CALLIDE MINE

SPECIES MANAGEMENT PLAN

BATCHFIRE RESOURCES PTY LTD
Callide Coal Mine
Coal Road
Biloela QLD 4715

BOUNDARY HILL SOUTH (EPBC 2012/6324)

EPBC ACT SPECIES MANAGEMENT PLAN

for

Batchfire Resources Pty Ltd

June 2018

Hansen Bailey

ENVIRONMENTAL CONSULTANTS

CALLIDE MINE

BOUNDARY HILL SOUTH (EPBC 2012/6324) EPBC ACT SPECIES MANAGEMENT PLAN

Prepared by:

HANSEN BAILEY
Level 15, 215 Adelaide Street
Brisbane QLD 4000

8 June 2018

For:

BATCHFIRE RESOURCES PTY LTD
Coal Road
Biloela QLD 4715

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 PURPOSE AND STRUCTURE OF THIS REPORT 1

2 PROJECT DESCRIPTION 2

3 EPBC ACT LISTED SPECIES 3
3.1 VEGETATION COMMUNITIES 3
3.2 TERRESTRIAL FLORA 4
3.3 TERRESTRIAL FAUNA 4

4 IMPACTS 6
4.1 ENVIRONMENTAL OUTCOMES AND PERFORMANCE CRITERIA 6

5 MANAGEMENT AND MITIGATION MEASURES 7
5.1 GENERAL SITE MANAGEMENT 7
5.2 VEGETATION CLEARING PROTOCOL 10
5.2.1 Pre-Clearing 10
5.2.2 Clearing 11
5.3 STAFF TRAINING 12
5.4 CONSERVATION ADVICE, RECOVERY PLANS, AND THREAT ABATEMENT PLANS 12
5.5 RESPONSIBILITIES 15
5.6 RISKS AND CONTINGENCY PLANNING 15

6 MONITORING, REPORTING AND IMPLEMENTATION 16
6.1 MONITORING PROGRAM 16
6.2 REPORTING 16
6.3 IMPLEMENTATION PROGRAM 17

7 KEY COMMITMENTS 18

8 REFERENCES 19

LIST OF TABLES

Table 1 EPBC Act Approval Conditions Relevant to this Species Management Plan
Table 2 Regional Ecosystems within the Project Site
Table 3 MNES Habitat within the Project Site Approved to be Cleared
Table 4 DoEE Conservation Advice, Recovery Plans, and Threat Abatement Plans
Table 5 Management Action Responsibilities
Table 6 Monitoring Program

LIST OF FIGURES

Figure 1 Habitat Types
Figure 2 Groundtruthed Vegetation

LIST OF APPENDICES

Appendix A EPBC Act Approval (EPBC 2012/6324)
Appendix B Boundary Hill South Project EIS Response to Submissions Round 1 Ecological Works Report
Appendix C Boundary Hill South Project Threated Species Profile Report
Appendix D Performance Criteria and Implementation Table
Appendix E Risk Assessment

VERSION CONTROL

Version No.	Author	Date Issued	Reviewed By
1	Peter Hansen and Chloe Annandale, Hansen Bailey	27 April 2018	Jeff Beatty, Batchfire Resources Pty Ltd
2	Peter Hansen and Chloe Annandale, Hansen Bailey	1 May 2018	Vaughn Cox and Tim Kaminskas, DoEE
3	Peter Hansen and Chloe Annandale, Hansen Bailey	5 June 2018	Jeff Beatty, Batchfire Resources Pty Ltd
4	Peter Hansen and Chloe Annandale, Hansen Bailey	6 June 2018	Vaughn Cox and Tim Kaminskas, DoEE
5	Peter Hansen and Chloe Annandale, Hansen Bailey	8 June 2018	Jeff Beatty, Batchfire Resources Pty Ltd
6	Peter Hansen and Chloe Annandale, Hansen Bailey	8 June 2018	Vaughn Cox, DoEE

GLOSSARY OF TERMS

Term	Definition
Biodiversity	The diversity of different species of plants, animals and micro-organisms, including the genes they contain.
Bioregion	Relatively large land areas characterised by broad, landscape-scale natural features and environmental processes that influence the functions of entire ecosystems.
Ecosystem	An interacting system of animals, plants, other organisms and non-living parts of the environment.
Endemism	The ecological state of a species being unique to a defined geographic location, such as an island, nation, country or other defined zone, or habitat type; organisms that are indigenous to a place are not endemic to it if they are also found elsewhere
Erosion	The wearing away of land surface by wind or water, intensified by land clearing practices related to farming, residential or industrial development, road building, or logging.
Fauna Spotter Catcher	An individual or corporation, as licensed by the Department of Environment and Science, who holds a current Rehabilitation Permit under the Queensland *Nature Conservation Act 1992*, to remove, relocate, or rehabilitate protected animals whose habitat will be destroyed or impacted by human activity.
Groundtruthed	Information that has been taken from the field, rather than desktop information.
Habitat	The native environment where a given animal or plant lives or grows, often described in terms of geography, climate and vegetation.
Mitigation	The act of lessening in intensity, to prevent or make less severe.
Open cut mine	Process used to remove minerals found over a large area, close to the surface. The mine is dug downward in benches or steps.
Product coal	Coal that has been processed in a coal processing plant, ready for export to market.
Rehabilitation	Reshaping of a disturbed area to a geotechnically and geochemically stable condition, followed by revegetation.
Regional ecosystem	A vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil.
Remnant vegetation	Native vegetation remaining after an area has otherwise been cleared: consisting of more than 50% of the undisturbed predominant canopy; averaging more than 70% of the vegetation's undisturbed height; and composed of species characteristic of the vegetation's undisturbed predominant canopy.

EXECUTIVE SUMMARY

This Species Management Plan has been prepared to meet the requirements of condition 9 of the Boundary Hill South Project (the project) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval (EPBC 2012/6324) and, through its implementation by Batchfire Resources Pty Ltd, will avoid, minimise and manage the project's impacts on EPBC Act listed species and their habitat.

This Species Management Plan includes a description of the project and the EPBC Act listed species within the project site, approved impacts to EPBC Act listed species and their habitat, and management and mitigation measures. It also includes monitoring, reporting, implementation, and key commitments. A risk assessment has been completed to inform management measures and performance criteria.

BOUNDARY HILL SOUTH (EPBC 2012/6324)
EPBC ACT SPECIES MANAGEMENT PLAN

for
Batchfire Resources Pty Ltd

1 INTRODUCTION

Hansen Bailey was commissioned by Batchfire Resources Pty Ltd (the proponent) to prepare a Species Management Plan (SMP) for the Boundary Hill South Project (the project). The project received approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC 2012/6324) on 24 March 2017. This SMP has been developed in accordance with the requirements of condition 9 of EPBC Approval.

1.1 PURPOSE AND STRUCTURE OF THIS REPORT

The EPBC Act approval requires a SMP be prepared to avoid, minimise and manage the project's impacts on EPBC Act listed species and their habitat.

Table 1 includes the requirements for the SMP from conditions 8 and 9 of the EPBC Act approval and indicates where the specific requirements of each condition are addressed in this SMP.

Table 1
EPBC Act Approval Conditions Relevant to this Species Management Plan

Condition	Section Number
8. The **approval holder** must submit a Species Management Plan for the **Ministers** written approval.	This document
9. The Species Management Plan must include:	
(a) details of measures to avoid mitigate and manage impacts to **EPBC Act** listed threatened species and their habitat during construction, operation and decommissioning of the **action**;	Section 5.1
(b) measures to manage areas on the project site, that are not within the disturbance boundary, as habitat for **EPBC Act** listed threatened species;	Section 5.1
(c) details of weed control, stock exclusion and revegetation measures; and	Section 5.1
(d) a discussion of relevant **conservation advice, recovery plans** and **threat abatement plans** and how measures proposed in the Species Management Plan take into account relevant **conservation advice** and are consistent with the measures contained in relevant **recovery plan** and **threat abatement plans**.	Section 5.5

2 PROJECT DESCRIPTION

Callide Mine is located approximately 20 km north of Biloela in Central Queensland. The project is an extension of the Boundary Hill open cut mining area at Callide Mine (Figure 1). Mining commenced at Callide Mine in 1944 and current production is approximately 10.5 Million tonnes per annum of product coal. The mine produces low-sulphur, sub-bituminous thermal coal that is predominantly used to supply Queensland's domestic power demands via the adjacent Callide Power Station.

Callide Mine involves open cut mining in four discrete mining areas. Open cut mining at the Boundary Hill mining area commenced in 1983. Boundary Hill operates independently of the other Callide Mine mining areas. The project involves the extension of open cut mining operations into Mining Lease (ML) 80186 and will extend the Boundary Hill mine life by approximately 20 years. Coal mining at the Boundary Hill South pit is due to commence in June 2018.

3 EPBC ACT LISTED SPECIES

A detailed flora and fauna study was completed as part of the Environmental Impact Statement (EIS) of the EPBC Act approval process for the project. The following documents prepared as part of the EIS are attached as Appendix B and C of this plan, respectively:

- Appendix B – Boundary Hill South Project EIS Response to Submissions Round 1 Ecological Works Report, Cumberland Ecology, February 2015; and
- Appendix C – Boundary Hill South Project Threatened Species Profile Report, Hansen Bailey, October 2015.

The detailed flora and fauna surveys and methdology, baseline data, results, and impacts are discussed in Appendix B and C. The EPBC Act listed threatened species identified as being present, or with a moderate or high likelihood of being present, on the project site are discussed in the following sections.

3.1 VEGETATION COMMUNITIES

The distribution of the groundtruthed Regional Ecosystems (REs) in the project site is shown in Figure 2. Habitat types, including non-remnant vegetation, are shown in Figure 1.

The project site is comprised of Least Concern Eucalyptus and Corymbia woodlands (RE 11.3.25, 11.9.9, and 11.10.1), and areas previously cleared for grazing activities and dominated by grazing pastures and regrowth vegetation, as shown in Table 2. The project site contains 135 ha of Least Concern REs. The project site does not contain any EPBC Act listed threatened ecological communities.

Table 2
Regional Ecosystems within the Project Site

Regional Ecosystem	Area within Project Site (ha)
RE 11.3.25	2.7
RE 11.9.9	62.2
RE 11.10.1	70.1
Grazing pastures	480.1
Total	**615.1**

3.2 TERRESTRIAL FLORA

A total of 243 plant species from 61 families were recorded within the project site. Thirty-three species were exotic, including three declared weed species, Lantana (*Lantana camara*), Creeping Lantana (*Lantana montevidensis*) and Prickly Pear (*Opuntia stricta*). Exotic species represented approximately 14% of the total number of species recorded during field surveys which provides an indication of the high level of disturbance to native flora within the project site. No threatened flora species under the EPBC Act were recorded.

3.3 TERRESTRIAL FAUNA

A range of grassland and woodland habitats were present in the project site exhibiting an array of habitat conditions. Habitat values for fauna were, however, limited by the introduction of Buffel Grass and infestations of Lantana, and the effects of cattle activity.

A total of 95 bird, 27 mammal, three amphibian and 10 reptile species were recorded within the project site, including eight introduced species. The eight introduced fauna species include the Cane Toad, Cattle, Feral Pig, Dingo / Wild Dog, European Red Fox, Feral Cat, European Rabbit, and House Mouse, and further detail is provided in Section 4.5.6 of Appendix B. Fauna survey sites are shown in Figure 6 of Appendix C. Overall, the majority of the fauna recorded within the project site is not listed under the EPBC Act, and was typical of that occurring in the surrounding Biloela area.

The fauna assessment did not identify any sites of particular significance with respect to high biodiversity, important breeding or feeding areas, high endemism, unusual fauna assemblages, or unique habitat types or assemblages. The assessment concluded that the project site represents an area that is not particularly significant for any species with respect to important populations or species occurring at the limit of their distribution. All of the habitats occurring within the project site are well represented throughout the Biloela area and wider Banana Shire region.

The faunal community of the project site is typical of the community occurring in disturbed agricultural landscapes throughout the Brigalow Belt Bioregion, comprising reduced species diversity due to the effects of habitat fragmentation from historic clearing, and habitat degradation from the effects of weed infestation and grazing on floristic and structural habitat diversity. Further detail on the regional context is provided in Section 1.4 of Appendix B.

The Squatter Pigeon (*Geophaps scripta scripta*) (Vulnerable) was recorded on the project site during EIS field surveys. The following species are also considered likely to occur in the project site, at least intermittently, but were not recorded during EIS field surveys:

- Koala (*Phascolarctus cinereus*) (Vulnerable under EPBC Act);
- Red Goshawk (*Erythrotriorchis radiatus*) (Vulnerable under EPBC Act);

- Collard Delma (*Delma torquata*) (Vulnerable under EPBC Act);
- Yakka Skink (*Egernia rugosa*) (Vulnerable under EPBC Act);
- South-eastern Long-eared Bat (*Nyctophilus corbeni*) (Vulnerable under EPBC Act);
- Large-eared Pied Bat (*Chalinolobus dwyeri*) (Vulnerable under EPBC Act);
- Australian Painted Snipe (*Rostratula australis*) (Endangered, Migratory, and Marine under the EPBC Act);
- Northern Quoll (*Dasyurus hallucatus*) (Endangered under the EPBC Act); and
- Grey-headed Flying-fox (*Pteropus poliocephalus*) (Vulnerable under the EPBC Act).

Potential habitat mapping was completed and approved as part of the EIS for the project. Potential habitat of MNES species is discussed in Sections 5 to 14, and shown in Figures 10 to 20, of Appendix C.

The following Migratory Species listed under the EPBC Act were also assessed as being present, or likely to occur within the project site:

- Cattle Egret (*Ardea ibis)* – Marine;
- Eastern Great Egret (*Ardea modesta*) – Marine;
- Rainbow Bee-eater (*Merops ornatus*) – Marine;
- Fork-tailed Swift (*Apus pacificus*) – Migratory, Marine;
- Rufous Fantail (*Rhipidura rufifrons*) – Migratory, Marine;
- Satin Flycatcher (*Myiagra cyanoleuca*) – Migratory, Marine; and
- White-throated Needletail (*Hirundapus caudacutus*) – Migratory, Marine.

4 IMPACTS

The project will involve the disturbance of approximately 477 ha as a result of clearing for mining activities (Figures 1 and 2). MNES habitat to be cleared as part of the project, as approved in condition 4 of the EPBC Act approval, is shown in Table 3.

Table 3
MNES Habitat within the Project Site Approved to be Cleared

MNES	Area within Project Site Approved to be Cleared (ha)
Squatter Pigeon	266
Koala	257

Section 5 of this SMP describes the management measures for retained species habitat within undisturbed areas of the project site and mitigation measures to be implemented during clearing operations in order to minimise impacts on threatened species. Potential habitat mapping was completed and approved as part of the EIS for the project. Potential habitat of MNES species is discussed in Sections 5 to 14, and shown in Figures 10 to 20, of Appendix C.

4.1 ENVIRONMENTAL OUTCOMES AND PERFORMANCE CRITERIA

The key environmental outcomes for the SMP are as follows:

- Minimising impacts on EPBC Act listed threatened species and their habitat during construction, operation and decommissioning of the project; and
- Maintaining the ecological values of areas on the ML that are not disturbed by mining activities.

The key performance criteria against which the success of the SMP will be assessed are provided in Appendix D. The implementation program for the performance criteria within this SMP is discussed in Section 6.3

5 MANAGEMENT AND MITIGATION MEASURES

5.1 GENERAL SITE MANAGEMENT

Protection of threatened species habitat values within undisturbed areas of the Boundary Hill South ML will be achieved through a range of management actions. The following management plans and procedures will be applied to undisturbed areas:

- Restricted access:

There will be no unauthorised access to the Boundary Hill South ML. Management measures include fencing of the ML boundary, "No Unauthorised Access" signage at entry points, and visitor access procedures.

- Rehabilitation Management Plan (RMP):

A RMP is required under Condition H2 of the Callide Mine Environmental Authority (EA), administered by the Queensland Department of Environment and Science. The RMP will describe progressive rehabilitation of Boundary Hill South, including rehabilitation of overburden dumps, and eventually mine closure and decommissioning. Rehabilitated areas within the project site will be safe, non-polluting, and stable, and will be in accordance with the Callide Mine EA. Final land use of rehabilitation areas within the project site will be predominantly grazing, with some areas of bushland if grazing cannot be achieved. The RMP for the project site will include the establishment of a rehabilitation monitoring program, which will include a minimum of three reference monitoring sites, and three rehabilitation area monitoring sites, to be established once rehabiltiaition commences within the project site.

- Weed Management Plan:

The Weed Management Plan which will be applied to the project site. The plan involves:

- Delivering education and awareness training about weeds to all staff and contractors via site inductions;
- Implementing the following prevention measures:
    - Use of wash down facilities by all vehicles and plant prior to entering the site and prior to exiting the mining area if they have been operating off graded site roads;
    - Maintenance of roads and tracks to minimise weeds on tracks and to reduce the spread of weeds by vehicle movements; and
    - Monitoring topsoil stockpiles to ensure that they do not become infested with weeds;
- Implementing appropriate treatment control programs for priority weed species identified in the project site. The control programs will contain or reduce the extent of weed species and prevent the introduction of additional species and infestation areas.

This will include monthly monitoring and spraying programs undertaken throughout the project area, in particular adjacent to entry points and disturbance areas and in MNES habitat. Control programs will involve chemical and/or mechanical methods, depending on the sensitivity of the receiving environment and the weed species to be controlled. These control programs will ensure that there are no significant negative impacts to MNES habitat;

- Undertaking weed audits and mapping throughout the study area for restricted pest species listed under the *Biosecurity Act 2015*. This mapping will identify any areas of severe weed infestation to prioritise weed control treatments; and
- Monitoring weed infestations, using photo point monitoring where necessary.

- Feral Animal Control Procedure:

The feral animal control procedure is aimed at the strategic management and control of feral animals within the mining leases in a cost effective, efficient, and humane manner. This includes minimising risk to native species. The control procedure includes monthly monitoring programs and biannual feral animal control / eradication programs.. Feral animal control / eradication programs include:

- On ground or aerial baiting / poisoning of wild dogs / dingoes, foxes, rabbits, pigs, and other pest animals using 1080 or similar; and/or
- Fumigation or destruction of warrens / burrows for foxes and rabbits; and/or
- Trapping for wild dogs / dingoes, foxes, cats, feral goats, and other pest animals.

These control / eradication programs will focus on all feral animals identified within the project site, which includes the species found during field surveys discussed in Section 3.3.

- Bushfire management:

Bushfire management measures will be applied to the project site. These will include annual monitoring of fire break condition and vegetation clearing to maintain firebreaks, as necessary, to minimise the risk of outbreak of bushfire and associated impacts on native vegetation. Any uncontrolled fires within the project site will be controlled and extinguished as soon as possible.

- Stock management measures:

Stock within the project site will be managed in accordance with sustainable grazing management practices that will not degrade koala or squatter pigeon habitat. This will include the exclusion of stock from active mining areas.

- Erosion and Sediment Control Plan (ESCP):

The ESCP will include detailed management actions to minimise erosion of disturbed areas and sediment loss to adjacent MNES habitat. The preparation of this plan is an EA condition. It is required to be developed by an appropriately qualified person and will be implemented for all stages of the mining activities to minimise erosion and the release of sediment to receiving waters and contamination of storm water to ensure no significant impact on MNES species or habitat. The existing ESCP includes the following measures that will also be applied to the project:

- A detailed description of the existing catchment and drainage setting in terms of the potential for erosion and sources of sediment.
- A description of the proposed drainage control measures for managing stormwater runoff and preventing gully and rill erosion.
- A description of the erosion control measures proposed for protection of exposed soils and surfaces.
- A description of the proposed sediment control measures for controlling suspended sediment in stormwater runoff or site drainage. This includes diverting runoff from undisturbed areas away from areas disturbed by mining activities, and the collection of drainage from disturbed areas and directing it to sediment control structures for the control of suspended sediment prior to overflow from site.
- A description of monitoring, including visual inspections of erosion and sediment control structures after heavy rainfall events.

- Permit to Disturb procedure:

The Permit to Disturb procedure describes actions to be followed prior to any planned disturbances. Prior to commencement of land disturbance, the Permit to Disturb application form must be completed and approved by site environmental staff, including consideration of environmental factors such as the clearing of vegetation and location of habitat trees within areas proposed to be cleared. Any clearing of vegetation under a Permit to Disturb will comply with the impact mitigation measures set out in this SMP.

- Waste Management:

The Waste Management Procedure describes the waste management practices that will be implemented for the project. These include:

- Training of employees on waste management appropriate to their areas of work;
- Waste minimisation, including recycling programs;
- Waste management for handling each waste stream; and
- Waste tracking of any regulated waste.

5.2 VEGETATION CLEARING PROTOCOL

Clearing of vegetation will be undertaken sequentially and in accordance with the approval holder's Permit to Disturb process. A clearing protocol will apply to all vegetation clearing undertaken as part of the project. Work areas in the vicinity of native vegetation to be retained will be clearly delineated (using survey pegs, flagging tape, or fenced and signed) prior to and during construction to prevent unnecessary encroachment into and disturbance of adjacent vegetation.

5.2.1 Pre-Clearing

Prior to the commencement of clearing activities, the approval holder or its construction contractors will engage at least one Fauna Spotter Catcher. The Fauna Spotter Catcher will be appropriately qualified and experienced in wildlife management and will hold the necessary Rehabilitation Permit to allow the removal of fauna from the area to be cleared. Prior to commencement of the action, the Fauna Spotter Catcher will identify appropriate wildlife carer groups and veterinarians in the local area who have the capacity and ability to treat injured animals should the need arise during clearing activities.

Within 48 hours prior to the commencement of clearing activities, a suitably qualified Fauna Spotter Catcher will undertake pre-clearing relocation surveys of the areas to be cleared. The pre-clearing surveys will involve:

- Delineation of the limits of clearing clearly on plans and on the ground (using survey pegs or flagging tape);
- Identification and marking of potential habitat trees with flagging tape;
- Identification and marking of trees that are inhabited, or potentially inhabited by threatened species;
- Identification and marking of tree hollows inhabited, or potentially inhabited by threatened species;
- Identification and marking of active roosts and nests; and
- Identification of threatened species present within the disturbance footprint, including determination of the distribution and density of affected species.

Fauna relocation will involve:

- Encouraging fauna to leave the disturbance footprint;
- Relocation of threatened fauna present to identified suitable habitat outside of the disturbance footprint; and
- Relocation of active nests/roosts and any dependent young/eggs to identified suitable habitat outside of the disturbance footprint:

- The Fauna Spotter Catcher will encourage fauna to leave by reasonable means (as outlined in Section 5.2.2) or capture and relocate it prior to clearing; and
- The Fauna Spotter Catcher will physically relocate active nests/roosts and any dependent young/eggs to identified suitable habitat outside of the disturbance footprint.

Details and results of the pre-clearing surveys and fauna relocation will be reported in annual compliance reports.

5.2.2 Clearing

During clearing, at least one Fauna Spotter Catcher will be present for all clearing works to ensure that marked habitat trees are felled appropriately. Generally, non-habitat trees will be felled first, with habitat trees left initially and then felled under direct supervision of the Fauna Spotter Catcher. The Fauna Spotter Catcher will advise construction staff whether habitat trees or trees being utilised by threatened species need to be left for 24 hours before felling (to enable wildlife to relocate on its own), or whether such trees should be left for 24 hours once felled (for the same reason).

For the felling of marked habitat trees, the following guidelines will be followed:

- The Fauna Spotter Catcher will inspect habitat trees to determine whether hollows are occupied (if unable to determine presence, it will be assumed that the hollow is occupied).
- If occupied, the Fauna Spotter Catcher will attempt to encourage the fauna to leave by reasonable means (including freely relocating, shaking the tree with the blade of a dozer to encourage freely relocating), or capture and physically relocate the fauna to identified suitable habitat outside of the disturbance footprint. Relocation of fauna during clearing activities will be done to reduce the overall risk of injury or fatality to species during clearing activities, and will focus on active nests and roosts within the disturbance footprint. Previous experience at Callide Mine has shown that this approach does not cause significant mortality of fauna species.
- If an inhabited hollow is identified within a habitat tree, and the fauna is unable to be relocated as per the above methods, habitat trees will be felled gently or lowered to the ground by skilled plant operators, ensuring the trees do not land on the inhabited hollow. Placement of other felled trees around habitat trees can be used to minimise the impact of felling. If necessary and at the discretion of the Fauna Spotter Catcher, occupied habitat trees and hollows may be plugged with a suitable material and relocated to an appropriate area outside of the disturbance footprint. The hollow will then be unplugged to allow fauna to escape.
- Once felled, habitat trees will be left for a short period of time on the ground to give the fauna an opportunity to escape.

- If the hollow is still occupied, any fauna found will be captured and relocated to suitable habitat outside of the disturbance footprint and released after nightfall to minimise the risk of predation by diurnal predators. Any animals that are inadvertently injured will be taken to the nearest veterinary clinic for treatment, or if the animal is unlikely to survive, it will be humanely euthanized.

Prior to the commencement of ongoing operational works, the Environmental Officer will survey the proposed area to be cleared and determine whether a Fauna Spotter Catcher is required. A Fauna Spotter Catcher will be required if any MNES habitat is being cleared.

5.3 STAFF TRAINING

As part of the induction process for the clearing works, all staff and contactors will be advised of the protocol for clearing of vegetation in accordance with this SMP. The contractor overseeing construction works will ensure that all sub-contractors are aware of their responsibilities under this SMP.

5.4 CONSERVATION ADVICE, RECOVERY PLANS, AND THREAT ABATEMENT PLANS

As discussed in Section 4, DoEE determined that the project will have a significant residual impact on the Squatter Pigeon (southern) and Koala. There are no recovery plans for either the Squatter Pigeon (southern) or the Koala, and no threat abatement plans for the Koala. The available DoEE plans and advice, and where they are addressed in this SMP, are outlined in Table 4.

Table 4
DoEE Conservation Advice, Recovery Plans, and Threat Abatement Plans

DoEE Plan	Plan Advice	Relevant Section of this SMP
Approved Conservation Advice for *Phascolarctos cinereus* (combined populations of Queensland, New South Wales and the Australian Capital Territory) (Koala Northern Designatable Unit)	Key threats identified are: • Loss and fragmentation of habitat	Condition 4 of the EPBC Act approval requires offsets for the loss of 257 ha of Koala habitat
	• Vehicle strike	The project will utilise the existing mine equipment and workforce, and speed limits, appropriate signage, and careful driving policies will be implemented to decrease the risk of vehicles striking fauna
	• Disease	N/A to management actions for the project

DoEE Plan	Plan Advice	Relevant Section of this SMP
	• Predation by dogs	Section 5.1 discusses pest management measures
Conservation Advice Geophaps *scripta scripta* Squatter Pigeon (southern)	Key threats identified are: • Loss and fragmentation of habitat	Condition 4 of the EPBC Act approval requires offsets for the loss of 266 ha of Squatter Pigeon habitat
	• Overgrazing of habitat by livestock	Section 5.1 discusses continued stock management[1]
	• Overgrazing of habitat by feral herbivores e.g. rabbits	Section 5.1 discusses pest management measures
	• Introduction of weeds	Section 5.1 discusses weed management measures
	• Inappropriate fire regimes	Section 5.1 fire management procedures
	• Thickening of understorey vegetation	Thickening of understorey vegetation will be managed using existing stock management practices
	• Predation by feral cats and foxes	Section 5.1 discusses pest management measures
	• Trampling of nests by domestic stock	Section 5.1 discusses continued stock management
	• Illegal shooting	The mining lease will be fully fenced, and existing Batchfire security protocols implemented to exclude access from the project site.
Threat abatement plan for predation by feral cats	Identifies the research, management and other actions needed to ensure the long-term survival of native species and ecological communities affected by predation by feral cats, noting that due to the thorough establishment of feral cats in Australia, management is	Section 5.1 discusses pest management measures

[1] Note the ML is an existing grazing lease and the purpose of this plan is avoid and mitigate impacts ffrom mining-related activities.

DoEE Plan	Plan Advice	Relevant Section of this SMP
	focused on impact abatement rather than eradication	
Threat abatement plan for competition and land degradation by rabbits	Identifies current management practices for rabbits, noting rabbits are wildely established and abundant in Australia and unable to be eradicated	Section 5.1 discusses pest management measures
Threat abatement plan for predation by the European red fox	Identifies current management practices for foxes, noting eradications is not currently considered a viable proposition	Section 5.1 discusses pest management measures

5.5 RESPONSIBILITIES

The following table identifies the parties responsible for ensuring management actions are carried out in accordance with this SMP.

Table 5
Management Action Responsibilities

Team Member	Responsibility
All employees and contractors	• Follow the protocols outlined in this SMP
Environment and Community Manager	• Ensure adequate resources are allocated to enable the training of staff
Environmental Officer	• Follow and implement all procedures outlined in Section 5.1, including the RMP, Weed Management Plan, Feral Animal Control Procedure, bushfire management, stock management, ESCP, and the Permit to Disturb procedure • Implement improvement measures as required • Engage a Fauna Spotter Catcher prior to undertaking clearing activities of MNES habitat comprising native vegetation • Identification of areas where additional management measures are necessary and undertaking additional management measures as required
Fauna Spotter Catcher	• Undertake pre-clearing surveys within 48 hours prior to clearing • Supervise all clearing works • Fauna and tree hollow relocation • Provide details of clearing activities for input into Animal Breeding Place Register • Advise Environmental Officer of any additional management measures required during subsequent clearing works

5.6 RISKS AND CONTINGENCY PLANNING

The risks to successful species management on the project site, and associated management measures are provided in Appendix E.

6 MONITORING, REPORTING AND IMPLEMENTATION

6.1 MONITORING PROGRAM

The monitoring program for this SMP is outlined in the following table.

Table 6
Monitoring Program

Monitoring Activity	Monitoring Program
Rehabilitation	As per the EA RMP requirements, there will be three reference sites and three rehabilitation area sites monitored within the project site once rehabilitation areas have been established, as detailed in Section 5.1
Weed management	See Section 5.1. Monthly weed monitoring will be undertaken, in conjunction with weed control activities, both adjacent to mining activities and throughout the MNES habitat on the mining lease.
Feral animal management	Feral animal monitoring will be undertaken in conjunction with weed monitoring and control activities, as detailed in Section 5.1
Fire breaks	Fire breaks will be periodically inspected, as detailed in Section 5.1
Stock exclusion fences	Stock exclusion fences will be periodically inspected, as detailed in Section 5.1
ESCP structures	ESCP structures will be inspected following heavy rainfall events, as detailed in Section 5.1
Clearing areas	Clearing areas will be inspected pre and post clearing as per the internal Permit to Disturb procedure, as detailed in Section 5.1

6.2 REPORTING

The Environmental Officer will be responsible for the periodic review of this SMP following completion of clearing activities, and as necessary, to ensure it remains effective in achieving the environmental outcomes and performance criteria specified in Appendix D. Any revisions of the SMP would be completed in accordance with condition 18 of the EPBC Act approval.

The following records will be kept in relation to the implementation of this SMP, in accordance with condition 15 of the EPBC Act approval:

- Executed Permits to Disturb;
- Animal Breeding Place Register from Fauna Spotter Catcher surveys (as required under the Queensland SMP);
- Fauna Incidence Register from Fauna Spotter Catcher surveys (as required under the Queensland SMP);

- Pest and weed management activity records;
- Bushfire management activity records, including fire break maintenance; and
- ESCP and associated monitoring records.

As required by condition 23 of the EPBC Act approval, this SMP will be published on the proponent's website within one month of approval by the Minister and will remain on the website for the life of the EPBC Act approval.

As required by condition 16 of the EPBC Act approval, within three months of every 12 month anniversary of the commencement of the action, a report will be published on the proponent's website addressing compliance with the implementation of this SMP.

6.3 IMPLEMENTATION PROGRAM

This SMP will be implementated on approval by the Minister, prior to construction of the project, for the life of the project. All other documents referenced in this report (e.g. the Permit to Disturb process) will be implemented for the life of the project, and are discussed in Appendix D.

7 KEY COMMITMENTS

The key commitments for this SMP are:

- The protocols outlined in this SMP will be followed.
- Adequate resources will be provided for training.
- All identified procedures will be implemented, including the RMP; Weed Management Plan; feral animal control, bushfire and stock management procedures; the ESCP; and the Permit to Disturb procedure.
- A Fauna Spotter Catcher will be engaged prior to undertaking clearing activities of MNES habitat comprising native vegetation within the project site, and the Fauna Spotter Catcher will follow the procedure outlined in this SMP.
- The Environmental Officer will undertake periodic review of this SMP, and revise as necessary.
- The following records will be kept in relation to the implementation of this SMP:
    - Executed Permits to Disturb;
    - Animal Breeding Place Register from Fauna Spotter Catcher surveys (as required under the Queensland SMP);
    - Fauna Incidence Register from Fauna Spotter Catcher surveys (as required under the Queensland SMP);
    - Pest and weed management activity records;
    - Bushfire management activity records, including fire break maintenance; and
    - ESCP and associated monitoring records.
- The SMP will be made available on the approval holder's website within one month of approval.
- Within three months of every 12 month anniversary of the commencement of the action, a report will be published on the proponent's website addressing compliance with the implementation of this SMP.

8 REFERENCES

Biosecurity Act 2014

Boundary Hill South Project Environmental Impact Statement, AECOM, November 2012.

Boundary Hill South Project Environmental Impact Statement Response to Submissions Round 1 Ecological Works Report, Cumberland Ecology, February 2015.

Boundary Hill South Project Threated Species Profile Report, Hansen Bailey, October 2015.

Department of the Environment (2015). Threat abatement plan for predation by feral cats

Department of the Environment and Energy (2016). Threat abatement plan for competition and land degradation by rabbits

Department of Environment and Heritage Protection Guideline Model Mining Conditions ESR/2016/1936 Version 6.01 Effective 7 March 2017

Department of the Environment, Water, Heritage and the Arts (2008). Threat abatement plan for predation by the European red fox

Department of Sustainability, Environment, Water, Population and Communities (2012). Approved Conservation Advice for Phascolarctos cinereus (combined populations in Queensland, New South Wales and the Australian Capital Territory)

Environment Protection and Biodiversity Conservation Act 1999

Nature Conservation Act 1992

Threatened Species Scientific Committee (2015). Conservation Advice Geophaps scripta scripta squatter pigeon (southern)

Vegetation Management Act 1999

Declaration of accuracy

I declare that:

1. To the best of my knowledge, all the information contained in, or accompanying this EPBC Act Species Management Plan is complete, current and correct.

2. I am duly authorised to sign this declaration on behalf of the approval holder.

3. I am aware that:

   a. Section 490 of the EPBC Act makes it an offence for an approval holder to provide information in response to an approval condition where the person is reckless as to whether the information is false or misleading.

   b. Section 491 of the EPBC Act makes it an offence for a person to provide information or documents to specified persons who are known by the person to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* where the person knows the information or document is false or misleading.

   c. The above offences are punishable on conviction by imprisonment, a fine or both.

Signed

Jeff Beatty

Manager – Technical Services & Environment and Community

Batchfire Resources Pty Ltd

8 June 2018

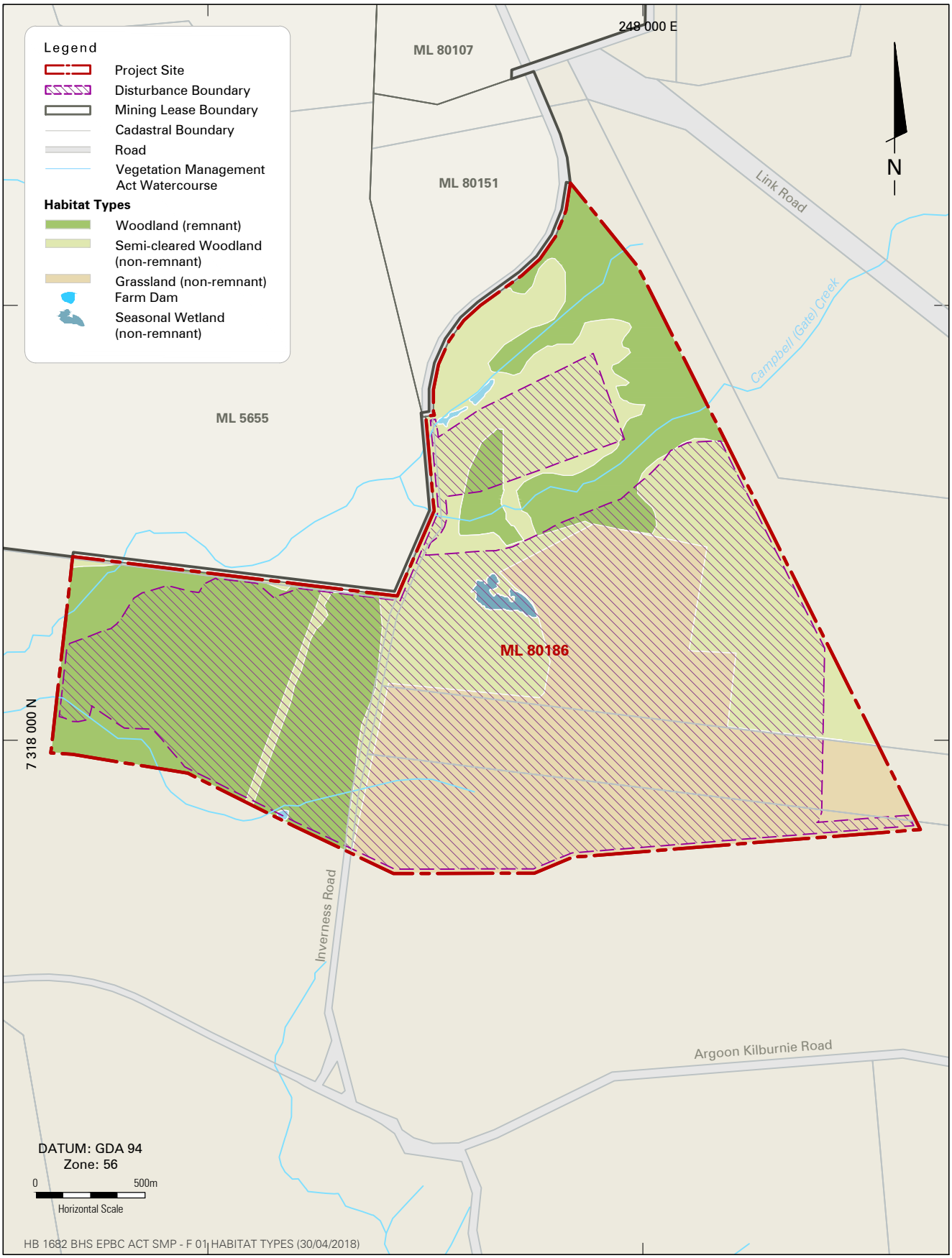
* * *

for
HANSEN BAILEY

Chloe Annandale
Environmental Scientist

Peter Hansen
Director

FIGURES

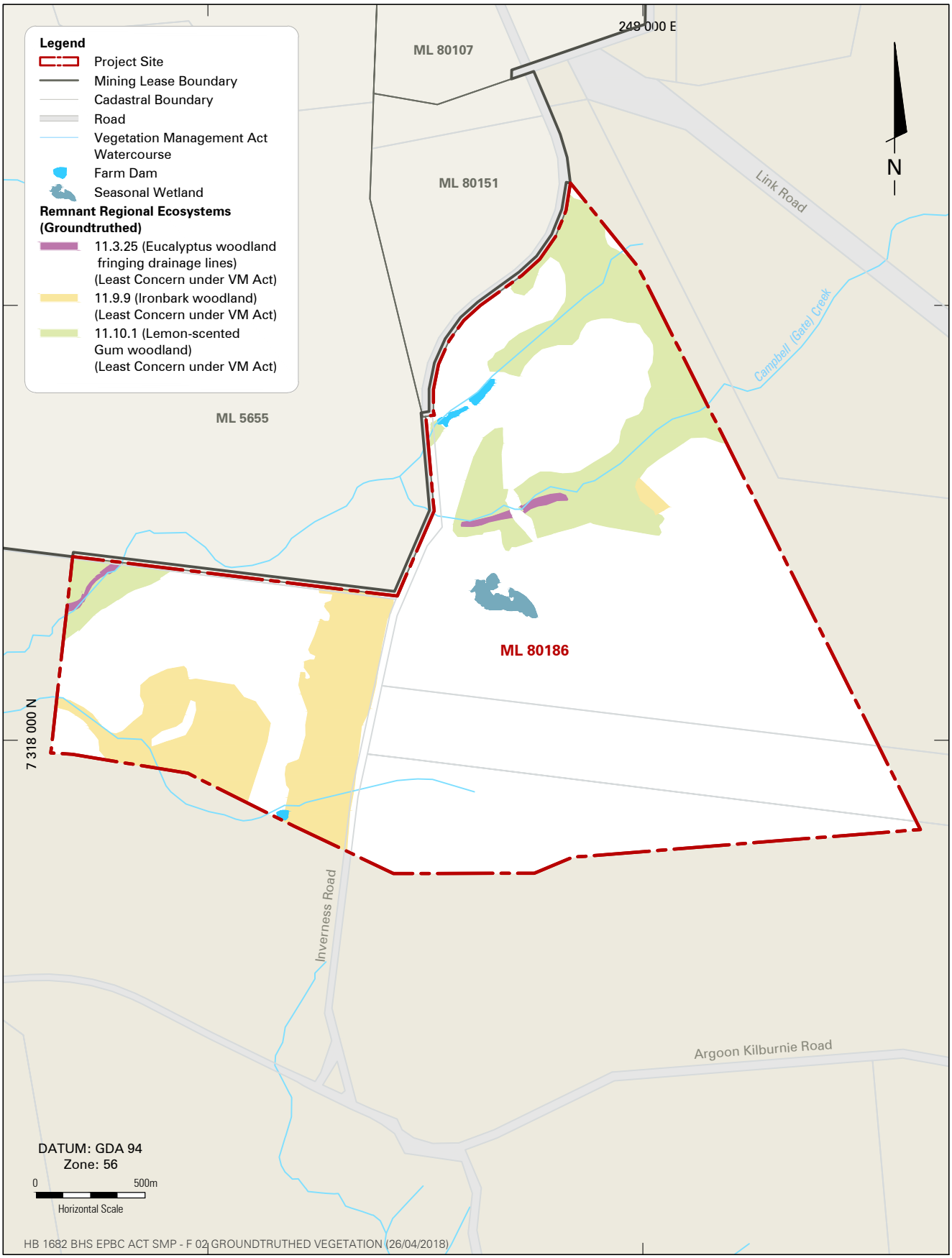


BOUNDARY HILL SOUTH PROJECT

BATCHFIRE CALLIDE | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Habitat Types

FIGURE 1



BOUNDARY HILL SOUTH PROJECT

BATCHFIRE CALLIDE | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Groundtruthed Vegetation

FIGURE 2

APPENDIX A

EPBC Act Approval (EPBC 2012/6324)

Australian Government
Department of the Environment and Energy

Approval

Boundary Hill South Lease Extension (BHSLE), north of Biloela, Central Queensland (EPBC 2012/6324)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted	Batchfire (Callide Management) Pty Ltd
proponent's ABN	**75 009 66 200**
proposed action	To expand an existing open cut coal mine pit and additional infrastructure (in ML 80186) as part of the Callide mines 20 km north of Biloela, central QLD [See EPBC Act referral 2012/6324 and variations to the action dated 20 November 2012 and 17 October 2013].

Approval decision

Controlling Provision	Decision
Listed threatened species and communities (sections 18 & 18A)	Approved
Listed migratory species (sections 20 & 20A)	Approved
Water resources (section 24D & 24E)	Approved

conditions of approval

This approval is subject to the conditions specified below.

expiry date of approval

This approval has effect until 30 June 2050.

Decision-maker

name and position	James Barker Assistant Secretary Assessments (QLD, Vic, Tas) and Sea Dumping Branch
signature	
date of decision	24/3/17

Conditions attached to the approval

Project area

1. For the purpose of the **action**, the **approval holder** must not take any action outside the areas identified as the Boundary Hill South disturbance boundary within MLA 80186 at Attachment A.

Pre-clearance surveys

2. The approval holder must undertake a harp trap survey for the South-eastern Long-eared bat (*Nyctophilus corbeni*) prior to **commencement** of the action. The harp trapping must be done in accordance with harp trapping requirements of the **EPBC Act survey guidelines**.

3. If the harp trap survey determines the presence of a South-eastern Long-eared Bat on the project site, the approval holder must provide an offset for the loss of its habitat on the project site.

Offsets

4. The **approval holder** must submit an Offset Management Strategy for the **Minister's** written approval for the loss of the following:

    - 266 hectares of Squatter Pigeon habitat;
    - 257 hectares of Koala habitat; and
    - 224 hectares of South-eastern Long-eared Bat habitat if the harp trap survey required at conditions 2 and 3 determines the species is present in the project site.

5. The Offset Management Strategy must include, but not be limited to:

    (a) The proposed timeline and legal mechanism for securing the offset areas or offset outcomes;

    (b) Details of minimum offset area/s;

    (c) Evidence that the offset/s are in accordance with the EPBC Act Environmental Offsets Policy.

6. The approval holder must not commence the action unless the Offset Strategy has been approved by the Minister in writing. The approved Offset Strategy must be implemented.

7. The approval holder must submit for the Minister's written approval an Offset Management Plan. The Offset Management Plan must include:

    (a) Details of the offset areas required to address the loss of habitat for **EPBC Act** listed threatened species at condition 4;

    (b) Justification for how the offset areas provide long-term functional habitat for the identified species, connectivity with other relevant habitats, conservation areas and functional biodiversity corridors, including a map depicting the offset areas in relation to other habitats and biodiversity corridors;

    (c) A survey and description of the current condition (prior to any management activities) of the offset area proposed, including existing vegetation (the baseline condition);

(d) Performance and completion criteria for evaluating the management of the offset area, and criteria for triggering remedial action (if necessary);

(e) A description of the management measures that will be implemented for the protection of **EPBC Act** listed threatened species, including a discussion of how measures outlined take into account relevant **conservation advice** and are consistent with the measures in relevant **recovery plans** and **threat abatement plans**;

(f) A program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria; and

(g) The proposed **legal mechanism for securing** the offset within 2 years from the date of the Minister's approval of the Offset Management Strategy required at condition 4.

(h) Evidence that the offset/s are in accordance with the EPBC Act Environmental Offsets Policy.

Species Management Plan

8. The **approval holder** must submit a Species Management Plan for the **Ministers** written approval.

9. The Species Management Plan must include:

   (a) details of measures to avoid mitigate and manage impacts to **EPBC Act** listed threatened species and their habitat during construction, operation and decommissioning of the **action**;

   (b) measures to manage areas on the project site, that are not within the disturbance boundary, as habitat for **EPBC Act** listed threatened species;

   (c) details of weed control, stock exclusion and revegetation measures; and

   (d) a discussion of relevant **conservation advice**, **recovery plans** and **threat abatement plans** and how measures proposed in the Species Management Plan take into account relevant **conservation advice** and are consistent with the measures contained in relevant **recovery plans** and **threat abatement plans**.

10. The **approval holder** must not **commence** the **action** until the Species Management Plan is approved by the **Minister** in writing. The approved Species Management Plan must be implemented.

Groundwater

11. The **approval holder** must undertake monitoring of groundwater as specified in the **Environmental Authority (EA).**

12. The **approval holder** must make the groundwater monitoring results, required under condition 11, publicly available on the **approval holder**'s website for the life of the project within 3 months of collecting the data.

13. The **approval holder** must make groundwater monitoring results, required under condition 11, available to the **Department** and **Queensland Government authorities** (if requested) for inclusion in any cumulative impact assessment, regional water balance model, bioregional assessment or relevant research.

General

14. Within 30 days after the **commencement** of the **action**, the **approval holder** must advise the **Department** in writing of the actual date of **commencement**.

15. The **approval holder** must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans required by this approval, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **Department**'s website. The results of audits may also be publicised through the general media.

16. Unless otherwise agreed to in writing by the **Minister**, within three months of every 12 month anniversary of the **commencement** of the **action**, the **approval holder** must publish a report on its website addressing compliance with each of the conditions of this approval over the previous 12 months, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and details of non-compliance with any of the conditions of this approval must be provided to the **Department** at the same time as the compliance report is published. Reports must remain published for the life of the approval. The person taking the action must continue to publish this report each year until such time as agreed to in writing by the **Minister**.

17. Upon the direction of the **Minister**, the **approval holder** must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the **Minister**. The independent auditor and audit criteria must be approved by the **Minister** prior to the commencement of the audit. The audit report must address the approved criteria to the satisfaction of the **Minister**.

18. The **approval holder** may choose to revise a Plan approved by the Minister under condition 8 without submitting it for approval under section 143A of the **EPBC Act**, if the taking of the **action** in accordance with the revised plan would not be likely to have a **new or increased impact**. If the **approval holder** makes this choice it must:

    a. notify the **Department** in writing that the approved plan has been revised and provide the **Department** with an electronic copy of the revised plan or strategy;

    b. implement the revised plan from the date that the revised plan or strategy is submitted to the **Department**; and

    c. for the life of this approval, maintain a record of the reasons the **approval holder** considers that taking the **action** in accordance with the revised plan would not be likely to have a **new or increased impact**.

19. The **approval holder** may revoke its choice under condition 18 at any time by notice to the **Department**. If the **approval holder** revokes the choice to implement a revised plan, without approval under section 143A of the Act, the plan most recently approved by the **Minister** must be implemented.

20. If the **Minister** gives a notice to the **approval holder** that the **Minister** is satisfied that the taking of the **action** in accordance with the revised plan would be likely to have a **new or increased impact**, then:

a. condition 18 does not apply, or ceases to apply, in relation to the revised plan; and

b. the **approval holder** must implement the plan most recently approved by the **Minister**.

To avoid any doubt, this condition does not affect any operation of conditions 18 and 19 in the period before the day the notice is given.

At the time of giving the notice the **Minister** may also notify that for a specified period of time that condition 18 does not apply for one or more specified plans required under the approval.

21. Conditions 18, 19 and 20 are not intended to limit the operation of section 143A of the **EPBC Act** which allows the **approval holder** to submit a revised plan or strategy to the **Minister** for approval.

22. If, at any time after 7 years from the date of this approval, the **approval holder** has not substantially **commenced** the **action**, then the **approval holder** must not substantially **commence** the **action** without the written agreement of the **Minister**.

23. Unless otherwise agreed to in writing by the **Minister**, the **approval holder** must publish all management plans, and reports, referred to in these conditions of approval on its website. Each management plan must be published on the website within one month of being approved by the **Minister** or submitted under condition 16a. All published reports must remain on website for the life of the approval.

Definitions

Action: the Boundary Hill South project as referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC 2012/6324) and variations to the action dated 20 November 2012 and 17 October 2013.

Approval holder: the person to whom the approval is granted or any person acting on their behalf, or to whom the approval is transferred under section 145B of the **EPBC Act**.

Commence/ Commencement: the construction of any infrastructure, excluding fences and signage associated with the proposed action.

Conservation advice: means a conservation advice approved by the **Minister** under the **EPBC Act**.

Department: the Australian Government Department administering the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

Environmental Authority (EA): the approval required under the *Environment Protection Act 1994* (QLD) to carry out an environmentally relevant activity.

EPBC Act: the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

EPBC Act Environmental Offsets Policy (2012): the *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy (October 2012), or subsequent revision, including the Offset Assessment Guide.

EPBC Act Survey Guidelines Australian Government Department of the Environment, Water, Heritage and the Arts (2010). *Survey Guidelines for Australia's threatened bats: Guidelines for*

detecting bats listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999. Available at: http://www.environment.gov.au/resource/survey-guidelines-australias-threatened-bats-guidelines-detecting-bats-listed-threatened

Harp trapping: the use of a device used to capture bats without exposing them to entanglement issues associated with other traps such as mist nets.

Legal mechanism for securing: to secure a covenant or similar legal agreement in relation to a site, to provide enduring protection for the site against development incompatible with conservation.

Minister: the Minister administering the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and includes a delegate of the Minister.

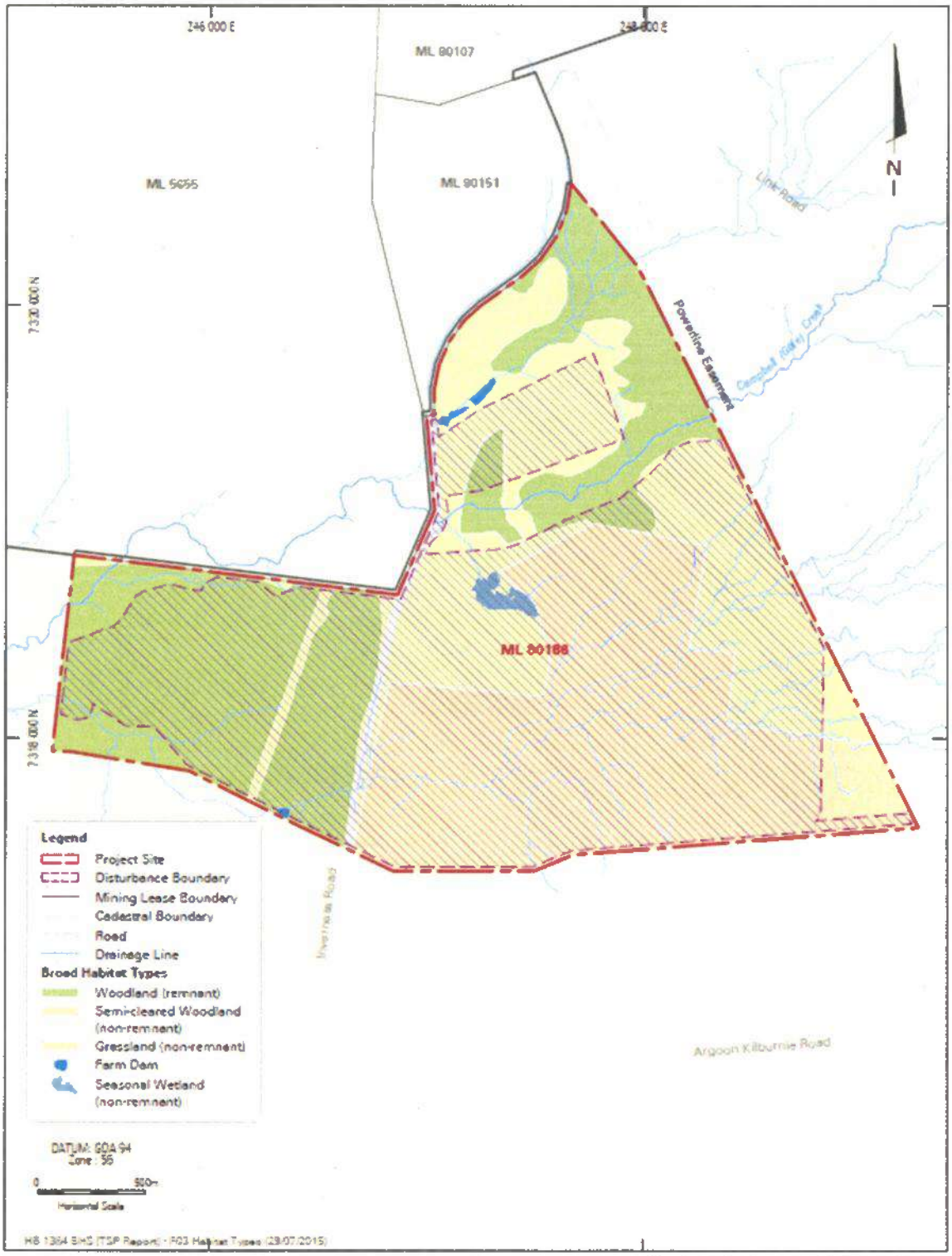
New or increased impact: a new or increased impact on any matter protected by the controlling provisions for the action, when compared to the plan that has been approved by the **Minister**.

Queensland Government authority/ies: authorities who have a role in regulating activities relating to listed threatened species, threatened ecological communities, migratory species and/or water resources.

Recovery plan: a recovery plan made or adopted by the **Minister** under the **EPBC Act**.

Threat abatement plan: a threat abatement plan made or adopted by the **Minister** under the **EPBC Act**.

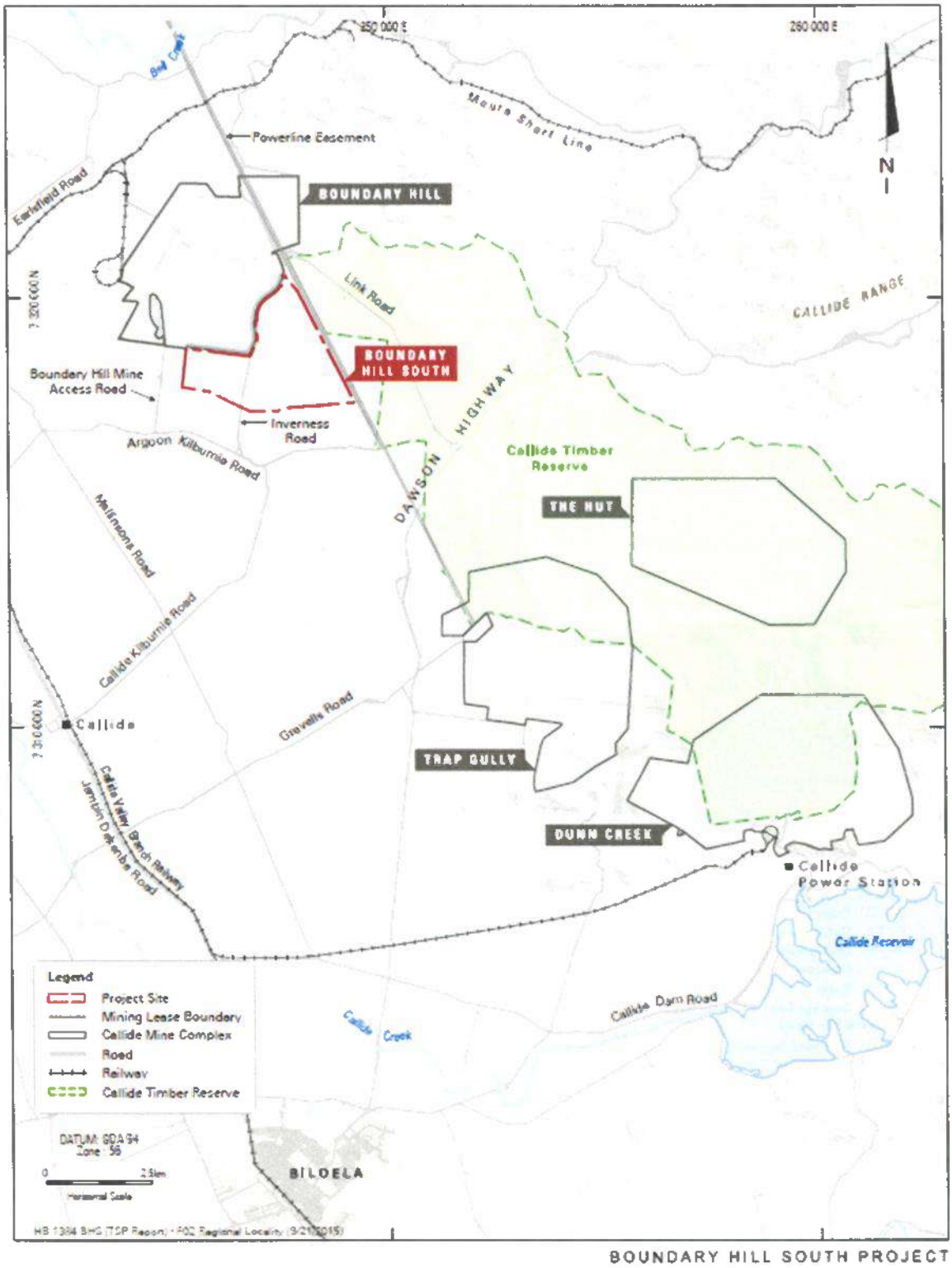
ATTACHMENT A1



BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Habitat Types



BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Regional Project Setting

APPENDIX B

Boundary Hill South Project EIS Response to Submissions
Round 1 Ecological Works Report

BOUNDARY HILL SOUTH

Ecological Works

For:

Hansen Bailey

February 2015

Final Report

PO Box 2474
Carlingford Court 2118

Report No. Q14007RP1

The preparation of this report has been in accordance with the brief provided by the Client and has relied upon the data and results collected at or under the times and conditions specified in the report. All findings, conclusions or recommendations contained within the report are based only on the aforementioned circumstances. The report has been prepared for use by the Client and no responsibility for its use by other parties is accepted by Cumberland Ecology.

Approved by:	David Robertson
Position:	Director
Signed:	David Robertson
Date:	*20 February, 2015*

Table of Contents

1 INTRODUCTION

1.1 Project Overview *1.1*

1.2 Assessment Background *1.2*

1.3 Report Terminology *1.2*

1.4 Regional Context *1.3*

1.5 Description of Study Area *1.3*

2 REGULATORY FRAMEWORK

2.1 Commonwealth Environment Protection and Biodiversity Conservation Act 1999 *2.1*

2.2 Queensland Vegetation Management Act 1999 *2.1*

2.3 Queensland Nature Conservation Act 1992 *2.2*

2.4 Queensland Land Protection (Pest and Stock Route Management) Act 2002 *2.3*

2.5 Queensland Environmental Protection Act 1994 *2.3*

2.6 Back on Track Species *2.4*

2.7 Biodiversity Planning Assessments *2.4*

2.8 International Treaty Obligations *2.5*

2.9 Government Mapping *2.5*

2.9.1 Map of Referrable Wetlands *2.5*

2.9.2 Vegetation Management Wetlands Map *2.6*

2.9.3 Vegetation Management Watercourse Map *2.6*

2.9.4 Queensland Essential Habitat Mapping *2.6*

2.10 Commonwealth Environmental Offsets Policy *2.6*

2.11 Queensland Environmental Offsets Policy *2.7*

3 METHODS

3.1 Desktop Assessment *3.1*

3.1.1 Database Analysis *3.1*

3.1.2 Literature Review *3.2*

3.1.3 Review of Aerial Photographs *3.11*

Table of Contents *(Cont'd)*

	3.1.4	Regional Ecosystem Mapping	*3.11*
	3.1.5	Geological Mapping	*3.11*
	3.1.6	Soil Mapping	*3.11*
3.2	Cumberland Ecology 2014 Terrestrial Ecology Surveys		*3.12*
	3.2.1	Survey Timing	*3.12*
	3.2.2	Project Team	*3.12*
	3.2.3	Field Survey Design	*3.12*
	3.2.4	Climate	*3.12*
	3.2.5	Flora Survey	*3.14*
	3.2.6	Fauna Surveys	*3.15*
3.3	Habitat Mapping Methods for Threatened Species		*3.18*
3.4	Likelihood of Occurrence Assessment		*3.20*
3.5	Compliance with Survey Guidelines		*3.22*
3.6	Limitations of the Field Surveys and Habitat Modelling		*3.22*
	3.6.1	AECOM Surveys	*3.22*
	3.6.2	Cumberland Ecology Surveys	*3.23*
4	**RESULTS**		
4.1	Desktop Study Results		*4.1*
	4.1.1	EPBC Act Protected Matters Search	*4.1*
	4.1.2	VM Act Regional Ecosystem and Remnant Map	*4.4*
	4.1.3	Queensland Wildlife Online Database Search Results	*4.5*
	4.1.4	HERBRECS Database Search Results	*4.6*
	4.1.5	Queensland Museum Database Search Results	*4.7*
	4.1.6	Map of Referrable Wetlands	*4.7*
	4.1.7	Vegetation Management Wetlands Map	*4.7*
	4.1.8	Vegetation Management Watercourse Map	*4.7*
	4.1.9	EHP Category A and B Environmentally Sensitive Areas	*4.8*
	4.1.10	Biodiversity Planning Assessments	*4.8*
	4.1.11	Essential Habitat	*4.8*

Table of Contents *(Cont'd)*

4.2 Overview of Biodiversity Values of Study Area *4.9*

4.2.1 Woodland Habitats *4.10*

4.2.2 Grassland Habitats *4.12*

4.2.3 Riparian Habitats: Ephemeral Drainage Lines *4.13*

4.2.4 Farm Dams *4.14*

4.2.5 Seasonal Wetland *4.15*

4.3 Regional Ecosystems *4.16*

4.3.1 Overview *4.16*

4.3.2 EPBC Act Listed Communities *4.23*

4.3.3 VM Act Listed Communities *4.23*

4.4 Flora Species *4.23*

4.4.1 Threatened Flora Species Listed under the EPBC Act *4.24*

4.4.2 Threatened Flora Species Listed under the NC Act *4.25*

4.4.3 Naturalised and Declared Weeds *4.27*

4.5 Fauna Species *4.28*

4.5.1 Overview *4.28*

4.5.2 Amphibians and Reptiles *4.28*

4.5.3 Birds *4.29*

4.5.4 Non-flying Mammals *4.29*

4.5.5 Bats *4.30*

4.5.6 Feral Animals *4.30*

4.5.7 Back on Track Species *4.30*

4.5.8 Threatened Fauna Species Listed under the EPBC Act *4.31*

4.5.9 Migratory Fauna Species Listed under the EPBC Act *4.52*

4.5.10 NC Act Listed Species *4.56*

4.5.11 Special Least Concern Fauna *4.58*

4.5.12 Introduced Pest Species *4.59*

5 IMPACTS

5.1 Introduction *5.1*

5.2 Direct Vegetation Clearing *5.1*

Table of Contents *(Cont'd)*

	5.2.1	Overview of Clearing	*5.1*
	5.2.2	Impacts of Vegetation Clearing on EPBC Act Listed Vegetation Communities	*5.3*
	5.2.3	Impacts of Vegetation Clearing on Queensland Listed Vegetation Communities	*5.3*
	5.2.4	Impacts of Vegetation Clearing on EPBC Act Listed Flora Species	*5.4*
	5.2.5	Impacts of Vegetation Clearing on NC Act Listed Flora Species	*5.5*
	5.2.6	General Impacts of Vegetation Clearing on Fauna Species	*5.6*
	5.2.7	Impacts of Vegetation Clearing on EPBC Act Listed Fauna Species	*5.8*
	5.2.8	Impacts of Vegetation Clearing on NC Act Listed Species	*5.19*
	5.2.9	Indirect Impacts	*5.20*
	5.2.10	Duration and Timing of Impacts	*5.25*
5.3	Impacts of Climate Change		*5.25*
5.4	Cumulative Impacts		*5.25*
5.5	Summary of Impacts		*5.26*
	5.5.1	Potential Impacts to MNES	*5.27*
	5.5.2	Impacts to MSES	*5.27*
6	**MITIGATION**		
6.1	Measures to Avoid Impacts		*6.1*
6.2	Measures to Mitigate Impacts		*6.2*
	6.2.1	Minimising Vegetation and Habitat Loss	*6.2*
	6.2.2	Pre-clearing Surveys	*6.2*
	6.2.3	Vegetation Conservation and Management	*6.3*
	6.2.4	Mine Rehabilitation	*6.3*
6.3	Management and Monitoring Plans		*6.3*
	6.3.1	Existing Management and Monitoring Plans	*6.3*
	6.3.2	Additional Plans for the Project	*6.5*

Table of Contents *(Cont'd)*

7 OFFSETS

REFERENCES

FIGURES

Table of Appendices

A. EPBC ACT PROTECTED MATTERS SEARCH TOOL REPORT

B. QUEENSLAND WILDLIFE ONLINE DATABASE SEARCH RESULTS

C. HERBRECS DATABASE SEARCH RESULTS

D. QUEENSLAND MUSEUM DATABASE SEARCH RESULTS

E. SUMMARY OF FLORA AND FAUNA SURVEYS UNDERTAKEN

F. THREATENED FLORA AND FAUNA SPECIES SURVEY REQUIREMENTS AND SURVEY COMPLIANCE

G. FLORA LIKELIHOOD OF OCCURRENCE

H. FAUNA LIKELIHOOD OF OCCURRENCE

I. THREATENED SPECIES HABITAT MAPPING

I.1	Criteria Applied to Threatened Species Habitat Mapping	*I.1*
I.2	Acacia pedleyi	*I.2*
I.3	Collared Delma	*I.4*
I.4	Yakka Skink	*I.6*
I.5	Australian Painted Snipe	*I.9*
I.6	Red Goshawk	*I.11*

Table of Appendices

	I.7	Squatter Pigeon (southern subspecies)	*I.13*
	I.8	Northern Quoll	*I.16*
	I.9	Koala	*I.19*
	I.10	Grey-headed Flying-fox	*I.25*
	I.11	Large-eared Pied Bat	*I.26*
	I.12	South-eastern Long-eared Bat	*I.28*
J.	**FLORA SPECIES LIST**		
K.	**FAUNA SPECIES LIST**		
L.	**SIGNIFICANT IMPACT ASSESSMENT**		
	L.1	Collared Delma	*L.2*
	L.2	Yakka Skink	*L.6*
	L.3	Australian Painted Snipe	*L.10*
	L.4	Red Goshawk	*L.13*
	L.5	Squatter Pigeon (southern subspecies)	*L.16*
	L.6	Northern Quoll	*L.21*
	L.7	Koala	*L.25*
	L.8	Grey-headed Flying-fox	*L.32*
	L.9	Large-eared Pied Bat	*L.35*
	L.10	South-eastern Long-eared Bat	*L.38*
	L.11	Migratory Species	*L.41*

List of Tables

3.1	Survey Effort at each Detailed Fauna Survey Site	3.6
3.2	Weather Conditions During Survey Periods – Local Climate Conditions	3.12
3.3	Weather Conditions During Survey Periods – Regional Climate Conditions	3.13

List of Tables

3.4	Threatened Species Habitat Mapping Criteria	3.19
3.5	Criteria to Assess Potential for Species to Occur within the Study Area	3.20
3.6	Criteria to Determine if Assessment of Impacts are Required for Species	3.21
4.1	TECs, Threatened Flora and Fauna and Migratory Fauna Species Recorded in the EPBC Act Protected Matters Search	4.2
4.2	REs Present in the Study Area	4.4
4.3	Threatened Flora Species Queensland Wildlife Online Database Results	4.5
4.4	Threatened and/or Migratory Fauna Species Queensland Wildlife Online Database Results	4.6
4.5	REs Present within the Study Area	4.17
4.6	EPBC Act Listed Threatened Flora Species Recorded from the Database Searches	4.24
4.7	NC Act Listed Threatened Flora Species Recorded from the Database Searches	4.25
4.8	EPBC Act Listed Threatened Fauna Species	4.31
4.9	Assessment of the Likelihood of Occurrence of Migratory Species Recorded from the Protected Matters Search Tool Report	4.52
4.10	NC Act Listed Threatened Fauna Species	4.56
5.1	Regional Ecosystems within the Study Area	5.2
5.2	REs along Watercourses Classified as MSES	5.3
7.1	Matters of National Environmental Significance in the Study Area Relevant to the Project	7.2
7.2	Matters of State Environmental Significance in the Study Area Relevant to the Project	7.7
E.1	Summary of Flora and Fauna Surveys Undertaken within and Immediately surrounding the Study Area	E.1
F.1	Threatened Flora and Fauna Species Survey Requirements and Survey	

List of Tables

	Compliance	F.1
G.1	Likelihood of Occurrence of Threatened Flora Species within the Study Area	G.1
H.1	Likelihood of Occurrence of Threatened Fauna Species within the Study Area	H.1
I.1	Threatened Species Habitat Mapping Criteria	I.1
I.2	Habitat Analysis Criteria for Acacia pedleyi	I.2
I.3	Habitat Analysis Criteria for the Collared Delma	I.4
I.4	Habitat Analysis Criteria for Yakka Skink	I.6
I.5	Habitat Analysis Criteria for Australian Painted Snipe	I.9
I.6	Habitat Analysis Criteria for Red Goshawk	I.11
I.7	Habitat Analysis Criteria for Squatter Pigeon (southern subspecies)	I.13
I.8	Habitat Analysis Criteria for Northern Quoll	I.16
I.9	Habitat Analysis Criteria for Koala	I.19
I.10	Primary and Secondary Food Trees of the Koala within the Study Area	I.21
I.11	Koala Habitat Assessment Tool	I.22
I.12	Habitat Analysis Criteria for Grey-headed Flying-fox	I.25
I.13	Habitat Analysis Criteria for Large-eared Pied Bat	I.26
I.14	Habitat Analysis Criteria for South-eastern Long-eared Bat	I.28
J.1	Flora Species Recorded During Surveys	J.1
K.1	Fauna Species Recorded During the Surveys	K.1
L.1	EPBC Act Listed Threatened and Migratory Species Recorded or with a High or Moderate Likelihood of Occurrence within the Study Area	L.1
L.2	Primary and Secondary Food Trees of the Koala within the Study Area	L.26
L.3	Koala Habitat Assessment Tool	L.26

Section Figures

Figure 1 Project Location

Figure 2 Location of the Study Area

Figure 3 Layout of the Project

Figure 4 Bioregions

Figure 5 Flora Survey Sites

Figure 6 Fauna Survey Sites

Figure 7 EHP RE Mapping of the Study Area and Surrounds

Figure 8 EHP Map of Referrable Wetlands

Figure 9 BPA Mapping of the Study Area and Surrounds

Figure 10 Broad Habitat Map of Study Area

Figure 11 Ground-truthed Regional Ecosystem Mapping of the Study Area (Cumberland Ecology)

Figure 12 Threatened Flora Records within the Study Area and Surrounds

Figure 13 Habitat Mapping for Acacia pedleyi within the Study Area

Figure 14 Threatened Fauna Records within the Study Area and Surrounds

Figure 15 Habitat Mapping for the Collared Delma within the Study Area

Figure 16 Habitat Mapping for the Yakka Skink within the Study Area

Figure 17 Habitat Mapping for the Australian Painted Snipe within the Study Area

Figure 18 Habitat Mapping for the Red Goshawk within the Study Area

Figure 19 Habitat Mapping for the Squatter Pigeon (southern subspecies) within the Study Area

Figure 20 Habitat Mapping for the Northern Quoll within the Study Area

Figure 21 Habitat Mapping for the Koala within the Study Area

Section Figures

Figure 22 Habitat Mapping for the Grey-headed Flying-fox within the Study Area

Figure 23 Habitat Mapping for the Large-eared Pied Bat within the Study Area

Figure 24 Habitat Mapping for the South-eastern Long-eared Bat within the Study Area

Figure 25 REs along Watercourses Classified as MSES

List of Photographs

4.1 Overhangs and crevices providing habitat for microbats along a dry ephemeral drainage line in the western part of the Study Area 4.11

4.2 Woodland habitat within the northern part of the Study Area with open canopy and shrubby understorey 4.12

4.3 Tussock grassland in the centre of the Study Area 4.13

4.4 Riparian habitat within the northern portion of the Study Area 4.14

4.5 Farm dam constructed in the northernmost drainage line within the Study Area 4.15

4.6 Seasonal wetland located towards the centre of the Study Area 4.16

4.7 RE 11.3.25 (Eucalyptus tereticornis woodland fringing drainage lines) within the northern portion of the Study Area 4.19

4.8 RE 11.9.9 (Eucalyptus crebra Woodland) within eastern and western parts of the Study Area 4.20

4.9 RE 11.10.1 (Corymbia citriodora Woodland) within the northern part of the Study Area 4.22

4.10 Non-remnant vegetation within the Study Area comprising grassland with scattered trees and shrubs. 4.23

Glossary of Terms

AECOM survey area	The area within which AECOM conducted flora and fauna surveys in 2011/ 2012
BAMM	Biodiversity Assessment and Mapping Methodology
BPA	Biodiversity Planning Assessment
Disturbance Boundary	The boundary encompassing the limits of proposed vegetation clearance by the project.
DNRM	Queensland Department of Natural Resources and Mines
DotE	Commonwealth Department of the Environment
EA	Environmental Authority
EHP	Queensland Department of Environment and Heritage Protection
EIS	Environmental Impact Statement
EM Plan	Environmental Management Plan
EO Act	Queensland *Environmental Offsets Act 2014*
EO Framework	Queensland *Environmental Offsets Framework 2014*
EO Regulation	Queensland *Environmental Offsets Regulation 2014*
EP Act	Queensland *Environment Protection Act 1994*
EP Regulation	Queensland *Environmental Protection Regulation 2008*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ERAs	Environmentally Relevant Activities
ESA	Environmentally Sensitive Area
GPS	Global Positioning System
HES	High Ecological Significance
Locality	The area within a 25 km buffer from the centre of the Study Area
LP Act	Queensland *Land Protection (Pest and Stock Route Management) Act 2002*
ML	Mining Lease
MLA	Mining Lease Application
MNES	'Matters of National Environmental Significance' that are listed by the EPBC Act
MSES	'Matters of State Environmental Significance' under the EO Framework
NC Act	Queensland *Nature Conservation Act 1992*
NC (W) Regulation	Queensland *Nature Conservation (Wildlife) Regulation 2006*
NC (WM) Regulation	Queensland *Nature Conservation (Wildlife Management) Regulation 2006*
the project	The Boundary Hill South Project

QEO	Queensland Environmental Offsets Policy Version 1.0
RE	Regional Ecosystem
REDD	Regional Ecosystem Description Database
SP	SP Act
Study Area	The area that was the focus for ecological investigations, including Mining Lease Application (MLA) 80186, and two small areas adjacent to the MLA.
TEC	'Threatened Ecological Community' as listed under the EPBC Act and/or NC Act
TOR	Terms of Reference
VM Act	Queensland *Vegetation Management Act 1999*
WPAs	Wetland Protection Areas

Chapter **1**

Introduction

1.1 Project Overview

Boundary Hill Mine is an operating open cut coal mine, which is part of the larger Callide Mine complex. Boundary Hill Mine is located approximately 15 km from the township of Biloela and 85 km south-west of Gladstone in Central Queensland (**Figures 1** and **2**). The mine generates thermal coal for the local and export market.

Open cut mining at Boundary Hill Mine is conducted using a dragline, and truck and shovel pre-strip. ROM coal is crushed at on-site coal handling facilities. The product coal does not require washing prior to sale therefore rejects/tailings are not produced by the mine. Product coal is transported by conveyor to the Train Load Out facility for train loading. Product coal is transported by rail to Gladstone to local customers and the RG Tanna Coal Terminal for export. Boundary Hill Mine operations are expected to reduce from 2015 until economic reserves are depleted in approximately 2016.

The Boundary Hill South Project involves the development of a new open cut pit to the south of the Boundary Hill Mine. The project site is within Mining Lease Application (MLA) 80186 (**Figure 3**) which adjoins the southern and eastern boundaries of the Boundary Hill mining leases.

The project provides access to an estimated 52 million tonnes of additional coal resources and will have the same ROM production rate as the Boundary Hill Mine (up to 2.9 Mtpa). The project will essentially extend the life of Boundary Hill Mine by approximately 20 years.

Coal will be mined in the project site using the same open cut mining method employed at Boundary Hill Mine, utilising the current Boundary Hill Mine workforce and equipment fleet. ROM coal extracted from the project site will be hauled by trucks via new and existing haul roads to the existing Boundary Hill coal handling facilities for processing and train loading. As Boundary Hill South will operate at the same production rate as Boundary Hill Mine, no upgrades to the Boundary Hill Mine coal handling facilities are necessary as part of the project. New infrastructure for the project will include:

- ROM coal stockpile;
- Haul roads and access roads;
- Various mine water dams, drainage infrastructure and water transfer pipeline; and

- Various temporary buildings (e.g. crib rooms and amenities).

Approval for the project is subject to the environmental impact assessment provisions of the Queensland *Environment Protection Act 1994* (EP Act). The Terms of Reference (TOR) for the Environmental Impact Statement (EIS) was issued by the Queensland Department of Environment and Heritage Protection (EHP) on 17 October 2012. In addition, under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the project has been determined to be a 'controlled action' (EPBC 2012/6324). The state's EIS process for the project has been accredited under the bilateral agreement between the Commonwealth and the State of Queensland under section 45 of the EPBC Act.

The purpose of this Terrestrial Ecology Assessment is to document the findings of an ecological investigation of the Study Area and to assess the impacts of the project on the terrestrial biodiversity values present within the Study Area. For the purpose of this report:

- Biodiversity values include terrestrial threatened species, populations, ecological communities, and migratory species protected under Queensland and/or Commonwealth legislation; and
- The Study Area of this report is the Mining Lease Application (MLA) area 80186.

1.2 Assessment Background

This Terrestrial Ecology Assessment updates the assessments conducted by AECOM (AECOM, 2012b; AECOM, 2012a; AECOM, 2013b; AECOM, 2013a) to address the significant stakeholder issues raised in the EIS submissions. While the investigations conducted by AECOM covered an area extending further to the east than the present one, they did not conduct trapping surveys for the Northern Quoll (*Dasyurus hallucatus*) within the Study Area. This task was undertaken by Cumberland Ecology, as reported in this document.

In addition, while vegetation surveys were previously undertaken by AECOM (2013a), a re-assessment was conducted by Cumberland Ecology using new high resolution aerial photography in conjunction with additional surveys, in order to refine vegetation mapping. Re-assessment of the mapping of habitat for the Northern Quoll and other threatened fauna species was also undertaken following collection of additional habitat assessment data.

Relevant parts of the AECOM reports and re-interpretations have been incorporated into the present report, which have been supplemented by Cumberland Ecology to present a single complete Terrestrial Ecology Assessment. Where the report includes material from the AECOM reports, this is highlighted by the date and nature of the investigations.

1.3 Report Terminology

The Study Area for the purposes of this Terrestrial Ecology Impact Assessment is the same as the project site (i.e. the area that will form the mining lease for the project).

The term “drainage line” has been used in this report to describe any natural feature that conveys surface water during rainfall events. The site does not contain any watercourses as defined under the Queensland *Water Act 2000*.

1.4 Regional Context

As per Interim Biogeographic Regionalisation for Australia (IBRA), Version 7 (DotE, 2012a), the Study Area is located in the Brigalow Belt South (BBS) Bioregion, in the Mount Morgan Ranges and Callide Creek Downs sub-regions (**Figure 4**).

The BBS Bioregion has a hot to warm subhumid climate with summer-dominant rainfall. Spatially averaged median (1890–2005) rainfall is 489 mm (April to March rainfall year) (Bastin and ACRIS Management Committee, 2008).

Several major waterways drain the BBS Bioregion, including the Fitzroy, Calliope, Burnett, Boyne and Dawson Rivers. The Study Area is located in the Dawson River catchment.

The bioregion is dominated by eucalypt woodlands and *Acacia* spp. forests, especially Brigalow (*Acacia harpophylla*). Several ecological communities of the region are nationally recognised as ‘Endangered’. These include the Brigalow woodlands, semi-evergreen vine thickets, blue grass plains and Coolabah woodlands. Extensive past tree clearing, exotic species and high grazing pressure are key issues that threaten the biodiversity values of the bioregion. Fragmentation of the remaining remnant woodlands is a significant threat to biodiversity within the sub-region of Callide Creek Downs, where the majority of the Study Area is located (ANRA, 2012) (**Figure 4**).

The majority of the land in the region is leasehold and is mainly used for cattle grazing on native pastures. There are also coal, mining and exploration activities within the region.

1.5 Description of Study Area

The land within the Study Area consists of established and regenerating Eucalypt woodland in the north and west and is approximately 618.7 ha in size. Within these woodland areas ephemeral drainage lines and stormwater washouts run from east to west providing a network of rocky channels through these vegetated areas. Two large farm dams along the northern drainage line contain permanent water in the north of the Study Area that are sparsely fringed with eucalypt woodland. A smaller farm dam along a drainage line is also located in the south-west of the Study Area that occurs in semi-cleared non-remnant woodland. A seasonal wetland is also present in the north of the Study Area that contains water in the wet season, but which dries out completely during the dry season. The central and southern portions of the Study Area are formed of grassy paddocks that are currently used for cattle grazing.

Land to the south and west of the Study Area is largely used for agricultural pursuits, including grazing and dry-land cropping. The closest dwelling south of the Study Area is the Kilburnie Homestead on Argoon-Kilburnie Road in the Leichhardt Pastoral District of Biloela,

at a distance of approximately 1.2 km. The closest pastoral homestead to the west is approximately 2 km from the Study Area.

Land to the north of the study Area comprises the exisiting Boundary Hill Mine, while land to the east of the Study Area is characterised by the Callide Timber Reserve. A major powerline and associated corridor are also present to the east of the Study Area and run along the eastern border of the Study Area. This corridor has been previously cleared for the powerline and associated infrastructure.

Chapter 2

Regulatory Framework

2.1 Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Commonwealth government's principal piece of environmental legislation, and is administered by the Commonwealth Department of the Environment (DotE). It is designed to protect national environmental assets, known as Matters of National Environmental Significance (MNES), which include threatened species of flora and fauna, threatened ecological communities (TECs), migratory species as well as other protected matters. Among other things, it defines the categories of threat for threatened flora and fauna, identifies key threatening processes to their survival and provides for the preparation of recovery plans for threatened flora and fauna.

Any action (which includes a development, project or activity) that is considered likely to have a significant impact on MNES is termed a Controlled Action and is subject to assessment under the EPBC Act.

The project was originally referred under the EPBC Act to the DotE in March 2012. There were two further variations to the project in November 2012 and October 2013. The project was declared a Controlled Action in May 2012 with the following Controlling Provisions: listed threatened species and communities; and listed migratory species. In October 2013, the DotE determined that a water resource, in relation to coal seam gas development and large coal mining development, should be a controlling provision to the project, and was subsequently added to the assessment.

2.2 Queensland *Vegetation Management Act 1999*

The Queensland *Vegetation Management Act 1999* (VM Act) is administered by the Queensland Department of Natural Resources and Mines (DNRM). The VM Act, in conjunction with the Queensland *Sustainable Planning Act 2009,* regulates the clearing of native vegetation in Queensland. The VM Act's objectives include the preservation of remnant endangered ecosystems and vegetation in areas of high nature conservation value or lands vulnerable to land degradation.

The VM Act does not apply to mining activities undertaken on mining leases; however, it is relevant to this assessment as it provides for the classification of remnant vegetation into

Regional Ecosystems (REs) which form the basis of the assessment of vegetation communities. REs are defined by Sattler and Williams (1999) as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The Queensland government maintains RE maps illustrating the distribution of REs throughout Queensland and these are updated periodically to reflect refinements that have been made through ground-truthing these communities.

Remnant vegetation is referred to under the VM Act as vegetation where the dominant canopy has >70% of the height and >50% of the cover, relative to the height and canopy cover of the pristine (undisturbed) vegetation community. Remnant vegetation must also be dominated by species characteristic of the vegetation community in its pristine condition.

REs are assigned one of the following three categories under the VM Act (Sattler and Williams, 1999):

- Endangered: Remnant vegetation that is less than 10% of its pre-clearing extent across the bioregion; or 10 - 30% of its pre-clearing extent remains and the remnant area is less than 10,000 ha;
- Of Concern: Remnant vegetation that is 10 - 30% of its pre-clearing extent across the bioregion; or more than 30% of its pre-clearing extent remains and the remnant area is less than 10,000 ha; and
- Least Concern: Remnant vegetation that is over 30% of its pre-clearing extent across the bioregion and the remnant area is greater than 10,000 ha.

The Queensland government also assigns a biodiversity status to each RE, in addition to the status under the VM Act. The biodiversity status has no formal regulatory meaning under the VM Act but is used for a variety of planning and management applications.

2.3 Queensland *Nature Conservation Act 1992*

The Queensland *Nature Conservation Act 1992* (NC Act) is the key piece of legislation in Queensland relating to the protection and management of biodiversity and threatened species. It establishes a framework for the identification, gazettal and management of protected areas (such as National Parks) and the protection of native flora and fauna (protected wildlife) listed under the Queensland *Nature Conservation (Wildlife) Regulation 2006*. The NC Act is administered by the Queensland Department of Environment and Heritage Protection (EHP).

The NC Act classifies native flora and fauna species into categories of conservation significance including Extinct in the Wild, Endangered, Vulnerable, Near Threatened and Least Concern in recognition of how threatened they are and what action needs to be taken to protect them.

The proponent will need to comply with the NC Act, particularly in regard to obtaining the following approvals for the project:

- Where there is a requirement for the clearing of plants protected under the NC Act (including Endangered, Vulnerable and Near Threatened species) a clearing permit under the NC Act will be required;

- Where the activities of the proponent may cause disturbance to animal breeding places, the proponent must prepare a Species Management Program under section 332 of the Queensland *Nature Conservation (Wildlife Management) Regulation 2006* (NC WM Regulation) and obtain approval from the EHP; and

- Any spotter catcher employed by the project must be in possession of a Rehabilitation Permit (spotter catcher endorsement) for managing fauna during clearing activities (section 207 of NC WM Regulation).

If it is necessary to remove animals posing a threat to human health or property, a Damage Mitigation Permit under section 181 of the NC WM Regulation is required.

2.4 Queensland *Land Protection (Pest and Stock Route Management) Act 2002*

The Queensland *Land Protection (Pest and Stock Route Management) Act 2002* (LP Act) provides a framework for the control of declared pests. Schedule 2 of the Queensland *Land Protection (Pest and Stock Route Management) Regulation 2003* lists three classes of declared pests (Class 1, 2 and 3). The LP Act operates in conjunction with the Queensland *Plant Protection Act 1989*, which provides for the control and eradication of pest plants, invertebrate animals, fungi, viruses and diseases that are harmful to crop plants in Queensland. The LP Act is administered by the Department of Agriculture, Fisheries and Forestry.

A Class 1 declared animal or plant is one that is not commonly present in Queensland, and has the potential to cause an adverse economic, environmental or social impacts to Queensland, another state or a part of Queensland or another state.

Class 2 and Class 3 declared animals and plants are those that are established in Queensland and that are causing, or have the potential to cause, adverse economic, environmental or social impacts in Queensland, another state or a part of Queensland or another state.

The LP Act requires landowners to take reasonable measures to keep their land free of declared plants and animals with different levels of control required for the three different classes of pest described under the LP Act.

2.5 Queensland *Environmental Protection Act 1994*

The Queensland *Environmental Protection Act 1994* (EP Act) is administered by the EHP and was established to protect Queensland's environment, while allowing for development that improves the total quality of life, both now and in the future.

The EP Act uses a number of mechanisms to achieve its objectives, including the following that are relevant to this report:

- Requirement for mining projects to obtain an Environmental Authority (EA) prior to operation; and
- Requirement for an environmental impact assessment process in support of an EA application.

2.6 Back on Track Species

The Back on Track Species Prioritisation Framework is an initiative of the Queensland government that (EHP, 2014c):

- Prioritises Queensland's native species to guide conservation management and recovery;
- Enables the strategic allocation of limited conservation resources for achieving greatest biodiversity outcomes; and
- Increases the capacity of government, natural resource management bodies and communities to make informed decisions by making information widely accessible.

The EHP has developed a list of species that are known to occur in the Fitzroy Natural Resource Management region (within which the Study Area lies) that are ranked as 'Critical' or 'High' by the Back on Track Species Prioritisation Framework (EHP, 2014c).

2.7 Biodiversity Planning Assessments

The Biodiversity Assessment and Mapping Methodology (BAMM) has been prepared to provide a consistent approach for assessing biodiversity values at the landscape scale in Queensland using vegetation mapping data generated or approved by the Queensland Herbarium as a fundamental basis. It is used by the EHP to generate Biodiversity Planning Assessments (BPAs) for each of Queensland's bioregions, including the Brigalow Belt South Bioregion where the project is located (**Figure 4**).

BPAs are developed in two stages: 1) diagnostic criteria, and 2) supplementary/expert panel criteria. The Stage 1 diagnostic criteria involve the integration of ecological criteria using BAMM to determine the relative Biodiversity Significance. The Stage 2 supplementary criteria allow for the refinement of the mapped information from Stage 1 by incorporating local knowledge and expert opinion.

The methodology has application for identifying areas with various levels of significance solely for biodiversity reasons. These include threatened ecosystems or taxa, large tracts of habitat in good condition and buffers to wetlands or other types of habitat important for the maintenance of biodiversity or ecological processes.

2.8 International Treaty Obligations

Australia is signatory to several agreements relating to migratory birds. These include the:

- China–Australia Migratory Bird Agreement (CAMBA);
- Japan–Australia Migratory Bird Agreement (JAMBA); and
- Republic of Korea–Australia Migratory Bird Agreement (ROKAMBA).

The JAMBA, CAMBA and ROKAMBA agreements list terrestrial, water and shorebird species which migrate between Australia and the respective countries. In both cases the majority of listed species are shorebirds.

Both agreements require the parties to protect migratory birds by:

- Limiting the circumstances under which migratory birds are taken or traded;
- Protecting and conserving important habitats;
- Exchanging information; and
- Building cooperative relationships.

Migratory birds listed under CAMBA, JAMBA and ROKAMBA are protected in Australia through being listed as MNES (Migratory Controlling Provision) under the EPBC Act (**Section 2.1**).

2.9 Government Mapping

2.9.1 Map of Referrable Wetlands

The EHP has a range of policies and programs to manage wetlands. As part of a broader policy of wetland protection, and in accordance with schedule 12, part 2 of the Queensland *Environmental Protection Regulation 2008* (EP Regulation), the EHP has prepared a map of referable wetlands. The map of referable wetlands includes:

- Wetland protection areas (WPAs), which comprise:
    - Wetlands of high ecological significance (HES wetlands) located within Great Barrier Reef catchments; and
    - Trigger areas that represent the area of hydrological influence of HES wetlands. Outside urban areas, the trigger area is 500 m from the edge of a HES wetland.
- Wetlands of General Ecological Significance (GES wetlands).

WPAs and HES wetlands contain wetland environmental values as listed under section 81A of the EP Regulation. WPAs are derived using a mapping method developed by the EHP called the Aquatic Biodiversity Assessment and Mapping Method (EHP, 2014b).

Significant residual impacts on WPAs are required to be offset in accordance with the Queensland Environmental Offsets Framework (**Section 2.11**).

2.9.2 Vegetation Management Wetlands Map

The Queensland government has produced a vegetation management wetlands map under section 20AA of the VM Act. This map shows wetlands, as defined under the VM Act as "the map certified by the chief executive as the vegetation management wetlands map showing particular wetlands for the State". It is used primarily to regulate vegetation clearing in areas mapped as wetlands. The wetlands shown on the vegetation management wetlands map are different to those wetlands shown on EHP's map of referrable wetlands.

Significant residual impacts on REs that intersect with an area shown as a wetland on the vegetation management wetlands map are required to be offset (to the extent of the intersection) (**Section 2.11**). This is described further in **Section 4.1.6**.

2.9.3 Vegetation Management Watercourse Map

The Queensland government has produced a vegetation management watercourse map under section 20AB of the VM Act. This map shows watercourses, which are defined under VM Act as "the map certified by the chief executive as the vegetation management watercourse map showing particular watercourses for the State". It is used primarily to regulate vegetation clearing in proximity of watercourses. The map is produced based on desktop information and includes stream order mapping under the Strahler method (DNRM 2014). It should be noted that the definition of watercourse under the VM Act is different to the definition under the Queensland *Water Act 2000*.

Significant residual impacts on REs located within a defined distance of watercourses shown on the vegetation management watercourse map are required to be offset (**Section 2.11**). This is described further in **Section 4.1.8**.

2.9.4 Queensland Essential Habitat Mapping

Essential habitat is mapped by the EHP and is vegetation in which a species that is Endangered, Vulnerable or Near Threatened has been known to occur. The EHP essential habitat mapping is described further in **Section 4.1.11**.

2.10 Commonwealth Environmental Offsets Policy

Under the *EPBC Act Environmental Offsets Policy 2012* (EPBC Act Environmental Offsets Policy), environmental offsets are actions taken to counterbalance significant residual impacts on MNES. Offsets are used as a last resort in instances where an action will give rise to residual impacts, even after the application of management measures.

The EPBC Act Environmental Offsets Policy came into force in October 2012 and provides guidance on the role of offsets in environmental impact assessments and how DotE considers the suitability of a proposed offset package (SEWPaC, 2012a).

According to the policy, an offsets package is a "*suite of actions that a proponent undertakes in order to compensate for the residual significant impact of a project*" (SEWPaC, 2012a). It can comprise a combination of direct offsets and other compensatory measures.

Direct offsets are those actions that provide a measurable conservation gain for an impacted protected matter. Direct offsets are an essential component of a suitable offsets package. A minimum of 90% of the offset requirements for any given impact must be met through direct offsets. Other compensatory measures are those actions that do not directly offset the impacts on the protected matter, but are anticipated to lead to benefits for the impacted protected matter, for example funding for research or educational programs (SEWPaC, 2012a).

2.11 Queensland Environmental Offsets Policy

Queensland recently passed the *Environmental Offsets Act 2014* (EO Act) along with the *Environmental Offsets Regulation 2014* (EO Regulation). The *Queensland Environmental Offsets Policy* (QEOP) (EHP, 2014m) came into force on 1 July 2014. The EO Act, EO Regulation and QEOP comprise the Queensland Environmental Offsets Framework. According to this framework, it is necessary to provide offsets for any significant, residual impacts on Matters of State Environmental Significance (MSES).

The EO Regulation prescribes a number of MSES that are potentially relevant to terrestrial ecology. These include:

- Regulated vegetation under the VM Act that are:
  - Endangered REs;
  - Of Concern REs;
  - REs that intersect with wetlands identified on the vegetation management wetlands map;
  - REs located within a defined distance from the defining banks of a relevant watercourse; and
  - Habitat that is shown as essential habitat, in accordance with the VM Act, for protected wildlife.
- Connectivity areas, comprising remnant REs that contain an area of land that is required for ecosystem functioning (i.e. a connectivity area);
- Wetlands in a WPA or a HES wetland as shown on the map of referrable wetlands;

- Habitat for terrestrial flora and fauna species that are listed as Special Least Concern, Vulnerable or Endangered under the NC Act;
- High risk areas identified on the flora survey trigger map that contains flora species that are listed as Endangered or Vulnerable under the NC Act;
- Areas not identified as a high risk area on the flora survey trigger map, to the extent that the area contains flora species that are listed as Endangered or Vulnerable under the NC Act;
- A non-juvenile koala habitat tree located in an area shown as bushland habitat, high value rehabilitation habitat or medium value rehabilitation habitat on the map called 'Map of Assessable Development Area Koala Habitat Values' that applies under the South East Queensland Koala Conservation State Planning Regulatory Provisions is a matter of State environmental significance;
- Protected areas; and
- Legally secured offset areas.

The MSES relevant to the project are discussed in **Section 4**.

The EHP released guidelines *Queensland Environmental Offsets Policy Significant Residual Impact Guideline* in December 2014, which have been used where relevant in this report and have been used to determine if offsets are required.

Chapter **3**

Methods

The methodology utilised in this terrestrial ecology assessment included a desktop study (**Section 3.1**) comprising: database analysis (**Section 3.1.1**), literature review of the previous flora and fauna assessments (**Section 3.1.2**), review of aerial photographs (**Section 3.1.3**) and review of existing RE, geology and soils mapping within the Study Area (**Sections 3.1.4** to **3.1.6**). **Section 3.2** describes the field surveys undertaken, **Section 3.3** describes the methodology used to map threatened fauna species potential habitat within the Study Area and **Section 3.4** outlines the process used to assess a species likelihood of occurrence. Survey compliance is outlined within **Section 3.5** and methodology limitations are outlined in **Section 3.6**.

Database analyses are presented in **Appendix A** to **D**. A summary of flora and fauna surveys undertaken within and immediately surrounding the Study Area is presented in **Appendix E**. Survey requirements and compliance for threatened flora and fauna species is presented in **Appendix F**.

Field identification of flora species was made using Brooker and Kleinig (2004), Sharp and Simon (2002), and Maslin (2001). As described below, the majority of plant species found were collected and pressed and identifications subsequently verified at the Queensland Herbarium.

Nomenclature and taxonomy for fauna species follows the following references: Tyler and Knight (2009) for amphibians; Wilson (2005) for reptiles; Pizzey and Knight (2003) for birds; Menkhorst and Knight (2004) mammals, and Churchill (2009) for bats. The scientific name for each fauna species is provided after the first usage of the common name. The common name is only used throughout the report thereafter.

3.1 Desktop Assessment

3.1.1 Database Analysis

Prior to the fieldwork, database searches were conducted, and government mapping was consulted. Database searches and mapping review included the following:

- EPBC Act Protected Matters Search Tool, accessed 5th September 2014 covering an area of 25 km radius around the centre of the Study Area (DotE, 2014o) (**Appendix A**);

- Queensland Wildlife Online database, accessed 5th September 2014 covering an area of 25 km radius around the centre of the Study Area (EHP, 2014s) (**Appendix B**);

- Queensland Herbarium HERBRECS specimen database, accessed 5th September 2014 covering an area of 100 km radius around the centre of the Study Area (**Appendix C**);

- Queensland Museum species database, accessed 5th September 2014 covering an area of 100 km radius around the centre of the Study Area (**Appendix D**);

- Queensland Herbarium VM Act RE and Remnant Map (Version 6.0b) (Queensland Herbarium, 2012a); and

- Government map datasets:

  - Map of referrable wetlands;

  - Vegetation management wetlands map;

  - Vegetation management watercourse map;

  - Biodiversity Planning Assessment – Brigalow Belt Bioregion;

  - Category A and B environmentally sensitive areas as defined under the EP Regulation*;* and

  - Essential habitat map.

The information collected during the database analysis guided the development of an appropriate field assessment program which targeted species and communities of conservation significance that were likely to occur within the Study Area.

The search area radius from the Study Area for all database investigations was 100 km in accordance with the TOR for the project. Such a wide search area stretches to the coastal areas and includes habitats and species that are not found in the Study Area. For this reason, many of the threatened species records that were exclusively found at distances greater than 25 km from the Study Area were not considered likely to occur on the Study Area and were excluded from detailed consideration. However, some exceptions to this included widely distributed, mobile threatened fauna with broad habitat requirements.

3.1.2 Literature Review

This Terrestrial Ecology Assessment included a literature review of all relevant information, including previous biodiversity reports prepared for the proponent in the locality (inlcuding the 2006 Callide Mine Biodiversity Action Plan (Parsons Brinkerhoff, 2006), government guidelines and related threatened species information, and other relevant literature pertaining to the project.

A number of flora and fauna investigations undertaken previously by AECOM, were also supplemented in 2014 by Cumberland Ecology to accommodate recent changes to legislation and policies, and to provide further detail on aspects of the biodiversity values of the Study Area and its surrounds. This section summarises the methods used by AECOM for the Boundary Hill Lease Expansion Project and Boundary Hill South EIS (2012b; 2012a; 2013a) that was conducted in order to identify, describe and assess potential impacts to terrestrial flora and fauna values associated with the construction and operation of the Boundary Hill South pit.

Surveys undertaken by AECOM covered an area larger than the currently defined Study Area. As the data collected from these surveys is relevant to the project, these surveys have been included within this assessment. The general area surveyed by AECOM is referred to as the 'AECOM survey area' within this report.

i. AECOM 2012 Flora Surveys

Flora surveys were undertaken by AECOM in March 2012 and September 2012 (AECOM 2013a). Field surveys were undertaken over four days in the wet season (March) and four days during the dry season (September) of 2012, allowing for the differing flowering and seeding times of various flora.

a. Vegetation Mapping

The vegetation within the Study Area was ground-truthed by AECOM to examine and determine the extent of the different REs present. Vegetation mapping was guided by the Methodology for Survey and Mapping of Regional Ecosystems and Communities in Queensland, Version 3.1 (Neldner *et al.*, 2005). Surveys included collection of data from the following types of sites:

- Secondary sites – detailed full floristic surveys within 50 m x 10 m transects, documenting a list of all species and their abundance using density counts, percentage crown cover and percentage ground cover;
- Tertiary sites – documenting the dominant species and their abundance using crown cover measurements along a either a 50 m or 100 m transect, and were used to determine the height, cover and compositional elements and status of regrowth vegetation; and
- Quaternary sites - documenting the dominant species of the tree, shrub and grass layers, land zone information, and the presence of weeds or threatened species, at a particular point.

Ten secondary sites were surveyed within each of the REs identified. Six tertiary sites were surveyed within areas that had evidence of significant past clearing. A total of 262 quaternary sites were surveyed across the AECOM survey area. The locations of these survey sites are shown in **Figure 5**. The collection of data from 278 sites ensured that there is an average of at least 25 observations per km^2 across the AECOM survey area as recommended for mapping at the 1:10,000 scale (Neldner *et al.*, 2005).

b. Threatened Flora Searches

Targeted flora searches were conducted for threatened species known to occur within the AECOM survey area. Searches were undertaken at vegetation mapping sites and while traversing between these sites using the random meander technique. A particular focus of the threatened flora searches was the north-east corner of the AECOM survey area adjacent to vine thicket communities, due to the potential for vine thicket species to encroach into nearby areas. This area was also identified as containing suitable habitat for threatened types of eucalypt forest. This area is located outside of the extent of the Study Area.

Voucher specimens of located threatened species were submitted to the Queensland Herbarium for confirmation.

c. Species Records

All flora species encountered during surveys were recorded. This included compilation of species recorded during the secondary, tertiary and quaternary site surveys and opportunistic records made whilst travelling between these sites.

Specimens of plants with fertile material that could not be identified during the survey were submitted to the Queensland Herbarium for identification.

Where encountered, weeds declared under the LP Act were recorded within the AECOM survey area.

d. Mapping Data Analysis

Each secondary, tertiary and quaternary site was allocated to a vegetation community and for all remnant or regrowth vegetation attributed to an RE of the BBS Bioregion. The allocation of each site to an RE was based on land zone and dominant species data and utilised the Queensland Herbarium's RE classification (Queensland Herbarium, 2012a). The distribution of the REs within the Study Area were mapped and digitised in ESRI ArcGIS (Version 9.3) following interpretation of an aerial photograph (flown 7 January 2012 with a 25 cm pixel resolution) in conjunction with the field data. The RE map prepared by AECOM is accurate at the scale of 1:10,000 and provides unique RE polygons rather that mixed REs as contained within the EHP mapping of the AECOM survey area.

ii. AECOM 2011 Surveys (Reconnaissance Northern Quoll Survey)

A reconnaissance survey for the Northern Quoll was undertaken from 6 December to 9 December 2011 using passive infrared cameras, hair tubes and searches for scats, dens and other signs of Northern Quolls, as recommended in *Survey guidelines for Australia's threatened mammals* (SEWPaC, 2011c).

a. Infra-red Cameras

Automatic Scout Guard 550 fauna cameras with passive infrared motion sensors were established in suitable Northern Quoll habitat areas to detect the presence of the Northern Quoll. Cameras were set to take three consecutive photos when triggered by movement and

wait for 10 seconds before taking another set of photos. The cameras were strapped to trees approximately 1 m above the ground and aimed at baits on the ground or tied to trees. Cameras were baited with chicken frames or chicken legs. The cameras emitted no lights or sound and therefore were unlikely to influence animal behaviour. Infrared illumination (invisible to most mammals) was used for night-time photography to reduce disturbance of animals. Two cameras were used and were left in each site for four nights. Cameras ran for 24 hours a day.

b. Hair Tubes

Hair tubes were established in the north-eastern section of the project, due to high habitat suitability for the Northern Quoll. A total of 20 hair tubes were used; placed approximately 100 m apart and baited with oats, sardines and peanut butter. The bait was checked every second night and replaced if needed. Baits were replaced after 2 days. Tubes were secured to the ground with pegs to avoid animals removing them. The hair tubes remained in the field for four nights between the 6th and 9th of December 2011. Hair samples were collected and sent to a hair analysis expert, Marama Hopkins (Biolink) for identification.

c. Habitat Surveys

Searches for Northern Quoll signs (scats, dens, latrines, bones etc.) were undertaken, while conducting habitat surveys and were based on *Survey guidelines for Australia's threatened mammals*, Section 3.1 (SEWPaC, 2011c). Approximately, 20 person hours were spent with two personnel systematically grid searching 100 m transects. A total of 45 sites were surveyed. Potential Northern Quoll scats and other predator scats were collected and sent to scat analysis expert Marama Hopkins (Biolink) for identification. Searches for scats were also undertaken opportunistically while traversing the AECOM survey area.

iii. AECOM 2012 Surveys (Detailed Fauna Survey)

Two rounds of fauna surveys were undertaken in 2012; during the early dry season from April 17 to April 21, 2012 and during the late dry season from September 6 to September 10, 2012.

Five detailed fauna survey sites, two secondary fauna sites and 11 habitat assessment sites were established (**Figure 6**). Site selection was based on RE mapping (used as an indicator of habitat type) and aerial photography.

Methods used at each of the survey sites are described below. Any species recorded opportunistically within the AECOM survey area were recorded as incidental observations.

a. Detailed Survey Sites

Five detailed fauna survey sites were established within the AECOM survey area. Survey locations aimed to sample the representative REs located within the project area and were located in areas where the probability of finding threatened species was estimated to be the highest. **Table 3.1** below summarises the survey effort undertaken at each detailed fauna survey site. Survey methods are further described below in subsequent subsections.

Table 3.1 Survey Effort at each Detailed Fauna Survey Site

Method	Effort per site	Target taxa
Box traps – Elliott 'A'	20 traps, left for 4 nights*	Small mammals
Box trap – Elliott 'B'	5 traps, left for 4 nights*	Medium mammals and reptiles
Wire cage trap	5 traps, left for 4 nights*	Medium mammals
Pitfall traps	6 x 20L buckets, 30m drift fence, left for 4 days and 4 nights*	Reptiles, amphibians, small mammals
Funnels	2 with 30m drift fence, left for 4 days and 4 nights	Reptiles and amphibians
Hair tubes	10; 5 on tree trunks, 5 on the ground, left for 4 days and 4 nights	Mammals
Acoustic bat detector	1, left for 4 nights	Microbats
Diurnal active search	30 mins, 3 days (2 people). Total search effort 3 person-hours	Reptiles, amphibians
Spotlighting and nocturnal active search	20-45 minutes on minimum 2 nights (2 people). Minimum total search effort 2 person-hours.	Nocturnal birds, mammals, reptiles, amphibians
Cameras	4; left for 4 days and 4 nights	Mammals, medium to large reptiles
Diurnal bird survey	20 mins on each of 4 mornings. Total search effort 1.3 person-hours	Birds

**During the survey in April 2012, pitfalls were only open for three nights due to time constraints.*

b. Bird Surveys

Diurnal bird surveys were undertaken for 20 minutes in a two hectare area as recommended by the Atlas of Australian Birds. Surveys were undertaken on four mornings, and were completed within four hours of dawn. Records were based both on direct observation and species-specific vocalisations.

Nocturnal birds were targeted by spotlighting at each detailed fauna survey site. Spotlighting involved conducting active searches at night by two observers for a minimum of 30 minutes (a total of one person hour per night). One observer used a hand held 100W spotlight, the other a high intensity LED head torch. Species recorded were identified based on direct observations or vocalisations heard during spotlighting. Information recorded included species and where possible the number of individuals present. During the April 2012 survey period, spotlighting could only take place on two nights, due to mine safety work time limits. On these occasions, survey time was increased to 45 minutes per person over two nights. During the September 2012 survey period, nocturnal surveys of each detailed fauna survey site were conducted by two observers for three nights, for 30 minutes per person (see **Table 3.1** for a summary of the total survey effort).

In addition to formal surveys, incidental observations of birds were also made while undertaking other activities (e.g. checking traps, driving), noting species and number of individuals.

c. Reptile and Amphibian Surveys

A variety of survey methods were utilised to survey for reptiles, including pitfall trapping, funnel traps and active diurnal and nocturnal searching on foot, focusing on likely reptile habitats and refuges.

Pitfall traps comprised six 20 L buckets evenly spaced along a 30 m fence consisting of 30 cm high damp course. A funnel trap was placed at either end of the drift fence. A shallow layer of earth and litter was placed in the base of each bucket, along with a section of PVC tube to provide shelter for captured animals, a damp cloth to provide moisture and a small float to ensure captured animals didn't drown if heavy rainfall occurred. Funnel and pitfall traps were left open for three days and four nights.

Diurnal searches for reptiles were undertaken in the late afternoon, when conditions were warm and reptiles were likely to be active. Searches targeted likely basking and refuge sites, including rock surfaces/outcrops, fallen logs and timber, decorticating and fallen bark and litter. Searches were undertaken by two observers on four days, for a period of 30 minutes for each search.

Nocturnal searches for reptiles were undertaken using a spotlight in the early evening using the same methods as those described for birds above. Searches targeted tree trunks and decorticating bark, as well as riparian areas and remnant pools where frogs were calling and likely to attract frog-eating snakes. Information recorded included species, number, and where possible sex and breeding condition.

The survey methods for amphibians were the same as those used for reptiles, the only differences being the substrates/habitats targeted during active searches. Specifically, for frogs, moist habitats such as ephemeral drainage lines, farm dams and remnant pools were targeted, or any areas where frogs were heard calling.

d. Mammal Surveys

Ground-dwelling mammals were surveyed for within each detailed fauna survey site using box and cage traps, as well as pitfall traps, hair tubes, cameras and active nocturnal searches.

Small mammals were targeted with small (Type A) Elliott aluminium box traps. Twenty traps were set out in a square, with five traps along each side, each separated by 20 m. A large Elliott trap (Type B) was placed at each corner of the square, also 20 m from the adjoining traps, and one within the square. A wire cage trap was placed in the centre of each side of the square (20 m from adjoining traps), and in the middle of the square (hence the length of each side of the square was 140 m). In total 20 small Elliott traps, five large Elliott traps and five wire cage traps were used. Traps were baited with a combination of peanut butter, rolled oats and sardines. Litter was placed inside traps as shelter for any trapped animals, and the

wire cage traps were covered with hessian. Traps were opened in the late afternoon, and checked early each morning, before being closed for the day. Traps were freshly baited each afternoon, and were set for four nights.

Pitfall traps were also utilised in each detailed fauna survey site to survey for mammals; the methods used for pitfall traps are described above.

Ten hair tubes were placed within each detailed fauna survey site, five on tree trunks and five on the ground. Hair tubes were baited with peanut butter and rolled oats and left in place throughout the survey (three days, four nights).

Four movement triggered infrared cameras were placed at each trapping site. Cameras were mounted to a tree, and focussed on a bait station. Bait stations consisted of buried chicken necks (which were wired in to prevent them being easily removed), and a tea-egg filled with a ball of rolled oats and peanut butter, very shallowly buried, also wired in to prevent it being removed. Cameras were operational from the time they were deployed until the site was closed (three days, four nights).

Microbats were surveyed for using acoustic bat detectors; either SM2 or SM2BAT+ SongMeters (Wildlife Acoustics). One bat detector was deployed at each detailed survey site, for a period of four nights, and placed in a likely flyway or close to water features such as ephemeral drainage lines, farm dams or remnant pools. Acoustic bat recordings were analysed by Greg Ford of 'Balance Environmental'.

For non-flying, captured mammals, information recorded included species, number, sex and breeding condition. Only species identity (or in some cases genus or family) information can be determined from hair tubes and acoustic bat detectors.

e. Secondary Survey Sites

During the late dry season in 2012 two secondary survey sites were also established (see **Figure 6**).

Secondary Site 1 was surveyed over four days and four nights with two movement triggered infrared cameras and one Songmeter2 acoustic bat recorder. In addition, one early morning bird survey, one diurnal reptile search and two nocturnal spotlight surveys were conducted.

Secondary Site 2 was surveyed over four days and four nights with two movement triggered infrared cameras. In addition, one early morning bird survey and one diurnal reptile search was conducted at this site.

f. Fauna Habitat Assessments

Detailed habitat assessments were completed at eleven sites, including all five detailed survey sites and six additional sites. Habitat assessments comprised a mixture of both qualitative and quantitative data including the following:

- Landscape description and landform;

- Aspect, elevation, slope and relief class;
- Geology, soil colour and texture;
- Vegetation community/RE, dominant species for each strata and general vegetation description;
- Canopy height;
- Projected cover, percent cover and dominant species for each strata and a variety of ground cover components, including; litter, rocky substrates, cryptogamic crust and bare ground;
- Tree size classes and bark types;
- Percent of trees supporting climbing vines, dieback and mistletoe;
- Abundance of coarse woody debris and fallen logs;
- Abundance, size class and decay stage of dead trees;
- Abundance of tree hollows of different size classes;
- Weed species abundance and distribution;
- Abundance of termite mounds;
- Fire history;
- Disturbance type and extent;
- Erosion type and extent;
- Connectivity;
- Land use; and
- Animal signs (nests, shelters, diggings, scats, tracks, burrows, tree scratches and feeding scars, any other sign).

Where animal signs were observed, the likely corresponding species identity was recorded, and in the case of scats or hairs, samples taken for identification. All scats and hair samples collected during the field survey were sent to Barbara Triggs of 'Dead Finish' for analysis.

iv. AECOM 2013 Surveys (Koala Surveys)

Habitat assessment and targeted searches for Koalas (or evidence of them) were carried out by AECOM in 2013 (AECOM, 2014). Surveys were conducted between 2-6 September 2013 in accordance with the methods outlined in the Interim Koala Referral Advice for

Proponents (SEWPaC, 2012b). Methods are described fully in AECOM (2014) and summarised below:

a. Initial habitat assessment

Vegetation surveys and RE verification provided the baseline data to determine the location of vegetation communities dominated by primary Koala food trees and associated favourable landforms. In particular, riparian areas associated with RE 11.3.25: *Eucalyptus tereticornis* woodland fringing drainage lines, were noted as potential Koala habitat.

b. Line transect surveys

Survey methods followed those described in Dique et al (2003). The AECOM survey area was divided into transects separated by 50 m which were then surveyed by two ecologists with a total of approximately 80 km traversed evenly across the entire site. Every tree intersected by each line transect was searched for Koalas and sign of Koala use (i.e. markings on trees, sign of feeding in canopy and obvious scats surrounding the base of the tree).

c. Critical habitat assessment

Critical habitat assessments were carried out in conjunction with the Koala survey methods outlined above. Preliminary site selection for critical habitat assessment was conducted prior to entering the field. RE mapping was used to ensure that each of the REs, including regrowth REs, was sampled. Further to these pre-determined sites, additional critical habitat assessments were carried out based on observations where changes in vegetation, land zone and/or habitat quality were noted.

Methodology for critical habitat assessment involved the collection of the following data as prescribed in the Interim Koala Referral Advice for Proponents (SEWPaC, 2012b):

- Canopy tree species composition;
- Percentage of canopy cover of each of the above;
- Percentage of the ground area of vegetation, leaf litter, bare ground, surface water;
- Distance to surface water (m); and
- Evidence of dogs in the area.

d. Koala SAT surveys

The Spot Assessment Technique (SAT) was applied using the methodology prescribed in Phillips and Callaghan (2011) which involves systematic searches of up to 30 trees surrounding the observed Koala and/or sign. Where no Koalas or Koala signs were observed, SAT surveys were performed in areas considered to be critical habitat, where primary food trees were present. This approach ensured that additional effort was applied to the areas of best available habitat across the site.

e. Spotlight and call playback surveys

Spotlight transect site selection was based on targeting appropriate habitat areas (determined by RE mapping). This was primarily associated with RE 11.3.25: *Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines*. Spotlighting was carried out at 41 transect sites in accordance with the methods outlined in the *Terrestrial Vertebrate Fauna Survey Guidelines* (Eyre *et al.*, 2012) with additional effort applied to each spotlighting event as survey timelines did not allow for replication at each of the sites. Spotlighting was conducted by two ecologists for one person hour at each site.

Call playback was carried out prior to spotlighting at the beginning of each spotlighting transect and was conducted in accordance with the prescribed call-playback methods outlined in the *Terrestrial Vertebrate Fauna Survey Guidelines* (Eyre *et al.*, 2012). This involved a five minute listening period prior to call playback, followed by three minutes of call playback, a two minute listening period and five minutes of spotlighting and observation.

This was repeated twice for each site as replication of subsequent nights was not possible due to survey timeframe constraints.

3.1.3 Review of Aerial Photographs

The most recent aerial photographs available at the time (flown October 2013) were utilised for the assessment. This was used to identify features for ground-truthing during the field survey, to identify appropriate survey locations, and for determining and characterising potential terrestrial flora and fauna habitats.

3.1.4 Regional Ecosystem Mapping

The Queensland government produces RE maps showing the distribution of remnant REs throughout Queensland. These published maps are produced using Landsat satellite imagery, aerial photography and field based ground-truthing. A review of the RE maps was undertaken prior to field surveys to assist in the verification of RE types mapped in the Study Area.

3.1.5 Geological Mapping

Geological mapping provided by EHP was reviewed. The geological mapping was used to provide an indication of the underlying substrate and to inform habitat mapping for species such as bats that require particular geological land forms such as crevices to roost in. The geological mapping was also used to assist in ground-truthing and verifying REs within the Study Area.

3.1.6 Soil Mapping

The soils mapping provided by EHP was reviewed. The soil mapping was used to correlate vegetation types and habitat preferences of particular flora and fauna to soil types present in the Study Area. Soils information was also used to assist in ground-truthing and verifying REs within the Study Area.

3.2 Cumberland Ecology 2014 Terrestrial Ecology Surveys

Additional terrestrial field surveys were undertaken by Cumberland Ecology in 2014 to:

- Further refine vegetation mapping, using recent high resolution aerial imagery; and
- Expand and update the Study Area to include the area required for the project.

The examination of impacts from groundwater drawdown on flora and fauna was not part of the scope of work for this report. Please refer to EIS Section 12A for discussion on the indirect impacts of groundwater drawdown on vegetation/fauna habitat.

3.2.1 Survey Timing

Terrestrial flora and fauna field surveys were conducted in the Study Area between 7 August and 16 August 2014. Flora surveys were conducted for seven days, between 7 August and 14 August, and the fauna surveys were undertaken over 9 nights/10 days between 7 August and 16 August 2014.

3.2.2 Project Team

Two teams of two ecologists were used, with each team focussing on either terrestrial flora or fauna ecology.

3.2.3 Field Survey Design

Field surveys were conducted in strategic locations and the results extrapolated by analysis of high resolution aerial photography, geological maps and topographic maps. Field survey locations for both flora and fauna were carefully chosen to sample all of the ecosystem types occurring in the Study Area, including the range of physiographic areas which occur in the Study Area.

3.2.4 Climate

i. Local Climate Conditions

Climate data is recorded from the adjacent Boundary Hill Mine located to the north of the Study Area. The observed meteorological conditions at the adjacent Boundary Hill Mine are presented below in **Table 3.2** for the survey period.

Table 3.2 Weather Conditions During Survey Periods – Local Climate Conditions

Date	Minimum Temperature (ºC)	Maximum Temperature (ºC)	Rainfall (mm)
7/08/2014	4.5	24	0
8/08/2014	4.7	24.5	0
9/08/2014	6.1	25.2	0
10/08/2014	7.9	23.8	0

Table 3.2 Weather Conditions During Survey Periods – Local Climate Conditions

Date	Minimum Temperature (ºC)	Maximum Temperature (ºC)	Rainfall (mm)
11/08/2014	12.3	24.3	0
12/08/2014	7.5	24.9	0
13/08/2014	6.6	26.1	0.4
14/08/2014	7.4	25.1	0
15/08/2014	10.8	19.6	10
16/08/2014	13.4	18.4	41.8

During the field survey the weather was mild with three days of rainfall. The average minimum temperature was 8.1°C and the average maximum temperature was 23.6°C (**Table 3.2**).

ii. Regional Climate Conditions

The observed meteorological conditions at Thangool Airport (approximately 30 km from the Study Area) (temperature data) and Biloela - Valbona (approximately 20 km from the Study Area) are presented below in **Table 3.3** for the survey period. Thangool Airport was used for these data as it is the nearest station to the Study Area that records temperature and Biloela - Valbona is the nearest station that records rainfall. The data from these weather stations considered to be broadly representative of the conditions in the Study Area.

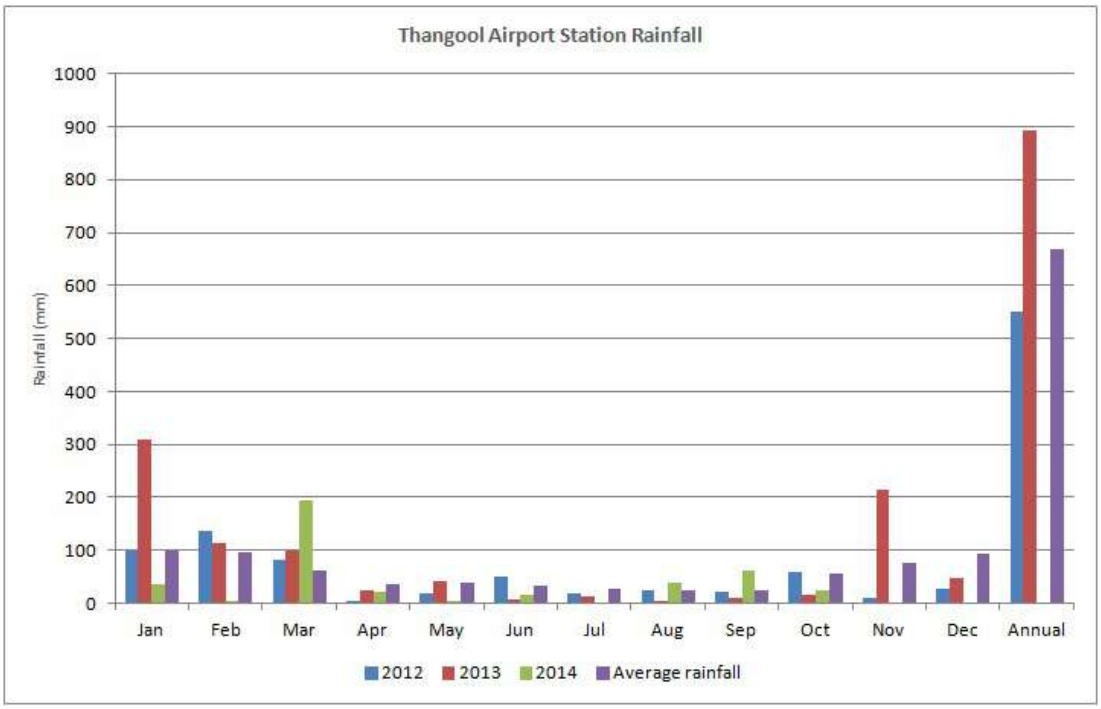
During the field survey the weather was mild with only one day of rainfall. The average minimum temperature was 8.2°C and the average maximum temperature was 24.4°C.

Table 3.3 Weather Conditions During Survey Periods – Regional Climate Conditions

Date	Minimum Temperature (ºC)	Maximum Temperature (ºC)	Rainfall (mm)
7/08/2014	3.3	24.4	0
8/08/2014	3.6	24.4	0
9/08/2014	4.3	25.8	0
10/08/2014	9.3	26.0	0
11/08/2014	12.4	25.7	0
12/08/2014	6.3	26.4	0
13/08/2014	7.9	25.4	0
14/08/2014	9.5	25.1	0
15/08/2014	11.7	21.6	0
16/08/2014	13.3	19.1	18

Source: BoM (2014)

Graph 1 shows 2012, 2013 and current 2014 rainfall vs. median rainfall at the Thangool Airport Weather Station. As can be seen from **Graph 1**, below average rainfall was experienced in 2012, above average rainfall levels was experienced in 2013 and at this stage 2014 has seen much below average rainfall with the exception of March, August and September.



Graph 1 Rainfall Recorded at the Thangool Airport Weather Station in 2012, 2013 and up to October 2014

3.2.5 Flora Survey

Ground-truthing of vegetation communities within the Study Area was undertaken with reference to the RE mapping and the vegetation mapping conducted by AECOM (2013a) (refer to **Section 3.1.2i**) and EHP (2014r) mapping. Additionally, recent high resolution aerial photography was utilised to refine the delineation of REs within the Study Area.

Vegetation mapping (or verification of any existing vegetation mapping) was undertaken in the Study Area between 7 August and 13 August 2014 with particular reference to potential TECs listed under the EPBC Act and REs listed as Of Concern or Endangered under the NC Act. Random meander transects are shown on **Figure 5**. RE mapping included identification of sensitive or important vegetation types, such as riparian vegetation.

Vegetation mapping within the Study Area involved the following methodology:

- Completion of a "C Sheet" (Queensland Herbarium, 2012b) at locations where the proposed RE differed in structure from the existing RE structure (e.g. remnant vs. non-remnant);

- Completion of "D Sheet" (Queensland Herbarium, 2012b) at locations where the proposed RE differed from the existing RE unit;
- Recording of additional data at quaternary sites to verify the proposed RE or existing EHP RE mapping; and
- Recording locations of changes between REs.

A "C Sheet" is used record information about the vegetation structure (growth form, height and cover) of each layer, for use in the verification of the remnant status of the vegetation (Queensland Herbarium, 2012b).

A "D Sheet" details the information required for an assessment of the RE type for an area. The information recorded includes bioregion, dominant vegetation species by strata, geology and landform and other information required to determine the land zone.

The following floristic data was recorded at 30 flora survey locations as shown in **Figure 5**. The flora survey locations comprised quaternary surveys, which are rapid assessments of the vegetation type present, and consisted of collecting the following data:

- Location (using handheld GPS unit);
- Dominant canopy and sub-canopy species;
- Notes about soil, aspect and slope; and
- Photographs.

The location of each flora survey location was recorded on a hand-held Global Positioning System (GPS) (**Figure 5**). Specimens of uncertain taxonomy and all potential threatened flora species were submitted to the Queensland Herbarium for formal identification.

REs were identified according to the Queensland government's RE type descriptions in accordance with the Regional Ecosystem Description Database (REDD) (Queensland Herbarium, 2012a). Identification of REs was achieved by comparison between the floristic composition of the vegetation recorded in the field, and the formal descriptions of REs contained in the REDD (Queensland Herbarium, 2012a).

The location and extent of REs was mapped using field data and extrapolated using aerial imagery analysis. The resultant information was synthesised using GIS MapInfo (Version 12.0) to create a spatial database and utilised to produce ground-truthed RE mapping of the Study Area.

3.2.6 Fauna Surveys

The Study Area has been subject to a large amount of fauna field survey, spanning several years and several seasons (**Section 3.1.2ii-iv**). A total of four rounds of fauna field surveys have been undertaken in the Study Area. Initially, AECOM conducted a reconnaissance survey for the Northern Quoll (*Dasyurus hallucatus*) in December 2011 (**Section 3.1.2ii**),

followed by two rounds of detailed field survey in 2012 for the EIS process (**Section 3.1.2iii**). This was then followed by Koala surveys in 2013 (**Section 3.1.2iv**). Cumberland Ecology subsequently conducted additional targeted trapping surveys for the Northern Quoll and additional habitat assessments in August 2014. Methodologies undertaken for the additional Northern Quoll surveys are described below, while habitat mapping methods that were undertaken for threatened species are described in **Section 3.3**.

This section describes the methodologies utilised in the 2014 surveys, while the methods utilised in AECOM's surveys are described in **Section 3.1.2ii-iv**.

i. Targeted Northern Quoll Surveys (2014)

Targeted Northern Quoll surveys were conducted in the Study Area during the fauna surveys over a period of 9 nights/10 days between 7 August and 16 August 2014.

In accordance with the requirements of the *EPBC Act Referral Guidelines for the Northern Quoll, Dasyurus hallucatus* (SEWPaC, 2011b) (herein referred to as the Northern Quoll Referral Guidelines) a targeted trapping survey was undertaken for the Northern Quoll in areas of habitat within the Study Area that had potential to comprise Critical Habitat for the Northern Quoll.

The Northern Quoll Referral Guidelines state that in critical habitat for the species, the trapping effort required should be determined by the formula $y=50x^{0.5}$, where y is the number of trap-nights and x is the area of potential Northern Quoll habitat in hectares. Trapping effort is calculated as the number of traps by the number of nights trapping (e.g. trap-nights) (SEWPaC, 2011b).

Accordingly, traps were set in those parts of the Study Area that had high quality habitat features and potential Critical Habitat. According to the Northern Quoll Referral Guidelines, Critical Habitat comprises the following:

- Rocky habitats such as ranges, escarpments, mesas, ranges, gorges, breakaways, boulder fields, major drainage lines or treed creek lines;
- Structurally diverse woodland or forest areas containing large diameter trees, termite mounds or hollow logs; and
- Off shore islands where the Northern Quoll is known to exist.

Some areas of the Study Area did not comprise Critical Habitat according to the definition above, however they were surveyed as it was considered that there was some potential for the Northern Quoll to utilise these areas periodically.

Trapping was conducted at 10 survey locations (**Figure 6**) using Elliott traps and cage traps, as recommended in the Northern Quoll Referral Guidelines. Twenty large Elliott (Type B) traps, and four cage traps were set at each survey location and left for three nights. They were baited with bait balls of sardines, rolled oats and peanut butter, or with chicken wings, necks and giblets. The Elliott traps were arranged in a 50 x 50 m square shape with baited

cage traps in the four corners and a baited motion detector camera placed in the centre of the square.

As well as the trapping surveys, two fixed motion infra-red cameras (IR cameras) were set up and left for the duration of the field survey (a total of 54 nights, including 36 trap nights of IR cameras undertaken at the trapping locations, as discussed above). In addition to the trapping and IR camera surveys, daytime searches for latrines and tracks of the Northern Quoll were also conducted during the fauna habitat assessments (**Section 3.2.6iii**) in the Study Area. Northern Quolls produces a distinctive twisted cylindrical scat deposited often on rock piles or boulders, usually on the highest point available, such as ridge tops or hill crests. Scats may also be deposited in other areas such as under boulders, in rock overhangs, road culverts and sheds (Pollock, 1999). Particular focus was given to assessing the suitability of habitat in the Study Area for the Northern Quoll and mapping the areas that contained habitat suitable to support resident or foraging Northern Quolls (**Section 3.2.6iii**).

AECOM (2012a) also conducted surveys for the Northern Quoll, including the use of 25 large Elliott (Type B) traps, and 5 cage traps set for four nights. This amounted to a total of 120 trap nights.

When AECOM and Cumberland Ecology effort is combined the total survey effort is:

- 820 Elliott trap nights;
- 184 cage traps nights; and
- 90 camera trap nights.

In total, 1094 trap nights of survey were completed, which exceeded the minimum survey effort of 1081 trap nights (based on Cumberland Ecology's habitat mapping for this species in the Study Area) required within the Northern Quoll Referral Guidelines.

ii. Incidental Observations

Any vertebrate fauna species observed, detected on the basis of calls, tracks, scats, scratch markings or otherwise, were recorded and are presented in the total species list for the Study Area.

iii. Fauna Habitat Assessment

Fauna habitat assessments were conducted at 80 locations in the Study Area over a period of 10 days between 7 August and 16 August 2014 (**Figure 6**).

Habitat assessments were undertaken within the Study Area for all Commonwealth and State listed species that were previously recorded by AECOM or determined to have a high likelihood of occurring, based generally on species' distributions, habitat preferences and previous records. The purpose of these assessments was to determine if the Study Area could provide habitat for the threatened species that were determined to have a high likelihood of occurring. Habitat assessment was also used, in conjunction with aerial

photography and RE mapping, to refine threatened fauna habitat mapping in order to provide an accurate representation of the suitable habitat present within the Study Area.

The Study Area was assessed for ground, shrub/understorey and canopy cover, number and size of hollows present, habitat features such as bush rock and fallen trees, and signs of fauna usage such as scats and scratches. Fauna habitat assessments (see **Figure 6** for locations) included consideration of important indicators of habitat condition and complexity including the occurrence of microhabitats such as tree hollows, fallen logs, grasses, rocky outcrops, and ephemeral drainage lines and wetland areas. An assessment of the structural complexity of vegetation, the age structure of the vegetation and the nature and extent of human disturbance throughout the Study Area was also undertaken and considered. Indirect indicators of fauna use of the Study Area such as droppings, diggings, footprints, scratches, nests, burrows, paths and runways were also recorded.

3.3 Habitat Mapping Methods for Threatened Species

For the purposes of impact assessment, habitat modelling and mapping was undertaken for the flora and fauna species listed as threatened or Special Least Concern under the EPBC Act and/or the NC Act that are known to occur or have been assessed as having a high or moderate likelihood of occurrence in the Study Area. The likelihood of occurrence assessments for threatened flora and fauna species are presented in **Appendix G** and **Appendix H**, respectively. Habitat modelling and mapping was undertaken for the following species:

- *Acacia pedleyi*;
- Collared Delma (*Delma torquata*);
- Yakka Skink (*Egernia rugosa*);
- Australian Painted Snipe (*Rostratula australis*);
- Red Goshawk (*Erythrotriorchis radiatus*);
- Squatter Pigeon (southern subspecies) (*Geophaps scripta scripta*);
- Northern Quoll (*Dasyurus hallucatus*);
- Koala (*Phascolarctos cinereus*);
- Grey-headed Flying-fox (*Pteropus poliocephalus*);
- Large-eared Pied Bat (*Chalinolobus dwyeri*); and
- South-eastern Long-eared Bat (*Nyctophilus corbeni*).

Other threatened species have been recorded from database analysis however these species are not considered likely to occur and therefore habitat mapping has not been conducted for these species.

Habitat mapping involved the identification and consideration of species-specific habitat criteria to create a model that enabled mapping of potential high and low value habitat for the species listed above within the Study Area. The criteria considered for threatened species habitat mapping are summarised in **Table 3.4**.

Table 3.4 Threatened Species Habitat Mapping Criteria

Habitat Analysis Criteria	Explanation
Pre-existing models for threatened species habitat	For some species, threatened species habitat models exist within recovery plans, and within previous reports. Where available, these were reviewed and used to guide habitat mapping for the project.
Threatened species records in the Study Area and surrounds	Threatened species records obtained during the surveys for the Study Area and surrounds were mapped to provide an indication of where species occurred. These were interpreted based upon the frequency of records and the habitats within which they were found. Where relevant, these were interpreted to extrapolate habitat mapping across the Study Area, including consideration of RE mapping.
RE mapping	Where information was known about the REs where a species was routinely found, this was used to identify potential vegetation habitat.
Topography	Where published information existed to indicate that a species was more likely to occur, or breed in one form of topography, preferred topography was overlain across preferred vegetation polygons to filter the habitat map.
Permanent water sources	Presence of permanent water sources was used to help delineate the preferred habitats and to filter the habitat map.
Presence of preferred food plants	Presence of preferred food plants, where known, was considered as a potential filter for habitat mapping.
Presence of tree hollows	Presence of tree hollows, or hollows of a certain size, where known, was considered as a potential filter for habitat mapping.
Foraging distances around permanent water	Published information about foraging distances from permanent water, if known, was used as a factor to filter habitat mapping.
Presumed presence of harmful feral species	Where feral animals harmful to a threatened species were considered likely to be concentrated in a portion of the Study Area, this was used as a factor to influence the mapping of threatened species habitat.
Sensitivity to cattle grazing pressure	Where cattle grazing pressure was considered likely to be a factor in significantly reducing the suitability of a habitat for a threatened species, this was used to filter habitat maps.

For the purpose of this mapping analysis, the following definitions are applied:

- **High Value Habitat**: habitat containing biological resources of high value that are essential for the persistence of the species. Examples include core breeding habitats around permanent waters, and REs containing primary food plants that are essential for a species existence. High value habitats have been mapped for all of the species listed above.

- **Low Value Habitat**: habitat containing biological resources that may be used on occasion for foraging or dispersal, but which are not essential for the species' existence.

- **Unsuitable Habitat**: habitats consisting of vegetation and other habitat features unlikely to be used or inhabited by the species.

The methodology used to model habitat is precautionary, as it is based on landscape scale habitat features that may be indicative, but are not prescriptive of habitat for listed threatened species. The degree of utilisation of areas of habitat by particular species is dependent on a variety of factors such as microhabitat features, presence of threatening processes (e.g. grazing) and population dynamics. Accordingly, potential habitat maps are considered to be a precautionary, indicative estimate of high value habitat.

Detailed habitat mapping criteria applied for threatened fauna species that are known or considered likely to occur in the Study Area is presented in **Appendix I**.

3.4 Likelihood of Occurrence Assessment

The database searches identified threatened species that may potentially occur within the Study Area. The likelihood of such species occurring within the Study Area was then assessed based on the results of the field surveys. The likelihood of occurrence assessments for threatened flora and fauna species are presented in **Appendix G** and **Appendix H**, respectively.

The likelihood of species occurring within the Study Area was classified using the criteria presented in **Table 3.5**. The assessment was based on the species known ranges and habitat preferences which were evaluated considering site characteristics observed during the field surveys. As mature plants are sessile, this was factored into the likelihood assessment, though it was also noted that some species have propagules that can be transported considerable distances.

Table 3.5 Criteria to Assess Potential for Species to Occur within the Study Area

Likelihood to Occur	Definition
Present	The species was recorded within the Study Area during the field surveys.
High	The species was not recorded within the Study Area during the field surveys but is known to occur within the surrounding area and habitat of suitable

Table 3.5 Criteria to Assess Potential for Species to Occur within the Study Area

Likelihood to Occur	Definition
	quality exists within the Study Area.
Moderate	The species was not recorded within the Study Area during the field surveys, although it is known to occur in the wider region. Habitat was identified for the species within the Study Area during field surveys; 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 surveys. The species is unlikely to occur in the wider region and due to a lack of, or extremely poor quality habitat within the Study Area, the species is not expected to occur within the Study Area.

A conservative, risk-based approach was adopted to determine the need for an assessment of potential impacts, such as a significance assessment for species listed under the EPBC Act. This approach considers both the likelihood of occurrence of the species within the Study Area and the significance of potential habitat loss or disturbance resulting from the project's impacts. This approach ensures that potential project-related impacts on threatened species which were recorded within the Study Area or were considered to have a moderate or high likelihood to occur within the Study Area were considered. The criteria for determining if further assessment of potential impacts is required are presented in **Table 3.6**.

Table 3.6 Criteria to Determine if Assessment of Impacts are Required for Species

Likelihood to Occur	No habitat loss or disturbance from the Project	Limited habitat loss or disturbance from the Project	Significant habitat loss or disturbance from the Project
Present	YES	YES	YES
High	NO	YES	YES
Moderate	NO	NO	YES
Low	NO	NO	NO

For species listed under the EPBC Act, the significance of impacts was assessed in accordance with the EPBC Act *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (DotE, 2013b) (herein referred to as the Significant Impact Guidelines).

As there is currently no prescribed methodology for the assessment of potential impacts under the NC Act, assessments of the potential impacts to species listed under the NC Act were undertaken on the basis of the species' known ecology, project design and potential mitigation measures.

3.5 Compliance with Survey Guidelines

Appendix F details the survey requirements for each threatened flora and fauna species listed under the EPBC Act and NC Act, respectively, identified from database analysis or from field surveys in the Study Area, and summarises the relevant survey effort undertaken for the project in consideration of the appropriate Commonwealth and Queensland guidelines.

The survey requirements have been sourced from the relevant Species Profile and Threats Database (SPRAT), as well as other relevant survey guidelines published by the Commonwealth government, including the: *Survey guidelines for Australia's threatened birds* (DEWHA, 2010b), *Survey guidelines for Australia's threatened bats* (DEWHA, 2010a), *Survey guidelines for Australia's threatened reptiles* (SEWPaC, 2011d) and *Survey guidelines for Australia's threatened mammals* (SEWPaC, 2011c).

As indicated in **Appendix F**, the field survey methodology was generally compliant with relevant guidelines.

3.6 Limitations of the Field Surveys and Habitat Modelling

The field surveys were successful and had an appropriate level of coverage of the Study Area. Moreover, they were generally successful in surveying most of the flora and fauna groups, as explained below.

Numerous surveys have been conducted in the Study Area over three years and all seasons. Accordingly, the data collected for the Study Area gives a high degree of confidence in the mapping of REs and fauna habitats.

3.6.1 AECOM Surveys

i. AECOM Surveys

Every attempt was made to locate fauna survey sites, particularly detailed sites, within substantial patches of remnant vegetation, to maximise the probability of detecting rare and cryptic species. Nevertheless, safety restrictions on access to many areas within the Study Area limited the extent to which this could be achieved for the 2012 surveys, and, in a number of cases, sites therefore had to be located in sub-optimal habitat, such as small patches or remnant edges, where habitat is subject to outside disturbances.

Field surveys conducted in 2012 were undertaken during the early dry season and late dry season, and were outside the wet season when species such as amphibians would have been more readily detected. However, 2012 had a late wet season, and during the April 2012 surveys, there was still standing water in the ephemeral drainage lines that were surveyed and sites were found to have good green vegetative cover providing potential habitat for amphibian species.

Dry season surveys in 2012 were undertaken outside the recommended survey period for threatened Brigalow Belt reptiles with lower than optimal night time temperatures. However,

maximum daily temperatures exceeded 25°C on all days during both surveys, which is considered suitable for detecting reptiles. To address this limitation, greater emphasis has been placed on the identification of suitable habitat for these species, and a precautionary approach has been taken where species are considered to have high or moderate likelihood of occurrence if suitable habitat was present.

A fire had occurred less than 12 months prior to the 2012 survey and several sites outside the Study Area were affected. Fauna diversity may be significantly impacted by a hot fire, particularly for diurnal reptiles, suggesting that the species diversity and/or population numbers were potentially less than prior to the fire.

3.6.2 Cumberland Ecology Surveys

i. Flora Survey

The timing of the surveys across different seasons and years is beneficial for the detection of a range of flora species that have different flowering periods. While extensive field surveys were undertaken, there is some potential for species that were not recorded during field surveys to occur in parts of the Study Area due to large areas requiring surveys. Despite this, it is considered that the survey represents an accurate baseline of floristic information for the Study Area and that issues including conservation significance of the flora, quality and viability of bushland and any likely impacts on native vegetation have been able to be satisfactorily assessed.

It is considered that the flora species of conservation value have been adequately targeted to enable a comprehensive Terrestrial Ecology Assessment to be prepared. A range of threatened flora is known to occur in the locality and there is suitable habitat present within the Study Area for a number of these species. It is possible that some threatened species were undetected even though surveys were conducted during suitable survey periods.

ii. Fauna Survey

The fauna field surveys were successful and had an appropriate level of coverage of the Study Area. Moreover, they were generally successful in survey of most fauna groups, as explained below.

a. Northern Quoll and Incidental Fauna Survey

The weather conditions for the targeted Northern Quoll surveys were optimal and the surveys were conducted at an optimal time of year for surveying for this species.

The fauna surveys are representative of fauna activity at the time of the survey only and provide only a ‘snap-shot’ of fauna activity in a relatively small area. The data produced by the surveys is intended to be indicative of the types of species that could occur and not an absolute census of all fauna species within the Study Area.

It is likely that if continued field sampling was undertaken within the Study Area, additional incidental species would be identified. Nevertheless, it is considered that the majority of fauna species have been recorded. In common with the flora surveys, a precautionary

approach was used to assume presence of some threatened fauna species where the presence of suitable habitat was recorded.

b. Habitat Modeling

The habitat modelling has been conducted based on published literature of the habitat preferences of the threatened species recorded or with with a high or moderate likelihood of occurrence in the Study Area, as well as on direct field based experience of habitat utilisation of species in the Study Area and from adjacent areas. The habitat modelling data and the areas of habitat mapped may vary according to seasonal conditions, in particular those relying on the presence of water as a modelling criterion. At the time of survey, the area was within a drought period so some of the ephemeral water bodies that rely on rainwater may not have been visible during the survey period.

Chapter **4**

Results

This section provides a description of the terrestrial ecology biodiversity values present in the Study Area. The following results are discussed in this section:

- Results from the desktop study (**Section 4.1**);
- Overview of the biodiversity values of the Study Area, including broad vegetation, geology, soils and aquatic ecology (**Section 4.2**);
- Regional Ecosystems mapped within the Study Area (**Section 4.3**);
- Flora species recorded within the Study Area (**Section 4.4**); and
- Fauna species recorded within the Study Area (**Section 4.5**).

4.1 Desktop Study Results

A range of database searches and online searches under the Commonwealth and Queensland legislation were conducted for the project and are listed in **Section 3.1.1**. The results of the database and online searches are presented below. Queensland species listed as near threatened and/or migratory species listed as special least concern that have been recorded within database search records (**Appendices A** to **D**), are not discussed further in the report due to there being no requirement under the *Queensland Offsets Regulation 2014* for impacts to these species to be offset. As such, impacts of the project on these species are not considered further.

4.1.1 EPBC Act Protected Matters Search

The EPBC Act Protected Matters Search Tool reports the following TECs, threatened flora and fauna species and migratory fauna as defined under the EPBC Act, as potentially occurring within a 25 km radius of the Study Area (see **Appendix A**), as shown in **Table 4.1**.

Table 4.1 TECs, Threatened Flora and Fauna and Migratory Fauna Species Recorded in the EPBC Act Protected Matters Search

Scientific Name	Common Name	Status[1]	
		EPBC Act	NC Act
FLORA			
TECs			
Brigalow (*Acacia harpophylla* dominant and co-dominant)		E	-
Coolabah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions		E	-
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions		E	-
Weeping Myall Woodlands		E	-
Threatened Flora species			
Bertya opponens	-	V	-
Bulbophyllum globuliforme	Miniature Moss-orchid	V	NT
Cossinia australiana	Cossinia	E	E
Cycas ophiolitica	-	E	E
Dichanthium queenslandicum	King Blue-grass	E	V
Polianthion minutiflorum	-	V	V
Samadera bidwillii	-	V	V
Streblus pendulinus	Siah's Backbone	E	-
FAUNA			
Fish			
Bidyanus bidyanus	Silver Perch	CE	-
Reptiles			
Delma torquata	Collared Delma	V	V
Furina dunmalli	Dunmall's Snake	V	V
Rheodytes leukops	Fitzroy River Turtle	V	V
Denisonia maculata	Ornamental Snake	V	V
Crocodylus porosus	Salt-water Crocodile	Mi, M	V
Egernia rugosa	Yakka Skink	V	V
Birds			
*Rostratula australis**	Australian Painted Snipe	E, Mi, M*	V
Hirundo rustica	Barn Swallow	Mi, M	-
Turnix melanogaster	Black-breasted Button-quail	V	V

Table 4.1 TECs, Threatened Flora and Fauna and Migratory Fauna Species Recorded in the EPBC Act Protected Matters Search

Scientific Name	Common Name	Status[1]	
		EPBC Act	NC Act
Monarcha melanopsis	Black-faced Monarch	Mi, Ma	-
Poephila cincta cincta	Black-throated Finch (white-rumped subspecies)	E	E
Ardea ibis	Cattle Egret	Mi, M	-
Ardea modesta	Eastern Great Egret	Mi, M+	-
Apus pacificus	Fork-tailed Swift	Mi, M	-
Gallinago hardwickii	Latham's Snipe	Mi, M	-
Merops ornatus	Rainbow bee-eater	Mi, M	-
Erythrotriorchis radiatus	Red Goshawk	V	E
Rhipidura rufifrons	Rufous Fantail	Mi, M	-
Myiagra cyanoleuca	Satin Flycatcher	Mi, M	-
Monarcha trivirgatus~	Spectacled Monarch	Mi, M	-
Geophaps scripta scripta	Squatter Pigeon (southern subspecies)	V	V
Neochmia ruficauda ruficauda	Star Finch (eastern subspecies)	E	E
Haliaeetus leucogaster	White-bellied Sea Eagle	Mi, M	-
Hirundapus caudacutus	White-throated Needletail	Mi, M	-
Mammals			
Pteropus poliocephalus	Grey-headed Flying-fox	V	-
Phascolarctos cinereus	Koala	V	SLC
Chalinolobus dwyeri	Large-eared Pied Bat	V	V
Dasyurus hallucatus	Northern Quoll	E	-
Hipposideros semoni	Semon's Leaf-nosed Bat	E	E
*Nyctophilus corbeni^*	South-eastern Long-eared Bat	V	V

[1] Threatened ecological communities and species status under the EPBC Act and/or NC Act (current at 20 January 2015).

CE = Critically Endangered; E = Endangered; V = Vulnerable; Mi = Migratory; M = Marine; SLC = Special Least Concern; NT = Near Threatened

* Species listed as marine and migratory under the EPBC Act as Painted Snipe (*Rostratula benghalensis*) (sensu lato).

\+ Species listed as a marine species under the EPBC Act as Great Egret (*Ardea alba*).

~ Species listed as a migratory species under the EPBC Act as *Symposiachrus trivirgatus*.

^ Species listed under the NC Act as Eastern Long-eared Bat (*Nyctophilus timoriensis*).

An assessment of the likelihood of occurrence in the Study Area of threatened flora species is presented in **Appendix G**. Threatened fauna species likelihood of occurrence in the Study Area is presented is in **Appendix H**. Flora and fauna species listed under the EPBC Act or NC Act present or with a high or moderate likelihood of occurrence area assessed in **Sections 4.4.1-4.4.2** and **Sections 4.5.8-4.5.11**.

4.1.2 VM Act Regional Ecosystem and Remnant Map

According to the Queensland Government's *Vegetation management regional ecosystem and remnant map - version 8.0 non-coastal* (EHP, 2014r), approximately 4.5 ha of the Study Area comprise "Remnant vegetation containing of concern regional ecosystems", and approximately 118 ha comprise "Remnant vegetation that is a least concern regional ecosystem". The remaining 497 ha of the Study Area is mapped as non-remnant.

The Study Area has been mapped by the Queensland Government as supporting the following REs (EHP, 2014o) shown in **Table 4.2**.

Table 4.2 REs Present in the Study Area

RE Code	Description[1]	Conservation Status			Area (ha)
		EPBC Act[2]	VM Act[3]	Biodiversity Status[4]	
11.9.9	*Eucalyptus crebra* woodland on fine-grained sedimentary rocks	-	Least Concern	No concern at present	100.13
11.10.1	*Corymbia citriodora* woodland on coarse-grained sedimentary rocks	-	Least Concern	No concern at present	17.63
11.9.13	*Eucalyptus moluccana* or *E. microcarpa* open forest on fine grained sedimentary rocks	-	Of Concern	Of Concern	4.5

1 EHP (2014d).

2 TEC status under the EPBC Act (current at 20 January 2015).

3 RE Status under the VM Act (current at 20 January 2015).

4 Biodiversity Status under the VM Act (current at 20 January 2015).

Figure 7 shows the Queensland Government mapping of the Study Area. Surveys by AECOM and Cumberland Ecology have refined this mapping and the results of this assessment are provided in **Section 4.3**.

Flora and fauna species listed under the EPBC Act or NC Act present or with a high or moderate likelihood of occurrence area assessed in **Sections 4.4.1-4.4.2** and **Sections 4.5.8-4.5.11**.

4.1.3 Queensland Wildlife Online Database Search Results

A total of 14 threatened flora species listed under the EPBC Act and/or NC Act that were listed in the Queensland Wildlife Online database search (**Appendix B**) as occurring within the locality are presented in **Table 4.3**.

Table 4.3 Threatened Flora Species Queensland Wildlife Online Database Results

Species	Common Name	Status[1]	
		EPBC Act	NC Act
Acacia pedleyi[2]	-	-	V
Acacia spania[2]	-	-	NT
Bertya opponens	-	V	-
Cerbera dumicola[2]	-	-	NT
Cossinia australiana[2]	Cossinia	E	E
Cycas megacarpa[2]	-	E	E
Eucalyptus decolor	-	-	NT
Grevillea hockingsii[2]	-	-	V
Macadamia integrifolia	Macadamia Nut	V	V
Melaleuca groveana[2]	Grove's Paperbark	-	NT
Polianthion minutiflorum[2]	-	V	V
Samadera bidwillii[2]	-	V	V
Solanum dissectum[2]	-	-	E
Solanum johnsonianum[2]	-	-	E

1 Threatened flora species status under the EPBC Act and NC Act (current at 20 January 2015).
E = Endangered; V = Vulnerable; NT = Near Threatened

2 Species also listed within the HEBRECS database search (refer to **Section 4.1.4**)

A total of 17 threatened, migratory and/or near threatened fauna species listed under the EPBC Act and/or NC Act that were listed in the Queensland Wildlife Online database search (**Appendix B**) as occurring within the locality are presented in **Table 4.4**.

Table 4.4 Threatened and/or Migratory Fauna Species Queensland Wildlife Online Database Results

Scientific Name	Common Name	Status[1]	
		EPBC Act	NC Act
Fish			
Bidyanus bidyanus	Silver Perch	CE	-
Birds			
Hydroprogne caspia	Caspian Tern	Mi	-
Ardea ibis	Cattle Egret	Mi, M	-
Actitis hypoleucos	Common Sandpiper	Mi, M	-
Ardea modesta+	Eastern Great Egret	Mi, M+	-
Calyptorhynchus lathami	Glossy Black-cockatoo	-	V
Plegadis falcinellus	Glossy Ibis	Mi, M	-
Gallinago hardwickii	Latham's Snipe	Mi, M	-
Tringa stagnatilis	Marsh Sandpiper	Mi, M	-
Merops ornatus	Rainbow Bee-eater	Mi, M	-
Rhipidura rufifrons	Rufous Fantail	Mi, M	-
Myiagra cyanoleuca	Satin Flycatcher	Mi, M	-
Calidris acuminata	Sharp-tailed Sandpiper	Mi, M	-
Geophaps scripta scripta	Squatter Pigeon (southern subspecies)	V	V
Haliaeetus leucogaster	White-bellied Sea-eagle	Mi, M	-
Mammals			
Phascolarctos cinereus	Koala	V	SLC
Tachyglossus aculeatus	Short-beaked Echidna	-	SLC

1 Threatened fauna species status under the EPBC Act and/or NC Act (current at 20 January 2015).
CE = Critically Endangered; V = Vulnerable; Mi = Migratory; M = Marine; NT = Near Threatened; SLC = Special Least Concern

\+ Species listed as a marine species under the EPBC Act as Great Egret (*Ardea alba*).

Flora and fauna species listed under the EPBC Act or NC Act present or with a high or moderate likelihood of occurrence area assessed in **Sections 4.4.1-4.4.2** and **Sections 4.5.8-4.5.11**.

4.1.4 HERBRECS Database Search Results

A total of 14 threatened flora species listed under the EPBC Act and/or NC Act were listed in the HEBRECS database search (**Appendix C**) as occurring within the locality. All of these species were also recorded from the Wildlife Online database search (see **Table 4.3**) with

the exception of *Xerothamnella herbacea*, listed as Endangered under both the EPBC Act and the NC Act, and records of two species from pre-1950, *Dichanthium queenslandicum* listed as Endangered under the EPBC Act and Vulnerable under the NC Act, and Native Thistle (*Rhaponticum australe*) listed as Vulnerable under the EPBC Act and the NC Act.

Flora and fauna species listed under the EPBC Act or NC Act present or with a high or moderate likelihood of occurrence area assessed in **Sections 4.4.1-4.4.2** and **Sections 4.5.8-4.5.11**.

4.1.5 Queensland Museum Database Search Results

Two threatened fauna species were recorded from the Queensland Museum database (**Appendix D**), namely the Tusked Frog (*Adelotus brevis*), listed as Vulnerable under the NC Act and the Ornamental Snake (*Denisonia maculata*), listed as Vulnerable under the EPBC Act and NC Act (**Appendix D**).

Flora and fauna species listed under the EPBC Act or NC Act present or with a high or moderate likelihood of occurrence area assessed in Sections **Sections 4.4.1-4.4.2** and **Sections 4.5.8-4.5.11**.

4.1.6 Map of Referrable Wetlands

The map of referable wetlands shows that there is one HES wetland (with an associated 500 m trigger area) located to the south of the Study Area (**Figure 8**). The HES wetland is described in more detail in **Section 4.2.5**.

4.1.7 Vegetation Management Wetlands Map

No wetlands mapped on EHP's vegetation management wetlands map occur within the Study Area.

4.1.8 Vegetation Management Watercourse Map

In accordance with the EO Regulation, a prescribed Regional Ecosystem is a MSES to the extent that the ecosystem is located within a defined distance from the banks of a relevant watercourse. The defined distance is determined by the stream order, with different stream orders requiring larger buffers of vegetation from the bank of the stream. Defined distances are outlined in the *Queensland Environmental Offsets Policy (Version 1.0)* (EHP, 2014m) and are:

- Stream Order 1 or 2 – 10 m distance from the defining bank;
- Stream Order 3 or 4 – 25 m distance from the defining bank; and
- Stream Order 5 or greater – 50 m distance from the defining bank.

The EHP's Vegetation Management Watercourse Map has been overlaid on top of the groundtruthed RE mapping that has been undertaken for the project to determine the areas that are classified as MSES. This is discussed further is **Section 5.2.3ii**.

4.1.9 EHP Category A and B Environmentally Sensitive Areas

No Category A and B environmentally sensitive areas as defined under the EP Regulation have been mapped from within the Study Area.

4.1.10 Biodiversity Planning Assessments

EHP has prepared a BPA for the Brigalow Belt Bioregion. This draws on remnant vegetation mapping and database information to characterise areas to one of three biodiversity significance levels:

- State Significance – areas assessed as being significant for biodiversity at the bioregional or state scales;
- Regional Significance – areas assessed as being significant for biodiversity at the sub-bioregional scale; and
- Local Significance and/or other values – local values that are of significance at the local government scale.

BPA mapping for the Study Area indicates that the majority of the Study Area is classified as Regional Biodiversity Significance, with the exception of the north-east corner considered to be of Local and/or other values Biodiversity Significance (see **Figure 9**). There are no Regional Biodiversity Corridors mapped by the Brigalow Belt BPA in the Study Area, however, the boundary of a State Biodiversity Corridor is located in the north-east of the Study Area (see **Figure 9**). The eastern boundary of the Study Area adjoins an extensive area of the Callide Timber Reserve that extends south and connects with Kroombit Tops National Park.

As described above, BPAs are prepared on a broad, landscape scale and are based on Queensland Government vegetation mapping. Further field work, and site-specific assessment, is required to accurately assess the biodiversity values of an area and its value as a biodiversity corridor. It is noted that the fieldwork has not identified any physical or biodiversity features that align with the boundaries of the BPA State Biodiversity Corridor mapped within the Study Area (**Figure 9**). The areas identified in a BPA are not protected under any Queensland legislation.

4.1.11 Essential Habitat

Essential habitat is mapped by EHP, and is defined as:

> *"vegetation in which a species that is endangered, vulnerable, rare or near threatened has been known to occur"*

EHP uses these essential habitat maps to help determine the habitat status of the vegetation when assessing applications to clear vegetation. No essential habitat has been mapped by EHP as occurring in the Study Area.

4.2 Overview of Biodiversity Values of Study Area

The biodiversity values of the Study Area comprise dry woodlands, grasslands, riparian habitats (comprising ephemeral drainage lines), farm dams and a non-remnant seasonal wetland (**Figure 10**). These habitats occur due to several key factors including:

- Geology and soils;
- Catchment context and rainfall; and
- Past and present land use.

The main feature of the regional geology the Callide Basin, a 230 km^2 synclinal sedimentary basin. Extensive surficial weathering is evident across the Callide Basin. The surface geology of the Study Area broadly comprises the claystone-dominated Biloela Formation, incorporating an extensive and heterogeneous weathering profile, locally characterised by clay-bound Quaternary sediments and highly weathered sedimentary and basaltic clays.

These weathered materials have produced soils of low to moderate fertility that the EIS Land and Soil Capability Report has characterised as:

- Texture-Contrast Soils: Deep, with thin sandy or loamy surface soils: Retro, Taurus, Wyseby, and Springwood. Minor Pegunny, Vermont, and shallow rocky soils;
- Dark Brown and Grey-Brown Soils: Cheshire, Kinnoul, and Carraba. Minor Rolleston, Downfall, Teviot, May Downs, and Rugby; and
- Red and Yellow Earths: Dunrobin, Annandale, Forrester, Wilpeena. Minor Taurus, Luxor, Petrona, Consuelo.

To the west, the soils in the Study Area comprise texture contrast soils that are deep, with thin loamy or sandy surface soils. In the centre of the Study Area, the soils are red and yellow earths, and to the east, there are dark brown or grey brown soils.

An elevated range approximately to the east of the project site forms a local catchment divide. The headwaters of Gate Creek, Oaky Creek and several minor tributaries form on the western slopes of the range and drain west to the floodplain of Callide Creek. The headwaters of Bell Creek form on the northern slopes of the range. The majority (i.e. 99%) of the Study Area is located in the Gate Creek sub-catchment of Callide Creek. The Gate Creek sub-catchment is highly ephemeral. The Study Area and upper Gate Creek catchment is drained by a network of minor drainage lines that coalesce at the Study Area to form Campbell (Gate) Creek and a minor tributary. These drainage features flow in a south-westerly direction, traversing the project site in parallel and joining downstream of the Study Area. Gate Creek flows continues south-west from this confluence and enters the braided creek system of Callide Creek via the Callide Creek Old Channel, approximately 11 km downstream of the Study Area. Callide Creek Old Channel is a remnant anabranch of Callide Creek typical of braided creek systems.

The climate is semi-arid with evaporation exceeding rainfall for all months of the year. Average monthly rainfall is greatest from October to March. The average annual rainfall rate for the area is between 664 mm and 679 mm, with an annual evaporation rate of 2002 mm. Annual evaporation is therefore approximately three times greater than the average annual rainfall.

Historically, the entire Study Area would have been covered by woodland. European settlement commenced over 100 years ago and since that time there has been extensive vegetation clearing and cattle grazing. Remnant woodlands remain along the northern, western and eastern portions of the Study Area. The southern, south-eastern and central portions are largely cleared and used for cattle grazing. Grassland predominates in these areas (**Figure 10**).

Coal mining has also impacted the habitat values of the Study Area and the existing Boundary Hill adjoins the north-west boundary of the project. There is limited habitat to the immediate north of the Study Area. An existing haul road connecting to the remainder of the Callide Mine Complex and a cleared transmission line easement are constructed through woodland to the east of the Study Area (**Figure 10**).

To the south and west of the Study Area, the locality largely comprises farmlands which have been extensively cleared. The major occurrence of relatively undisturbed native vegetation is within Callide Timber Reserve, which occurs to the east of the Study Area.

There are no permanently flowing streams or permanent natural wetlands within the Study Area. The only permanent or semi-permanent water resources for wildlife are farm dams that have been established for cattle. Two large dams have been constructed within the northernmost drainage line within the Study Area, and a smaller farm dam occurs along a drainage line in the south-western portion of the Study Area. A seasonal wetland also occurs towards the centre of the Study Area, which was dry at the time that the Cumberland Ecology surveys took place.

In summary, five broad habitat types occur: woodland, grassland, riparian habitats, farm dams and a seasonal wetland. These are discussed in **Sections 4.2.1**-**4.2.5**.

4.2.1 Woodland Habitats

Woodlands provide a range of habitat resources for fauna including trees, shrubs and herbaceous plants for foraging, shelter and breeding opportunities. Some of the woodland areas, particularly the remnant woodlands, include larger trees with hollows suitable for shelter and breeding sites.

Where woodland occurs around ephemeral drainage lines, and on some limited upper hillsides, small scarps and sandstone outcrops are present. These rocky outcrops and associated crevices and overhangs provide roosting opportunities for bats, and shelter sites for small reptiles. A photograph of this habitat type within the Study Area is shown in **Photograph 4.1**.

Photograph 4.1 Overhangs and crevices providing habitat for microbats along a dry ephemeral drainage line in the western part of the Study Area

The main fauna habitat in the Study Area consists of woodlands dominated by Narrow-leaved Ironbark (*Eucalyptus crebra*) and Lemon-scented Gum (*Corymbia citriodora*). A photograph of this habitat type within the Study Area is shown in **Photograph 4.2**.

To the east of the Study Area, woodland forms a large connected area, dissected only by the primary haul road from the current Boundary Hill mine pit to the remainder of the Callide Mine Complex. Continuous large tracts of woodland such as this, provide important habitat for many species including arboreal mammals such as the Squirrel Glider (*Petaurus norfolcensis*) and Greater Glider (*Petauroides volans*), which were both recorded from the eastern side of the Study Area during spotlighting, as well as birds and bats.

Some of the woodland habitats within the Study Area contain a dense leaf litter cover as well as logs, which provide potential habitat for reptiles and small mammals. This habitat type also contains large trees which provide foraging opportunities for birds and arboreal mammals. Where present, Ironbark trees provide potential habitat for many reptile species that seek cover under the bark. Stags and hollow-bearing trees are also present within this habitat type and provide habitat for bats and birds that nest in tree hollows, such as owls.

The woodland habitats within the Study Area are subject to light to moderate cattle grazing which has degraded the habitat values to some extent. The Study Area is inhabited by a range of introduced pest species, which include the: Feral Pig (*Sus scrofa*), European Red Fox (*Vulpes vulpes*) and Dingo/dog (*Canis* sp.). The Noisy Miner (*Manorina melanocephala*) was assessed as abundant in the woodland areas in the Study Area, and although it is a

native bird species, it is known to reduce avian diversity by aggressively defending its territory from other native species.

Some parts of the woodland east of the transmission line easement, which runs north-south generally along the eastern boundary of the Study Area (**Figure 10**) were burnt prior to the 2014 field surveys and so lacked vegetative cover at the time of the survey.

Photograph 4.2 Woodland habitat within the northern part of the Study Area with open canopy and shrubby understorey

4.2.2 Grassland Habitats

Grasslands predominate in the southern and central portions of the Study Area. They are not natural and have been created by woodland clearance by graziers to provide improved pasture for cattle. An example of this habitat type within the Study Area is shown as **Photograph 4.3**.

Grassland habitat is highly simplified and contains few habitat resources due to the lack of vegetation structure and diversity. The species that utilise these areas are for the most part common, widespread native and feral species that are tolerant of disturbed habitats.

Despite its artificial nature, grassland provides some foraging opportunities for raptors, ground-dwelling birds, granivorous birds, snakes, and macropods. Species recorded from these habitats include the: Eastern Grey Kangaroo (*Macropus giganteus*), Australian Bustard (*Ardeotis australis*), Crested Pigeon (*Ocyphaps lophotes*), and Australian Pipit (*Anthus*

australis). Due to the high degree of disturbance, pest species such as foxes, dingos/dogs and cats are likely to be prevalent in this habitat type.

Photograph 4.3 Tussock grassland in the centre of the Study Area

4.2.3 Riparian Habitats: Ephemeral Drainage Lines

Riparian habitats are quite limited in extent and are confined to three small, ephemeral drainage lines in the north and west of the Study Area (**Figure 10**). An example of this habitat type is shown in **Photograph 4.4**.

The ephemeral drainage lines flow after heavy rains and have remnant pools that, when filled, help to sustain a variety of wildlife. The remnant pools supply water for drinking, for aquatic and semi-aquatic animals to feed upon, and for breeding habitats by some amphibians.

The northern-most ephemeral drainage lines are wooded and relatively large trees occur along them. Large eucalypt species with hollows provide nesting/denning opportunities for many species, such as owls and raptors. They therefore form east-west habitat corridors for species of vertebrates, particularly birds, mammals and reptiles.

Although these habitats only cover a small portion of the Study Area, they may provide habitat for some ground-dwelling species including small mammals, reptiles and amphibians.

In patches along the banks of the northern drainage lines, small cave-like crevices and overhangs occur and these provide cover, roosting and denning sites for many species, such as the ground dwelling mammals and microchiropteran bats.

The riparian habitats have been impacted by cattle and feral animals. At the time of the 2014 field surveys there were visble signs of cattle grazing and trampling along the banks and in the bed of the ephemeral drainage lines. Several feral animals were found along these areas, including the European Red Fox (*Vulpes vulpes*), European Rabbit (*Oryctolagus cuniculus*) Feral Cat (*Felis catus*) and Cane Toads (*Bufo rhinella*) in some remnant pools.

Cane Toads occur across the Study Area and were found in in large congregations near water sources during field surveys conducted by AECOM (2012b). These are a major threat to native carnivores, particularly the Northern Quoll, large snakes and goannas. Cane Toads are highly likely to have significantly diminished the habitat values of riparian areas and nearby woodlands for such species.

Photograph 4.4 Riparian habitat within the northern portion of the Study Area

4.2.4 Farm Dams

Aquatic habitats in the Study Area have been augmented by the creation of farm dams for cattle. Two large farm dams occur in the north or the Study Area (**Figure 10**) and, because of their size, they are considered to comprise permanent sources of water. A third smaller farm dam is located on the south-west margin of the Study Area (**Figure 10**). One of the northern farm dams is shown on **Photograph 4.5**.

The three farm dams all occur along ephemeral drainage lines (**Figure 10**).

The farm dams supply water for drinking, for aquatic and semi-aquatic animals to feed upon, and for breeding habitats by some amphibians. They also provide waterbird habitats in an otherwise largely dry landscape.

As shown in **Photograph 4.5** some sedges and other water plants have established along the banks of the farm dams providing shelter for a variety of wildlife including water birds, frogs and reptiles.

As is the case within the remnant pools along the ephemeral drainage lines (**Section 4.2.3**), Cane Toads occur around the farm dams, reducing habitat values for carnivorous native fauna.

Photograph 4.5 Farm dam constructed in the northernmost drainage line within the Study Area

4.2.5 Seasonal Wetland

The seasonal wetland occurring towards the centre of the Study Area was found to be dry at the time of survey (August 2014) as shown in **Photograph 4.6.** It forms a large depression with a dense monoculture of *Eleocharis equisetina* as a ground layer. When dry, this wetland holds little value for wildlife, but when wet, it would provide an important water resource for a range of species including water birds and amphibians, as well as mammals, reptiles and birds associated with woodlands and grasslands. The cracked mud at the

forefront of the photograph suggests that the wetland fills and dries fairly regularly. Stands of Blue Gum surround this wetland area.

Photograph 4.6 Seasonal wetland located towards the centre of the Study Area

4.3 Regional Ecosystems

4.3.1 Overview

RE mapping of the Study Area has been undertaken based on existing Queensland government RE mapping (EHP, 2014n) and previous mapping conducted by AECOM. This mapping was ground-truthed during the field surveys.

Three REs have been ground-truthed by Cumberland Ecology within the Study Area. **Table 4.5** lists the REs occurring within the Study Area and their area within the Study Area. The distribution of these REs within the Study Area is shown in **Figure 11**.

Table 4.5 REs Present within the Study Area

RE ID	RE Name	EPBC Act Status[1]	VM Act Status[2]	Biodiversity Status[3]	Area within Study Area (ha)
11.3.25	*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines	-	Least Concern	Of Concern	2.7
11.9.9	*Eucalyptus crebra* woodland on fine-grained sedimentary rocks	-	Least Concern	No concern at present	62.2
11.10.1	*Corymbia citriodora* woodland on coarse-grained sedimentary rocks	-	Least Concern	No concern at present	70.1
Non-remnant	NA	NA	NA	NA	480.1
				TOTAL	**615.1**

1 TEC Status under the EPBC Act (current at 20 January 2015).

2 Threatened RE status under the VM Act (current at 20 January 2015).

3 Biodiversity Status under the VM Act (current at 20 January 2015).

* This total excludes the three farm dams and seasonal wetland located within the Study Area which equate to 3.6 ha.

The mapping previously conducted by AECOM (2013a) was found to be relatively accurate; however some changes have been made. Key modifications include:

- Modification to the extent of AECOM mapped areas of RE 11.9.9 and RE 11.10.1 in the central portions of the Study Area;
- Inclusion of RE 11.3.25 in additional areas along ephemeral drainage lines where it is considered that the land zone comprises an alluvial system;
- Inclusion of additional areas of RE 11.9.9 in the south-eastern portion of the Study Area previously mapped as non-remnant where it is considered the vegetation meets the definition of remnant vegetation; and
- Exclusion of RE 11.9.13 / 11.10.4 mixed polygon as neither of these communities were recorded within the Study Area.

Additional minor modifications were made to the AECOM mapping based on field surveys and interpretation of recent aerial photography. Although there is a difference between the AECOM mapping and the Cumberland Ecology mapping, this does not have any implications for impact assessment. This is because the REs affected by the minor discrepancy in the mapping are all classified as Least Concern under the VM Act and have similar habitat values.

A description of the three REs that were recorded within the Study Area is provided below.

i. RE 11.3.25: Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines

VM Act Status: Least concern

Biodiversity Status: Of concern

EPBC Act Status: Not listed

This community occurs at two restricted locations within the Study Area along one of the ephemeral drainage lines (**Figure 11**). **Photograph 4.7** shows an example of this RE within the Study Area. This RE is located on soils that are sandy, over a clay base, along alluvial channels.

Canopy: Dominated by Blue Gum (*Eucalyptus tereticornis*), averaging 21 m in height (ranging from 15 to 22 m). The typical crown cover is 22%. Trees from adjacent ecosystems are often present, including Lemon-scented Gum (*Corymbia citriodora*), Ironbark (*Eucalyptus crebra*), Grey Bloodwood (*Corymbia clarksoniana*), Moreton Bay Ash (*Corymbia tessellaris*) and Gum-topped Box (*Eucalyptus moluccana*).

Sub-canopy: The sub-canopy is made up of smaller Blue Gums and other eucalypts, as well as *Acacia crassa*, Whitewood (*Atalaya hemiglauca*), Quinine Bush (*Petalostigma pubescens*) and Wilga (*Geijera salicifolia*). It ranges from 4 - 6 m tall (averaging 6 m), with a typical crown cover of 9%.

Tall shrubs: The shrub layer ranges from 0.5 to 4 m tall and is dominated by Currant Bush (*Carissa ovata*), Native Capper (*Capparis lasiantha*), Canthium (*Psydrax odorata*) and Sally Wattle (*Acacia salicina*).

Ground layer: Common grasses are Black Speargrass (*Heteropogon contortus*), Green Panic (*Megathyrsus maximus*), Buffel Grass (*Pennisetum ciliare*), Indian Couch (*Bothriochloa pertusa*), Golden Beard Grass (*Chrysopogon fallax*) and Creeping Shade Grass (*Oplismenus aemulus*). Sedges were common, especially *Cyperus victoriensis* in the wet areas in the centre of the Study Area. The ground layer consists of an average of 22% live plant cover, 2% fallen timber, 13% leaf litter and 63% bare ground especially along sandy ephemeral drainage line beds.

Weeds: Creeping Lantana (*Lantana montevidensis*) (Class 3) is widespread across this RE at a moderate density. Several exotic grasses are common, especially Buffel Grass, Green Panic, Indian Couch and Red Natal grass (*Melinis repens*).

Photograph 4.7 RE 11.3.25 (Eucalyptus tereticornis woodland fringing drainage lines) within the northern portion of the Study Area

ii. RE 11.9.9: Eucalyptus crebra woodland on fine-grained sedimentary rocks

VM Act Status: Least concern

Biodiversity Status: No concern at present

EPBC Act Status: Not listed

This community occurs at a number of locations within the Study Area and dominates the remnant vegetation within the south-western portion (**Figure 11**). **Photograph 4.8** shows an example of this RE within the Study Area. This RE is located on red clay loams on flats.

Canopy: Dominant canopy species are Ironbark (*Eucalyptus crebra*), Grey Bloodwood (*Corymbia clarksoniana*) and Peppermint (*Eucalyptus exserta*), with Moreton Bay Ash (*Corymbia tessellaris*) common. The canopy is typically 20 m tall, though ranges from 15 to 26 m. Crown cover averages 17%, but is quite variable.

Sub-canopy: The sub-canopy consists of young trees of canopy species, especially Grey Bloodwood, Ironbark and Moreton Bay Ash. Scattered *Bursaria incana*, Beefwood (*Grevillea striata*), *Acacia leiocalyx* and Red Ash (*Alphitonia excelsa*) reach the sub-canopy. The sub-canopy is sparse, typically 8 m tall (ranging from 5 – 15 m) and with a general crown cover of 1 to 2%.

Shrubs: The most common shrubs are wattles (*Acacia leiocalyx* and *A. decora*), Red Ash, Quinine Bush (*Petalostigma pubescens*) and Currant Bush (*Carissa ovata*). The shrub layer ranges from 0.5 to 4 m tall, typically 2 m.

Ground layer: The most common grasses are Sabi Grass (*Urochloa mosambicensis*), Black Spear Grass (*Heteropogon contortus*), Buffel Grass (*Pennisetum ciliare*) and Creeping Shade Grass (*Oplismenus aemulus*). Creeping Lantana (*Lantana montevidensis*) is widespread and abundant. Common forbs are Secca (*Stylosanthes scabra*), *Sida hackettiana* and *Tephrosia filipes*. This is a densely grassed ecosystem, with an average of 60% live grass and forb cover; 12% leaf litter and 28% bare ground. There is little fallen timber.

Weeds: Creeping Lantana (Class 3) is widespread across this ecosystem at a moderate density. Prickly Pear (*Opuntia* spp.) (Class 2) is also scattered across this RE. Environmental weeds that are not declared include Mayne's Pest (*Verbena aristigera*) and the exotic grasses Buffel Grass, Indian couch (*Bothriochloa pertusa*), Red Natal grass (*Melinis repens*) and Sabi Grass.

Photograph 4.8 RE 11.9.9 (Eucalyptus crebra Woodland) within eastern and western parts of the Study Area

iii. RE 11.10.1: Corymbia citriodora woodland on coarse-grained sedimentary rocks

VM Act Status: Least concern

Biodiversity Status: No concern at present

EPBC Act Status: Not listed

This community predominantly occurs in the northern portion of the Study Area (**Figure 11**). **Photograph 4.9** shows an example of this RE within the Study Area. This RE is located on soils derived from coarse grained sandstone, with sandstone outcropping along some gullies. The upper soil profile is sandy, with a reddish sandy clay loam at greater depth.

Canopy: Lemon-scented Gum (*Corymbia citriodora*) and Ironbark (*Eucalyptus crebra*) co-dominant, with some Brown Bloodwood (*Corymbia trachyphloia*). Grey bloodwood (*Corymbia clarksoniana*) occurs in lower slope area, especially in the centre of the Study Area. Kurrajong (*Brachychiton populneus*) trees are scattered across this community. The canopy ranges in height from 20 to 28 m, and is typically 25 m. Average crown cover is 25%.

Sub-canopy: The sub-canopy is made up of smaller canopy species, especially Lemon-scented Gums and Ironbarks, with Wattle (*Acacia julifera*), Red Ash (*Alphitonia excelsa*), and Emu Apple (*Owenia venosa*) the most common other sub-canopy species. The sub-canopy layer spans 6 to 15 m, with a median height of 8 m. The crown cover of the sub-canopy is an average of 14%.

Tall shrubs: This shrub layer is dominated by Quinine Bush (*Petalostigma pubescens*), *Acacia julifera*, Red Ash, Canthium (*Psydrax odorata*) and Sally Wattle (*Acacia salicina*) are also common. The taller shrub layer is from 2 to 5 m, typically around 2 m tall and fairly open.

Low shrubs: Dominating natives are Currant Bush (*Carissa ovata*), Dog's Balls (*Grewia latifolia*) and Triangle-leaved Hop Bush (*Dodonaea triangularis*). A sub-shrub layer, averaging 0.5 m in height is present and dominated by the weeds Creeping Lantana (*Lantana montevidensis*), and occasionally Indian Couch (*Bothriochloa pertusa*).

Ground layer: Dominating grasses are *Aristida* spp., *Entolasia stricta*, *Paspalidium albovillosum* and *Enneapogon lindleyanus*. The ground layer is typically made up of 50% cover of live grasses and forbs, 18% leaf litter, 2% fallen timber and 30% bare ground, including some small sandstone rocks.

Weeds: Creeping Lantana (*Lantana montevidensis*) (Class 3) is abundant across this RE. Small and isolated Prickly Pears (*Opuntia* spp.) (Class 2) are scattered at a low density (< 10% ground cover) across this RE, and across the Study Area. Other, non-declared common weeds in this ecosystem are primarily introduced grasses, especially Indian Couch (*Bothriochloa pertusa*) Green Panic (*Megathyrsus maximus*) and Red Natal Grass (*Melinis repens*).

Photograph 4.9 RE 11.10.1 (Corymbia citriodora Woodland) within the northern part of the Study Area

iv. Non-remnant

Non-remnant areas account for the largest vegetation unit and occur throughout the Study Area (**Figure 11**). This comprises cleared paddocks in the south of the Study Area, regrowth vegetation across the Study Area and the Link Road. **Photograph 4.10** shows an example of non-remnant vegetation within the Study Area.

Photograph 4.10 Non-remnant vegetation within the Study Area comprising grassland with scattered trees and shrubs.

4.3.2 EPBC Act Listed Communities

No TECs as defined under the EPBC Act were recorded during the field survey, and none are considered likely to occur despite the EPBC Protected Matters Search indicating the potential presence of four TECs (see **Section 4.1.1**).

4.3.3 VM Act Listed Communities

The REs recorded within the Study Area are listed under the VM Act as Least Concern. No REs listed as Of Concern or Endangered as defined under the VM Act were recorded within the Study Area during the field survey, and none are considered likely to occur.

4.4 Flora Species

The Study Area supports a high diversity of flora species, with a total of 243 flora species recorded within the Study Area and AECOM survey area. This included 210 (86%) native species and 33 (14%) exotic species representing 61 families and 163 genera. A complete flora species list is provided in **Appendix J**. Weed species recorded within the Study Area are described in detail in **Section 4.4.3**.

The dominant plant families recorded within the Study Area and AECOM survey area include the Poaceae (47 species), Fabaceae (18 species), Asteraceae (14 species), Mimosaceae

(12 species) and Myrtaceae (11 species) families. The most common genera included *Acacia* (11 species), *Eucalyptus* (seven species), *Eragrostis* (five species), *Sida* (five species), *Aristida* (four species) and *Corymbia* (four species) and (**Appendix J**).

No threatened flora species were recorded during any of the surveys within or surrounding the the Study Area. Threatened flora species listed under the EPBC Act and NC Act that were recorded in the database searches (**Appendices A** to **D**) are discussed in **Sections 4.4.1** to **4.4.2**, respectively.

4.4.1 Threatened Flora Species Listed under the EPBC Act

No threatened flora species listed under the EPBC Act have been recorded within or surrounding the the Study Area.

Table 4.6 provides a summary of the 12 threatened flora species listed under the EPBC Act that were listed in the EPBC Act Protected Matters Search Tool (**Appendix A**), Queensland Wildlife Online database search (**Appendix B**) and HERBRECS database (**Appendix C**) as being recorded or predicted to occur from the locality and an assessment of their likelihood of occurrence within the Study Area.

Table 4.6 EPBC Act Listed Threatened Flora Species Recorded from the Database Searches

Species	Common Name	EPBC Act Status[1]	Likelihood of Occurence within the Study Area
Bertya opponens	-	Vulnerable	Low
Bulbophyllum globuliforme	Miniature Moss-orchid	Vulnerable	Low
Cossinia australiana	Cossinia	Endangered	Low
Cycas megacarpa	-	Endangered	Low
Cycas ophiolitica	-	Endangered	Low
Dichanthium queenslandicum	King Blue-grass	Endangered	Low
Macadamia integrifolia	Macadamia Nut	Vulnerable	Low
Polianthion minutiflorum	-	Vulnerable	Low
Rhaponticum australe	Native Thistle	Vulnerable	Low
Samadera bidwillii	-	Vulnerable	Low
Streblus pendulinus	Siah's Backbone	Endangered	Low
Xerothamnella herbacea	-	Endangered	Low

[1] Threatened flora species status under the EPBC Act (current at 20 January 2015).

No threatened flora species listed in **Table 4.6** have been assessed as having a high or moderate likelihood of occurrence within the Study Area. All the species listed in **Table 4.6** are assessed in detail in **Appendix G**.

4.4.2 Threatened Flora Species Listed under the NC Act

No threatened flora species listed under the NC Act were recorded from the Study Area. However, 12 threatened flora species were listed in the EPBC Act Protected Matters Search Tool (**Appendix A**), Queensland Wildlife Online database search (**Appendix B**) and HERBRECS database (**Appendix C**) as being recorded or predicted to occur from the locality and are listed in **Table 4.7**.

Table 4.7 provides a summary of the threatened flora species listed under the NC Act that have been recorded or predicted to occur from the locality and an assessment of their likelihood of occurrence within the Study Area. *Desmodium macrocarpum*, a plant species that was previously listed as Near Threatened under the NC Act, has since been delisted and is not considered further in this report.

Table 4.7 NC Act Listed Threatened Flora Species Recorded from the Database Searches

Species	Common Name	NC Act Status[1]	Likelihood of Occurrence within the Study Area
Acacia pedleyi	-	Vulnerable	Moderate
Cossinia australiana	Cossinia	Endangered	Low
Cycas megacarpa	-	Endangered	Low
Dichanthium queenslandicum	King Blue-grass	Vulnerable	Low
Grevillea hockingsii	-	Vulnerable	Low
Macadamia integrifolia	Macadamia Nit	Vulnerable	Low
Polianthion minutiflorum	-	Vulnerable	Low
Rhaponticum australe	Native Thistle	Vulnerable	Low
Samadera bidwillii	-	Vulnerable	Low
Solanum dissectum	-	Endangered	Low
Solanum johnsonianum	-	Endangered	Low
Xerothamnella herbacea	-	Endangered	Low

[1] Threatened flora species status under the NC Act (current at 20 January 2015).

Cossinia australiana, Cycas megacarpa, Dichanthium queenslandicum, Macadamia integrifolia, Polianthion minutiflorum, Rhaponticum australe, Samadera bidwillii and *Xerothamnella herbacea* are also listed under the EPBC Act and have been considered previously in **Section 4.4.1**.

Acacia spania, Cerbera dumicola, Eucalyptus decolour and *Melaleuca groveana* which are all listed as Near Threatened under the NC Act, were listed as occurring within the locality in the Queensland Wildlife Online database search (**Appendix B**). These species have been

assessed as having a low likelihood of occurrence within the Study Area and further detail is provided in **Appendix G**.

One threatened flora species listed in **Table 4.7** has been assessed as having a moderate likelihood of occurrence within the Study Area, namely *Acacia pedleyi,* and is described below. The species listed in **Table 4.7** that have been assessed as having a low likelihood of occurrence within the Study Area are assessed in detail in **Appendix G**.

The Study Area does not contain any areas of critical habitat for flora species within the meaning of the NC Act.

i. Acacia pedleyi

a. Species Overview

EPBC Act Status: Not listed.

NC Act Status: Vulnerable

Acacia pedleyi is a shrub/small tree that occurs in open eucalypt forest or woodland on slopes and ridge tops in red loamy soils.

Acacia pedleyi normally inhabits eucalypt-dominated woodlands, open-forests and adjacent exposed rocky areas in the following Queensland Regional Ecosystem Land Zones (DotE, 2014k):

- Land Zone 3 – Alluvium (river and creek flats);
- Land Zone 9 – Undulating country on fine-grained sedimentary rocks; and
- Land Zone 10 – Sandstone ranges.

Regionally, this species has been found within open forest with Lemon-scented Gum (*Corymbia citriodora*), Gum-topped Box (*Eucalyptus moluccana*) and/or Ironbark (*E. crebra*), and in Popular Box (*E. populnea*) woodland.

Locally, this species is known to occur within RE 11.10.1 – *Corymbia citriodora* open forest on coarse-grained sedimentary rocks. However it was not recorded during detailed surveys.

b. Presence and Habitat in the Study Area

Acacia pedleyi has been recorded on slopes approximately 1 km beyond the eastern boundary of the Study Area in RE 11.10.1 (*Corymbia citriodora* woodland) (**Figure 12**). It has not been found within the Study Area during flora surveys, but potential low value habitat exists within RE 11.10.1 and this has been modelled in **Figure 13**. The Study Area does not contain any high value habitat for this species. The Study Area does not contain an undisturbed woodland understorey, and due to this species potential sensitivity to cattle grazing and historic clearing, no habitats within the Study Area have been mapped as high value.

The majority of the Study Area does not contain suitable habitat for the species.

c. Habitat Modelling

Habitat modelling has been conducted for this species. **Appendix I** contains a full description of the methodology used for habitat modelling. Areas of low value habitat for this species within the Study Area are presented on **Figure 13**.

Figure 15 shows that:

- No high value habitat for this species is present in the woodland areas of the Study Area as the Study Area does not contain an undisturbed woodland understorey, this species is potentially sensitive to cattle grazing and historic clearing and a lack of known records of the species within the Study Area despite searches for it;
- 132.4 ha of low value habitat occurs in patches of RE 11.10.1 (*Corymbia citriodora* woodland) in the northern, eastern and western portions of the Study Area where rocky, relatively intact understorey is present and where cattle grazing is restricted or absent; and
- 486.4 ha of unsuitable habitat for the *Acacia pedleyi* occurs in the Study Area.

4.4.3 Naturalised and Declared Weeds

A total of 35 naturalised and introduced species were found within the Study Area (see **Appendix J**). Most of these have little or no ecological impacts. However, several are environmentally harmful pests, including several introduced pasture grasses, such as Buffel Grass (*Pennisetum ciliare*), Indian Couch (*Bothriochloa pertusa*) and Green Panic (*Megathyrsus maximus* var. *pubiglumis*).

Three Declared Weed species listed under the LP Act were recorded within the Study Area, namely: Prickly Pear (*Opuntia stricta*) a Class 2 Declared Weed; Lantana (*Lantana camara*) and Creeping Lantana (*Lantana montevidensis*) which are both Class 3 Declared Weeds.

The Prickly Pears recorded within the Study Area were mostly < 1 m tall and the absence of fertile material inhibits complete confidence in their identification to species level. Most of the Prickly Pears recorded appear to be *Opuntia stricta*, but some appear to be the hairy, *O. tomentosa*. All of these *Opuntia* species are 'Declared' as a 'Class 2' weed under the LP Act, requiring Landowners must take "*reasonable steps to keep land free of Class 2 pests*".

Of the two species of Lantana species recorded, the larger *Lantana camara* is restricted within the Study Area to a small but dense gully adjacent to the transmission line easement (**Figure 11**). Creeping lantana (*Lantana montevidensis*) is abundant throughout most of the Study Area, with evidence suggesting that this species is most likely interrupting the natural ecological processes of the Study Area, especially the regeneration of the grass layer. The LP Act states that "*Landholders are not required to control Class 3 plants unless their land is adjacent to an environmentally significant area and they are issued with a pest control notice*". A 'Class 3' pest must not be sold.

4.5 Fauna Species

4.5.1 Overview

A total of 135 fauna species (including 127 native species and eight introduced species) have been recorded from the Study Area and AECOM survey area comprising three amphibians (including two native and one introduced species), 10 reptiles, 95 bird species and 27 mammal species (including 20 native and seven introduced species) (**Appendix K**).

The faunal diversity recorded from the Study Area and AECOM survey area is described in **Sections 4.5.2** to **4.5.6**. A complete list of fauna species recorded during the surveys within the Study Area and AECOM survey area is provided in **Appendix K**.

Sections 4.5.8 to **4.5.11** discuss threatened and/or migratory species listed under the EPBC Act, NC Act and Special Least Concern species listed under the NC Act that were recorded or have a high or moderate likelihood of occurrence within the Study Area. The locations of threatened fauna species recorded during surveys of the Study Area and surrounds is shown in **Figure 14**.

4.5.2 Amphibians and Reptiles

A total of three amphibian species (comprising two native and one introduced species) were recorded within the Study Area (**Appendix K**). Amphibians were reasonably abundant in suitable areas of habitat given the ephemeral nature of the seasonal wetland and ephemeral drainage lines at the Study Area. Species consisted mainly of adaptable frogs such as burrowing frogs (e.g. Ornate Burrowing Frog [*Platyplectrum ornatum*]) (**Appendix K**) that remain dormant during dry conditions and breed in eruptive patterns during wet conditions. The other amphibian species recorded was Green Tree Frog (*Litoria caerulea*) (**Appendix K**). No threatened amphibians have been recorded from the locality or the Study Area and none are considered likely to occur (**Appendix H**).

Exotic Cane Toads (*Rhinella marinus*) occurred throughout the Study Area (**Appendix K**), and these are known to have the potential to impact negatively on native species that use them as a food source, such as frog-feeding snakes.

A total of 10 native reptile species were recorded within the Study Area (**Appendix K**). Reptiles recorded consisted of common, widespread species including geckoes such as the Eastern Stone Gecko (*Diplodactylus vittatus*) and Dubious Gecko (*Gehyra dubia*); and dragons such as the Tommy Roundhead Dragon (*Diporiphora australis*) and Bearded Dragon (*Pagona barbata*) (**Appendix K**). Three snake species were recorded, namely the: Black-headed Python (*Aspidites melanocephalus*), Carpet Python (*Morelia spilota*) and Red-naped Snake (*Furina diadema*) (**Appendix K**).

No threatened reptile species were recorded within the Study Area.

4.5.3 Birds

A total of 95 native bird species were recorded within the Study Area and the avian fauna was generally diverse and abundant during all survey periods (**Appendix K**). Suitable foraging habitats and remnant pools were present for granivores, insectivores and nectarivores; however predatory birds were comparatively scarce at the Study Area. This may be a result of the relatively depauperate small mammal population present at the Study Area.

The majority of the bird species recorded were common, widespread species, however one threatened bird species listed as Vulnerable under the EPBC Act and NC Act was recorded, namely the: Squatter Pigeon (southern subspecies). Two species listed as Migratory under the EPBC Act, namely the Rainbow Bee-eater (*Merops ornatus*) and Rufous Fantail (*Rhipidura rufifrons*), were also recorded and 15 species listed as Marine species under the EPBC Act (excluding the Rainbow Bee-eater and Rufous Fantail which are also listed as Marine species under the EPBC Act) were recorded within the Study Area (**Appendix K**). During AECOM's 2012 surveys, one species that was previously listed as Near Threatened under the NC Act, the Black-chinned Honeyeater (*Melithreptus gularis*), was recorded from the Study Area. This species has since been delisted from the NC Act.

The threatened and/or migratory bird species recorded from the Study Area and those with a high or moderate likelihood of occurrence within the Study Area are considered in more detail in **Sections 4.5.8** to **4.6.10**.

4.5.4 Non-flying Mammals

A total of 14 non-flying mammals, comprising seven native and seven introduced species, were recorded within the Study Area (**Appendix K**). A relatively low diversity of non-flying mammals was recorded during the field surveys, and the majority of species were common and widespread, including domestic animals and feral animals. Two common native arboreal mammals, the Squirrel Glider (*Petaurus norfolcensis*) and Greater Glider (*Petaurus volans*), were observed (**Appendix K**).

Terrestrial mammals included the Short-beaked Echidna, which is a Special Least Concern Species under the NC Act and is discussed further in **Section 4.5.11**.

Macropods were relatively abundant in the Study Area and a number of species were observed during surveys, including the Eastern Grey Kangaroo (*Macropus giganteus*) and Swamp Wallaby (*Wallabia bicolor*) (**Appendix K**).

Larger predatory mammals in the Study Area were restricted to introduced species such as the Domestic Dog/Dingo (*Canis familiaris*) and Feral Cat (*Felix catus*) (**Appendix K**).

The Study Area is currently grazed by European Cattle (*Bos taurus*) which cause land degradation through the creation of access pathways through the vegetation and by eroding the banks of ephemeral drainage lines. Other exotic animals recorded included the Feral Pig (*Sus scrofa*) and European Rabbit (*Oryctolagus cuniculus*) (**Appendix K**). Feral Pigs cause

damage to wetland habitats during wet conditions and evidence of pig wallows were observed during the field survey.

4.5.5 Bats

The Study Area supports an abundance and diversity of micro-chiropteran (insectivorous) bats (microbats) with at least 11 microbat species recorded during the field survey (**Appendix K**). Two species recorded, *Mormopterus* sp. and *Nyctophilus* sp., could not be identified to species level.

Large areas of foraging habitat for microbats are present in the Study Area including standing water in the form of artificial farm dams and remnant pools along ephemeral drainage lines, and shelter in the form of tree hollows and crevices. The northern and western sections of the Study Area provides more suitable shelter habitat for cave-dependant bats in the form of cracks and crevices within the sandstone outcrops of the riparian areas. All woodland areas of the Study Area would support shelter for hollow-dependant species. Cave-dependant species are likely to also drink and forage over low-lying flat areas adjacent to the rocky riparian areas.

One species listed as Near Threatened under the NC Act, the Little Pied Bat (*Chalinolobus picatus*), was recorded from the Study Area. None of the bat species recorded from the Study Area are listed as threatened under the EPBC Act.

4.5.6 Feral Animals

There are three classes of declared animals under the LP Act. These animals are targeted for control as they represent a threat to primary industries, natural resources and the environment. The definitions of each class are described in **Section 2.4**.

No Class 1 or Class 3 Declared Animals have been recorded in the Study Area.

Five Class 2 Declared Animals were recorded from the Study Area including the Dingo, European Red Fox, Feral Cat, Feral Pig, and European Rabbit (**Appendix K**). Other feral animals recorded from the Study Area include the House Mouse and the Cane Toad (**Appendix K**).

4.5.7 Back on Track Species

The following species recorded or assessed as having a high or moderate likelihood of occurrence within the Study Area that are listed as priority species under the Back on Track framework are listed below:

- Collared Delma (Back on Track rank of high);
- Yakka Skink (Back on Track rank of high);
- Red Goshawk (Back on Track rank of high);
- Koala (Back on Track rank of low);

- Short-beaked Echidna (Back on Track rank of low);
- Northern Quoll (Back on Track rank of medium);
- Grey-headed Flying-fox (Back on Track Rank of critical); and
- South-eastern Long-eared Bat (Back on Track Rank of high).

4.5.8 Threatened Fauna Species Listed under the EPBC Act

One threatened fauna species listed as Vulnerable under the EPBC Act has been recorded from the Study Area, namely the Squatter Pigeon (southern subspecies).

Although not recorded from the Study Area, a further three threatened species listed under the EPBC Act have been recorded from database searches of the locality and have been assessed as having a high likelihood of occurrence within the Study Area, including the Koala, Northern Quoll and Collared Delma.

Table 4.8 provides a summary of the threatened fauna species listed under the EPBC Act that were recorded during the surveys or identified in the databases (**Appendix A** to **D**) as potentially occurring. **Table 4.8** also provides an assessment of their likelihood of occurrence within the Study Area.

Table 4.8 EPBC Act Listed Threatened Fauna Species

Scientific Name	Species	EPBC Act Status[1]	Likelihood of Occurrence within the Study Area
Fish			
Bidyanus bidyanus	Silver Perch	Critically Endangered	Low
Reptiles			
Delma torquata	Collared Delma	Vulnerable	High
Furina dunmalli	Dunmall's Snake	Vulnerable	Low
Rheodytes luecops	Fitzroy River Turtle	Vulnerable	Low
Denisonia maculata	Ornamental Snake	Vulnerable	Low
Ergernia rugosa	Yakka Skink	Vulnerable	Moderate
Birds			
Rostratula australis	Australian Painted Snipe	Endangered, Migratory, Marine*	Moderate
Turnix melanogaster	Black-breasted Button-quail	Vulnerable	Low
Poephila cincta cincta	Black-throated Finch (white-rumped species)	Endangered	Low
Erythrotriorchis radiatus	Red Goshawk	Vulnerable	Moderate

Table 4.8 EPBC Act Listed Threatened Fauna Species

Scientific Name	Species	EPBC Act Status[1]	Likelihood of Occurrence within the Study Area
Geophaps scripta scripta	Squatter Pigeon (southern subspecies)	Vulnerable	Present
Neochmia ruficauda ruficauda	Star Finch (eastern subspecies)	Endangered	Low
Mammals			
Dasyurus hallucatus	Northern Quoll	Endangered	High
Phascolarctus cinereus	Koala	Vulnerable	High
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Moderate
Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Moderate
Nyctophilis corbeni	South-eastern Long-eared Bat^	Vulnerable	Moderate
Hipposideros semoni	Semon's Leaf-nosed Bat	Endangered	Low

1 Threatened, migratory and/or marine species status under the EPBC Act (current at 20 January 2015).

* Species listed as marine and migratory under the EPBC Act as Painted Snipe (*Rostratula benghalensis*) (sensu lato).

^ Species listed under the NC Act as Eastern Long-eared Bat (*Nyctophilus timoriensis*).

Three additional EPBC Act listed fauna species were assessed by AECOM (2012b) that are not included in **Table 4.8**. These are discussed below:

- Brigalow Scaly-foot (*Paradelma orientalis*): the Study Area was assessed by AECOM (2012b) as containing suitable habitat for this species. At the time of the assessment, the Brigalow Scaly-foot was listed as Vulnerable under both the EPBC Act and the NC Act. As such, this species was included in the EPBC Act Referral to the DotE and was considered to be one of the project's contolling provisions. However, it has since been de-listed from both Acts and is therefore not discussed further in this report.

- Spotted-tailed Quoll (SE mainland population) (*Dasyurus maculatus maculatus*) listed as Vulnerable under the NC Act and Endangered under the EPBC Act; and Brush-tailed Rock Wallaby (*Petrogale penicillata*) listed as Vulnerable under both the EPBC Act and the NC Act: both of these species were assessed by AECOM as being unlikely to occur in the Study Area as the Study Area is locaated outside of both species known ranges. They were not recorded in any of the database searches conducted by Cumberland Ecology (refer to **Section 3.1.1**) and therefore these species are not considered further in this report.

An assessment of the likelihood of occurrence of threatened fauna has been conducted and is presented in **Appendix H**. The threatened fauna species listed in **Table 4.8** that were recorded within the Study Area or have been assessed as having a high or moderate likelihood of occurrence within the Study Area are described below.

i. Collared Delma (Delma torquata)

a. Species Overview

EPBC Act Status: Vulnerable

NC Act Status: Vulnerable

The Collared Delma is endemic to Queensland and is restricted to Central and South-east Queensland and northern New South Wales. Due to specific habitat requirements of the Collared Delma, the species' distribution is highly fragmented and restricted to only a few locations. Typically, the Collared Delma occurs in small isolated populations throughout its distribution (DotE, 2014k).

Regionally, the Collared Delma normally inhabits eucalypt-dominated woodlands, open-forests and adjacent exposed rocky areas in the following Queensland Regional Ecosystem Land Zones (DotE, 2014k):

- Land Zone 3 - Alluvium (river and creek flats);
- Land Zone 9 - Undulating country on fine-grained sedimentary rocks; and
- Land Zone 10 - Sandstone ranges.

The Collared Delma has been recorded from the following REs (DotE, 2014k):

- RE 11.3.2 - Poplar Box (*Eucalyptus populnea*) woodland on alluvial plains.
- RE 11.9.10 - Poplar Box/ Brigalow (*Acacia harpophylla*) open-forest on fine-grained sedimentary rocks.
- RE 11.10.1 - Lemon-scented Gum (Blue Spotted Gum) (*Corymbia citriodora*) open forest on coarse-grained sedimentary rocks
- RE 11.10.4 - Gum-topped Ironbark (*Eucalyptus decorticans*), Budgeroo/ Brown Hazelwood (*Lysicarpus angustifolius*) +/- *Eucalyptus species, Corymbia* species, *Acacia* species woodland on coarse-grained sedimentary rocks.

The presence of rocks, logs, bark and other coarse woody debris, and mats of leaf litter (typically 30–100 mm thick) appears to be an essential characteristic of the Collared Delma microhabitat and is always present where the species occurs (DotE, 2014k).

Canopy tree species present in suitable habitat for this species generally comprise: Silver-leaved Ironbark (*Eucalyptus melanophloia*), Moreton Bay Ash (*E. tessellaris*), Gum Top Box (*E. moluccana*) and Tallowood (*E. microcorys*) (DotE 2014i).

Given the difficulty in detecting this species, the DotE considers that an occurrence of important habitat for the Collared Delma is a surrogate for an 'important population' of the species. Suitable habitat for listed Brigalow Belt reptiles is considered important if it is (DotE, 2014k):

- habitat where the species has been identified during a survey;
- near the limit of the species' known range;
- large patches of contiguous, suitable habitat and viable landscape corridors (necessary for the purposes of breeding, dispersal or maintaining the genetic diversity of the species over successive generations); or
- a habitat type where the species is identified during a survey, but which was previously thought not to support the species.

Threats to the Collared Delma include: habitat loss through clearing for agriculture; habitat degradation by overgrazing by stock; removal of rocks; course woody debris and ground litter; use of agricultural chemicals; predation by feral Cats and Foxes; and weed invasion (DotE 2014i).

b. Presence and Habitat in the Study Area

The Collared Delma has not been recorded from the Study Area and has been assessed as having a high likelihood of occurrence within the Study Area. This species or its habitat was predicted to occur in the Study Area in the EPBC Act Protected Matters Search Tool (**Appendix A**).

The distribution of habitat for this species in the Study Area is shown in **Figure 15**. Suitable habitat for this species is present on the Study Area, largely confined to the occasional boulders and rocky outcroppings in the timbered northern areas. RE 11.10.1 is present in the Study Area, and the Collared Delma has been recorded in the region from this RE (DotE, 2014k). In addition, land forms 3, 9 and 10 are also regarded as suitable habitat for the Collared Delma (DotE 2014i), all of which are present within the Study Area.

However, the majority of the Study Area does not contain essential habitat in the form of dense ground cover as well as loose bush rocks for this species as defined by the DotE (2014i). Although some areas of potential habitat are present in the form of boulders and rocky outcrops in the northern portion of the Study Area, large patches of contiguous, suitable habitat and viable landscape corridors are not present.

In addition, the potential habitat for this species that is present within the Study Area is not considered to comprise "important habitat" according to the Draft Referral Guidelines for the Brigalow Belt Reptiles (SEWPaC, 2011a). This is because:

- No individuals have been recorded within the Study Area;
- The Study Area is not considered to be near the limit of the species' known range;
- Large patches of contiguous, suitable habitat and viable landscape corridors are absent from the Study Area as the Study Area has been extensively disturbed and subjected to cattle grazing; and
- The Study Area does not comprise a new habitat type for this species.

c. Habitat Modelling

Habitat modelling has been conducted for this species. **Appendix I** contains a full description of the methodology used for habitat modelling. Areas of habitat for this species within the Study Area are presented on **Figure 15**.

Figure 15 shows that:

- No high value habitat for this species is present in the woodland areas of the Study Area due to a lack of essential habitat features;
- 70.8 ha of low value habitat occurs in patches in the northern, eastern and western portions of the Study Area which contain some features suitable for Collared Delma such a dead logs; and
- 547.9 ha of unsuitable habitat for the Collared Delma covers the majority of the Study Area in areas containing no shelter features, such as dense ground cover and loose bush rocks.

ii. Yakka Skink (Egernia rugosa)

a. Species Overview

EPBC Act Status: Vulnerable

NC Act Status: Vulnerable

The core habitat of the Yakka Skink is within the Mulga Lands or Brigalow Belt Bioregions (**Figure 4**) (DotE, 2014m).

The Yakka Skink is known to occur in open dry sclerophyll forest, woodland and scrub. Common woodland and open forest types where this species is found include (DotE, 2014m):

- Brigalow (*Acacia harpophylla*);
- Mulga (*A. aneura*);
- Bendee (*A. catenulata*);

- Lancewood (*A. shirleyi*);
- Belah (*Casuarina cristata*);
- Poplar Box (*Eucalyptus populnea*);
- Ironbark (*Eucalyptus spp*.); and
- White Cypress Pine (*Callitris glaucophylla*).

This species is also known to occur in the following landforms: alluvium (river and creek flats), clay pans not associated with current alluvium, old loamy and sandy plains, ironstone jump-ups, undulating country on fine-grained sedimentary rocks and sandstone ranges (DotE, 2014m).

The Yakka Skink is commonly found in cavities under and between partly buried rocks, logs or tree stumps, root cavities and abandoned animal burrows. The species often takes refuge in large hollow logs and has been known to excavate deep burrow systems, sometimes under dense ground vegetation (DotE, 2014m). In cleared habitat, this species can persist where there are shelter sites such as raked log piles, deep gullies, tunnel erosion/sinkholes and rabbit warrens. The species has also been found sheltering under sheds and loading ramps. This species is not generally found in trees or rocky habitats (DotE, 2014m).

The Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (SEWPaC, 2011a) state that populations are small and often hard to find. As such, those guidelines list important habitat as:

- Any contiguous patch of suitable habitat, particularly remnant vegetation, where a colony is known or identified; and
- Any microhabitat where colonies are likely to be found.

The main threat to the Yakka Skink is habitat reduction and degradation (DotE, 2014m). The Brigalow Belt Bioregion is an area of high human impact where much of the land has been modified through agricultural and urban development (Cogger *et al.* 1993). Other threats include inappropriate roadside management, including road widening and removal of microhabitat, such as rocks, logs, dense leaf litter and fallen bark. Feral animal impacts include predation by Foxes (*Vulpes vulpes*) and Feral Cats (*Felis catus*) and destruction of rabbit warrens which could be used as a shelter site for the Yakka Skink (DotE, 2014m).

b. Presence and Habitat in the Study Area

The Yakka Skink has not been recorded from the Study Area and has been assessed as having a moderate likelihood of occurrence within the Study Area. This species or its habitat was predicted to occur in the Study Area in the EPBC Act Protected Matters Search Tool (**Appendix A**).

The Yakka Skink is noted as being previously recorded approximately 1.5km north east of the Study Area in the Callide Timber Reserve (Parsons Brinkerhoff, 2006). However, no

information regarding the date of the record or the type of habitat it was recorded in is available.

The distribution of habitat for this species within the Study Area is shown in **Figure 16**. The Study Area is likely to provide potential habitat for this species as it has broad habitat preferences and the Study Area contains broadly suitable habitat. The wooded northern and eastern portions of the Study Area contain occasional rocky outcrops, boulders, fallen timber and log piles which provide some habitat for this species.

Brigalow is absent from the Study Area due to a lack of suitable soils. The majority of other preferred tree species that form habitat for this species are also absent within the Study Area, with the exceptions of Poplar Box and Ironbarks.

In accordance with the Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (SEWPaC, 2011a) the Study Area does not contain important habitat for this species as the Study Area does not include habitats or microhabitats where a colony is known to occur. Additionally, the habitat within the Study Area is not contiguous with the vegetation within the Callide Timber Reserve where a previous record is known from, being separated by both a powerline corridor and a haul road. Given the disturbance of the Study Area by past clearing and cattle grazing, the potential habitats within the Study Area are not considered likely to support the species.

European Rabbits (*Oryctolagus cuniculus*) occur on the Study Area. The warren networks these animals create may be utilised by the Yakka Skink, however no evidence of this was recorded during surveys.

c. Habitat Modelling

Habitat modelling has been conducted for this species. **Appendix I** contains a full description of the methodology used for habitat modelling. Areas of habitat for this species within the Study Area are presented on **Figure 16**.

Figure 16 shows that:

- No high value habitat for this species is present in the Study Area due to the disturbance of the Study Area from cattle grazing and historic clearing;
- 62.2 ha of low value habitat occurs in patches of RE 11.9.9 (*Eucalyptus crebra* woodland) in the northern, eastern and western portions of the Study Area, which contain some features suitable for Yakka Skink, such as rock piles and dead logs; and
- 556.5 ha of unsuitable habitat for the Yakka Skink is present in the majority of the Study Area in areas containing no shelter features such as rocky outcrops, boulders, fallen timber and log piles.

iii. Australian Painted Snipe

a. Species Overview

EPBC Act Status: Endangered, Migratory and Marine

NC Act Status: Vulnerable

The Australian Painted Snipe is also listed as a migratory and marine species under the EPBC Act under the name Painted Snipe (*Rostratula benghalensis*). It has been recorded at wetlands in all states of Australia but 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 (DotE 2014).

The Australian Painted Snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of Lignum (*Muehlenbeckia* spp.) or Canegrass or sometimes Tea-trees (*Melaleuca* spp.). The Australian Painted Snipe sometimes utilises areas that are lined with trees, or that have some scattered fallen or washed-up timber. The breeding habitat requirements of the Australian Painted Snipe are likely to be quite specific and include shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby (DotE 2014).

A number of key threatening processes have been identified for the Australian Painted Snipe. They include habitat loss and degradation associated with drainage and/or diversion of water for agriculture or reservoirs, habitat loss or degradation from trampling by domestic stock, nutrient enrichment and substrate disturbance of aquatic habitat, particularly where cattle are concentrated around wetlands during the dry season, as well as predation by feral animals (DotE 2014).

b. Presence and Habitat in Study Area

The Australian Painted Snipe was not recorded during any surveys of the Study Area and has been assessed as having a moderate likelihood of occurrence within the Study Area. This species or its habitat was predicted to occur in the Study Area in the EPBC Act Protected Matters Search (**Appendix A**).

The distribution of habitat for this species within the Study Area is shown in **Figure 17**.

This bird species is known to use littoral areas around large dams and seasonal wetlands as habitats (DotE 2014). Therefore, potential habitat is present in the form of the two large dams in the northern portion of the Study Area and a seasonal wetland in the central portion of the Study Area (**Figure 17**). The southern farm dam is not considered to comprise habitat for this species because it is small and lacks wetland vegetation due to disturbances by livestock.

c. Habitat Modelling

Habitat modelling has been conducted for this species. **Appendix I** contains a full description of the methodology used for habitat modelling. Areas of habitat for this species within the Study Area are presented on **Figure 17.**

Figure 17 shows that:

- No high value habitat for this species is present in the Study Area due to the absence of permanent wetlands in good condition and the presence of only disturbed farm dams and seasonal wetland;
- 3.4 ha of the Study Area contains low value habitat for this species in the form of the two northern farm dams and the seasonal wetland; and
- The remaining 615.3 ha of the Study Area is considered unsuitable for this species.

iv. Red Goshawk (Erythrotriochis radiatus)

a. Species Overview

EPBC Act Status: Vulnerable

NC Act Status: Endangered

The Red Goshawk is a large, swift and powerful rufous-brown hawk. It occurs in coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia, including riverine forests (DotE, 2014p). Vegetation types utilised include eucalypt woodland, open forest, tall open forest, gallery rainforest, swamp sclerophyll forest, and rainforest margins. These habitats typically support high bird numbers and biodiversity, especially medium to large species which the goshawk requires for prey. The Red Goshawk nests in large trees, frequently the tallest and most massive in a tall stand, and nest trees are invariably within 1 km of permanent water (DotE, 2014p).

Red Goshawks are endemic to Australia and prefer undisturbed forest or woodland with a mosaic of mixed vegetation, especially patches that include river, billabong or swamp wetland with large bird populations (DotE 2014). It is suspected that the distribution of the Red Goshawk is slightly fragmented, but there is no evidence that fragmentation in the Red Goshawk distribution is severe. Fragmentation may occur in the more heavily settled and cleared regions of the species' range, such as in the coastal lowlands of eastern Queensland. The degree of this fragmentation in the lowlands may be masked by the persistence of birds in the adjacent foothills and hinterland country which has not suffered the same degree of clearing (DotE, 2014p).

Habitat loss has been, and is likely to continue to be, the biggest threat to the viability of the Red Goshawk, especially in eastern Australia (DotE, 2014p). Widespread deforestation, particularly of lowland and riverine forests, is thought to have caused the historical decline in northeastern New South Wales and Queensland (DotE, 2014p).

b. Presence and Habitat in Study Area

This species was not recorded during any surveys of the Study Area and this species or its habitat was predicted to occur in the Study Area in the EPBC Act Protected Matters Search (**Appendix A**). This species has been assessed as having a moderate likelihood of occurrence within the Study Area based on the presence of some suitable habitat in the form of RE 11.3.25: *Eucalyptus tereticornis* woodlands fringing drainage lines and permanent water (i.e. the two large northern farm dams) being present in the Study Area with a relative abundance of prey.

c. Habitat Modelling

Habitat modelling has been conducted for this species. **Appendix I** contains a full description of the methodology used for habitat modelling. Areas of habitat for this species within the Study Area are presented on **Figure 18**.

Figure 18 shows that:

- No high value habitat for this species is present in the Study Area due to clearing and disturbance of potential habitats within the Study Area; a lack of natural permanent water; and no records of this species occur within the Study Area;
- 395 ha of low value habitat for this species is present in woodland areas that cover the majority of the Study Area. These woodlands support potential prey; and
- 223.7 ha of unsuitable habitat for the Red Goshawk comprised of all other non-woodland areas present in the central southern portion of the Study Area.

v. Squatter Pigeon (southern subspecies) (Geophaps scripta scripta)

a. Species Overview

EPBC Act Status: Vulnerable

NC Act Status: Vulnerable

The Squatter Pigeon (southern subspecies) is a medium-sized, ground-dwelling pigeon that measures approximately 30 cm in length. The Squatter Pigeon (southern subspecies) occurs in tropical, open, dry sclerophyll woodlands and, savannahs of north-eastern Australia. This species is most often observed in the grassy understorey of eucalypt woodlands, close to permanent water bodies. This species has also been recorded in sown grasslands with scattered remnant trees, disturbed habitats (i.e. around stockyards, along roads and railways, and around settlements), in scrub and *Acacia* growth. The Squatter Pigeon (southern subspecies) feeds on the seeds of grasses, legumes and other herbs and forbs, and sometimes eats fallen seeds from acacias (DotE, 2014s).

The Handbook of Australian and New Zealand Birds (Higgins and S.J.J.F, 1996) provides the most detailed summary of habitats used by the Squatter Pigeon across its range. That description is as follows:

"Terrestrial; in tropical open dry sclerophyll woodlands and, less often, savannas, of ne. Aust. Frith identifies four important woodland communities in n. areas of range, round Mitchell-Normanby (subspecies *peninsulae*): (1) Ironbark: dominated by Chillagoe Ironbark *Eucalyptus cullenii* and Silver-leafed Box *E. shirleyi,* with scattered or locally abundant bloodwoods; dominant ground-cover Kangaroo Grass *Themeda triandra*; (2) Gum: dominated by large and spreading Poplar Gums *E. alba*, with Blue Gums (*E. tereticornis*)*, Acacia*, *Melaleuca* and *Alphitonia*; ground-cover of grasses varying in height and structure; (3) Bloodwood-Stringybark: dominated by Darwin Stringybark *E. tetradonta*, Red Bloodwood *E. polycarpa* and Gum-topped Bloodwood *E. dichromophloia*, sometimes with *Acacia, Leptocarpus, Alphitonia, Melaleuca, Thryptomene* and *Pandanus*: ground-cover mainly short grasses; and (4) Mixed eucalypt: varying, small communities of *Eucalyptus* woodland. Appear to prefer areas of sandy soil dissected by low gravelly ridges, which have most open and shortest cover of grasses, allowing easier movement; less common on heavier soils with dense growth of grasses (Frith). Rarely, on bare plains sparsely vegetated with grass and shrubs; occasionally in sown grasslands and pastures, especially with a few scattered trees. Nearly always near permanent water, such as rivers, creeks and waterholes."

The Squatter Pigeon nests on the ground; sometimes among or sheltered by vegetation, including short dray grass, grass tussocks or bushes (Higgins and S.J.J.F, 1996; DotE, 2014s) and such nesting makes the species vulnerable to feral animals and to the impacts of cattle and sheep grazing (Higgins and S.J.J.F, 1996). Breeding habitat occurs on stony rises occurring on sandy or gravely soils (DotE, 2014s), rather than areas where there are heavier soils (Higgins and S.J.J.F, 1996).

The Squatter Pigeon (southern subspecies) was once common and widespread nationally and spread from southern New South Wales to the Burdekin River in northern Queensland. It is now widespread in northern and eastern Queensland, with very few recent records from New South Wales (NSW NPWS, 1999). It now occurs on the inland slopes of the Great Dividing Range and its distribution extends from the Burdekin-Lynd divide in central Queensland, west to Charleville and Longreach, east to the coastline between Proserpine and Port Curtis (near Gladstone), and south to scattered sites throughout south-eastern Queensland (DotE, 2014s). Across its range it is thought to occur as a continuous, inter-breeding population, with no single populations identified as being important for its long-term survival or recovery (DotE, 2014s).

The main threats to the Squatter Pigeon (southern subspecies) are the degradation of habitat by overgrazing by stock, the degradation of habitat by invasive weeds, such as Buffel Grass (*Cenchrus ciliaris*), and predation by numerous avian and terrestrial predators (DotE, 2014s).

No habitat critical to the survival of the Squatter Pigeon (southern subspecies) within Queensland has been nominated under the EPBC Act.

b. Presence and Habitat in the Study Area

The Squatter Pigeon (southern subspecies) has been recorded from two locations in the north eastern Study Area, and two just to the north of the Study Area. All records are in areas with lighter sandy soils, in the vicinity of the two large farm dams that provide a source of permanent water. These farm dams are located along ephemeral drainage lines. The modelled distribution of habitat for this species is shown in **Figure 19**.

Habitat in the form of grasslands under open, regenerating woodland are common in many parts of the Study Area. The Study Area also supports large permanent water sources in the form of two farm dams, and cattle drinking troughs also provide a year round water supply for this species. However, low shrub, woody debris and tussock vegetation is limited, with the later mainly confined to the edges of the two water bodies. Woody debris is most dense in the riparian areas, with the grassy woodland areas more suitable for this species being relatively depauperate in these features due to the relatively recent regeneration occurring in these areas.

Individuals of this species were most regularly encountered foraging along the edges of unsealed roads fringed by tall grass on the edge of regenerating woodlands. These areas provided the most significant areas of exposed earth within the Study Area for dust bathing behaviour, which is a common characteristic trait of the species.

c. Habitat Modelling

Habitat modelling has been conducted for this species. **Appendix I** contains a full description of the methodology used for habitat modelling. Areas of habitat for this species within the Study Area are presented on **Figure 19**.

Figure 19 shows that:

- 147.1 ha of high value habitat for this species is present in the northern portion of the Study Area and the two northern farm dams that contain permanent water;
- 247.9 ha of low value habitat for this species is present in the northern, eastern and western portions of the Study Area; and
- 223.7 ha of unsuitable habitat across the central southern and eastern portions of the Study Area.

vi. Northern Quoll

a. Species Overview

EPBC Act Status: Endangered

NC Act Status: Not listed

The Northern Quoll is the smallest of the four Australian quoll species. It has a pointy snout and reddish brown fur, with a cream underside. It has white spots on its back and rump and

a long, sparsely-furred, unspotted tail with a length ranging between 202 and 345 mm. Northern Quolls can weigh up to 1.2 kg, with the males being larger than the females and it is the most arboreal and aggressive of the four quoll species.

The Northern Quoll occupies a variety of habitats across its current range, including rocky areas, eucalypt forest and woodlands, rainforests, sandy lowlands and beaches, shrublands, grasslands and deserts. Habitat usually includes some form of rocky area or structurally diverse woodland or forest for denning / shelter purposes with surrounding vegetated habitats used for foraging and dispersal. This denning / shelter habitat is important for the purposes of breeding and refuge from fire and/or predation, and is therefore a key habitat requirement for the long term viability of the species (Commonwealth of Australia, 2011).

A key threat to the continued existence of the Northern Quoll is the Cane Toad, which poisons the Northern Quoll when Northern Quolls eat toads (Commonwealth of Australia, 2011). The Cane Toad is such a threat that Northern Quoll populations collapse soon after Cane Toads first invade an area (Commonwealth of Australia, 2011). Today, according to the National Recovery Plan for Northern Quolls, viable populations of the Northern Quoll are only found where Cane Toads are not present (offshore islands and parts of Western Australia), or where extensive undisturbed areas of rocky habitats provide opportunities for Northern Quolls to persist and obtain food and water without Cane Toads (Commonwealth of Australia, 2011).

b. Presence and Habitat in the Study Area

Although targeted in detailed surveys, the Northern Quoll has not been found in the Study Area, though this species or its habitat was predicted to occur in the Study Area by the EPBC Act Protected Matters Search Tool (**Appendix A**).

Two records of this species have been made from nearby areas and it is likely that the species persists to the east of the Study Area in large areas of intact forest and woodland nearby. The records are as follows:

- A potential scat from this species was recorded less than 1 km east of the Study Area in a large block of dense woodland and forest habitat (**Figure 20**). Visually, Northern Quoll scats are fairly distinctive and can usually be differentiated from fox or cat scats with a reasonable degree of confidence (Triggs (2012) in AECOM 2012b). The scat was sent for analysis of hair structures by Barbara Triggs of Dead Finish Pty Ltd., however, analysis could not positively confirm the scat as belonging to a Northern Quoll, as grooming hairs were not present (AECOM, 2012b).

- On 17 May 2012, a Northern Quoll was captured at the Callide Power Station by staff (the animal was photographed and taken to a vet for identification, before being released) (J. Dunlop pers. comm. 28/04/12, in AECOM 2012b). Callide Power Station staff reported having seen a Northern Quoll a number of weeks earlier, as well as regularly observing scats. The capture site is approximately 12 km south-east from the Study Area.

Despite the records from the locality, the Northern Quoll is unlikely to frequent the Study Area, though individuals may potentially make transient use of the more undisturbed parts of the Study Area. There are several reasons that the Northern Quoll may not utilise the Study Area, as outlined below. The major reason is that Cane Toads are present and are found in farm dams and drainage lines on the Study Area. This factor alone almost certainly precludes a viable occurrence of Northern Quolls within the Study Area, as indicated by the Northern Quoll Recovery Plan (Hill and Ward, 2010). In addition, the habitats of the Study Area have been subject to clearing and modification for cattle grazing, and for road and powerline infrastructure. Woodlands present in the Study Area are fragmented and a high proportion of the area is now grassland. Feral Cats and Red Foxes, which prey upon Northern Quolls, are also established on the Study Area.

To take a precautionary approach, due to the proximity of intact probable Northern Quoll habitat to the east, the woodland areas present in the Study Area, including the northern drainage lines have been mapped as Northern Quoll habitat and is shown in **Figure 20**.

c. Habitat Modelling

Habitat modelling has been conducted for this species. **Appendix I** contains a full description of the methodology used for habitat modelling. Areas of habitat for this species within the Study Area are presented on **Figure 20**.

Figure 20 shows that:

- No high value habitat occurs in the Study Area due to the extensive clearing and cattle grazing in these areas, the presence of Cane Toads in ephemeral drainage lines and farm dams which poison Northern Quolls, and the presence of feral cats and foxes which prey upon Northern Quolls;
- 395 ha of low value habitat occurs in the northern, eastern and western portions of the Study Area, in areas that contain some suitable habitat features for supporting a population of Northern Quolls, but do not contain critical habitat features; and
- 223.7 ha of unsuitable habitat for the Northern Quoll is present in the central southern, western and eastern portions of the Study Area pre-dominantly in the form of the disturbed grasslands.

vii. Koala (Phascolarctos cinereus)

a. Species Overview

EPBC Act Status: Vulnerable

NC Act Status: Special least concern

Koalas occur in subhumid woodlands in southern and central Queensland, and in some eucalypt woodlands along watercourses in the semiarid environments of the western part of Queensland (DotE, 2014). The Koala is known to occur in the Brigalow Belt Bioregion, where the Study Area is located. Koalas forage on the leaves of a wide range of *Eucalyptus*

spp., however they have distinct preferences for some species over others that vary across their range. Commonly preferred feed trees in Queensland are members of the Red Gum group (DotE, 2014). While Koalas have been observed sitting in or eating up to 120 species of eucalypt, the diet of individual Koalas is usually limited to obtaining most of their nutrition from one or a few species present at a site (DotE, 2014). Species-level preferences may also vary between regions or seasons, and therefore, assessment of habitat quality for Koalas is often based on the identification of local preferences for species and quantification of the availability of those species. At this stage, no local preferences for species have been identified for the Koalas in the Study Area and their preferences in the Study Area have been inferred from other locations.

Referral Guidelines for the Koala have been prepared by DotE (2014n) which provide advice on which areas constitute critical habitat for this species. A national recovery plan has not yet been prepared for the Koala.

The main threats to the Koala are ongoing habitat loss and habitat fragmentation, vehicle` strike and predation by the domestic or feral Dogs (*Canis lupus familiaris*). Drought and incidences of extreme heat are also known to cause very significant mortality, and post-drought recovery may be substantially impaired by the range of other threatening factors (DotE, 2014).

b. Presence and Habitat in the Study Area

The Koala was not recorded during field surveys of the Study Area but some potential habitat does occur. This species or its habitat was predicted to occur in the Study Area in the EPBC Act Protected Matters Search Tool (**Appendix A**) and recorded in the locality in the Queensland Wildlife Online database (**Appendix B**).

AECOM (2014) did not identify any Koalas during their Koala surveys and did not detect any obvious signs of recent or historic use of the area by Koalas.

Of the scat samples collected, only one was identified as potentially being a Koala scat, however it was too damaged by insect predation for definitive identification. AECOM concluded that given the lack of any live Koala observation it was unlikely that it represented a Koala scat (AECOM, 2014).

Spotlighting surveys and call playback did not identify any Koalas or sign of Koala activity within the transect areas (AECOM, 2014).

AECOM (2012b) recorded that previous surveys at Callide Mine (located approximately 7 km to the south-east of the Study Area) confirmed the presence of the Koala adjacent to the Southern operations. However, this record is unsubstantiated. Conservatively, it has been assessed that there is some potential for the Koala to occur in the Study Area. The distribution of habitat for this species is shown in **Figure 21**.

If present, the Koala population in the Study Area is likely to be low. Koala densities in Central Queensland are generally low, and in the Brigalow Belt Bioregion, densities are estimated to be approximately 0.005 animals per hectare (DotE, 2014). The size of

individual home ranges for Koalas in the arid areas of Australia is relatively large, and in Central Queensland, home ranges are on average approximately 116 ha (EHP, 2012). At Blair Athol in Central Queensland, home ranges are estimated to be approximately 135 ha for males and 101 ha for females (Ellis *et al.*, 2002). Due to the broadly similar environment of Blair Athol and the Study Area, it is considered likely that similar sized home ranges are required in the Study Area. For these reasons it is likely that the Koalas in the Study Area have large home ranges and occur at low densities. In far inland areas, the highest numbers are found along watercourses and in low ranges (EHP, 2012). This is likely to be the case in the Study Area as no sign of Koalas was recorded during field surveys between 2012 and 2014.

Koalas are likely to mostly occur in narrow riparian corridors that support their favoured forage species of Blue Gums (i.e. RE 11.3.25). These are known to be preferred feed trees for Koalas and riparian areas are known to be refuges in dry conditions. Secondary feed trees may occur in a number of other areas that contain Box eucalypt species, or ironbark species (e.g. Narrow-leaved Ironbark [*Eucalyptus crebra*]). Although Koalas are known to occasionally eat non-eucalypt species, they are only likely to do so occasionally (Wildcare Australia, 2014). Although this is not primary feed habitat, it may be used to allow them to disperse through the landscape in order to respond to seasonal variability and access preferred food resources.

The majority of the Study Area does not support suitable feed tree species for the Koala; with Ironbarks or Lemon-scented Gum (*Corymbia citriodora*) dominating most wooded areas. However, scattered occurrences of Blue Gum (*Eucalyptus tereticornis*) were recorded along ephemeral drainage lines to the north of the Study Area and around water bodies on the Study Area, providing some suitable habitat for this species. However, connectivity with better watered stands of Queensland Blue Gum in the locality is limited by roads and open pastureland. The presence of large numbers of wild dogs on the Study Area would also be a limiting factor in the occurrence of the Koala.

c. Habitat Modelling

Habitat modelling has been conducted for this species. **Appendix I** contains a full description of the methodology used for habitat modelling. Areas of habitat for this species within the Study Area are presented on **Figure 21**.

Figure 21 shows that:

- No high value habitat occurs in the Study Area due to extensive clearance and fragmentation of the Study Area, a lack of preferred food trees across most of the woodlands in the Study Area, and the abundance of predators in the more open/cleared portions of the Study Area (foxes and Dingos). The lack of high value habitat is evidenced by the lack of any Koala records from the Study Area;

- 324.8 ha of low value habitat for the species is present in the northern, eastern and western portions of the Study Area; and

- 293.9 ha of unsuitable habitat for the Koala is present in the remaining areas of the Study Area due to the absence of suitable feed trees and disturbance of the Study Area.

viii. Grey-headed Flying-fox (Pteropus poliocephalus)

a. Species Overview

EPBC Act Status: Vulnerable

NC Act Status: Not listed

The Grey-headed Flying-fox is Australia's only endemic flying-fox and occurs in the coastal belt from Rockhampton in central Queensland to Melbourne in Victoria (DotE, 2014,). However, only a small proportion of this range is used at any one time, as the species selectively forages where food is available. As a result, patterns of occurrence and relative abundance within its distribution vary widely between seasons and between years. At a local scale, the species is generally present intermittently and irregularly. At a regional scale, broad trends in the distribution of plants with similar flowering and fruiting times support regular annual cycles of migration. Whilst Brisbane, Newcastle, Sydney and Melbourne are occupied continuously, elsewhere, during spring, Grey-headed Flying-foxes are uncommon south of Nowra and widespread in other areas of their range. The species is widespread throughout their range in summer, whilst in autumn it occupies coastal lowlands and is uncommon inland (DotE, 2014,).

The Grey-headed Flying-fox requires foraging resources and roosting sites. It is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands (DotE, 2014,). It also feeds on commercial fruit crops and on introduced tree species in urban areas. The primary food source is blossom from Eucalyptus and related genera, such as *Corymbia citrodora*, but in some areas it also utilises a wide range of rainforest fruits. None of the vegetation communities used by the Grey-headed Flying-fox produce continuous foraging resources throughout the year. As a result, the species has adopted complex migration traits in response to ephemeral and patchy food resources.

The Grey-headed Flying-fox roosts in aggregations of various sizes on exposed branches of trees. Roost sites are typically located near water, such as lakes, rivers or the coast. Roost vegetation includes rainforest patches, stands of Melaleuca, mangroves and riparian vegetation, but colonies also use highly modified vegetation in urban and suburban areas (DotE, 2014,).

Habitat loss has resulted in a decrease in the variety of flowering and fruiting tree species, particularly those that usually have a high nectar output (DotE, 2014,). Over 70% of Melaleuca forests have been cleared since European settlement. This tree species usually provides an important food source for flying-foxes. Also, extensive areas containing Blue Gum (*Eucalyptus tereticornis*) and Spotted Gum (*Corymbia maculata*) have been cleared, both of which are important wintering flower tree species (DotE, 2014,).

Annually, reliable winter resources are limited in distribution to a narrow coastal strip in Queensland and northern New South Wales, and primarily occur on freehold land. These coastal areas, containing important winter flowering species, particularly Broad-leaved Paper Bark (*Melaleuca quinquenervia*), Spotted Gum (*Corymbia maculata*), Swamp Mahogany (*Eucalyptus robusta*) and Blue Gum (*Eucalyptus tereticornis*), are targeted for intensive residential development (DotE, 2014,).

Spring foraging resources are considered to be critical to the survival of the species. Reliable resources during late gestation, birth and early lactation are required to avoid rapid weight loss in adults and poor reproductive success. Spring food shortages have been reported over large portions of the range in six of the past 20 years, and more frequently in some local areas (DotE, 2014,).

Lack of foraging resources can also force Grey-headed Flying-foxes into commercial fruit crops, increasing conflict with growers and subsequent culling of individuals (DotE, 2014,).

b. Presence and Habitat in Study Area

This species was not recorded during any surveys of the Study Area though it was predicted to occur in the Study Area in the EPBC Act Protected Matters Search (**Appendix A**).

To take a precautionary approach, this species has been assessed as having a moderate likelihood of occurrence within the Study Area based on the presence of some suitable woodland habitat and feed trees such as Lemon-scented Gum (*Corymbia citriodora*) and Blue Gum (*Eucalyptus tereticornis*) being present in the Study Area.

c. Habitat Modelling

Habitat modelling has been conducted for this species. **Appendix I** contains a full description of the methodology used for habitat modelling. Areas of habitat for this species within the Study Area are presented on **Figure 22**.

Figure 22 shows that:

- No high value habitat occurs in the Study Area due to the clearing and fragmentation of the woodlands of the Study Area, the general lack of high value food resources and the lack of Flying-fox camps;
- 347.3 ha of low value habitat occurs in the form of woodlands in the northern, eastern and western portions of the Study Area; and
- 271.4 ha of unsuitable habitat occurs as grassland (due to a lack of foraging resources and roost trees) and is located in the central southern and western portions of the Study Area.

ix. Large-eared Pied Bat (Chalinobus dwyeri)

a. Species Overview

EPBC Act Status: Vulnerable

NC Act Status: Vulnerable

The Large-eared Pied Bat mostly occurs within New South Wales, in the sandstone escarpments of the Sydney basin and the north-west slopes. In Queensland, further records are known from sandstone escarpments in the Carnarvon, Expedition Ranges and Blackdown Tablelands, although no maternity roost sites are known from this state (DotE 2014d). There is very little information about this species available for Central Queensland, and as such the majority of information used has been sourced from the New South Wales population of this species.

The species requires a combination of sandstone cliff/escarpment and disused mine shafts to provide roosting habitat that is adjacent to higher fertility sites, particularly box gum woodlands or river/rainforest corridors which are used for foraging. Almost all records have been found within several kilometres of cliff lines or rocky terrain (DotE 2014d).

In New South Wales, this species has been recorded from a large range of vegetation types including: dry and wet sclerophyll forest; Cyprus Pine (*Callitris glauca*) dominated forest; tall open eucalypt forest with a rainforest sub-canopy; sub-alpine woodland; and sandstone outcrop country. In south-east Queensland the species has primarily been recorded from higher altitude moist tall open forest adjacent to rainforest.

Potential threats to this species include (DotE 2014d):

- loss of maternity roosting habitat;
- loss of foraging habitat;
- predation by Foxes (*Vulpes vulpes*) and other predators;
- habitat destruction for agriculture and urban development;
- severe drought; and
- impacts of forestry operations

No recovery plan for the Large-eared Pied Bat has been prepared. The following recovery objectives have been identified for the species (DotE 2014d):

- Identify priority roost and maternity sites for protection;
- Implement conservation and management strategies for priority sites, especially as the species has narrow habitat requirements (sandstone overhangs and higher productive landscapes);

- Management of the species should focus on the protection and enhancement of higher fertility soils;
- Educate the community and industry to understand and participate in the conservation of the Large-eared Pied Bat;
- Research to augment biological and ecological data to enable conservation management;
- Collect genetic data throughout the distribution of the Large-eared Pied Bat; and
- Reassess status of and threats to the Large-eared Pied Bat following targeted survey and research.

b. Presence and Habitat in the Study Area

The Large-eared Pied Bat has not been recorded from the Study Area and this species was predicted to occur in the Study Area in the EPBC Act Protected Matters Search Tool (**Appendix A**). This species has been assessed as having a moderate likelihood of occurrence within the Study Area.

The distribution of habitat for this species within the Study Area is shown in **Figure 23**. The Study Area provides suitable foraging habitat for Large-eared Pied Bat in the form of open woodlands, predominantly in the northern and western parts. However, the species preferred roosting resources of crevices in cliff lines are rare on the Study Area.

c. Habitat Modelling

Habitat modelling has been conducted for this species. **Appendix I** contains a full description of the methodology used for habitat modelling. Areas of habitat for this species within the Study Area are presented on **Figure 23**.

Figure 23 shows that:

- No high value habitat occurs in the Study Area due to a lack of roosting habitat in the form of caves and disused mine shafts;
- 347.3 ha of low value habitat occurs in woodland in the northern, eastern and western portions of the Study area where suitable foraging habitat is present; and
- 271.4 ha of unsuitable habitat occurs in the remainder of the Study Area and is characterised by heavily modified woodlands and grasslands.

x. South-eastern Long-eared Bat (Nyctophilus corbeni)

a. Species Overview

EPBC Act Status: Vulnerable

NC Act Status: Vulnerable

The South-eastern Long-eared Bat is found in the Murray-Darling basin of southern central Queensland, inland New South Wales, north-western Victoria and far-eastern South Australia (EHP 2014). It is rarely recorded throughout most of its distribution, except for some parts of north-eastern New South Wales where it is more common.

The South-eastern Long-eared Bat occurs in a range of inland woodland vegetation types, including box, ironbark and cypress pine woodlands. The species also occurs in Buloke woodland, Brigalow woodland, Belah woodland, Smooth-barked Apple (*Angophora leiocarpa*) woodland; River Red Gum (*Eucalyptus camaldulensis*), forests lining watercourses and lakes, Black Box (*Eucalyptus largiflorens*) woodland, and dry sclerophyll forest (DotE, 2014~). Throughout inland Queensland, the species habitat is dominated by various eucalypt and bloodwood species, and various types of tree mallee with it being most abundant in vegetation with a distinct canopy and a dense cluttered shrub layer (DotE, 2014~). It has also been recorded from rainforest with hoop pines in the Bunya Mountains, and in semi evergreen vine thickets on the banks of the Dawson River.

The South-eastern Long-eared Bat is thought to roost solitarily under the loose bark, and in the crevices and hollows of trees (DotE, 2014~).

Potential threats to this species include (DotE 2013i):

- Habitat loss and fragmentation;
- Fires that destroy roosting sites and foraging habitat;
- Forestry activities;
- Overgrazing;
- Predation by feral species;
- Competition for tree hollows; and
- Exposure to agrichemicals

A recovery plan for the Eastern Long-eared Bat is in preparation. The plan aims to secure the long-term protection of the species by reducing the impact of threatening processes, and improving the information available to guide recovery (DotE 2013i).

b. Presence and Habitat in the Study Area

The South-eastern Long-eared Bat has not been recorded from the Study Area, and this species or its habitat was predicted to occur in the Study Area in the EPBC Act Protected Matters Search Tool (**Appendix A**). This species has been assessed as having a moderate likelihood of occurrence within the Study Area.

The distribution of habitat for this species in the Study Area is shown in **Figure 24**. The Study Area provides suitable foraging habitat for South-eastern Long-eared Bat in the form of open woodlands, predominantly in the northern and western parts. However, the species

preferred roosting resources, loose bark and tree crevices are reasonably rare on the Study Area, due to the regenerating nature of the woodlands present.

The box-ironbark-cypress pine habitat most strongly associated with this species is not well represented on the Study Area, although such communities are present in the locality.

c. Habitat Modelling

Habitat modelling has been conducted for this species. **Appendix I** contains a full description of the methodology used for habitat modelling. Areas of habitat for this species within the Study Area are presented on **Figure 24**.

Figure 24 shows that:

- No high value habitat occurs in the Study Area as there is no verified habitat where the species has been found and, due to the extensive disturbance via clearing and cattle grazing that has occurred to the woodlands of the Study Area;
- 347.3 ha of low value habitat occurs in woodland in the northern, eastern and western portions of the Study area where suitable foraging habitat is present; and
- 271.4 ha of unsuitable habitat occurs in the remainder of the Study Area and is characterised by heavily modified woodlands and grasslands.

4.5.9 Migratory Fauna Species Listed under the EPBC Act

Two migratory fauna species listed under the EPBC Act were recorded within and surrounding the Study Area, namely the Rainbow Bee-eater and Rufous Fantail.

An additional 17 migratory species were predicted to occur in the Study Area in the EPBC Act Protected Matters Search (**Appendix A**) or recorded within the locality in the Queensland Wildlife Online database search (**Appendix B**). The results of an assessment of the likelihood of migratory species occurring within the Study Area are presented in **Table 4.9**.

Table 4.9 Assessment of the Likelihood of Occurrence of Migratory Species Recorded from the Protected Matters Search Tool Report

Scientific Name	Common Name	EPBC Act Status[1]	Likelihood of Occurrence within the Study Area
Reptiles			
Crocodylus porosus	Salt-water Crocodile	Migratory, Marine	Low
Birds			
Rostratula australis	Australian Painted Snipe	Endangered ,Migratory*,	Moderate

Table 4.9 Assessment of the Likelihood of Occurrence of Migratory Species Recorded from the Protected Matters Search Tool Report

Scientific Name	Common Name	EPBC Act Status[1]	Likelihood of Occurrence within the Study Area
		Marine*	
Hirundo rustica	Barn Swallow	Migratory, Marine	Low
Monarcha melanopsis	Black-faced Monarch	Migratory, Marine	Low
Hydroprogne caspia	Caspian Tern	Migratory	Low
Ardea ibis	Cattle Egret	Migratory, Marine	High
Actitis hypoleucos	Common Sandpiper	Migratory, Marine	Low
Ardea modesta	Eastern Great Egret	Migratory, Marine+	High
Apus pacificus	Fork-tailed Swift	Migratory, Marine	High
Plegadis falcinellus	Glossy Ibis	Migratory, Marine	Low
Gallinago hardwickii	Latham's Snipe	Migratory, Marine	Low
Tringa stagnatilis	Marsh Sandpiper	Migratory, Marine	Low
Merops ornatus	Rainbow Bee-eater	Migratory, Marine	Present
Rhipidura rufifrons	Rufous Fantail	Migratory, Marine	Present
Myiagra cyanoleuca	Satin Flycatcher	Migratory, Marine	High
Calidris acuminata	Sharp-tailed Sandpiper	Migratory, Marine	Low
Monarcha trivirgatus~	Spectacled Monarch	Migratory, Marine	Low
Haliaeetus leucogaster	White-bellied Sea-eagle	Migratory, Marine	Low
Hirundapus caudacutus	White-throated Needletail	Migratory, Marine	High

1 Threatened, migratory and/or marine species status under the EPBC Act (current at 20 January 2015).

* Species listed as marine and migratory under the EPBC Act as Painted Snipe (*Rostratula benghalensis) (sensu lato).*

\+ Species listed as a marine species under the EPBC Act as Great Egret (*Ardea alba*).

` Species listed as a migratory species under the EPBC Act as *Symposiachrus trivirgatus*.

The Australian Painted Snipe is also listed as Endangered under the EPBC Act and is discussed in detail in **Section 4.5.8iii**. As it is the only migratory species assessed as having a moderate potential to occur within the Study Area, the remainder of this assessment focuses on migratory species that were recorded or assessed as having a high likelihood of occurrence.

The migratory species recorded or with a high likelihood of occurrence within the Study Area include wetland species, such as the Cattle Egret and Eastern Great Egret; woodland

dependent species such as the Rainbow Bee-eater, Rufous Fantail and Satin Flycatcher; and fly-over species including the Fork-tailed Swift and White-throated Needletail.

All of these species have either been recorded or have been assessed as having a high likelihood of occurrence within the Study Area. Suitable habitat for the wetland species occurs in the farm dams, and other species are likely to forage in and over the wooded areas of the Study Area.

The migratory species recorded or with a high or moderate likelihood of occurrence within the Study Area are all relatively common, abundant and widespread species that are known to have a wide range and distribution. The habitat requirements and habitat availability in the Study Area for migratory species is discussed below.

a. Wetland-dependent Species

No wetland-dependent migratory species were recorded within the Study Area, however the Study Area is considered to contain potential habitat for the Cattle Egret and Eastern Great Egret.

The Eastern Great Egret has been reported in a wide range of wetland habitats including for inland and coastal habitats, freshwater and saline habitats, permanent and ephemeral habitats, open and vegetated habitats, large and small habitats and natural and artificial habitats. These include swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pastures or agricultural lands; reservoirs; sewage treatment ponds; drainage channels; salt pans and salt lakes and salt marshes (DotE, 2014d). The species usually frequents shallow waters.

The Cattle Egret occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands (DotE, 2014c). It has occasionally been seen in arid and semi-arid regions however this is extremely rare. High numbers have been observed in moist, low-lying poorly drained pastures with an abundance of high grass; it avoids low grass pastures. It has been recorded on earthen dam walls and ploughed fields. It is commonly associated with the habitats of farm animals, particularly cattle (DotE, 2014c).

Aquatic habitat in the Study Area consists of ephemeral drainage lines and farm dams. Low value habitat for these wetland-dependent migratory bird species in the Study Area is represented by three farm dams and seasonal wetland in the Study Area (**Figure 10**) that contain permanent and ephemeral sources of water. The farm dams and seasonal wetland provide relatively low quality habitat for the potential wetland-dependent migratory bird species as they are degraded by stock access and pugging, and fringing vegetation is limited. Approximately 3.4 ha of low value habitat and 615.3 ha of unsuitable habitat for the Cattle Egret and Eastern Great Egret is present in the Study Area.

b. Woodland Birds

Two woodland-dependent migratory bird species have been recorded within or surrounding the Study Area, namely the Rainbow Bee-eater and Rufous Fantail (**Figure 14**). One

additional woodland-dependent bird species has been assessed as having a high likelihood of occurrence within the Study Area, namely the Satin Flycater.

The Rainbow Bee-eater occurs over most of mainland Australia and is considered to be seasonally common and locally abundant throughout much of its range. It forages in a wide variety of habitats including in open forests and woodlands, shrublands, and in various cleared or semi-cleared habitats, including farmland and areas of human habitation (DotE, 2014z). This species breeds in tunnels, often constructed in riverbanks. Two Rainbow Bee-eaters were recorded outside of the Study Area from woodland along the boundary of the north-eastern corner of the Study Area (**Figure 14**). Due to its wide habitat tolerances, all of the woodland areas in the Study Area are likely to provide potential foraging habitat for this species, while potential breeding habitat is present along the ephemeral drainage lines during times of high water flow. These areas only contain water during periods of extended rainfall and they are therefore not considered to contain high value habitat for the Rainbow Bee-eater.

The Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts usually with a dense shrubby understorey often including ferns (DotE, 2014…). They occasionally occur in secondary regrowth, following logging or disturbance in forests or rainforests. When on passage, they are sometimes recorded in drier sclerophyll forests and woodlands, including Spotted Gum (*Eucalyptus maculata*), Yellow Box (*E. melliodora*), ironbarks or stringybarks, often with a shrubby or heath understorey. They are also recorded from parks and gardens when on passage. In north and north-east Australia, they often occur in tropical rainforest and monsoon rainforests, including semi-evergreen mesophyll vine forests, semi-deciduous vine thickets or thickets of Paperbarks (*Melaleuca* spp.) One record of Rufous Fantail was made near the large farm dams in the north of the Study Area (**Figure 14**).

The Satin Flycatcher inhabits and breeds in vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests (DotE, 2014|). This species was not recorded from the Study Area, however woodland habitat occurs that is likely to provide habitat for this species and it has high likelihood of occurrence within the Study Area. It is unlikely to breed in the Study Area, however it may utilise woodland habitats while on migration.

Approximately 395 ha of low value habitat and 223.7 ha of unsuitable habitat for the Rainbow Bee-eater, Rufous Fantail and Satin Flycatcher is present in the Study Area.

c. Fly-over Species

The Fork-tailed Swift and the White-throated Needletail are aerial feeding, insectivorous migratory bird species that have a high likelihood of occurrence within the Study Area.

The Fork-tailed Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. They also occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless

grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. The sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines (DotE, 2014b).

The White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground (DotE, 2014v). Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps (DotE, 2014v).

These species are extremely widespread and have very large ranges. They forage in the air for insects and typically fly vast distances in search of food. These species were not recorded from the Study Area, however the Study Area is within their range and they have potential to occur from time to time. These species are known to forage over a wide range of habitats including native woodlands and forests, grasslands, and also disturbed and agricultural areas. As such, all of the Study Area is considered to provide suitable foraging habitat for these species.

Approximately 395 ha of low value habitat and 223.7 ha of unsuitable habitat for the Fork-tailed Swift and White-throated Needletail is present in the Study Area.

4.5.10 NC Act Listed Species

One threatened fauna species listed as threatened under the NC Act has been recorded from the Study Area, namely the Squatter Pigeon (southern subspecies) and is discussed in detail in **Section 4.5.8v**.

Table 4.10 provides a summary of the threatened fauna species listed under the NC Act that were recorded during surveys or listed from database searches as occurring in the locality or with a high or moderate likelihood of occurrence within the Study Area. **Table 4.10** also provides an assessment of the potential of each species to occur in the Study Area and supporting data for these assessments is provided in **Appendix H**.

Table 4.10 NC Act Listed Threatened Fauna Species

Scientific Name	Species	NC Act Status[1]	Likelihood of Occurrence within the Study Area
Amphibians			
Adelotus brevis	Tusked Frog	Vulnerable	Low
Reptiles			
Delma torquata	Collared Delma	Vulnerable	High
Furina dunmalli	Dunmall's Snake	Vulnerable	Low
Rheodytes leukops	Fitzroy River Turtle	Vulnerable	Low

Table 4.10 NC Act Listed Threatened Fauna Species

Scientific Name	Species	NC Act Status[1]	Likelihood of Occurrence within the Study Area
Denisonia maculata	Ornamental Snake	Vulnerable	Low
Crocodylus porosus	Salt-water Crocodile	Vulnerable	Low
Egernia rugosa	Yakka Skink	Vulnerable	Moderate
Birds			
Rostratula australis	Australian Painted Snipe	Vulnerable	Moderate
Turnix melanogaster	Black-breasted Button-quail	Vulnerable	Low
Poephila cincta cincta	Black-throated Finch (whit-rumped subspecies)	Endangered	Low
Calyptorhynchus lathami	Glossy Black-cockatoo	Vulnerable	Low
Erythrotriorchis radiatus	Red Goshawk	Endangered	Moderate
Geophaps scripta scripta	Squatter Pigeon (southern subspecies)	Vulnerable	Present
Neochmia ruficauda ruficauda	Star Finch (eastern subspecies)	Endangered	Low
Mammals			
Phascolarctus cinereus	Koala	Special Least Concern	High
Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Moderate
Nyctophilus corbeni^	South-eastern Long-eared Bat	Vulnerable	Moderate
Hipposideros semoni	Semon's Leaf-nosed Bat	Endangered	Low
Tachyglossus aculeatus	Short-beaked Echidna	Special Least Concern	Present

[1] Threatened fauna species status under the NC Act (current at 20 January 2015).

^ Species listed under the NC Act as Eastern Long-eared Bat (*Nyctophilus timoriensis*).

All species listed in **Table 4.10**, with the exception of the Tusked Frog, Glossy Black-cockatoo and Short-beaked Echidna, are also listed under the EPBC Act and are considered in **Section 4.5.8** to**4.5.9**.

The Tusked Frog and Glossy Black-cockatoo are listed as Vulnerable under the NC Act with a low likelihood of occurrence and are assessed in **Appendix H**, while the Short-beaked Echidna is listed as Special Least Concern under the NC Act and was recorded in the Study Area and is assessed in **Section 4.6.11**.

The Study Area does not contain any areas of critical habitat for fauna species within the meaning of the NC Act.

AECOM (2012b) assessed a number of other fauna species that are not shown in **Table 4.11**. Three of the species, namely the Brigalow Scaley-foot, Spotted-tailed Quoll and Brush-tailed Rock-wallaby are also listed as threatened under the EPBC Act and are discussed in **Section 4.5.8**. Four additional species listed under the NC Act were assessed by AECOM (2012b) and are discussed briefly below:

- The Black-chinned Honeyeater (*Melithreptus gularis*) and Little Pied Bat (*Chalinolobus picatus*): these two species were previously recorded within the Study Area (AECOM, 2012b). At the time of recording they were both listed as Near Threatened under the NC Act. Both of these species have since been de-listed from the NC Act and are not discussed further in this report.

- The Common Death Adder (*Acanthophis antarcticus*) and Golden-tailed Gecko (*Strophurus taenicauda*) are both listed as Near Threatened species under the NC Act and the Study Area was assessed by AECOM (2012b) as containing suitable habitat for these species. These two species have been assessed in detail in **Appendix H**.

4.5.11 Special Least Concern Fauna

The following Special Least Concern fauna species listed under the NC Act are known or are considered to have a high or moderate likelihood of occurrence within the Study Area:

- Short-beaked Echidna (recorded); and

- Koala (high likelihood of occurrence).

The Koala is considered in more detail in **Section 4.5.8vii** and the Short-beaked Echidna is considered below.

i. Short-beaked Echidna

a. Species Overview

The Short-beaked Echidna is listed as Special Least Concern under the NC Act. This species was recorded once during recent surveys (**Figure 14**) and was listed in the Queensland Wildlife Online database search (**Appendix B**) as occurring within the locality.

The Short-beaked Echidna can inhabit the majority of habitat types that contain a good supply of food. They inhabit a wide range of terrestrial habitats wherever there are enough ants or termites including: deserts, the rainforest, open forest, bushland, farmland and suburban backyards. In Australia, they are most common in forested areas with abundant, termite-filled, fallen logs (Wildlife Queensland 2013).

Threats to the Short-beaked Echidna include predation by cats and Dingos and vehicle strike (Wildlife Queensland 2013).

b. Presence in Study Area

The Short-beaked Echidna was recorded once within Eucalyptus-dominated woodland in the southern portion of the Study Area during recent surveys (**Figure 14**). Evidence (i.e. scats) of this species were recorded in one location within the south-western portion of the Study Area.

No habitat modelling or mapping was made for this species, given that is is such a generalist species and it was recorded within the Study Area and is expected to forage across all remaining woodland areas within the Study Area, including within REs 11.3.25, 11.10.1 and 11.9.9.

4.5.12 Introduced Pest Species

Pest animals are concerning because they have, or potentially have, detrimental effects on ecological values. Landowners have a responsibility under the LP Act to control declared pests. The pest animals recorded from the Study Area and their status under the LP Act are listed below:

- Cane Toad (*Bufo rhinella*) – not listed;
- Cattle (*Bos taurus*) – not listed;
- Feral Pig (*Sus scrofa*) – Class 2;
- Dingo/dog (*Canis lupus dingo/familiaris*) – Class 2;
- European Red Fox (*Vulpes vulpes*) – Class 2;
- Feral Cat (*Felis catus*) – Class 2;
- European Rabbit (*Oryctolagus cuniculus*) – Class 2; and
- House Mouse (*Mus musculus*) – not listed.

With the exception of the Dingo/dog, DotE also recognises the pests listed above as a 'key threatening processes' related to their impacts on biodiversity through predation, competition, land degradation and poisoning. Further information on the occurrence of these species in the Study Area is provided below.

Cane Toads are present within the Study Area. In areas where water was available, they were abundant and found to congregate in large numbers. Ingestion of cane toads (including eggs and tadpoles) resulting in poisoning is the primary effect of Cane Toads on native species such as the Northern Quoll (Hill and Ward, 2010) (Shine, 2010). There is also evidence of Cane Toads affecting the growth rate of native tadpoles and even reducing Rainbow Bee-eater nesting success by nest usurpation (Williamson, 1999; Boland, 2004).

The majority of the Study Area is used for cattle grazing and so most of the Study Area has been disturbed by cattle due to the trampling of groundcover species and pugging around water sources, which significantly reduces the suitability of habitat for fauna species.

One pair of Feral Pigs were recorded in the north east section of the Study Area and scats were also recorded. It is likely this species is present throughout the Study Area. The most significant direct environmental impact that feral pigs have are habitat degradation and predation. Feral Pigs pose a threat to native fauna and vegetation by creating wallows, which can cause locally extensive damage to dams and waterholes, and eating or destroying native plants and animals(DEH, 2005)

Wild Dogs and/or Dingos were recorded throughout the Study Area from scats, tracks and from infrared cameras at several locations. It is often difficult to distinguish between wild dogs and Dingos, mainly due to interbreeding and genetic testing is required to definitely distinguish between them. Wild dogs and/or Dingos are a major threat to several species and have been known to attack and prey on several fauna species. These species pose a threat to the majority of fauna species recorded in the Study Area.

The European Red Fox was recorded by infrared cameras at three locations, indicating it is widespread in the Study Area. European Red Foxes are a well known threat to many small native vertebrates including mammals, birds and reptiles.

The Feral Cat was not recorded from on infrared cameras or seen by field personnel but tracks were observed. Cats are listed as a key threatening process by SEWPAC, primarily through predation on species such as birds and reptiles.

The European Rabbit and House Mouse were recorded during both surveys and are considered established in the area. These species may compete with numerous fauna species within the Study Area for food and resources.

Chapter **5**

Impacts

5.1 Introduction

This section presents an assessment of the likely impacts of the project to terrestrial ecology, with a focus on species listed under the EPBC Act and/or the NC Act recorded during the field surveys or considered likely to occur due to the presence of suitable habitat.

Project activities that have the potential to impact flora and fauna species include:

- Vegetation clearing for the construction of the open cut mine and the construction of the mine infrastructure (**Section 5.2**); and
- Indirect impacts such as the effects of noise and vibration, vehicle strikes, lighting, dust, erosion; the introduction of invasive species; and the spread of introduced plants and plant diseases (**Section 5.3**). Indirect impacts from the drawdown of groundwater are not within the scope of this report and are discussed in the EIS Section 12A.

This section considers these impacts of the project for vegetation communities, flora species and fauna species. Mitigation measures for these impacts are described in **Section 6**.

5.2 Direct Vegetation Clearing

5.2.1 Overview of Clearing

The largest direct impact of the project is the removal of native vegetation that also provides habitat for a range of flora and fauna species. Vegetation clearance will be required to allow for open cut mining and the construction of mine infrastructure (see **Figure 3**). Approximately 477.4 ha, comprising 65.3 ha of remnant vegetation, will be cleared for these components of the project. The remaining areas to be cleared comprise non-remnant vegetation (409.3 ha), the seasonal wetland (2.6 ha) and the southern farm dam (0.2 ha).

The majority of the vegetation clearance will occur in the south-western and central portions of the Study Area where open cut mining and associated infrastructure is located. **Table 5.1** provides a breakdown of the areas of each vegetation community that are proposed to be cleared.

Table 5.1 Regional Ecosystems within the Study Area

RE ID	RE Name	EPBC Act Status[1]	VM Act Status[2]	Biodiversity Status[2]	Total Area within Study Area (ha)	Area Cleared for Project (ha)	% Cleared within Study Area
11.3.25	*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines	-	Least Concern	No concern at present	2.7	0	0%
11.9.9	*Eucalyptus crebra* woodland on fine-grained sedimentary rocks	-	Least Concern	No concern at present	62.2	56.5	91%
11.10.1	*Corymbia citriodora* woodland on coarse-grained sedimentary rocks	-	Least Concern	No concern at present	70.1	8.7	12%
-	Non-remnant	-	-	-	480.1	409.3	85%
-	Seasonal Wetland	-	-	-	2.6	2.6	100%
-	Farm Dams	-	-	-	1	0.2	20%
				TOTAL*	**618.7**	**477.3**	**77%**

1 TEC Status under the EPBC Act (current at 20 January 2015).

2 Threatened RE status and Biodiversity Status under the VM Act (current at 20 January 2015).

* Total includes rounding.

The proposed layout has been designed to avoid ephemeral drainage lines and high value habitats for fauna species wherever possible. Clearing activities will be subject to a number of controls to ensure that impacts are limited to the areas required to be cleared. These controls are outlined in **Section 6**, and include measures such as conducting pre-clearance surveys and demarcating construction areas to limit disturbance to the minimum area required for the work.

The vegetation proposed to be cleared provides habitat for a range of native flora and fauna species, including some listed under the EPBC Act and/or the NC Act. Vegetation clearance has potential to directly impact species via habitat loss, and also through indirect impacts. These potential impacts are discussed in **Sections 5.2.4** to **5.2.7**.

5.2.2 Impacts of Vegetation Clearing on EPBC Act Listed Vegetation Communities

As detailed in **Section 4.3.2**, the Study Area does not contain any EPBC Act listed vegetation communities and the project will consequently not have any impact on EPBC Act listed communities.

5.2.3 Impacts of Vegetation Clearing on Queensland Listed Vegetation Communities

i. Threatened Vegetation Communities

As detailed in **Section 4.3.3**, the Study Area does not contain any VM Act Endangered or Of Concern vegetation communities and the project therefore does not require any offsets for the disturbance of vegetation communities.

ii. Impacts of Vegetation Clearing on Vegetation Communities along Watercourses

The EHP's Vegetation Management Watercourse Map has been overlaid on the RE mapping to determine the areas of riparian vegetation that are classified as MSES (**Figure 25**). Vegetation located within 25 m of a stream order 1 and 2, 50 m of a stream order of 3 and 4 or 100 m of a stream order of 5 or greater, is classified as a MSES. The REs and areas that are classified as a MSES in accordance with the Queensland Environmental Offsets Policy (Version 1.0) (EHP, 2014m) are outlined below in **Table 5.2**.

Table 5.2 REs along Watercourses Classified as MSES

RE Code	Vegetation Type	Vegetation Structure	Status under *the VM Act*[1]	Area Classified as a MSES within the Disturbance Boundary (ha)
11.3.25	*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines	Mid-dense	Least Concern	-
11.9.9	*Eucalyptus crebra* woodland on fine-grained sedimentary	Sparse	Least Concern	2.17

Table 5.2 REs along Watercourses Classified as MSES

RE Code	Vegetation Type	Vegetation Structure	Status under *the VM Act*[1]	Area Classified as a MSES within the Disturbance Boundary (ha)
	rocks			
11.10.1	*Corymbia citriodora* woodland on coarse-grained sedimentary rocks	Mid-dense	Least Concern	0.22
			TOTAL (ha)	**2.39**

[1] Threatened RE status under the VM Act (current at 20 January 2015).

The loss of riparian vegetation will impact on native species through the removal of habitat. Due to the presence of water (even seasonally), riparian vegetation is often denser, and has a greater species richness than adjacent areas. Accordingly, riparian vegetation provides high quality habitat for fauna. This habitat may provide refuge in times of drought, and shelter for fauna utilising watercourses to drink.

Offsets are required for any significant residual impacts on the vegetation listed in **Table 5.2**. In accordance with the EHP's (2014) *Significant Residual Impacts Guideline*, offsets are required if more than 0.5 ha of mid-dense vegetation is cleared (Table 1 of EHP 2014). The project will remove approximately 0.22 ha of mid-dense vegetation (**Table 5.2**). Therefore offsets are not required.

According to Table 1 in EHP's (2014) *Significant Residual Impacts Guideline,* offsets are required if more than 2 ha of sparse vegetation is cleared. The project will remove approximately 2.17 ha of sparse vegetation. Although the guidelines state that the removal of this vegetation should be offset, the vegetation along the mapped watercourses does not generally comprise vegetation typical of riparian habitats due to the ephemeral nature of the drainage lines present within the Study Area. In addition, the vegetation proposed to be cleared is mostly open woodland. As there is a significant amount of similar vegetation in the surrounding area and this vegetation is not unique, the removal of approximately 2.17 ha of vegetation along minor ephemeral drainage lines is not considered to be significant and therefore offsets are not required.

5.2.4 Impacts of Vegetation Clearing on EPBC Act Listed Flora Species

As discussed in **Section 4.4.1**, no threatened flora species listed under the EPBC Act were recorded or are considered likely to occur within the Study Area. Therefore, no threatened flora species listed under the EPBC Act will be impacted as a result of the clearing associated with the project.

5.2.5 Impacts of Vegetation Clearing on NC Act Listed Flora Species

As discussed in **Section 4.4.2**, one threatened flora species listed under the NC Act has a moderate likelihood to occur within the Study Area, namely *Acacia pedleyi*. This section provides an assessment of the potential impacts of vegetation clearing to *Acacia pedleyi*. **Figure 13** shows potential habitat for this flora species within the Disturbance Boundary, while the impacts of the project on this species are discussed below.

i. Acacia pedleyi

EPBC Act Status: Not listed

NC Act Status: Vulnerable

Occurrence within Study Area: Moderate potential

Acacia pedleyi has not been recorded from the Study Area; however low value habitat for this species is present, and occurs in in patches of RE 11.10.1 (*Corymbia citriodora* woodland) in the northern, eastern and western portions of the Study Area where rocky, relatively intact understorey is present and where cattle grazing is restricted or absent (**Figure 13**).

Habitat modelling indicates that no high value habitat for this species would be cleared as a result of the project (**Figure 13**). The Study Area does not contain an undisturbed woodland understorey, and this species is potentially sensitive to cattle grazing and historic clearing. No areas within the Study Area have been mapped as high value habitat (**Section 4.4.2i**).

Large areas of suitable vegetation occur outside of the Study Area that are likely to provide habitat for this species. In particular, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for several different flora species. The vegetation within the Callide Timber Reserve comprises remnant vegetation, mostly in the form of eucalypt woodlands and contains habitat features such as an undisturbed understorey suitable for this species. The nearest records of this species to the Study Area occur in the Callide Timber Reserve, demonstrating that suitable habitat for this species is present in the Timber Reserve, compared to the Study Area, where despite several surveys, this species has not been recorded (**Figure 13**).

Connectivity of existing low value habitat within the Disturbance Boundary is presently limited within the MLA by Inverness Road and cleared habitat surrounding this road. The proposed haul roads are therefore unlikely to limit connectivity further than current conditions. Connectivity with other potential habitat (i.e. Timber Reserve) is limited by the existing cleared powerline corridor along the eastern boundary of the Study Area.

A range of impact avoidance and mitigation measures are proposed to minimise impacts on this species, as outlined in **Section 6**. This includes minimising clearing of woodland, pre-clearance surveys and undertaking progressive rehabilitation of mined areas.

5.2.6 General Impacts of Vegetation Clearing on Fauna Species

i. Loss of Habitat Features

The largest direct impact of vegetation clearing for the project would be the removal of woodland vegetation that provides habitat for a wide range of fauna species. Other habitats that occur aside from woodland vegetation that will be cleared include grassland, one farm dam, the seasonal wetland and ephemeral drainage lines.

The remnant and non-remnant vegetation throughout the Study Area provides habitat for a range of fauna including some species that are listed under the EPBC Act and/or the NC Act. Within these vegetation communities, a range of habitat features provide foraging, shelter and breeding opportunities for fauna. Important fauna habitat features that may be removed by the project are:

- Fallen logs, debris and leaf litter – shelter habitat for amphibians, reptiles and terrestrial mammals;
- Rocky outcrops – shelter and breeding habitat for amphibians, reptiles and terrestrial mammals;
- Hollow-bearing living trees and stags – shelter and breeding habitat for a range of reptiles, birds, arboreal mammals and microbats;
- Nectar-producing trees and shrubs – foraging habitat for insects, blossom-dependent birds, arboreal mammals and megachiropteran bats (flying-foxes);
- Feed trees, shrubs and grasses for a range of species – food for small birds, cockatoos, Koalas and other and herbivorous mammals;
- Ecotonal (edge) communities – foraging habitat for many species, particularly birds;
- Ephemeral drainage lines – foraging, shelter and breeding habitat for amphibians, aquatic reptiles, wetland birds and aquatic mammals; and
- Dam and seasonal wetland with aquatic vegetation – seasonal foraging and breeding habitat for amphibians, aquatic reptiles and wetland birds, as well as foraging for other terrestrial fauna species.

ii. Habitat Fragmentation

One of the impacts of the project on flora and fauna would be habitat fragmentation. Fragmentation is the process where habitats that were once continuous become divided into separate fragments isolated from each other by non-forest land (Primack, 1993; Fahrig, 2003; Lindenmayer and Fischer, 2006). The resultant divided habitat is often artificial and inhospitable to the species remaining within the fragments (Bennet, 1990; Reid, 1999) (Bennett A.F, 1990, Reid, 1999).

Habitat fragmentation affects biodiversity by reducing the amount of available habitat for some species as it involves some habitat loss. Plants and other sessile organisms are usually directly removed, while mobile animals (especially birds and mammals) retreat into other remnant patches of habitat (Lindenmayer and Fischer, 2006). Indirectly, fragmentation can put stress on native flora and fauna by increasing intraspecific and interspecific competition for space and resources in areas of remaining habitat.

Barrier effects are another impact of habitat fragmentation. This occurs where particular species are either unable, or are unwilling, to move between suitable areas of fragmented habitat. Species that are most vulnerable to barrier effects include rare species, smaller ground-dwelling species and species with low mobility. Species that are least vulnerable to barrier effects tend to be those that are large or highly mobile (e.g. birds and bats), as they can move between fragments (Bennet, 1990).

The Biodiversity Assessment and Mapping Methodology (BAMM) has been prepared to provide a consistent approach for assessing biodiversity values at the landscape scale in Queensland using vegetation mapping data generated or approved by the Queensland Herbarium as a fundamental basis. It is being used by the EHP to generate Biodiversity Planning Assessments (BPAs) for each of Queensland's bioregions, including the Brigalow Belt South Bioregion where the project is located (**Figure 9**).

BPAs of the Study Area and surrounds has classified the majority of the woodland vegetation within the Study Area as of "regional significance", though some areas are mapped as being of "local significance" (**Figure 9**). These two categories of landscape biodiversity value are defined as:

- regional significance - areas assessed as being significant for biodiversitiy at the sub-bioregional scale. They have lower significance for biodiversity than areas assessed as being of State significane;
- local significance - areas being assessed as not being significant for biodiversity at State or Regional scales, though significant at lthe local government scale.

Such mapping was done remotely using satellite imagery and was not based on field surveys and local data. The analysis done for this report shows has shown that extensive areas within the Study Area have previously been cleared for agricultural purposes. Many of the remnant patches of the vegetation are already fragmented by cleared land, such as Inverness Road and a powerline corridor. Some of the areas mapped by the BPA mapping as "regional" and "local" significance have actually already been cleared and disturbed historically. Therefore, connectivity has already been impacted by such developments.

Despite past impacts from clearing, the project will result in some increased fragmentation between habitat in the north of the Study Area and areas of habitat to the east and south. Stepping stone habitat will also be removed within the south-western portion of the Study Area. However, the threatened species found in the Study Area are mainly mobile species (birds), and these have potential to move across disturbed areas. The vegetation surrounding the project will not be disturbed and movement and dispersal opportunities will remain. Furthermore, the clearing of habitat as a result of the Project will occur

incrementally due to the staging of open cut mining and progressive rehabilitation of some mined areas will help to address these impacts.

Large tracts of relatively undisturbed bushland will remain to the east of the Study Area, including but not limited to the Callide Timber Reserve. These have been mapped by the BPA as being of State significance (**Figure 9**) and their connectivity and integrity will not be impacted by the project.

It is considered unlikely that the project will have a significant, residual impact on connectivity in the locality due to the existing highly fragmented landscape around the Study Area, and the fact that there will be staged rehabilitation of the mined area. In accordance with the EHP's (2014) *Significant Residual Impacts Guideline*, EHP's Landscape Fragmentation and Connectivity (LCF) Tool was used to assist in identifying and quantifying any significant impact as a result of the project on connectivity. EHP's LCF Tool determined that the project would not result in a significant residual impact on local or regional connectivity and therefore offsets for connectivity are not required for the project.

iii. Edge Effects

A consequence of habitat fragmentation is that it produces "edge effects". Edge effects are impacts that occur at the interface between natural habitats, especially forests and disturbed or developed land (Yahner, 1988). When an edge is created between woodland and a cleared area, changes to ecological processes within the vegetation can extend between 10 m and 100 m from the edge (Yahner, 1988). These include microclimatic changes in light, temperature, humidity and wind, which can favour a suite of different species and therefore cause significant changes to the ecology of the patch (Lindenmayer and Fischer, 2006) (Lindenmayer, 2006). These changes include; invasion by weeds, increase in feral animals, reduction in tree health, and barriers to dispersal or distribution (Yahner, 1988).

The project will result in edge effects where woodland is cleared for open cut mining and the construction of mine infrastructure. Due to edge effects, the effects of clearing are likely to extend beyond the areas that are being cleared and into areas of adjacent woodland that are being retained. However, these impacts are likely to be minor, given the already highly fragmented nature of vegetation and existing barriers present (e.g. powerline corridor to the east of the Study Area).

5.2.7 Impacts of Vegetation Clearing on EPBC Act Listed Fauna Species

The vegetation proposed to be cleared provides habitat for a number of fauna species listed under the EPBC Act. This section provides an assessment of the potential impacts of vegetation clearing to threatened fauna species listed under the EPBC Act that have been recorded from the Study Area, or which have high or moderate likelihood of occurrence within the Study Area. **Figures 15** to **24** show potential habitat for these fauna species within the Disturbance Boundary, while the impacts of the project on fauna species recorded or with a high or moderate likelihood of occurrence within the Study Area are discussed below.

i. Collared Delma

EPBC Act Status: Vulnerable

NC Act Status: Vulnerable

Occurrence within Study Area: High potential

The Collared Delma has not been recorded from the Study Area and only low value habitat for this species, confined to the occasional boulders and rocky outcroppings in the timbered northern areas, is present within the Study Area (**Figure 15**). Although two small patches of low value habitat would be cleared as a result of the project, large patches of contiguous, suitable habitat and viable landscape corridors are not present, and therefore the potential habitat is not considered to comprise "important habitat" for this species according to the Draft Referral Guidelines for the Brigalow Belt Reptiles (SEWPaC, 2011a).

Habitat modelling indicates that no high value habitat for this species would be cleared as a result of the project (**Figure 15**). No high value habitat occurs as the Study Area lacks essential habitat in the form of dense groundcover and loose bush rocks and because of the disturbance of the Study Area from cattle grazing and historic clearing (**Section 4.5.8i**).

Large areas of suitable vegetation occur outside of the Study Area that are likely to provide habitat for this species. In particular, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for many different fauna species. The vegetation within the Callide Timber Reserve comprises remnant vegetation, mostly in the form of eucalypt woodlands and contains habitat features such as dense leaf litter and logs, which can provide habitat for reptile species such as the Collared Delma.

Connectivity of existing low value habitat within the Disturbance Boundary is presently limited within the MLA by Inverness Road and cleared habitat surrounding this road. The proposed haul roads are therefore unlikely to limit connectivity further than current conditions (**Figure 15**). Connectivity with other potential habitat is limited by the existing cleared powerline corridor along the eastern boundary of the Study Area (**Figure 15**).

A range of existing and proposed impact avoidance and mitigation measures are proposed to minimise impacts on this species, as outlined in **Section 6**. This includes minimising clearing of woodland, pre-clearance surveys and undertaking progressive rehabilitation of mined areas.

An assessment of significance has been conducted for this species according to the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (DotE, 2013b) for Vulnerable species (see **Appendix L**). The assessment concluded that no important population of this species is present within the Study Area. This assessment indicates that although some suitable low value habitat is present within the Disturbance Boundary, due to the high number of feral predators present, any population, if present, is likely to be small and, as such, it is unlikely that there will be a residual significant impact to the Collared Delma as a result of the project.

ii. Yakka Skink

EPBC Act Status: Vulnerable

NC Act Status: Vulnerable

Occurrence within Study Area: Moderate potential

The Yakka Skink has not been recorded from the Study Area; however it has been previously recorded approximately 1.5km north east of the Study Area in the Callide Timber Reserve (Parsons Brinkerhoff, 2006).

This species has broad habitat preferences and the Study Area contains broadly suitable low value habitat (**Figure 16**). The wooded northern area and the portion of the Study Area to the west of Inverness Road contain occasional rocky outcrops, boulders, fallen timber and log piles which provide some habitat for this species (**Figure 16**).

Habitat modelling indicates that no high value habitat for this species would be cleared as a result of the project (**Figure 16**). No high value habitat occurs as the Study Area lacks due to the lack of records; lack of majority of preferred forest/woodland types; and disturbance of the Study Area from cattle grazing and historic clearing. Additionally, the habitat within the Study Area is not contiguous with the vegetation within the Callide Timber Reserve where a previous record is known from, being separated by both a powerline corridor and a haul road.

Large areas of suitable vegetation occur outside of the Study Area that are likely to provide habitat for this species. In particular, the Callide Timber Reserve to the east of the Study Area, where the species has been previously recorded (PB, 2015) provides a large continuous patch of woodland vegetation suitable for many different fauna species. Some areas also contain rocky outcrops and associated crevices and overhangs that could also provide some habitat for this species. The vegetation within the Callide Timber Reserve comprises remnant vegetation, mostly in the form of eucalypt woodlands and contains habitat features such as dense leaf litter and logs, which can provide habitat for reptile species such as the Yakka Skink.

Connectivity of existing low value habitat within the Disturbance Boundary is presently limited by Inverness Road and cleared habitat surrounding this road (**Figure 16**). The proposed haul roads are therefore unlikely to limit connectivity further than current conditions. Connectivity with potential habitat is limited by the existing cleared powerline corridor along the eastern boundary of the Study Area (**Figure 16**).

A range of existing and proposed impact avoidance and mitigation measures are proposed to minimise impacts on this species, as outlined in **Section 6**. This includes minimising clearing of woodland, pre-clearance surveys and undertaking progressive rehabilitation of mined areas.

An assessment of significance has been conducted for this species according to the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (DotE, 2013b) for Vulnerable species

(see **Appendix L**). The assessment concluded that no important population of this species is present within the Study Area. This assessment indicates that although suitable low value habitat is present within the Disturbance Boundary, due to the high number of feral predators present, any population, if present, is likely to be small and, as such, it is unlikely that there will be a residual significant impact to the Yakka Skink as a result of the project.

iii. Australian Painted Snipe

EPBC Act Status: Endangered

NC Act Status: Vulnerable

Occurrence within Study Area: Moderate potential

This species was not recorded during any surveys of the Study Area. It has, however, been assessed as having a moderate likelihood of occurrence within the Study Area based on the presence of suitable low value habitat in the form of the farm dams and the seasonal wetland present in the Study Area (**Figure 17**).

Habitat modelling indicates that no high value habitat for this species would be cleared as a result of the project (**Figure 17**). No high value habitat occurs as the Study Area lacks substantial wetland areas and those that do occur have been subject to disturbance by cattle grazing.

Numerous waterbodies including farm dams, seasonal wetlands and riparian areas occur in the area surrounding the Study Area that are likely to provide suitable habitat for this species.

A range of existing and proposed impact avoidance and mitigation measures are proposed to minimise impacts on this species, as outlined in **Section 6**. This includes minimising clearing of woodland, pre-clearance surveys and undertaking progressive rehabilitation of mined areas.

An assessment of significance has been conducted for this species according to the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (DotE, 2013b) for Endangered species (see **Appendix L**). The assessment concluded that no important population of this species is present within the Study Area. This assessment indicates that due to the very small area of low value habitat for the Australian Painted Snipe that will be removed for the project, and the numerous permanent water sources surrounding the Study Area, it is unlikely that there will be a significant residual impact to the Australian Painted Snipe as a result of the project.

iv. Red Goshawk

EPBC Act Status: Vulnerable

NC Act Status: Endangered

Occurrence within Study Area: Moderate potential

The Red Goshawk was not recorded during any surveys of the Study Area. It has, however, been assessed as having a moderate likelihood of occurrence within the Study Area based on the presence of some suitable low value habitat in the form of the woodlands, farm dams and the seasonal wetland present in the Study Area (**Figure 18**) with a relative abundance of prey.

Habitat modelling indicates that no high value habitat for this species would be cleared as a result of the project (**Figure 18**). No high value habitat occurs as the Study Area lacks records of the species and because woodlands around the limited permanent waters within the Study Area have been fragmented and disturbed.

Large areas of suitable vegetation occur outside of the Study Area that may provide habitat for this species.

Low value habitat for this species is fragmented within the Study Area. The project would further fragment the connectivity between low value habitat areas (**Figure 18**).

A range of existing and proposed impact avoidance and mitigation measures are proposed to minimise impacts on this species, as outlined in **Section 6**. This includes minimising clearing of woodland, pre-clearance surveys and undertaking progressive rehabilitation of mined areas.

An assessment of significance has been conducted for this species according to the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (DotE, 2013b) for Vulnerable species (see **Appendix L**). The assessment concluded that no important population of this species is present within the Study Area. This assessment indicates that due to the small area of low value habitat for the Red Goshawk that will be removed, and the large areas of similar habitat surrounding the Study Area; it is unlikely that there will be a residual significant impact to the Red Goshawk as a result of the project.

v. Squatter Pigeon (southern subspecies)

EPBC Act Status: Vulnerable

NC Act Status: Vulnerable

Occurrence within Study Area: Present

Four records of the Squatter Pigeon (southern subspecies) have been made in the Study Area, outside of the Disturbance Boundary (**Figure 19**), and this species is considered to be common in areas of suitable habitat. It is likely to occur in the northern and western parts of the Study Area. Such areas support woodlands with a wide diversity of grasses which this species relies on for feeding (DotE 2014j).

Habitat modelling indicates that the Study Area supports approximately 147.1 ha of high value habitat for the Squatter Pigeon (southern subspecies) (**Figure 19**). Large areas of similar vegetation occur outside of the Study Area that is also likely to provide similar habitat for this species.

Approximately 48.5 ha of high value habitat for the Squatter Pigeon (southern subspecies) would be cleared for the project (**Figure 19**). This represents a reduction of approximately 33% of high value habitat within the Study Area for this species. In addition to the removal of this habitat, the project will also result in a reduction in connectivity between Squatter Pigeon (southern subspecies) habitat in the northern parts of the Study Area and habitat to the south-west. However, given that the Squatter Pigeon (southern subspecies) is a mobile species (and has been recorded at a number of mine sites in Central Queensland), this reduction in connectivity is unlikely to significantly impact the Squatter Pigeon (southern subspecies). Connectivity to the extensive woodland areas to the east remains.

Large areas of suitable vegetation occur outside of the Study Area that may provide habitat for this species For example, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of forest and woodland vegetation suitable for many different fauna species. The vegetation within the Callide Timber Reserve comprises remnant vegetation, mostly in the form of eucalypt woodlands and contains suitable habitat features for the Squatter Pigeon (southern subspecies) such as woodlands with a grassy understorey.

A range of existing and proposed impact avoidance and mitigation measures are proposed to minimise impacts on this species, as outlined in **Section 6**. This includes minimising clearing of woodland, pre-clearance surveys and undertaking progressive rehabilitation of mined areas.

An assessment of significance has been conducted for this species according to the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (DotE, 2013b) for Vulnerable species (see **Appendix L**). The assessment concluded that no important population of this species is present within the Study Area. This assessment indicates that although the project will remove some limited high value habitat for this species, a residual significant impact is unlikely to occur to the Squatter Pigeon (southern subspecies) as a result of the project due to its broad habitat requirements and widespread areas of potential breeding and foraging habitat that will remain outside the Disturbance Boundary. It is also likely that rehabilitation of the Study Area will restore some habitat of the species in the longer term.

vi. Northern Quoll

EPBC Act Status: Endangered

NC Act Status: Not listed

Occurrence within Study Area: High potential

The Northern Quoll has not been recorded from the Study Area, however this species or its habitat was predicted to occur in the EPBC Act Protected Matters Search Tool (**Appendix A**), and a potential scat from this species was recorded less than 1 km east of the Study Area (**Figure 20**) in the Callide Timber Reserve. An individual was also recorded approximately 12 km south of the Study Area within the Callide Timber Reserve near the Callide Power Station.

Habitat modelling indicates that no high value habitat for this species would be cleared as a result of the project (**Figure 20**). No high value habitat occurs principally because the Cane Toads are well established within the drainage lines and farm dams within the Study Area and because of the extensive clearing and disturbance of the Study Area due to grazing.

Large areas of potentially suitable vegetation occur to the east of the Study Area that may provide habitat for this species. The vegetation within the Callide Timber Reserve comprises remnant vegetation, mostly in the form of eucalypt woodlands and contains rocky outcrops and associated crevices and overhangs which can provide shelter sites for the Northern Quoll. Broad areas of rocky habitats can support higher densities and/or longer lived individuals within the species range, due principally to the fact that such areas can remain free from Cane Toads. The broad rocky areas within the Callide Timber Reserve are naturally vegetated, relatively undisturbed and may be used by the Northern Quoll for breeding and foraging.

Low potential habitat for this species is fragmented within the Study Area. The project would further fragment the connectivity between low potential habitat areas (**Figure 20**). However, given the existing state of Northern Quoll habitat within the Study Area this is unlikely to have a significant impact on the Northern Quoll.

A range of existing and proposed impact avoidance and mitigation measures are proposed to minimise impacts on this species, as outlined in **Section 6**. This includes minimising clearing of woodland, pre-clearance surveys and undertaking progressive rehabilitation of mined areas.

An assessment of significance has been conducted for this species according to the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (DotE, 2013b) for Endangered species (see **Appendix L**). This assessment indicates that a resident population of Northern Quoll is unlikely due to a very low density of denning opportunities in conjunction with the presence of predatory feral animals and the Cane Toad. Some areas of the Disturbance Boundary may contain foraging or transient individuals; however, it is unlikely that there will be a residual significant impact to the Northern Quoll as a result of the project.

vii. Koala

EPBC Act Status: Vulnerable

NC Act Status: Special Least Concern

Occurrence within Study Area: High potential

The Koala has not been recorded from the Study Area; however it has potential to be present in select Eucalyptus-dominated woodlands of the Study Area, particularly those dominated by Blue Gums; albeit in low numbers and density.

According to the EPBC Act Referral Guidelines for the Vulnerable Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (DotE, 2014n), the Study Area comprises “Critical Habitat” for the Koala (**Appendix I**). That

notwithstanding, a more detailed analysis of the relative quality of habitat in the Study Area for the Koala has been undertaken for this project based on detailed and targeted field studies and only areas of low and unsuitable habitat have been identified (**Appendix I**).

Habitat modelling indicates that the Study Area supports no high value habitat for the Koala (**Figure 21**). Areas of low value habitat are present in the ephemeral drainage lines and riparian areas where a low density of primary food trees (i.e. Blue Gum [*Eucalyptus tereticornis*]) are present. Given the small size and fragmented nature of these woodland areas, combined with a lack of Koala records and low density of food trees, the habitat within the Study Area is only low value Koala habitat.

Based on published literature about Koala food preferences in central and northern Queensland (Ellis *et al.*, 2002), other areas of the Study Area that are dominated by secondary food trees such as Ironbarks are likely to be less used and so considered as representing low value habitat. The Narrow Leaved Ironbark and Lemon Scented Gum woodlands were therefore also assigned as low value habitat.

Large areas of suitable vegetation occur outside of the Study Area that may provide habitat for this species In particular, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation. The vegetation within the Callide Timber Reserve comprises remnant vegetation, mostly in the form of eucalypt woodlands and contains some areas of preferred food trees including Blue Gum.

A range of existing and proposed impact avoidance and mitigation measures are proposed to minimise impacts on this species, as outlined in **Section 6**. This includes minimising clearing of woodland, pre-clearance surveys and undertaking progressive rehabilitation of mined areas.

An assessment of significance has been conducted for this species according to the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (DotE, 2013b) for Vulnerable species (see **Appendix L**). The assessment concluded that no important population of this species is present within the Study Area. This assessment indicates that the Study Area contains a very low density of suitable feed trees for the Koala. On this basis, a population of this species within the Study Area is unlikely and therefore unlikely that there is to be any residual significant impact on Koala as a result of the project.

viii. Grey-headed Flying-fox

EPBC Act Status: Vulnerable

NC Act Status: Not listed

Occurrence within Study Area: Moderate potential

This species was not recorded during any surveys of the Study Area. It has, however, been assessed as having a moderate likelihood of occurrence within the Study Area based on the presence of some suitable low value habitat in the form of Blue Gums near permanent water present in the Study Area.

Habitat modelling indicates that no high value habitat for this species would be cleared as a result of the project (**Figure 22**). No high value habitat occurs as the Study Area does not support a Grey-headed Flying-fox colony and the Study Area lacks major concentrations of food resources.

Large areas of potentially suitable vegetation occur to the east of the Study Area that may provide habitat for this species. In particular, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for several different fauna species. The vegetation within the Callide Timber Reserve comprises remnant vegetation, mostly in the form of eucalypt woodlands and contains broad areas of potential foraging habitat for the species.

Low value habitat for this species is currently fragmented within the Study Area. The project would further fragment the connectivity between low potential habitat areas (**Figure 22**). However this is unlikely to significantly impact the Grey-headed Flying-fox because this species is highly mobile and is able to move easily between fragmented habitats.

A range of existing and proposed impact avoidance and mitigation measures are proposed to minimise impacts on this species, as outlined in **Section 6**. This includes minimising clearing of woodland, pre-clearance surveys and undertaking progressive rehabilitation of mined areas.

An assessment of significance has been conducted for this species according to the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (DotE, 2013b) for Vulnerable species (see **Appendix L**). The assessment concluded that no important population of this species is present within the Study Area. This assessment indicates that due to the very small area of low value habitat for the Grey-headed Flying-fox that will be removed, it is unlikely that there will be a residual significant impact to the Grey-headed Flying-fox as a result of the project.

ix. Large-eared Pied Bat

EPBC Act Status: Vulnerable

NC Act Status: Vulnerable

Occurrence within Study Area: Moderate potential

This species was not recorded during any surveys of the Study Area. It has, however, been assessed as having a moderate likelihood of occurrence within the Study Area based on the presence of some suitable foraging habitat found in the woodland vegetation present within the Study Area (**Figure 23**).

Habitat modelling indicates that no high value habitat for this species would be cleared as a result of the project (**Figure 23**). No high value habitat occurs as the Study Area lacks cliffs and caves suitable for roosting in close proximity to fertile woodlands/forests for foraging.

Large areas of suitable less disturbed forest and woodland occur outside of the Study Area that are likely to provide habitat for this species. In particular, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of forest and woodland that is

potentially suitable for the species, for both foraging and roosting. The Callide Timber Reserve contains rocky outcrops and associated crevices and overhangs that could provide roosting habitat for the Large-eared Pied Bat. These rocky areas within the Callide Timber Reserve are surrounded by woodland which could potentially be used by the Large-eared Pied Bat for foraging.

Connectivity with suitable habitat to the north will remain unaffected as the northern woodland present in the Study Area will not be cleared as a result of the project.

A range of existing and proposed impact avoidance and mitigation measures are proposed to minimise impacts on this species, as outlined in **Section 6**. This includes minimising clearing of woodland, pre-clearance surveys and undertaking progressive rehabilitation of mined areas.

An assessment of significance has been conducted for this species according to the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (DotE, 2013b) for Vulnerable species (see **Appendix L**). The assessment concluded that no important population of this species is present within the Study Area. This assessment indicates that due to the small area of low value habitat for the Large-eared Pied Bat that will be removed, it is unlikely that there will be a residual significant impact to the Large-eared Pied Bat as a result of the project.

x. South-eastern Long-eared Bat

EPBC Act Status: Vulnerable

NC Act Status: Vulnerable

Occurrence within Study Area: Moderate potential

The South-eastern Long-eared Bat has not been recorded from the Study Area, potential low value foraging habitat for this species occurs in the form of open woodlands, predominantly in the northern and western portions of the Study Area (**Figure 24**). However, the species preferred roosting resources, loose bark and tree crevices, are reasonably rare on the Study Area, due to the regenerating nature of the woodlands present. Furthermore, the box-ironbark-cypress pine habitat most strongly associated with this species is not well represented on the Study Area, although such communities are present in the locality.

Habitat modelling indicates that no high value habitat for this species would be cleared as a result of the project (**Figure 24**). No high value habitat occurs as the species has not been found within the Study Area and the South-eastern Long-eared Bat preferred woodlands habitat has been extensively cleared and modified within the Study Area.

Large areas of potentially suitable vegetation occur to the east of the Study Area that may provide habitat for this species. The Callide Timber Reserve to the east of the Study Area provides a large continuous patch of forest and woodland vegetation potentially suitable for this species. It includes open woodland vegetation, with some patches on dense woodland, which is suitable for the South-eastern Long-eared Bat.

Connectivity with suitable habitat to the north will remain unaffected as the northern woodland present in the Study Area will not be cleared as a result of the project.

A range of existing and proposed impact avoidance and mitigation measures are proposed to minimise impacts on this species, as outlined in **Section 6**. This includes minimising clearing of woodland, pre-clearance surveys and undertaking progressive rehabilitation of mined areas.

An assessment of significance has been conducted for this species according to the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (DotE, 2013b) for Vulnerable species (see **Appendix L**). The assessment concluded that no important population of this species is present within the Study Area. This assessment indicates that as the Disturbance Boundary contains few hollow bearing trees and little in the way of suitable foraging habitat, should a population be present, it is likely to be small, as such that it is unlikely that there will be residual significant impact to the South-eastern Long-eared Bat as a result of the project.

xi. Migratory Species

Two migratory fauna species listed under the EPBC Act, the Rainbow Bee-eater and Rufous Fantail, have been recorded within or surrounding the Study Area. Although not recorded, several other species listed as migratory under the EPBC Act have a high or moderate likelihood of occurrence within the Study Area due to the presence of suitable habitat. These species are not listed as threatened species and they are considered to be relatively abundant. These include the following species:

- Australian Painted Snipe;
- Cattle Egret;
- Eastern Great Egret;
- Fork-tailed Swift;
- Satin Flycatcher; and
- White-throated Needletail.

Potential habitat occurs in the Study Area for these species which may be used periodically. Impacts to each of these species are discussed below. The Australian Painted Snipe is also listed as Endangered under the EPBC Act and is discussed in **Section 5.2.7iii**.

Approximately 3.4 ha of low value habitat for the two wetland-dependent migratory bird species, the Cattle Egret and Eastern Great Egret, in present within the Study Area. The low value habitat is represented by the two farm dams located in the north of the Study Area (see **Figure 10**) that contain permanent sources of water. The two northern farm dams would not be removed for the project. These two species have been assessed as having a high likelihood of occurrence within the Study Area. The two farm dams within the Study Area provide relatively low quality habitat for these two wetland-dependent migratory bird species as they are degraded by stock access and pugging, and fringing vegetation is

limited. These farm dams are not proposed to be removed as a component of the project and are located outside of the Disturbance Boundary.

Two woodland species, the Rainbow Bee-eater and Rufous Fantail have been recorded within or surrounding the Study Area, and one additional species, the Satin Flycatcher has been assessed as having a high likelihood of occurrence within the Study Area. The Study Area contains 395 ha of low value potential habitat for these three species in the form of woodland vegetation and riparian vegetation along ephemeral drainage lines. The project will remove potential low value foraging habitat for these three species in the form of woodland vegetation. Additionally, potential breeding habitat along the banks of the ephemeral drainage lines will be cleared within the Disturbance Boundary. However, these are wide ranging migratory species. There are broad areas of suitable habitat for these species in the adjacent woodland areas, and so these species are unlikely to be significantly impacted by the project.

The Fork-tailed Swift and White-throated Needletail were assessed as having a high likelihood of occurrence within the Study Area. The Study Area contains 395 ha of low value potential habitat for these two species in the form of woodland vegetation and riparian vegetation along ephemeral drainage lines. These species are aerial feeding birds and are likely to find suitable foraging resources above the majority of the Study Area. These are extremely wide-ranging birds that access resources from across a large area and they are unlikely to be dependent on the resources present in the Study Area for their survival. No breeding habitat will be impacted as these species breed in Asia (DotE, 2014v). Being species that may potentially feed aerially over the Study Area on insects, the project may remove woodland habitats that generate some insect foods. However, such habitats will be replaced over time as the Study Area is rehabilitated. There is also suitable foraging habitat for these species in the wider locality. The project is therefore unlikely to significantly impact the Fork-tailed Swift and White-throated Needletail.

The Study Area is not considered to comprise important habitat for any of the migratory species. Areas of similar habitat occur elsewhere in the locality that will remain and will continue to provide habitat for these species. There is no evidence to suggest that the Study Area supports an ecologically significant proportion of the population of these migratory species and no breeding was observed during field surveys.

An assessment of significance has been conducted for these species according to the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (DotE, 2013b) for migratory species (**Appendix L**). These assessments indicate that no significant impact is likely to occur to any migratory species listed under the EPBC Act due to the project.

5.2.8 Impacts of Vegetation Clearing on NC Act Listed Species

A number of fauna species listed under the NC Act were either recorded within the Study Area during the field surveys, or have been assessed as having a high or moderate likelihood of occurrence within the Study Area. All of these, except for the Short-beaked Echidna, are also listed under the EPBC Act and have been considered previously in **Section 5.2.7**. Species listed under the EPBC Act that are also listed under the NC Act are as follows: Squatter Pigeon (southern subspecies), listed as Vulnerable; Australian Painted

Snipe, listed as Vulnerable; Red Goshawk, listed as Endangered; Koala, listed as Special Least Concern; South-eastern Long-eared Bat, listed as Vulnerable; Large-eared Pied Bat, listed as Vulnerable; Collared Delma, listed as Vulnerable and Yakka Skink, listed as Vulnerable.

Potential impacts on the Short-beaked Echidna are discussed below.

i. Short-beaked Echidna

EPBC Act Status: Not listed

NC Act Status: Special Least Concern

Occurrence within Study Area: Present

The Short-beaked Echidna was recorded once within the *Eucalyptus*-dominated woodland in the southern portion of the Study Area during recent surveys (**Figure 14**). Approximately 395 ha of habitat for the Short-beaked Echidna is present in the Study Area. Large areas of similar vegetation occur outside of the Study Area, particularly to the east, that are also likely to provide similar or better habitat for this species.

Large areas of potentially suitable vegetation occur to the east of the Study Area that may provide habitat for this species. In particular, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of forest and woodland vegetation suitable for the Short-beaked Echidna. The forest and woodland areas are relatively undisturbed and would have extensive ant and termite food resources and shelter sites amid rocks and fallen logs.

The project is unlikely to result in the fragmentation of potential Short-beaked Echidna foraging habitat, as the Study Area is already highly fragmented.

A range of impact avoidance and mitigation measures are proposed to minimise impacts on this species, as outlined in **Section 6**. This includes minimising clearing of woodland, pre-clearance surveys and undertaking progressive rehabilitation of mined areas.

Although the Short-beaked Echidna is not a threatened species, offsets are required for the Short-beaked Echidna under the EO Act, in the event of the project giving rise to a significant residual impact on this species. It has been assessed that the project is unlikely to have a significant residual impact on this species due to its broad habitat requirements and widespread areas of potential breeding and foraging habitat that will remain outside the Disturbance Boundary. It is also likely that rehabilitation of the Study Area will restore some habitat of the species in the longer term.

5.2.9 Indirect Impacts

i. Noise and Vibration

The project is likely to generate significant noise during construction of infrastructure and through routine mining operations. Examples of noise can come from large mining trucks,

excavation machinery, noise from blasting used during the mining phase, and the noise from generators and machinery used in the daily operation of the mine. However, the area is already affected to an extent by noise impacts due to the existing Boundary Hill Mine to the north of the project. The noise impacts from the approved existing Boundary Hill Mine will move from the north to the south at the commencement of the project.

Some fauna species are sensitive to elevated levels of noise in their environment and this has the potential to impact negatively on these species (AMEC Americas Limited 2005). Noise can affect animal physiology and behaviour, and if it becomes an ongoing stress, it can be injurious to an animal's energy budget, reproductive success and long-term survival. There are other potential effects that include habitat loss through avoidance, reduced reproductive success and a retreat away from favourable habitats (AMEC Americas Limited 2005).

Noise also affects the way that animal-created sounds are heard and interpreted by other animals. This can include mating calls, territorial calls and alarm calls. Interference with these calls by noise created by the mine, has the potential to disrupt the species relying on these calls with deleterious results including reduced reproductive success and mortality (AMEC Americas Limited 2005).

The noise created by the construction and operation of the mine is likely to affect native species and affect the value of the habitats that remain. Some species are likely to move in response to noise, and therefore the habitat value of the woodlands remaining in the immediate vicinity of open cut mining and mine infrastructure areas may decrease. This has the effect of increasing the amount of habitat for native species that will be disturbed as a result of the project. However, it is likely that most animal species will habituate to noise disturbance (AMEC Americas Limited 2005), and the project is likely to only cause temporary disturbance to fauna. Furthermore, the impacts from noise emissions are likely to be localised close to the open cut mine and mine infrastructure (up to 100 m) and are not likely to have a significant, long-term, impact on wildlife populations.

Noise will diminish within areas that are progressively rehabilitated and, in the long term, noise levels will return to normal following rehabilitation of the total mined area and cessation of mining.

ii. Vehicle Strike

Vehicle strikes can pose a significant risk to some wildlife, particularly but not exclusively to ground dwelling species (Taylor and Goldingay 2010). Koalas are particularly at risk from vehicle strike as they frequently cross roads and tracks while moving between individual trees or from one patch of habitat to another. However no Koalas were recorded in or near the project site, therefore there is a low risk of vehicle strike of Koalas within the Study Area.

The project will result in the construction of additional roads and tracks which means an increased length of road for animals to cross and navigate, as well as a significant increase in the number of vehicles operating in the Study Area. Vehicle strikes may also occur during the operation of the mine with vehicles entering and leaving the open cut mine and mine

infrastructure areas as well as during the normal daily movements of workers and vehicles throughout the Study Area.

These changes are not likely to increase the likelihood of vehicle strikes on native fauna, or associated mortality, as the project will utilise the existing Boundary Hill Mine equipment and there will be no increase in the Boundary Hill workforce for the project. Although some mortality of animals as a result of vehicle strike is likely, it is not expected to be significant. Speed limits along internal roads, appropriate signage and careful driving policies will increase the awareness of drivers and decrease the risk of vehicles striking fauna. The risk of vehicle strike will diminish following rehabilitation of the total mined area and cessation of mining. Currently, vehicle strikes recorded at the adjacent Boundary Hill Mine are not significant, therefore, significant vehicle strikes are not likely to occur at the project.

iii. Light

The project will increase the level of artificial night light in the natural environment as work will be conducted 24 hours/day. However, the northern part of the Study Area is already partly affected by light impacts due to the existing Boundary Hill Mine to the north of the project. Sources of night light will come from light from buildings, vehicle headlights and floodlighting of work areas. Increased light levels may adversely impact wildlife by direct glare, chronic or periodic increased illumination and temporary unexpected fluctuations in light levels (Saleh 2007; Longcore and Rich 2010).

Research into impacts from altered lighting (Longcore and Rich 2004) indicates that it can trigger behavioural and physiological responses that include but are not limited to:

- Changes in foraging behaviour, such as when diurnal species begin foraging during night-time;
- A disruption of seasonal day length cues which trigger critical behaviours (Saleh 2007; Longcore and Rich 2004, 2010);
- Disorientation and/or temporary blindness; and
- Interference with predator-prey relationships.

While increased levels of night lighting will have some effect on the surrounding woodland environment, the impacts from night light pollution are likely to remain close to the immediate boundary of the open cut mine and mine infrastructure areas, with only limited glare into the surrounding natural vegetation. Detailed design will ensure that lighting will be directed away from high value habitat areas. It is likely that most fauna species would habituate to the levels of light pollution from the mine, and it is unlikely to have a significant or long-term impact on any fauna species.

Artificial light will diminish within areas that are progressively rehabilitated and, in the long term, light levels will return to normal following rehabilitation of the total mined area and cessation of mining.

iv. Dust

Construction and mining activities have the ability to generate dust, which may impact on the ecology within the Study Area in a number of ways. Dust that settles can accumulate on leaf surfaces and reduce essential physiological processes including photosynthesis, respiration, and transpiration (Farmer 1993). Dust can also produce physical effects on plants such as blockage and damage to stomata, shading, abrasion of leaf surface or cuticle. Decreased growth and vigour of plants may mean that they are more susceptible to pathogens and other disturbance, and these plants are more likely to be subject to increased mortality. Such impacts to individual plants generally result in decreased productivity and can result in changes in vegetation and community structure (Farmer 1993).

The effect of dust deposition also affects animals that use plants, either as a source of food or habitat. Dust on the foliage and fruit may reduce palatability to animals and decreased health of trees and changed community structure results in a reduction in the amount of available habitat.

Dust pollution can lead to a decrease in habitat quality which has the potential to extend the area of impact beyond the area directly disturbed by the mine. Increased levels of dust could impact vegetation within woodland communities, reducing health of some species along the edge of mined areas and roads. It could also impact upon potential foraging resources for wildlife. That notwithstanding, dust will diminish within areas that are progressively rehabilitated and, in the long term, dust levels should return to normal following rehabilitation of the total mined area and cessation of mining. Standard dust minimisation strategies such as watering haul roads will be implemented to minimise the creation of dust. These are described in the EIS Air Quality Report. In the context of the scale of the project, dust is not considered likely to cause a significant impact on the ecological values of the Study Area.

v. Erosion and Sedimentation

The project has the potential to increase the amount of erosion occurring in the Study Area through the construction of roads, tracks, and infrastructure. The effects of erosion can already be seen in places within the Study Area, particularly along ephemeral drainage lines, and is caused by Cattle. The Study Area is located in a tropical climate, and during the wet season, large volumes of rain fall and can wash away any disturbed earth relatively easily. This has the potential to increase sedimentation and turbidity of ephemeral drainage lines.

The project will result in a significant amount of soil disturbance, both for the mine and the creation of roads and tracks throughout the Study Area, with an associated increase in the potential for erosion and consequent impacts. Erosion is also likely to be exacerbated by any kind of vegetation clearance for the mine and infrastructure as vegetative cover is known to stabilise soils.

Erosion and sediment controls will be established to minimise the amount of erosion and consequent impacts of the project. With the implementation of appropriate measures, it is unlikely that erosion will significantly affect the ecology of the Study Area.

vi. Feral Animals and Weeds

Alterations to habitat conditions often favour introduced and/or hardy native plant and animal species that can proliferate in disturbed conditions. Such species have potential to impact upon the original local native plant and animal species. Weeds such as Buffel Grass and other introduced plants have potential to out-compete regenerating native plant species. Feral animals such as pigs, foxes, rabbits and some species of birds can also breed in the more open areas following clearance of forest and woodland. They can cause problems for native fauna species by preying upon them or by competing with them for food and resources.

Although the project has the potential to increase the numbers of feral animals, the Study Area already contains a significant amount of feral animals, including Cane Toads, European Red Foxes, Dogs, Feral Pigs and Feral Cats. Feral pigs are known to prey on frogs, reptiles, birds and small mammals (New South Wales Department of Environment and Conservation 2005) as well as degrade habitat by:

- Feeding selectively on plant communities;
- Creating drainage channels in swamps;
- Eroding soil and fouling watering points with their wallowing; and
- Spreading weeds and possibly disease, such as foot and mouth disease.

Feral animals such as wild dogs and pigs are currently controlled in the Study Area to mitigate the impacts of these species on livestock. This mitigation will continue for the duration of the project.

The existing Callide Mine Weed Management Plan (**Section 6.3.1iii**) will be updated to include mitigation for feral animals. This will include provision for the implementation of appropriate control measures including monitoring and population reduction. With the implementation of these measures, it is unlikely that feral animals or weeds will have a large impact on the ecology of the Study Area.

vii. Spread of Introduced Plants and Plant Diseases

The project has the potential to spread weeds through vegetation clearance, and vehicles and machinery entering and exiting the Study Area. A Weed Management Plan for Callide Mine already exists (refer to **Section 6.3.1iii**) and this will be extended to cover the project.

There is also the potential for the project to spread plant diseases such Mytle Rust (*Uredo rangelii*) and Root Rot Fungus (*Phytophthora cinnamomi*). Myrtle Rust is a serious fungal disease that spreads rapdly via wind, human activity and animals, and is now widely spread in South East, Central and Far North Queensland (DAFF 2012). Root Rot Fungus is a soil borne pathogen that is associated with plant deaths in in native vegetation in Queensland. The existing Weed Management Plan for Callide Mine (refer to **Section 6.3.1iii**) will be updated to outline measures to limit any potential spread of weeds and diseases and where

vegetation occurs on the Study Area it should be monitored to assess any occurrence of disease.

5.2.10 Duration and Timing of Impacts

The duration and timing of the impacts of the project has important effects on the magnitude of the overall impacts on the ecology of the Study Area.

The total or net impacts of the project will not occur simultaneously as the mining will be staged and rehabilitation will be progressive. Woodlands will be progressively cleared by the project; however, areas of woodland will be re-established in the rehabilitation, with the primary aim of restoring them to native vegetation. Further detail in rehabilitation will be provided in the Rehabilitation Management Plan.

This means that for much of the life of the mine, the majority of the Study Area will be vegetated, although rehabilitated mine areas will have immature vegetation. These young rehabilitated areas will still represent habitat for some fauna species, including birds, and play an important role in maintaining habitat areas as the project progresses. Thus the net loss of vegetation at a given stage of the project time will be minimised through the progressive clearance and concurrent rehabilitation of the mined land within the Study Area.

5.3 Impacts of Climate Change

There is potential for climate change to cause changes in habitat, as changed climatic conditions will favour some kinds of environments over others. This will lead to changes in the distribution of habitat which will in turn affect the distribution of native species. Areas most at risk are the wet tropics in Queensland and the alpine areas that will change significantly if temperatures rise according to predictions.

Climate change may happen too quickly for some species to adapt and may exacerbate existing threats such as land clearance, farming and pollution. Species with biological traits that make them susceptible to change, or with restricted habitats, are particularly vulnerable to extinction, as they will have nowhere to go if their habitats are rendered unsuitable.

The project will result in the reduction of habitat for native species, which may indirectly exacerbate any reduction in habitat caused by climate change. However it is unclear whether the habitats present in the Study Area are susceptible to climate change. As well as reducing the extent of some communities and habitats, climate change can also facilitate the expansion of other habitats, and some species will increase their distribution as a result. There are large areas of similar habitat in the locality that is similar to the habitat present in the Study Area, and it is not expected that the reduction of habitat as a result of the project would significantly exacerbate the effects of climate change in the locality.

5.4 Cumulative Impacts

Cumulative impacts result when many small-scale alterations to the environment combine to cause an overall greater level of impact. In a mining environment, cumulative impacts can

arise from the compounding activities of a single operation or multiple mining and processing operations in the same area, as well as the interaction of mining impacts with other past, current and future activities that may not be related to mining (Franks *et al.*, 2008).

Cumulative impacts can arise from either persistent losses of one resource, or the compounding effects of two or more impacts (Lindenmayer and Fischer, 2006). Direct and indirect impacts that may be considered insignificant on their own may be significant when considered together with other actions being undertaken as part of the project, or with other similar projects in the locality.

The main impact to biodiversity that will occur as a result of the project is the clearance of native vegetation that provides habitat for a range of native species. Extensive clearance of vegetation has already occurred within the district, largely for agricultural pursuits, but also for the existing Callide Mine Complex coal mines, including Boundary Hill immediately to the north and Trap Gully, The Hut and Dunn Creek approximately 7 km to the south-east. Within a 20 km radius of the Study Area the extent of remnant habitat remains mostly within the Callide Timber Reserve that extend south and connect with Kroombit Tops National Park. No proposals to clear any further remnant habitat are known at this stage.

The Study Area occurs within the Brigalow Belt Bioregion, which has been extensively cleared of native vegetation in the past for agricultural and pastoral practices. For this reason, several vegetation types within the region are protected under the EPBC Act and/or NC Act, as they fall below a critical pre-European extent remaining threshold). The Study Area does not contain any REs that have been extensively cleared across the bioregion, and all REs identified within the Study Area are 'Least Concern' REs under the VM Act. The clearing of REs for the project will result in the loss of less than 1% of each RE (as a percentage of RE remaining in the bioregion).

Therefore, it is not considered that the clearing of this vegetation will contribute significantly to cumulative remnant habitat clearing within the region.

Cumulative impacts potentially include habitat fragmentation. Clearing of small areas of remnant habitat will be required for the project. For highly mobile species, such as birds, these impacts would be much less severe than for less mobile species, such as reptiles. Although more isolated areas of woodland can be important refuge habitat for some species, the woodland that would be cleared is relatively isolated from any other large tracts of woodland, separated by cleared farming land, a powerline corridor, and existing mining operations. The Study Area is therefore outside the main bioregional corridor system located within the Callide Timber Reserve and Kroombit Tops National Park axis.

5.5 Summary of Impacts

The project would result in the clearing of approximately 65.3 ha of remnant native vegetation consisting of widespread forms of woodland. No threatened ecological communities listed under the EPBC Act or VM Act are present in the Study Area or would be impacted by the project. The potential impacts of the project to MNES and MSES are outlined below.

5.5.1 Potential Impacts to MNES

No threatened flora species listed under the EPBC Act are present in the Study Area or would be impacted by the project.

One threatened fauna species under the EPBC Act, the Squatter Pigeon (southern subspecies), has been recorded immediately adjacent the project Disturbance Boundary and an estimated 48.5 ha of high value habitat would be removed for this species. An Assessment of Significance was undertaken for this species and it was concluded that the project will not have a residual significant impact on this species under the EPBC Act and therefore offsets are not required under the EPBC Act.

An additional nine fauna species listed under the EPBC Act (the Collared Delma, Yakka Skink, Australian Painted Snipe, Red Goshawk, Northern Quoll, Koala, Grey-headed Flying-fox, Large-eared Pied Bat and South-eastern Long-eared Bat) have been assessed as having a moderate or high likelihood of occurrence within the Study Area. None of these species have been recorded within the Study Area (although the Yakka Skink has been recorded approximately 1.5km away in the Callide Timber Reserve) (Parsons Brinkerhoff, 2006). Detailed habitat mapping undertaken for these species assessed that no high value habitat for these species occurs within the Study Area. Assessments of Significance were also undertaken for these species and it was concluded that that the project will not have a residual significant impact on these species under the EPBC Act and therefore offsets are not required under the EPBC Act.

Two migratory bird species, the Rainbow Bee Eater and Rufous Fantail, have been recorded within or surrounding the Study Area. While the project will remove habitat for these two migratory species, impacts are not expected to be significant and broad areas of habitat will remain in the locality. Assessments of Significance were also undertaken for these species and it was concluded that that the project will not have a residual significant impact on these species under the EPBC Act and therefore offsets are not required under the EPBC Act.

An additional five migratory fauna species (excluding the Australian Painted Snipe which is discussed above), namely the: Cattle Egret, Eastern Great Egret, Fork-tailed Swift, Satin Flycatcher and White-throated Needletail have been assessed as having a moderate or high likelihood of occurrence within the Study Area. These five migratory species have not been recorded within the Study Area. It has been assessed that while the project will remove habitat for these species, impacts are not expected to be significant and broad areas of habitat will remain in the locality. Assessments of Significance were also undertaken for these species and it was concluded that the project will not have a residual significant impact on these species under the EPBC Act and therefore offsets are not required under the EPBC Act.

5.5.2 Impacts to MSES

The project will require the clearing of approximately 2.39 ha of vegetation along ephemeral drainage lines, which is a MSES under the EO Act. However, this is not considered to be a significant residual impact and therefore offsets under the EO Act are not proposed.

One threatened flora species listed under the NC Act, *Acacia pedleyi*, has been assessed as having a moderate likelihood of occurrence within the Study Area. This species was not recorded within the Study Area. Detailed habitat mapping undertaken for this species assessed that no high value habitat for this species occurs within the Study Area. An impact assessment was also undertaken for this species and it was concluded that the project will not have a significant residual impact on *Acacia pedleyi* under the NC Act and therefore offsets are not required for this species under the EO Act.

One threatened fauna species listed under the NC Act, the Squatter Pigeon (southern subspecies), has been recorded immediately adjacent the project Disturbance Boundary and an estimated 48.5 ha of high value habitat would be removed for this species. It has been assessed that the project will not have a significant residual impact on this species under the EO Act and therefore offsets are not required under the EO Act.

An additional seven fauna species listed under the NC Act (all of which are also listed under the EPBC Act) (the Collared Delma, Yakka Skink, Australian Painted Snipe, Red Goshawk, Koala, Large-eared Pied Bat and South-eastern Long-eared Bat) have been assessed as having a moderate or high likelihood of occurrence within the Study Area. None of these species have been recorded within the Study Area. As described above, detailed habitat mapping undertaken for these species assessed that no high value habitat for these species occurs within the Study Area. Assessments of Significance were also undertaken for these species and it was concluded that that the project will not have a significant residual impact on these species under the EO Act and offsets are not proposed for these species under the EO Act.

One Special Least Concern fauna species listed under the NC Act, the Short-beaked Echidna, was recorded in the woodlands of the Study Area. While the project will remove habitat for this species, impacts are not expected to be significant and broad areas of habitat will remain in the locality. It was concluded that that the project will not have a significant residual impact on this species and offsets for this species are not proposed under the EO Act.

Chapter **6**

Mitigation

The purpose of this section is to outline the mitigation measures proposed to ameliorate the impacts of the project on flora and fauna. As demonstrated in previous sections, the Study Area is biodiverse and provides habitat for a wide range of flora and fauna, including threatened fauna species listed under the EPBC Act and/or the NC Act. As discussed in **Section 5**, the project will remove a small amount of Of Concern vegetation listed under the VM Act and will impact the threatened species through the clearing of habitat and a range of indirect impacts.

This section outlines a range of impact mitigation measures that will be implemented for the project, including measures to avoid, mitigate and compensate for impacts, particularly the removal of habitat. This includes minimising vegetation clearance, pre-clearance surveys, mine rehabilitation and a suite of management and monitoring plans that will ensure biodiversity values present in the Study Area are appropriately managed in the long term, and that threats to biodiversity such as feral animals and weeds are managed. Furthermore, an ecological monitoring program will be established to monitor the ongoing status and health of flora and fauna communities that will be retained within the Study Area in order to assess the success of the mitigation and compensation measures.

6.1 Measures to Avoid Impacts

Open cut mining projects cannot readily avoid impacts to biodiversity where mineral resources are beneath flora and fauna habitats. However, avoidance of impacts has been achieved to the extent possible by modification of the design and location of the open cut mine and associated infrastructure away from remnant habitats, where feasible, and avoidance of ephemeral drainage lines.

During the detailed design stage of the project, areas of high quality habitat will be identified and avoided where possible. These areas include;

- Hollow bearing trees;
- Ephemeral drainage lines and riparian zones; and
- Large remnant trees.

Based on the assessment of impacts, further measures to avoid impacts are proposed.

6.2 Measures to Mitigate Impacts

The following impact mitigation measures will be implemented to mitigate the direct and indirect impacts of the construction and operation of the project.

6.2.1 Minimising Vegetation and Habitat Loss

In order to minimise clearing impacts and unnecessary disturbance to native vegetation, the following procedures will be implemented:

- The limits of clearing will be delineated during the construction process and marked clearly on plans and on the ground;
- Native vegetation beyond the identified clearing areas will not be disturbed;
- Ancillary facilities such as stockpile sites, site compounds and construction zones will not be located beyond the limits of clearing;
- Vegetation clearing will be undertaken sequentially and in accordance with the proponent's Permit to Disturb process. This will restrict the area of vegetation to be cleared to that required; and
- Worker briefings on the care and conservation of the Study Area native vegetation and habitat.

6.2.2 Pre-clearing Surveys

Where clearing of fauna habitats will take place, pre-clearing protocols will be followed to avoid injuring native fauna and livestock, including:

- Preparation of an inventory of trees and hollows to be removed, prior to clearing;
- Checking hollow-bearing trees for the presence of bird nests and arboreal mammals, such as possums, gliders and bats, prior to felling;
- Animals found to be occupying trees and habitat will be safely removed before the clearing of trees and relocated into nearby woodlands;
- Nest boxes or salvaged tree hollows will be provided in nearby woodland to compensate for the hollows to be removed due to vegetation clearance; and
- Boulders and large logs will be placed in nearby areas of retained vegetation to allow their continued use as fauna habitat.

The pre-clearing surveys will also involve ensuring no domestic stock is present in the clearing area. A Spotter Catcher, in possession of relevant permits under the NC Act, will be on hand at all times to supervise clearing and to rescue any animals still remaining in the clearing area following the pre-clearance surveys. The Spotter Catcher will handle any

animals injured during the process and will determine whether veterinary help is needed. If appropriate, animals will be taken to the nearest veterinary surgeon for treatment.

6.2.3 Vegetation Conservation and Management

In order to maximise the conservation of biodiversity, and mitigate the impacts of the project, as much existing vegetation as possible will be retained in the Study Area. Areas of native vegetation in the Study Area, outside of the disturbance footprint of the project will be retained where feasible. The following measures will be implemented in the remaining habitats within the Study Area:

- Measures to manage weeds and feral animals, in accordance with the requirements and updates to the Weed Management Plan; and
- Management of grazing pressure in the Study Area.

6.2.4 Mine Rehabilitation

All areas disturbed by mining activities will be progressively rehabilitated over the life of the project. Staged rehabilitation of all mine disturbed areas will occur with the objective of recreating and establishing a self-sustaining post-mining landscape with native vegetation and is able to support a diverse range of viable flora and fauna populations.

Local provenance native plant species will be utilised in mine rehabilitation where possible and seed will be collected from native vegetation in the Study Area, where possible, to ensure genetic diversity is maintained. Where practical, topsoil will be translocated from proposed mining areas to conserve the native seed bank of local ecological communities. This will improve the quality and diversity of native growth in rehabilitation areas and maximise the establishment of a diversity of native species, particularly the understorey species.

All rehabilitated areas will be managed according to the Rehabilitation Management Plan, including outlining procedures for the recreation of the ecological functions of native vegetation communities, and for the provision of suitable habitat for native flora and fauna in rehabilitated areas.

Monitoring will be undertaken to track the progress of rehabilitation and identify any remedial works that may be required.

6.3 Management and Monitoring Plans

6.3.1 Existing Management and Monitoring Plans

Callide Mine has a range of existing management plans to assist with managing and protecting environmental values and monitoring potential environmental impacts (including MNES) at the current Boundary Hill operations. The project aims to build on existing management plans plus develop new plans where additional environmental protection opportunities are identified.

The objectives of the existing management plans are outlined below. Proposed management plans for development to further improve environmental protection are also discussed. Prior to the development and operation of the project, existing management plans and strategies will be updated to include the Boundary Hill South mining area.

i. Erosion and Sediment Control Plan

The primary purpose of the Erosion and Sediment Control Plan is to:

- Examine and address all issues relevant to the generation, management, and mitigation or reduction of erosion and sediment transport on and off Callide Mine;
- Provide guidance in erosion and sediment related issues and management techniques applicable to Callide Mine;
- Determine the appropriate requirements for erosion and sediment control and management for all land uses on site and serve to determine whether existing control measures on site are compliant in relation to their design and functionality; and
- Comply with Callide Mine's approval conditions and any other regulatory requirements of the administering authority.

ii. Biodiversity Action Plan

A Biodiversity Action Plan has been prepared for Callide Mine to provide a framework for assessing the 'biodiversity value' of the land at Callide Mine. Once these values are understood, at a qualitative level, assessments are made on whether impacts to biodiversity values as a result of the coal mine operations will cause a risk to the business. The Callide Mine Biodiversity Action Plan is a trial plan, the first of its kind for Anglo American Metallurgical Coal in Australia.

iii. Weed Management Plan

The Callide Mine Weed Management Plan provides a framework for the effective management of weed species introduction and control. The aim of this document is to increase awareness of weed management and practices on site to provide some general guidelines for the prevention and distribution of weeds that can be facilitated by mining related activities. This plan has been prepared to address Callide Mine's legislative obligations regarding the management of weeds on site. It is not intended to cover the operations of Contractors that undertake weed treatment activities for the purpose of maintaining infrastructure or access. This current plan will be updated to include feral animals and be renamed the Feral Animal and Weed Management Plan. This plan will also be updated to include measures to minimise the spread of introduced plants and plant diseases.

6.3.2 Additional Plans for the Project

In addition to the existing management plans that are in operation for Callide Mine, and which will be implemented for the project, a Species Management Program will be prepared and implemented, as described below.

i. Species Management Program

A Species Management Program is required to be developed and implemented for the project in accordance with the requirements of the NC Act (**Section 2.3**). The Species Management Program will outline actions to be taken to minimise impacts on animal breeding places and will be submitted to the EHP for approval prior to the commencement of construction activities. The program will include prescriptions on the nature and duration of pre-clearance surveys as well as measures to be employed during any clearing activities (e.g. relocation of habitat features such as hollows and logs).

Chapter 7

Offsets

In order to compensate for the impacts of the project on flora and fauna, biodiversity offsets will be provided for any significant, residual impacts on MNES or MSES. Biodiversity offsets will be developed to address the residual impacts of the project in a strategic and meaningful way that will deliver a real biodiversity outcome, and will ensure that the project does not result in a net loss of biodiversity values.

A summary of the EPBC Act listed species that have been recorded or assessed as having a moderate or high likelihood of occurrence within the Study Area is presented in **Table 7.1**. The Assessment of Significance undertaken for EPBC Act listed species (**Appendix L**) indicated that the project is unlikely to have a significant impact on any EPBC Act listed species.

A summary of the MSES in the Study Area is presented in **Table 7.2**.

Table 7.1 Matters of National Environmental Significance in the Study Area Relevant to the Project

MNES	Presence in the Study Area	Potential Project Impact on High Value Habitat within the Study Area	Offsets
Threatened Fauna Species			
Reptiles			
Collared Delma [Vulnerable]	This species has not been recorded from the Study Area but has been assessed as having a high likelihood of occurrence within the Study Area due to the presence of potential low value habitat.	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the Collared Delma (**Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.
Yakka Skink [Vulnerable]	This species has not been recorded from the Study Area but has been assessed as having a moderate likelihood of occurence within the Study Area due to the presence of potential low value habitat habitat.	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the Yakka Skink (**Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.
Birds			
Australian Painted Snipe* *[Endangered]	This species has not been recorded from the Study Area but has been assessed as having a moderate likelihood of occurence within the Study Area due to the presence of potential low value habitat.	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to result in a residual significant impact on the Australian Painted Snipe (**Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.
Red Goshawk [Vulnerable]	This species has not been recorded	No high value habitat has been identified in	No residual significant impact is

Table 7.1 Matters of National Environmental Significance in the Study Area Relevant to the Project

MNES	Presence in the Study Area	Potential Project Impact on High Value Habitat within the Study Area	Offsets
	from the Study Area but has been assessed as having a moderate likelihood of occurence within the Study Area due to the presence of potential low value habitat.	the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the Red Goshawk (**Section 5.2.7; Appendix L**).	predicted to occur to this species and no offsets are proposed.
Squatter Pigeon (southern subspecies) [Vulnerable]	This species has been recorded from four locations within and surrounding the Study Area (**Figure 14**).	Approximately 48.5 ha of high value habitat for this species is proposed to be cleared to allow for open cut mining and the construction of mine infrastructure. This clearing has been assessed as being unlikely to result in a residual significant impact on the Squatter Pigeon (southern subspecies) (**Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.
Mammals			
Northern Quoll [Endangered]	This species has not been recorded from the Study Area but has been assessed as having a high likelihood of occurence within the Study Area due to the presence of potential low value habitat.	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the Northern Quoll (**Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.
Koala [Vulnerable]	This species has not been recorded from the Study Area but has been assessed as having a high	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely	No residual significant impact is predicted to occur to this species and no offsets are proposed.

Table 7.1 Matters of National Environmental Significance in the Study Area Relevant to the Project

MNES	Presence in the Study Area	Potential Project Impact on High Value Habitat within the Study Area	Offsets
	likelihood of occurence within the Study Area due to the presence of potential low value habitat.	to give rise to a residual significant impact on the Koala (**Section 5.2.7; Appendix L**).	
Grey-headed Flying-fox [Vulnerable]	This species has not been recorded from the Study Area but has been assessed as having a moderate likelihood of occurence within the Study Area due to the presence of potential low value habitat.	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the Grey-headed Flying-fox **(Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.
Large-eared Pied Bat [Vulnerable]	This species has not been recorded from the Study Area but has been assessed as having a moderate likelihood of occurence within the Study Area due to the presence of potential low value habitat.	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the Large-eared Pied Bat **(Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.
South-eastern Long-eared Bat^ [Vulnerable]	This species has not been recorded from the Study Area but has been assessed as having a moderate likelihood of occurence within the Study Area due to the presence of potential low value habitat.	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the South-eastern Long-eared Bat (**Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.
Migratory Fauna Species			

Table 7.1 Matters of National Environmental Significance in the Study Area Relevant to the Project

MNES	Presence in the Study Area	Potential Project Impact on High Value Habitat within the Study Area	Offsets
Cattle Egret	This species has not been recorded from the Study Area but has been assessed as having a high likelihood of occurence within the Study Area due to the presence of potential low value habitat.	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the Cattle Egret (**Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.
Eastern Great Egret +	This species has not been recorded from the Study Area but has been assessed as having a high likelihood of occurence within the Study Area due to the presence of potential low value habitat.	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the Eastern Great Egret (**Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.
Fork-tailed Swift	This species has not been recorded from the Study Area but has been assessed as having a high likelihood of occurence within the Study Area due to the presence of potential low value habitat.	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the Fork-tailed Swift (**Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.
Rainbow Bee-eater	This species has been recorded once to the east of the Study Area **(Figure 14**).	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the Rainbow Bee-eater (**Section 5.2.7;**	No residual significant impact is predicted to occur to this species and no offsets are proposed.

Table 7.1 Matters of National Environmental Significance in the Study Area Relevant to the Project

MNES	Presence in the Study Area	Potential Project Impact on High Value Habitat within the Study Area	Offsets
		Appendix L).	
Rufous Fantail	This species has been recorded from one location in the northern portion of the Study Area (**Figure 14**).	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the Rufous Fantail (**Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.
Satin Flycatcher	This species has not been recorded from the Study Area but has been assessed as having a high likelihood of occurence within the Study Area due to the presence of potential low value habitat.	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the Satin Flycatcher (**Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.
White-throated Needletail	This species has not been recorded from the Study Area but has been assessed as having a high likelihood of occurence within the Study Area due to the presence of potential low value habitat.	No high value habitat has been identified in the Study Area for this species. Vegetation clearing has been assessed as being unlikely to give rise to a residual significant impact on the White-throated Needletail (**Section 5.2.7; Appendix L**).	No residual significant impact is predicted to occur to this species and no offsets are proposed.

Threatened species status under the EPBC Act and/or NC Act (current at 20 January 2015).

* Species listed as marine and migratory under the EPBC Act as Painted Snipe (*Rostratula benghalensis*) (sensu lato).

\+ Species listed as a marine species under the EPBC Act as Great Egret (*Ardea alba*).

^ Species listed under the NC Act as Eastern Long-eared Bat (*Nyctophilus timoriensis*).

Table 7.2 Matters of State Environmental Significance in the Study Area Relevant to the Project

Matters of State Environmental Significance	Details	Presence in Study Area	Potential Project Impact	Offsets
Regulated Vegetation				
The prescribed regional ecosystems that are endangered regional ecosystems comprise a MSES.	Endangered regional ecosystem means a RE declared to be an endangered regional ecosystem under section 22LA of the VM Act.	No Endangered REs listed under the VM Act have been recorded or are likely to occur within the Study Area (**Section 4.3.3**).	Not applicable.	Not applicable.
The prescribed regional ecosystems that are of concern regional ecosystems comprise a MSES.	Of concern regional ecosystem means a RE declared to be an of concern regional ecosystem under section 22LB of the VM Act.	No Of concern REs listed under the VM Act have been recorded or are likely to occur within the Study Area (**Section 4.3.3**).	Not applicable.	Not applicable.
A prescribed regional ecosystem is a MSES if it is— a regional ecosystem that intersects with an area shown as a wetland on the vegetation management wetlands map (to the extent of the intersection); or	The regulated vegetation management map is the map certified by the chief executive as the regulated vegetation management map for a part of the State and showing the vegetation category areas for the part under section 20AA of the VM Act.	No areas shown as wetlands on the vegetation management wetlands map occur within the Study Area (**Section 4.1.7**).	Not applicable.	Not applicable.
an area of essential habitat on the essential habitat map for an animal that is endangered	The essential habitat map is a map certified by the chief	No essential habitat as per the EHP's essential habitat map has	Not applicable.	Not applicable.

Table 7.2 Matters of State Environmental Significance in the Study Area Relevant to the Project

Matters of State Environmental Significance	Details	Presence in Study Area	Potential Project Impact	Offsets
wildlife or vulnerable wildlife or a plant that is endangered wildlife or vulnerable wildlife.	executive as the essential habitat map for the State and showing, for the State, areas the chief executive reasonably believes are areas of essential habitat for protected wildlife under section 20AC(1) of the VM Act.	been mapped within the Study Area.		
A prescribed regional ecosystem is a MSES to the extent the ecosystem is located within a defined distance from the defining banks of a relevant watercourse. However, to the extent a prescribed regional ecosystem is located within an urban area, it is not a MSES.	Defined distance for a regional ecosystem, means a distance identified in the environmental offsets policy as the relevant distance from the defining banks of a relevant watercourse, i.e 25 m from a watercourse stream order of 1 or 2, 50 m from a watercourse stream order of 3 or 4 and 100 m from a watercourse stream order of 5 or more. Relevant watercourse means a watercourse identified on the vegetation management watercourse map.	Relevant watercourses as per the vegetation management watercourse map have been assessed within the Study Area and are described in **Section 5.2.3**. Defined distances for the REs on the banks of the watercourses within the disturbance boundary have been applied and are also described in **Section 5.2.3**.	Approximately 2.17 ha of sparse vegetation will be cleared and approximately 0.22 ha of mid-dense vegetation will be cleared.	No offsets are proposed for disturbance to sparse vegetation. Given the significant amount of similar or better quality mid-density vegetation in the immediate area surrounding the project site, a disturbance of 2.39 ha is not a significant, residual impact and therefore no offsets are proposed.

Table 7.2 Matters of State Environmental Significance in the Study Area Relevant to the Project

Matters of State Environmental Significance	Details	Presence in Study Area	Potential Project Impact	Offsets
	The vegetation management watercourse map is the map certified by the chief executive as the vegetation management watercourse map showing particular watercourses for the State under section 20AB of the VM Act.			
Connectivity Areas				
This section applies to a prescribed regional ecosystem: to the extent the ecosystem contains remnant vegetation; and if the ecosystem contains an area of land that is required for ecosystem functioning (a connectivity area). The prescribed regional ecosystem is a MSES if the administering agency is	Remnant vegetation means vegetation forming the predominant canopy of the vegetation: covering more than 50% of the undisturbed predominant canopy; and averaging more than 70% of the vegetation's undisturbed height; and composed of species characteristic of the vegetation's undisturbed predominant	Areas of vegetation in the north and west of the Study Area have been mapped as remnant vegetation. BPA mapping for the Study Area indicates that some parts are classified as State Biodiversity Significance, Regional Biodiversity Significance and Local and Other Biodiversity Significance.	As discussed in **Section 5.2.6ii,** the project will not have a significant residual impact on connectivity areas given the existing fragmentation of the Study Area. EHP's connectivity tool has confirmed that the project will not significantly impact either regional or local connectivity.	Not applicable.

Table 7.2 Matters of State Environmental Significance in the Study Area Relevant to the Project

Matters of State Environmental Significance	Details	Presence in Study Area	Potential Project Impact	Offsets
satisfied, having had regard to criteria in the environmental offsets policy about connectivity areas, that: the connectivity area is of sufficient size or configured in a way that maintains ecosystem functioning; and the prescribed regional ecosystem will remain despite a threatening process within the meaning of the Nature Conservation Act 1992. However, to the extent a prescribed regional ecosystem is located within an urban area, it is not a MSES.	canopy.			
Wetlands and watercourses				
Each of the following matters is a MSES— a wetland— in a wetland protection area; or	Wetland means an area shown as a wetland on the Map of referable wetlands. Wetland protection area means	No referrable wetlands are present in the Study Area. The closest EHP referrable wetland to the project is located approximately 8 km to the south of	Not applicable	Not applicable

Table 7.2 Matters of State Environmental Significance in the Study Area Relevant to the Project

Matters of State Environmental Significance	Details	Presence in Study Area	Potential Project Impact	Offsets
of high ecological significance shown on the Map of referable wetlands;	an area shown as a wetland protection area on the Map of referable wetlands. Map of referable wetlands means the 'Map of referable wetlands', a document approved by the chief executive on 4 November 2011 and published by the department, as amended from time to time by the chief executive under section 144D of the Environmental Protection Regulation 2008.	the Study Area (**Figure 8**) and will not be impacted by the project.		
a wetland or watercourse in high ecological value waters.	Wetland means an area shown as a wetland on the Map of referable wetlands. Watercourse is defined in schedule 12, part 1, section 8 of the Environmental Protection Regulation 2008 and is: a river, creek or stream in which water flows permanently or intermittently—	No wetland or watercourse in high ecological value waters are present in the Study Area.	Not applicable	Not applicable

Table 7.2 Matters of State Environmental Significance in the Study Area Relevant to the Project

Matters of State Environmental Significance	Details	Presence in Study Area	Potential Project Impact	Offsets
	in a natural channel, whether artificially improved or not; or in an artificial channel that has changed the course of the watercourse. A watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water. High ecological value waters means waters in which the biological integrity of the water is effectively unmodified or highly valued under schedule 2 of the Environmental Protection (Water) Policy 2009.			
High preservation areas of wild river areas				
A part of a wild river area described as a high preservation area in the wild river declaration for the area is	Wild river areas see the Wild Rivers Act 2005. Wild river declaration see the Wild Rivers Act 2005.	The Study Area does not contain any high preservation areas in a wild river declaration.	Not applicable.	Not applicable.

Table 7.2 Matters of State Environmental Significance in the Study Area Relevant to the Project

Matters of State Environmental Significance	Details	Presence in Study Area	Potential Project Impact	Offsets
a matter of State environmental significance. However, to the extent a wild river area described as a high preservation area is in an urban area, it is not a matter of State environmental significance.				
Protected Wildlife Habitat				
An area that is shown as a high risk area on the flora survey trigger map and that contains plants that are endangered wildlife or vulnerable wildlife is a MSES.	Flora survey trigger map means the map held by EHP under section 247 of the Nature Conservation (Wildlife Management) Regulation 2006.	The flora survey trigger map has not identified any high risk areas that contain plants that are endangered wildlife or vulnerable wildlife within the Study Area.	Not applicable.	Not applicable.
An area that is not shown as a high risk area on the flora survey trigger map, to the extent that the area contains plants that are endangered wildlife or vulnerable wildlife is a MSES.	Flora survey trigger map means the map held by EHP under section 247 of the Nature Conservation (Wildlife Management) Regulation 2006.	No threatened flora species listed as Endangered or Vulnerable under the NC Act have been recorded within the Study Area, however, one flora species, *Acacia pedleyi*, has been assessed as having a moderate likelihood of occurrence within the	As described in **Section 5.2.5i**, habitat modelling indicates that no high value habitat for *Acacia pedleyi* is present within the Study Area. The project will not have a significant residual impact on *Acacia pedleyi*.	Not applicable as the project will not have a significant residual impact on *Acacia pedleyi*.

Table 7.2 Matters of State Environmental Significance in the Study Area Relevant to the Project

Matters of State Environmental Significance	Details	Presence in Study Area	Potential Project Impact	Offsets
		Study Area (**Section 4.4.2**).		
A non-juvenile koala habitat tree located in an area shown as bushland habitat, high value rehabilitation habitat or medium value rehabilitation habitat on the map called 'Map of Assessable Development Area Koala Habitat Values' that applies under the South East Queensland Koala Conservation State Planning Regulatory Provisions is a MSES.	Koala habitat tree means a tree of any of the following genera— Angophora; Corymbia; Eucalyptus; Lophostemon; Melaleuca. Non-juvenile koala habitat tree means a koala habitat tree that— is more than 4 m high; or has a trunk with a circumference of more than 31.5 cm at 1.3 m above the ground. South East Queensland Koala Conservation State Planning Regulatory Provisions means the document called the 'South East Queensland Koala Conservation State Planning Regulatory Provisions', dated	No areas within the Study Area have been mapped as bushland habitat, high value rehabilitation habitat or medium value rehabilitation habitat on the map called 'Map of Assessable Development Area Koala Habitat Values' that applies under the South East Queensland Koala Conservation State Planning Regulatory Provisions.	Not applicable.	Not applicable.

Table 7.2 Matters of State Environmental Significance in the Study Area Relevant to the Project

Matters of State Environmental Significance	Details	Presence in Study Area	Potential Project Impact	Offsets
	May 2010 and published on the website of the department in which the Sustainable Planning Act 2009 is administered.			
A habitat for an animal that is endangered wildlife or vulnerable wildlife or a special least concern animal is a MSES.	Examples of habitat include an area of land used by an animal for foraging, roosting, nesting or breeding Special least concern animal means the following animals that are least concern wildlife under the NC Act: a koala (*Phascolarctos cinereus*); an echidna (*Tachyglossus aculeatus*); a platypus (*Ornithorhynchus anatinus*).	Two fauna species listed as threatened or Special Least Concern under the NC Act have been recorded within the Study Area, namely the: • Squatter Pigeon (southern subspecies) (*Geophaps scripta scripta*) (listed as Vulnerable under the NC Act); and • Short-beaked Echidna (*Tachyglossus aculeatus*) (listed as Special Least Concern under the NC Act).	As detailed in Table 7.1, the project will not significantly impact the Squatter Pigeon (southern subspecies). As detailed in **Section 5.2.8i**, the project wiil not significantly impact the Short-beaked Echidna.	Not applicable as the project will not have a significant residual impact on the Squatter Pigeon (southern subspecies) or the Short-beaked Echidna.
Protected Areas				
A protected area is a MSES.	A coordinated conservation area under the *Nature Conservation*	No protected areas are within the Study Area.	Not applicable.	Not applicable.

Table 7.2 Matters of State Environmental Significance in the Study Area Relevant to the Project

Matters of State Environmental Significance	Details	Presence in Study Area	Potential Project Impact	Offsets
	Act 1992 is excluded by the Environmental *Offsets Act 2014*, definition protected area.			
Highly protected zones of State marine parks				
A highly protected area of a relevant Queensland marine park is a MSES.	Highly protected area means: a zone classified, under the Marine Parks Act 2004, as a conservation park zone, marine national park zone or preservation zone; or another area prescribed under a regulation or zoning plan, under the Marine Parks Act 2004, as a highly protected area. Relevant Queensland marine park means any of the following marine parks declared under the Marine Parks Act 2004: the Great Barrier Reef Coast Marine Park; the Moreton Bay Marine Park; the Great Sandy Marine Park.	Not applicable	Not applicable	Not applicable

Table 7.2 Matters of State Environmental Significance in the Study Area Relevant to the Project

Matters of State Environmental Significance	Details	Presence in Study Area	Potential Project Impact	Offsets
	Zone, for a marine park, see the Marine Parks Act 2004, schedule.			
Fish habitat areas				
An area declared under the *Fisheries Act 1994* to be a fish habitat area is a MSES.	The Fisheries Act 1994 details areas to be declared as a fish habitat area.	No declaration of fish habitat has been made for the Study Area.	Not applicable.	Not applicable.
Waterway providing for fish passage				
Any part of a waterway providing for passage of fish and not located within an urban area is a matter of State environmental significance only if the construction, installation or modification of waterway barrier works carried out under an authority will limit the passage of fish along the waterway.	Fish means fish regulated under the *Fisheries Act 1994*. Passage, for fish, means the natural movement patterns of fish species required to maintain the biological integrity of the species. Waterway includes a river, creek, stream, watercourse or inlet of the sea. Waterway barrier works means a dam, weir or other barrier across a waterway.	All of the waterways that would be disturbed as a result of the project in the Study Area are mapped as stream order 1, and classified as green (low risk) under the DAFF's mapping system. The project is not predicted to give rise to any significant impacts on fish passage.	Not applicable.	Not applicable.
Marine plants				

Table 7.2 Matters of State Environmental Significance in the Study Area Relevant to the Project

Matters of State Environmental Significance	Details	Presence in Study Area	Potential Project Impact	Offsets
A marine plant within the meaning of the **Fisheries Act 1994** is a MSES. However, a marine plant is not a MSES if the plant is in an urban area.	Section 8 of the Fisheries Act 1994 defines a marine plant as: plant (a "tidal plant") that usually grows on, or adjacent to, tidal land, whether it is living, dead, standing or fallen; material of a tidal plant, or other plant material on tidal land; a plant, or material of a plant, prescribed under a regulation or management plan to be a marine plant.	No marine plants have been recorded within the Study Area.	Not applicable	Not applicable
Legally secured offset areas				
A legally secured offset area is a MSES.	A legally secured offset area is an area of land the subject of a covenant under the Land Act 1994.	There are no offset areas present on the Study Area.	Not applicable.	Not applicable.

References

AECOM (2012a). *Boundary Hill Lease Expansion Project - Quoll Surveys - December 2011*. AECOM Australia Pty Ltd, Townsville.

AECOM (2012b). *Boundary Hill South - Terrestrial Fauna Technical Report*. AECOM Australia Pty Ltd, Townsville.

AECOM (2013a). *Boundary Hill South - Terrestrial Flora Technical Report*. AECOM Australia Pty Ltd, Fortitude Valley.

AECOM (2013b). *Boundary Hill South EIS - Significant Impact Assessment*. AECOM Australia Pty Ltd, Townsville.

AECOM (2014). *Koala Survey Report: Boundary Hill South* AECOM Australia, Rockhampton

ANRA (2012). "Biodiversity Assessment - Brigalow Belt South." from http://www.anra.gov.au/topics/vegetation/assessment/nsw/ibra-bbs-activity.html.

BAAM (2005). *Conservation status review of the tusked frog Adelotus brevis in Brisbane*. unpublished report prepared for Brisbane City Council.

Barker, M. (1995). *Acacia pedleyi Species Management Profile*. Department of Natural Resources, Queensland.

Bastin, G. and ACRIS Management Committee (2008). *Rangelands 2008 — Taking the Pulse: Brigalow Belt South bioregion*. National Land & Water Resources Audit, Canberra.

Bennet, A. F. (1990). "Land Use , Forest Fragmentation and the Mammalian Fauna at Naringal, South-western Victoria." *Australian Wildlife Research* **17**: 325-347.

Birds in Backyards (2014). "Spectacled Monarch." *Basic Information* Retrieved 18 December 2014, from http://www.birdsinbackyards.net/species/Symposiarchus-trivirgatus.

Boland, C. R. J. (2004). "Introduced cane toads *Bufo marinus* are active nest predators and competitors of rainbow bee-eaters *Merops ornatus*: observational and experimental evidence." *Biological Conservation* **120**(1): 53-62.

BOM (2014). "Queensland Observations." from http://www.bom.gov.au/qld/observations/index.shtml?ref=hdr.

Brooker, M. I. H. and Kleinig, D. A. (2004). *Field Guide to eucalypts – Vol. 3 northern Australia, 2nd edition*. Bloomings Books, Melbourne.

Churchill, S. (2009). *Australian Bats*. Allen & Unwin, Crows Nest, NSW.

Cogger, H. G. (2014). *Reptiles and Amphibians of Australia - 7th Edition*.

Curtis, L. K., Dennis, A. J., Macdonald, K. R., Kyne, P. M. and Debus, S. J., Eds. (2012). *Queensland's Threatened Animals*. CSIRO Publishing, Collingwood.

DEH (2005). *Threat Abatement Plan for Predation, Habitat Degradation, Competition and Disease Transmission by Feral Pigs*. Department of Environment and Heritage, Canberra.

DEWHA (2010a). *Survey guidelines for Australia's threatened bats*. Commonwealth Department of Environment, Water, Heritage and the Arts, Canberra.

DEWHA (2010b). *Survey guidelines for Australia's threatened birds*. Commonwealth Department of Environment, Water, Heritage and the Arts, Canberra.

Dique, D. S., de Villiers, D. L. and Preece, H. J. (2003). "Evaluation of line-transect sampling for estimating koala abundance in the Pine Rivers Shire, south-east Queensland." *Wildlife Research* **30**: 127-133.

DotE (2011a). *Draft Referral guidelines for the nationally listed Brigalow Belt reptiles*. Commonwealth Department of the Environment, Canberra.

DotE (2011b). *Survey guidelines for Australia's threatened reptiles*. Commonwealth Department of the Environment, Canberra.

DotE (2012a). *Interim Biogeographic Regionalisation for Australia, Version 7*. Commonwealth Department of the Environment, Canberra.
DotE (2012b). *Koala Phascolarctus cinerea Conservation Management Profile*. Commonwealth Department of the Environment, Canberra.
DotE (2013a). *Draft EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)*. Commonwealth Department of the Environment, Canberra.
DotE (2013b). *Matters of National Environmental Significance. Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment, Canberra.
DotE (2014a). *Actitis hypoleucos in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014b). *Apus pacificus in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014c). *Ardea ibis in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014d). *Ardea modesta in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014e). *Calidris acuminata in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014f). *Calyptorhynchus lathami in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014g). *Chalinolobus dwyeri in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014h). *Crocodylus porosus in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014i). *Cycas ophiolitica in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014j). *Dasyurus hallucatus in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014k). *Delma torquata in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014l). *Denisonia maculata in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014m). *Egernia rugosa in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014n). *EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)*. Department of the Environment, Canberra.
DotE (2014o). *EPBC Protected Matters Search Tool*. Department of the Environment, Canberra.
DotE (2014p). *Erythrotriorchis radiatus in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014q). *Furina dunmalli in Species Profile and Threats Database*. Commonwealth Deparment of the Environment, Canberra.
DotE (2014r). *Gallinago hardwickii in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014s). *Geophaps scripta scripta in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014t). *Haliaeetus leucogaster in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014u). *Hipposideros semoni in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014v). *Hirundapus caudacutus in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.

DotE (2014w). *Hirundo rustica in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014x). *Hydroprogne caspia in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014y). *Macadamia integrifolia in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014z). *Merops ornatus in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014{). *Monarcha melanopsis in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014|). *Myiagra cyanoleuca in Species Profile and Threats Database*. Comomnwealth Department of the Environment, Canberra.
DotE (2014}). *Neochmia ruficauda ruficauda in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014~). *Nyctophilus corbeni in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014). *Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014). *Plegadis falcinellus in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014). *Poephila cincta cincta in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014,). *Pteropus poliocephalus in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014ƒ). *Rhaponticum australe in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014„). *Rheodytes leukops in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014…). *Rhipidura rufifrons in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014†). *Rostratula australis in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014‡). *Samadera bidwillii in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014ˆ). *Streblus pendulinus in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014‰). *Tringa stagnatilis in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DotE (2014Š). *Turnix melanogaster in Species Profile and Threats Database*. Commonwealth Department of the Environment, Canberra.
DSITIA (2013a). *Targeted species Survey Guidelines – Glossy Black-cockatoo Calyptorhynchus lathami*. Department of Science, Information Technology, Innovation and the Arts.
DSITIA (2013b). *Targeted species Survey Guidelines – Tusked Frog Adelotus brevis*. Department of Science, Information Technology, Innovation and the Arts.
Eby, P. and Law, B. (2008). *Ranking the feeding habitats of Grey-headed flying foxes for conservation management: a report for The Department of Environment and Climate Change (NSW) & The Department of Environment, Water, Heritage and the Arts*. Commonwealth Department of the Environment, Canberra.
EHP (2012). *Koala Phascolarctus cinerea Conservation Management Profile*. Department of Environment and heritage, Brisbane.
EHP (2013a). *Common Death Adder*. Department of Environment and Heritage Protection, Canberra.

EHP (2013b). "Golden-tailed Gecko." Retrieved 2014, from http://www.ehp.qld.gov.au/wildlife/threatened-species/near-threatened/goldentailed_gecko.html.

EHP (2014a). "*Acacia pedleyi*." *WetlandInfo* Retrieved 19 November 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?acacia-pedleyi.

EHP (2014b). "*Acacia spania*." *WetlandInfo* Retrieved 19 December 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?acacia-spania.

EHP (2014c). "Back on Track Actions for Biodiversity documents." Retrieved 2014, from https://www.ehp.qld.gov.au/wildlife/prioritisation-framework/bot-biodiversity-documents.html.

EHP (2014d). "*Bertya opponens*." *WetlandInfo* Retrieved 19 November 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?bertya-opponens.

EHP (2014e). "*Cerbera dumicola*." *WetlandInfo* Retrieved 19 November 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?cerbera-dumicola.

EHP (2014f). "*Cossinia australiana*." *WetlandInfo* Retrieved 19 November 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?cossinia-australiana.

EHP (2014g). "*Cycas megacarpa*." *WetlandInfo* Retrieved 19 November 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?cycas-megacarpa.

EHP (2014h). "*Dichanthium queenslandicum*." *WetlandInfo* Retrieved 19 November 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?dichanthium-queenslandicum.

EHP (2014i). "*Eucalyptus decolor*." *WetlandInfo* Retrieved 19 November 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?eucalyptus-decolor.

EHP (2014j). "*Grevillea hockingsii*." *WetlandInfo* Retrieved 19 November 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?grevillea-hockingsii.

EHP (2014k). "*Melaleuca groveana*." *WetlandInfo* Retrieved 19 November 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?melaleuca-groveana.

EHP (2014l). "*Polianthion minutiflorum*." *WetlandInfo* Retrieved 19 November 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?polianthion-minutiflorum.

EHP (2014m). *Queensland Environmental Offsets Policy (Version 1.0) 1 July 2014*. D. o. E. a. H. Protection.

EHP (2014n). *Regional ecosystem details for 10.10.3*. Department of Environment and Heritage Protection, Brisbane.

EHP (2014o). "Regional ecosystem maps, vegetation maps, PMAVS and Regional Ecosystem Data." Retrieved 2014, from http://www.ehp.qld.gov.au/ecosystems/biodiversity/regional-ecosystems/maps/index.php.

EHP (2014p). "*Solanum dissectum*." *WetlandInfo* Retrieved 19 November 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?solanum-dissectum.

EHP (2014q). "*Solanum johnsonianum*." *WetlandInfo* Retrieved 19 November 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?solanum-johnsonianum.

EHP (2014r). "Vegetation management regional ecosystem and remnant map - version 8.0 non-coastal." Retrieved 2014, from https://data.qld.gov.au/dataset/e6d87b83-a565-4533-99ec-00adce8cc673/resource/b17ea81d-5a41-430d-b8be-34ec4d791f9c.

EHP (2014s). "Wildlife Online Database." Retrieved 2014, from https://www.qld.gov.au/environment/plants-animals/species-list/.

EHP (2014t). "Xerothamnella herbacea." *WetlandInfo* Retrieved 19 November 2014, from http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?xerothamnella-herbacea.

Ellis, W. A. H., Melzer, A., Carrick, F. N. and Hasegawa, M. (2002). "Tree use, diet and home range of the koala (*Phascolarctos cinereus*) at Blair Athol, central Queensland." *Wildlife Research* **29**: 303-311.

Eyre, T. J., Ferguson, D. J., Hourigan, C. L., Smith, G. C., Mathieson, M. T., Kelly, A. L., Venz, M. F. and Hogan, L. D. (2012). *Terrestrial Vertebrate Fauna Survey Assessment Guidelines for Queensland*. I. T. Department of Science, Innovation and the Arts, Queensland Government, Brisbane.

Fahrig, L. (2003). "Effects of habitat fragmentation on biodiversity." *Annual Review of Ecology Evolution and Systematics* **34**: 487–515.

Franks, D., Brereton, D. and Moran, C. (2008). *Managing the cumulative impacts of multiple mines on regional communities and environments in Australia*. Paper Submitted to the International Association for Impact Assessment, Assessing and Managing Cumulative Environmental Effects Special Topic Meeting, Calgary, Canada, 6-9 November, 2008.

Higgins, P. J. and S.J.J.F, D. (1996). *Handbook of Australian, New Zealand and Antarctic Birds. Volume 3: Snipe to Pigeons*. Oxford University Press, Melbourne.

Hill, B. and Ward, S. (2010). *National Recovery Plan for the Northern Quoll Dasyurus hallucatus*. Department of Natural Resources, Environment, the Arts and Sport, Darwin.

Hines, H., Meyer, E., Jean-Marc, H., Newell, D. and Clarke, J. (2004, 2014). "*Adelotus brevis*." Retrieved 17 December 2014, from www.iucnredlist.org.

Jones, D. L. (2006). *A Complete Guide to Native Orchids of Australia including the Island Territories*. Reed New Holland, Sydney.

Lindenmayer, D. B. and Fischer, J. (2006). *Habitat fragmentation and landscape change: An Ecological and Conservation Synthesis*. Island Press, Washington D.C.

Maslin, B. R. (2001). *WATTLE: Acacias of Australia CD-ROM, Version 1.0*. Australian Biological Resources Study, Canberra, and Department of Conservation and Land Management Perth.

Murray-Darling Basin Commission (2007). *Fishes of the Murray-Darling Basin - Silver Perch*. Murray-Darling Basin Commission, Canberra.

Neldner, V. J., Wilson, B. A., Thompson, E. J. and Dillewaard, H. A. (2005). *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland. Version 3.1. Updated September 2005.* Queensland Herbarium, Environmental Protection Agency, Brisbane.

NSW NPWS (1999). *Threatened Species Information; Squatter Pigeon*. New South Wales National Parks and Wildlife Service, Hurstville.

OEH (2013). *Koala - profile*. Department of Environment and Heritage, Sydney.

OEH (2014). *Koala habitat and feed trees*. NSW Office of Environment and Heritage, Hurstville.

Parsons Brinkerhoff (2006). *Callide Mine Biodiversity Action Plan*, Parsons Brinkerhoff, Brisbane.

Phillips, S. and Callaghan, J. (2011). "The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas Phascolarctos cinereus." *Australian Zoologist* **35**(3): 774-780.

Pollock, A. B. (1999). "Notes on status, distribution and diet of northern quoll *Dasyurus hallucatus* in the Mackay-Bowen area, mideastern Queensland." *Australian Zoologist* **31**: 388-395.

Primack, R. B. (1993). *Essentials of Conservation Biology*. Sinauer Associates Inc, Sunderland.

Queensland Government (2012). "Targeted species survey guidelines: *Hipposideros stenotis*." Retrieved 17 December 2014, from https://www.qld.gov.au/environment/assets/documents/plants-animals/biodiversity/northern-leafnosed-bat.pdf.

Queensland Herbarium (2012a). *Regional Ecosystem Database (REDD), Version 6.0b*. Queensland Department of Science, Information Technology, Innovation and the Arts, Brisbane.

Queensland Herbarium (2012b). *Regional Ecosystems Assessment Kit*. Department of Science, Information Technology, Innovation and the Arts.

Reid, J. R. W. (1999). *Threatened and declining birds in the New South Wales sheep-wheat belt: I Diagnosis, characteristics and management*. CSIRO Wildlife and Ecology, Canberra.

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

SEWPaC (2011a). *Draft Referral guidelines for the nationally listed Brigalow Belt reptiles*. Department of Sustainability, Environment, Water, Population and Communities, Canberra.

SEWPaC (2011b). *Environment Protection and Biodiversity Conservation Act 1999 referral guidelines for the endangered northern quoll, Dasyurus hallucatus. EPBC Act policy statement 3.25*. Department of Sustainability, Environment, Water, Population and Communities, Canberra.

SEWPaC (2011c). *Survey guidelines for Australia's threatened mammals*. Commonwealth Department of Sustainability, Environment, Water, Population and Communities, Canberra.

SEWPaC (2011d). *Survey guidelines for Australia's threatened reptiles*. Commonwealth Department of Sustainability, Environment, Water, Population and Communities, Canberra.

SEWPaC (2012a). *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy. October 2012*. Department of Sustainability, Environment, Water, Population and Communities, Canberra.

SEWPaC (2012b). *Interim koala referral advice for proponents*. Department of Sustainability, Environment, Water, Population and Communities Canberra.

Sharp, D. and Simon, B. K. (2002). *AusGrass; Grasses of Australia, CD-ROM, Version 1.0*. Australian Biological Resources Study, Canberra, and Environmental Protection Agency Queensland.

Tyler, M. J. and Knight, F. (2009). *Field Guide to the Frogs of Australia*. CSIRO Publishing, Collingwood, Victoria, Australia.

Van Dyck, S. and Strahan, R., Eds. (2008). *The Mammals of Australia, 3rd edition*. Reed New Holland , Sydney.

Wildcare Australia (2014). "Koalas." Retrieved 2014, from http://wildcare.org.au/species-information/koalas/.

Wildlife Preservation Society of Queensland (2013). "Short-beaked Echidna." Retrieved 17 December 2014, from http://www.wildlife.org.au/wildlife/speciesprofile/mammals/short_beaked_echidna.html.

Williamson, I. (1999). "Competition between the larvae of the introduced cane toad Bufo marinus (Anura: Bufonidae) and native anurans from the Darling Downs area of southern Queensland." *Australian Journal of Ecology* **24**(6): 636-643.

Wilson, S. (2005). *A field guide to reptiles of Queensland* Reed New Holland Publishing, Frenchs Forest.

Woinarski, J. C. Z., Oakwood, M., Winter, J., Burnett, S., Milne, D., Foster, P., Myles, H. and Holmes, B. (2008). *Surviving the toads: patterns of persistence of the northern quoll Dasyurus hallucatus in Queensland*. Natural Heritage Trust Strategic Reserve Program.

Yahner, R. H. (1988). "Changes in wildlife communities near edges." *Conservation Biology* **2**: 333-339.

Figures

This Section contains the following figures:

- Figure 1 Project Location;
- Figure 2: Location of the Study Area;
- Figure 3: Layout of the Project;
- Figure 4: Bioregions;
- Figure 5: Flora Survey Sites;
- Figure 6: Fauna Survey Sites;
- Figure 7: EHP RE Mapping of the Study Area and Surrounds;
- Figure 8: EHP Map of Referrable Wetlands;
- Figure 9: BPA Mapping of the Study Area and Surrounds;
- Figure 10: Broad Habitat Map of Study Area;
- Figure 11: Ground-truthed Regional Ecosystem Mapping of the Study Area (Cumberland Ecology);
- Figure 12: Threatened Flora Records within the Study Area and Surrounds;
- Figure 13: Habitat Mapping for *Acacia pedleyi* within the Study Area
- Figure 14: Threatened Fauna Records within the Study Area and Surrounds;
- Figure 15: Habitat Mapping for the Collared Delma within the Study Area.
- Figure 16: Habitat Mapping for the Yakka Skink within the Study Area;
- Figure 17: Habitat Mapping for the Australian Painted Snipe within the Study Area;
- Figure 18: Habitat Mapping for the Red Goshawk within the Study Area;
- Figure 19: Habitat Mapping for the Squatter Pigeon (southern subspecies) within the Study Area;
- Figure 20: Habitat Mapping for the Northern Quoll within the Study Area;

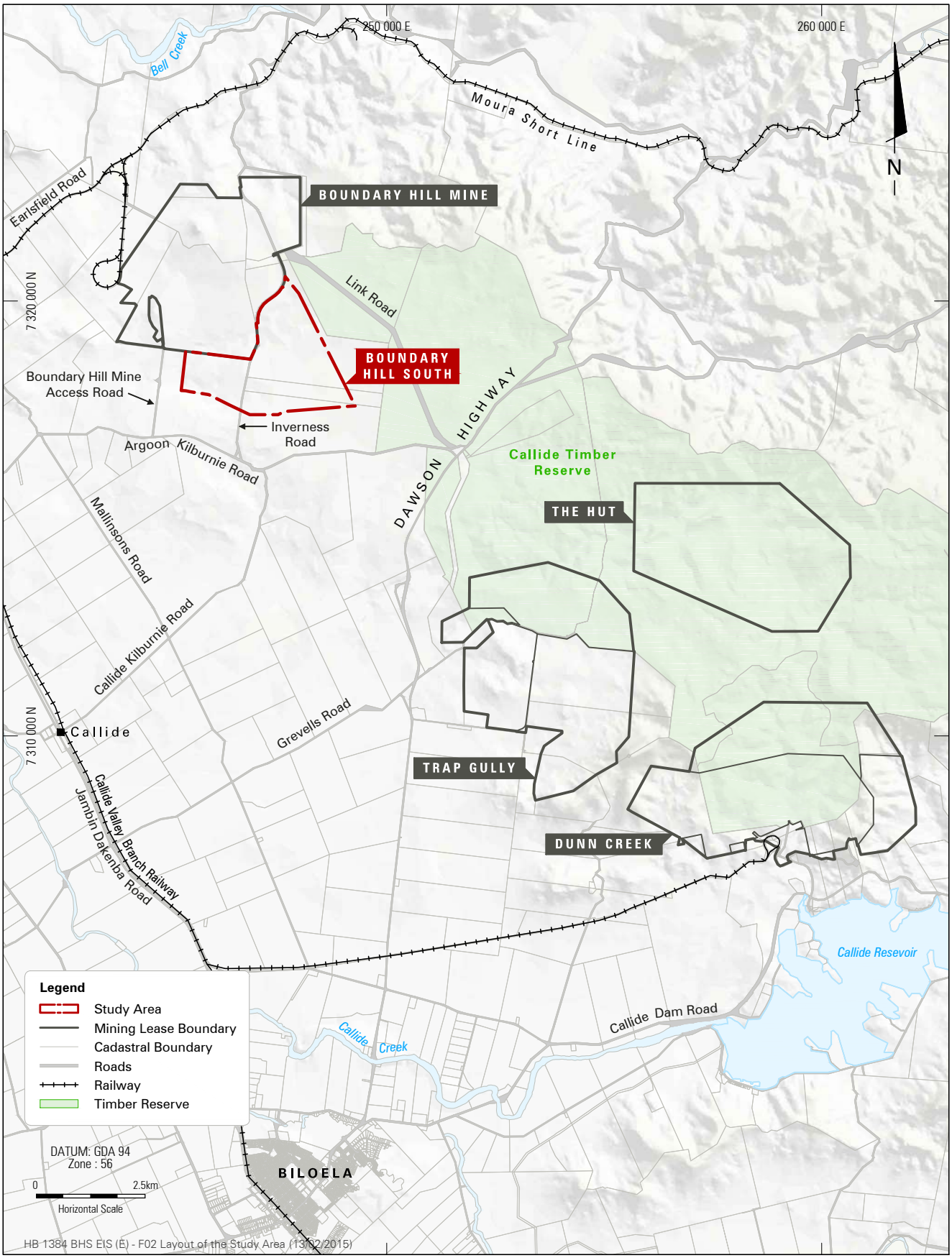
- Figure 21: Habitat Mapping for the Koala within the Study Area;
- Figure 22 Habitat Mapping for the Grey-headed Flying-fox within the Study Area;
- Figure 23: Habitat Mapping for the Large-eared Pied Bat within the Study Area;
- Figure 24: Habitat Mapping for the South-eastern Long-eared Bat within the Study Area.
- Figure 25: REs along Watercourses Classified as MSES

BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Location Plan

FIGURE 1

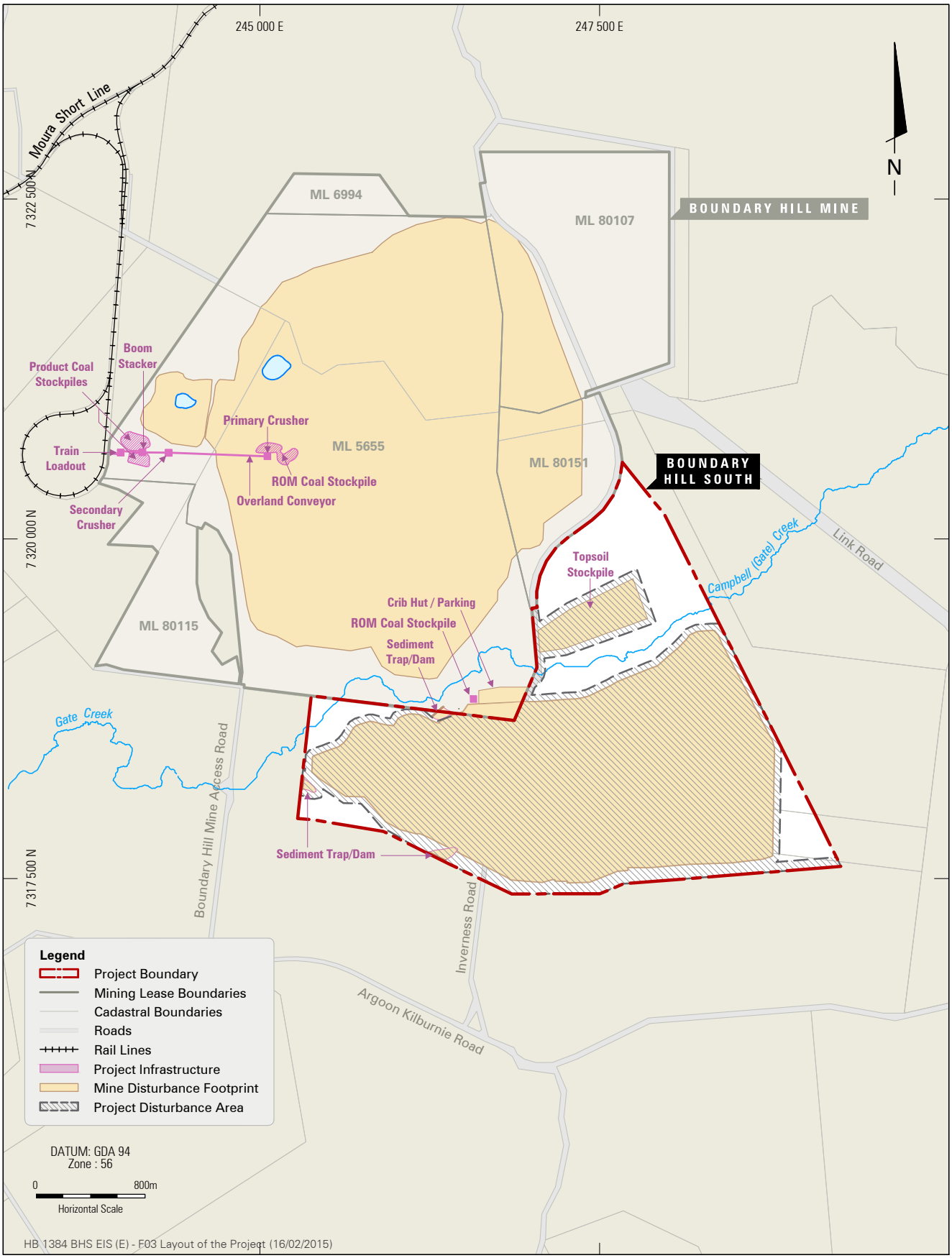


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Layout of the Study Area

FIGURE 2



BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Layout of the Project

FIGURE 3

Coordinate System: MGA Zone 55 (GDA 94)

N
Grid North

Yeppoon
Marlborough Plains
Boomer Range
ROCKHAMPTON
Mount
GLADSTONE
Woorabinda
Mount Morgan Ranges
Callide Creek Downs
Miriam Vale
Biloela
Moura
Burnett - Curtis Hills and Ranges
Dawson River Downs
Monto
Theodore
Banana - Auburn Ranges
Barakula
Carnarvon Ranges

Legend

- Project Site
- Brigalow Belt North Bioregion
- Brigalow Belt South Bioregion
- Southeast Queensland Bioregion
- Subregion
- Town

CUMBERLAND ECOLOGY

Data Source:
© State of Queensland (Department of Science, Information Technology, Innovation and the Arts) 2014

I:\...\Q14007\Figures\RP1\20150213\Figure 4. Bioregions

Figure 4. Bioregions

10 0 10 20 30 40km

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

Legend

Study Area

Ephemeral Drainage Line

Cumberland Ecology 2014 Survey Sites

Flora Survey Locations

Random Meander Transects

AECOM 2012 Survey Sites

Secondary Flora Site

Tertiary Flora Site

Quaternary Flora Site

CUMBERLAND ECOLOGY

Image Source:
Anglo American Feb 2013

I:\...\Q14007\Figures\RP1\20150211\Figure 5. Flora Survey Sites

Figure 5. Flora Survey Sites

250 0 250 500 750 1000m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

Legend

Study Area

Ephemeral Drainage Line

Fauna Survey Locations
Cumberland Ecology 2014 Survey Sites

- IR Camera
- Habitat Assessment
- Trap Line

AECOM 2012 Survey Sites

- Detailed Fauna Survey Site: Suite of surveys targeting all fauna groups
- Secondary Fauna Survey Site: Limited surveys targeting mammals, birds and reptiles
- Habitat Assessment
- Northern Quoll Trap Location

AECOM 2014 Koala Survey Sites

- SAT Site
- Spotlighting Transect Points
- Koala Survey Transect Line

Image Source:
Anglo American Feb 2013

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150213\Figure 6. Fauna Survey Sites

Figure 6. Fauna Survey Sites

250 0 250 500 750 1000m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

ML 6994
ML 80107
ML 5655
ML 80151
ML 80115

Image Source:
Image © 2014 CNES/Astrium
Image © 2014 DigitalGlobe
© 2014 Cnes/Spot Image

Data Source:
© State of Queensland (Department of National Parks, Recreation, Sport and Racing) 2014.
Updated data available at
http://dds.information.qld.gov.au/dds/.
© State of Queensland (Department of Natural Resources and Mines) 2014
Updated data available at
http://dds.information.qld.gov.au/dds/.

Legend

- Study Area
- Mining Leases
- National Parks, Forest Reserves and State Forests

Regional Ecosystem Mapping

- 11.10.1 (LC)
- 11.10.1/11.9.13 (LC/OC)
- 11.10.13/11.10.4 (LC)
- 11.10.8 (OC)
- 11.10.8/11.10.1 (OC/LC)
- 11.11.1/11.11.4 (LC)
- 11.11.15/11.11.4 (LC)
- 11.11.15/11.11.16/11.11.14 (LC/OC/E)
- 11.11.15/11.11.4a (LC)
- 11.11.15/11.3.25/11.11.4/ 11.11.4a (LC/LC/LC)
- 11.11.4 (LC)
- 11.11.5a/11.11.15 (LC)
- 11.3.11/11.3.1 (E/E)
- 11.3.25 (OC)
- 11.9.13 (OC)
- 11.9.13/11.10.1 (OC/LC)
- 11.9.4a (OC)
- 11.9.4a/11.9.5/11.9.1 (OC/E/E)
- 11.9.9 (LC)
- 12.5.1 (LC)
- non-rem

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150213\Figure 7. EHP RE mapping

Figure 7. Queensland Government Mapping of the Study Area and Surrounds

500 0 500 1000 1500 2000m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

Legend

- Study Area
- Palustrine Wetland
- Riverine Wetland
- High Ecological Significance (HES) Wetland
- Wetland Protection Area - trigger area
- Wetland Trigger Area
- Ephemeral Drainage Line

Image Source:
Image © 2014 DigitalGlobe
© 2014 Cnes/Spot Image
Image © 2014 CNES/Astrium

Data Source:
© State of Queensland (Department of Environment and Heritage Protection) 2014.
Updated data available at
http://dds.information.qld.gov.au/dds/.

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150211\Figure 8. EHP Referrable Wetlands

Figure 8. EHP Map of Referrable Wetlands

1 0 1 2 3 4km

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

Legend

Study Area

Biodiversity Significance

- State
- State Habitat for EVR taxa
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Image Source:
Image © 2014 DigitalGlobe
© 2014 Cnes/Spot Image
Image © 2014 CNES/Astrium

Data Source:
© State of Queensland (Department of Environment and Heritage Protection) 2014.
Updated data available at
http://dds.information.qld.gov.au/dds/

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150211\Figure 9. BPA Mapping

Figure 9. BPA Mapping of the Study Area and Surrounds

1000 0 1000 2000 3000 4000m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

TRANSMISSION LINE EASEMENT

HAUL ROAD

INVERNESS ROAD

Legend

- Study Area
- Disturbance Boundary
- Ephemeral Drainage Line
- Inverness Road

Broad Habitat Types

- Woodland (remnant)
- Semi-cleared Woodland (non-remnant)
- Grassland (non-remnant)
- Farm Dam
- Seasonal Wetland (non-remnant)

Image Source:
Anglo American Feb 2013

Data Source:
© Copyright Commonwealth of Australia
(Geoscience Australia) 2006

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150211\Figure 10. Broad Habitat map

Figure 10. Broad Habitat Map of the Study Area

250 0 250 500 750 1000 m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

Legend

- Study Area
- Disturbance Boundary
- Farm Dam
- Seasonal Wetland (non-remnant)
- Ephemeral Drainage Line
- Inverness Road

RE Mapping

- 11.3.25 - Eucalyptus tereticornis woodland fringing drainage lines (LC)
- 11.9.9 - Eucalyptus crebra grassy woodland (LC)
- 11.10.1 - Corymbia citriodora woodland (LC)
- non-remnant

Image Source:
Anglo American Feb 2013

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150213\Figure 11. Ground-truthed RE Mapping

Figure 11. Ground-truthed Regional Ecosystem Mapping of the Study Area (Cumberland Ecology)

250 0 250 500 750 1000m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

Legend

- Study Area
- Disturbance Boundary
- Farm Dam
- Seasonal Wetland (non-remnant)
- Inverness Road
- Drainage Line

Threatened Flora - AECOM Records

- *Acacia pedleyi*

Image Source:
Anglo American Feb 2013

Data Source:
AECOM (2012)

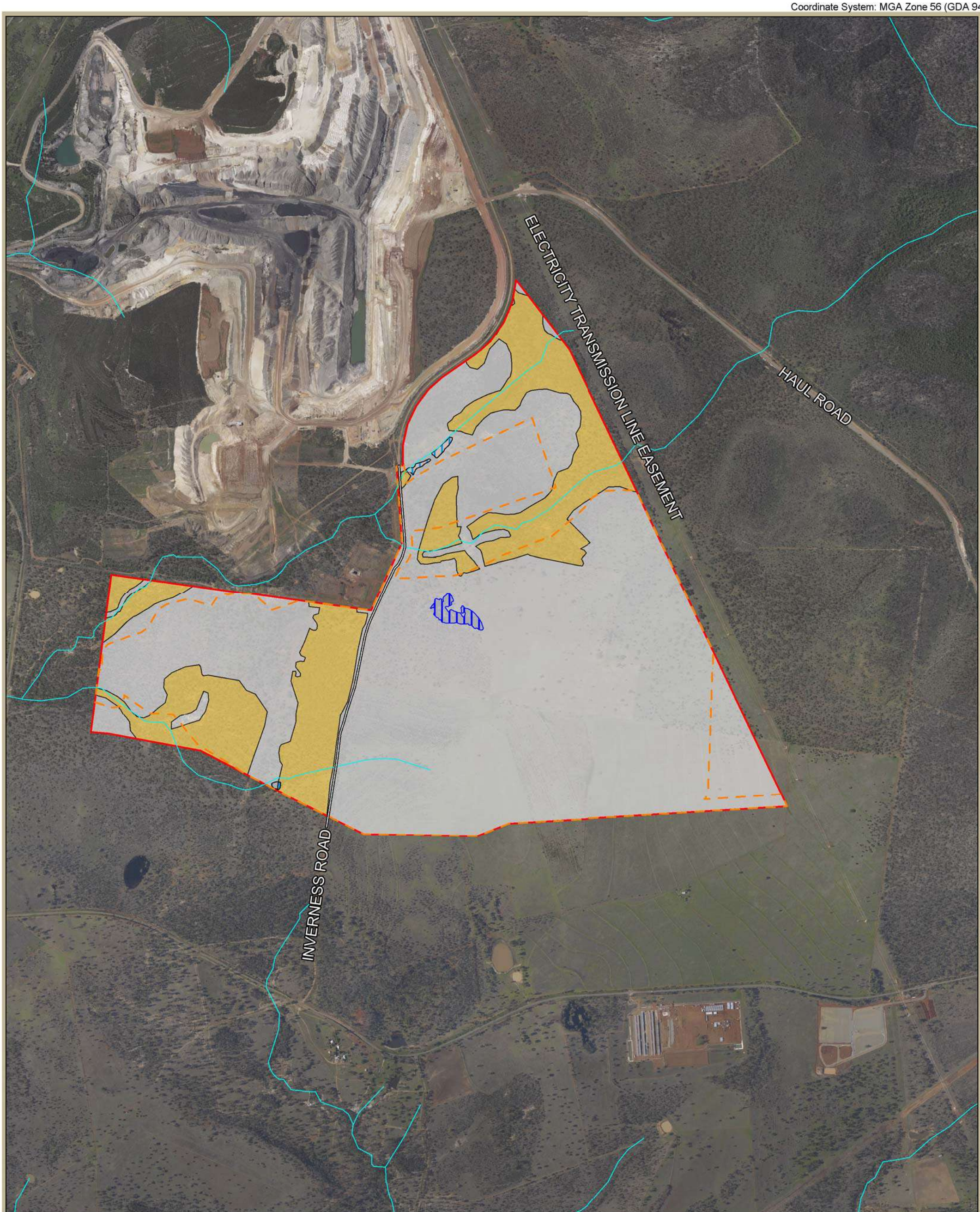
CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150211\Figure 12. Threatened Flora Records

Figure 12. Threatened Flora Records surrounding the Study Area

250 0 250 500 750 1000m

Coordinate System: MGA Zone 56 (GDA 94)



Legend

- Study Area
- Disturbance Boundary
- Farm Dam
- Seasonal Wetland (non-remnant)
- Ephemeral Drainage Line
- Inverness Road

Habitat Value

- Low Value Habitat
- Unsuitable Habitat

Image Source:
Anglo American Feb 2013

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150213\Figure 13. Habitat Map_Acacia pedleyi

Figure 13. Modelled Habitat for Acacia pedleyi (NC Act: V) within the Study Area

250 0 250 500 750 1000m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

Legend

- Study Area
- Disturbance Boundary
- Farm Dam
- Seasonal Wetland (non-remnant)
- Inverness Road

Threatened Fauna - CE Records

- Squatter Pigeon (Southern subspecies) (EPBC Act & NC Act: V)

Special Least Concern Fauna- CE Records

- Echidna (NC Act: SLC)
- Echidna scat

Migratory Fauna - CE Records

- Rainbow Bee-eater (EPBC Act: Mi&M)
- Rufous Fantail (EPBC Act: Mi&M)

Threatened Fauna - AECOM Records

- Squatter Pigeon (Southern subspecies) (NC Act & EPBC Act: V)
- Potential Northern Quoll Record (NC Act: Least Concern; EPBC Act: E)

Image Source:
Anglo American Feb 2013

Data Source:
AECOM (2012)

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150213\Figure 14. Threatened Fauna Records

Figure 14. Threatened Fauna Records within the Study Area and Surrounds

250 0 250 500 750 1000m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

ELECTRICITY TRANSMISSION LINE EASEMENT

HAUL ROAD

INVERNESS ROAD

Legend

- Study Area
- Disturbance Boundary
- Farm Dam
- Seasonal Wetland (non-remnant)
- Ephemeral Drainage Line
- Inverness Road

Habitat Value

- Low Value Habitat
- Unsuitable Habitat

Image Source:
Anglo American Feb 2013

Data Source:
© Copyright Commonwealth of Australia
(Geoscience Australia) 2006

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150211\Figure 15. Modelled Habitat_Collared Delma

Figure 15. Modelled Habitat for the Collared Delma (EPBC Act: V; NC Act: V) within the Study Area

250 0 250 500 750 1000 m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

ELECTRICITY TRANSMISSION LINE EASEMENT

HAUL ROAD

INVERNESS ROAD

Legend

- Study Area
- Disturbance Boundary
- Farm Dam
- Seasonal Wetland (non-remnant)
- Ephemeral Drainage Line
- Inverness Road

Habitat Value

- Low Value Habitat
- Unsuitable Habitat

Image Source:
Anglo American Feb 2013

Data Source:
© Copyright Commonwealth of Australia
(Geoscience Australia) 2006

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150211\Figure 16. Modelled Habitat_Yakka Skink

Figure 16. Modelled Habitat for the Yakka Skink (EPBC Act: V; NC Act: V) within the Study Area

250 0 250 500 750 1000 m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

ELECTRICITY TRANSMISSION LINE EASEMENT

HAUL ROAD

INVERNESS ROAD

Legend

- Study Area
- Disturbance Boundary
- Farm Dam
- Seasonal Wetland
- Ephemeral Drainage Line
- Inverness Road

Habitat Value

- Low Value Habitat
- Unsuitable Habitat

Image Source:
Anglo American Feb 2013

Data Source:
© Copyright Commonwealth of Australia
(Geoscience Australia) 2006

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150211\Figure 17. Modelled Habitat_Australian Painted Snipe

Figure 17. Modelled Habitat for the Australian Painted Snipe (EPBC Act: E/M/M; NC Act: V) within the Study Area

250 0 250 500 750 1000 m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

ELECTRICITY TRANSMISSION LINE EASEMENT

HAUL ROAD

INVERNESS ROAD

Legend

- Study Area
- Disturbance Area
- Farm Dam
- Seasonal Wetland
- Ephemeral Drainage Line
- Inverness Road

Habitat Value

- Low Value Habitat
- Unsuitable Habitat

Image Source:
Anglo American Feb 2013

Data Source:
© Copyright Commonwealth of Australia
(Geoscience Australia) 2006

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150211\Figure 18. Modelled Habitat_Red Goshawk

Figure 18. Modelled Habitat for the Red Goshawk (EPBC Act: V; NC Act: E) within the Study Area

250 0 250 500 750 1000 m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

ELECTRICITY TRANSMISSION LINE EASEMENT

HAUL ROAD

INVERNESS ROAD

Legend

- Study Area
- Disturbance Boundary
- Farm Dam
- Seasonal Wetland
- Ephemeral Drainage Line
- Inverness Road

Squatter Pigeon Records

- Cumberland Ecology (2014)
- AECOM (2012)

Habitat Value

- High Value Habitat
- Low Value Habitat
- Unsuitable Habitat

Image Source:
Anglo American Feb 2013

Data Source:
© Copyright Commonwealth of Australia
(Geoscience Australia) 2006

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150211\Figure 19. Modelled Habitat_Squatter Pigeon

Figure 19. Modelled Habitat for the Squatter Pigeon (southern subspecies) (EPBC Act: V; NC Act: V) within the Study Area

250 0 250 500 750 1000 m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

ELECTRICITY TRANSMISSION LINE EASEMENT

HAUL ROAD

INVERNESS ROAD

Legend

- Study Area
- Disturbance Boundary
- Farm Dam
- Seasonal Wetland
- Ephemeral Drainage Line
- Inverness Road
- Potential Northern Quoll Record (AECOM, 2012)

Habitat Value

- Low Value Habitat
- Unsuitable Habitat

Image Source:
Anglo American Feb 2013

Data Source:
© Copyright Commonwealth of Australia (Geoscience Australia) 2006

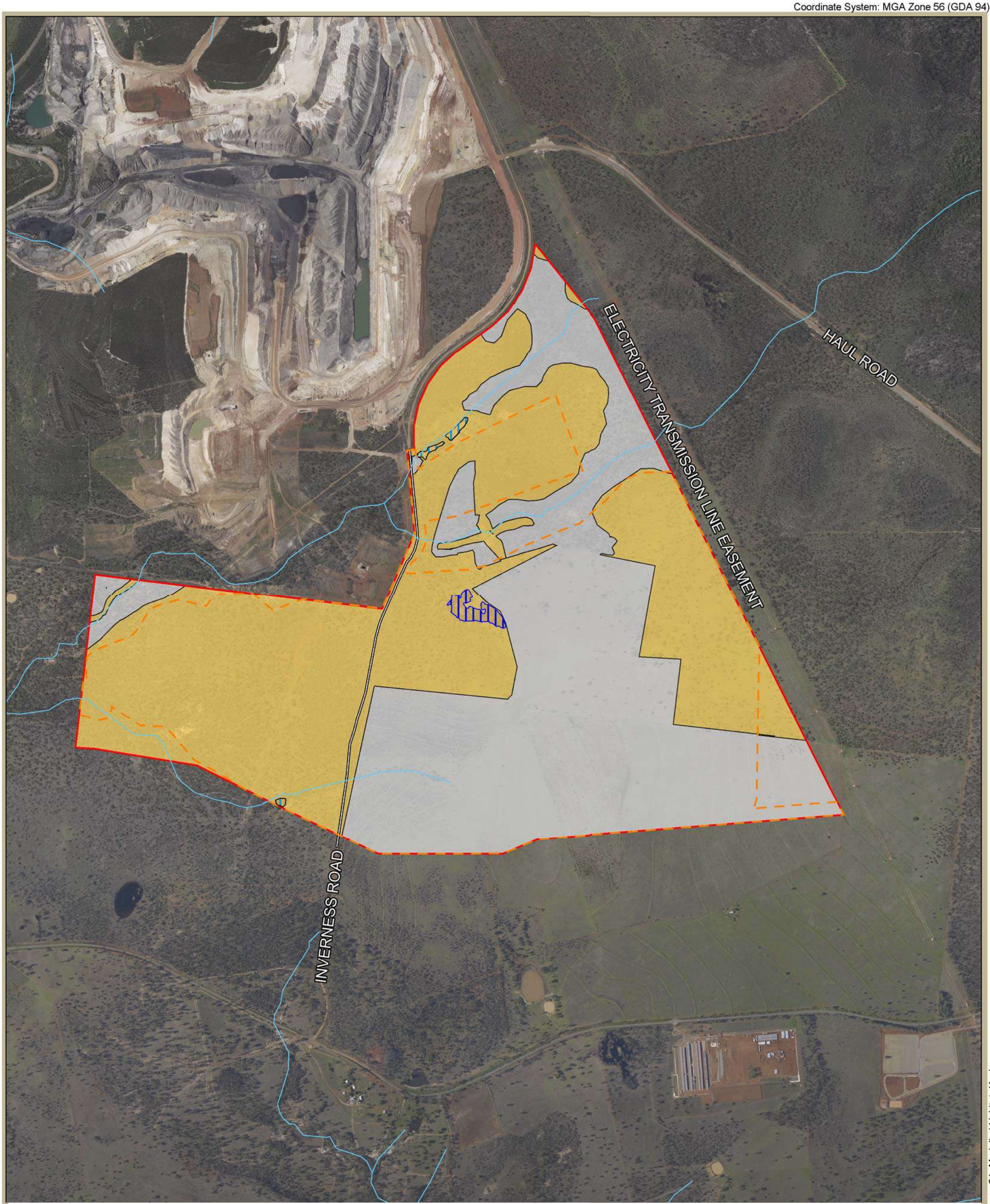
CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150211\Figure 20. Modelled Habitat_Koala

Figure 20. Modelled Habitat for the Northern Quoll (EPBC Act: E) within the Study Area

250 0 250 500 750 1000 m

Coordinate System: MGA Zone 56 (GDA 94)



Legend

- Study Area
- Disturbance Boundary
- Farm Dam
- Seasonal Wetland
- Ephemeral Drainage Line
- Inverness Road

Habitat Value

- Low Value Habitat
- Unsuitable Habitat

Image Source:
Anglo American Feb 2013

Data Source:
© Copyright Commonwealth of Australia
(Geoscience Australia) 2006

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150213\Figure 21. Modelled Habitat_Koala

Figure 21. Modelled Habitat for the Koala (EPBC Act: V) within the Study Area

250 0 250 500 750 1000 m

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

ELECTRICITY TRANSMISSION LINE EASEMENT

HAUL ROAD

INVERNESS ROAD

Legend

- Study Area
- Disturbance Boundary
- Farm Dam
- Seasonal Wetland
- Ephemeral Drainage Line
- Inverness Road

Habitat Value

- Low Value Habitat
- Unsuitable Habitat

Image Source:
Anglo American Feb 2013

Data Source:
© Copyright Commonwealth of Australia
(Geoscience Australia) 2006

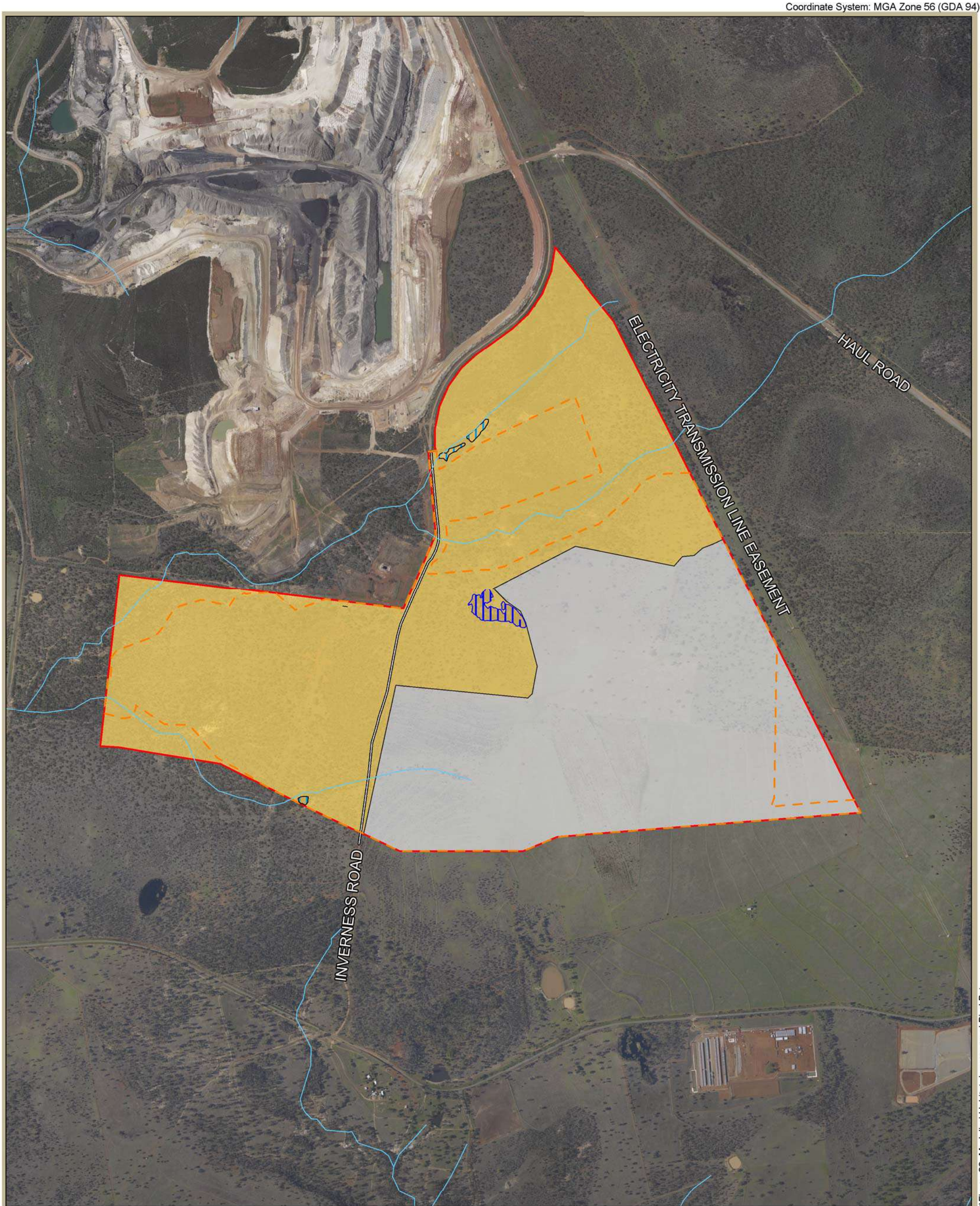
CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150213\Figure 22. Modelled Habitat_Grey headed Flying Fox

Figure 22. Modelled Habitat for the Grey-headed Flying Fox (EPBC Act: V) within the Study Area

250 0 250 500 750 1000 m

Coordinate System: MGA Zone 56 (GDA 94)



Legend

- Study Area
- Disturbance Boundary
- Farm Dam
- Seasonal Wetland
- Ephemeral Drainage Line
- Inverness Road

Habitat Value

- Low Value Habitat
- Unsuitable Habitat

Image Source:
Anglo American Feb 2013

Data Source:
© Copyright Commonwealth of Australia
(Geoscience Australia) 2006

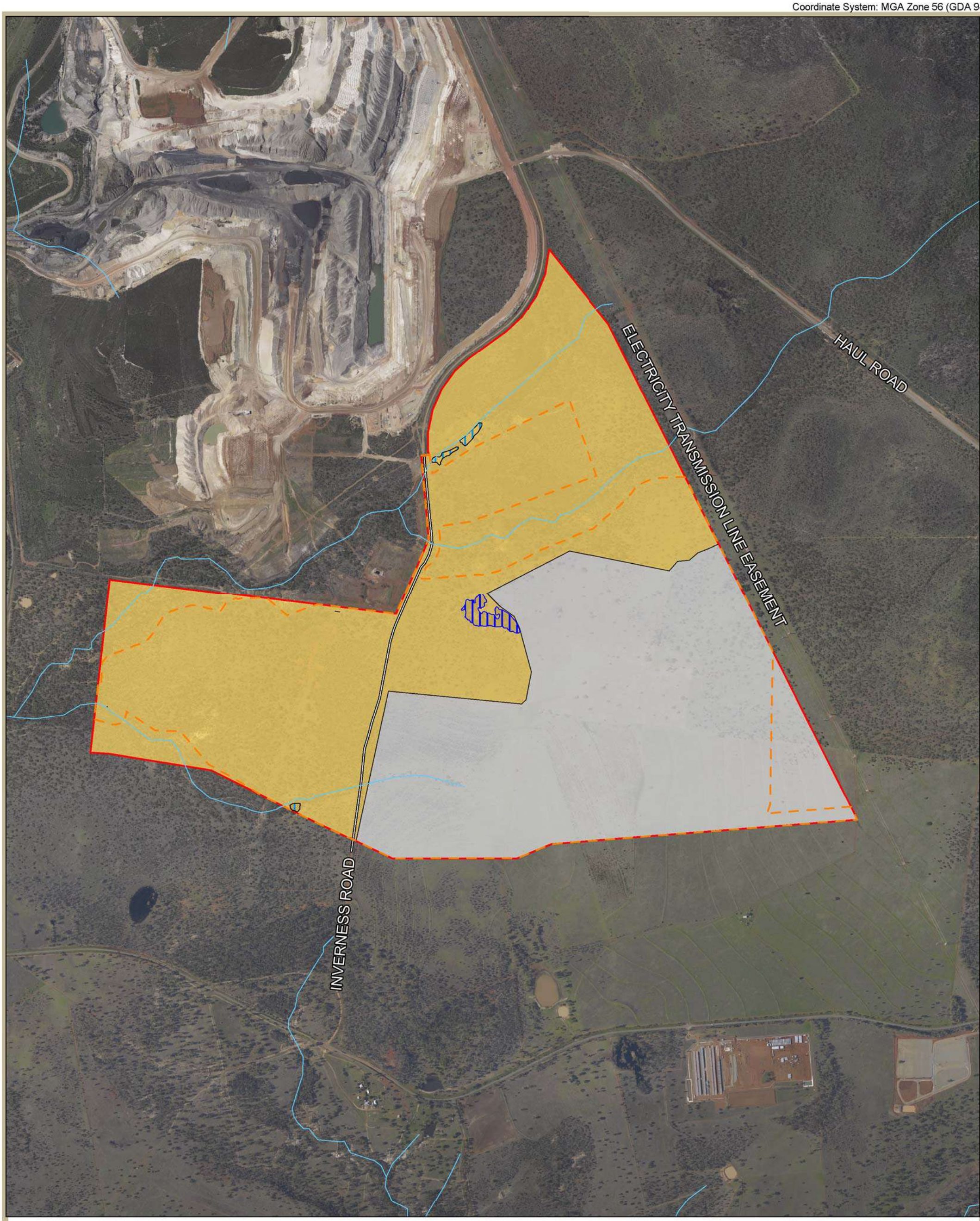
CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150213\Figure 23. Modelled Habitat_Large-eared Pied Bat

Figure 23. Modelled Habitat for the Large-eared Pied Bat (EPBC Act: V; NC Act: V) within the Study Area

250 0 250 500 750 1000 m

Coordinate System: MGA Zone 56 (GDA 94)



Legend

- Study Area
- Disturbance Boundary
- Farm Dam
- Seasonal Wetland
- Ephemeral Drainage Line
- Inverness Road

Habitat Value

- Low Value Habitat
- Unsuitable Habitat

Image Source:
Anglo American Feb 2013

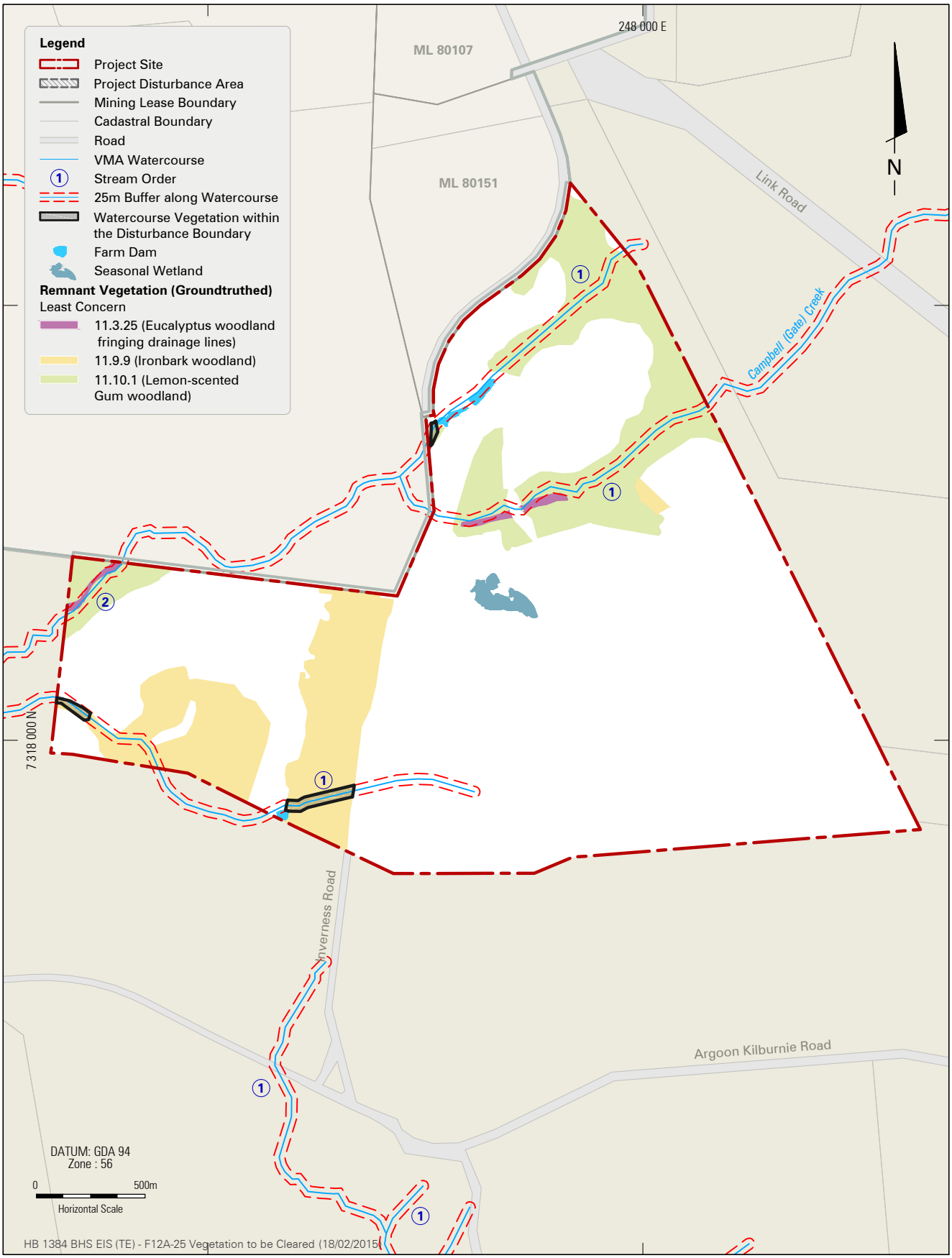
Data Source:
© Copyright Commonwealth of Australia
(Geoscience Australia) 2006

CUMBERLAND ECOLOGY

I:\...\Q14007\Figures\RP1\20150213\Figure 24. Modelled Habitat_South-eastern Long-eared Bat

Figure 24. Modelled Habitat for the South-eastern Long-eared Bat (EPBC Act: V; NC Act: V) within the Study Area

250 0 250 500 750 1000 m



BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Vegetation to be C□eared for the Pro□e□t A□ong □ ater□ourses

FIGURE 12□ □25

Appendix A

EPBC Act Protected Matters Search Tool Report

Australian Government

Department of the Environment

EPBC Act Protected Matters Report

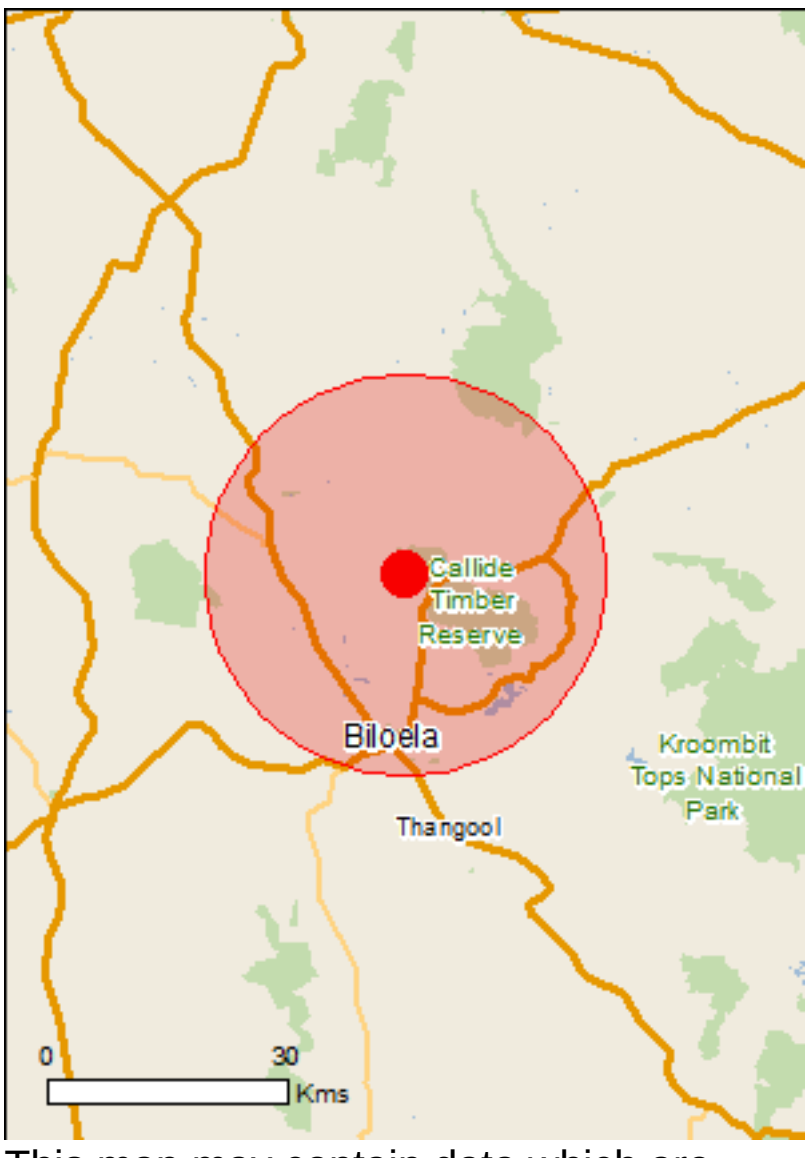
This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

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

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

Report created: 05/09/14 15:49:49

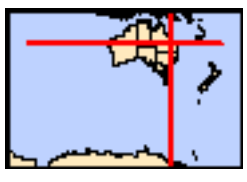
- Summary
- Details
  - Matters of NES
  - Other Matters Protected by the EPBC Act
  - Extra Information
- Caveat
- Acknowledgements



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

Coordinates

Buffer: 25.0Km



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:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	27
Listed Migratory Species:	14

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 and the heritage values of a place on the Register of the National Estate.

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.

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:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	16
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine	None

Extra Information

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

Place on the RNE:	2
State and Territory Reserves:	3
Regional Forest Agreements:	None
Invasive Species:	25
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

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

Name	Status	Type of Presence
Brigalow (Acacia harpophylla dominant and co-dominant)	Endangered	Community known to occur within area
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community likely to occur within area
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	Endangered	Community likely to occur within area
Weeping Myall Woodlands	Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
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
Neochmia ruficauda ruficauda Star Finch (eastern), Star Finch (southern) [26027]	Endangered	Species or species habitat likely to occur within area
Poephila cincta cincta Black-throated Finch (southern) [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

Name	Status	Type of Presence
		within area
Fish		
Bidyanus bidyanus Silver Perch, Bidyan [76155]	Critically Endangered	Species or species habitat likely to 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 hallucatus Northern Quoll [331]	Endangered	Species or species habitat likely to occur within area
Hipposideros semoni Semon's Leaf-nosed Bat, Greater Wart-nosed Horseshoe-bat [180]	Endangered	Species or species habitat may occur within area
Nyctophilus corbeni South-eastern Long-eared Bat [83395]	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 likely to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Species or species habitat may occur within area
Other		
Cycas megacarpa [55794]	Endangered	Species or species habitat known to occur within area
Cycas ophiolitica [55797]	Endangered	Species or species habitat likely to occur within area
Plants		
Bertya opponens [13792]	Vulnerable	Species or species habitat likely to occur within area
Bulbophyllum globuliforme Miniature Moss-orchid, Hoop Pine Orchid [6649]	Vulnerable	Species or species habitat likely to occur within area
Cossinia australiana Cossinia [3066]	Endangered	Species or species habitat likely to occur within area
Dichanthium queenslandicum King Blue-grass [5481]	Endangered	Species or species habitat may occur within area
Polianthion minutiflorum [82772]	Vulnerable	Species or species habitat likely to occur within area
Samadera bidwillii [29708]	Vulnerable	Species or species habitat likely to occur within area
Streblus pendulinus Siah's Backbone, Sia's Backbone, Isaac Wood [21618]	Endangered	Species or species habitat may occur within area
Reptiles		
Delma torquata Collared Delma [1656]	Vulnerable	Species or species

Name	Status	Type of Presence
		habitat may occur within area
Denisonia maculata Ornamental Snake [1193]	Vulnerable	Species or species habitat known to occur within area
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat known to occur within area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area
Rheodytes leukops Fitzroy River Turtle, Fitzroy Tortoise, Fitzroy Turtle, White-eyed River Diver [1761]	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 Marine Species		
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
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 likely to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may 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 known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		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		
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species

Name	Threatened	Type of Presence
		habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Defence - BILOELA TRAINING DEPOT

Listed Marine Species [Resource Information]

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

Name	Threatened	Type of Presence
Birds		
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area
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 likely to 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 likely to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat 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]	Endangered*	Species or species habitat may occur within area
Reptiles		
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area

Extra Information

Places on the RNE [Resource Information]

Note that not all Indigenous sites may be listed.

Name	State	Status
Natural		
Callide Range Area	QLD	Indicative Place
Historic		
Kilburnie Homestead	QLD	Registered

State and Territory Reserves [Resource Information]

Name	State
Bell Creek	QLD
Mount Murchison	QLD
Rivercal	QLD

Invasive Species [Resource Information]

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

Name	Status	Type of Presence
Birds		
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
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
Frogs		
Rhinella marina Cane Toad [83218]		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
Equus caballus Horse [5]		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
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
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Cryptostegia grandiflora Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda [18913]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Hymenachne amplexicaulis Hymenachne, Olive Hymenachne, Water Stargrass,		Species or species

Name	Status	Type of Presence
West Indian Grass, West Indian Marsh Grass [31754]		habitat likely to occur within area
Jatropha gossypifolia		
Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [7507]		Species or species habitat likely to occur within area
Lantana camara		
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
Opuntia spp.		
Prickly Pears [82753]		Species or species habitat likely to occur within area
Parkinsonia aculeata		
Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		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
Vachellia nilotica		
Prickly Acacia, Blackthorn, Prickly Mimosa, Black Piquant, Babul [84351]		Species or species habitat likely to occur within area

Coordinates

-24.22937 150.52425

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 Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Acknowledgements

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

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

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

Please feel free to provide feedback via the Contact Us page.

© Commonwealth of Australia
Department of the Environment
GPO Box 787
Canberra ACT 2601 Australia
+61 2 6274 1111

Appendix B

Queensland 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: Since 1980
	Latitude: -24.2294
	Longitude: 150.5242
	Distance: 25
	Email: cecilia.eriksson@cumberlandecology.com.au
	Date submitted: Thursday 22 Jan 2015 11:31:54
	Date extracted: Thursday 22 Jan 2015 11:40:02

The number of records retrieved = 817

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	Bufonidae	*Rhinella marina*	cane toad	Y			5
animals	amphibians	Hylidae	*Litoria caerulea*	common green treefrog		C		2
animals	amphibians	Limnodynastidae	*Platyplectrum ornatum*	ornate burrowing frog		C		2
animals	amphibians	Myobatrachidae	*Pseudophryne major*	great brown broodfrog		C		1
animals	birds	Acanthizidae	*Acanthiza nana*	yellow thornbill		C		4
animals	birds	Acanthizidae	*Smicrornis brevirostris*	weebill		C		5
animals	birds	Acanthizidae	*Acanthiza lineata*	striated thornbill		C		1
animals	birds	Acanthizidae	*Acanthiza pusilla*	brown thornbill		C		3
animals	birds	Acanthizidae	*Sericornis magnirostra*	large-billed scrubwren		C		1
animals	birds	Acanthizidae	*Gerygone albogularis*	white-throated gerygone		C		20
animals	birds	Acanthizidae	*Sericornis frontalis*	white-browed scrubwren		C		5
animals	birds	Acanthizidae	*Acanthiza chrysorrhoa*	yellow-rumped thornbill		C		3
animals	birds	Acanthizidae	*Chthonicola sagittata*	speckled warbler		C		1
animals	birds	Acanthizidae	*Acanthiza reguloides*	buff-rumped thornbill		C		3
animals	birds	Accipitridae	*Aquila audax*	wedge-tailed eagle		C		8
animals	birds	Accipitridae	*Accipiter novaehollandiae*	grey goshawk		C		1
animals	birds	Accipitridae	*Accipiter cirrocephalus*	collared sparrowhawk		C		2
animals	birds	Accipitridae	*Hieraaetus morphnoides*	little eagle		C		2
animals	birds	Accipitridae	*Milvus migrans*	black kite		C		5
animals	birds	Accipitridae	*Elanus axillaris*	black-shouldered kite		C		4
animals	birds	Accipitridae	*Aviceda subcristata*	Pacific baza		C		4
animals	birds	Accipitridae	*Haliastur sphenurus*	whistling kite		C		7
animals	birds	Accipitridae	*Haliaeetus leucogaster*	white-bellied sea-eagle		SL		3
animals	birds	Acrocephalidae	*Acrocephalus australis*	Australian reed-warbler		SL		2
animals	birds	Aegothelidae	*Aegotheles cristatus*	Australian owlet-nightjar		C		2
animals	birds	Alaudidae	*Mirafra javanica*	Horsfield's bushlark		C		1
animals	birds	Alcedinidae	*Ceyx azureus*	azure kingfisher		C		1
animals	birds	Anatidae	*Cygnus atratus*	black swan		C		5
animals	birds	Anatidae	*Aythya australis*	hardhead		C		4
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		14
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		6
animals	birds	Anatidae	*Anas platyrhynchos*	northern mallard	Y			1
animals	birds	Anatidae	*Dendrocygna eytoni*	plumed whistling-duck		C		2
animals	birds	Anatidae	*Dendrocygna arcuata*	wandering whistling-duck		C		2
animals	birds	Anatidae	*Anas castanea*	chestnut teal		C		1
animals	birds	Anatidae	*Anas gracilis*	grey teal		C		5
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		7
animals	birds	Anseranatidae	*Anseranas semipalmata*	magpie goose		C		4
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		7
animals	birds	Ardeidae	*Ixobrychus flavicollis*	black bittern		C		1
animals	birds	Ardeidae	*Egretta garzetta*	little egret		C		2
animals	birds	Ardeidae	*Ardea intermedia*	intermediate egret		C		3
animals	birds	Ardeidae	*Ardea modesta*	eastern great egret		SL		2
animals	birds	Ardeidae	*Ardea ibis*	cattle egret		SL		6
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		22
animals	birds	Artamidae	*Artamus superciliosus*	white-browed woodswallow		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Artamidae	*Artamus leucorynchus*	white-breasted woodswallow		C		3
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		9
animals	birds	Artamidae	*Artamus cyanopterus*	dusky woodswallow		C		1
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		29
animals	birds	Artamidae	*Artamus personatus*	masked woodswallow		C		1
animals	birds	Artamidae	*Artamus cinereus*	black-faced woodswallow		C		5
animals	birds	Artamidae	*Cracticus tibicen*	Australian magpie		C		32
animals	birds	Burhinidae	*Burhinus grallarius*	bush stone-curlew		C		4
animals	birds	Cacatuidae	*Nymphicus hollandicus*	cockatiel		C		15
animals	birds	Cacatuidae	*Eolophus roseicapillus*	galah		C		17
animals	birds	Cacatuidae	*Cacatua sanguinea*	little corella		C		15
animals	birds	Cacatuidae	*Calyptorhynchus banksii*	red-tailed black-cockatoo		C		6
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		33
animals	birds	Cacatuidae	*Calyptorhynchus lathami*	glossy black-cockatoo		V		1
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		23
animals	birds	Campephagidae	*Coracina papuensis*	white-bellied cuckoo-shrike		C		3
animals	birds	Campephagidae	*Lalage leucomela*	varied triller		C		4
animals	birds	Campephagidae	*Lalage sueurii*	white-winged triller		C		4
animals	birds	Campephagidae	*Coracina tenuirostris*	cicadabird		SL		3
animals	birds	Charadriidae	*Vanellus miles novaehollandiae*	masked lapwing (southern subspecies)		C		5
animals	birds	Charadriidae	*Elseyornis melanops*	black-fronted dotterel		C		1
animals	birds	Charadriidae	*Vanellus tricolor*	banded lapwing		C		1
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		3
animals	birds	Cisticolidae	*Cisticola exilis*	golden-headed cisticola		C		4
animals	birds	Climacteridae	*Cormobates leucophaea metastasis*	white-throated treecreeper (southern)		C		2
animals	birds	Climacteridae	*Climacteris picumnus*	brown treecreeper		C		1
animals	birds	Columbidae	*Leucosarcia picata*	wonga pigeon		C		3
animals	birds	Columbidae	*Geopelia humeralis*	bar-shouldered dove		C		8
animals	birds	Columbidae	*Chalcophaps indica*	emerald dove		C		2
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		23
animals	birds	Columbidae	*Geopelia striata*	peaceful dove		C		22
animals	birds	Columbidae	*Columba livia*	rock dove	Y			5
animals	birds	Columbidae	*Ptilinopus superbus*	superb fruit-dove		C		2
animals	birds	Columbidae	*Geophaps scripta scripta*	squatter pigeon (southern subspecies)		V	V	1
animals	birds	Columbidae	*Phaps chalcoptera*	common bronzewing		C		1
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		9
animals	birds	Corcoracidae	*Struthidea cinerea*	apostlebird		C		20
animals	birds	Corcoracidae	*Corcorax melanorhamphos*	white-winged chough		C		6
animals	birds	Corvidae	*Corvus sp.*					1
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		43
animals	birds	Corvidae	*Corvus coronoides*	Australian raven		C		3
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		7
animals	birds	Cuculidae	*Chalcites lucidus*	shining bronze-cuckoo		C		3
animals	birds	Cuculidae	*Cacomantis pallidus*	pallid cuckoo		C		1
animals	birds	Cuculidae	*Chalcites basalis*	Horsfield's bronze-cuckoo		C		2
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		6

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Cuculidae	*Cacomantis flabelliformis*	fan-tailed cuckoo		C		3
animals	birds	Cuculidae	*Scythrops novaehollandiae*	channel-billed cuckoo		C		7
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		7
animals	birds	Estrildidae	*Taeniopygia guttata*	zebra finch		C		1
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		25
animals	birds	Eurostopodidae	*Eurostopodus argus*	spotted nightjar		C		2
animals	birds	Falconidae	*Falco berigora*	brown falcon		C		6
animals	birds	Falconidae	*Falco longipennis*	Australian hobby		C		2
animals	birds	Falconidae	*Falco cenchroides*	Nankeen kestrel		C		14
animals	birds	Falconidae	*Falco subniger*	black falcon		C		1
animals	birds	Halcyonidae	*Dacelo leachii*	blue-winged kookaburra		C		5
animals	birds	Halcyonidae	*Todiramphus macleayii*	forest kingfisher		C		6
animals	birds	Halcyonidae	*Todiramphus sanctus*	sacred kingfisher		C		6
animals	birds	Halcyonidae	*Todiramphus pyrrhopygius*	red-backed kingfisher		C		2
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		28
animals	birds	Hirundinidae	*Petrochelidon nigricans*	tree martin		C		3
animals	birds	Hirundinidae	*Petrochelidon ariel*	fairy martin		C		3
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		6
animals	birds	Laridae	*Chlidonias hybrida*	whiskered tern		C		1
animals	birds	Laridae	*Chroicocephalus novaehollandiae*	silver gull		C		3
animals	birds	Laridae	*Gelochelidon nilotica*	gull-billed tern		C		1
animals	birds	Laridae	*Hydroprogne caspia*	Caspian tern		SL		3
animals	birds	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren		C		20
animals	birds	Maluridae	*Malurus lamberti*	variegated fairy-wren		C		4
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		2
animals	birds	Megaluridae	*Megalurus gramineus*	little grassbird		C		1
animals	birds	Megaluridae	*Cincloramphus cruralis*	brown songlark		C		1
animals	birds	Megaluridae	*Cincloramphus mathewsi*	rufous songlark		C		3
animals	birds	Megapodiidae	*Alectura lathami*	Australian brush-turkey		C		4
animals	birds	Meliphagidae	*Myzomela sanguinolenta*	scarlet honeyeater		C		4
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		18
animals	birds	Meliphagidae	*Acanthagenys rufogularis*	spiny-cheeked honeyeater		C		3
animals	birds	Meliphagidae	*Melithreptus albogularis*	white-throated honeyeater		C		11
animals	birds	Meliphagidae	*Plectorhyncha lanceolata*	striped honeyeater		C		16
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		21
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		9
animals	birds	Meliphagidae	*Melithreptus gularis*	black-chinned honeyeater		C		1
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		15
animals	birds	Meliphagidae	*Manorina flavigula*	yellow-throated miner		C		3
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		18
animals	birds	Meliphagidae	*Meliphaga lewinii*	Lewin's honeyeater		C		10
animals	birds	Meliphagidae	*Ptilotula fuscus*	fuscous honeyeater		C		1
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		SL		12
animals	birds	Monarchidae	*Carterornis leucotis*	white-eared monarch		C		2
animals	birds	Monarchidae	*Myiagra inquieta*	restless flycatcher		C		5
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		7

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Monarchidae	*Myiagra cyanoleuca*	satin flycatcher		SL		4
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		35
animals	birds	Motacillidae	*Anthus novaeseelandiae*	Australasian pipit		C		5
animals	birds	Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird		C		18
animals	birds	Neosittidae	*Daphoenositta chrysoptera*	varied sittella		C		3
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		9
animals	birds	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird		C		19
animals	birds	Otididae	*Ardeotis australis*	Australian bustard		C		5
animals	birds	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush		C		5
animals	birds	Pachycephalidae	*Colluricincla megarhyncha*	little shrike-thrush		C		3
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		12
animals	birds	Pachycephalidae	*Pachycephala pectoralis*	golden whistler		C		4
animals	birds	Pachycephalidae	*Falcunculus frontatus*	crested shrike-tit		C		1
animals	birds	Pardalotidae	*Pardalotus rubricatus*	red-browed pardalote		C		2
animals	birds	Pardalotidae	*Pardalotus punctatus*	spotted pardalote		C		1
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		15
animals	birds	Passeridae	*Passer domesticus*	house sparrow	Y			14
animals	birds	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican		C		7
animals	birds	Petroicidae	*Eopsaltria australis*	eastern yellow robin		C		2
animals	birds	Petroicidae	*Petroica goodenovii*	red-capped robin		C		1
animals	birds	Petroicidae	*Microeca fascinans*	jacky winter		C		3
animals	birds	Petroicidae	*Petroica rosea*	rose robin		C		2
animals	birds	Phalacrocoracidae	*Phalacrocorax carbo*	great cormorant		C		3
animals	birds	Phalacrocoracidae	*Phalacrocorax varius*	pied cormorant		C		4
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		5
animals	birds	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant		C		3
animals	birds	Phasianidae	*Coturnix ypsilophora*	brown quail		C		4
animals	birds	Podargidae	*Podargus strigoides*	tawny frogmouth		C		3
animals	birds	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe		C		5
animals	birds	Podicipedidae	*Podiceps cristatus*	great crested grebe		C		2
animals	birds	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler		C		18
animals	birds	Psittacidae	*Glossopsitta pusilla*	little lorikeet		C		1
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		21
animals	birds	Psittacidae	*Melopsittacus undulatus*	budgerigar		C		1
animals	birds	Psittacidae	*Neophema pulchella*	turquoise parrot		C		2
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		6
animals	birds	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet		C		33
animals	birds	Psittacidae	*Alisterus scapularis*	Australian king-parrot		C		6
animals	birds	Psittacidae	*Aprosmictus erythropterus*	red-winged parrot		C		18
animals	birds	Ptilonorhynchidae	*Ptilonorhynchus maculatus*	spotted bowerbird		C		2
animals	birds	Rallidae	*Gallinula tenebrosa*	dusky moorhen		C		5
animals	birds	Rallidae	*Fulica atra*	Eurasian coot		C		1
animals	birds	Recurvirostridae	*Himantopus himantopus*	black-winged stilt		C		5
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		34
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		15
animals	birds	Rhipiduridae	*Rhipidura rufifrons*	rufous fantail		SL		3

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Scolopacidae	*Gallinago hardwickii*	Latham's snipe		SL		1
animals	birds	Scolopacidae	*Tringa stagnatilis*	marsh sandpiper		SL		1
animals	birds	Scolopacidae	*Actitis hypoleucos*	common sandpiper		SL		1
animals	birds	Scolopacidae	*Calidris acuminata*	sharp-tailed sandpiper		SL		1
animals	birds	Strigidae	*Ninox boobook*	southern boobook		C		6
animals	birds	Strigidae	*Ninox connivens*	barking owl		C		2
animals	birds	Sturnidae	*Sturnus vulgaris*	common starling	Y			9
animals	birds	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis		C		8
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		5
animals	birds	Threskiornithidae	*Platalea flavipes*	yellow-billed spoonbill		C		4
animals	birds	Threskiornithidae	*Platalea regia*	royal spoonbill		C		1
animals	birds	Threskiornithidae	*Plegadis falcinellus*	glossy ibis		SL		2
animals	birds	Timaliidae	*Zosterops lateralis*	silvereye		C		8
animals	birds	Turnicidae	*Turnix pyrrhothorax*	red-chested button-quail		C		1
animals	birds	Tytonidae	*Tyto javanica*	eastern barn owl		C		2
animals	mammals	Acrobatidae	*Acrobates pygmaeus*	feathertail glider		C		1
animals	mammals	Bovidae	*Bos taurus*	European cattle	Y			1
animals	mammals	Canidae	*Canis lupus dingo*	dingo				1
animals	mammals	Canidae	*Canis lupus familiaris*	dog	Y			3
animals	mammals	Emballonuridae	*Taphozous troughtoni*	Troughton's sheathtail bat		C		2
animals	mammals	Emballonuridae	*Saccolaimus flaviventris*	yellow-bellied sheathtail bat		C		2
animals	mammals	Leporidae	*Oryctolagus cuniculus*	rabbit	Y			4
animals	mammals	Macropodidae	*Macropus giganteus*	eastern grey kangaroo		C		1
animals	mammals	Macropodidae	*Macropus dorsalis*	black-striped wallaby		C		4
animals	mammals	Macropodidae	*Wallabia bicolor*	swamp wallaby		C		4
animals	mammals	Macropodidae	*Macropus parryi*	whiptail wallaby		C		2
animals	mammals	Miniopteridae	*Miniopterus schreibersii oceanensis*	eastern bent-wing bat		C		1
animals	mammals	Molossidae	*Chaerephon jobensis*	northern freetail bat		C		1
animals	mammals	Molossidae	*Mormopterus norfolkensis*	east coast freetail bat		C		1
animals	mammals	Petauridae	*Petaurus australis australis*	yellow-bellied glider (southern subspecies)		C		3
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		3
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		SL	V	8
animals	mammals	Potoroidae	*Aepyprymnus rufescens*	rufous bettong		C		4
animals	mammals	Pseudocheiridae	*Pseudocheirus peregrinus*	common ringtail possum		C		3
animals	mammals	Pseudocheiridae	*Petauroides volans*	greater glider		C		1
animals	mammals	Pteropodidae	*Pteropus alecto*	black flying-fox		C		2
animals	mammals	Pteropodidae	*Pteropus sp.*					1
animals	mammals	Rhinolophidae	*Rhinolophus megaphyllus*	eastern horseshoe-bat		C		1
animals	mammals	Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna		SL		1
animals	mammals	Vespertilionidae	*Vespadelus troughtoni*	eastern cave bat		C		1
animals	mammals	Vespertilionidae	*Scotorepens greyii*	little broad-nosed bat		C		1
animals	mammals	Vespertilionidae	*Chalinolobus gouldii*	Gould's wattled bat		C		1
animals	ray-finned fishes	Ambassidae	*Ambassis agassizii*	Agassiz's glassfish				1
animals	ray-finned fishes	Anguillidae	*Anguilla reinhardtii*	longfin eel				1
animals	ray-finned fishes	Atherinidae	*Craterocephalus stercusmuscarum*	flyspecked hardyhead				1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	ray-finned fishes	Clupeidae	*Nematalosa erebi*	bony bream				1
animals	ray-finned fishes	Eleotridae	*Mogurnda adspersa*	southern purplespotted gudgeon				1
animals	ray-finned fishes	Eleotridae	*Oxyeleotris lineolata*	sleepy cod				1
animals	ray-finned fishes	Osteoglossidae	*Scleropages leichardti*	southern saratoga				1
animals	ray-finned fishes	Percichthyidae	*Macquaria ambigua*	golden perch				1
animals	ray-finned fishes	Plotosidae	*Tandanus tandanus*	freshwater catfish				1
animals	ray-finned fishes	Pseudomugilidae	*Pseudomugil signifer*	Pacific blue eye				1
animals	ray-finned fishes	Terapontidae	*Bidyanus bidyanus*	silver perch			CE	1
animals	reptiles	Agamidae	*Diporiphora nobbi*	nobbi		C		1
animals	reptiles	Agamidae	*Diporiphora australis*			C		1
animals	reptiles	Agamidae	*Pogona barbata*	bearded dragon		C		1
animals	reptiles	Chelidae	*Chelodina longicollis*	eastern snake-necked turtle		C		1
animals	reptiles	Chelidae	*Emydura macquarii krefftii*	Krefft's river turtle		C		2
animals	reptiles	Chelidae	*Elseya albagula*	southern snapping turtle		C	CE	1
animals	reptiles	Colubridae	*Dendrelaphis punctulatus*	green tree snake		C		1
animals	reptiles	Diplodactylidae	*Amalosia rhombifer*	zig-zag gecko		C		1
animals	reptiles	Diplodactylidae	*Strophurus williamsi*	soft-spined gecko		C		2
animals	reptiles	Diplodactylidae	*Nebulifera robusta*	robust velvet gecko		C		1
animals	reptiles	Diplodactylidae	*Oedura monilis*			C		2
animals	reptiles	Diplodactylidae	*Oedura tryoni*	southern spotted velvet gecko		C		3
animals	reptiles	Elapidae	*Demansia psammophis*	yellow-faced whipsnake		C		3
animals	reptiles	Elapidae	*Vermicella annulata*	bandy-bandy		C		1
animals	reptiles	Gekkonidae	*Gehyra dubia*			C		2
animals	reptiles	Gekkonidae	*Heteronotia binoei*	Bynoe's gecko		C		3
animals	reptiles	Scincidae	*Morethia taeniopleura*	fire-tailed skink		C		3
animals	reptiles	Scincidae	*Anomalopus verreauxii*			C		1
animals	reptiles	Scincidae	*Ctenotus taeniolatus*	copper-tailed skink		C		2
animals	reptiles	Scincidae	*Lygisaurus foliorum*			C		2
animals	reptiles	Scincidae	*Ctenotus spaldingi*			C		4
animals	reptiles	Scincidae	*Carlia schmeltzii*			C		4
animals	reptiles	Scincidae	*Carlia vivax*			C		3
animals	reptiles	Scincidae	*Carlia munda*			C		1
animals	reptiles	Scincidae	*Liburnascincus mundivensis*			C		2
animals	reptiles	Scincidae	*Carlia pectoralis sensu lato*			C		3
animals	reptiles	Scincidae	*Cryptoblepharus pulcher pulcher*	elegant snake-eyed skink		C		2
fungi	club fungi	Basidiomycota	*Battarrea stevenii*			C		1/1
fungi	sac fungi	Graphidaceae	*Diploschistes sp. (Callide H.Streimann 52528)*			C		1/1
fungi	sac fungi	Lecanoraceae	*Lecanora oreinoides*			C		1/1
fungi	sac fungi	Parmeliaceae	*Xanthoparmelia loxodella*			C		1/1
fungi	sac fungi	Parmeliaceae	*Xanthoparmelia biloelensis*			C		1/1
fungi	sac fungi	Physciaceae	*Pyxine australiensis*			C		1/1
fungi	sac fungi	Usneaceae	*Usnea trichodeoides*			C		1/1
plants	conifers	Araucariaceae	*Araucaria cunninghamii*	hoop pine		C		1
plants	conifers	Cupressaceae	*Callitris endlicheri*	black cypress pine		C		7/1
plants	cycads	Cycadaceae	*Cycas megacarpa*			E	E	18/17
plants	cycads	Zamiaceae	*Macrozamia miquelii*			C		2/2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	cycads	Zamiaceae	*Macrozamia macleayi*			C		10/10
plants	ferns	Adiantaceae	*Cheilanthes sieberi*			C		1
plants	ferns	Adiantaceae	*Pellaea nana*			C		1/1
plants	ferns	Dryopteridaceae	*Lastreopsis microsora subsp. microsora*			C		1/1
plants	ferns	Marsileaceae	*Marsilea mutica*	shiny nardoo		C		1/1
plants	ferns	Marsileaceae	*Marsilea drummondii*	common nardoo		C		2/2
plants	ferns	Polypodiaceae	*Drynaria rigidula*			C		2
plants	higher dicots	Acanthaceae	*Ruellia simplex*		Y			1/1
plants	higher dicots	Acanthaceae	*Pseuderanthemum variabile*	pastel flower		C		1
plants	higher dicots	Aizoaceae	*Zaleya galericulata*			C		1/1
plants	higher dicots	Amaranthaceae	*Gomphrena celosioides*	gomphrena weed	Y			1/1
plants	higher dicots	Amaranthaceae	*Alternanthera pungens*	khaki weed	Y			1/1
plants	higher dicots	Amaranthaceae	*Ptilotus macrocephalus*	green pussytails		C		1/1
plants	higher dicots	Amaranthaceae	*Alternanthera nodiflora*	joyweed		C		1/1
plants	higher dicots	Amaranthaceae	*Deeringia amaranthoides*	redberry		C		4/4
plants	higher dicots	Anacardiaceae	*Schinus molle var. areira*	pepper tree	Y			1/1
plants	higher dicots	Anacardiaceae	*Pleiogynium timorense*	Burdekin plum		C		3
plants	higher dicots	Anacardiaceae	*Schinus terebinthifolius*		Y			1/1
plants	higher dicots	Anacardiaceae	*Euroschinus falcatus*			C		3
plants	higher dicots	Apiaceae	*Eryngium plantagineum*	long eryngium		C		3/3
plants	higher dicots	Apocynaceae	*Cryptostegia grandiflora*	rubber vine	Y			5/4
plants	higher dicots	Apocynaceae	*Gomphocarpus physocarpus*	balloon cottonbush	Y			1/1
plants	higher dicots	Apocynaceae	*Hoya australis subsp. australis*			C		1/1
plants	higher dicots	Apocynaceae	*Carissa ovata*	currantbush		C		4/1
plants	higher dicots	Apocynaceae	*Alyxia sharpei*			C		5/5
plants	higher dicots	Apocynaceae	*Hoya australis*			C		3
plants	higher dicots	Apocynaceae	*Cerbera dumicola*			NT		2/2
plants	higher dicots	Apocynaceae	*Alyxia magnifolia*			C		1
plants	higher dicots	Apocynaceae	*Alyxia ruscifolia*			C		4/3
plants	higher dicots	Apocynaceae	*Cascabela thevetia*	yellow oleander	Y			2/2
plants	higher dicots	Apocynaceae	*Cynanchum bowmanii*	bowman's milkvine		C		1/1
plants	higher dicots	Apocynaceae	*Parsonsia velutina*	hairy silkpod		C		1
plants	higher dicots	Apocynaceae	*Secamone elliptica*			C		1
plants	higher dicots	Apocynaceae	*Alstonia constricta*	bitterbark		C		3
plants	higher dicots	Apocynaceae	*Parsonsia straminea*	monkey rope		C		1
plants	higher dicots	Apocynaceae	*Asclepias curassavica*	red-head cottonbush	Y			2/2
plants	higher dicots	Apocynaceae	*Parsonsia plaesiophylla*			C		1/1
plants	higher dicots	Araliaceae	*Polyscias elegans*	celery wood		C		3/2
plants	higher dicots	Araliaceae	*Astrotricha*			C		2
plants	higher dicots	Araliaceae	*Astrotricha brachyandra*			C		3/3
plants	higher dicots	Araliaceae	*Astrotricha intermedia*			C		2
plants	higher dicots	Araliaceae	*Astrotricha cordata*			C		4
plants	higher dicots	Asteraceae	*Eclipta prostrata*	white eclipta	Y			1/1
plants	higher dicots	Asteraceae	*Olearia canescens*			C		3/1
plants	higher dicots	Asteraceae	*Sonchus oleraceus*	common sowthistle	Y			1/1
plants	higher dicots	Asteraceae	*Xanthium spinosum*	Bathurst burr	Y			2/2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Asteraceae	*Calotis cuneifolia*	burr daisy		C		1/1
plants	higher dicots	Asteraceae	*Peripleura bicolor*			C		2/2
plants	higher dicots	Asteraceae	*Olearia canescens subsp. (SF618 P.Forster PIF6660)*			C		2/2
plants	higher dicots	Asteraceae	*Coronidium glutinosum*			C		1/1
plants	higher dicots	Asteraceae	*Cyanthillium cinereum*			C		3/2
plants	higher dicots	Asteraceae	*Gnaphalium polycaulon*		Y			1/1
plants	higher dicots	Asteraceae	*Senecio brigalowensis*			C		2/2
plants	higher dicots	Asteraceae	*Verbesina encelioides*	crownbeard	Y			1/1
plants	higher dicots	Asteraceae	*Senecio quadridentatus*	cotton fireweed		C		1/1
plants	higher dicots	Asteraceae	*Sigesbeckia orientalis*	Indian weed		C		1/1
plants	higher dicots	Asteraceae	*Gamochaeta pensylvanica*		Y			1/1
plants	higher dicots	Asteraceae	*Ozothamnus cassinioides*			C		2/1
plants	higher dicots	Asteraceae	*Ozothamnus diosmifolius*	white dogwood		C		1
plants	higher dicots	Asteraceae	*Pterocaulon sphacelatum*	applebush		C		2
plants	higher dicots	Asteraceae	*Parthenium hysterophorus*	parthenium weed	Y			3/3
plants	higher dicots	Asteraceae	*Synedrellopsis grisebachii*		Y			1/1
plants	higher dicots	Asteraceae	*Pseudognaphalium luteoalbum*	Jersey cudweed		C		1/1
plants	higher dicots	Asteraceae	*Gynura drymophila var. glabrifolia*			C		1/1
plants	higher dicots	Asteraceae	*Zinnia peruviana*	wild zinnia	Y			1/1
plants	higher dicots	Asteraceae	*Cassinia laevis*			C		3/2
plants	higher dicots	Asteraceae	*Tagetes minuta*	stinking roger	Y			1/1
plants	higher dicots	Asteraceae	*Calotis dentex*	white burr daisy		C		1/1
plants	higher dicots	Asteraceae	*Bidens pilosa*		Y			2/2
plants	higher dicots	Asteraceae	*Rhodanthe polyphylla*			C		2/2
plants	higher dicots	Bignoniaceae	*Dolichandra unguis-cati*	cat's claw creeper	Y			7/7
plants	higher dicots	Boraginaceae	*Ehretia membranifolia*	weeping koda		C		5/1
plants	higher dicots	Boraginaceae	*Trichodesma zeylanicum var. zeylanicum*			C		1/1
plants	higher dicots	Brassicaceae	*Cardamine paucijuga*			C		1/1
plants	higher dicots	Brassicaceae	*Rapistrum rugosum*		Y			1/1
plants	higher dicots	Brassicaceae	*Lepidium bonariense*	Argentine peppercress	Y			3/3
plants	higher dicots	Brassicaceae	*Sisymbrium thellungii*	African turnip-weed	Y			1/1
plants	higher dicots	Byttneriaceae	*Waltheria indica*			C		1/1
plants	higher dicots	Byttneriaceae	*Seringia corollata*			C		5/4
plants	higher dicots	Byttneriaceae	*Keraudrenia collina*			C		1/1
plants	higher dicots	Byttneriaceae	*Hannafordia shanesii*			C		3/2
plants	higher dicots	Byttneriaceae	*Keraudrenia lanceolata*			C		1/1
plants	higher dicots	Cactaceae	*Opuntia stricta*		Y			3
plants	higher dicots	Cactaceae	*Opuntia*		Y			2
plants	higher dicots	Caesalpiniaceae	*Senna barclayana*			C		2/2
plants	higher dicots	Caesalpiniaceae	*Cassia tomentella*			C		1
plants	higher dicots	Caesalpiniaceae	*Senna gaudichaudii*			C		2/1
plants	higher dicots	Caesalpiniaceae	*Senna sophera var. (40Mile Scrub J.R.Clarkson+ 6908)*			C		2/2
plants	higher dicots	Caesalpiniaceae	*Senna pendula var. glabrata*	Easter cassia	Y			1/1
plants	higher dicots	Caesalpiniaceae	*Lysiphyllum hookeri*	Queensland ebony		C		2/1
plants	higher dicots	Capparaceae	*Capparis loranthifolia*			C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Capparaceae	*Capparis lasiantha*	nipan		C		2/1
plants	higher dicots	Capparaceae	*Capparis arborea*	brush caper berry		C		1
plants	higher dicots	Capparaceae	*Capparis canescens*			C		2
plants	higher dicots	Caryophyllaceae	*Polycarpaea corymbosa*			C		1
plants	higher dicots	Casuarinaceae	*Allocasuarina littoralis*			C		1
plants	higher dicots	Casuarinaceae	*Casuarina cristata*	belah		C		1
plants	higher dicots	Casuarinaceae	*Allocasuarina luehmannii*	bull oak		C		1
plants	higher dicots	Celastraceae	*Elaeodendron melanocarpum*			C		1/1
plants	higher dicots	Celastraceae	*Elaeodendron australe var. australe*			C		1/1
plants	higher dicots	Celastraceae	*Elaeodendron australe var. integrifolium*			C		3/2
plants	higher dicots	Celastraceae	*Denhamia oleaster*			C		2
plants	higher dicots	Celastraceae	*Maytenus disperma*	orange boxwood		C		2
plants	higher dicots	Celastraceae	*Siphonodon australis*	ivorywood		C		1
plants	higher dicots	Celastraceae	*Denhamia cunninghamii*			C		2/2
plants	higher dicots	Celastraceae	*Elaeodendron australe*			C		2
plants	higher dicots	Celastraceae	*Maytenus cunninghamii*	yellow berry bush		C		2/1
plants	higher dicots	Celastraceae	*Denhamia pittosporoides*			C		2
plants	higher dicots	Chenopodiaceae	*Sclerolaena birchii*	galvanised burr		C		1/1
plants	higher dicots	Chenopodiaceae	*Atriplex*			C		1/1
plants	higher dicots	Chenopodiaceae	*Einadia hastata*			C		1
plants	higher dicots	Chenopodiaceae	*Dysphania pumilio*			C		1/1
plants	higher dicots	Chenopodiaceae	*Dysphania glomulifera subsp. glomulifera*			C		1/1
plants	higher dicots	Chenopodiaceae	*Sclerolaena muricata var. muricata*			C		1/1
plants	higher dicots	Chenopodiaceae	*Dysphania carinata*			C		1/1
plants	higher dicots	Combretaceae	*Terminalia porphyrocarpa*			C		1
plants	higher dicots	Convolvulaceae	*Evolvulus alsinoides*			C		1
plants	higher dicots	Convolvulaceae	*Cuscuta campestris*	dodder	Y			1/1
plants	higher dicots	Crassulaceae	*Bryophyllum delagoense*		Y			2/2
plants	higher dicots	Cucurbitaceae	*Sicyos australis*	star cucumber		C		1
plants	higher dicots	Cucurbitaceae	*Cucumis dipsaceus*		Y			1/1
plants	higher dicots	Cucurbitaceae	*Diplocyclos palmatus*			C		1/1
plants	higher dicots	Cucurbitaceae	*Diplocyclos palmatus subsp. palmatus*			C		1/1
plants	higher dicots	Dilleniaceae	*Hibbertia*			C		1
plants	higher dicots	Dilleniaceae	*Hibbertia stricta*			C		2
plants	higher dicots	Dilleniaceae	*Hibbertia linearis var. obtusifolia*			C		2/1
plants	higher dicots	Dilleniaceae	*Hibbertia cistoidea*			C		2/2
plants	higher dicots	Dilleniaceae	*Hibbertia acicularis*			C		1/1
plants	higher dicots	Dilleniaceae	*Hibbertia linearis*			C		1/1
plants	higher dicots	Ebenaceae	*Diospyros humilis*	small-leaved ebony		C		6/3
plants	higher dicots	Ebenaceae	*Diospyros fasciculosa*	grey ebony		C		2
plants	higher dicots	Ebenaceae	*Diospyros geminata*	scaly ebony		C		1
plants	higher dicots	Ericaceae	*Leucopogon mitchellii*			C		2/2
plants	higher dicots	Ericaceae	*Acrotriche aggregata*	red cluster heath		C		3/2
plants	higher dicots	Ericaceae	*Monotoca scoparia*	prickly broom heath		C		2
plants	higher dicots	Erythroxylaceae	*Erythroxylum australe*	cocaine tree		C		3
plants	higher dicots	Erythroxylaceae	*Erythroxylum sp. (Splityard Creek L.Pedley 5360)*			C		2/2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Euphorbiaceae	*Croton acronychioides*	thick-leaved croton		C		2/2
plants	higher dicots	Euphorbiaceae	*Croton phebalioides*	narrow-leaved croton		C		1
plants	higher dicots	Euphorbiaceae	*Euphorbia dallachyana*			C		1/1
plants	higher dicots	Euphorbiaceae	*Mallotus philippensis*	red kamala		C		1/1
plants	higher dicots	Euphorbiaceae	*Excoecaria dallachyana*	scrub poison tree		C		2/1
plants	higher dicots	Euphorbiaceae	*Ricinocarpos ledifolius*	scrub wedding bush		C		1/1
plants	higher dicots	Euphorbiaceae	*Tragia novae-hollandiae*	stinging-vine		C		1/1
plants	higher dicots	Euphorbiaceae	*Euphorbia tannensis subsp. eremophila*			C		1
plants	higher dicots	Euphorbiaceae	*Claoxylon tenerifolium subsp. tenerifolium*			C		1/1
plants	higher dicots	Euphorbiaceae	*Acalypha capillipes*	small-leaved acalypha		C		1
plants	higher dicots	Euphorbiaceae	*Ricinus communis*	castor oil bush	Y			1/1
plants	higher dicots	Euphorbiaceae	*Euphorbia bifida*			C		1/1
plants	higher dicots	Euphorbiaceae	*Croton insularis*	Queensland cascarilla		C		3/2
plants	higher dicots	Euphorbiaceae	*Bertya opponens*			C	V	3/3
plants	higher dicots	Euphorbiaceae	*Euphorbia cyathophora*	dwarf poinsettia	Y			1/1
plants	higher dicots	Fabaceae	*Jacksonia scoparia*			C		5/1
plants	higher dicots	Fabaceae	*Indigofera colutea*	sticky indigo		C		1/1
plants	higher dicots	Fabaceae	*Desmodium triflorum*		Y			1/1
plants	higher dicots	Fabaceae	*Stylosanthes scabra*		Y			2/2
plants	higher dicots	Fabaceae	*Crotalaria verrucosa*			C		1/1
plants	higher dicots	Fabaceae	*Indigofera australis*			C		1/1
plants	higher dicots	Fabaceae	*Indigofera pratensis*			C		1/1
plants	higher dicots	Fabaceae	*Pultenaea petiolaris*			C		1/1
plants	higher dicots	Fabaceae	*Desmodium macrocarpum*			C		2/2
plants	higher dicots	Fabaceae	*Hardenbergia violacea*			C		2
plants	higher dicots	Fabaceae	*Macroptilium atropurpureum*	siratro	Y			1/1
plants	higher dicots	Fabaceae	*Medicago sativa subsp. sativa*		Y			1/1
plants	higher dicots	Fabaceae	*Vicia monantha subsp. triflora*		Y			1/1
plants	higher dicots	Fabaceae	*Crotalaria incana subsp. incana*		Y			1/1
plants	higher dicots	Fabaceae	*Vigna vexillata var. angustifolia*			C		1/1
plants	higher dicots	Fabaceae	*Pultenaea millarii var. angustifolia*			C		1/1
plants	higher dicots	Fabaceae	*Crotalaria incana subsp. purpurascens*		Y			1/1
plants	higher dicots	Fabaceae	*Indigofera australis subsp. australis*			C		1/1
plants	higher dicots	Fabaceae	*Crotalaria lanceolata subsp. lanceolata*		Y			1/1
plants	higher dicots	Fabaceae	*Crotalaria medicaginea var. medicaginea*			C		1/1
plants	higher dicots	Fabaceae	*Glycine sp. (Marburg K.A.Williams 83006)*			C		1/1
plants	higher dicots	Fabaceae	*Tephrosia sp. (The Grampians L.H.Bird AQ565381)*			C		1/1
plants	higher dicots	Fabaceae	*Hovea*			C		3
plants	higher dicots	Fabaceae	*Indigofera*			C		1
plants	higher dicots	Fabaceae	*Hovea longipes*	brush hovea		C		2/1
plants	higher dicots	Fabaceae	*Lotus australis*	Australian trefoil		C		1/1
plants	higher dicots	Fabaceae	*Daviesia filipes*			C		2
plants	higher dicots	Fabaceae	*Hovea planifolia*			C		4/3
plants	higher dicots	Fabaceae	*Lablab purpureus*	lablab	Y			1/1
plants	higher dicots	Fabaceae	*Tephrosia juncea*			C		1
plants	higher dicots	Fabaceae	*Canavalia papuana*	wild jack bean		C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Fabaceae	*Clitoria ternatea*	butterfly pea	Y			1/1
plants	higher dicots	Fabaceae	*Crotalaria juncea*	sunhemp	Y			1/1
plants	higher dicots	Fabaceae	*Hovea tholiformis*			C		1/1
plants	higher dicots	Fabaceae	*Swainsona luteola*	dwarf darling pea		C		1/1
plants	higher dicots	Fabaceae	*Bossiaea carinalis*			C		4/3
plants	higher dicots	Fabaceae	*Daviesia wyattiana*	long-leaved bitter pea		C		1/1
plants	higher dicots	Fabaceae	*Aeschynomene indica*	budda pea		C		1/1
plants	higher dicots	Goodeniaceae	*Dampiera discolor*			C		3/1
plants	higher dicots	Goodeniaceae	*Goodenia rosulata*			C		1/1
plants	higher dicots	Goodeniaceae	*Goodenia sp. (Mt Castletower M.D.Crisp 2753)*			C		1/1
plants	higher dicots	Goodeniaceae	*Goodenia rotundifolia*			C		3/1
plants	higher dicots	Goodeniaceae	*Goodenia grandiflora*			C		1/1
plants	higher dicots	Haloragaceae	*Gonocarpus elatus*			C		4/4
plants	higher dicots	Lamiaceae	*Spartothamnella juncea*	native broom		C		3/3
plants	higher dicots	Lamiaceae	*Glossocarya hemiderma*			C		2
plants	higher dicots	Lamiaceae	*Salvia coccinea*	red salvia	Y			2/2
plants	higher dicots	Lamiaceae	*Prostanthera sp. (Baking Board V.Hando 135)*			C		1/1
plants	higher dicots	Lamiaceae	*Pityrodia salviifolia*	pityrodia		C		3/2
plants	higher dicots	Lamiaceae	*Basilicum polystachyon*			C		2/2
plants	higher dicots	Lamiaceae	*Leucas lavandulifolia*		Y			1/1
plants	higher dicots	Lamiaceae	*Plectranthus graveolens*	flea bush		C		1/1
plants	higher dicots	Lamiaceae	*Prostanthera ovalifolia*			C		1/1
plants	higher dicots	Lamiaceae	*Clerodendrum floribundum*			C		3
plants	higher dicots	Loganiaceae	*Strychnos psilosperma*	strychnine tree		C		2/1
plants	higher dicots	Loranthaceae	*Amyema congener subsp. rotundifolia*			C		1/1
plants	higher dicots	Loranthaceae	*Amyema pendula subsp. longifolia*			C		1/1
plants	higher dicots	Loranthaceae	*Lysiana subfalcata*			C		1/1
plants	higher dicots	Malvaceae	*Hibiscus sturtii var. sturtii*			C		1/1
plants	higher dicots	Malvaceae	*Gossypium hirsutum*		Y			2/2
plants	higher dicots	Malvaceae	*Abutilon oxycarpum*			C		1
plants	higher dicots	Malvaceae	*Malvastrum americanum var. stellatum*			C		1/1
plants	higher dicots	Malvaceae	*Sida corrugata var. (Kroombit E.J.Thompson+ BIL95)*			C		1/1
plants	higher dicots	Malvaceae	*Malvastrum coromandelianum subsp. coromandelianum*		Y			1/1
plants	higher dicots	Malvaceae	*Hibiscus sp. (Emerald S.L.Everist 2124)*			C		1/1
plants	higher dicots	Martyniaceae	*Proboscidea lutea*		Y			1/1
plants	higher dicots	Meliaceae	*Melia azedarach*	white cedar		C		3
plants	higher dicots	Meliaceae	*Owenia x reliqua*			C		1/1
plants	higher dicots	Meliaceae	*Turraea pubescens*	native honeysuckle		C		2/1
plants	higher dicots	Mimosaceae	*Acacia polifolia*			C		10/10
plants	higher dicots	Mimosaceae	*Acacia pubicosta*			C		5/1
plants	higher dicots	Mimosaceae	*Acacia complanata*	flatstem wattle		C		2/1
plants	higher dicots	Mimosaceae	*Acacia flavescens*	toothed wattle		C		1
plants	higher dicots	Mimosaceae	*Acacia juncifolia*			C		3/2
plants	higher dicots	Mimosaceae	*Acacia leptocarpa*	north coast wattle		C		1/1
plants	higher dicots	Mimosaceae	*Acacia rhodoxylon*	ringy rosewood		C		1/1
plants	higher dicots	Mimosaceae	*Acacia aulacocarpa*			C		3

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Mimosaceae	*Acacia harpophylla*	brigalow		C		4/1
plants	higher dicots	Mimosaceae	*Acacia melanoxylon*	blackwood		C		1
plants	higher dicots	Mimosaceae	*Acacia sparsiflora*			C		1/1
plants	higher dicots	Mimosaceae	*Vachellia nilotica*	prickly acacia	Y			1/1
plants	higher dicots	Mimosaceae	*Vachellia bidwillii*			C		2
plants	higher dicots	Mimosaceae	*Acacia fasciculifera*	scaly bark		C		2
plants	higher dicots	Mimosaceae	*Vachellia farnesiana*		Y			1/1
plants	higher dicots	Mimosaceae	*Acacia podalyriifolia*	Queensland silver wattle		C		4/2
plants	higher dicots	Mimosaceae	*Archidendropsis thozetiana*			C		1
plants	higher dicots	Mimosaceae	*Acacia crassa subsp. longicoma*			C		1
plants	higher dicots	Mimosaceae	*Acacia julifera subsp. julifera*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia sp. (Biloela T.Shepard A32)*			C		2/2
plants	higher dicots	Mimosaceae	*Acacia disparrima subsp. disparrima*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia penninervis var. penninervis*			C		2
plants	higher dicots	Mimosaceae	*Leucaena leucocephala subsp. glabrata*		Y			2/2
plants	higher dicots	Mimosaceae	*Acacia leiocalyx*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia acradenia*			C		1
plants	higher dicots	Mimosaceae	*Albizia lebbeck*	Indian siris		C		1/1
plants	higher dicots	Mimosaceae	*Acacia shirleyi*	lancewood		C		1
plants	higher dicots	Mimosaceae	*Acacia salicina*	doolan		C		6/2
plants	higher dicots	Mimosaceae	*Acacia maidenii*	Maiden's wattle		C		1
plants	higher dicots	Mimosaceae	*Acacia pedleyi*			V		20/20
plants	higher dicots	Mimosaceae	*Acacia spania*			NT		1/1
plants	higher dicots	Mimosaceae	*Acacia simsii*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia decora*	pretty wattle		C		3/1
plants	higher dicots	Mimosaceae	*Acacia blakei*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia crassa*			C		1
plants	higher dicots	Moraceae	*Trophis scandens subsp. scandens*			C		1
plants	higher dicots	Moraceae	*Ficus opposita*			C		3/1
plants	higher dicots	Moraceae	*Ficus obliqua*			C		1
plants	higher dicots	Moraceae	*Ficus virens*			C		2
plants	higher dicots	Moraceae	*Ficus*			C		2
plants	higher dicots	Moraceae	*Ficus macrophylla forma macrophylla*	Moreton Bay fig		C		1
plants	higher dicots	Myrtaceae	*Lophostemon confertus*	brush box		C		6/1
plants	higher dicots	Myrtaceae	*Corymbia erythrophloia*	variable-barked bloodwood		C		2
plants	higher dicots	Myrtaceae	*Eucalyptus decorticans*			C		2/1
plants	higher dicots	Myrtaceae	*Leptospermum neglectum*			C		1/1
plants	higher dicots	Myrtaceae	*Lophostemon suaveolens*	swamp box		C		1
plants	higher dicots	Myrtaceae	*Backhousia angustifolia*	narrow-leaved backhousia		C		3/1
plants	higher dicots	Myrtaceae	*Eucalyptus melanophloia*			C		2
plants	higher dicots	Myrtaceae	*Eucalyptus tereticornis*			C		3
plants	higher dicots	Myrtaceae	*Leptospermum lamellatum*			C		1/1
plants	higher dicots	Myrtaceae	*Leptospermum polygalifolium*	tantoon		C		2/1
plants	higher dicots	Myrtaceae	*Corymbia citriodora subsp. variegata*			C		1
plants	higher dicots	Myrtaceae	*Corymbia citriodora subsp. citriodora*			C		4
plants	higher dicots	Myrtaceae	*Syncarpia glomulifera subsp. glomulifera*			C		3/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Myrtaceae	*Eucalyptus*			C		4
plants	higher dicots	Myrtaceae	*Gossia bidwillii*			C		2
plants	higher dicots	Myrtaceae	*Eucalyptus bakeri*	Baker's mallee		C		2/2
plants	higher dicots	Myrtaceae	*Eucalyptus crebra*	narrow-leaved red ironbark		C		8
plants	higher dicots	Myrtaceae	*Eucalyptus decolor*			NT		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus exserta*	Queensland peppermint		C		1
plants	higher dicots	Myrtaceae	*Melaleuca groveana*			NT		1/1
plants	higher dicots	Myrtaceae	*Corymbia citriodora*	spotted gum		C		3
plants	higher dicots	Myrtaceae	*Corymbia intermedia*	pink bloodwood		C		4
plants	higher dicots	Myrtaceae	*Eucalyptus coolabah*	coolabah		C		3/2
plants	higher dicots	Myrtaceae	*Melaleuca bracteata*			C		3
plants	higher dicots	Myrtaceae	*Corymbia tessellaris*	Moreton Bay ash		C		2
plants	higher dicots	Myrtaceae	*Eucalyptus cloeziana*	Gympie messmate		C		2
plants	higher dicots	Myrtaceae	*Eucalyptus moluccana*	gum-topped box		C		1
plants	higher dicots	Myrtaceae	*Melaleuca hemisticta*			C		1/1
plants	higher dicots	Myrtaceae	*Corymbia trachyphloia*			C		5
plants	higher dicots	Myrtaceae	*Eucalyptus acmenoides*			C		3/3
plants	higher dicots	Myrtaceae	*Eucalyptus cambageana*	Dawson gum		C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus suffulgens*			C		7/3
plants	higher dicots	Myrtaceae	*Eucalyptus thozetiana*			C		1/1
plants	higher dicots	Nyctaginaceae	*Boerhavia pubescens*			C		1/1
plants	higher dicots	Nyctaginaceae	*Boerhavia dominii*			C		1/1
plants	higher dicots	Olacaceae	*Ximenia americana*			C		1/1
plants	higher dicots	Oleaceae	*Jasminum simplicifolium*					2
plants	higher dicots	Oleaceae	*Notelaea microcarpa*			C		1
plants	higher dicots	Oleaceae	*Jasminum didymum*			C		1
plants	higher dicots	Oleaceae	*Jasminum didymum subsp. racemosum*			C		2/1
plants	higher dicots	Oleaceae	*Jasminum didymum subsp. lineare*			C		2/2
plants	higher dicots	Oleaceae	*Notelaea sp. (Barakula A.R.Bean 7553)*			C		1/1
plants	higher dicots	Onagraceae	*Oenothera mollissima*		Y			1/1
plants	higher dicots	Onagraceae	*Oenothera curtiflora*		Y			1/1
plants	higher dicots	Onagraceae	*Ludwigia octovalvis*	willow primrose		C		1/1
plants	higher dicots	Onagraceae	*Oenothera affinis*	long-flowered evening primrose	Y			1/1
plants	higher dicots	Onagraceae	*Ludwigia peploides subsp. montevidensis*			C		1/1
plants	higher dicots	Oxalidaceae	*Oxalis radicosa*			C		1/1
plants	higher dicots	Oxalidaceae	*Oxalis corniculata*		Y			1/1
plants	higher dicots	Passifloraceae	*Passiflora foetida*		Y			1/1
plants	higher dicots	Petiveriaceae	*Rivina humilis*		Y			1
plants	higher dicots	Phyllanthaceae	*Breynia oblongifolia*			C		2
plants	higher dicots	Phyllanthaceae	*Phyllanthus virgatus*			C		2/1
plants	higher dicots	Phyllanthaceae	*Bridelia leichhardtii*			C		2
plants	higher dicots	Phyllanthaceae	*Flueggea leucopyrus*			C		1
plants	higher dicots	Phyllanthaceae	*Phyllanthus gunnii*			C		2/2
plants	higher dicots	Phyllanthaceae	*Phyllanthus hebecarpus*			C		1/1
plants	higher dicots	Phytolaccaceae	*Phytolacca octandra*	inkweed	Y			1/1
plants	higher dicots	Picrodendraceae	*Dissiliaria baloghioides*	hauer		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Picrodendraceae	*Petalostigma pubescens*	quinine tree		C		3
plants	higher dicots	Pittosporaceae	*Pittosporum viscidum*	black-fruited thornbush		C		1/1
plants	higher dicots	Pittosporaceae	*Pittosporum spinescens*			C		2
plants	higher dicots	Pittosporaceae	*Auranticarpa rhombifolia*			C		1
plants	higher dicots	Pittosporaceae	*Pittosporum ferrugineum subsp. linifolium*			C		1/1
plants	higher dicots	Plantaginaceae	*Mecardonia procumbens*		Y			1/1
plants	higher dicots	Plantaginaceae	*Callitriche sonderi*			C		1/1
plants	higher dicots	Polygonaceae	*Muehlenbeckia florulenta*	lignum		C		1
plants	higher dicots	Polygonaceae	*Polygonum plebeium*	small knotweed		C		1/1
plants	higher dicots	Polygonaceae	*Persicaria orientalis*	princes feathers		C		1/1
plants	higher dicots	Polygonaceae	*Persicaria lapathifolia*	pale knotweed		C		1/1
plants	higher dicots	Portulacaceae	*Calandrinia pickeringii*			C		2/2
plants	higher dicots	Proteaceae	*Grevillea banksii*			C		2/1
plants	higher dicots	Proteaceae	*Grevillea helmsiae*			C		2/1
plants	higher dicots	Proteaceae	*Banksia integrifolia*			C		1/1
plants	higher dicots	Proteaceae	*Grevillea hockingsii*			V		10/9
plants	higher dicots	Proteaceae	*Macadamia integrifolia*	macadamia nut		V	V	4
plants	higher dicots	Putranjivaceae	*Drypetes deplanchei*	grey boxwood		C		2
plants	higher dicots	Rhamnaceae	*Pomaderris canescens*			C		5/2
plants	higher dicots	Rhamnaceae	*Polianthion minutiflorum*			V	V	10/7
plants	higher dicots	Rhamnaceae	*Alphitonia excelsa*	soap tree		C		7/1
plants	higher dicots	Rubiaceae	*Psydrax odorata*			C		2/1
plants	higher dicots	Rubiaceae	*Atractocarpus chartaceus*			C		1
plants	higher dicots	Rubiaceae	*Pogonolobus reticulatus*			C		1
plants	higher dicots	Rubiaceae	*Triflorensia ixoroides*			C		4/3
plants	higher dicots	Rubiaceae	*Psydrax oleifolia*			C		4
plants	higher dicots	Rubiaceae	*Psydrax johnsonii*			C		2/1
plants	higher dicots	Rubiaceae	*Pavetta australiensis var. australiensis*			C		1/1
plants	higher dicots	Rubiaceae	*Cyclophyllum coprosmoides var. coprosmoides*			C		2/2
plants	higher dicots	Rubiaceae	*Dentella repens*	dentella		C		2/2
plants	higher dicots	Rubiaceae	*Cyclophyllum coprosmoides*			C		2/1
plants	higher dicots	Rutaceae	*Boronia rosmarinifolia*	forest boronia		C		2
plants	higher dicots	Rutaceae	*Murraya ovatifoliolata*			C		1/1
plants	higher dicots	Rutaceae	*Dinosperma erythrococcum*			C		2/1
plants	higher dicots	Rutaceae	*Philotheca difformis subsp. smithiana*			C		1/1
plants	higher dicots	Rutaceae	*Flindersia xanthoxyla*	yellow-wood		C		1
plants	higher dicots	Rutaceae	*Flindersia schottiana*	bumpy ash		C		1
plants	higher dicots	Rutaceae	*Acronychia pauciflora*	soft acronychia		C		1/1
plants	higher dicots	Rutaceae	*Flindersia australis*	crow's ash		C		3
plants	higher dicots	Rutaceae	*Geijera salicifolia*	brush wilga		C		4/1
plants	higher dicots	Rutaceae	*Coatesia paniculata*			C		3/2
plants	higher dicots	Rutaceae	*Murraya paniculata*			C		1
plants	higher dicots	Rutaceae	*Micromelum minutum*	clusterberry		C		2/1
plants	higher dicots	Rutaceae	*Geijera parviflora*	wilga		C		2/1
plants	higher dicots	Rutaceae	*Flindersia collina*	broad-leaved leopard tree		C		1/1
plants	higher dicots	Rutaceae	*Sarcomelicope simplicifolia subsp. simplicifolia*	yellow aspen		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Rutaceae	*Boronia bipinnata*	rock boronia		C		10/7
plants	higher dicots	Rutaceae	*Acronychia laevis*	glossy acronychia		C		2/1
plants	higher dicots	Rutaceae	*Boronia palasepala*			C		6/6
plants	higher dicots	Santalaceae	*Santalum lanceolatum*			C		4
plants	higher dicots	Sapindaceae	*Harpullia pendula*			C		2/2
plants	higher dicots	Sapindaceae	*Atalaya hemiglauca*			C		3/1
plants	higher dicots	Sapindaceae	*Atalaya multiflora*	broad-leaved whitewood		C		1
plants	higher dicots	Sapindaceae	*Dodonaea filifolia*			C		3
plants	higher dicots	Sapindaceae	*Atalaya salicifolia*			C		1
plants	higher dicots	Sapindaceae	*Dodonaea lanceolata*			C		2
plants	higher dicots	Sapindaceae	*Dodonaea tenuifolia*			C		4/3
plants	higher dicots	Sapindaceae	*Alectryon oleifolius*			C		1
plants	higher dicots	Sapindaceae	*Cossinia australiana*			E	E	4/4
plants	higher dicots	Sapindaceae	*Dodonaea stenophylla*			C		7/5
plants	higher dicots	Sapindaceae	*Alectryon subdentatus*			C		1/1
plants	higher dicots	Sapindaceae	*Dodonaea triangularis*			C		3/1
plants	higher dicots	Sapindaceae	*Alectryon diversifolius*	scrub boonaree		C		4/3
plants	higher dicots	Sapindaceae	*Elattostachys xylocarpa*	white tamarind		C		2
plants	higher dicots	Sapindaceae	*Cupaniopsis anacardioides*	tuckeroo		C		2/1
plants	higher dicots	Sapindaceae	*Dodonaea viscosa subsp. burmanniana*			C		2/2
plants	higher dicots	Sapindaceae	*Alectryon oleifolius subsp. elongatus*			C		1/1
plants	higher dicots	Sapotaceae	*Planchonella cotinifolia*			C		1
plants	higher dicots	Sapotaceae	*Pouteria queenslandica*			C		1
plants	higher dicots	Sapotaceae	*Planchonella cotinifolia var. pubescens*			C		1/1
plants	higher dicots	Sapotaceae	*Planchonella pubescens*			C		2
plants	higher dicots	Sapotaceae	*Planchonella pohlmaniana*			C		1
plants	higher dicots	Scrophulariaceae	*Myoporum acuminatum*	coastal boobialla		C		1
plants	higher dicots	Scrophulariaceae	*Eremophila mitchellii*			C		4/2
plants	higher dicots	Scrophulariaceae	*Verbascum virgatum*	twiggy mullein	Y			1/1
plants	higher dicots	Scrophulariaceae	*Eremophila*			C		1
plants	higher dicots	Simaroubaceae	*Samadera bidwillii*			V	V	6/6
plants	higher dicots	Solanaceae	*Physalis*			C		1/1
plants	higher dicots	Solanaceae	*Cestrum parqui*	green cestrum	Y			1/1
plants	higher dicots	Solanaceae	*Solanum stelligerum*	devil's needles		C		3/2
plants	higher dicots	Solanaceae	*Solanum furfuraceum*			C		2/2
plants	higher dicots	Solanaceae	*Solanum seaforthianum*	Brazilian nightshade	Y			2/1
plants	higher dicots	Solanaceae	*Solanum dissectum*			E		3/3
plants	higher dicots	Solanaceae	*Solanum jucundum*			C		2/2
plants	higher dicots	Solanaceae	*Nicotiana glauca*	tree tobacco	Y			1/1
plants	higher dicots	Solanaceae	*Solanum parvifolium subsp. parvifolium*			C		2/2
plants	higher dicots	Solanaceae	*Solanum ellipticum*	potato bush		C		3/2
plants	higher dicots	Solanaceae	*Solanum tetrathecum*			C		1/1
plants	higher dicots	Solanaceae	*Solanum johnsonianum*			E		4/4
plants	higher dicots	Sparrmanniaceae	*Grewia latifolia*	dysentery plant		C		3
plants	higher dicots	Sterculiaceae	*Argyrodendron trifoliolatum*	booyong		C		2
plants	higher dicots	Sterculiaceae	*Brachychiton rupestris*			C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Sterculiaceae	*Brachychiton populneus*			C		2
plants	higher dicots	Sterculiaceae	*Brachychiton australis*	broad-leaved bottle tree		C		2
plants	higher dicots	Stylidiaceae	*Stylidium eglandulosum*			C		1/1
plants	higher dicots	Thymelaeaceae	*Pimelea latifolia*			C		3/3
plants	higher dicots	Thymelaeaceae	*Pimelea glauca*	smooth riceflower		C		1/1
plants	higher dicots	Thymelaeaceae	*Pimelea latifolia subsp. latifolia*			C		1/1
plants	higher dicots	Verbenaceae	*Lantana montevidensis*	creeping lantana	Y			7/6
plants	higher dicots	Verbenaceae	*Phyla nodiflora*	carpetweed		C		1/1
plants	higher dicots	Verbenaceae	*Verbena litoralis var. litoralis*		Y			1/1
plants	higher dicots	Verbenaceae	*Lantana camara*	lantana	Y			8/4
plants	higher dicots	Verbenaceae	*Glandularia aristigera*		Y			2/1
plants	higher dicots	Violaceae	*Hybanthus monopetalus*			C		1/1
plants	higher dicots	Vitaceae	*Cissus oblonga*			C		3/2
plants	higher dicots	Vitaceae	*Cayratia acris*	hairy grape		C		3/1
plants	higher dicots	Vitaceae	*Clematicissus opaca*			C		5/2
plants	liverworts	Porellaceae	*Porella crawfordii*			C		2/2
plants	lower dicots	Annonaceae	*Melodorum leichhardtii*			C		1
plants	lower dicots	Aristolochiaceae	*Aristolochia pubera*			C		1/1
plants	lower dicots	Aristolochiaceae	*Aristolochia elegans*	calico-flower	Y			2/2
plants	lower dicots	Hernandiaceae	*Gyrocarpus americanus*			C		1
plants	lower dicots	Lauraceae	*Cassytha filiformis*	dodder laurel		C		1
plants	lower dicots	Lauraceae	*Cassytha*			C		1/1
plants	lower dicots	Lauraceae	*Cassytha paniculata*			C		1/1
plants	lower dicots	Lauraceae	*Cryptocarya triplinervis var. triplinervis*			C		1/1
plants	lower dicots	Lauraceae	*Cinnamomum baileyanum*	candlewood		C		1
plants	lower dicots	Menispermaceae	*Sarcopetalum harveyanum*	pearl vine		C		1
plants	lower dicots	Menispermaceae	*Tinospora smilacina*	snakevine		C		1
plants	lower dicots	Menispermaceae	*Legnephora moorei*			C		1/1
plants	lower dicots	Menispermaceae	*Stephania renifolia*			C		2/2
plants	monocots	Alismataceae	*Damasonium minus*	starfruit		C		1/1
plants	monocots	Alismataceae	*Caldesia oligococca*			C		1/1
plants	monocots	Amaryllidaceae	*Crinum flaccidum*	Murray lily		C		1/1
plants	monocots	Aponogetonaceae	*Aponogeton queenslandicus*			C		2/2
plants	monocots	Cyperaceae	*Eleocharis pallens*	pale spikerush		C		1/1
plants	monocots	Cyperaceae	*Rhynchospora rubra*			C		1/1
plants	monocots	Cyperaceae	*Scleria sphacelata*			C		7/6
plants	monocots	Cyperaceae	*Bulbostylis barbata*			C		1/1
plants	monocots	Cyperaceae	*Cyperus isabellinus*			C		1/1
plants	monocots	Cyperaceae	*Eleocharis blakeana*			C		1/1
plants	monocots	Cyperaceae	*Cyperus victoriensis*			C		1/1
plants	monocots	Cyperaceae	*Scleria mackaviensis*			C		1/1
plants	monocots	Cyperaceae	*Eleocharis sphacelata*	tall spikerush		C		1/1
plants	monocots	Cyperaceae	*Lepidosperma laterale*			C		3/1
plants	monocots	Cyperaceae	*Fimbristylis sieberiana*			C		1/1
plants	monocots	Cyperaceae	*Fimbristylis bisumbellata*			C		1/1
plants	monocots	Cyperaceae	*Schoenoplectus tabernaemontani*			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Cyperaceae	*Cyperus dietrichiae var. dietrichiae*			C		1/1
plants	monocots	Cyperaceae	*Cyperus javanicus*			C		1/1
plants	monocots	Cyperaceae	*Cyperus exaltatus*	tall flatsedge		C		1/1
plants	monocots	Cyperaceae	*Schoenus kennyi*			C		2/2
plants	monocots	Cyperaceae	*Gahnia aspera*			C		1
plants	monocots	Cyperaceae	*Scleria*			C		1
plants	monocots	Dioscoreaceae	*Dioscorea transversa*	native yam		C		1
plants	monocots	Hemerocallidaceae	*Dianella revoluta var. tenuis*			C		1/1
plants	monocots	Hemerocallidaceae	*Geitonoplesium cymosum*	scrambling lily		C		2
plants	monocots	Hemerocallidaceae	*Dianella caerulea*			C		2
plants	monocots	Hemerocallidaceae	*Dianella*			C		1
plants	monocots	Juncaceae	*Juncus aridicola*	tussock rush		C		1/1
plants	monocots	Laxmanniaceae	*Lomandra confertifolia subsp. pallida*			C		5/3
plants	monocots	Laxmanniaceae	*Lomandra confertifolia*			C		2
plants	monocots	Laxmanniaceae	*Eustrephus latifolius*	wombat berry		C		3
plants	monocots	Orchidaceae	*Sarcochilus dilatatus*	brown sarcochilus		C		1/1
plants	monocots	Poaceae	*Dimorphochloa rigida*			C		3/2
plants	monocots	Poaceae	*Sporobolus scabridus*			C		1/1
plants	monocots	Poaceae	*Alloteropsis cimicina*			C		1/1
plants	monocots	Poaceae	*Chionachne cyathopoda*	river grass		C		1/1
plants	monocots	Poaceae	*Cymbopogon bombycinus*	silky oilgrass		C		1
plants	monocots	Poaceae	*Digitaria breviglumis*			C		1
plants	monocots	Poaceae	*Heteropogon contortus*	black speargrass		C		1
plants	monocots	Poaceae	*Arundinella nepalensis*	reedgrass		C		4/1
plants	monocots	Poaceae	*Cleistochloa subjuncea*			C		5/2
plants	monocots	Poaceae	*Enteropogon unispiceus*			C		1/1
plants	monocots	Poaceae	*Eragrostis cilianensis*		Y			2/2
plants	monocots	Poaceae	*Paspalidium criniforme*			C		1/1
plants	monocots	Poaceae	*Thyridolepis xerophila*			C		1/1
plants	monocots	Poaceae	*Urochloa mosambicensis*	sabi grass	Y			2/2
plants	monocots	Poaceae	*Ancistrachne uncinulata*	hooky grass		C		1
plants	monocots	Poaceae	*Enneapogon robustissimus*			C		1/1
plants	monocots	Poaceae	*Paspalidium albovillosum*			C		1
plants	monocots	Poaceae	*Eragrostis longipedicellata*			C		3/3
plants	monocots	Poaceae	*Hyparrhenia rufa subsp. rufa*		Y			2/2
plants	monocots	Poaceae	*Diplachne fusca var. uninervia*		Y			1/1
plants	monocots	Poaceae	*Aristida calycina var. calycina*			C		1/1
plants	monocots	Poaceae	*Echinochloa polystachya cv. Amity*		Y			1/1
plants	monocots	Poaceae	*Hymenachne amplexicaulis cv. Olive*		Y			2/2
plants	monocots	Poaceae	*Eriachne pallescens var. pallescens*			C		1/1
plants	monocots	Poaceae	*Megathyrsus maximus var. pubiglumis*		Y			1/1
plants	monocots	Poaceae	*Aristida queenslandica var. dissimilis*			C		3/3
plants	monocots	Poaceae	*Calyptochloa gracillima subsp. gracillima*			C		1/1
plants	monocots	Poaceae	*Panicum*			C		2
plants	monocots	Poaceae	*Aristida*			C		4
plants	monocots	Poaceae	*Enneapogon*			C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Poaceae	*Melinis repens*	red natal grass	Y			2
plants	monocots	Poaceae	*Panicum effusum*			C		1/1
plants	monocots	Poaceae	*Setaria surgens*			C		2/2
plants	monocots	Poaceae	*Urochloa mutica*		Y			1/1
plants	monocots	Poaceae	*Aristida lignosa*			C		1/1
plants	monocots	Poaceae	*Digitaria fumida*			C		1/1
plants	monocots	Poaceae	*Dinebra ligulata*			C		1/1
plants	monocots	Poaceae	*Hyparrhenia rufa*		Y			2/2
plants	monocots	Poaceae	*Themeda triandra*	kangaroo grass		C		5
plants	monocots	Poaceae	*Cenchrus ciliaris*		Y			4/1
plants	monocots	Poaceae	*Entolasia stricta*	wiry panic		C		2
plants	monocots	Poaceae	*Urochloa pubigera*			C		2/2
plants	monocots	Poaceae	*Eragrostis curvula*		Y			2/2
plants	monocots	Poaceae	*Oplismenus aemulus*	creeping shade grass		C		1
plants	monocots	Poaceae	*Enneapogon gracilis*	slender nineawn		C		1/1
plants	monocots	Poaceae	*Megathyrsus maximus*		Y			1
plants	monocots	Poaceae	*Panicum larcomianum*			C		1/1
plants	monocots	Poaceae	*Paspalidium gracile*	slender panic		C		1/1
plants	monocots	Poaceae	*Sporobolus fertilis*	giant Parramatta grass	Y			2/2
plants	monocots	Poaceae	*Cymbopogon refractus*	barbed-wire grass		C		1
plants	monocots	Poaceae	*Digitaria parviflora*			C		2
plants	monocots	Potamogetonaceae	*Stuckenia pectinata*			C		1/1
plants	monocots	Potamogetonaceae	*Potamogeton tricarinatus*	floating pondweed		C		1/1
plants	monocots	Smilacaceae	*Smilax glyciphylla*	sweet sarsaparilla		C		1
plants	monocots	Typhaceae	*Typha domingensis*			C		1/1
plants	monocots	Typhaceae	*Sparganium erectum subsp. stoloniferum*	erect bur-reed	Y			1/1
plants	monocots	Xanthorrhoeaceae	*Xanthorrhoea latifolia subsp. latifolia*			C		4
plants	mosses	Daltoniaceae	*Distichophyllum crispulum*			C		1/1
plants	mosses	Entodontaceae	*Entodon mackaviensis*			C		1/1
plants	mosses	Erpodiaceae	*Erpodium hodgkinsoniae*			C		1/1
plants	mosses	Meteoriaceae	*Papillaria flexicaulis*			C		1/1
plants	mosses	Meteoriaceae	*Papillaria crocea*			C		1/1
plants	mosses	Orthotrichaceae	*Macromitrium involutifolium subsp. ptychomitrioides*			C		1/1
plants	mosses	Orthotrichaceae	*Macromitrium aurescens*			C		3/3
plants	whisk ferns	Psilotaceae	*Psilotum nudum*	skeleton fork fern		C		1/1
plants		Linderniaceae	*Lindernia*			C		1/1
plants		Phrymaceae	*Glossostigma diandrum*			C		1/1

CODES

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

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.* The codes are Extinct 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

HERBRECS Database Search Results

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Corveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
451848	1		A	Angiosperms	Acanthaceae	N	Graptophyllum excelsum (F.Muell.) Druce	2799	Hoy D.	138		20JUL1987			Queensland	Port Curtis	BESIDE MT ARCHER RD GRID REFERENCE 9051-520155	+++-000----	FT----	F			Hrb Convert	GridRef	AGD66	100	S23 21 03.08	E150 34 29.04	150.5747337	-23.35085559	56	252050	7415550	9051-520155														7/11/2000	21/05/2010	-23.34927795	150.5758091
772247	6259		A	Angiosperms	Acanthaceae	N	Graptophyllum excelsum (F.Muell.) Druce	2799	Shapcott A.	GE2		JAN2001			Queensland	Port Curtis	MT ARCHER NATIONAL PARK, ROCKHAMPTON	----000----	--AH--	VF			GPS	Lat/Long	AGD66	100	S23 21 06.00	E150 34 23.00	150.5730556	-23.35166667	56	251880	7415457	9051-518154	Mt Archer National Park, Rockhampton. Vinethicket. Shrub forming dense thickets. Voucher for genetic analysis.													30/04/2003	21/05/2010	-23.35008903	150.5741309
7493	1		A	Angiosperms	Acanthaceae	N	Graptophyllum excelsum (F.Muell.) Druce	2799	Bailey F.M.				Barker R.M.		Queensland	Port Curtis	ROCKHAMPTON	+++0000-+--	------				Hrb Convert	Lat/Long	AGD66	1600	S23 23 30.00	E150 32 30.00	150.5416667	-23.39166667	56	248745	7410972	9051-487109	Rockhampton.										C15			7/11/2000	21/05/2010	-23.39008903	150.542742
625327	5374		A	Angiosperms	Acanthaceae	N	Graptophyllum excelsum (F.Muell.) Druce	2799	Thomas G.	54	Hoy,N.;	19AUG1992			Queensland	Port Curtis	MT ARCHER RD STRUCK OIL SITE 3	+++-000----	KZAH--		360		Hrb Convert	Lat/Long	AGD66	1600	S23 37 30.00	E150 28 30.00	150.475	-23.625	56	242383	7385005	8950-423850	Mount Archer Road, Struck Oil, site 3. Top of ridge, red soil, semi evergreen vine thicket with Polyscias elegans, Albizzia thozetiana, Austromyrtus bidwillii, Alstonia constricta, Alyxia ruscifolia, Alchornia ilicifolia.													7/11/2000	21/05/2010	-23.62342058	150.4760816
263892	1		A	Angiosperms	Acanthaceae	N	Graptophyllum excelsum (F.Muell.) Druce	2799	Webb L.J.	10446A	Tracey,J.G.;	12MAY1971	Bean A.R.		Queensland	Port Curtis	RUNDLE RA SF C 12KM SE OF PORT ALMA NR O'CONNOR CK	----000----	-TAH--				Hrb Convert	Lat/Long	AGD66	1600	S23 40 30.00	E150 59 30.00	150.9916667	-23.675	56	295191	7380304	9050-951803	Rundle Range State Forest, ca 12km SE of Port Alma, near O'Connor Creek. Semievergreen vine thicket on stony soils derived from basic igneous rocks.													7/11/2000	21/05/2010	-23.67342108	150.9927414
470651	1		A	Angiosperms	Acanthaceae	N	Graptophyllum excelsum (F.Muell.) Druce	2799	Forster P.I.	PIF3470	et al.,;	09JAN1988			Queensland	Port Curtis	BUTLERVILLE 2KM SE OF ON N END OF MT LARCOM RA GRID REF 9150-018703	+++-000----	-ZAH--	F	100		Hrb Convert	GridRef	AGD66	100	S23 45 56.49	E151 03 20.16	151.0556001	-23.76569034	56	301850	7370350	9150-018703														7/11/2000	21/05/2010	-23.76411163	151.0566671
572823	5764		A	Angiosperms	Acanthaceae	N	Graptophyllum excelsum (F.Muell.) Druce	2799	Thompson E.J.	GLA91	Turpin,G.P.;	06MAR1997	Thompson E.J.	MAY1997	Queensland	Port Curtis	SF 150 13.5KM SSW OF GLADSTONE (GPS 23 56 53 151 11 23)(SITE 648)	----000----	DDAA-C	#	50		GPS	Lat/Long	AGD66	100	S23 56 53.00	E151 11 23.00	151.1897222	-23.94805556	56	315780	7350334	9150-157503	State Forest 150, 13.5km SSW of Gladstone (GPS 23 56 53 151 11 23)(site 648). Hilly terrain, valley with gravelly brown loam, chert. Tall open woodland (complex notophyll rainforest) of Argyrodondron trifoliolatum.													7/11/2000	21/05/2010	-23.94647685	151.1907893
819985	7321		A	Angiosperms	Acanthaceae	E	Xerothamnella herbacea R.M.Barker	48657	Menkins I.L.	ILM0482	Leiper,G.;	02JUL2011			Queensland	Leichhardt	KOKOTUNGO, IN BRIGALOW REMNANT ON SOUTHERN ROADSIDE.	++++000----	-KMC--	GQ			GPS	Lat/Long	GDA94	100	S24 08 24.98	E149 59 32.83	149.9924528	-24.14027222	55	804127	7326993	8849-041269	Kokotungo, in brigalow remnant on southern roadside. In a small remnant brigalow and Eucalyptus thozetiana community, on ground elevated a few centimetres above the edges of a melonhole. Clay soil with a light covering of fine sand and silt. Small dark green herb with distinct woody taproot. Leaves opposite, sparsely situated on straight, linear branches. Growth habit mostly prostrate or decumbent. Pale pinkish-purple flowers borne singly on long stalks from leaf axils. Very rare. Only 8 individuals noted in an area c. 1m sq. This species is under serious threat from invasive exotic grasses at this location. I have not seen this species so far north before.													20/11/2013	12/12/2013	-24.14027222	149.9924528
797446	7298		A	Angiosperms	Acanthaceae	E	Xerothamnella herbacea R.M.Barker	48657	McLennan B.	151112-1		15NOV2012			Queensland	Port Curtis	OVERDEEN SF, NE BILOELA.	++++000----	F-FB--				GPS	Lat/Long	GDA94	100	S24 16 12.48	E150 15 08.61	150.2523903	-24.27013389	56	221053	7313115	8949-210131	Overdeen SF, NE Biloela. Footslope, open forest with Acacia harpophylla, Eucalyptus cambageana on light gilgai to 0.5m deep. Insignificant plant within grass cover to 200mm high; solitary pink flowers on some plants.					11	9	1						24/06/2013	24/06/2013	-24.27013389	150.2523903
852145	7292		A	Angiosperms	Acanthaceae	E	Xerothamnella herbacea R.M.Barker	48657	Jeffers B.			03APR2013			Queensland	Leichhardt	5.57KM WSW OF BARALABA - BANANA RD & BACKENS RD INTERSECTION, BANANA	+--+000----	CKFF--	G			GPS	Lat/Long	GDA94	100	S24 22 48.22	E150 00 05.10	150.0014164	-24.38006083	56	195821	7300407	8949-958004	5.57km WSW of Baralaba - Banana Rd & Backens Rd intersection, Banana. Creekbank with Acacia harpophylla, Eucalyptus coolabah woodland. Black clay soil. Herb to 25cm tall, prostrate, rooting at nodes, pink flowers, leaves & stems green.													4/06/2013	22/07/2013	-24.38006083	150.0014164
852712	7354		A	Angiosperms	Acanthaceae	E	Xerothamnella herbacea R.M.Barker	48657	Jeffers B.	AUSEC-011		13FEB2014			Queensland	Leichhardt	PRIVATE PROPERTY, LOT 3 ON PLAN FN207. THEODORE BARALABA RD, MOURA. CA 17KM N OF MOURA IN CENTRAL QLD	+++-000----	-HFE--	G			GPS	Lat/Long	GDA94	100	S24 24 48.30	E149 56 25.80	149.9405	-24.41341667	55	798205	7296837	8849-982968	Private property, Lot 3 on Plan FN207. Theodore Baralaba Rd, Moura. Ca 17km N of Moura in Central Qld. Growing in small remnant patch of Acacia harpophylla woodland near a dam. Also detected in other small remnant/regrowth patches of A. harpophylla with Eucalyptus cambageana. Stoney dark brown clay loam. Prostrate herb.													13/05/2014	14/05/2014	-24.41341667	149.9405
833893	7234		A	Angiosperms	Acanthaceae	E	Xerothamnella herbacea R.M.Barker	48657	Eddie C.	CPE2192	Jeffers,B.; Hoffmann,A.;	01JUN2012			Queensland	Leichhardt	STOCK ROUTE FOLLOWING LEICHHARDT HIGHWAY (BANANA - THEODORE), C. 5.1KM SOUTH OF BANANA.	+-++000----	AK----	OG			GPS	Lat/Long	WGS84	100	S24 31 02.00	E150 07 35.00	150.1263889	-24.51722222	56	208821	7285476	8948-088854	Stock Route following Leichhardt Highway (Banana - Theodore), c. 5.1km south of Banana. Acacia harpophylla advanced regrowth; shrub layer dominated by Geijera parviflora, Eremophila mitchellii and Santalum lanceolatum; ground layer dominated by Cenchrus ciliaris, Dichanthium sericeum, Megathyrsus maximus and sparse forbs. Plain (possibly flood plain) with micro relief of shallow channels, banks and gilgais. Substrate: black clay. Small prostrate herb to 0.3m diameter, 0.1m high; flowers very small with green bracts to 5mm, corolla pink. Common at site.		+											30/07/2012	3/10/2012	-24.51722222	150.1263889
833684	7230		A	Angiosperms	Acanthaceae	E	Xerothamnella herbacea R.M.Barker	48657	Hansen C.			08MAR2010			Queensland	Leichhardt	KIANGA CREEK, CA. 5KM NORTH OF MOURA.	+-+-000----	CNMK--	BG			GPS	AMG	GDA94	100	S24 32 03.31	E149 57 23.75	149.9565982	-24.53425254	55	799552	7283411	8848-995834	Kianga Creek, ca. 5km north of Moura. High bank of creek, dark brown sandy clays; fringing woodland of Acacia harpophylla, Eucalyptus coolabah and Lysiphyllum sp. Herb 20-40cm tall in small clumps; mauve flower; close to tree trunks or under semi evergreen vine thicket generalists. Less than 5% cover but scattered along length of Kianga Creek. Pressure from cattle, mine pollutants and weeds.													11/07/2012	18/07/2012	-24.53425254	149.9565982
389352	1		A	Angiosperms	Acanthaceae	E	Xerothamnella herbacea R.M.Barker	48657	Johnson R.W.	2689B		27SEP1963	Forster P.I.	MAR1993	Queensland	Leichhardt	20M NW OF THEODORE BRIGALOW RESEARCH STN	0000000----	-K----				Hrb Convert	Lat/Long	AGD66	16000	S24 45	E149 45	149.75	-24.75	55	778131	7259929	8848-781599														7/11/2000	25/03/2013	-24.74841526	149.7510935
398635	1		A	Angiosperms	Apocynaceae	N	Cerbera dumicola P.I.Forst.	63792	Heppell I.			09DEC1983	Leeuwenberg A.J.	1997	Queensland	Leichhardt	PORTION 130 GOGANGO SHIRE PARISH OF FLEETWOOD PROPERTY OWNER M.H.OHL	----000----	F-OD--	A			Hrb Convert	Lat/Long	AGD66	100000	S23 30	E150 30	150.5	-23.5	56	244693	7398898	9050-446988	Portion 130, Gogango Shire, Parish of Fleetwood, Property owner MH Ohl. Ironbark-rosewood country. Sloping. Medium size trees.													7/11/2000	21/05/2010	-23.49842108	150.5010747
584141	5562		A	Angiosperms	Apocynaceae	N	Cerbera dumicola P.I.Forst.	63792	Anderson E.R.	4959		06NOV1995	Leeuwenberg A.J.	1997	Queensland	Leichhardt	N SIDE OF CAPRICORN HWY 7KM W OF DUARINGA	+++-000----	-DFB--	F			Hrb Convert	Lat/Long	AGD66	16000	S23 45	E149 45	149.75	-23.75	55	780317	7370732	8850-803707	N side of Capricorn Highway, 7km W of Duaringa. Shallow sandy loam soil, open forest of Acacia shirleyi. Shrub to 2m, flowers white.													7/11/2000	21/05/2010	-23.74842179	149.7510889
212428	1		A	Angiosperms	Apocynaceae	N	Cerbera dumicola P.I.Forst.	63792	Blake S.T.	15360		01OCT1943	Leeuwenberg A.J.	1997	Queensland	Leichhardt	DUARINGA	+0+0000----	QZND--		135		Hrb Convert	Lat/Long	AGD66	16000	S23 45	E149 45	149.75	-23.75	55	780317	7370732	8850-803707	Duaringa. Common in lancewood scrub on very fine grained hard reddish soil on low tableland. Deciduous scrub or small crooked tree to 15ft with open irregular light green crown and with white thready rather sticky latex in twigs, less in bark; bark light grey, long. shallowly and widely fissured, +/- distinctly scaly on the taller plants, dark brown beneath surface, then dull brownish, yelow with ooze of latex; sapwood whitish; leaves bright light green to green, paler beneath. Outer layer of bark no separating so readily from inner as in Gerbera manghas.													7/11/2000	21/05/2010	-23.74842179	149.7510889
212431	1		A	Angiosperms	Apocynaceae	N	Cerbera dumicola P.I.Forst.	63792	White C.T.	12460		23NOV1943	Leeuwenberg A.J.	1997	Queensland	Leichhardt	DUARINGA	+0+0000----	------				Hrb Convert	Lat/Long	AGD66	16000	S23 45	E149 45	149.75	-23.75	55	780317	7370732	8850-803707	Duaringa. Common in patches, hard red latecitic soil. Assoc with Acacia shirleyi. Small tree up to 5m high, 15cm stem diam. Bark grey, fissured. Leaves pale glossy green, corolla pale white.													7/11/2000	21/05/2010	-23.74842179	149.7510889
212426	1		A	Angiosperms	Apocynaceae	N	Cerbera dumicola P.I.Forst.	63792	Murray			OCT1943	Leeuwenberg A.J.	1997	Queensland	Leichhardt	DUARINGA	+0+0000----	------				Hrb Convert	Lat/Long	AGD66	16000	S23 45	E149 45	149.75	-23.75	55	780317	7370732	8850-803707	Duaringa.													7/11/2000	21/05/2010	-23.74842179	149.7510889
472305	1		A	Angiosperms	Apocynaceae	N	Cerbera dumicola P.I.Forst.	63792	Gillespie R.	4837		28FEB1990	Leeuwenberg A.J.	1997	Queensland	Port Curtis	BANANA SHIRE 5KM NW OF WOWAN	0---000----	-T----	F			Hrb Convert	Lat/Long	AGD66	1600	S23 50 30.00	E150 10 30.00	150.175	-23.84166667	56	212236	7360425	8950-122604	Banana Shire, 5km NW of Wowan. Edge of tableland, stony soil. Shrub to 2m., milky sap.													7/11/2000	21/05/2010	-23.84008724	150.1760816
768300	6601		A	Angiosperms	Apocynaceae	N	Cerbera dumicola P.I.Forst.	63792	Halford D.	Q8720	Batianoff,G.;	05NOV2004	Halford D.	MAY2005	Queensland	Leichhardt	11.6KM BY ROAD S OF CAPRICORN HIGHWAY ALONG DUARINGA-BARALABA ROAD, 21.6KM BY ROAD FROM DUARINGA	+++-000----	-Y---C	Z	140		GPS	Lat/Long	AGD66	100	S23 52 29.00	E149 45 32.00	149.7588889	-23.87472222	55	780955	7356895	8850-809568	11.6km by road S of Capricorn Highway along Duaringa-Baralaba Road, 21.6km by road from Duaringa. Growing at top of low escarpment, red lateritic loam, remnant shrub near escarpment. Slender erect shrub; 3m high; milky sap; flowers white; leaves crowded towards the end of branches. Occasional at site.													6/02/2007	21/05/2010	-23.87314402	149.7599778
571887	5596		A	Angiosperms	Apocynaceae	N	Cerbera dumicola P.I.Forst.	63792	Thompson E.J.	BIL233	Price,R.J.;	12MAR1996	Leeuwenberg A.J.	1997	Queensland	Port Curtis	16KM NNE OF BILOELA TR 170 (GPS 24 15 38 150 32 43)(SITE 412)	----000----	KDFB-F		390		GPS	Lat/Long	AGD66	100	S24 15 38.00	E150 32 43.00	150.5452778	-24.26055556	56	250781	7314722	9049-507147	16km NNE of Biloela, TR 170 (GPS 24 15 38 150 32 43)(site 412). Crest of ridge with brown, sandy loam. Mid-high woodland of Acacia rhodoxylon. Remnant laterite.													7/11/2000	21/05/2010	-24.25897367	150.5463529
664788	5904		A	Angiosperms	Apocynaceae	N	Cerbera dumicola P.I.Forst.	63792	Rider E.J.			17FEB1998			Queensland	Port Curtis	15KM E OF BILOELA	----000----	F-FF--	A			Hrb Convert	Lat/Long	AGD66	1600	S24 24 30.00	E150 40 30.00	150.675	-24.40833333	56	264230	7298577	9049-642985	15 km E of Biloela. Rocky hills, open forest. Small tree.													7/11/2000	21/05/2010	-24.40675145	150.6760751
333096	1		A	Angiosperms	Apocynaceae	V	Marsdenia brevifolia (Benth.) P.I.Forst.	78571	Dietrich A.						Queensland	Port Curtis	ROCKHAMPTON	+000000----	------				Hrb Convert	Lat/Long	AGD66	16000	S23 25	E150 35	150.5833333	-23.41666667	56	253052	7408275	9051-530082	Rockhampton.													7/11/2000	2/01/2008	-23.41508903	150.5844087
614917	6539		A	Angiosperms	Apocynaceae	V	Marsdenia brevifolia (Benth.) P.I.Forst.	78571	Augusteyn J.			08MAY2005	Pollock A.B.	JUL2005	Queensland	Port Curtis	BALNAGOWAN STATION 3.5KM NNE OF MT KILNER	+-+-000----	--FF--				GPS	AMG	AGD66	100	S23 26 15.80	E150 45 44.69	150.7624139	-23.43772285	56	271394	7406238	9051-713062	Balnagowan Station 3.5km NNE of Mt Kilner. East facing slope, serpentinite soil. Eucalyptus fibrosa open forest or woodland with Corymbia erythrophloia.													4/09/2006	2/01/2008	-23.43614521	150.7634892
333119	1		A	Angiosperms	Apocynaceae	N	Marsdenia hemiptera Rchb.	37073	Thozet A.	511					Queensland	Port Curtis	NEAR ROCKHAMPTON	+++-000----	------	T			Hrb Convert	Lat/Long	AGD66	16000	S23 25	E150 35	150.5833333	-23.41666667	56	253052	7408275	9051-530082	Near Rockhampton. In dense scrub. Deep purple flowers.													7/11/2000	26/08/2014	-23.41508903	150.5844087
216944	1		A	Angiosperms	Apocynaceae	N	Marsdenia hemiptera Rchb.	37073	Bowman						Queensland	Port Curtis	FITZROY RIVER	0000000----	------				Hrb Convert	Lat/Long	AGD66	100000	S23 30	E150 30	150.5	-23.5	56	244693	7398898	9050-446988	Fitzroy River.													7/11/2000	21/05/2010	-23.49842108	150.5010747
470247	1		A	Angiosperms	Apocynaceae	N	Marsdenia hemiptera Rchb.	37073	Forster P.I.	PIF5675	Bean,A.R.;	04SEP1989			Queensland	Port Curtis	GLASSFORD VALE 2.5KM N OF ON TR 353 GRID REF 9148-283833	----000----	-ZAA--	J	340		Hrb Convert	GridRef	AGD66	100	S24 33 15.09	E151 18 18.75	151.3052081	-24.55419121	56	328350	7283350	9148-283833	2.5km N of Glassford Vale, Timber Reserve 353. Araucarian notophyll vine forest, on chocolate soil. Vine, clear latex.													7/11/2000	21/05/2010	-24.55260844	151.3062773
636663	5496		A	Angiosperms	Apocynaceae	N	Marsdenia hemiptera Rchb.	37073	Thomas G.	224	Brushe,J.;	28MAR1993			Queensland	Port Curtis	TR 353 DAWES CA 7KM WSW OF MANY PEAKS	----000----	F-AA-U	J	300		Hrb Convert	Lat/Long	AGD66	1600	S24 33 30.00	E151 18 30.00	151.3083333	-24.55833333	56	328672	7282895	9148-286828	TR 353 Dawes, about 7km WSW of Many Peaks. Hillside, muncon volcanics, granite, hoop pine emergents rainforest. Vine. Rare.													7/11/2000	21/05/2010	-24.55675057	151.3094025
571652	5547		A	Angiosperms	Apocynaceae	V	Parsonsia kroombitensis J.B.Williams	81606	Thompson E.J.	CAL310	Turpin,G.P.;	06JUL1995			Queensland	Port Curtis	SF 423 BOYNE RA C 2KM W OF TARGOOLA (GPS 24 06 17 151 11 50) (SITE 226)	+--+000----	FDOD-G	J#	120		GPS	Lat/Long	AGD66	100	S24 06 17.00	E151 11 50.00	151.1972222	-24.10472222	56	316765	7332992	9149-167329	SF 423, Boyne Range, C 2km W of Targoola (GPS 24 06 17 151 11 50) (site 226). NE facing slope of hilly terrain with brown gravelly loam. Tall open woodland of Eucalyptus crebra with Eucalyptus erythrophloia. Mudstone.													7/11/2000	28/11/2003	-24.10314253	151.19829
634564	5469		A	Angiosperms	Apocynaceae	V	Parsonsia kroombitensis J.B.Williams	81606	Forster P.I.	PIF16248		16FEB1995			Queensland	Port Curtis	SF 316 KROOMBIT TOPS (GPS 24 21 29 150 56 43)	+++-000+---	--FA--		860		GPS	Lat/Long	AGD66	100	S24 21 29.00	E150 56 43.00	150.9452778	-24.35805556	56	291564	7304580	9049-915045	State Forest 316 Kroombit Tops (GPS 24 21 29 150 56 43). Woodland of Eucalyptus eugenioides, E. andrewsii and E. longirostrata on metamorphosed sandstone. Wiry vine, clear latex, flowers yellow with red stripe in middle. Occasional on sheer clifflines and outcrops. Spirit material at BRI.								E2777					7/11/2000	28/11/2003	-24.35647367	150.9463529
696799	4786		A	Angiosperms	Apocynaceae	V	Parsonsia kroombitensis J.B.Williams	81606	Williams J.B.	93297		17SEP1993			Queensland	Port Curtis	KROOMBIT TOPS STATE FOREST, EASTERN EDGE OF ESCARPMENT, C 59KM SW OF GLADSTONE	+--+000----	LTFA-P	TJ			Gazetteer	Lat/Long	AGD66	1600	S24 21 30.00	E150 56 30.00	150.9416667	-24.35833333	56	291198	7304543	9049-911045	Kroombit Tops State Forest, eastern edge of escarpment, c 59km SW of Gladstone. Escarpment edge. Acid volcanics. Low shrubby Eucalyptus acmenoides - E. trachyphloia woodland with Jacksonia scoparia, Eriostemon myoporoides, Xanthorrhoea sp. Climber to 2m. Note: Coll. is J.B. Williams et al. (Dup of NE 80884). Locality data erroneous on label and in protologue. Corrected by I.Telford, Jul 2003.													9/05/2006	10/05/2006	-24.35675145	150.9427418
632226	5436		A	Angiosperms	Apocynaceae	V	Parsonsia kroombitensis J.B.Williams	81606	Gibson N.	1348		17SEP1993			Queensland	Port Curtis	SF 316 KROOMBIT TOPS 44KM E OF BILOELA	+--+000----	LT----	J	800		Hrb Convert	Lat/Long	AGD66	1600	S24 22 30.00	E150 55 30.00	150.925	-24.375	56	289534	7302672	9049-895026	State Forest 316, Kroombit Tops, 44km E of Biloela. Growing in rock crevices, rock faces, dry escarpment. Weak-stemmed climber, tends to be bushy. Stems reddish-brown; leaves green above, lighter green under.													7/11/2000	28/11/2003	-24.37341811	150.9260751
571319	5491		A	Angiosperms	Apocynaceae	V	Parsonsia kroombitensis J.B.Williams	81606	Thompson E.J.	BIL58	Simon,B.K.;Sharpe,P.;	21MAR1995			Queensland	Port Curtis	KROOMBIT TOPS SF (GPS 24 23 06 150 53 24) (SITE 95)	+++0000----	FTFA-F		860		GPS	Lat/Long	AGD66	100	S24 23 06.00	E150 53 24.00	150.89	-24.385	56	286000	7301511	9049-860015	Kroombit Tops State Forest (GPS 24 23 06 150 53 24) (Site 95). Open woodland of Eucalyptus trachyphloia and Eucalyptus acmenoides South-east facing slope of hilly terrain. Rocky brown loam, skeletal derived from sandstone.													7/11/2000	28/11/2003	-24.38341811	150.8910751
847610	4993		A	Angiosperms	Apocynaceae	V	Parsonsia kroombitensis J.B.Williams	81606	Brushe J.			DEC1995			Queensland	Burnett	CANIA GORGE, NORTH WEST OF MONTO.	+++-000----	LT----	J			Label	Lat/Long	AGD66	1600	S24 37 30.00	E150 58 30.00	150.975	-24.625	56	295013	7275055	9048-950750	Cania Gorge, north west of Monto. Escarpment cliff. Growing in crevices of cliff face.													30/11/2010		-24.62341588	150.9760758
758702	7264		A	Angiosperms	Apocynaceae	V	Parsonsia kroombitensis J.B.Williams	81606	Pollock A.B.	ABP2772	McDonald,W.J.;	09FEB2011	McDonald W.J.	FEB2011	Queensland	Burnett	C. 200M DUE W OF MT DOWGO, CANIA GORGE NATIONAL PARK.	+++-000----	LTWB-F	J	470		GPS	AMG	WGS84	100	S24 41 23.89	E150 58 41.74	150.9782598	-24.68996858	56	295450	7267873	9048-954678	C. 200m due W of Mt Dowgo, Cania Gorge National Park. Base of tall, sheer sandstone cliffs; rocky soils derived from the Precipice Sandstones. Tall open forest of Corymbia trachyphloia and Syncarpia glomulifera, with low tree layer of Acacia maidenii and Acronychia laevis, abundant vines of Melodorum leichhardtii, Parsonsia kroombitensis and Smilax australis, groundlayer of Commelina cyanea, Scleria sphacelata, Ottochloa gracillima and Lobelia trigonocaulis. Thin vine to 5m tall. Flowers conspicuous with yellow margins and orange-yellow central stripe, to 5mm across. Leaves glossy dark green. Sap clear. Sprawling vine forming loose tangles, occasional in this specific habitat, absent elsewhere.			+										12/11/2012	26/11/2012	-24.68996858	150.9782598

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Corveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
743404	6760		A	Angiosperms	Apocynaceae	V	Parsonsia kroombitensis J.B.Williams	81606	Nicholson N.	NJN685		27APR2003			Queensland	Burnett	CANIA GORGE, AT KING ORCHID CLIFF ON 2-STOREY CAVE WALK	+-+-000----	F-FA--	J	340		Map	AMG	AGD66	100	S24 42 52.32	E150 59 09.29	150.9859152	-24.71453273	56	296264	7265154	9048-962651	Cania Gorge, at King Orchid Cliff on 2-storey cave walk. Steep hillside to north-west; eucalypt community. Vine, clear sap, no glands, yellow flower with red base. Hugh Nicholson Photo No: 27 04 03/7 40-7 41.													19/09/2008	24/09/2008	-24.71294861	150.9869911
746688	6823		A	Angiosperms	Apocynaceae	V	Parsonsia larcomensis J.B.Williams	81608	Braddick B.	2890		12AUG1999			Queensland	Port Curtis	MT LARCOM	+0-+000----	E-----	J			GPS	Lat/Long	AGD66	100	S23 43 35.00	E151 05 03.00	151.0841667	-23.72638889	56	304703	7374742	9150-047747	Mt Larcom. Escarpment gully, dry creek bed. Vine.													7/04/2009		-23.72481018	151.0852337
847609	4993		A	Angiosperms	Apocynaceae	V	Parsonsia larcomensis J.B.Williams	81608	Williams J.B.	93101	Brushe,J.;	16SEP1993			Queensland	Port Curtis	MOUNT LARCOM, 20KM WEST NORTH WEST OF GLADSTONE.	+--+000----	KT---P	J			Label	Lat/Long	AGD66	1600	S23 48 30.00	E151 04 30.00	151.075	-23.80833333	56	303892	7365654	9150-038656	Mount Larcom, 20km west north west of Gladstone. Near summit. Rock crevices of acid volcanics. Open shrubland.													30/11/2010	30/11/2010	-23.80675462	151.076067
675500	5893		A	Angiosperms	Apocynaceae	V	Parsonsia larcomensis J.B.Williams	81608	Brushe J.		Sinclair,G.;Brushe,L.;	29APR1995			Queensland	Port Curtis	MT LARCOM SOUTH PEAK 17.5KM WNW OF GLADSTONE	+-+-000----	-D----		600		Unknown	Lat/Long	AGD66	100	S23 48 45.00	E151 05 15.00	151.0875	-23.8125	56	305172	7365210	9150-051652	Mt Larcom south peak, 17.5km WNW of Gladstone. Very steep mountains, lithosols, skeletal soils, growing in rock, rocky soil. Evidence of recent fire. Leptospermum polygalifolium/ Lophostemon confertus/ Xanthorrhoea johnsonii tall open shrubland with emergent Eucalyptus acmenoides. Climber clinging to rocks with adventitious roots.													7/11/2000	1/09/2005	-23.81092129	151.088567
572782	5764		A	Angiosperms	Apocynaceae	V	Parsonsia larcomensis J.B.Williams	81608	Thompson E.J.	GLA50	Turpin,G.P.;	17APR1997	Thompson E.J.	MAY1997	Queensland	Port Curtis	MT LARCOM CA 13KM NW OF GLADSTONE (GPS 23 48 55 151 04 58)	+++-000----	FTFF--	J			GPS	Lat/Long	AGD66	100	S23 48 55.00	E151 04 58.00	151.0827778	-23.81527778	56	304694	7364896	9150-046648	Mt Larcom about 13km NW of Gladstone (GPS 23 48 55 151 04 58). S slopes. Common vine growing from cracks in rock faces.													7/11/2000	28/11/2003	-23.81369907	151.0838448
624927	5370		A	Angiosperms	Apocynaceae	V	Parsonsia larcomensis J.B.Williams	81608	Forster P.I.	PIF14653		25JAN1994			Queensland	Port Curtis	MT LARCOM 5KM NW OF YARWUN SUMMIT (REFSET) (PUBREF)	+++-000+---	L-FF--	J	630		Unknown	Lat/Long	AGD66	100	S23 48 55.00	E151 04 58.00	151.0827778	-23.81527778	56	304694	7364896	9150-046648	Mt Larcom, 5km northwest of Yarwun. Summit. Clifflines and exposed outcrops with scattered vegetation in open woodland/shrubland. Lithophytic wiry creeper, clear latex; cream tubular flowers with five pink blotches at top of throat. Rare in area. Spirit material at BRI.		+	+					E2551					7/11/2000	1/09/2005	-23.81369907	151.0838448
213177	1		A	Angiosperms	Apocynaceae	V	Parsonsia larcomensis J.B.Williams	81608	Blake S.T.	22450		23MAR1966			Queensland	Port Curtis	MT LARCOM NR TOP OF	+++0000----	KT----	T	600		GPS	Lat/Long	AGD66	100	S23 48 55.00	E151 04 58.00	151.0827778	-23.81527778	56	304694	7364896	9150-046648	Mt Larcom, near the top. In rock crevices; climber clinging to rock walls with adventitious roots. Stems yellowish, watery juice; dull green leaves, paler beneath; flowers cream, turning white with 5 reddish spots in throat.													7/11/2000	22/08/2007	-23.81369907	151.0838448
76071	1		A	Angiosperms	Arecaceae	N	Livistona nitida Rodd	69660	Isbell R.			MAR1957	Forster P.I.	AUG1995	Queensland	Leichhardt	Sensitive Species. Precise locality withheld.	----000----	------				Map	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld.													7/11/2000	25/03/2013	-24.91666667	150.0833333
675503	5893		A	Angiosperms	Asteraceae	V	Cassinia collina C.T.White	45717	Brushe J.	JB215	Brushe,L.;	27JUN1992			Queensland	Port Curtis	2KM SW OF MT STANLEY MANY PEAKS RANGE 25.5KM SE OF CALLIOPE (GPS 24 12 30 151 20 40) (R)	+-+-000----	-DFF--	F	240		GPS	Lat/Long	AGD66	100	S24 12 30.00	E151 20 40.00	151.3444444	-24.20833333	56	331868	7321702	9149-318217	2km SW of Mt Stanley, Many Peaks Range, upper slope of peak 816, 25.5km SE of Calliope Site. (GPS 24 12 30 151 20 40) Rolling hills. Eucalyptus trachyphloia/ E. acmenoides tall woodland with a midstraum of Acacia spp./heath shrubs, Xanthorrhoea sp. and a ground stratum of grasses and sedges.			+										7/11/2000	30/11/2009	-24.20675365	151.3455122
582601	5517		A	Angiosperms	Asteraceae	N	Olearia gravis (F.Muell.) Benth.	3689	Bean A.R.	8843		17AUG1995			Queensland	Burnett	COLES RD COOMINGLAH SF W OF MONTO	+++-000----	-DFF-F	F	440		Hrb Convert	Lat/Long	AGD66	1600	S24 51 30.00	E151 00 30.00	151.0083333	-24.85833333	56	298765	7249258	9148-987492	Coles Road, Coominglah State Forest, W of Monto. Open forest of Eucalyptus trachyphloia, E. acmenoides, Acacia complanata. Sandy soil over sandstone. Shrub 1m high, spindly. Flowers white.													7/11/2000	21/05/2010	-24.85675057	151.0094025
432019	1		A	Angiosperms	Asteraceae	N	Olearia gravis (F.Muell.) Benth.	3689	Forster P.I.	PIF2638		13SEP1986	Messina A.	NOV2012	Queensland	Leichhardt	GLENMORAL GAP 13KM WSW OF THEODORE (REFSET)	+++-000----	--FA-F		300		Map	Lat/Long	AGD66	100	S24 58 36.00	E149 56 26.00	149.9405556	-24.97666667	55	796872	7234408	8848-968344	Moura, Glenmoral Gap, 13km WSW of Theodore. Open Eucalypt forest on sandstone with Triodia understorey. Daisy bush to 50cm., ray florets white. Fairly common.			+										7/11/2000	19/03/2014	-24.97508193	149.941649
620834	5314		A	Angiosperms	Asteraceae	N	Olearia gravis (F.Muell.) Benth.	3689	Forster P.I.	PIF14074	Holland,A.E.;	13OCT1993	Messina A.	NOV2012	Queensland	Leichhardt	GLENMORAL GAP 13KM WSW OF THEODORE	+++-000+---	K-OF-F	F	240		Map	Lat/Long	AGD66	100	S24 58 36.00	E149 56 26.00	149.9405556	-24.97666667	55	796872	7234408	8848-968344	Glenmoral Gap, 13km WSW of Theodore. Open forest on sandstone ridge with Triodia understorey & Eucalyptus maculata, E. suffulgens & E. tenuipes dominant in the overstorey. Bush to 40cm high, white flowers. Common in area. Spirit material at BRI.								E2403					7/11/2000	19/03/2014	-24.97508193	149.941649
644521	4718		A	Angiosperms	Asteraceae	N	Olearia gravis (F.Muell.) Benth.	3689	Makinson R.O.	1392		10NOV1993	Messina A.	NOV2012	Queensland	Leichhardt	C 20KM SSW OF THEODORE, SANDSTONE SCARP W OF SAWMILL ROAD AT C. 9KM FROM THEODORE TO TAROOM ROAD.	+++0000----	FDFA-F	FB			Label	Lat/Long	AGD66	100	S25 02 00.00	E149 57 30.00	149.9583333	-25.03333333	55	798531	7228089	8847-985280	C 20km SSW of Theodore, sandstone scarp W of Sawmill Road at c. 9km from Theodore to Taroom road. Steep slope above cliff line, E aspect. Sandstone; sandy soil. Dry sclerophyll (eucalypt) open forest, burnt in last 2 years. Shrublet c. 40-50cm tall. Occasional. CBG 9317747.													16/06/2003	19/03/2014	-25.03175127	149.9594333
323398	1		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Marriott S.			JUL1947			Queensland	Port Curtis	CALLIDE VALLEY	+00+000----	------				Hrb Convert	Lat/Long	AGD66	100000	S24 30	E150 30	150.5	-24.5	56	246660	7288112	9048-466881	Callide Valley.													7/11/2000	5/12/2006	-24.49841588	150.5010758
323390	1		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Stevens J.G.			23NOV1966			Queensland	Port Curtis	MARDALE 10M S OF THANGOOL	+00+000----	------				Hrb Convert	Lat/Long	AGD66	16000	S24 35	E150 35	150.5833333	-24.58333333	56	255270	7279030	9048-552790	Mardale, 10 miles S of Thangool.													7/11/2000	5/12/2006	-24.58174922	150.5844092
578675	6408		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Batianoff G.N.	0411702	Halford,D.A.;	28NOV2004			Queensland	Port Curtis	BANANA SHIRE, 4.5KM S OF BILOELA, TOWARDS MONTO	+-+-000----	--HH--	QBZG			GPS	Lat/Long	AGD66	100	S24 39 20.00	E150 45 43.00	150.7619444	-24.65555556	56	273494	7271336	9048-734713	Banana Shire, 4.5km S of Biloela, towards Monto. Roadside, disturbed land, herbland. Vulnerable species, perennial herb, mauve flowers. Common on site.			+										9/06/2005	5/12/2006	-24.65397144	150.7630203
872535	7034		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Menkins I.L.	ILM0345		09AUG2009			Queensland	Port Curtis	NORTH OF GREVILLEA CREEK, 30.5KM-34.1KM SOUTH OF THANGOOL.	+000000----	BDZZ--	Q			GPS	Lat/Long	WGS84	100	S24 40 23.00	E150 46 51.00	150.7808333	-24.67305556	56	275439	7269438	9048-754694	North of Grevillea Creek, 30.5km-34.1km south of Thangool. Occurs on the roadsides. There are many large and prominent Opuntia streptacantha (Westwood Pear) in the paddocks nearby. Sandy, loamy alluvial flat. Weedy grassland. An open Eucalyptus populnea woodland occurs to the immediate south. Erect, colony-forming thistle to about 1m high, no flowers observed, only spent seed bearing heads/pappus present. Common on both sides of road, but very restricted. Completely absent from the grazed paddocks adjacent to the fenced roadsides. In two distinct colonies. About 100 mature plants plus several dozen young rosettes also observed in vicinity.													22/07/2010	31/05/2011	-24.67305556	150.7808333
487955	5586		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Bean A.R.	9726		10FEB1996			Queensland	Burnett	CNR EAST MONAL CK ROAD & COLLINGWOODS ROAD N OF MUNGUNGO	+-++000----	-KFF--	G	280		Hrb Convert	Lat/Long	AGD66	1600	S24 43 30.00	E151 10 30.00	151.175	-24.725	56	315411	7264263	9148-154642	Cnr east Monal Ck road and Collingwoods road, north of Mungungo. Tall woodland of Eucalyptus tereticornis, Angophora floribunda on black clay soil. Erect herb 35cm high. FLowers purple. Locally common, with several thousand plants along roadside and on road reserve.													7/11/2000	5/12/2006	-24.72341723	151.1760692
657223	5756		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Semple B.			19NOV1997			Queensland	Burnett	BURNETT HWY HALF-WAY BETWEEN BILOELA AND MONTO	+-+-000----	------	QG			Hrb Convert	Lat/Long	AGD66	1600	S24 45 30.00	E150 50 30.00	150.8416667	-24.75833333	56	281745	7260080	9048-817600	Burnett Hwy half-way between Biloela and Monto. Roadside. Herb.													7/11/2000	5/12/2006	-24.75674922	150.8427425
639523	5557		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Bean A.R.	9336	Robins,P.;	03DEC1995			Queensland	Burnett	0.4KM E OF MOONFORD	+-++000----	------	GQ	260		Hrb Convert	Lat/Long	AGD66	1600	S24 45 30.00	E151 02 30.00	151.0416667	-24.75833333	56	301974	7260384	9148-019603	0.4km E of Moonford. Grassy road verge with Chloris gayana, Cirsium vulgare. Herb 50cm. high. Occasional at site.													7/11/2000	5/12/2006	-24.75675057	151.0427359
664023	5869		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Wyatte K.			15NOV1998			Queensland	Burnett	MUNGUNGO PROPERTY 15KM NE OF MONTO	+000000----	------				Hrb Convert	Lat/Long	AGD66	1600	S24 46 30.00	E151 10 30.00	151.175	-24.775	56	315485	7258725	9148-154587	Mungungo, property 15 km NE of Monto. 1 m tall. Single plant.													7/11/2000	5/12/2006	-24.77341723	151.1760692
639769	5560		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Bean A.R.	9263	Robins,P.;	29NOV1995			Queensland	Burnett	1.5KM N OF BANCROFT TOWARDS KALPOWAR	+-++000----	-HZZ--	GQ	300		Hrb Convert	Lat/Long	AGD66	1600	S24 46 30.00	E151 14 30.00	151.2416667	-24.775	56	322226	7258813	9148-222588	1.5km N of Bancroft, towards Kalpowar. Roadside grassland on brown clay-laom. Remnant trees nearby of Eucalyptus tereticornis, E. melanophloia, Angophora subvelutina. Herb 60cm high, flower heads purple. 200-300 plants present here, but extremely rare in the monto area at this time.													7/11/2000	5/12/2006	-24.77341723	151.2427359
659417	5793		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Graving B.			26MAY1997			Queensland	Burnett	MT SHAW VIA HARRIMI (R) (P)	+-+-000----	-H----				Hrb Convert	Lat/Long	AGD66	1600	S24 48 30.00	E150 38 30.00	150.6416667	-24.80833333	56	261609	7254206	9048-616542	Mt Shaw via Harrimi. Along fence line in pasture paddock, clay loam duplex soil, sown pasture. To 90cm.		+	+										7/11/2000	5/12/2006	-24.80674922	150.6427425
249406	1		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Romano I.			SEP1971			Queensland	Burnett	MONTO-MUNGUNGO RD	+0+0000----	------	VQ			Map	Lat/Long	GDA94	1600	S24 48 30.00	E151 09 30.00	151.1583333	-24.80833333	56	313850	7255019	9148-138550	Between Monto and Mungungo. On roadside. Voucher specimen for seeds forwarded to Dr M. Dittrich, Geneva.													7/11/2000	15/07/2014	-24.80833333	151.1583333
249409	1		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Stanley T.D.			03NOV1976			Queensland	Burnett	C 10KM FROM MONTO MONTO-MUNGUNGO ROAD	+000000----	------	VQW			Map	Lat/Long	GDA94	1600	S24 48 30.00	E151 09 30.00	151.1583333	-24.80833333	56	313850	7255019	9148-138550	Ca 10km from Monto along Monto-Mungungo Road. Roadside weed. Herb to ca 75cm - locally common. Another patch seen at Moonford, NW of Monto. Voucher for flower and seed sample.													7/11/2000	15/07/2014	-24.80833333	151.1583333
249407	1		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Romano I.			07JUN1971			Queensland	Burnett	MONTO-MUNGUNGO ROAD	+0+0000----	-D----	Q			Map	Lat/Long	GDA94	1600	S24 48 30.00	E151 09 30.00	151.1583333	-24.80833333	56	313850	7255019	9148-138550	Monto-Mungungo Road. Roadside. Open forest; brown loam. 2-3ft high. Appears to be perennial.													7/11/2000	15/07/2014	-24.80833333	151.1583333
323799	1		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Bartlam R.H.			23NOV1950			Queensland	Burnett	NEAR MUNGUNGO N OF MONTO	+00+000----	------	Q			Hrb Convert	Lat/Long	AGD66	1600	S24 48 30.00	E151 10 30.00	151.175	-24.80833333	56	315534	7255033	9148-155550	Near Mungungo N of Monto. Several plants in one group not seen in district before.													7/11/2000	5/12/2006	-24.80675057	151.1760692
640882	5601		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Bean A.R.	10137		15MAR1996			Queensland	Burnett	HARRAMI CK N OF RAWBELLE	+++-000----	-H----	QG	320		Hrb Convert	Lat/Long	AGD66	1600	S24 49 30.00	E150 43 30.00	150.725	-24.825	56	270066	7252503	9048-700525	Harrami ck north of Rawbelle. Road verges, formerly woodland of Eucalyptus populnea. Clay soil. Herb 60cm high, flowers purple. Locally common.													7/11/2000	5/12/2006	-24.82341588	150.7260758
323801	1		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Wright C.B.			OCT1955			Queensland	Burnett	BUKALI NEAR MONTO	+00+000----	-D----				Map	Lat/Long	GDA94	1600	S24 49 30.00	E151 10 30.00	151.175	-24.825	56	315559	7253196	9148-155531	Bukali, near Monto. Adjacent to creek bank. Grey sandy loam.													7/11/2000	15/07/2014	-24.825	151.175
640880	5601		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Bean A.R.	10139	Halford,D.;	15MAR1996			Queensland	Burnett	THE BROOK 4KM N OF RAWBELLE	+--+000----	-H----	QG			Hrb Convert	Lat/Long	AGD66	1600	S24 51 30.00	E150 43 30.00	150.725	-24.85833333	56	270128	7248810	9048-701488	The Brook 4km north of Rawbelle. Roadside where trees have been removed. Rucalyptus teretocirnis, E. populnea nearby. Heavy clay soil. Herb 25cm high. Occasional at site.													7/11/2000	5/12/2006	-24.85674922	150.7260758
249410	1		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Romano I.			22NOV1976			Queensland	Burnett	NR MONTO	+000000----	------	V			Hrb Convert	Lat/Long	AGD66	1600	S24 52 30.00	E151 07 30.00	151.125	-24.875	56	310581	7247580	9148-105475	Near Monto. Material sent; (1) Specimen and mature achenes to Dr J. Holub (PR). (2) Mature achenes to Dr M. Ditrich (G).													7/11/2000	5/12/2006	-24.87341723	151.1260692
249408	1		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Malcomson G.H.			04NOV1968			Queensland	Burnett	MONTO	+0+0000----	------	V			Hrb Convert	Lat/Long	AGD66	1600	S24 52 30.00	E151 08 30.00	151.1416667	-24.875	56	312265	7247603	9148-122476	Monto. Voucher specimen for seed for Standards Branch.													7/11/2000	5/12/2006	-24.87341723	151.1427359
323391	1		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Bartlett C.			24OCT1963			Queensland	Burnett	MONTO CANIA GORGE PROPERTY OF C BARTLETT	+000000----	D-----				Hrb Convert	Lat/Long	AGD66	16000	S24 55	E150 55	150.9166667	-24.91666667	56	289599	7242658	9048-895426	Cania Gorge; property of C. Bartlett, Monro. Grows over whole gorge area. Flower colour pinkish. Grows all year but flowers only in spring.													7/11/2000	5/12/2006	-24.91508255	150.9177425
617106	6587		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Kerr G.			OCT2006	Thomas M.B.	NOV2006	Queensland	Burnett	NEAR MONTO, 8KM ON CANNINDAH ROAD, PAST SILOS, WHICH ARE ABOUT 4KM SOUTH OF MONTO ON EIDSVOLD ROAD.	+++-000----	------				GPS	Lat/Long	AGD66	1600	S24 55 30.00	E151 13 30.00	151.225	-24.925	56	320757	7242177	9148-207421	Near Monto, 8km on Cannindah road, past silos, which are about 4km south of Monto on Eidsvold road. On road verge on bluegrass downs. Erect herb about 30cm high in clumps. Classified as vulnerable. The need to slash verges is a problem, but species responds to disturbance.			+										9/01/2007	9/01/2007	-24.92341723	151.2260692
585345	5597		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Bean A.R.	9771		14FEB1996			Queensland	Burnett	C 5KM S OF 'YARROL' SE OF MONTO	+-+-000----	-KFF--	G	250		Hrb Convert	Lat/Long	AGD66	1600	S24 59 30.00	E151 20 30.00	151.3416667	-24.99166667	56	332631	7234942	9148-326349	About 5km S of 'Yarrol', SE of Monto. Woodland of Eucalyptus tereticornis, E. melanophloia, Angophora floribunda, clayey soil. Herb 40cm. high, flowers purple. About 20-30 plants present.													7/11/2000	5/12/2006	-24.9900839	151.3427359
458048	1		A	Angiosperms	Asteraceae	V	Rhaponticum australe (Gaudich.) Sojak	98394	Jobling F.			25OCT1989			Queensland	Burnett	MONTO SELENE PORTION 5	+++0000----	--MC--	SG			Hrb Convert	Lat/Long	AGD66	1600	S25 00 30.00	E151 09 30.00	151.1583333	-25.00833333	56	314149	7232857	9147-141328	Portion 5, Selene, Monto. In pasture paddock, brigalow scrub. Broadleaf herb.													7/11/2000	5/12/2006	-25.00675009	151.159406
379827	1		A	Angiosperms	Asteraceae	V	Rutidosis crispata A.E.Holland	75520	Forster P.I.	PIF2639		13SEP1986			Queensland	Leichhardt	GLENMOREL GAP 13KM WSW OF THEODORE (REFSET)	+++-000----	--FASF	TG	300		Map	Lat/Long	AGD66	100	S24 58 02.00	E149 56 27.00	149.9408333	-24.96722222	55	796923	7235454	8848-969354	Glenmorel Gap, 13km WSW of Theodore. Open eucalypt forest on sandstone with Triodia understorey. Herb to 40cm., ray florets yellow. Fairly common at site.			+										7/11/2000	24/05/2010	-24.96563748	149.9419268
627917	5399		A	Angiosperms	Asteraceae	V	Rutidosis crispata A.E.Holland	75520	Forster P.I.	PIF14076	Holland,A.E.;	13OCT1993			Queensland	Leichhardt	GLENMORAL GAP 13KM WSW OF THEODORE	+++-000+---	K-OF-F	G	240		Map	Lat/Long	AGD66	100	S24 58 02.00	E149 56 27.00	149.9408333	-24.96722222	55	796923	7235454	8848-969354	Glenmoral Gap, 13km west southwest of Theodore. Open forest on sandstone ridge with Triodia understorey and Eucalyptus maculata, E. suffulgens and E. tenuipes dominant in the overstorey. Small semi-erect daisy, leaves bluish-green above, silver below, yellow flowers. Common in area.								E2739					7/11/2000	24/05/2010	-24.96563748	149.9419268
432520	1		A	Angiosperms	Asteraceae	V	Rutidosis crispata A.E.Holland	75520	Forster P.I.	PIF2862		06JAN1987			Queensland	Leichhardt	MOURA 8848-969354 GLENMORAL GAP 13KM WSW OF THEODORE	+++0000+---	--YC-F		300		Hrb Convert	GridRef	AGD66	100	S24 58 02.10	E149 56 27.97	149.9411023	-24.96725114	55	796950	7235450	8848-969354	Moura 8848-969354 Glenmoral Gap, 13km WSW of Theodore. Spinifex hummock grassland on sandstone. Small daisy, flowers yellow. Spirit material at BRI.								E595,E2646					7/11/2000	24/05/2010	-24.9656664	149.9421958
389379	1		A	Angiosperms	Burmanniaceae	N	Thismia rodwayi F.Muell.	63800	Leggett D.			17DEC1983	Cribb A.B.		Queensland	Port Curtis	THREE MOON SCRUB KROOMBIT TOPS	+-+-000----	------				Unknown	Lat/Long	AGD66	1600	S24 22 30.00	E151 01 30.00	151.025	-24.375	56	299680	7302820	9149-996028	Three Moon Scrub, Kroombit Tops.													7/11/2000	21/05/2010	-24.37342031	151.0260678
17892	1		A	Angiosperms	Caesalpiniaceae	N	Senna acclinis (F.Muell.) Randell	5010	Hedley C.				Randell B.		Queensland	Port Curtis	GLADSTONE	+--+000----	------				Hrb Convert	Lat/Long	AGD66	16000	S23 55	E151 15	151.25	-23.91666667	56	321872	7353887	9150-218538	Gladstone. A pubescent form.													7/11/2000	21/05/2010	-23.91508796	151.251067
472361	1		A	Angiosperms	Caesalpiniaceae	N	Senna acclinis (F.Muell.) Randell	5010	Gibson N.	TOI731		14OCT1989	Pedley L.	SEP2004	Queensland	Port Curtis	WIETALABA TR 122 32KM S OF CALLIOPE	+--+000----	K-AA--	F	400		Hrb Convert	Lat/Long	AGD66	1600	S24 17 30.00	E151 12 30.00	151.2083333	-24.29166667	56	318160	7312302	9149-181123	Timber Reserve 122, Wietalaba, 32km S of Calliope. Track along ridge, in dry rainforest. Shrub to 1.5m. Bark light grey, old fruit brown.													7/11/2000	21/05/2010	-24.29008698	151.2094011
665634	5923		A	Angiosperms	Caesalpiniaceae	N	Senna acclinis (F.Muell.) Randell	5010	Aspland S.	1752		30OCT1997	Francis R.	FEB1999	Queensland	Port Curtis	KOOLKOOROOM CK CA 20KM SW OF NAGOORIN BOYNE VALLEY	++++000----	------	F	160		Hrb Convert	Lat/Long	AGD66	1600	S24 26 30.00	E151 11 30.00	151.1916667	-24.44166667	56	316685	7295667	9149-166956	Koolkooroom Creek, ca.20 km SW of Nagoorin, Boyne Valley. Small shrub 1 m high. Leaves compound, leaflets opposite, dull green upper surface, dull lighter under blade. Flowers yellow, in leaf axils. Pod flat.													7/11/2000	21/05/2010	-24.44008698	151.1927344

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Corveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
733134	6252		A	Angiosperms	Caesalpiniaceae	N	Senna acclinis (F.Muell.) Randell	5010	Bean A.R.	19774		07JAN2003	Pedley L.	SEP2004	Queensland	Port Curtis	NW SECTION OF SF69, SE OF BILOELA	+-++000----	D-AH--	F			Map	GridRef	AGD66	100	S24 38 51.59	E150 50 54.84	150.8485659	-24.64766487	56	282250	7272350	9048-822723	NW section of SF69, SE of Biloela. Semi-evergreen vine thicket with Owenia venosa, Croton insularis, Exocarpos latifolius, in sheltered valley. Shrub 1.2m high, flowers yellow. Rare at site.													8/04/2003	21/05/2010	-24.64608075	150.8496417
816529	7102		A	Angiosperms	Caesalpiniaceae	N	Senna acclinis (F.Muell.) Randell	5010	Forster P.I.	PIF37751		13NOV2010	Forster P.I.	NOV2010	Queensland	Burnett	CANNINDAH STATE FOREST (S.F.215); 20KM ESE OF MONTO.	+++-000----	DYAA-S	FZ	360		GPS	AMG	WGS84	100	S24 56 22.06	E151 18 35.36	151.3098211	-24.93946153	56	329345	7240694	9148-293406	Cannindah State Forest (S.F.215); 20km ESE of Monto. Semi-evergreen vinethicket on brown-red soil along gully, some adjacent brigalow patches; emergent Brachychiton rupestris and Acacia fasciculifera. Soft subshrub to 1.5m tall; foliage chartaceous, matt, dark green above, paler and glaucous below; flowers yellow.													14/02/2011		-24.93946153	151.3098211
816466	7100		A	Angiosperms	Caesalpiniaceae	N	Senna acclinis (F.Muell.) Randell	5010	Forster P.I.	PIF37714		13NOV2010	Forster P.I.	NOV2010	Queensland	Burnett	TELLEBANG STATE FOREST, MULGILDIE PLATEAU; 17KM SSE OF MONTO.	+++-000----	KYAA-S	FZ	320		GPS	AMG	WGS84	100	S25 00 55.52	E151 11 44.42	151.1956715	-25.01542243	56	317929	7232132	9147-179321	Tellebang State Forest, Mulgildie Plateau; 17km SSE of Monto. Fragmented semi-evergreen vinethicket on red volcanic soil near top of ridge, some overtopping Corymbia citriodora and Eucalyptus crebra; edge of a now cleared much larger patch of scrub (adjacent farmland). Shrublet to 1m tall; foliage chartaceous, glossy and grey-green above, much paler and matt below; flowers yellow. Occasional at locality.													7/12/2010		-25.01542243	151.1956715
840636	6949		A	Angiosperms	Capparaceae	E	Capparis humistrata (F.Muell.) F.Muell.	52336	Elson S.			25JUN2008	Guymer G.P.	JAN2014	Queensland	Port Curtis	MORINISH, NEAR MORINISH STATE FOREST, W OF RIDGELANDS.	----000----	-KMC--	F			GPS	Lat/Long	GDA94	100	S23 18 05.50	E150 11 23.60	150.1898889	-23.30152778	56	212579	7420311	8951-125203	Morinish, near Morinish State Forest, W of Ridgelands. Road reserve, entrance to property and Morinish State Forest. Brigalow black clay soil. Brigalow, SEVT. Shrub. Subject to slashing, least affected c. 1m high. 3 plants in small area, no more within 50m.													21/06/2010	11/06/2014	-23.30152778	150.1898889
652954	5694		A	Angiosperms	Capparaceae	E	Capparis humistrata (F.Muell.) F.Muell.	52336	Sinclair G.	GS96050		12NOV1996	Francis R.	NOV1996	Queensland	Port Curtis	SF 878 MORINISH 27KM NW OF STANWELL	+--+000--+-	ADMC--	F			Hrb Convert	Lat/Long	AGD66	1600	S23 18 30.00	E150 09 30.00	150.1583333	-23.30833333	56	209364	7419485	8951-093194	SF 878 Morinish 27km NW of Stanwell. Situation plain, soil sandy, veg-brigalow forest near the edge. Shrub 1.5m spreading, fruiting, many spines along stem, leaf tips also forming spines. Carpological material at BRI.													7/11/2000	9/06/2009	-23.3067562	150.1594156
652953	5694		A	Angiosperms	Capparaceae	E	Capparis humistrata (F.Muell.) F.Muell.	52336	Sinclair G.	GS596051		12NOV1996	Francis R.	NOV1996	Queensland	Port Curtis	SF 878 MORINISH - 27KM NW OF STANWELL	----000----	ADMC--	F			Hrb Convert	Lat/Long	AGD66	1600	S23 18 30.00	E150 09 30.00	150.1583333	-23.30833333	56	209364	7419485	8951-093194	SF 878 Morinish 27km NW of Stanwell. Situation plain, soil sandy, veg brigalow forest near the edge. Shrub 1.5m spreading many spines along stem leaf tips forming spines.													7/11/2000	9/06/2009	-23.3067562	150.1594156
394782	1		A	Angiosperms	Capparaceae	E	Capparis humistrata (F.Muell.) F.Muell.	52336	Sattler P.			MAY1984	Guymer G.P.	JAN2014	Queensland	Port Curtis	BETWEEN GOOLARA (C 12KM NW OF ROCKHAMPTON) & OOMBAH	----+------	------				Map	Lat/Long	AGD66	1600	S23 19 30.00	E150 20 30.00	150.3416667	-23.325	56	228158	7417995	8951-281179	Between 'Oombah' and 'Goolara' (Goolara is 12km NW of Rockhampton).			+										7/11/2000	11/06/2014	-23.32342287	150.3427489
652660	5692		A	Angiosperms	Capparaceae	E	Capparis humistrata (F.Muell.) F.Muell.	52336	Elson S.			16DEC1996	McDonald W.J.	JAN1997	Queensland	Port Curtis	MOUNTAIN VIEW NORTH OF MT MORGAN	+-++000----	-D----				Hrb Convert	Lat/Long	AGD66	1600	S23 33 30.00	E150 20 30.00	150.3416667	-23.55833333	56	228636	7392144	8950-286921	Mountain view, north of Mt Morgan. Sandy duplex soil.													7/11/2000	9/06/2009	-23.55675391	150.3427483
756508	6988		A	Angiosperms	Capparaceae	E	Capparis humistrata (F.Muell.) F.Muell.	52336	McCabe J.	JMC011107		30NOV2007	Guymer G.P.	JAN2014	Queensland	Port Curtis	PROPOSED NATURE REFUGE ON GHPL, LOT 4 ON PLANT LN729 (S OF RAINBOW MT NATURE RESERVE)	----000----	-DFF-F	#F			GPS	AMG	GDA94	100	S23 33 41.47	E150 19 47.48	150.3298566	-23.56151931	56	227437	7391778	8950-274917	Proposed Nature Refuge on GHPL, Lot 4 on plant LN729 (S of Rainbow Mt Nature Reserve). Side of 8 degree slope. Gravelly-sandy soil on sandstone. Woodland of Corymbia citriodora; Acacia rhodoxylon; Eucalyptus crebra. Low shrub to 0.5m with vine like branches. Prickly.					11	10	1						13/09/2010	11/06/2014	-23.56151931	150.3298566
756511	6988		A	Angiosperms	Capparaceae	E	Capparis humistrata (F.Muell.) F.Muell.	52336	Healy R.	JMC021107		30NOV2007	Guymer G.P.	JAN2014	Queensland	Port Curtis	PROPOSED NATURE REFUGE ON GHPL, LOT 4 ON PLAN LN729 (S OF RAINBOW MT NATURE RESERVE)	----000----	ADFF--	F#			GPS	AMG	GDA94	100	S23 34 01.22	E150 20 32.73	150.3424262	-23.56700608	56	228732	7391194	8950-287911	Proposed Nature Refuge on GHPL, Lot 4 on plan LN729 (S of Rainbow Mt Nature Reserve). Side of 8 degree slope. Gravelly-sandy soil on sandstone. Woodland of Corymbia citriodora; Acacia shirleyi. Low shrub to 0.5m with vine like branches. Prickly. Scattered over side of slope. Over 200 plants were counted on about 40ha of Lot 4.					11	11	1						13/09/2010	11/06/2014	-23.56700608	150.3424262
756510	6988		A	Angiosperms	Capparaceae	E	Capparis humistrata (F.Muell.) F.Muell.	52336	Healy R.	JMC031107		30NOV2007	Guymer G.P.	JAN2014	Queensland	Port Curtis	PROPOSED NATURE REFUGE ON GHPL, LOT 4 ON PLAN LN729 (S OF RAINBOW MT NATURE RESERVE)	----000----	A-FF--	F			GPS	AMG	GDA94	100	S23 34 10.02	E150 19 52.33	150.3312042	-23.56944931	56	227591	7390902	8950-275909	Proposed nature refuge on GHPL, Lot 4 on plan LN729 (S of Rainbow Mt Nature Reserve). 50m above stony gully. Gravelly-sandy soil on sandstone. Woodland of Corymbia citriodora; Acacia shirleyi; Eucalyptus crebra. Low shrub to 0.5m with vine-like branches. Prickly. 61 plants counted above gully on gentle slope. Over 200 plants were counted on about 40ha of Lot 4.					11	10	1						13/09/2010	11/06/2014	-23.56944931	150.3312042
333265	1		A	Angiosperms	Capparaceae	V	Capparis thozetiana (F.Muell.) F.Muell.	48429	Thozet A.	150			Jacobs M.		Queensland	Port Curtis	ROCKHAMPTON	+-+-000----	------	T			Hrb Convert	Lat/Long	AGD66	16000	S23 25	E150 35	150.5833333	-23.41666667	56	253052	7408275	9051-530082	Rockhampton.													7/11/2000	19/10/2012	-23.41508903	150.5844087
634250	5464		A	Angiosperms	Celastraceae	E	Apatophyllum olsenii McGill.	38290	Forster P.I.	PIF16341	Thompson,E.J.;	20FEB1995			Queensland	Port Curtis	MT CASTLETOWER NP E SLOPES MANY PEAKS RANGE (GPS 24 07 41 151 18 25)	++++000+---	F----U	F			GPS	Lat/Long	AGD66	100	S24 07 41.00	E151 18 25.00	151.3069444	-24.12805556	56	327951	7330547	9149-279305	Mt Castletower National Park E slopes Many Peaks Range (GPS 24 07 41 151 18 25) Tall shrubland of Eucalyptus exserta, Lophostemon confertus and Xanthorrhoea johnsonii on bouldery granite hills. Soft leaved subshrub to 30cm. high, green flowers, fruit. Only six seen in small area. Spirit material at BRI.								E2825					7/11/2000	28/11/2003	-24.12647587	151.3080122
240573	1		A	Angiosperms	Celastraceae	E	Apatophyllum olsenii McGill.	38290	Rodd A.	1132		13AUG1970			Queensland	Port Curtis	MANY PEAKS RA CASTLETOWER C 1KM W OF	+000000----	L-FA-U		450		Hrb Convert	Lat/Long	AGD66	1600	S24 10 30.00	E151 16 30.00	151.275	-24.175	56	324768	7325309	9149-247253	Many Peaks Range, c 1km W of Castletower Mountain. Small colony on top of narrow granite spur, on W facing slope among granite outcrops, with collection from one of the largest plants, c 80cm tall, dense and bushy, foliage fresh green; petals and sepals greenish-yellow, ovary shiny green, c spherical, tapering into style; anthers white; capsules dull green at first, turning straw-coloured. In hotter, more exposed spots plants are much lower with foliage a brownish (or bronze) green colour. Appears a viable reproducing colony though small. Long sucker shoots from same plant.													7/11/2000	29/06/2006	-24.17342031	151.2760678
333298	1		A	Angiosperms	Celastraceae	E	Apatophyllum olsenii McGill.	38290	Olsen I.S.	347		22MAY1967			Queensland	Port Curtis	MANY PEAKS RA CA S GLADSTONE	+0++000----	K----U	T			Hrb Convert	Lat/Long	AGD66	16000	S24 35	E151 25	151.4166667	-24.58333333	56	339678	7280257	9148-396802	Many Peaks Range, ca S of Gladstone. 2ft., bush. Granite ridge.													7/11/2000	29/06/2006	-24.58175057	151.4177359
222907	1		A	Angiosperms	Celastraceae	E	Apatophyllum olsenii McGill.	38290	Waddell I.	NSW86707		16JAN1968			Queensland	Port Curtis	MANY PEAKS RA	+000000----	------				Hrb Convert	Lat/Long	AGD66	16000	S24 35	E151 25	151.4166667	-24.58333333	56	339678	7280257	9148-396802	Many Peaks Range.													7/11/2000	29/06/2006	-24.58175057	151.4177359
264054	1		A	Angiosperms	Combretaceae	N	Dansiea elliptica Byrnes	740	Webb L.J.	11517	Tracey,J.G.;	12MAY1971	Byrnes N.		Queensland	Port Curtis	RUNDLE RA SF	+000000----	C-----				Hrb Convert	Lat/Long	AGD66	1600	S23 40 30.00	E150 59 30.00	150.9916667	-23.675	56	295191	7380304	9050-951803	Rundle Range State Forest. Tree 15m high. On alluvial soils on creek bank.													7/11/2000	21/05/2010	-23.67342108	150.9927414
440487	1		A	Angiosperms	Combretaceae	N	Dansiea elliptica Byrnes	740	Gibson N.	754		27MAY1985			Queensland	Port Curtis	RUNDLE RA SF 60	+-+0000----	--AH--				Unknown	Lat/Long	AGD66	1600	S23 40 30.00	E150 59 30.00	150.9916667	-23.675	56	295191	7380304	9050-951803	SF 60, Rundle Range. Dry rainforest. Bark rough, flakly tessellated, greyish. Leaves glossy green above, lighter green underside.													7/11/2000	21/05/2010	-23.67342108	150.9927414
334995	1		A	Angiosperms	Combretaceae	N	Dansiea elliptica Byrnes	740	Webb L.J.	10447	Tracey,J.G.;	12MAY1971			Queensland	Port Curtis	RUNDLE RA SF 10M SE OF PORT ALMA	0000000----	-TAH--				Hrb Convert	Lat/Long	AGD66	1600	S23 40 30.00	E150 59 30.00	150.9916667	-23.675	56	295191	7380304	9050-951803	Rundle Range State Forest, c 10 miles SE of Port Alma, near O'Connor Creek which joins Fitzroy River, near its mouth. Semievergreen vine thicket on stony soils derived from basic igneous rocks.													7/11/2000	21/05/2010	-23.67342108	150.9927414
581	1		A	Angiosperms	Combretaceae	N	Dansiea elliptica Byrnes	740	McDonald K.R.			MAY1971	Byrnes N.		Queensland	Port Curtis	RUNDLE SFR 60	+--+000----	--CH--				Unknown	Lat/Long	AGD66	1600	S23 40 30.00	E150 59 30.00	150.9916667	-23.675	56	295191	7380304	9050-951803	Rundle, State Forest Reserve 60. Belah and vine scrub. Tree ca 3m high.													7/11/2000	21/05/2010	-23.67342108	150.9927414
490091	5974		A	Angiosperms	Combretaceae	N	Dansiea elliptica Byrnes	740	not known			02JUL2000	Jessup L.	JUL2000	Queensland	Port Curtis	PRIOR PARK NR MT BOMBOOLBA CA 20KM SW OF BAJOOL (S OF ROCKHAMPTON) COLL BY MEMBERS ROCKHAMPTON S.G.A.P.	----000----	------	A			Hrb Convert	Lat/Long	AGD66	1600	S23 47 30.00	E150 42 30.00	150.7083333	-23.79166667	56	266495	7366945	9050-664669	Prior Park, near Mt Bomboolba, about 20km SW of Bajool, about 20km SW of Bajool (S of Rockhampton). Softwood scrub in hilly country dry creek bed. Small tree, grey/white bark with lichens. Collected by the members of Rockhampton S.G.A.P.													7/11/2000	21/05/2010	-23.79008774	150.7094081
572772	5711		A	Angiosperms	Combretaceae	N	Dansiea elliptica Byrnes	740	Thompson E.J.	GLA40	Turpin,G.P.;	15APR1997	Thompson E.J.	MAR1997	Queensland	Port Curtis	14.7KM SW OF GLADSTONE (GPS 23 53 11 151 07 14)(SITE 659)	----000----	FDAH-G	A#	70		GPS	Lat/Long	AGD66	100	S23 53 11.00	E151 07 14.00	151.1205556	-23.88638889	56	308648	7357071	9150-086570	14.7km SW of Gladstone (GPS 23 53 11 151 07 14)(site 659). W facing upper slope of hilly terrain with gravelly brown loam, scrub, greywacke. Occasionally occurring small tree.													7/11/2000	21/05/2010	-23.88481018	151.1216226
547608	5173		A	Angiosperms	Combretaceae	N	Dansiea elliptica Byrnes	740	Gibson N.	TOI1149		03JUL1992			Queensland	Port Curtis	BOYLES RD 5KM SSW OF YARWUN (REFSET)	+--+000----	--AH--	A	30		Hrb Convert	Lat/Long	AGD66	1600	S23 53 30.00	E151 06 30.00	151.1083333	-23.89166667	56	307411	7356470	9150-074564	Boyles Road, 5km SSW of Yarwun. Remnant scrub. Tree 8metres high. Bark rough grey. Leaves glossy green above, lighter, duller under. Branchlets brown. Fruit yellow green.			+										7/11/2000	21/05/2010	-23.89008796	151.1094004
625329	5374		A	Angiosperms	Combretaceae	N	Dansiea elliptica Byrnes	740	Thomas G.	55	Barry,S.;	20AUG1992			Queensland	Port Curtis	BOYLES RD 5.5KM FROM YARWUN RDSIDE RESERVE SITE 5	----000----	A-AH--	AQ			Hrb Convert	Lat/Long	AGD66	1600	S23 53 30.00	E151 06 30.00	151.1083333	-23.89166667	56	307411	7356470	9150-074564	Boyle's Road, 5.5km from Yarwun, Roadside Reserve, site 5. Flat area, roadside remnant of semi-evergreen vine thicket with emergents of Flindersia australis. Tree.													7/11/2000	21/05/2010	-23.89008796	151.1094004
476271	1		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Forster P.I.	PIF5030	Hoy,D.;	18MAR1989			Queensland	Port Curtis	STRUCK OIL 6KM E OF MT MORGAN 8950-408830	----000----	-ZAH--	F	300		Hrb Convert	GridRef	AGD66	100	S23 38 32.64	E150 27 34.73	150.4596462	-23.64239875	56	240850	7383050	8950-408830	Struck Oil, 6km E of Mt Morgan. Semi-evergreen vine thicket on chocolate soil. Shrub to 3m.													7/11/2000	21/05/2010	-23.64081933	150.4607278
763361	6360		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Worthington M.	2611		20JUL2003			Queensland	Port Curtis	'KELCOLIN' PROPERTY BELONGING TO J & C WEEKS. 6M ROAD, BAJOOL.	----000----	-HFD--	A			GPS	Lat/Long	AGD66	100	S23 39 04.90	E150 36 30.50	150.6084722	-23.65136111	56	256055	7382320	9050-560823	'Kelcolin' Property belonging to J & C Weeks. 6M Road, Bajool. Dark clay loam. Brigalow/Belah scrub. straggly bushy multi-trunked tree. 4m long but 1m high, has been knocked down. Opposite leaves shiny on top, matt under glabrous. Plentiful seed.													11/11/2004	21/05/2010	-23.64978219	150.609547
36603	1		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	White J.			16JAN1915	Forster P.I.	DEC2006	Queensland	Port Curtis	BAJOOL	+000000----	------				Hrb Convert	Lat/Long	AGD66	1600	S23 39 30.00	E150 39 30.00	150.6583333	-23.65833333	56	261156	7381632	9050-611816	Bajool.													7/11/2000	25/03/2013	-23.65675441	150.6594081
368686	1		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Thorne R.F.	20547	Jones,W.T.;	17APR1959	Forster P.I.	DEC2006	Queensland	Port Curtis	NEAR MARMOR	+00+000----	--AH--				Unknown	Lat/Long	AGD66	1600	S23 40 30.00	E150 42 30.00	150.7083333	-23.675	56	266287	7379868	9050-662798	Near Marmor. Dry scrub. Small tree or large shrub; four-winged fruit.													7/11/2000	25/03/2013	-23.67342108	150.7094081
414215	1		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Blake S.T.	12751		08MAR1937	Forster P.I.	DEC2006	Queensland	Port Curtis	MARMOR	+0+0000----	--AH--	A	30		Unknown	Lat/Long	AGD66	1600	S23 40 30.00	E150 42 30.00	150.7083333	-23.675	56	266287	7379868	9050-662798	Marmor. In dense dwarf, monsoon scrub. Small tree with grey rough bark; leaves green above, paler below; corolla white.													7/11/2000	25/03/2013	-23.67342108	150.7094081
36605	1		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Francis W.D.			FEB1920	Forster P.I.	DEC2006	Queensland	Port Curtis	MARMOR NR ROCKHAMPTON	0000000----	------				Unknown	Lat/Long	AGD66	1600	S23 40 30.00	E150 42 30.00	150.7083333	-23.675	56	266287	7379868	9050-662798	Marmor, near Rockhampton.													7/11/2000	25/03/2013	-23.67342108	150.7094081
368684	1		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Thorne R.F.	20549	Jones,W.T.;	17APR1959	Forster P.I.	SEP1994	Queensland	Port Curtis	MARMOR 1 MILE S	+0+0000----	C-AH--				Unknown	Lat/Long	AGD66	1600	S23 41 30.00	E150 43 30.00	150.725	-23.69166667	56	268017	7378049	9050-680780	1 mile S of Marmor. Dry scrub, along small creek. Four-winged calyx and fruit.													7/11/2000	25/03/2013	-23.69008774	150.7260747
395619	1		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Anderson E.R.	3791		22AUG1984	Forster P.I.	SEP1994	Queensland	Port Curtis	NR MARBLE CK 7KM WNW OF RAGLAN CALLIOPE SHIRE	+++-000----	AJAHA-	A			Map	Lat/Long	AGD66	100	S23 41 39.00	E150 45 32.00	150.7588889	-23.69416667	56	271478	7377827	9050-714778	Near Marble Creek, ca 7km WNW of Raglan, Calliope Shire. Undulating plain. Sandy clay loam surface Duplex soil. Softwood scrub. Small bushy tree ca 4m.													7/11/2000	25/03/2013	-23.69258774	150.7599636
655813	5737		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Rider E.	11		01AUG1996	Forster P.I.	DEC2006	Queensland	Port Curtis	MARBLE CREEK 20KM SOUTH OF ROCKHAMPTON	+-+-000----	--AH--	A			Map	Lat/Long	AGD66	100	S23 41 39.00	E150 45 32.00	150.7588889	-23.69416667	56	271478	7377827	9050-714778	Marble Creek, 20km south of Rockhampton. In semi evergreen vine thicket (bottle tree and crows ash scrub). Small tree, there is also a population of this species west of Budgool.													7/11/2000	25/03/2013	-23.69258774	150.7599636
459205	1		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Anderson E.R.	4811		07NOV1989			Queensland	Port Curtis	FITZROY SHIRE CA 7KM WNW OF RAGLAN NR MARBLE CK (REFSET)	++-000----	AJAH--	F			Map	Lat/Long	AGD66	100	S23 41 39.00	E150 45 32.00	150.7588889	-23.69416667	56	271478	7377827	9050-714778	Fitzroy Shire ca 7km WNW of Raglan near Marble Creek. Plain, sandy clay loam surface, duplex soil, on softwood scrub. Shrub to ca 3m.			+										7/11/2000	21/05/2010	-23.69258774	150.7599636
844395	7060		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Nicholson N.	NJN443		10MAR2003			Queensland	Port Curtis	MARBLE CREEK AT MARMOR, 40KM SE OF ROCKHAMPTON. SMALL SCRUB REMNANT TO N OF BRUCE HWY AND RAILWAY LINE. TREE AT SE END OF PATCH, JUST THROUGH GATE	----000----	--AH--	A			Collector	AMG	AGD66	100	S23 41 42.79	E150 45 35.53	150.7598691	-23.69522008	56	271580	7377712	9050-715777	Marble Creek at Marmor, 40km SE of Rockhampton. Small scrub remnant to N of Bruce Hwy and railway line. Tree at SE end of patch, just through gate. Semi evergreen vine thicket. Trees occasional in patch. Bark rough and scaly, fissured. 4m tall.													18/08/2010	15/06/2011	-23.69364116	150.7609439
36604	1		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	White C.T.	12481		26NOV1943	Forster P.I.	SEP1994	Queensland	Port Curtis	MARMOR	+000000----	D-----				Hrb Convert	Lat/Long	AGD66	16000	S23 45	E150 45	150.75	-23.75	56	270669	7371628	9050-706716	Marmor. Fairly common along creeks and in gullies in mixed softwood forest. Small tree 3-4m high.													7/11/2000	14/01/2014	-23.74842108	150.7510747
437020	1		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Gibson N.	1099		15JAN1988	Forster P.I.	JAN1994	Queensland	Port Curtis	MT LARCOM RA	+-+0000----	--AA--	A	80		Hrb Convert	Lat/Long	AGD66	1600	S23 45 30.00	E151 04 30.00	151.075	-23.75833333	56	303816	7371192	9150-038711	Mt Larcom Range. Dry rainforest. Small tree to 2.5m. Bark rough, grey, blotched. Leaves glossy green, lighter underside. Fruit papery, brown.													7/11/2000	25/03/2013	-23.75675462	151.076067
636203	5486		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Thomas G.		Gibson,N.;Hoy,N.;	22OCT1992			Queensland	Port Curtis	MT LARCOM RA BUTLERVILLE SCRUB 9150-017709	----000----	FHAA--		90		Hrb Convert	GridRef	AGD66	100	S23 45 36.94	E151 03 16.92	151.0546998	-23.76026161	56	301750	7370950	9150-017709	Mt Larcom Ra, Butlerville Scrub, Mph 33465 Lot 2 Targinie, Grid ref 9150-017709. Brown clay loam. Simple microphyll mixed mid-high closed forest.													7/11/2000	21/05/2010	-23.7586829	151.0557668
506069	5073		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Gibson N.	TOI65		29APR1990	Forster P.I.	JAN1994	Queensland	Port Curtis	MT LARCOM RA 6KM NNW OF TARGINIE	+++-000----	--AG--	A	60		Hrb Convert	Lat/Long	AGD66	1600	S23 46 30.00	E151 04 30.00	151.075	-23.775	56	303841	7369346	9150-038693	Mount Larcom Range, 6km NNW of Targinie. On dry rainforest edge. Small tree to 3.5 metres high. Bark rough grey. Branchlets brown. Petals white. Leaves glossy green.													7/11/2000	25/03/2013	-23.77342129	151.076067
782203	6591		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Tanner P.	2768		30OCT2005	Forster P.I.	OCT2008	Queensland	Port Curtis	BEV AND JOHN MCKAY'S PROPERTY, HENEKE RD, 10KM W OF MT LARCOM TOWNSHIP.	+-+-000----	ADAH--	OA			GPS	Lat/Long	AGD66	100	S23 48 41.00	E150 55 42.00	150.9283333	-23.81138889	56	288951	7365105	9050-889651	Bev and John McKay's property, Heneke Rd, 10km W of Mt Larcom township. Undulating landform. Dry scrub regrowth. Soil rocky loam. Tree to 6m high with single trunk. Bark rough, grey with lichens. Branchlets grey. Leaf mid green, semi-gloss, top slightly paler under. Flower creamy with 5 petals and long stamen. Fruit green 4 sided capsule. Not common in area.													9/01/2007	25/03/2013	-23.80980996	150.9294081
36602	1		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	not known				Forster P.I.	DEC2006	Queensland	Port Curtis	GLADSTONE	+000000----	------				Hrb Convert	Lat/Long	AGD66	16000	S23 55	E151 15	151.25	-23.91666667	56	321872	7353887	9150-218538	Gladstone.													7/11/2000	25/03/2013	-23.91508796	151.251067

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Corveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
506070	5073		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Gibson N.	TOI66		02MAY1991	Forster P.I.	JAN1994	Queensland	Port Curtis	MT COULSTON 9KM NNW OF BOROREN	+--+000----	F-AA--	A	200		Hrb Convert	Lat/Long	AGD66	1600	S24 11 30.00	E151 26 30.00	151.4416667	-24.19166667	56	341722	7323662	9149-417236	Mount Coulston, 9km NNW of Bororen. On scree hillside, dry rainforest. Spindly tree to 7 metres. Bark rough, pale, blotched. Leaves dark glossy green above, lighter green under. Fruit papery brown, 4-winged, in pairs, falls off early.													7/11/2000	25/03/2013	-24.19008698	151.4427344
547606	5173		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Gibson N.	TOI1156		07DEC1991	Forster P.I.	JAN1994	Queensland	Port Curtis	LOT 2V WOODSIDE MT COULSTON 8KM NW OF BOROREN (REFSET)	+++-000----	--AA--	A	80		Hrb Convert	Lat/Long	AGD66	1600	S24 11 30.00	E151 26 30.00	151.4416667	-24.19166667	56	341722	7323662	9149-417236	Lot 2V, Woodside, Mount Coulston, 8km NW of Bororen. Dry rainforest. Small tree 6metres high. Bark rough grey-brown. Leaves glossy-green. Petals white.			+										7/11/2000	25/03/2013	-24.19008698	151.4427344
571590	5522		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Thompson E.J.	CAL294	Turpin,G.;	07JUL1995	Thompson E.J.	JUL1995	Queensland	Port Curtis	SF471 (GPS 24 11 50 151 26 20)	----000----	FHFF-S		200		GPS	Lat/Long	AGD66	100	S24 11 50.00	E151 26 20.00	151.4388889	-24.19722222	56	341447	7323043	9149-414230	SF471 (GPS 24 11 50 151 26 20). VT SN O/W on lower slope of hilly terrain with clay loam soil derived from basalt.													7/11/2000	21/05/2010	-24.19564253	151.4399567
657371	5766		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Aspland S.	1631		17APR1997	Hucks L.	NOV1997	Queensland	Port Curtis	BOYNE VALLEY 14.5KM SW NAGOORIN 62.5KM CALLIOPE PO	----000----	-D----	A	160		Hrb Convert	Lat/Long	AGD66	1600	S24 24 30.00	E151 12 30.00	151.2083333	-24.40833333	56	318327	7299381	9149-183993	Boyne Valley 14.5km SW Nagoorin 62.5km Calliope PO. Remnant softwood scrub on hillside, loam soil with some boulders. Small tree 7m, bark flaky with smooth salmon bark under flakes, leaves alternate.													7/11/2000	21/05/2010	-24.40675365	151.2094011
489836	5624		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Aspland S.	1539		29AUG1995			Queensland	Port Curtis	BRADLEYS RD BOYNE VALLEY 14KM SW NAGOORIN 62KM CALLIOPE PO	----000----	-Y----	B			Hrb Convert	Lat/Long	AGD66	1600	S24 25 30.00	E151 12 30.00	151.2083333	-24.425	56	318351	7297535	9149-183975	Bradleys Rd Boyne Valley 14km SW Nagoorin 62km Calliope PO. Ridge line remnant in cleared area, red rocky volcanic soil. Remnant tree in cleared area, tree 16m approx, smooth salmon bark flaking greyish bark in places.													7/11/2000	21/05/2010	-24.42342031	151.2094011
624557	5362		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Forster P.I.	PIF14511	Orford,D.;Smyrell,G.;Tucker,M.C.;	30DEC1993	Forster P.I.	JUN2002	Queensland	Port Curtis	LOWER REACHES OF KOOLKOORUM CK 12KM W OF UBOBO	+--+000----	-ZAH--	A	160		Map	Lat/Long	AGD66	100	S24 25 49.00	E151 12 33.00	151.2091667	-24.43027778	56	318443	7296951	9149-184969	Lower reaches of Koolkoorum Creek, 12km west of Ubobo. Araucarian microphyll vine forest on red-brown soil, with Backhousia citriodora dominant in canopy, Bosistoas and Fontainea venosa common in understorey. Large tree to 25m high, with 'Crow's Ash' bark, fallen fruit. Common in area.													7/11/2000	25/03/2013	-24.42869809	151.2102344
457419	1		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Forster P.I.	PIF5688	Bean,A.R.;	05SEP1989	Forster P.I.	SEP1994	Queensland	Port Curtis	SF 121 KOOLKOOROOM CK LOWER REACHES GRID REF 9149-184969	+---000----	--AH--	A	140		Hrb Convert	GridRef	AGD66	100	S24 25 49.04	E151 12 33.25	151.2092364	-24.43029024	56	318450	7296950	9149-184969	Koolkooroom Creek, lower reaches, State Forest 121. Semi-evergreen vine thicket. Tree to 25m., buttressed trunk.													7/11/2000	25/03/2013	-24.42871055	151.2103042
457420	1		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Forster P.I.	PIF5700	Bean,A.R.;	05SEP1989	Forster P.I.	SEP1994	Queensland	Port Curtis	SF 121 SCIENTIFIC AREA 54 GRID REF 9149-165956	+---000----	-ZAH--	F	220		Hrb Convert	GridRef	AGD66	100	S24 26 30.49	E151 11 25.21	151.190335	-24.44180267	56	316550	7295650	9149-165956	Scientific Area 54, State Forest 121. Semi-evergreen vine thicket, red soil. Shrub to 3m.													7/11/2000	25/03/2013	-24.44022298	151.1914028
624558	5362		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Forster P.I.	PIF14513	Orford,D.;Smyrell,G.;Tucker,M.C.;	30DEC1993	Forster P.I.	JUN2002	Queensland	Port Curtis	UPPER KOOLKORUM CK SCIENTIFIC AREA 54 SF 121	+--+000----	-ZAH--	A	200		Map	Lat/Long	AGD66	100	S24 26 32.00	E151 11 23.00	151.1897222	-24.44222222	56	316488	7295603	9149-164956	Upper Koolkoorum Creek, Scientific Area 54, State Forest 121. Araucarian microphyll vine forest on red-brown soil. Tree to 25m high; bark smooth pink and grey in patches similar to Flindersia australis bark; glossy green foliage; green fruit. Very common in area.													7/11/2000	25/03/2013	-24.44064253	151.19079
600405	5391		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Forster P.I.	PIF14275		01DEC1993	Forster P.I.	JUN2002	Queensland	Port Curtis	SCIENTIFIC AREA 54 SF 121 DEGALGIL KOOLKOORUM CK	----000----	CGAH-B	A			Map	Lat/Long	AGD66	100	S24 26 32.00	E151 11 23.00	151.1897222	-24.44222222	56	316488	7295603	9149-164956	Scientific Area 54, State Forest 121 Degalgil, Koolkoorum Creek. Araucarian microphyll vine forest on chocolate soil with large Archidendropsis and Macropteranthes emergent. Tree to 25m high, smooth pink-white bark with flaky patches, foliage dark green, glossy above, pale glossy below. Common in area.													7/11/2000	25/03/2013	-24.44064253	151.19079
792852	6951		A	Angiosperms	Combretaceae	N	Macropteranthes leiocaulis P.I.Forst.	71527	Nicholson N.J.	NJN637		23APR2003			Queensland	Port Curtis	DEGALGIL STATE FOREST 151, SA54, ON TRACK HEADING W FROM KOOLKOORUM CREEK	++0-000----	F-AH--	A	637		Collector	Lat/Long	GDA94	100	S24 26 36.00	E151 11 28.00	151.1911111	-24.44333333	56	316632	7295491	9149-166954	Degalgil State Forest 151, SA54, on track heading W from Koolkoorum Creek. Lower hillslope; araucarian microphyll vine forest. Tree 10m, but fallen; leaves alternate or opposite; grey spotted bark, similar to a python tree. Photos by Hugh Nicholson.													7/06/2010		-24.44333333	151.1911111
315154	1		A	Angiosperms	Cyperaceae	V	Cyperus clarus S.T.Blake	47206	O'Heanesy P.A.	1406		01NOV1943	Wilson K.		Queensland	Port Curtis	GRACEMER	+000000----	-T----				Hrb Convert	Lat/Long	AGD66	16000	S23 25	E150 25	150.4166667	-23.41666667	56	236013	7407979	8951-360079	Gracemer.													7/11/2000	29/06/2006	-23.41508954	150.4177489
315156	1		A	Angiosperms	Cyperaceae	V	Cyperus clarus S.T.Blake	47206	not known			MAR1975	Wilson K.		Queensland	Leichhardt	BANANA STATE SCHOOL	+000000----	--FF--				Hrb Convert	Lat/Long	AGD66	1600	S24 28 30.00	E150 08 30.00	150.1416667	-24.475	56	210272	7290178	8949-102901	Banana State School environment trail. C. 1km from Banana Post Office. Open forest country.													7/11/2000	29/06/2006	-24.47341664	150.1427494
315158	1		A	Angiosperms	Cyperaceae	V	Cyperus clarus S.T.Blake	47206	Blake S.T.	22622		31MAR1966	Wilson K.		Queensland	Burnett	NEAR MULGILDIE	+000000----	-HFA--		215		Map	Lat/Long	GDA94	100	S24 57 48.00	E151 07 59.00	151.1330556	-24.96333333	56	311530	7237816	9148-115378	Near Mulgildie. Dark grey clay loam. Railway enclosure and roadside through Eucalyptus forest. Green tufts. Greenish to yellowish brown spikelets.													7/11/2000	8/07/2010	-24.96333333	151.1330556
833890	7234		A	Angiosperms	Euphorbiaceae	N	Bertya pedicellata F.Muell.	35420	Ogston C.			06JUL2012	Halford D.	JUL2012	Queensland	Leichhardt	LOWER SLOPES OF MASSIVE ROCKY OUTCROP	+++-000----	L-FF--	F			Gazetteer	Lat/Long	GDA94	100	S24 16 42.96	E149 51 44.61	149.8623917	-24.2786	55	790587	7311942	8849-905119	Lower slopes of massive rocky outcrop. Open forest. Shrub to 2m tall.													30/07/2012		-24.2786	149.8623917
641277	5637		A	Angiosperms	Euphorbiaceae	N	Bertya pedicellata F.Muell.	35420	Bean A.R.	10438		13JUN1996	Bean A.R.	JUN1996	Queensland	Port Curtis	PROSPECT PEAK C 35KM S OF BILOELA	+-+-000----	-DFB--	F	420		Hrb Convert	Lat/Long	AGD66	1600	S24 43 30.00	E150 31 30.00	150.525	-24.725	56	249644	7263230	9048-496632	Prospect Peak, C 35km south of Biloela. Woodland of Acacia rhodoxylon, A. sparsiflora, Eucalyptus crebra. Brown loamy soil. Shrub 1.8m high, male flowers pale yellow. Common at site. Some plants appear to be wholly male, with others bear both male & female flowers on the same bush.													7/11/2000	21/05/2010	-24.72341588	150.5260758
641278	5637		A	Angiosperms	Euphorbiaceae	N	Bertya pedicellata F.Muell.	35420	Bean A.R.	10439		13JUN1996	Bean A.R.	JUN1996	Queensland	Port Curtis	PROSPECT PEAK C 35KM S OF BILOELA	+-+-000----	-DFB--	F	420		Hrb Convert	Lat/Long	AGD66	1600	S24 43 30.00	E150 31 30.00	150.525	-24.725	56	249644	7263230	9048-496632	Prospect Peak, C 35km south of Biloela. Woodland of Acacia rhodoxylon, A. sparsiflora, Eucalyptus crebra. Brown loamy soil. Shrub 1.6m high, female flowers red on yellow. Common at site.													7/11/2000	21/05/2010	-24.72341588	150.5260758
656743	5748		A	Angiosperms	Euphorbiaceae	V	Fontainea venosa Jessup & Guymer	35789	Aspland S.	1620		17APR1997	Francis R.		Queensland	Port Curtis	BOYNE VALLEY 14.5KM SW OF NAGOORIN 62.5KM S CALLIOPE	+-+-000----	------	A	160		Hrb Convert	Lat/Long	AGD66	1600	S24 24 30.00	E151 12 30.00	151.2083333	-24.40833333	56	318327	7299381	9149-183993	Boyne Valley 14.5km SW of Nagoorin, 62.5km Calliope. Remnant softwood scrub on hill side. Red loam soil with some limestone boulders. Tree 8m multi-trunked, grey bark, green bark on new growth, dark blossy upper surface, lighter matt under surface. Flowers creamy pubescent. Fruit globular (immature). Flowers perfumed.													7/11/2000	2/01/2008	-24.40675365	151.2094011
662805	5825		A	Angiosperms	Euphorbiaceae	V	Fontainea venosa Jessup & Guymer	35789	Beatson L.			18NOV1997	Guymer G.P.		Queensland	Port Curtis	UBOBO PROPERTY OF M. & R.LEAHY	+-++000----	--AH--	A			Hrb Convert	Lat/Long	AGD66	1600	S24 24 30.00	E151 18 30.00	151.3083333	-24.40833333	56	328469	7299508	9149-284995	'Ubobo', property of M & R Leahy. Semi-evergreen vine thicket. Associated with Flindersia, Macroptanthes, Brachychiton, Araucaria, Barklya. Small tree.													7/11/2000	2/01/2008	-24.40675365	151.3094011
489854	5624		A	Angiosperms	Euphorbiaceae	V	Fontainea venosa Jessup & Guymer	35789	Aspland S.	1529		29AUG1995			Queensland	Port Curtis	KOOLKOOROOM CK BOYNE VALLEY APP 14.5KM SW NAGOORIN 62.5KM CALLIOPE PO	----000----	-D----	A	120		Hrb Convert	Lat/Long	AGD66	1600	S24 25 30.00	E151 13 30.00	151.225	-24.425	56	320041	7297557	9149-200975	Koolkooroom Ck Boyne Valley app 14.5km SW Nagoorin 62.5km Calliope PO. Loam soil, small tree 5m common in area, bark grey new growth branchlets green, leaves darker glossy green upper, lighter under obovate/ovate. Reticulate veins raised on both surfaces. Fruit orange/yellow app 20mm diameter.													7/11/2000	2/01/2008	-24.42342031	151.2260678
636226	5486		A	Angiosperms	Euphorbiaceae	V	Fontainea venosa Jessup & Guymer	35789	Thomas G.		Gale,M.;Gibson,N.;Hoy,N.;	24OCT1992			Queensland	Port Curtis	KOOLKOOROON CK LOT 3 DEGALGIL BOYNE VALLEY	----000----	ADAA-S		140		Hrb Convert	Lat/Long	AGD66	1600	S24 25 30.00	E151 13 30.00	151.225	-24.425	56	320041	7297557	9149-200975	Koolkooroon Ck, Lot 3 Degalgil, Boyne Valley. Simple notophyll mixed very tall closed forest with Casuarina and Melaleuca emergents.													7/11/2000	2/01/2008	-24.42342031	151.2260678
634261	5465		A	Angiosperms	Euphorbiaceae	V	Fontainea venosa Jessup & Guymer	35789	Forster P.I.	PIF16288		18FEB1995			Queensland	Port Curtis	SF 121 KOOLKOORUM CREEK (GPS 24 25 46 151 12 59)	+++-000+---	------		140		GPS	Lat/Long	AGD66	100	S24 25 46.00	E151 12 59.00	151.2163889	-24.42944444	56	319174	7297053	9149-191970	State forest 121 Koolkoorum Creek (GPS 24 25 46 151 12 59) Araucarian microphyll vineforest on alluvium along creek. Small tree to 6m high, orange latex in stems, male tree, flowers with white petals & yellow stamens. Very common in area. Spirit Material at BRI.								D1363					7/11/2000	2/01/2008	-24.42786476	151.2174567
634243	5464		A	Angiosperms	Euphorbiaceae	V	Fontainea venosa Jessup & Guymer	35789	Forster P.I.	PIF16289		18FEB1995			Queensland	Port Curtis	SF 121 KOOLKOORUM (GPS 24 25 46 151 12 59)	+++-000+---	C-AH-B	A	140		GPS	Lat/Long	AGD66	100	S24 25 46.00	E151 12 59.00	151.2163889	-24.42944444	56	319174	7297053	9149-191970	State Forest 121 Koolkoorum Creek (GPS 24 25 46 151 12 59) Araucarian microphyll vine forest on alluvium along creek. Small tree to 6m high, orange latex in stems; female tree, flowers with white petals, green ovary, yellow styles. Very common in area. Spirit material at BRI.								D1318					7/11/2000	2/01/2008	-24.42786476	151.2174567
600392	5391		A	Angiosperms	Euphorbiaceae	V	Fontainea venosa Jessup & Guymer	35789	Forster P.I.	PIF14260		01DEC1993			Queensland	Port Curtis	LOWER REACHES OF KOOLKOORUM CK	----000----	CGAH-B	A			Map	Lat/Long	AGD66	100	S24 25 49.00	E151 12 33.00	151.2091667	-24.43027778	56	318443	7296951	9149-184969	Lower reaches of Koolkoorum Creek. Araucarian microphyll vine forest on rocky talus & alluvium along seasonal watercourse. Backhousia citriodora, Actephila lindleyi, Fontainea venosa & Bosistoa medicinalis common. Small tree to 4m high, new foliage, yellow-brown exudate in cut stems, sterile. Very common in area.													7/11/2000	2/03/2009	-24.42869809	151.2102344
457238	1		A	Angiosperms	Euphorbiaceae	V	Fontainea venosa Jessup & Guymer	35789	Forster P.I.	PIF5687	Bean,A.R.;	05SEP1989			Queensland	Port Curtis	SF 121 KOOLKOOROOM CK LOWER REACHES GRID REF 9149-184969	+--+000+---	--AH--	A	140		Hrb Convert	GridRef	AGD66	100	S24 25 49.04	E151 12 33.25	151.209236	-24.43029	56	318450	7296950	9149-184969	SF 121 Koolkooroom Creek lower reaches. Semi evergreen vine thicket. Tree to 10m; fruit orange.		+						C514					7/11/2000	2/01/2008	-24.42871031	151.2103038
792969	6975		A	Angiosperms	Euphorbiaceae	V	Fontainea venosa Jessup & Guymer	35789	Nicholson N.J.	NJN643		23APR2003			Queensland	Port Curtis	DEGALGIL STATE FOREST, SA54, 100M BEYOND CREEK CROSSING W OF 10TH CROSSING OF KOOLKOOROOM CREEK	----000----	F-AH--	F	190		Map	AMG	AGD66	100	S24 26 22.17	E151 11 03.31	151.1842534	-24.43949064	56	315930	7295898	9149-159958	Degalgil State Forest, SA54, 100m beyond creek crossing W of 10th crossing of Koolkooroom Creek. Hillslope near valley bottom, araucarian microphyll vine forest. Shrub 1.5m, leaves very veiny, slightly paler below. Photos by Hugh Nicholson.													21/06/2010		-24.43791095	151.1853212
792970	6975		A	Angiosperms	Euphorbiaceae	V	Fontainea venosa Jessup & Guymer	35789	Nicholson N.J.	NJN647		23APR2003			Queensland	Port Curtis	DEGALGIL STATE FOREST, SA54, ON ROAD BEYOND 10TH CROSSING OF KOOLKOOROOM CREEK, N SIDE OF ROAD	+--+000----	F-AH--	A	180		Map	AMG	AGD66	100	S24 26 26.95	E151 11 09.39	151.1859406	-24.44082005	56	316103	7295753	9149-161957	Degalgil State Forest, SA54, on road beyond 10th crossing of Koolkooroom Creek, N side of road. Hillslope near creek, araucarian microphyll vine forest. Tree 7m, fruit orange. Several together. Photos by Hugh Nicholson.													21/06/2010		-24.43924036	151.1870084
398589	1		A	Angiosperms	Euphorbiaceae	V	Fontainea venosa Jessup & Guymer	35789	Garthe R.J.		James,S.M.;	23JUL1985			Queensland	Port Curtis	TIMBER RESERVE 121 PARISH OF DELGALGIL SHIRE OF CALLIOPE	----000----	------				Hrb Convert	Lat/Long	AGD66	1600	S24 26 30.00	E151 13 30.00	151.225	-24.44166667	56	320065	7295711	9149-200957	TR 121 Parish of Delgalgil.													7/11/2000	2/01/2008	-24.44008698	151.2260678
657385	5766		A	Angiosperms	Euphorbiaceae	V	Fontainea venosa Jessup & Guymer	35789	Worthington M.	1689		18JUN1997	Jessup L.W.	NOV1997	Queensland	Port Curtis	DENNIS MARTIN PROPERTY HORSESHOE VALLEY 8K RUSHBROOK RD TURNOFF LITTLEMORE	----000----	------	A	190		Hrb Convert	Lat/Long	AGD66	1600	S24 29 30.00	E151 17 30.00	151.2916667	-24.49166667	56	326893	7290258	9149-268902	Dennis Martin Property Horseshoe valley 8k, Rushbrook Rd turnoff Littlemore. Dry rocky creek bank, riverine. Tree overhanging creek, 7m trunk grey with brown-lichen, lightly furrowed bark leaf shiny green on top, matt underneath. Fruit green. Not common.													7/11/2000	2/01/2008	-24.49008698	151.2927344
339475	1		A	Angiosperms	Euphorbiaceae	E	Ricinocarpos canianus Halford & R.J.F.Hend.	99243	Anderson E.R.	3170		16AUG1982	Halford D.	JAN2008	Queensland	Burnett	CANIA GORGE C 19KM NW OF MONTO	+++--+-----	LAFF-F	F			Map	Lat/Long	GDA94	100	S24 42 23.00	E150 59 48.00	150.9966667	-24.70638889	56	297339	7266081	9048-973660	Monto Shire, c. 19km NW of Monto at Cania Gorge. Sandy, stony, sandstone cliff; woodland with shrubby understorey. Shrub c 2m, white flowers, flowering well.													7/11/2000	31/07/2012	-24.70638889	150.9966667
742512	6704		A	Angiosperms	Euphorbiaceae	E	Ricinocarpos canianus Halford & R.J.F.Hend.	99243	Halford D.	Q3841		25OCT1999			Queensland	Burnett	CANIA GORGE NATIONAL PARK, BESIDE TRACK NEAR DRIPPING ROCK	+-++000+---	FDFA--	TF			Map	Lat/Long	GDA94	100	S24 42 23.00	E150 59 48.00	150.9966667	-24.70638889	56	297339	7266081	9048-973660	Cania Gorge National Park, beside track near Dripping Rock. Sandy talus slope below cliffline, open eucalypt forest. Shrub 2m high. Common in side gorge. Spirit material at BRI. Holotype and isotype. Type collection - Austrobaileya 7:401 (2007).								D2599					12/03/2008	31/07/2012	-24.70638889	150.9966667
414746	1		A	Angiosperms	Euphorbiaceae	E	Ricinocarpos canianus Halford & R.J.F.Hend.	99243	Henderson R.J.	H2943	Guymer,G.P.;Dillewaard,H.A.;	20OCT1983	Halford D.	JAN2008	Queensland	Burnett	CANIA GORGE NP	+00+--+----	-DFF-F	F			Map	Lat/Long	GDA94	100	S24 42 23.00	E150 59 48.00	150.9966667	-24.70638889	56	297339	7266081	9048-973660	Cania Gorge National Park. In open Eucalyptus/Tristania forest with dense shrub layer on shallow sandy soil between sandstone rocks. Shrub 1m.		+	+										7/11/2000	31/07/2012	-24.70638889	150.9966667
494594	6029		A	Angiosperms	Euphorbiaceae	E	Ricinocarpos canianus Halford & R.J.F.Hend.	99243	Henderson R.J.	H3105		17OCT1987	Halford D.	JAN2008	Queensland	Burnett	DRIPPING ROCK, CANIA GORGE NATIONAL PARK CA 24KM NW OF MONTO	+-+-000+---	-D----	FV			Map	Lat/Long	GDA94	100	S24 42 23.00	E150 59 48.00	150.9966667	-24.70638889	56	297339	7266081	9048-973660	Dripping Rock, Cania Gorge National Park, ca 24km NW of Monto. Shallow sandy soil between or near large rocks (with much organic debris over surface). Erect shrubs to ca 1.5m high. Spirit material at BRI. Photographs taken.								C4247					31/08/2001	31/07/2012	-24.70638889	150.9966667
350042	1		A	Angiosperms	Euphorbiaceae	E	Ricinocarpos canianus Halford & R.J.F.Hend.	99243	Williams K.A.	80221		13AUG1980	Halford D.	JAN2008	Queensland	Burnett	CANIA GORGE NEAR DRIPPING ROCK	+-+-000----	L-----				Map	Lat/Long	GDA94	100	S24 42 23.00	E150 59 48.00	150.9966667	-24.70638889	56	297339	7266081	9048-973660	Cania Gorge near Dripping Rock. Near cliff face associated with light scrub. Tall open shrub to 2m.		+											7/11/2000	31/07/2012	-24.70638889	150.9966667
730497	4615		A	Angiosperms	Euphorbiaceae	E	Ricinocarpos canianus Halford & R.J.F.Hend.	99243	Telford I.R.	12319		15AUG1996	Halford D.	JAN2008	Queensland	Burnett	CANIA GORGE	+++-00+----	DDFA-F	F	500		Map	Lat/Long	GDA94	100	S24 42 23.00	E150 59 48.00	150.9966667	-24.70638889	56	297339	7266081	9048-973660	Cania Gorge. Gorge. Skeletal sandy soil on sandstone. Open Eucalyptus forest with dense shrub understorey. Shrub. 2m. Dioecious, female.													12/02/2002	31/07/2012	-24.70638889	150.9966667
730498	4615		A	Angiosperms	Euphorbiaceae	E	Ricinocarpos canianus Halford & R.J.F.Hend.	99243	Telford I.R.	12320		15AUG1996	Halford D.	JAN2008	Queensland	Burnett	CANIA GORGE	+-+-0+0----	DDFA-F	F	500		Map	Lat/Long	GDA94	100	S24 42 23.00	E150 59 48.00	150.9966667	-24.70638889	56	297339	7266081	9048-973660	Cania Gorge. Gorge. Skeletal sandy soil on sandstone. Open Eucalyptus forest with dense shrub understorey. Shrub. 2m. Dioecious, male.													12/02/2002	31/07/2012	-24.70638889	150.9966667
489846	5624		A	Angiosperms	Fabaceae	V	Sophora fraseri Benth.	39787	Aspland S.	1526		29AUG1995			Queensland	Port Curtis	KOOLKOOROOM CK BOYNE VALLEY 14.5KM SW NAGOORIN 62.5KM CALLIOPE PO	----000----	-D----	F	120		Hrb Convert	Lat/Long	AGD66	1600	S24 25 30.00	E151 13 30.00	151.225	-24.425	56	320041	7297557	9149-200975	Koolkooroom CK BOyne Valley, 14.5km SW Nagoorin, 62.5km Calliope PO. Creekbank riverine vine scrub sandy soil. Small shrub approx 2m, brown bark leaves clustered towards ends of branches, alternate. Leaflets darker green on upper surface, oblong 5-10mm long with notched tip. Fruit a hairy pod compressed between rach seed. Uncommon in area.													7/11/2000	28/11/2003	-24.42342031	151.2260678
557877	6201		A	Angiosperms	Fabaceae	V	Sophora fraseri Benth.	39787	Aspland S.	1749		30OCT1997			Queensland	Port Curtis	KOOLKOOROOM CREEK BOYNE VALLEY, APPROX 20KM SW NAGOORIN.	+-+-000----	------	F			GPS	Lat/Long	AGD66	100	S24 26 00.00	E151 11 26.00	151.1905556	-24.43333333	56	316560	7296588	9149-165965	Koolkooroom Creek Boyne Valley, approx 20km SW Nagoorin. Creek bank. Small shrub 450mm high. Leaves pinnate leaflets dark reen upper, lighter under. Flowers yellow pea. Terminal on branchlets. Rare in area.													12/09/2002	6/09/2005	-24.43175365	151.1916233

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precison	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Coreg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
663671	5856		A	Angiosperms	Fabaceae	V	Sophora fraseri Benth.	39787	Aspland S.	1749		30OCT1997			Queensland	Port Curtis	KOOLKOOROOM CK 20KM SW OF NAGOORIN BOYNE VALLEY	+++-000----	C-----	F			Hrb Convert	Lat/Long	AGD66	1600	S24 26 30.00	E151 11 30.00	151.1916667	-24.44166667	56	316685	7295667	9149-166956	Kooloooroom Creek, ca.20 km SW of Nagoorin, Boyne Valley. Creekbank. Small shrub 450 mm high, leaves pinnate, leaflets dark green upper, lighter under, flowers pea yellow, terminal on branches. Rare in area.													7/11/2000	28/11/2003	-24.44008698	151.1927344
851677	7262		A	Angiosperms	Fabaceae	N	Zornia pallida Mohlenbr.	6861	Henderson J.			12APR2011	Holland A.E.	JUN2011	Queensland	Burnett	RAWBELLE AREA IN BASALTIC RED BROWN SOIL AT COLODAN ROAD AT ROADSIDE, BOUNDARY GRID	++-+000-++	F-FF-S				GPS	Lat/Long	GDA94	100	S24 56 48.90	E150 40 43.68	150.6788	-24.94691667	56	265626	7238927	9048-656389	Rawbelle area in basaltic red brown soil at Colodan Road at roadside, boundary grid. Basaltic hillside beside gravel road. Eucalypt forest, disturbed broadleaf, iron bark. Endemic biannual legume with restricted habitat. Phone at BRI with confirmation.													12/11/2012	12/11/2012	-24.94691667	150.6788
794402	7121		A	Angiosperms	Fabaceae	N	Zornia pallida Mohlenbr.	6861	Henderson J.			JAN2011	Holland A.	MAY2011	Queensland	Burnett	JAMES GULLY, COLODAN STATION, 46KM WEST SOUTH WEST OF MONTO.	+0-+-000----	--OD-U				Collector	Lat/Long	GDA94	100	S24 57 58.80	E150 41 17.40	150.6881667	-24.96633333	56	266609	7236792	9048-666367	James Gully,Colodan Station, 46km west south west of Monto. Ferrosol, regolith, over granite bedrock about 3 metres. Currajong, wilga, ironbark. Ascending herb, 30cm; yellow flowers with red streaks near the stem.													20/06/2011		-24.96633333	150.6881667
759929	7287		A	Angiosperms	Fabaceae	N	Zornia pallida Mohlenbr.	6861	Henderson J.			28MAY2011			Queensland	Burnett	6029 GLENCOE RD, MONTO. SOUTHWEST EXTREMITY OF FORMER MONTO SHIRE, 49KM SW OF MONTO.	+--+000---+	--MC-B	Q			Map	Lat/Long	AGD66	1600	S25 07 30.00	E150 38 30.00	150.6416667	-25.125	56	262219	7219123	9047-622191	6029 Glencoe Rd, Monto. Southwest extremity of former Monto Shire, 49km SW of Monto. Hilltop/elevated area of softwood brigalow remnant, surrounded by 'flame forest', eucalypts, poplar box and broadleaf ironbark. Basalt over granite. Disturbed site. Decumbent herb with rhomboid bracts; 30cm at widest. Abundance: 20 mature individuals; size of clump 40m sq. Appears to be an extension by 16k of the collector's observed range of Z. pallida. Phone at BRI with confirmation.													1/05/2013	22/05/2013	-25.1234164	150.6427465
395889	1		A	Angiosperms	Hemandiaceae	N	Hemandia bivalvis Benth.	11615	Hoy D.	5		22OCT1984			Queensland	Port Curtis	STRUCK OIL VIA MT MORGAN	+++-000----	--AH--	A			Unknown	Lat/Long	AGD66	100	S23 36 38.00	E150 27 26.00	150.4572222	-23.61055556	56	240540	7386573	8950-405865	Struck Oil via Mt Morgan. Regrowth scrub. Medium tree.													7/11/2000	21/05/2010	-23.60897613	150.4583038
617440	6610		A	Angiosperms	Hemandiaceae	N	Hemandia bivalvis Benth.	11615	Forster P.I.	PIF32332		24NOV2006			Queensland	Port Curtis	DEE RANGE, TRACK TO MT HOPEFUL MICROWAVE TOWER, 29KM W OF RAGLAN	+++-000----	A-AA--	A			GPS	Lat/Long	AGD84	100	S23 44 47.00	E150 32 41.00	150.5447222	-23.74638889	56	249731	7371682	9050-497716	Dee Range, track to Mt Hopeful microwave tower, 29km W of Raglan. Microphyll vineforest on steep talus slope. Tree to 15m tall; bark cream, somewhat glossy; foliage dark green glossy above, paler below; cream flowers and buds. Very common in area.													6/03/2007	21/05/2010	-23.74480996	150.545797
576545	6369		A	Angiosperms	Hemandiaceae	N	Hemandia bivalvis Benth.	11615	Forster P.I.	PIF29913	Tucker,M.C.;	04FEB2004			Queensland	Port Curtis	MT HOPEFUL, 29KM W OF RAGLAN	---000----	A-AA--	A			GPS	Lat/Long	AGD84	100	S23 44 49.00	E150 32 18.00	150.5383333	-23.74694444	56	249081	7371609	9050-490716	Mt Hopeful, 29km W of Raglan. Microphyll vineforest on steep slope with talus. Tree to 10m high, foliage mid-green glossy; sterile. Occasional in area.													22/11/2004	21/05/2010	-23.74536552	150.5394081
636656	5496		A	Angiosperms	Hemandiaceae	N	Hemandia bivalvis Benth.	11615	Thomas G.	179	Gibson,N.;Hoy, N.;	22OCT1992			Queensland	Port Curtis	BUTLERVILLE SCRUB MPH 33465 LOT 2 TARGINIE GRID REF 9150-017709.	---000----	RHAA-R		90		Hrb Convert	GridRef	AGD66	100	S23 45 36.94	E151 03 16.92	151.0546998	-23.76026161	56	301750	7370950	9150-017709	Mt Larcom Range, Butlerville Scrub, Mph 33465, Lot 2, Targinie, grid ref. 9150-017709. Hillside, Andesite, brown clay loam, mixed closed forest.													7/11/2000	21/05/2010	-23.7586829	151.0557668
437245	1		A	Angiosperms	Hemandiaceae	N	Hemandia bivalvis Benth.	11615	Gibson N.	1090		15JAN1988			Queensland	Port Curtis	MT LARCOM RA	+--+000----	CTAA--	A	100		Unknown	Lat/Long	AGD66	100	S23 47 26.00	E151 05 57.00	151.0991667	-23.79055556	56	306328	7367656	9150-063676	Mt Larcom Range. Rocky watercourse in dry rainforest. Tree to 15m. Bark rough, grey, irregularly tessellated. Leaves glossy green, lighter underside. Black fruit in yellow or red bracts.													7/11/2000	21/05/2010	-23.78897685	151.1002337
606773	5985		A	Angiosperms	Hemandiaceae	N	Hemandia bivalvis Benth.	11615	Forster P.I.	PIF25490	Booth,R.;	05APR2000			Queensland	Port Curtis	MT LARCOM 9150-063676 4KM NNW OF YARWUN (P)	---000-+--	--AA--	A			Hrb Convert	GridRef	AGD66	100	S23 47 26.21	E151 05 57.78	151.0993841	-23.79061414	56	306350	7367650	9150-063676	Mt Larcom, 4km NNW of Yarwun. Grid ref 9150-063676. Araucarian microphyll vineforest on rocky gully. Tree to 15m high, glossy foliage; bark nondescript, glossy foliage; bark nondescript, glossy-cream; blaze yellow-cream; wood cream. Common in area. Wood sample at BRI.		+											7/11/2000	21/05/2010	-23.78903543	151.1004511
436409	1		A	Angiosperms	Hemandiaceae	N	Hemandia bivalvis Benth.	11615	Forster P.I.	PIF3369	Gibson,N.;	09JAN1988			Queensland	Port Curtis	GLADSTONE CA 9150-055670 MT LARCOM NR START OF WALKING TRACK	+--+000+---	LZAH-S	A			Hrb Convert	GridRef	AGD66	100	S23 47 45.36	E151 05 29.24	151.0914566	-23.79593275	56	305550	7367050	9150-055670	Near start of walking track, Mt Larcom, Gladstone. Tall semi-evergreen vine thicket on steep hillside; red soil with many rocks. Tree to 15m, corky light-coloured bark, outer case of fruit bright.							C361						7/11/2000	21/05/2010	-23.79435504	151.0925236
457845	1		A	Angiosperms	Hemandiaceae	N	Hemandia bivalvis Benth.	11615	Forster P.I.	PIF5809	Bean,A.R.;	04OCT1989			Queensland	Port Curtis	MT COULSTON SF 471 GRID REF 9149-411235	0--000----	-ZAH--	A	360		Hrb Convert	GridRef	AGD66	100	S24 11 33.42	E151 26 09.68	151.4360219	-24.19261648	56	341150	7323550	9149-411235	SF 471, Mt Coulston. Semi-evergreen vine thicket, on chocolate coloured soil. Tree to 6m.													7/11/2000	21/05/2010	-24.19103679	151.4370897
339006	1		A	Angiosperms	Lamiaceae	E	Callicarpa thozetii Munir	47885	Anderson E.R.	3413		05JUN1983	Guymer G.P.	APR2008	Queensland	Port Curtis	ROCKHAMPTON MT ARCHER C 3KM NE ROCKHAMPTON	+--+000----	FHFAF-				Hrb Convert	Lat/Long	AGD66	1600	S23 20 30.00	E150 33 30.00	150.5583333	-23.34166667	56	250355	7416540	9051-503165	Slopes of MtArcher, ca. 3km NE of Rockhampton. Hilly, slope c. 15-20%; shallow, stony, clay loam soil; open forest of Eucalyptus acmenoides, E. citriodora, and E. intermedia. Small bush ca. 1.5m with purple fruits.													7/11/2000	20/05/2014	-23.34008903	150.5594087
326557	1		A	Angiosperms	Lamiaceae	E	Callicarpa thozetii Munir	47885	Webb L.J.	10555	Tracey,J.G.;	MAY1971	Guymer G.P.	APR2008	Queensland	Port Curtis	BERSERKER RA MT ARCHER AREA	+00+000----	--AA--				Hrb Convert	Lat/Long	AGD66	1600	S23 20 30.00	E150 36 30.00	150.6083333	-23.34166667	56	255470	7416625	9051-554166	Mt Archer area, Berserker Ranges near Rockhampton. Semi-evergreen vineforest and vine thicket in valley and steep slopes at head of Moores Ck on alluvial-colluvial soils derived from a mixture of acid and basic rocks.													7/11/2000	20/05/2014	-23.34008903	150.6094087
326779	1		A	Angiosperms	Lamiaceae	E	Callicarpa thozetii Munir	47885	Blake S.T.	12731		06MAR1937	Munir A.A.		Queensland	Port Curtis	MT BERSERKER	+++-000---	F-FF--		300		Unknown	Lat/Long	AGD66	1600	S23 22 30.00	E150 34 30.00	150.575	-23.375	56	252122	7412876	9051-521128	Mt Berserker. Mid and upper slopes in open forest. Spreading, shrub, ca 2ft; leaves green above, pale yellow underneath, flowers lilac; fruit rich purple.													7/11/2000	21/05/2010	-23.37342236	150.5760754
797388	7307	E	A	Angiosperms	Lamiaceae	E	Callicarpa thozetii Munir	47885	Champion I.G.	MRBG00350		16JAN2013			Queensland	Port Curtis	CULTIVATED MACKAY REGIONAL BOTANIC GARDEN FROM MATERIAL COLLECTED NERRIMBA, E OF LAKES CREEK N OF ROCKHAMPTON.	+++-000---	--OD--	FV			GPS	Lat/Long	WGS84	100	S23 23 43.55	E150 36 12.26	150.6034056	-23.39543056	56	255065	7410670	9051-550106	Cultivated Mackay Regional Botanic Gardens from material collected Nerrimba, E of Lakes Creek N of Rockhampton. Clonal material ex Eucalyptus crebra woodland with Cycas ophiolitica etc. Shrub. Open habit, thin textured discolorous leaves, new growth and underside of leaves covered with stellate hairs, upper surface also with white ?scales. Tiny flowers; K-pale green other parts pale pink. Voucher material for MRBG living collection. Clonal material of specimen previously sent by G.Patterson June 09 and incorporated into BRI collection. These plants never produced fruit.													8/08/2013	8/08/2013	-23.39543056	150.6034056
415367	1		A	Angiosperms	Loranthaceae	N	Muellerina myrtifolia (A.Cunn. ex Benth.) Barlow	32476	Sharpe P.R.	3413		14DEC1983			Queensland	Port Curtis	KROOMBIT TOPS KROOMBIT CK 64KM SW OF CALLIOPE 5KM SE OF FORESTRY CAMP	+++-000---	--FF-Q	L			Hrb Convert	Lat/Long	AGD66	1600	S24 23 30.00	E150 58 30.00	150.975	-24.39166667	56	294634	7300901	9049-946009	Kroombit Creek, Kroombit Tops, 64km SW of Calliope and 5km SE of Forestry Camp. In open forest of Lophostemon, Casuarina etc. with understorey of ferns, Smilax etc, with trachyte rocks prominent. Mistletoe growing on branches of Casuarina littoralis; leaves green; runners present.													7/11/2000	21/05/2010	-24.39008478	150.9760751
601344	5489		A	Angiosperms	Loranthaceae	N	Muellerina myrtifolia (A.Cunn. ex Benth.) Barlow	32476	Forster P.I.	PIF16284		18FEB1995			Queensland	Port Curtis	BEECH SCIENTIFIC AREA SF316 KROOMBIT TOPS (GPS 24 24 42 151 02 17)	+++-000---	--FF--	D	820		GPS	Lat/Long	AGD66	100	S24 24 42.00	E151 02 17.00	151.0380556	-24.41166667	56	301062	7298778	9149-010987	Beech Scientific Area State Forest 316 Kroombit Tops (GPS 24 24 42 151 02 17) Open forest of Eucalyptus saligna with dense understorey of rainforest species. Aerial mistletoe, orange-pink flowers. Common in area.													7/11/2000	21/05/2010	-24.41008698	151.0391233
571218	5477		A	Angiosperms	Loranthaceae	N	Muellerina myrtifolia (A.Cunn. ex Benth.) Barlow	32476	Thompson E.J.	CAL74	Turpin,G.P.;Forster,P.I.;	18FEB1995	Thompson E.J.	MAY1995	Queensland	Port Curtis	BEECH SCIENTIFIC AREA KROOMBIT TOPS SF (GPS 24 24 42 151 02 17)(SITE 24)	+++-000---	QDFA-F		880		GPS	Lat/Long	AGD66	100	S24 24 42.00	E151 02 17.00	151.0380556	-24.41166667	56	301062	7298778	9149-010987	Beech Scientific Area, Kroombit Tops State Forest (24 24 42 151 02 17)(site 24). Forest of Eucalyptus saligna and Lophostemon confertus . Plateau with undulating terrain with loamy soil derived from sandstone.													7/11/2000	21/05/2010	-24.41008698	151.0391233
640263	5552		A	Angiosperms	Mimosaceae	N	Acacia calantha Pedley	4015	Bean A.R.	8899	Robins,P.;	12SEP1995	Bean A.R.	OCT1995	Queensland	Burnett	LOCKHART LA COOMINGLAH SF W OF MONTO	+++-000---	-TFA--	F	430		Hrb Convert	Lat/Long	AGD66	1600	S24 59 30.00	E151 01 30.00	151.025	-24.99166667	56	300664	7234514	9148-006345	Lockhart Logging Area, Coomringlah State Forest, W of Monto. Open forest of Eucalyptus corynodes, E. cloeziana, Lysicarpus, rocky site. Shrub 2.5m high, flowers yellow. Occasional at site.													7/11/2000	16/06/2014	-24.9900829	151.0260692
584882	5565		A	Angiosperms	Mimosaceae	N	Acacia calantha Pedley	4015	Bean A.R.	9180		13NOV1995			Queensland	Burnett	RAINBOW LA COOMINGLAH SF SOUTH WEST OF MONTO	+--+000----	-DFF--	F			Hrb Convert	Lat/Long	AGD66	1600	S24 59 30.00	E151 01 30.00	151.025	-24.99166667	56	300664	7234514	9148-006345	Rainbow Logging Area, Coomringlah SF, south west of Monto. Open forest of Eucalyptus cloeziana, E. fibrosa, Angophora leiocarpa, Lysicarpus. Sandy soil. Shrub 2.5m high, phylloides somewhat sticky. Common at site.													7/11/2000	16/06/2014	-24.9900829	151.0260692
640254	5552		A	Angiosperms	Mimosaceae	V	Acacia stana Pedley	4031	Bean A.R.	8907	Robins,P.;	12SEP1995	Bean A.R.	OCT1995	Queensland	Burnett	RAINBOW LA COOMINGLAH SF SW OF MONTO	+++-000---	-TFA--	F	420		Hrb Convert	GridRef	AGD66	100	S25 00 17.26	E151 01 07.36	151.0187115	-25.00479541	56	300050	7233050	9147-000330	Rainbow Logging Area, Coomringlah State Forest, SW of Monto. Open forest of Eucalyptus trachyphloia, E. cloeziana, E. corynodes, Lysicarpus, stony site. Shrub 2m high, flowers yellow. Common at site. AMG reference 9147-000330.													7/11/2000	16/06/2014	-25.00321216	151.0197842
562118	5210		A	Angiosperms	Mimosaceae	V	Acacia stana Pedley	4031	Rider E.	33		15DEC1992	Pedley L.	APR1994	Queensland	Burnett	S BOUNDARY OF SF 28 COOMINGLAH	++--000----	K-FA--	F			Unknown	Lat/Long	AGD66	1600	S25 00 30.00	E151 01 30.00	151.025	-25.00833333	56	300691	7232667	9147-006326	S boundary of State Forest 28, Coomringlah. On top of range, in shrubby layered open forest of Euc. decorticans, Euc cloeziana, Euc. exserta, Euc. trachyphloia, Lysicarpus angustifolia. Small shrub.													7/11/2000	16/06/2014	-25.00675009	151.0260727
584874	5565		A	Angiosperms	Mimosaceae	V	Acacia stana Pedley	4031	Bean A.R.	9188		13NOV1995			Queensland	Burnett	RAINFOW LA COOMINGLAH SF SOUTH WEST OF MONTO	+--+000----	--FF--	F	420		Hrb Convert	Lat/Long	AGD66	1600	S25 00 30.00	E151 01 30.00	151.025	-25.00833333	56	300691	7232667	9147-006326	Rainbow Logging Area, Coomringlah SF, south west of Monto. Open forest of Eucalyptus corynodes, E. cloeziana, Lysicarpus. Shrub 2m high. Common at site.													7/11/2000	16/06/2014	-25.00675009	151.0260727
408180	1		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Bean A.R.	684		26OCT1987			Queensland	Port Curtis	CALLIDE RA N OF BILOELA CALLIOPE RD	+00+000----	-H---	A			Hrb Convert	Lat/Long	AGD66	1600	S24 13 30.00	E150 34 30.00	150.575	-24.225	56	253731	7318714	9049-537187	Callide Range, N of Biloela-Calliope Road. Tree, smooth bark, grey on lower trunk, green on upper trunk and branches. Red clay loam. In association with Eucalyptus citriodora, Eucalyptus sp. aff. paniculata. Keyed out to inorata but has far to many glands.													7/11/2000	16/06/2014	-24.22341811	150.5760751
453091	1		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Bean A.R.	978		24NOV1988	Tindale M.D.	AUG1991	Queensland	Port Curtis	CALLIDE RA 22KM FROM BILOELA TOWARDS GLADSTONE	+++-000---	KYOF--	A			Map	Lat/Long	GDA94	100	S24 13 32.00	E150 35 18.00	150.5883333	-24.22555556	56	255088	7318685	9049-550186	Callide Range, 22km from Biloela towards Gladstone. Ridge top, on red loamy soil. Associated spp. Euc. citriodora, Euc. moluccana. Tree to 7 metres high. Bark smooth throughout, Grey at the base, greenish above.													7/11/2000	16/06/2014	-24.22555556	150.5883333
436465	1		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Niall J.	152		DEC1987			Queensland	Port Curtis	20KM FROM BILOELA-GLADSTONE RD	++++-000----	-----				Map	Lat/Long	GDA94	100	S24 13 38.00	E150 34 47.00	150.5797222	-24.22722222	56	254216	7318485	9049-542184	20km from Biloela - Gladstone road.													7/11/2000	16/06/2014	-24.22722222	150.5797222
455184	1		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Simmons J.G.	2047	Simmonds,M.H	SEP1988			Queensland	Port Curtis	20-21KM ON BILOELA-GLADSTONE RD	+++-000---	-----				Map	Lat/Long	GDA94	100	S24 13 38.00	E150 34 47.00	150.5797222	-24.22722222	56	254216	7318485	9049-542184	20-21km on Biloela-Gladstone road.													7/11/2000	16/06/2014	-24.22722222	150.5797222
788320	7105		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	McDonald K.R.	KRM10009		05OCT2010			Queensland	Port Curtis	75.4KM BY ROAD W OF CALLIOPE.	+--+000---+	--FF-F	A			GPS	Lat/Long	WGS84	100	S24 13 42.00	E150 34 38.00	150.5772222	-24.22833333	56	253964	7318358	9049-539183	75.4km by road W of Calliope. Eucalyptus moluccana and Corymbia citriodora woodland with shrubby softwood understorey on reddish sandstone soil. Tree 4m; green smooth bark on upper trunk, brown smooth bark at base. Scarce; photos with specimen at BRI.		+	+											4/01/2011	16/06/2014	-24.22833333	150.5772222
852203	7300		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Baker S.			25MAR2013			Queensland	Port Curtis	'INVERNESS' PROPERTY 21KM NE OF BILOELA	+#--000---+	--FF--	F			GPS	Lat/Long	GDA94	100	S24 13 42.00	E150 36 53.00	150.6147222	-24.22833333	56	257774	7318423	9049-577184	'Inverness' property 21km NE of Biloela. Invert of watercourse (dry). Woodland. Shrub. Photos at BRI with specimen.					11	11	4						15/07/2013	16/06/2014	-24.22833333	150.6147222
571884	5596		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Thompson E.J.	BIL230	Price,R.J.;	13MAR1996	Thompson E.J.	APR1996	Queensland	Port Curtis	19KM NNE OF BILOELA TR 170 (GPS 24 14 23 150 34 57)(SITE 413)	---000----	KDFA-C		460		GPS	Lat/Long	AGD66	100	S24 14 23.00	E150 34 57.00	150.5825	-24.23972222	56	254522	7317096	9049-545170	19km NNE of Biloela, TR 170 (GPS 24 14 23 150 34 57)(site 413). SE facing upper slope of ridge with brown sandy loam. Very tall woodland of Eucalyptus suffuligens and Euc. citriodora. Laterite.													7/11/2000	16/06/2014	-24.23814033	150.5835751
457619	1		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Chamberlain M.	4753		21SEP1989			Queensland	Port Curtis	19KM NNE OF BILOELA	+--+000----	ADWC--	F			Hrb Convert	Lat/Long	AGD66	1600	S24 14 30.00	E150 33 30.00	150.5583333	-24.24166667	56	252070	7316838	9049-520168	19km NNE of Biloela. Undulating plain, red, sandy loam surface, Euc. populnea woodland. Shrub to 2 metres, green pods.													7/11/2000	16/06/2014	-24.24008478	150.5594084
399732	1		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Gibson N.	789		29DEC1985			Queensland	Port Curtis	CALLIDE RA BANANA SHIRE DAWSON HWY	+++-000---	--FA--	A	300		Hrb Convert	Lat/Long	AGD66	1600	S24 14 30.00	E150 34 30.00	150.575	-24.24166667	56	253763	7316868	9049-537168	Callide Ranges, Dawson Highway, Banana Shire. Open forest. Small tree 6m. Bark on lower part of bole rough, light brown. Upper bole and ranches green. Inflorescence creamy, fragrant. Only one pod found.													7/11/2000	16/06/2014	-24.24008478	150.5760751
479834	1		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Pedley L.	5488		29NOV1989			Queensland	Port Curtis	CALLIOPE RA WESTERN SLOPES C 20KM NNE OF BILOELA	+++-000---	F-FA--	TA			Hrb Convert	Lat/Long	AGD66	1600	S24 14 30.00	E150 35 30.00	150.5916667	-24.24166667	56	255456	7316897	9049-554168	Ca. 20km NNE of Biloela on western slopes of Calliope Range. Understorey with A. crassa in open forest of Eucalyptus crebra and E. maculata. Slender erect tree to 10m., foliage dark green, flowers pale yellow.													7/11/2000	16/06/2014	-24.24008478	150.5927418
477019	1		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Pedley L.	5431		26MAY1989			Queensland	Port Curtis	C 20KM NNE OF BILOELA ON WESTERN SLOPES OF CALLIOPE RA	+++0000----	FHFA--	A			Hrb Convert	Lat/Long	AGD66	1600	S24 14 30.00	E150 35 30.00	150.5916667	-24.24166667	56	255456	7316897	9049-554168	Ca. 20km NNE of Biloela on Western Slopes of Calliope Range. On clay loam in open forest of Eucalyptus maculata and E. crebra. Slender erect tree to 10m., flowers pale yellow. Common in area but few trees flowering.													7/11/2000	16/06/2014	-24.24008478	150.5927418
571883	5596		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Thompson E.J.	BIL229	Price,R.J.;	13MAR1996	Thompson E.J.	APR1996	Queensland	Port Curtis	19.5KM NE OF BILOELA TR 170 (GPS 24 14 34 150 36 19)(SITE 414)	---000----	KDFA-C	F	510		GPS	Lat/Long	AGD66	100	S24 14 34.00	E150 36 19.00	150.6052778	-24.24277778	56	256841	7316798	9049-568167	19.5km NE of Biloela, TR 170 (GPS 24 14 34 150 36 19)(site 414). Crest of ridge with reddish-brown, gravelly, sandy loam. Very tall open woodland of Eucalyptus suffuligens with Euc. cloeziana and Euc. citriodora. Lateritefaterised sandstone.													7/11/2000	16/06/2014	-24.24119589	150.6063529
571864	5585		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Thompson E.J.	BIL215	Price,R.J.;	13FEB1996	Thompson E.J.	MAR1996	Queensland	Port Curtis	20.5KM NE OF BILOELA (GPS 24 15 29 150 38 48)(SITE 391)	---000----	KDFA-F		520		GPS	Lat/Long	AGD66	100	S24 15 29.00	E150 38 48.00	150.6466667	-24.25805556	56	261074	7315177	9049-610151	20.5km NE of Biloela (GPS 24 15 29 150 38 48)(site 391). Crest of hilly terrain with brown sandy loam. Tall open woodland of Eucalyptus suffuligens and Euc. trachyphloia. Sandstone.													7/11/2000	16/06/2014	-24.25647367	150.6477418

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality
408237	1		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Shepard T.	A33		08OCT1987	Tindale M.D.	AUG1991	Queensland	Port Curtis	TR 170 THALBERG C 30KM NE OF BILOELA
435657	1		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Shepherd T.	A33		03DEC1987			Queensland	Port Curtis	TR 170 NE OF BILOELA
451535	1		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Ford F.			MAY1987	Tindale M.D.	AUG1991	Queensland	Port Curtis	15KM NE OF BILOELA
663075	5837		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Melzer A.			1998	Pedley L.	AUG1998	Queensland	Port Curtis	TR 170 CALLIOPE SHIRE (GPS 24 16 11 150 33 09)(AMG 56 251545 7313730) (R)
663595	1		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Simmons J.G.	3392	Simmons,M.H.;	JUL1996	Spokes T.M.	JUL1998	Queensland	Port Curtis	COAL RD
489295	5620		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Elsol J.			MAR1996			Queensland	Leichhardt	CALLIDE & BOUNDARY HILL COAL BILOELA
435594	1		A	Angiosperms	Mimosaceae	V	Acacia pedleyi Tindale & Kodela	67954	Gibson N.	843			Pedley L.	JAN1999	Queensland	Port Curtis	CLEWLEYS GAP OUTSIDE SF 316
453062	1		A	Angiosperms	Mimosaceae	N	Acacia sp. (Castletower N.Gibson TOI345)	76057	Gibson N.	TOI345		03OCT1988	Pedley L.		Queensland	Port Curtis	CASTLETOWER PORTION 36 17KM SE OF CALLIOPE
677862	5941		A	Angiosperms	Mimosaceae	N	Acacia spania Pedley	4058	Bean A.R.	15412	McDonald,K.R.;	17SEP1999	Pedley L.	SEP2008	Queensland	Port Curtis	C 5KM ALONG HIBBS ROAD N OF JAMBIN (GPS 24 06 42 150 23 39)
554881	6165		A	Angiosperms	Myrtaceae	E	Backhousia oligantha A.R.Bean	94835	Brushe J.		Plum,J.;	28MAR2002	Bean A.R.	DEC2003	Queensland	Port Curtis	MOUNT ARCHER; NE OF HOUSES
496030	6051		A	Angiosperms	Myrtaceae	E	Backhousia oligantha A.R.Bean	94835	Brushe J.	JB2301	Plum,J.;Smyrell,G.;	29JUN2000	Bean A.R.	DEC2003	Queensland	Port Curtis	BERSERKER WILDERNESS, MOUNT ARCHER, ROCKHAMPTON
554880	6165		A	Angiosperms	Myrtaceae	E	Backhousia oligantha A.R.Bean	94835	Brushe J.		Plum,J.;	28MAR2002	Bean A.R.	DEC2003	Queensland	Port Curtis	MOUNT ARCHER
603763	5716		A	Angiosperms	Myrtaceae	E	Decaspermum struckoilicum N.Snow & Guymer	92148	Forster P.I.	PIF20268	Watson,M.;Barry,S.;	07FEB1997	Guymer G.P.	FEB2002	Queensland	Port Curtis	STRUCKOIL PROPERTY OF D.MCDONALD (GPS 23 37 06 150 27 49) (R)(P)
501680	5030		A	Angiosperms	Myrtaceae	E	Decaspermum struckoilicum N.Snow & Guymer	92148	Forster P.I.	PIF4984	Hoy,N.;	18NOV1989	Guymer G.P.	JAN2002	Queensland	Port Curtis	STRUCK OIL 6KM E OF MT MORGAN GRID REF 8950-408830
455657	1		A	Angiosperms	Myrtaceae	E	Decaspermum struckoilicum N.Snow & Guymer	92148	Hoy N.			14NOV1987	Guymer G.P.	JAN2002	Queensland	Port Curtis	STRUCK OIL 6KM E OF MT MORGAN
476400	1		A	Angiosperms	Myrtaceae	E	Decaspermum struckoilicum N.Snow & Guymer	92148	Hoy D.			26FEB1989			Queensland	Port Curtis	STRUCK OIL 6KM E OF MT MORGAN
395886	1		A	Angiosperms	Myrtaceae	E	Decaspermum struckoilicum N.Snow & Guymer	92148	Hoy D.	3		22OCT1984			Queensland	Port Curtis	STRUCK OIL VIA MT MORGAN
440357	1		A	Angiosperms	Myrtaceae	N	Eucalyptus decolor A.R.Bean & Brooker	55468	Bean A.R.	480A		09AUG1986	Bean A.R.		Queensland	Port Curtis	CASTLETOWER NP ABOVE OAKY CK ALONG SPUR (BEARING 320DEG ON 542M PEAK)
424871	1		A	Angiosperms	Myrtaceae	N	Eucalyptus decolor A.R.Bean & Brooker	55468	Bean A.R.	480		09AUG1986			Queensland	Port Curtis	MT CASTLETOWER JUST BELOW SUMMIT
446944	1		A	Angiosperms	Myrtaceae	N	Eucalyptus decolor A.R.Bean & Brooker	55468	Brooker M.I.	9766		11OCT1987			Queensland	Port Curtis	OAKEY CK NR CASTLE TOWER NP
429778	1		A	Angiosperms	Myrtaceae	N	Eucalyptus decolor A.R.Bean & Brooker	55468	Bean A.R.	750		13FEB1988			Queensland	Port Curtis	MANY PEAKS RA MID-SLOPES OF MT STANLEY
429777	1		A	Angiosperms	Myrtaceae	N	Eucalyptus decolor A.R.Bean & Brooker	55468	Bean A.R.	749		13FEB1988			Queensland	Port Curtis	MANY PEAKS RA UPPER SLOPES OF MT STANLEY
571529	5520		A	Angiosperms	Myrtaceae	N	Eucalyptus decolor A.R.Bean & Brooker	55468	Thompson E.J.	CAL235	Hohnen,C.;	29MAR1995	Thompson E.J.	MAY1995	Queensland	Port Curtis	TR 645 NR NORTON CK CA 11KM E OF NAGOORIN (GPS 24 20 56 151 24 15)(SITE 118)
644582	4719		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Rodd A.N.	4411	Hardie,M.;	15APR1985			Queensland	Leichhardt	CREEK (REEDY CK?) 29KM N OF MACKENZIE RIVER CROSSING, DUARINGA-MALBOROUGH (MARLBOROUGH) RD.
852460	7339		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Schick N.			05DEC2013	Bean A.R.	JAN2014	Queensland	Port Curtis	BRUCE HWY, NEAR ROCKHAMPTON TO YEPPOON TURNOFF
617645	6621		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Fox S.			12FEB2006			Queensland	Port Curtis	LIMESTONE CREEK
490889	5986		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Ryan T.S.	1015		04JUL1998			Queensland	Leichhardt	GOODEDULLA NATIONAL PARK MELALEUCA CREEK CROSSING (GPS 23 19 34 149 46 42)
451531	1		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Hinz R.			06MAR1987			Queensland	Port Curtis	ROCKHAMPTON MOORES CK
132488	1		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Francis W.D.			MAR1920			Queensland	Port Curtis	WOODEND
224605	1		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Hyland B.	8160		24APR1975	Hyland B.		Queensland	Port Curtis	MOORES CK
132486	1		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Bailey F.M.						Queensland	Port Curtis	ROCKHAMPTON
132485	1		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Byerley F.J.						Queensland	Port Curtis	ROCKHAMPTON
132483	1		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Maiden J.H.			MAR1909			Queensland	Port Curtis	ROCKHAMPTON
132484	1		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Sabin B.			12JAN1966			Queensland	Port Curtis	KABRA NEERKOL CK
132482	1		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Francis W.D.			MAR1920			Queensland	Port Curtis	BANKS NEERKOL CK STATE FARM WARREN
442153	1		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Bean A.R.	208		27MAY1985			Queensland	Port Curtis	RAILWAY BRIDGE ROCKY-EMERALD RD 3KM E OF 100METRES BEFORE CROSSING CK
616670	6565		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Fox S.			06JUN2005			Queensland	Port Curtis	MELALEUCA CREEK AT CROSSING WITH SMITH ROAD, ON 'FITROY POCKET' PROPERTY, 45KM WEST OF STANWELL POWER STATION, ROCKHAMPTON
132487	1		A	Angiosperms	Myrtaceae	V	Eucalyptus raveretiana F.Muell.	4569	Speck N.H.	2006		16MAY1964	Lazarides M.		Queensland	Port Curtis	WYCARBAH 2M NW OF
634251	5464		A	Angiosperms	Myrtaceae	N	Kunzea flavescens C.T.White & W.D.Francis	4711	Forster P.I.	PIF16339		20FEB1995			Queensland	Port Curtis	MT CASTLETOWER NP E SLOPES MANY PEAKS RANGE (GPS 24 07 41 151 18 25)
676048	5902		A	Angiosperms	Myrtaceae	N	Kunzea flavescens C.T.White & W.D.Francis	4711	Bean A.R.	14431		11DEC1998			Queensland	Burnett	EAST OF SCRUBBY DAM COOMINGLAH SF NEAR MONTO (GPS 24 58 25 150 59 41)
408028	1		A	Angiosperms	Myrtaceae	N	Melaleuca formosa (S.T.Blake) Craven	98471	McDonald W.J.	4014		16DEC1983	Craven L.A.	2004	Queensland	Port Curtis	KROOMBIT TOPS CA 70KM SSW OF GLADSTONE
637006	5500		A	Angiosperms	Myrtaceae	N	Melaleuca formosa (S.T.Blake) Craven	98471	Brushe J.	JB625		09DEC1994	Craven L.A.	2004	Queensland	Port Curtis	KROOMBIT TOPS SF NEAR RADIO TOWER

Aq_Nr	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid
408237	+00+000----	------	A			Unknown	Lat/Long	AGD66	1600	S24 15 30.00	E150 33 30.00	150.5583333	-24.25833333	56	252103	7314992	9049-521149
435657	++++000----	------	B			Unknown	Lat/Long	AGD66	1600	S24 15 30.00	E150 33 30.00	150.5583333	-24.25833333	56	252103	7314992	9049-521149
451535	+--+000----	------				Hrb Convert	Lat/Long	AGD66	1600	S24 15 30.00	E150 33 30.00	150.5583333	-24.25833333	56	252103	7314992	9049-521149
663075	0000000----	EDOF-B				GPS	Lat/Long	AGD66	100	S24 16 11.00	E150 33 09.00	150.5525	-24.26972222	56	251532	7313719	9049-515137
663595	+--+000----	-T----	A			Hrb Convert	Lat/Long	AGD66	1600	S24 19 30.00	E150 41 30.00	150.6916667	-24.325	56	265767	7307837	9049-657078
489295	----000----	------				Hrb Convert	Lat/Long	AGD66	1600	S24 24 30.00	E150 31 30.00	150.525	-24.40833333	56	249013	7298314	9049-490983
435594	+++-000----	F-FF--	A	500		Map	Lat/Long	GDA94	100	S24 26 21.00	E151 04 57.00	151.0825	-24.43916667	56	305613	7295804	9149-056958
453062	+-++000----	-----B	A	45		Hrb Convert	Lat/Long	AGD66	1600	S24 07 30.00	E151 18 30.00	151.3083333	-24.125	56	328088	7330887	9149-280308
677862	+++-000----	KZOD--	AH			GPS	Lat/Long	AGD66	100	S24 06 42.00	E150 23 39.00	150.3941667	-24.11166667	56	235125	7330939	8949-351309
554881	----000----	AT----				GPS	Lat/Long	AGD66	100	S23 19 57.00	E150 34 10.80	150.5696667	-23.3325	56	251498	7417575	9051-514175
496030	----000----	------		475		GPS	AMG	AGD66	100	S23 19 57.67	E150 34 08.87	150.5691299	-23.33268673	56	251443	7417553	9051-514175
554880	----000----	AHAH--				GPS	Lat/Long	AGD66	100	S23 19 57.67	E150 34 08.90	150.5691389	-23.33268611	56	251444	7417553	9051-514175
603763	+--+000----	-ZAH--	VBF			GPS	Lat/Long	AGD66	100	S23 37 06.00	E150 27 49.00	150.4636111	-23.61833333	56	241207	7385723	8950-412857
501680	+--+000----	-ZAH--	F	300		Hrb Convert	GridRef	AGD66	100	S23 38 32.64	E150 27 34.73	150.4596462	-23.64239875	56	240850	7383050	8950-408830
455657	+++0000+---	-ZAH--	FT	300		Map	Lat/Long	AGD66	100	S23 38 47.00	E150 27 32.00	150.4588889	-23.64638889	56	240781	7382607	8950-407826
476400	+--+000+---	-YAH--	F	300		Map	Lat/Long	AGD66	100	S23 38 47.00	E150 27 32.00	150.4588889	-23.64638889	56	240781	7382607	8950-407826
395886	+-+-000----	--AH--	AO			Map	Lat/Long	AGD66	100	S23 38 47.00	E150 27 32.00	150.4588889	-23.64638889	56	240781	7382607	8950-407826
440357	+--+000----	K-----		350		Collector	GridRef	AGD66	100	S24 10 26.23	E151 17 43.81	151.2955041	-24.17395366	56	326850	7325450	9149-268254
424871	+--+000----	--FA--	TA			Hrb Convert	Lat/Long	AGD66	1600	S24 10 30.00	E151 17 30.00	151.2916667	-24.175	56	326462	7325329	9149-264253
446944	++00000----	E-----				Hrb Convert	Lat/Long	AGD66	1600	S24 11 30.00	E151 18 30.00	151.3083333	-24.19166667	56	328177	7323504	9149-281235
429778	+--+000----	FTFA--	A			Hrb Convert	Lat/Long	AGD66	1600	S24 12 30.00	E151 22 30.00	151.375	-24.20833333	56	334971	7321739	9149-349217
429777	++--000----	FDFA--	A			Hrb Convert	Lat/Long	AGD66	1600	S24 12 30.00	E151 22 30.00	151.375	-24.20833333	56	334971	7321739	9149-349217
571529	++-+000----	FDFA-U	A	280		GPS	Lat/Long	AGD66	100	S24 20 56.00	E151 24 15.00	151.4041667	-24.34888889	56	338112	7306207	9149-381062
644582	+--+000----	CGFA--	A	120		Label	Lat/Long	AGD66	1600	S23 18 30.00	E149 37 30.00	149.625	-23.30833333	55	768465	7419904	8851-684199
852460	++--000---+	--FF--				GPS	Lat/Long	GDA94	100	S23 18 44.60	E150 30 57.93	150.5160917	-23.31238889	56	245980	7419718	9051-459197
617645	+++-000----	CQ----	A			GPS	AMG	AGD66	100	S23 19 11.66	E150 16 31.00	150.2752772	-23.31990549	56	221355	7418433	8951-213184
490889	+0+0000----	C-----	A			GPS	Lat/Long	AGD66	100	S23 19 34.00	E149 46 42.00	149.7783333	-23.32611111	55	784117	7417641	8851-841176
451531	++00000----	C-----	A			Unknown	Lat/Long	AGD66	1600	S23 20 30.00	E150 32 30.00	150.5416667	-23.34166667	56	248651	7416511	9051-486165
132488	+000000----	------				Map	Lat/Long	AGD66	1600	S23 20 30.00	E150 32 30.00	150.5416667	-23.34166667	56	248651	7416511	9051-486165
224605	+000000----	--AG--		100		Unknown	Lat/Long	AGD66	1600	S23 20 30.00	E150 32 30.00	150.5416667	-23.34166667	56	248651	7416511	9051-486165
132486	+++0000----	------				Hrb Convert	Lat/Long	AGD66	16000	S23 25	E150 35	150.5833333	-23.41666667	56	253052	7408275	9051-530082
132485	+000000----	------				Hrb Convert	Lat/Long	AGD66	16000	S23 25	E150 35	150.5833333	-23.41666667	56	253052	7408275	9051-530082
132483	+000000----	------				Hrb Convert	Lat/Long	AGD66	16000	S23 25	E150 35	150.5833333	-23.41666667	56	253052	7408275	9051-530082
132484	+++0000----	C-----				Map	Lat/Long	AGD66	1600	S23 27 30.00	E150 23 30.00	150.3916667	-23.45833333	56	233541	7403317	8951-335033
132482	+000000----	------				Map	Lat/Long	AGD66	1600	S23 29 30.00	E150 17 30.00	150.2916667	-23.49166667	56	223390	7399435	8951-233994
442153	++--000----	CQOF--	A			Hrb Convert	Lat/Long	AGD66	1600	S23 32 30.00	E150 15 30.00	150.2583333	-23.54166667	56	220089	7393831	8950-200938
616670	+--+000----	CD----	A			GPS	Lat/Long	AGD66	100	S23 32 39.96	E149 52 50.44	149.8806767	-23.54443278	55	794105	7393246	8850-941932
132487	+000000----	------				Hrb Convert	Lat/Long	AGD66	16000	S23 35	E150 15	150.25	-23.58333333	56	219327	7389198	8950-193891
634251	+--+000----	F----U				GPS	Lat/Long	AGD66	100	S24 07 41.00	E151 18 25.00	151.3069444	-24.12805556	56	327951	7330547	9149-279305
676048	+--+000----	-DFF--	F			GPS	Lat/Long	AGD66	100	S24 58 25.00	E150 59 41.00	150.9947222	-24.97361111	56	297577	7236469	9048-975364
408028	+--+000----	L-----	F	840		Hrb Convert	Lat/Long	AGD66	1600	S24 21 30.00	E150 56 30.00	150.9416667	-24.35833333	56	291198	7304543	9049-911045
637006	+-+-000----	------	F			Hrb Convert	Lat/Long	AGD66	1600	S24 21 30.00	E150 56 30.00	150.9416667	-24.35833333	56	291198	7304543	9049-911045

Aq_Nr	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Corveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
408237	T.R. 170, Thalberg, ca. 30km NE of Biloela. Open forest with Eucalyptus citriodora and ironbarks. Tree 9 metres x 25cm diameter at breast height. Grey smooth bark.													7/11/2000	16/06/2014	-24.25675145	150.5594084
435657	Timber Reserve 170, NE of Biloela. Growing in moderately dense stands in cleared areas. Flowering and fruiting at same time.													7/11/2000	16/06/2014	-24.25675145	150.5594084
451535	15km NE of Biloela.													7/11/2000	16/06/2014	-24.25675145	150.5594084
663075	Timber Reserve 170, Calliope Shire, (GPS 24 16 11 150 33 09) (AMG 56 251545 7313730). Eucalyptus tereticornis woodland with vine scrub understorey. sandy/alluvial soils along creek line. 10 individuals.			+										7/11/2000	16/06/2014	-24.26814033	150.5535751
663595	Coal Road. Rocky red brown soil. Open tree 5-6m tall, bark smooth dark brown, foliage bright green. Pods on bush dark brown.													7/11/2000	16/06/2014	-24.32341811	150.6927418
489295	Callide & Boundary Hill Coal Biloela.													7/11/2000	16/06/2014	-24.40675145	150.5260751
435594	Just outside State Forest, 316, Clewleys Gap. Grassy hillside, remnant open forest. Spreading tree, 7m high. Bark, dark grey, hard, groved. Branchlets and leaves dull grey green. Inflorescence yellow.													7/11/2000	16/06/2014	-24.43916667	151.0825
453062	Castletower Portion 36, 17km SE of Calliope. Riverine. Tree to 6 metres, bark rough, grey, grooved. Woody branchlets brown. Ends of branchlets green. Phyllodes dull green, pulvinus reddish. Unripe fruit green. Remains of flower spikes on some branches.													7/11/2000	16/06/2014	-24.12342031	151.3094011
677862	C 5km along Hibbs Road, N of Jambin. (GPS 24 06 42 150 23 39) Red soil ridge with Eucalyptus melanohloia, Acacia crassa. Tree 4m high, phyllodes perhaps somewhat juvenile (taller trees seen with narrower phyllodes). Bark furrowed, similar to ironbark. Flowers bright yellow. Common at site.													7/11/2000	16/06/2014	-24.11008331	150.3952494
554881	Mount Archer; NE of houses. Approximately 50m downslope from houses, on rock outcrop adjacent to vine thicket edge. Steep mountains, Volcanic rocks, skeletal soil. Low shrubland. Lichens abundant on foliage and trunks.		+											6/06/2002	24/05/2010	-23.33092236	150.570742
496030	Berserker Wilderness, Mount Archer, Rockhampton. Steep mountains, simple slope. Red clay loam. Abundant.													25/07/2001	24/05/2010	-23.33110909	150.5702053
554880	Mount Archer. Microphyll vine thicket. Red clay loam.			+										6/06/2002	24/05/2010	-23.33110847	150.5702143
603763	Struck Oil, Property of D. McDonald (GPS 23 37 06 150 27 49). Semi-evergreen vine thicket on reddish soil, fragmented and disturbed. Multistemmed shrub to 4m high, green immature fruit. One individual present at this spot. Voucher for essential oils analysis by J.J.Brophy.		+	+										7/11/2000	20/05/2014	-23.61675391	150.4646927
501680	Struck Oil, 6km E of Mount Morgan, grid ref. 8950-408830. On chocolate coloured soil, semi-evergreen vine thicket. Shrub to 3metres, fruit blackish to purple.													7/11/2000	20/05/2014	-23.64081933	150.4607278
455657	Struck Oil, 6km E of Mt Morgan. Semi-evergreen vine thicket, chocolate soil. Large shrub, multi-stemmed to 3m, flowers cream. Spirit material at BRI.								C621,C622					7/11/2000	20/05/2014	-23.64480947	150.4599705
476400	Struck Oil, 6km E of Mt.Morgan. Chocolate soil. Semi-evergreen vine thicket. Large shrub (multi-stmmed) to 3m. Mature fruit black and glossy. Material in spirit collection at BRI.													7/11/2000	23/05/2008	-23.64480947	150.4599705
395886	Struck Oil via Mt Morgan. Regrowth scrub. Small bushy tree.													7/11/2000	23/05/2008	-23.64480947	150.4599705
440357	Castletower National Park, along spur above Oaky Creek (bearing 320 deg on 542m peak). Ironbark.			+										7/11/2000	21/05/2010	-24.17237398	151.2965718
424871	Mt Castletower just below Summit. Associated with E. trachyphloia, E. acmenoides. Tree 14m high; rugged dark-grey ironbark; small and medium branches smooth barked, pink; adult leaves strongly discolorous.													7/11/2000	21/05/2010	-24.17342031	151.2927344
446944	Oaky Creek near Castle Tower National Park. Gum top ironbark, 6m tall in creek bed.													7/11/2000	21/05/2010	-24.19008698	151.3094011
429778	Mid-slopes of Mount Stanley, Many Peaks Range. Tree 12m high; furrowed ironbark on trunk and large branches. Smooth above, grey, shedding to bronze. Mountainside on skeletal soil. Assoc. with E.acmenoides, E. trachyphloia, Casuarina littorlis.													7/11/2000	21/05/2010	-24.20675365	151.3760678
429777	Upper slopes of Mt Stanley, Many Peaks Range. Tree 10m high; rugged grey ironbark on trunk and large branches. Smooth above, bronze coloured. Mountainside with very shallow sandy soil. Assoc. with E. acmenoides, E. umbellata.													7/11/2000	21/05/2010	-24.20675365	151.3760678
571529	TR 645, near Norton Creek, about 11km E of Nagoorin (GPS 24 20 56 151 24 15)(site 118). Woodland of Eucalyptus acmenoides and Syncarpia glomulifera with understorey of Arundinella nepalensis, Pomaderris argyrophylla and Eremochloa bimaculata. S facing mid-slope of hill with dark brown sandy loam derived from granite.													7/11/2000	21/05/2010	-24.3473092	151.4052344
644582	Creek (Reedy Ck?) 29km N of Mackenzie River crossing, Duaringa-Malborough (Marlborough) rd. In stream channel and on banks of dry creek; gravelly alluvium; open forest of this, E. camaldulensis, Casuarina cunninghamiana. Broadly spreading tree 15-20m high, to 1m diam, ofen with massive crooked lower limbs; dark tessellated bark to half tree height but on bases only of main limbs; foliage green (photo not included with specimen).													19/06/2003	28/11/2003	-23.30675912	149.6260869
852460	Bruce Hwy, near Rockhampton to Yeppoon turnoff. Growing in creek bed. Woodland. Mapped as non remnant RE. Tree to 25m, bark rough box type on trunk, branches smooth. Photos with specimen at BRI.													20/02/2014		-23.31238889	150.5160917
617645	Limestone Creek. Alluvial black soils. Tree to 20m, dominant along creekbank.					11	3	25						22/03/2007	12/04/2007	-23.31832836	150.2763595
490889	Goodedulla Natiolnal Park Melaleuca creek crossing. (GPS 23 19 34 149 46 42). Growing on river bank with other fringing vegetation. Tree to 25m. Occasional.													7/11/2000	7/06/2005	-23.3245369	149.7794202
451531	Moores Creek, Rockhampton. Creek banks. Tall tree to 25 m. Smooth blue grey blocky bark.													7/11/2000	8/09/2008	-23.34008903	150.542742
132488	Woodend, Rockhampton.													7/11/2000	28/10/2010	-23.34008903	150.542742
224605	Moores Creek. Tree 20 m x 70 cm d.b.h.o.b. with a box type bark on the trunk and larger branches. Most branches with a smooth gum bark.													7/11/2000	8/09/2008	-23.34008903	150.542742
132486	Rockhampton.													7/11/2000	28/05/2007	-23.41508903	150.5844087
132485	Rockhampton. Blue bark water gum.													7/11/2000	28/11/2003	-23.41508903	150.5844087
132483	Rockhampton.													7/11/2000	28/11/2003	-23.41508903	150.5844087
132484	Kabra, bank of Neerkol Creek. Tree tessellated, upper portion smooth. Growing in alluvial soil.													7/11/2000	3/08/2010	-23.4567562	150.3927489
132482	Banks Neerkol Creek, State Farm Warren.													7/11/2000	7/07/2014	-23.49008954	150.2927489
442153	100m before crossing of Creek, 2 km east of Railway Bridge, Rocky-Emerald Road. Creek bank. Black, cracking clay. Associate Sp. E. tereticornis, E. tessellaris. Tree 18 m, bark grey scaly, tessellated on trunk. All branches smooth and grey.													7/11/2000	28/11/2003	-23.54008724	150.2594149
616670	Melaleuca Creek at crossing with Smith Road, on 'Fitroy Pocket' property, 45km west of Stanwell Power Station, Rockhampton. Sandy creek bank with Eucalyptus tereticornis, E. coolabah, Casuarina cunninghamiana and Callisteman viminalis. Tree to 24m.		+											17/10/2006	17/10/2006	-23.54285457	149.8817656
132487	2 miles of north west of Wycarbah, Port Curtis District, Qld. Streamline fringe with E. tereticornis, Casuarina cunninghamiana, Melaleuca spp., Callistemon. Tree 40-50 ft with dark grey bark irregularly tessellated on trunk; limbs are clean barked and bluey-grey, patch like E. tereticornis. Leaves large and pendulous; flowers in terminal clusters; fruits very small.													7/11/2000	15/07/2008	-23.58175391	150.2510816
634251	Mt Castletower National Park E slopes Many Peaks Range (GPS 24 07 41 151 18 25) Tall shrubland of Eucalyptus exserta, Lophostemon confertus and Xanthorrhoea johnsonii on bouldery granite hills. Woody bush to 1m high, fruit. Common in area.													7/11/2000	21/05/2010	-24.12647587	151.3080122
676048	East of Scrubby Dam, Coominglah SF, near Monto. (GPS 24 58 25 150 59 41) Open woodland of Eucalyptus corynodes, Acacia crassa subsp. longicoma, Phebalium nottii, Hibiscus heterophyllus ssp. lutens. Dense shrubby understorey. Brown loamy soil. Dense shrub 1.2m high.													7/11/2000	21/05/2010	-24.972027	150.9957981
408028	Kroombit Tops, ca. 2km north west of Forestry Barracks, 70km south south west of Gladstone. Large areas of exposed (?)rhyolite with small pockets of sandy soil. Open shrubland of Acacia penninervis, Eriostemon myoporoides and Prostanthera nivea. A shrub ca. 1.5m high growing in rock crevice.													7/11/2000	7/02/2012	-24.35675145	150.9427418
637006	Kroombit Tops SF, near radio tower. Escarpment-rocky low veg. Low shrub, green-white flowers. Occasional.													7/11/2000	8/12/2011	-24.35675145	150.9427418

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Corveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
557878	6201		A	Angiosperms	Myrtaceae	N	Melaleuca formosa (S.T.Blake) Craven	98471	Aspland S.			26NOV1997			Queensland	Port Curtis	KROOMBIT TOPS SF 316, WESTERN ESCARPMENT APPROX 100KM W OF TONDOON BOTANIC GARDENS	++--000----	------	F			GPS	Lat/Long	AGD66	100	S24 21 54.00	E150 57 07.00	150.9519444	-24.365	56	292252	7303820	9049-922038	Kroombit Tops SF 316, western escarpment approx 100km W of Tondoon Botanic Gardens. Small shrub 1m high. Growing on rocky cliff face. Bottle brush creamy flower. Woody capsule													12/09/2002	21/05/2010	-24.36341811	150.9530195
753086	6733	E	A	Angiosperms	Myrtaceae	N	Melaleuca formosa (S.T.Blake) Craven	98471	Worthington M.	2814		SEP2006			Queensland	Port Curtis	EX KROOMBIT TOPS CULT 8 TALABA ROAD, TONDOON BOTANIC GARDENS, GLADSTONE	+-+-000----	------	F			Unknown	Lat/Long	AGD66	16000	S24 25	E150 55	150.9166667	-24.41666667	56	288758	7298044	9049-887980	8 Talaba Road, Tondoon Botanic Gardens, Gladstone. Shrub, propagated from seed collected at Kroombit Tops.													1/07/2008	21/05/2010	-24.41508478	150.9177418
571620	5520		A	Angiosperms	Myrtaceae	N	Melaleuca formosa (S.T.Blake) Craven	98471	Thompson E.J.	BIL118	Turpin,G.P.;	30AUG1995			Queensland	Port Curtis	KROOMBIT TOPS NP W SECTION (GPS 24 25 05 150 53 25)	+--+000----	KDFA-F	F			GPS	Lat/Long	AGD66	100	S24 25 05.00	E150 53 25.00	150.8902778	-24.41805556	56	286084	7297850	9049-860978	Kroombit Tops National Park, W section (GPS 24 25 05 150 53 25). Ridge with sandy loam derived from sandstone. Tall woodland of Eucalyptus decorticans. Shrub to 5m high with rough, persistent bark.													7/11/2000	21/05/2010	-24.41647367	150.8913529
472509	1		A	Angiosperms	Myrtaceae	N	Melaleuca formosa (S.T.Blake) Craven	98471	Forster P.I.	PIF6962		10JUL1990			Queensland	Burnett	COOMINGLAH SF 28 GRID REF 9048-919493	+-++000----	-ZOF--	F	450		Hrb Convert	GridRef	AGD66	100	S24 51 23.73	E150 56 27.37	150.9409359	-24.85659269	56	291950	7249350	9048-919493	Coominglah State Forest 28, grid ref. 9048-919493. Euc.maculata, Euc.decortican forest with scrubby understorey, on red soil. Shrub to 4m, old flowers, fruiting.													7/11/2000	21/05/2010	-24.85500857	150.9420117
638488	5537		A	Angiosperms	Myrtaceae	N	Melaleuca formosa (S.T.Blake) Craven	98471	Bean A.R.	8894	Robins,P.;	12SEP1995	Craven L.A.	2004	Queensland	Burnett	300METRES S OF SCRUBBY DAM COOMINGLAH SF W OF MONTO	+--+000----	--AA--	F	400		Hrb Convert	Lat/Long	AGD66	1600	S24 58 30.00	E150 59 30.00	150.9916667	-24.975	56	297271	7236310	9048-972363	300m S of Scrubby Dam, Coominglah State Forest, W of Monto. Marginal rainforest with Eucalyptus decorticans. Shrub 4m high. Bark hard, grey, scaly. Occasional at site.													7/11/2000	8/12/2011	-24.97341588	150.9927425
571867	5585		A	Angiosperms	Myrtaceae	N	Melaleuca groveana Cheel & C.T.White	13278	Thompson E.J.	BIL218	Price,R.J.;	13FEB1995	Thompson E.J.	MAR1996	Queensland	Port Curtis	20.5KM NE OF BILOELA (GPS 24 15 22 150 38 23)(NR SITE 390)	+--+000----	KDFA-F		500		GPS	Lat/Long	AGD66	100	S24 15 22.00	E150 38 23.00	150.6397222	-24.25611111	56	260365	7315380	9049-603153	20.5km NE of Biloela (GPS 24 15 22 150 38 23)(site 390). Crest of hilly terrain with brown sandy loam. Very tall open forest of Eucalyptus decorticans with Euc. cloeziana. Sandstone.													7/11/2000	21/05/2010	-24.25452922	150.6407973
602498	5584		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Forster P.I.	PIF18272	Orford,D.;Tucker,M.C.;	29DEC1995	Snow N.	APR1999	Queensland	Port Curtis	SF 583 WIETALABA (GPS 24 17 02 151 12 53) (R)(P)	+--+000+---	F-AA--	A	600		GPS	Lat/Long	AGD66	100	S24 17 02.00	E151 12 53.00	151.2147222	-24.28388889	56	318798	7313172	9149-187131	State Forest 583 Wietalaba (GPS 24 17 02 151 12 53). Araucarian microphyll vine forest on reddish soil, steep slope; canopy dominated by Choricarpia subargentea, Backhousia kingii and Barklya syringifolia. Tree to 7m high; flaky-cream bark in longitudinal blocks, yellowish blaze, wood straw; fruit are very small, immature colouring purple. Rare in area with 3 seen. Spirit material at BRI. Voucher for essential oils analysis.		+	+					D1430					7/11/2000	9/09/2013	-24.2823092	151.21579
672969	5858		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Halford D.	Q3456	Snow,N.;	18NOV1997	Snow N.	APR1999	Queensland	Port Curtis	WIETALABA SF C 31KM S OF CALLIOPE (GRID REF CALLIOPE 9149-186130) (GPS 24 17 05 151 12 49) (R) (P)	+000000+---	KDAA--	A	440		GPS	Lat/Long	AGD66	100	S24 17 05.00	E151 12 49.00	151.2136111	-24.28472222	56	318686	7313078	9149-186130	Wietalaba SF, c.31km S of Calliope (Grid ref 9149 Calliope 186130). (GPS 24 17 05 151 12 49). Hilly terrain, ridge top, red brown loam, growing on edge of track, microphyll vineforest. Tree 10m high, leaves diocolorous. 1 plant seen. Rare. Spirit material at BRI.		+	+					B1667					7/11/2000	20/04/2005	-24.28314253	151.2146789
792706	6941		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Nicholson N.J.	NJN595		20APR2003			Queensland	Port Curtis	WIETALABA STATE FOREST, HEAD OF CEDAR CREEK, 30KM S OF CALLIOPE, 10KM FROM BOYNE VALLEY ROAD	----000----	KDAH--	AB	400		Map	Lat/Long	AGD66	100	S24 17 07.00	E151 12 49.00	151.2136111	-24.28527778	56	318687	7313017	9149-186130	Wietalaba State Forest, head of Cedar Creek, 30km S of Calliope, 10km from Boyne Valley road. Just below ridge top; brown loam; microphyll vine forest, degraded. Tree 6m, dense crown. Photos by Hugh Nicholson.													26/05/2010	8/06/2010	-24.28369809	151.2146789
659043	1		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Halford D.A.	Q3450	Snow,N.;	20NOV1997	Snow N.	APR1999	Queensland	Port Curtis	WIETALABA SF C 31KM S OF CALLIOPE GRID REF 9149-188129 (CALLIOPE MAP) (GPS 24 17 09 151 12 53)	+++0000+---	KYAH--	TA			GPS	Lat/Long	AGD66	100	S24 17 09.00	E151 12 53.00	151.2147222	-24.28583333	56	318801	7312957	9149-188129	Wietalaba SF 31K S of Calliope. Remmant tree from microphyll vineforest; hilly terrain, ridgetop; reddish/brown loam. Tree 3m high; leaves discolorous; bark light-brown, shallowly tessellate. Spirit at BRI.								C3015					7/11/2000	10/08/2009	-24.28425365	151.21579
672966	5858		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Halford D.	Q3449	Brushe,J.;Snow,N.;	19NOV1997	Snow N.	APR1999	Queensland	Port Curtis	WIETALABA SF C 31KM S OF CALLIOPE (GRID REF CALLIOPE 9149-187128) (GPS 24 17 12 151 12 51)	----000----	--AA--	A	360		GPS	Lat/Long	AGD66	100	S24 17 12.00	E151 12 51.00	151.2141667	-24.28666667	56	318745	7312864	9149-187128	Wietalaba SF, c.31km S of Calliope (Grid ref 9149 Calliope 187128). (GPS 24 17 12 151 12 51). Hilly terrain, steep hillslope, midslope, SW aspect, brown loam. Microphyll vine forest with Choricarpa subargentea dominant on edge of old logging track. Tree 3m high, leaves discolorous. 3 plants seen. Rare.													7/11/2000	28/11/2003	-24.28508698	151.2152344
672967	5858		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Halford D.	Q3451	Snow,N.;	20NOV1997	Snow N.	APR1999	Queensland	Port Curtis	WIETALABA SF C 31KM S OF CALLIOPE (GRID REF CALLIOPE 9149-188128)	----000----	--AA--	A	380		Hrb Convert	GridRef	AGD66	100	S24 17 12.48	E151 12 54.70	151.2151953	-24.28680082	56	318850	7312850	9149-188128	Wietalaba SF, c.31km S of Calliope. (Grid Ref Calliope 9149-188128). Hilly terrain, hillslope, moderately steep, S aspect, brown loam. Microphyll vine forest (Choricarpa subargentea, Barklya syringifolia, Sterculia quadrifida. Tree 10m high, leaves discolorous. 4 plants seen. Rare.													7/11/2000	28/11/2003	-24.28522113	151.2162631
571773	5568		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Thompson E.J.	CAL355	Turpin,G.P.;	1995	Snow N.	APR1999	Queensland	Port Curtis	NR HEADWATERS OF CEDAR CK SF 583 (GPS 24 17 16 151 13 13) (SITE 227)	----000----	RDFF-G		360		GPS	Lat/Long	AGD66	100	S24 17 16.00	E151 13 13.00	151.2202778	-24.28777778	56	319367	7312748	9149-193127	Nr headwaters of Cedar Ck, SF 583 (GPS 24 17 15 141 13 13) (site 227). S facing upper slope on ridge with brown loam. Tall simple microphyll open-woodland predominated by Choricarpa subargentia. Mudstone.													7/11/2000	28/11/2003	-24.28619809	151.2213456
672965	5858		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Halford D.	Q3447	Brushe,J.;Snow,N.;	19NOV1997	Snow N.	APR1999	Queensland	Port Curtis	WIETALABA SF C 31KM S OF CALLIOPE (GRID REF CALLIOPE 9149-185126) (GPS 24 17 18 151 12 44)	----000----	--AA--	A	400		GPS	Lat/Long	AGD66	100	S24 17 18.00	E151 12 44.00	151.2122222	-24.28833333	56	318550	7312676	9149-185126	Wietalaba SF, c.31km S of Calliope (Grid ref 9149 Calliope 185126). (GPS 24 17 18 151 12 44). Hilly terrain, steep hill slope, midslope, easterly aspect. Brown loam, microphyll vine forest. Tree 8m high, leaves discolorous. 6 plants seen. Rare.													7/11/2000	28/11/2003	-24.28675365	151.21329
672964	5858		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Halford D.	Q3446	Brushe,J.;Snow,N.;	19NOV1997	Snow N.	APR1999	Queensland	Port Curtis	WIETALABA SF C 31KM S OF CALLIOPE (GRID REF 9149 CALLIOPE 185126)(GPS 24 17 18 151 12 44)	----000----	--AA--		400		GPS	Lat/Long	AGD66	100	S24 17 18.00	E151 12 44.00	151.2122222	-24.28833333	56	318550	7312676	9149-185126	Wietalaba SF, C.31km S of Calliope (Grid ref 9149 Calliope 185126). Hilly terrain, steep hillslope, easterly aspect, brown loam, araucarian microphyll vine forest, understorey opened up by fire and drought. Regrowth from base of dead small tree, shoot c.30cm high. Rare.													7/11/2000	28/11/2003	-24.28675365	151.21329
632213	5436		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Gibson N.	1335		11NOV1993	Snow N.	APR1999	Queensland	Port Curtis	SF 583 WIETALABA 32KM S OF CALLIOPE	----000----	K-AA--	A	400		Hrb Convert	Lat/Long	AGD66	1600	S24 17 30.00	E151 12 30.00	151.2083333	-24.29166667	56	318160	7312302	9149-181123	State Forest 583, Wietalaba, 32km S of Calliope. Dry rainforest, open ridgeline, in full sun along track. Small tree 3 metres tall. Densely leaved; bark rough, light grey; branchlets cream-brown; leaves glossy green above, dull grey-green under. Rare.													7/11/2000	10/08/2009	-24.29008698	151.2094011
632212	5436		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Gibson N.	1336		13APR1994	Snow N.	APR1999	Queensland	Port Curtis	SF 583 WIETALABA 32KM S OF CALLIOPE	----000----	--AA--	F	400		Hrb Convert	Lat/Long	AGD66	1600	S24 17 30.00	E151 12 30.00	151.2083333	-24.29166667	56	318160	7312302	9149-181123	State Forest 583, Wietalaba, 32km S of Calliope. Dry rainforest, under closed canopy. Shrub 1.5 metres; multi-stemmed; bark rough light brown; branchlets light brown; leaves green above, grey-green under. Rare.													7/11/2000	10/08/2009	-24.29008698	151.2094011
632211	5436		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Gibson N.	1334		11NOV1993	Snow N.	APR1999	Queensland	Port Curtis	SF 583 WIETALABA 32KM S OF CALLIOPE	----000----	F-AA--	A	400		Hrb Convert	Lat/Long	AGD66	1600	S24 17 30.00	E151 12 30.00	151.2083333	-24.29166667	56	318160	7312302	9149-181123	State Forest 583, Wietalaba, 32km S of Calliope. Scree hillside, dry rainforest. Small tree 2.5 metres, sparsely leaved. Bark creamy, flaky; branchlets creamy brown; leaves glossy green above, grey green under. Rare.													7/11/2000	28/11/2003	-24.29008698	151.2094011
672963	5858		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Brushe J.	JB1186	Brushe,L.;	26JAN1998	Snow N.	APR1999	Queensland	Port Curtis	WIETALABA SF ADJACENT TO THE ROAD ON RIDGETOP IMMEDIATELY BEHIND REMAINS OF FORESTRY SHED	+--+000+---	------	A	560		Hrb Convert	Lat/Long	AGD66	1600	S24 17 30.00	E151 12 30.00	151.2083333	-24.29166667	56	318160	7312302	9149-181123	Wietalaba SF adjacent to the road on ridgetop, immediately behind remanis of forestry shed. Rainforest edge in ecotone area between rainforest & clearing on ridgetop, adjacent community is araucarian vine forest with Choricarpa subargentea. Steep mountainous country, muncon volcanics. Multitrunked small tree approx 4m tall, leaves dark green on uppersurface, white on under surface (discolorous). Tree was in fruit at time of collection, samples representative of the denates of fruit on the tree generally. Fruit colour was mainly yellow to orange with reddish tinges on some individual fruit, the red colour has intensified on drying. Spirit at BRI.								C3021					7/11/2000	10/08/2009	-24.29008698	151.2094011
568108	5286		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Gibson N.			19MAY1993	Snow N.	APR1999	Queensland	Port Curtis	SF 583 WIETALABA	----000----	--AA--	A			Hrb Convert	Lat/Long	AGD66	1600	S24 17 30.00	E151 12 30.00	151.2083333	-24.29166667	56	318160	7312302	9149-181123	State Forest 585, Wietabala. In dry rainforest. Small tree. Only two individuals seen.													7/11/2000	28/11/2003	-24.29008698	151.2094011
672968	5858		A	Angiosperms	Myrtaceae	E	Rhodamnia angustifolia N.Snow & Guymer	87911	Halford D.	Q3452	Snow,N.;	18NOV1997	Snow N.	APR1999	Queensland	Port Curtis	WIETALABA SF C 31KM S OF CALLIOPE (GRID REF 9149 CALLIOPE 191121) (GPS 24 17 36 151 13 05)	----000----	--DAA-	A	200		GPS	Lat/Long	AGD66	100	S24 17 36.00	E151 13 05.00	151.2180556	-24.29333333	56	319150	7312130	9149-191121	Wietalaba SF, c.31km S of Calliope (Grid Ref 9149 Calliope 191121). (GPS 24 17 36 151 13 05). Hilly terrain, ridge top, brown loam, microphyll vineforest with emergent hoop ipne (Choricarpa subargentea, dominant). Tree 3m high. 1 plant seen. Rare.													7/11/2000	28/11/2003	-24.29175365	151.2191233
472427	1		A	Angiosperms	Myrtaceae	N	Rhodamnia glabrescens Guymer & Jessup	2223	Gibson N.	TOI820		13SEP1989	Snow N.	APR2002	Queensland	Port Curtis	9KM NNW OF BOROREN MT COULSTON TR 115 (NOW SF 471)	+--+000----	F-AA--	A	200		Hrb Convert	Lat/Long	AGD66	1600	S24 11 30.00	E151 26 30.00	151.4416667	-24.19166667	56	341722	7323662	9149-417236	9km NNW of Bororen, Mt Coulston, Timerber Reserve 115. Dry rainforest, scree hillside. Small tree to 2 metres. Bark grey brown, flaky. Fruit shiny black.													7/11/2000	21/05/2010	-24.19008698	151.4427344
632210	5436		A	Angiosperms	Myrtaceae	N	Rhodamnia glabrescens Guymer & Jessup	2223	Gibson N.	1333		24APR1994	Snow N.	APR2002	Queensland	Port Curtis	MT COULSTON SF 471 8KM NNW OF BOROREN	+++-000----	F-AA--	A	400		Hrb Convert	Lat/Long	AGD66	1600	S24 11 30.00	E151 26 30.00	151.4416667	-24.19166667	56	341722	7323662	9149-417236	Mount Coulston, State Forest 471, 8km NNW of Bororen. Dry rainforest, scree hillside. Spindly tree 4 metres tall. Bark papery brown, branches smooth rich brown; leaves glossy green; petals creamy, calyx red-green. Occasional.													7/11/2000	21/05/2010	-24.19008698	151.4427344
457870	1		A	Angiosperms	Myrtaceae	N	Rhodamnia glabrescens Guymer & Jessup	2223	Forster P.I.	PIF5828	Bean,A.R.;	04OCT1989			Queensland	Port Curtis	MT COULSTON SF 471 GRID REF 9149-411235	0---000----	-ZAH--	A	360		Hrb Convert	GridRef	AGD66	100	S24 11 33.42	E151 26 09.68	151.4360219	-24.19261648	56	341150	7323550	9149-411235	Mount Coulston, SF 471, grid ref 9149-411235. Semi-evergreen vine thicket, on chocolate coloured soil. Small tree to 4m.													7/11/2000	21/05/2010	-24.19103679	151.4370897
571591	5522		A	Angiosperms	Myrtaceae	N	Rhodamnia glabrescens Guymer & Jessup	2223	Thompson E.J.	CAL295	Turpin,G.;	07JUL1995	Thompson E.J.	JUL1995	Queensland	Port Curtis	SF471 (GPS 24 11 50 151 26 20)	----000----	FHFF-S		200		GPS	Lat/Long	AGD66	100	S24 11 50.00	E151 26 20.00	151.4388889	-24.19722222	56	341447	7323043	9149-414230	SF471 (GPS 24 11 50 151 26 20). VT SN O/W on lower slope of hilly terrain with clay loam soil derived from basalt.													7/11/2000	21/05/2010	-24.19564253	151.4399567
322199	1		A	Angiosperms	Myrtaceae	N	Rhodamnia glabrescens Guymer & Jessup	2223	McDonald W.J.	3160	Fisher,W.J.;Ryan,P.;	15APR1980	Snow N.	APR2002	Queensland	Port Curtis	SF 67 BULBURIN (NOW SF 391)	----000----	KTAA-S		570		Unknown	Lat/Long	AGD66	1600	S24 30 30.00	E151 29 30.00	151.4916667	-24.50833333	56	347182	7288648	9148-471886	Bulburin State Forest 67 (now SF 391). Western side of Boyne Logging Area, adjacent to Plantations, 3km NE of Forest Station. Closed forest (complex notophyll vine forest), formerly with Araucaria cunninghamii emergents. Upper slopes of ridge (10 degrees slope), easterly aspect. Fairly shallow soil, rocky in places. Parent material basalt. A shrub 2m high.													7/11/2000	21/05/2010	-24.50675057	151.4927359
635721	5481		A	Angiosperms	Myrtaceae	N	Rhodamnia glabrescens Guymer & Jessup	2223	Barry S.	RFR131	Thomas,G.;Brushe,J.;Gale,M.;	01JUN1993			Queensland	Port Curtis	BULBURIN SF S EDGE OF HOOP PLANTATION E OF FORESTRY BARRACKS	----000----	FHAA--		500		Hrb Convert	Lat/Long	AGD66	1600	S24 31 30.00	E151 29 30.00	151.4916667	-24.525	56	347202	7286802	9148-472868	S edge of hoop plantation E of forestry barracks, Bulburin State Forest. Complex notophyll very tall mixed closed forest with Argyrodendron emergents to 40m, sandy clay loam.													7/11/2000	21/05/2010	-24.52341723	151.4927359
296364	1		A	Angiosperms	Myrtaceae	N	Rhodamnia glabrescens Guymer & Jessup	2223	McDonald W.J.	2368	Stanton,J.P.;	22JUL1978			Queensland	Port Curtis	SF 67 BULBURIN 24KM W OF LOWMEAD (NOW SF 391)	----000----	D-AC--				Unknown	Lat/Long	AGD66	1600	S24 31 30.00	E151 29 30.00	151.4916667	-24.525	56	347202	7286802	9148-472868	State Forest 67 Bulburin (now SF391), ca 24km W of Lowmead. Araucarian notophyll vine forest along upper Granite Creek. Substrate andesite/alluvium. A shrub 2m high. Bark reddish, becoming fibrous on branches, trunk.													7/11/2000	21/05/2010	-24.52341723	151.4927359
424625	1		A	Angiosperms	Myrtaceae	N	Rhodamnia glabrescens Guymer & Jessup	2223	Gibson N.	733		23MAY1985	Guymer G.P.		Queensland	Port Curtis	BULBURIN SF 67 (NOW SF 391)	+++-000----	--AA--	TA			Unknown	Lat/Long	AGD66	1600	S24 31 30.00	E151 29 30.00	151.4916667	-24.525	56	347202	7286802	9148-472868	Bulburin State Forest. In rainforest. Spindly tree 4.5m high; bark brown, flaky; petals white, filaments mauve; leaves green, semi-glossy.													7/11/2000	21/05/2010	-24.52341723	151.4927359
756476	6937		A	Angiosperms	Myrtaceae	N	Rhodamnia glabrescens Guymer & Jessup	2223	Nicholson N.	NJN513		16MAR2003			Queensland	Port Curtis	C. 1.2KM S OF BULBURIN FOREST CAMP, GRANITE CREEK STATE FOREST. W SIDE OF ROAD, OPPOSITE BLOODWOOD	+++-000----	-D----	F	600		GPS	AMG	GDA94	100	S24 32 00.89	E151 28 01.40	151.467056	-24.53357996	56	344720	7285834	9148-447858	C. 1.2km S of Bulburin forest camp, Granite Creek State Forest. W side of road, opposite bloodwood. Regrowth Complex notophyll vine forest/sclerophyll. Red loam, ridge. 4m shrub, bark very flaky, black fruit 6-9 seeds.													21/06/2010	6/07/2010	-24.53357996	151.467056
622699	5335		A	Angiosperms	Myrtaceae	N	Rhodamnia glabrescens Guymer & Jessup	2223	Forster P.I.	PIF14520	Orford,D.;Smyrell,G.;Tucker,M.C.;	30DEC1993			Queensland	Port Curtis	RESUMPTION LA SF 391 BULBURIN	++++000----	-ZAA--	VF	590		Map	Lat/Long	GDA94	100	S24 32 11.00	E151 28 38.00	151.4772222	-24.53638889	56	345753	7285534	9148-457855	Resumption Logging Area, State Forest 391 Bulburin. Complex notophyll vine forest on red soil. Shrub to 4m high, red flaky bark, white flowers, black fleshy fruit. Common in area. Voucher for volatile oils analysis by J.J.Brophy.													7/11/2000	21/05/2010	-24.53638889	151.4772222
635702	5481		A	Angiosperms	Myrtaceae	N	Rhodamnia glabrescens Guymer & Jessup	2223	Barry S.	RFR153	Thomas,G.;Brushe,J.;Gale,M.;	30MAY1993	Snow N.	APR2002	Queensland	Port Curtis	BULBURIN SF CA 0.3KM ALONG SCOTT'S RD HEADING E	----000----	FDAA--		550		Map	Lat/Long	WGS84	100	S24 32 25.00	E151 29 18.00	151.4883333	-24.54027778	56	346884	7285116	9148-468851	About 0.3km along Scott's Road heading E, Bulburin State Forest. Complex notophyll very tall mixed closed forest with Argyrodendron, Ficus and Lophostemon emergents to 40m.													7/11/2000	21/05/2010	-24.54027778	151.4883333
437214	1		A	Angiosperms	Myrtaceae	V	Xanthostemon oppositifolius F.M.Bailey	16325	Randall J.	406					Queensland	Wide Bay	GRANITE CK FORESTRY AREA BULBURIN AREA	++++000----	--AA--	A			Hrb Convert	Lat/Long	AGD66	16000	S24 35	E151 35	151.5833333	-24.58333333	56	356556	7280441	9248-565804	Bulburin area, Forestry area, Granite Creek. Rainforest. Tree to 6m.													7/11/2000	28/11/2003	-24.58175153	151.5843961

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Coreg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
584861	5565		A	Angiosperms	Myrtaceae	V	Xanthostemon oppositifolius F.M.Bailey	16325	Bean A.R.	9163	Turpin,G.;	12NOV1995			Queensland	Wide Bay	UPPER REACHES OF BROKEN CREEK SE OF BULLYAN	+-+-000----	-DAA--	A	320		Hrb Convert	Lat/Long	AGD66	1600	S24 39 30.00	E151 29 30.00	151.4916667	-24.65833333	56	347364	7272036	9148-473720	Upper reaches of Broken Creek, south east of BUlIyan. Riverine rainforest with Xanthostemon oppositifolius, Planchonella laurifolia, Drgeetes deplanchei. Shallow sandy soil. Tree 10m high, bark smooth, creamy yellow. Flowers white. Abundant at site.													7/11/2000	28/11/2003	-24.65675057	151.4927359
670028	5805		A	Angiosperms	Oleaceae	N	Notelaea pungens Guymer	52539	Pollock A.B.	ABP502	Baalen,K.V.;	27NOV1997	Pollock A.B.	MAR1998	Queensland	Burnett	ABOUT 2.1KM DUE NE OF ABERCORN TOWNSHIP ON UNNAMED MTN PARISH OF CYNTHIA (GPS 25 07 33 151 09 48)	0000000----	QXOD--		300		GPS	Lat/Long	AGD66	100	S25 07 33.00	E151 09 48.00	151.1633333	-25.12583333	56	314831	7219849	9147-148198	About 2.1km due NE of Abercoan township on unnamed mountain parish of Cynthia At edge of narrow laterite ridge. (GPS 25 07 33 151 09 48) Eldsvold 9147-135198. On skeletal gravels & rock slabs on very steep east facing sandstone escarpment. In very tall woodland of Eucalyptus decorticans with understorey of Acacia barcrofti and A. conferta. Thin ground layer of Cleistochloa ridga and Entolaisia stricta. Small shrub to 1.4m tall, leaves dull olive green, leaves rigid.													7/11/2000	14/03/2014	-25.12425009	151.164406
652186	5688		A	Angiosperms	Orchidaceae	N	Bulbophyllum globuliforme Nicholls	5409	Crane R.	1780		02JAN1997			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+-+-000*---	-----	#	650		Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Steep stoney creek banks in hoop pine vine scrub. Occasional on ground on fallen hoop pine branches, one would expect it to be more common in the upper branches of the 30+ mt high hoop pines. Spirit material only at BRI.							E3405					7/11/2000	21/05/2010	-24.41666667	150.9166667
657053	5752		A	Angiosperms	Orchidaceae	N	Bulbophyllum globuliforme Nicholls	5409	Crane R.	1780		29DEC1996			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+-+-000*---	--AA--		650		Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Steep stoney creek banks in araucarian microphyll vineforest. Occasional on ground in fallen branches. Epiphytic orchid in upper branches of hoop-pine, flowers. Spirit material only at BRI.							E3594					7/11/2000	21/05/2010	-24.41666667	150.9166667
656311	5745		A	Angiosperms	Orchidaceae	V	Bulbophyllum weinthalii subsp. sinatum D.L.Jones	91622	Crane R.	1777		02JAN1997			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+-+-000*---	CTAA--		650		GPS	Lat/Long	WGS84	16000	0	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. (GPS removed) Hoop pine vine scrub, steep rocky creek banks. Occasional on ground on fallen hoop pine branches. Epiphytic orchid. One would expect it to be much more common in the upper branches as these trees were 30m+ in height. Spirit material only at BRI.							C1794					7/11/2000	23/04/2007	-24.41666667	150.9166667
268305	1		A	Angiosperms	Phyllanthaceae	V	Actephila bella P.I.Forst.	97763	McDonald W.J.	2374	Stanton,J.P.;	22JUL1978			Queensland	Port Curtis	SF 67 BULBURIN	0000000----	D-AC--				Hrb Convert	Lat/Long	AGD66	16000	S24 35	E151 35	151.5833333	-24.58333333	56	356556	7280441	9248-565804	SF 67 Bulburin. Granit Creek C 24K W of Lowmead. Araucarian notophyll vine forest on narrow flats adjacent to creek. Substrate alluvium derived from andesite. An understorey shrub 1.5m high.												7/11/2000	30/11/2009	-24.58175153	151.5843961
322582	1		A	Angiosperms	Phyllanthaceae	V	Actephila bella P.I.Forst.	97763	McDonald W.J.	3260	Fisher,W.J.;Ryan,P.;	17APR1980	Forster P.I.	AUG1995	Queensland	Port Curtis	SF 67 BULBURIN GRANITE CK RD	+00+000----	--AA--	T	220		Hrb Convert	Lat/Long	AGD66	16000	S24 35	E151 35	151.5833333	-24.58333333	56	356556	7280441	9248-565804	Bulburin State Forest (SF 67 Bulburin). Granite Creek Road, ca. 400m NW of junction of Granite and Boobook Creeks. Closed-forest (complex notophyll vine forest) previously with Araucaria cunninghamii emergents. Soils derived from andesite and alluvial material. Common in understorey.												7/11/2000	25/03/2013	-24.58175153	151.5843961
636660	5496		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Thomas G.	231	Brushe,J.;	29MAR1993			Queensland	Port Curtis	TR 353 DAWES CA 12.4KM SW OF BULLYAN	+-+-000----	F-AA-U	F	220		Hrb Convert	Lat/Long	AGD66	1600	S24 34 30.00	E151 16 30.00	151.275	-24.575	56	325319	7281007	9148-253810	TR 353 Dawes, about 12.4km SW of Bullyan. Hillslope, Granodiorite, rainforest. Shrub. Occasional.												7/11/2000	21/05/2010	-24.57341723	151.2760692
226777	1		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	McDonald W.J.	1601		15SEP1976			Queensland	Port Curtis	PLUMMER CK GRANITE CK RD BETWEEN BULBURIN & BRUCE	++++000---	-----				Hrb Convert	Lat/Long	AGD66	16000	S24 35	E151 35	151.5833333	-24.58333333	56	356556	7280441	9248-565804													7/11/2000	21/05/2010	-24.58175153	151.5843961
457330	1		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Forster P.I.	PIF5666	et al.,;	03SEP1989	Forster P.I.		Queensland	Port Curtis	MT FORT WILLIAM MILL SOUTH LA SF 95 GRID REF 9148-322725	++0+000----	-ZAA--	F	690		Hrb Convert	GridRef	AGD66	100	S24 39 07.63	E151 20 32.70	151.3424178	-24.65211885	56	332250	7272550	9148-322725													7/11/2000	25/03/2013	-24.65053609	151.343487
584860	5565		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Bean A.R.	9162	Turpin,G.;	12NOV1995			Queensland	Wide Bay	UPPER REACHES OF BROKEN CREEK SE OF BULLYAN	+-+-000----	-DAA--	F	320		Hrb Convert	Lat/Long	AGD66	1600	S24 39 30.00	E151 29 30.00	151.4916667	-24.65833333	56	347364	7272036	9148-473720	Upper reaches of Broken Creek, south east of BUlIyan. Riverine rainforest with Xanthostemon oppositifolius, Planchonella laurifolia, Drgeetes deplanchei. Shallow sandy soil. Shrub 2.5m high. Flowers white. Rare at site.												7/11/2000	21/05/2010	-24.65675057	151.4927359
576487	6369		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Forster P.I.	PIF29857	Tucker,M.C.;	20JAN2004			Queensland	Burnett	STATE FOREST 695 KALPOWAR, BURNETT RANGE ROAD, 4.5KM ENE OF KALPOWAR	++++000+---	-ZAA-S	V	500		GPS	Lat/Long	AGD84	100	S24 40 35.00	E151 21 15.00	151.3541667	-24.67638889	56	333471	7269876	9148-334698	State Forest 695 Kalpowar, Burnett Range Road, 4.5km ENE of Kalpowar. Araucarian microphyll vineforest on red soil, basalt. Shrub to 2m high, flowers cream, fruit green. Very common in area. Voucher for molecular analysis by P. van Welzen at L.							B1745					22/11/2004	21/05/2010	-24.67480612	151.3552359
624530	5362		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Forster P.I.	PIF14633		25JAN1994			Queensland	Port Curtis	COLOSSEUM CK TR 115 MANY PEAKS RANGE	+++-000---	C-AA--	F	120		Map	Lat/Long	AGD66	100	S24 23 39.00	E151 27 40.00	151.4611111	-24.39416667	56	343945	7301258	9149-439012	Colosseum Creek, Timber Reserve 115, Many Peaks Range. Araucarian notophyll vine forest along creek. Shrub to 2.5m high, monoecious, cream flowers. Very common in area. Spirit material at BRI.							E3919					7/11/2000	21/05/2010	-24.39258698	151.4621789
314095	1		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	McDonald W.J.	2350	et al.,;	21JUL1978			Queensland	Port Curtis	CROSSING RESERVE R73 MIRIAM VALE ON BAFFLE CK 5KM E MIRIAM VALE TO AGAE	+--+000----	C-AG--				Hrb Convert	Lat/Long	AGD66	16000	S24 25	E151 35	151.5833333	-24.41666667	56	356367	7298898	9249-563988													7/11/2000	21/05/2010	-24.41508566	151.5843932
636314	5487		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Thomas G.		Brushe,J.;	29MAR1993			Queensland	Port Curtis	PRIZEMANS CK DENNIS MARTIN'S PROPERTY	----000----	E-AA--		260		Hrb Convert	Lat/Long	AGD66	1600	S24 30 30.00	E151 17 30.00	151.2916667	-24.50833333	56	326915	7288412	9148-269884	Prizemans Creek, Dennis Martin's Property. Simple microphyll mixed tall closed forest.													7/11/2000	21/05/2010	-24.50675057	151.2927359
636223	5486		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Thomas G.		Brushe,J.;Gale,M.;Barry,S.;	01JUN1993			Queensland	Port Curtis	BULBURIN SF GRANITE CK C. 250METRES N OF SCOTTS RD CROSSING	++++000---	ADAA-S	B	200		Map	Lat/Long	GDA94	100	S24 31 06.00	E151 29 56.00	151.4988889	-24.51833333	56	347927	7287558	9148-479875	Bulburin SF, Granite Ck, ca 250m N of Scotts Rd crossing. Dark olive brown sandy loam. Simple notophyll very tall mixed closed forest with Ficus and Flindersia emergents to 40m. Evidence of previous logging.												7/11/2000	21/05/2010	-24.51833333	151.4988889
342677	1		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Robinson A.C.			11JAN1975	Airy Shaw H.K.		Queensland	Burnett	BULBURIN FOREST	++++000---	-----	TV			Hrb Convert	Lat/Long	AGD66	1600	S24 31 30.00	E151 28 30.00	151.475	-24.525	56	345514	7286784	9148-455867													7/11/2000	21/05/2010	-24.52341723	151.4760692
636222	5486		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Barry S.		Thomas,G.;Brushe,J.;Gale,M.;	30MAY1993			Queensland	Port Curtis	BULBURIN SF	+-+-000----	FDAA--	B	550		Map	Lat/Long	GDA94	100	S24 32 24.00	E151 29 16.00	151.4877778	-24.54	56	346827	7285146	9148-468851	Bulburin SF, ca 0.3km along Scotts Rd heading east. Dark brown sandy loam. Complex notophyll very tall mixed closed forest with Argyrodendron, Ficus and Lophostemon emergents to 40m. Evidence of previous logging.												7/11/2000	21/05/2010	-24.54	151.4877778
602547	5584		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Forster P.I.	PIF18292	Orford,D.;Tucker,M.C.;	30DEC1995			Queensland	Port Curtis	BOYNE LA SF 391 BULBURIN (GPS 24 32 25 151 29 19)(P)	+--+000----	--AA--	F	560		GPS	Lat/Long	AGD66	100	S24 32 25.00	E151 29 19.00	151.4886111	-24.54027778	56	346911	7285107	9148-469851	Boyne Logging Area, State Forest 391 Bulburin (GPS 24 32 25 151 29 19). Complex notophyll vine forest on red soil. Shrub to 3m high, cream-green fruit. Very common in area.	+											7/11/2000	21/05/2010	-24.53869501	151.4896803
567658	5279		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Zillman E.			JUN1993	Hohnen C.	JUL1993	Queensland	Port Curtis	BULLYAN SF ALONG DAWES RA - BOOBY RA RDS	+-+-000----	-----				Map	Lat/Long	AGD66	1600	S24 32 30.00	E151 29 30.00	151.4916667	-24.54166667	56	347223	7284957	9148-472849	Bullyan State Forest, along Dawes Range - Bobby Range roads.												7/11/2000	21/05/2010	-24.5400829	151.4927359
457322	1		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Forster P.I.	PIF5682	et al.,;	04SEP1989	Forster P.I.		Queensland	Port Curtis	GLASSFORD VALE 4KM N OF ON TR 353 GRID REF 9148-280845	+++-000----	-ZAA--	F	400		Hrb Convert	GridRef	AGD66	100	S24 32 35.97	E151 18 08.61	151.3023929	-24.54332474	56	328050	7284550	9148-280845													7/11/2000	25/03/2013	-24.54174197	151.3034621
457236	1		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Forster P.I.	PIF5672	Bean,A.R.;	04SEP1989	Forster P.I.		Queensland	Port Curtis	GLASSFORD VALE 2.5KM N OF ON TR 353 GRID REF 9148-283833	+--+000----	-ZAH--	F	340		Hrb Convert	GridRef	AGD66	100	S24 33 15.09	E151 18 18.75	151.3052081	-24.55419121	56	328350	7283350	9148-283833	TR 353, 2.5km N of Glassford Vale. Araucarian microphyll vine forest, chocolate soil. Shrub to 3m, immature fruit.												7/11/2000	25/03/2013	-24.55260844	151.3062773
636341	5487		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Thomas G.		Brushe,J.;	29MAR1993			Queensland	Port Curtis	TR 353 DAWES CA 12.4KM SW OF BULLYAN	----000----	F-AA--		220		Hrb Convert	Lat/Long	AGD66	1600	S24 34 30.00	E151 16 30.00	151.275	-24.575	56	325319	7281007	9148-253810	About 12.4km SW of Bullyan, TR 353 Dawes. Simple microphyll mixed tall closed forest.												7/11/2000	21/05/2010	-24.57341723	151.2760692
606819	5989		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Forster P.I.	PIF25417	Booth,R.;	21MAR2000			Queensland	Burnett	STATE FOREST 695 KALPOWAR, BURNETT RANGE ROAD	+++-000+++	-ZAA-S	A	520		GPS	GridRef	AGD66	100	S24 40 49.08	E151 21 35.40	151.359632	-24.6803	56	334050	7269450	9148-340694	State Forest 695 Kalpowar, Burnett Range Road. Araucarian microphyll vineforest with emergent Argyrodendron & Araucaria on red soil derived from basalt. Tree to 5m high; bark tessellated, corky; blaze pink-red; wood pink-red; flowers green. Very common in area. Wood & Spirit samples at BRI.							C2539					27/04/2001	21/05/2010	-24.67871723	151.3609012
639827	5563		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sauropodoides Airy Shaw	38727	Bean A.R.	9363	Robins,P.;	05DEC1995			Queensland	Burnett	TWENTY MILE LA SF 95 SE OF KALPOWAR	++++000---	--AA--	F	460		Hrb Convert	Lat/Long	AGD66	1600	S24 44 30.00	E151 20 30.00	151.3416667	-24.74166667	56	332294	7262631	9148-322626	Twenty Mile Logging Area, State Forest 95, SE of Kalpowar. Microphyll rainforest with Araucaria emergents. Shrub 4m high, flowers white, pendulous. Common at site.												7/11/2000	21/05/2010	-24.7400829	151.3427359
571718	5552		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sp. (Bulburin P.I.Forster+ PIF16034)	80660	Thompson E.J.	CAL339	Turpin,G.P.;	15JUN1995	Telford I.R.	APR2006	Queensland	Port Curtis	NR HEADWATERS OF HORSE CK BULBURIN SF 391 BOBBY RA (GPS 24 29 41 151 30 00)(SITE 209)	++--000----	FDAA-S		510		GPS	Lat/Long	AGD66	100	S24 29 41.00	E151 30 00.00	151.5	-24.49472222	56	348010	7290165	9249-480901	Near headwaters of Horse Creek, Bulburin State Forest 39, Bobby Range (GPS 24 29 41 151 30 00)(site 209). E facing upper slope of hilly terrain with brown loam. Very tall simple notophyll open woodland of Argyrodendron trifoliolatum with Austromyrtus bidwilli and Siphonodon australe in dense understorey.												7/11/2000	21/05/2010	-24.49314121	151.5010599
204515	1		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sp. (Bulburin P.I.Forster+ PIF16034)	80660	Webb L.J.	3318	et al.,;	02AUG1957			Queensland	Port Curtis	BULBURIN	+--+000----	-----				Hrb Convert	Lat/Long	AGD66	100000	S24 30	E151 30	151.5	-24.5	56	348017	7289580	9248-480895													7/11/2000	21/03/2012	-24.4984182	151.5010627
458807	1		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sp. (Bulburin P.I.Forster+ PIF16034)	80660	Forster P.I.	PIF5845	et al.,;	26OCT1989			Queensland	Port Curtis	BULBURIN SF 391 RESUMPTION LA GRID REF 9148-445863	+++-000+---	-YAA--	F	600		Hrb Convert	GridRef	AGD66	100	S24 31 43.75	E151 27 55.59	151.4654415	-24.52881959	56	344550	7286350	9148-445863								E941					7/11/2000	21/03/2012	-24.52723682	151.4665107
636224	5486		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sp. (Bulburin P.I.Forster+ PIF16034)	80660	Barry S.		Thomas,G.;Brushe,J.;Gale,M.;	01JUN1993	Telford I.R.	APR2006	Queensland	Port Curtis	BULBURIN SF	+--+000----	FDAA-S	B	500		Map	Lat/Long	GDA94	100	S24 31 45.00	E151 28 41.00	151.4780556	-24.52916667	56	345829	7286335	9148-458863	Bulburin SF, southern edge of hoop plantation E of forestry barracks. Dark olive brown sandy clay loam, basalt, hillslope. Complex notophyll very tall mixed closed forest with Argyrodendron emergents to 40m. Evidence of previous logging.												7/11/2000	21/05/2010	-24.52916667	151.4780556
792967	6975		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sp. (Bulburin P.I.Forster+ PIF16034)	80660	Nicholson N.J.	NJN680		26APR2003			Queensland	Port Curtis	BULBURIN, GRANITE CREEK STATE FOREST, SCOTTS ROAD BRIDGE, UPSTREAM C. 100M	---000----	DYAA--		550		Map	AMG	AGD66	100	S24 31 46.18	E151 29 15.51	151.4876413	-24.5294953	56	346800	7286300	9148-468863	Bulburin, Granite Creek State Forest, Scotts Road bridge, upstream c. 100m. Gully red loam, complex notophyll vine forest. 1m tall, fruit dry splitting. Common in understorey.												21/06/2010		-24.52791254	151.4887105
636225	5486		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sp. (Bulburin P.I.Forster+ PIF16034)	80660	Barry S.		Thomas,G.;Brushe,J.;Gale,M.;	30MAY1993	Telford I.R.	APR2006	Queensland	Port Curtis	BULBURIN SF CA 0.3KM ALONG SCOTTS RD HEADING EAST	+--+000----	FDAA--	B	550		Map	Lat/Long	GDA94	100	S24 32 24.00	E151 29 16.00	151.4877778	-24.54	56	346827	7285146	9148-468851	Bulburin SF, ca 0.3km along Scotts Rd heading east. Dark brown sandy loam. Complex notophyll very tall mixed closed forest with Argyrodendron, Ficus and Lophostemon emergents to 40m. Evidence of previous logging.												7/11/2000	21/05/2010	-24.54	151.4877778
636355	5487		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sp. (Bulburin P.I.Forster+ PIF16034)	80660	Barry S.		Thomas,G.;Brushe,J.;Gale,M.;	30MAY1993	Telford I.R.	APR2006	Queensland	Port Curtis	BULBURIN SF CA 0.3KM ALONG SCOTT'S RD HEADING E	----000----	FDAA--		550		Map	Lat/Long	GDA94	100	S24 32 24.00	E151 29 16.00	151.4877778	-24.54	56	346827	7285146	9148-468851	About 0.3km along Scott's Road heading E, Bulburin State Forest. Complex notophyll very tall mixed closed forest with Argyrodendron, Ficus and Lophostemon emergents to 40m.												7/11/2000	21/05/2010	-24.54	151.4877778
602548	5584		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sp. (Bulburin P.I.Forster+ PIF16034)	80660	Forster P.I.	PIF18293	Orford,D.;Tucker,M.C.;	30DEC1995	Telford I.R.	APR2006	Queensland	Port Curtis	BOYNE LA SF 391 BULBURIN (GPS 24 32 25 151 29 19)(P)	+++-000----	--AA--	F	560		GPS	Lat/Long	AGD66	100	S24 32 25.00	E151 29 19.00	151.4886111	-24.54027778	56	346911	7285107	9148-469851	Boyne Logging Area, State Forest 391 Bulburin (GPS 24 32 25 151 29 19). Complex notophyll vine forest on red soil. Subs/nsb to 1m high, reddish fruit, red flowers. Very common in area.	+											7/11/2000	21/05/2010	-24.53869501	151.4896803
483138	1		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sp. (Bulburin P.I.Forster+ PIF16034)	80660	Gibson N.	1101		15APR1990			Queensland	Port Curtis	BULBURIN SF 67 OLD FORESTRY BARRACKS AREA 9KM E OF BULLYAN	+0+-000----	-----	A	550		Hrb Convert	Lat/Long	AGD66	1600	S24 32 30.00	E151 28 30.00	151.475	-24.54166667	56	345534	7284938	9148-455849													7/11/2000	21/03/2012	-24.5400829	151.4760692
483148	1		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sp. (Bulburin P.I.Forster+ PIF16034)	80660	Gibson N.	1102		30SEP1989			Queensland	Port Curtis	BULBURIN SF 67 OLD BARRACKS AREA 9KM E OF BULLYAN	+++-000----	--AA--	A	550		Hrb Convert	Lat/Long	AGD66	1600	S24 32 30.00	E151 28 30.00	151.475	-24.54166667	56	345534	7284938	9148-455849													7/11/2000	21/03/2012	-24.5400829	151.4760692
567657	5279		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sp. (Bulburin P.I.Forster+ PIF16034)	80660	Zillman E.			JUN1993	Telford I.R.	APR2006	Queensland	Port Curtis	BULLYAN SF ALONG DAWES RA - BOBBY RA RDS	++--000----	-----				Map	Lat/Long	AGD66	1600	S24 32 30.00	E151 29 30.00	151.4916667	-24.54166667	56	347223	7284957	9148-472849	Bullyan State Forest, along Dawes Range - Bobby Range roads.												7/11/2000	21/05/2010	-24.5400829	151.4927359
314093	1		A	Angiosperms	Phyllanthaceae	N	Phyllanthus sp. (Bulburin P.I.Forster+ PIF16034)	80660	McDonald W.J.	2373	et al.,;	22JUL1978			Queensland	Port Curtis	SFR 67 BULBURIN C 24KM W OF LOWMEAD	++++-000---	D-AC--				Hrb Convert	Lat/Long	AGD66	16000	S24 35	E151 35	151.5833333	-24.58333333	56	356556	7280441	9248-565804													7/11/2000	21/03/2012	-24.58175153	151.5843961
665471	5921		A	Angiosperms	Poaceae	V	Arthraxon hispidus (Thunb.) Makino	46508	Fensham R.J.	RJF3611		19JAN1999			Queensland	Burnett	3KM N OF ABERCORN (GPS 25 06 56 151 08 05)	+0--000----	W-----				GPS	Lat/Long	AGD66	100	S25 06 56.00	E151 08 05.00	151.1347222	-25.11555556	56	311930	7220948	9147-119209	3km N of Abercorn. (GPS 25 06 56 151 08 05) Spring fed wetland.												7/11/2000	15/05/2008	-25.11397231	151.1357949
283807	1		A	Angiosperms	Poaceae	V	Dichanthium queensland icum B.K.Simon	38421	White C.T.	10793		APR1937	Simon B.K.		Queensland	Port Curtis	CALLIDE VALLEY	+000000----	-----				Hrb Convert	Lat/Long	AGD66	100000	S24 30	E150 30	150.5	-24.5	56	246660	7288112	9048-466881	Callide Valley. Same locality as No. 10791.												7/11/2000	15/05/2008	-24.49841588	150.5010758
283808	1		A	Angiosperms	Poaceae	V	Dichanthium queensland icum B.K.Simon	38421	Scarlett N.H.	S527	Birsset,W.J.;	19APR1948	Simon B.K.		Queensland	Port Curtis	MAIN RD BETWEEN DAWES & LAWGI	+000000----	AQOD-S				Hrb Convert	Lat/Long	AGD66	1600	S24 35 30.00	E150 40 30.00	150.675	-24.59166667	56	264572	7278267	9048-645782	Main road between Dawes and Lawgi. Black soil (basaltic) lightly timbered with silver-leaf ironbark, in association with Dichanthium sericeum.												7/11/2000	16/06/2010	-24.59008255	150.6760758
339061	1		A	Angiosperms	Poaceae	V	Dichanthium queensland icum B.K.Simon	38421	Anderson E.R.	2857		10DEC1981			Queensland	Port Curtis	26KM SE OF THANGOOL ON RD TO MONTO	+--+000----	AKOD--				Hrb Convert	Lat/Long	AGD66	1600	S24 39 30.00	E150 45 30.00	150.7583333	-24.65833333	56	273134	7271022	9048-731710	26 km SE of Thangool on road to Monto. Undulating plain; light clay; Eucalyptus melanophloia woodland with grassy understorey. Grass.												7/11/2000	15/05/2008	-24.65674922	150.7594092
833898	7234		A	Angiosperms	Poaceae	V	Dichanthium queensland icum B.K.Simon	38421	Eddie C.	CPE2208	Jeffers,B.; Chemello,D.;	06JUN2012			Queensland	Leichhardt	STOCK ROUTE FOLLOWING LEICHHARDT HIGHWAY (BANANA - THEODORE), C. 23.2KM SOUTH OF BANANA.	+--+000----	AKZL--	G			GPS	Lat/Long	WGS84	100	S24 40 38.00	E150 07 59.00	150.1330556	-24.67722222	56	209867	7267760	8948-098677	Stock Route following Leichhardt Highway (Banana - Theodore), c. 23.2km south of Banana. Native grassland dominated by Bothriochloa erianthoides and Dichanthium sericeum. Mid to lower slope of gently undulating plain; black clay. Tufted grass to c. 60cm high; leaf blades hairy above and below. Common at site.												30/07/2012		-24.67722222	150.1330556

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precison	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Coreg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
833897	7234		A	Angiosperms	Poaceae	V	Dichanthium queenslandicum B.K.Simon	38421	Eddie C.	CPE2206	Jeffers,B.; Hoffmann,A.;	16JUN2012			Queensland	Leichhardt	STOCK ROUTE FOLLOWING LEICHHARDT HIGHWAY (BANANA - THEODORE), C. 28.1KM SOUTH OF BANANA.	+--+000----	AKZL--	G			GPS	Lat/Long	WGS84	100	S24 43 21.00	E150 08 32.00	150.1422222	-24.7225	56	210900	7262762	8948-109627	Stock Route following Leichhardt Highway (Banana - Theodore), c. 28.1km south of Banana. Native grassland dominated by Dichanthium sericeum; very sparse shrub layer of Acacia farnesiana. Upper slope of undulating plain; black clay. Tufted grass to c. 50cm high; leaf blades hairy above and below. Glumes overlapping slightly													30/07/2012		-24.7225	150.1422222
833896	7234		A	Angiosperms	Poaceae	V	Dichanthium queenslandicum B.K.Simon	38421	Eddie C.	CPE2193b	Jeffers,B.; Hoffmann,A.;	31MAY2012			Queensland	Leichhardt	STOCK ROUTE FOLLOWING LEICHHARDT HIGHWAY (BANANA - THEODORE), C. 43KM SOUTH OF BANANA.	+--+000----	AKZL--	G			GPS	Lat/Long	WGS84	100	S24 51 19.00	E150 10 41.00	150.1780556	-24.85527778	56	214831	7248124	8948-148481	Stock Route following Leichhardt Highway (Banana - Theodore), c. 43km south of Banana. Native grassland dominated by Dichanthium sericeum, Bothriochloa erianthoides, Panicum queenslandicum and Aristida leptopoda. Gently undulating plain; heavy black clay. Tufted grass to c. 0.5m high; flowers purplish when young, straw colour when mature. Common at site.													30/07/2012		-24.85527778	150.1780556
833895	7234		A	Angiosperms	Poaceae	V	Dichanthium queenslandicum B.K.Simon	38421	Eddie C.	CPE2193a	Jeffers,B.; Hoffmann,A.;	31MAY2012			Queensland	Leichhardt	STOCK ROUTE FOLLOWING LEICHHARDT HIGHWAY (BANANA - THEODORE), C. 43KM SOUTH OF BANANA.	+--+000----	AKZZ--	G			GPS	Lat/Long	WGS84	100	S24 51 19.00	E150 10 41.00	150.1780556	-24.85527778	56	214831	7248124	8948-148481	Stock Route following Leichhardt Highway (Banana - Theodore), c. 43km south of Banana. Native grassland dominated by Dichanthium sericeum, Bothriochloa erianthoides, Panicum queenslandicum and Aristida leptopoda. Gently undulating plain; heavy black clay Tufted grass to c. 0.5m high; inflorescence purplish on upper side, green below when young, straw colour when seed mature. Common at site.													30/07/2012		-24.85527778	150.1780556
319981	1		A	Angiosperms	Poaceae	N	Paspalidium scabriflorum S.T.Blake	44461	Blake S.T.	19983		16MAY1956			Queensland	Port Curtis	N OF WOWAN	+000000----	-Q---	f			Hrb Convert	Lat/Long	AGD66	1600	S23 45 30.00	E150 11 30.00	150.1916667	-23.75833333	56	213752	7369692	8950-137696	North of Wowan. In edge of Brigalow-Wilga scrub on heavy soil. Light green separation tufts.													7/11/2000	21/05/2010	-23.75675391	150.1927483
291979	1		A	Angiosperms	Poaceae	N	Paspalidium scabriflorum S.T.Blake	44461	not known			APR1937			Queensland	Port Curtis	BOREEN	+000000----	+-----				Hrb Convert	Lat/Long	AGD66	16000	S24 15	E150 25	150.4166667	-24.25	56	237686	7315655	8949-376156	Boreen. Broad leafed grassin cleared wilga forest.													7/11/2000	21/05/2010	-24.24841664	150.4177494
491151	5990		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Ryan T.S.	758		11NOV1997			Queensland	Port Curtis	PADDY CREEK CATCHMENT RAZORBACK RIDGE ON EDGE OF FORESTRY TRACK (GPS 23 37 55 150 21 18)	+--+000----	--FF--	F			GPS	Lat/Long	AGD66	100	S23 37 55.00	E150 21 18.00	150.355	-23.63194444	56	230148	7384014	8950-301840	Paddy Creek catchment, Razorback Ridge on edge of forestry track. (GPS 23 37 55 150 21 18). Growing beneath Corymbia trachyphloia, Syncarpia glomulifera, Acacia hervidula woodland on Jurassic sediments. Erect bushy shrub to 1.5m. No others seen in immediate area.													7/11/2000	28/11/2003	-23.63036502	150.3560816
395627	1		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Anderson E.R.	3797		21JUL1984	Molyneux W.	NOV1993	Queensland	Port Curtis	RAZOR BACK RA C 3KM W OF MT MORGAN MT MORGAN SHIRE	+++-000----	FBFAF-	F			Hrb Convert	Lat/Long	AGD66	1600	S23 38 30.00	E150 22 30.00	150.375	-23.64166667	56	232209	7382975	8950-322829	Mt Morgan Shire, Razor Back Range ca 3km W of Mt Morgan. Hilly, sandy, stony, shallow soil. Eucalyptus acmenoides open forest. Shrub ca 2m., inflescent red flowers.													7/11/2000	28/11/2003	-23.64008724	150.3760816
550747	6118		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Cooper A.			JUL2001	Fechner N.	AUG2001	Queensland	Port Curtis	MOUNT MORGAN MINE	+--+000----	+---F	F			Collector	Lat/Long	AGD66	1600	S23 38 30.00	E150 23 30.00	150.3916667	-23.64166667	56	233910	7383006	8950-339830	Mount Morgan Mine. Sandstone. Shrub, dark pink flowers.													5/12/2001	28/11/2003	-23.64008724	150.3927483
408160	1		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Bean A.R.	682		25OCT1987	Molyneux W.	NOV1993	Queensland	Port Curtis	CALLIDE RA S OF BILOELA CALLIOPE RD	+++0000----	-----				Hrb Convert	Lat/Long	AGD66	1600	S24 14 30.00	E150 36 30.00	150.6083333	-24.24166667	56	257149	7316926	9049-571169	Callide Range, S of Biloela-Callope Road. Sandy, skeletal soil. In association with Eucalyptus decorticans, Eucalyptus cloeziana, Bossiaea cainsalis. About 30 or 40 plants seen most were flowering.													7/11/2000	28/11/2003	-24.24008478	150.6094084
571881	5596		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Thompson E.J.	BIL227	Price,R.J.;	13MAR1996	Thompson E.J.	APR1996	Queensland	Port Curtis	19.5KM NE OF BILOELA TR 170 (GPS 24 14 34 150 36 19)(SITE 414)	-000----	KDFA-C	F	510		GPS	Lat/Long	AGD66	100	S24 14 34.00	E150 36 19.00	150.6052778	-24.24277778	56	256841	7316798	9049-568167	19.5km NE of Biloela, TR 170 (GPS 24 14 34 150 36 19)(site 414). Crest of ridge with reddish-brown, gravelly, sandy loam. Very tall open woodland of Eucalyptus suffulgens with Euc. cloeziana and Euc. citriodora. Laterite/laterised sandstone.													7/11/2000	28/11/2003	-24.24119589	150.6063529
629574	5414		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	McDonald W.J.	6060	Melzer,R.;Johnson,R.W.;	31JUL1994			Queensland	Port Curtis	TR 170 SPHER C 18.5KM NE OF BILOELA (CALLIDE RANGE) 9049-544161	+++-000----	-DFA--	F#	340		Hrb Convert	GridRef	AGD66	100	S24 14 53.70	E150 34 53.88	150.5816339	-24.24824913	56	254450	7316150	9049-544161	Timber Reserve 170 Spher. c 18.5km NE of Biloela (Callide Range). Map reference Biloela 9049-544161. (Open) woodland of Eucalyptus suffulgens, E. trachyphloia, Callitris endlicheri. Tall shrubs of Acacia blakei, A. pubicosta. Dense low shrub layer of Boronia rasmanifolia, B. bipinnata, Dodonaea triangularis and Trymalium minutiflorum. Soil a light brown gravelly loam derived from sedimentary rocks. Shrub 1.5m high. Occasional at site.													7/11/2000	28/11/2003	-24.24666724	150.582709
571837	5568		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Thompson E.J.	BIL203	Price,R.J.;	13FEB1996	Thompson E.J.	FEB1995	Queensland	Port Curtis	21KM NE OF BILOELA CALLIDE RA (GPS 24 15 18 150 38 48) (NR SITE 388)	+++-000----	FDOF-F				GPS	Lat/Long	AGD66	100	S24 15 18.00	E150 38 48.00	150.6466667	-24.255	56	261068	7315515	9049-610155	21km NE of Biloela, Callide Range (GPS 24 15 18 150 38 48). NW facing mid-slope of hilly terrain of brown sandy soil. Very tall woodland of Eucalyptus citriodora.													7/11/2000	28/11/2003	-24.25341811	150.6477418
571865	5585		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Thompson E.J.	BIL216	Price,R.J.;	13FEB1996	Thompson E.J.	MAR1996	Queensland	Port Curtis	20.5KM NE OF BILOELA (GPS 24 15 29 150 38 48)(SITE 391)	+++-000----	KDFA-F		520		GPS	Lat/Long	AGD66	100	S24 15 29.00	E150 38 48.00	150.6466667	-24.25805556	56	261074	7315177	9049-610151	20.5km NE of Biloela (GPS 24 15 29 150 38 48)(site 391). Crest of hilly terrain with brown sandy loam. Tall open woodland of Eucalyptus suffulgens and Euc. trachyphloia. Sandstone.													7/11/2000	28/11/2003	-24.25647367	150.6477418
571861	5585		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Thompson E.J.	BIL212	Price,R.J.;	13FEB1996	Thompson E.J.	MAR1996	Queensland	Port Curtis	18KM NE OF BILOELA (GPS 24 18 01 150 40 02)(SITE 393)	++++000----	FDOF-F		510		GPS	Lat/Long	AGD66	100	S24 18 01.00	E150 40 53.00	150.6813889	-24.30027778	56	264678	7310558	9049-646105	18km NE of Biloela (GPS 24 18 01 150 10 53)(site 393). S facing mid-slope of hilly terrain with brown sandy loam. Very tall woodland of Eucalyptus citriodora and Euc. cloeziana.													7/11/2000	28/11/2003	-24.29869589	150.682464
759075	7276		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Pollock A.B.	ABP2860	McDonald,W.J.;	05APR2011	Pollock A.B.	JUL2011	Queensland	Port Curtis	C. 6km due E of Mt MURCHISON, STATE FOREST 170 (THE BLUFF), N OF BILOELA	+++-000----	F-FA-F	F	380		GPS	AMG	WGS84	100	S24 18 14.71	E150 39 15.87	150.6544082	-24.30408568	56	261947	7310100	9049-619101	C. 6km due E of Mt Murchison, State Forest 170 (The Bluff), N of Biloela. Steep to moderate slopes of grey-white soils derived from Precipice Sandstones. Tall open forest of Eucalyptus decorticans with occasional Corymbia cloeziana and Corymbia trachyphloia, lower tree layer of Acacia pubicosta and Acacia blakei, tall shrub layer of whipstick Lophostemon confertus, dense low shrublayer of Boronia palasepala, Dodonaea triangularis, groundlayer of Scleria sphacelata and Cleistochloa subjuncea. Thin shrub to 2.5m tall. Flowers purplish-red. Leaf upper surface pale green, under surface whitish. Occasional to rare at this locality, 3-5 plants seen.													11/12/2012	4/03/2013	-24.30408568	150.6544082
570279	5307		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Thompson E.J.	BIL10A		13SEP1993			Queensland	Port Curtis	15KM NE OF BILOELA	+++-000----	FAFA-F		300		Hrb Convert	Lat/Long	AGD66	1600	S24 19 30.00	E150 39 30.00	150.6583333	-24.325	56	262384	7307781	9049-623077	15km NE of Biloela. Open woodland of Eucalyptus trachyphloia with E. suffulgens on undulating terrain with sandy soil. Open shrub to 2m high with red flowers. Locally abundant.													7/11/2000	28/11/2003	-24.32341811	150.6594084
601262	5449		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Forster P.I.	PIF15905		28NOV1994			Queensland	Burnett	ALIENS RD SOUTH END COOMINGLAH RANGE SF 28 COOMINGLAH (PUBREF) (REFSET)	+++-000----	QZFF--	F	460		Unknown	Lat/Long	AGD66	100	S24 51 23.00	E150 56 27.00	150.9408333	-24.85638889	56	291939	7249372	9048-919493	Aliens road south end, Coominglah Range, State Forest 28 Coominglah. Open forest on red soil jump-up ridge with Eucalyptus decorticans & E. maculata dominant. Shrub to 2m high, foliage silver-gold below, red flowers. Very common on area.		*	*										7/11/2000	14/12/2006	-24.85480477	150.941909 2
471369	1		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Forster P.I.	PIF6717		28APR1990			Queensland	Burnett	SF 28 GIRD REF 9048-919493	+--+000----	-ZOF--	F	450		Hrb Convert	GridRef	AGD66	100	S24 51 23.73	E150 56 27.37	150.940936	-24.856593	56	291950	7249350	9048-919493	State Forest 28. Euc. caculata, Euc. decorticans open forest with scrubby understorey, on red soil. Shrub to 3 metres, foliage silver below, red flowers.		*											7/11/2000	28/11/2003	-24.85500888	150.9420118
533066	5713		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Ormesher J.				Francis R.	APR1997	Queensland	Burnett	SIXTEEN MILE LOGGING AREA SF28 SHIRE OF MONTO	+--+000----	-----	F			Unknown	Lat/Long	AGD66	1600	S24 52 30.00	E150 56 30.00	150.9416667	-24.875	56	292055	7247312	9048-920473	Sixteen Mile Logging Area, SF28, Shire of Monto. State forest. Small, bushy shrub about 1-2m tall, pink/red flowers.													7/11/2000	29/09/2005	-24.87341588	150.9427425
474552	5012		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Bean A.R.	2082		13AUG1990	Molyneux W.	NOV1993	Queensland	Burnett	COOMINGLAH SF W OF MONTO	+--+000----	-DFA--	#F			Hrb Convert	Lat/Long	AGD66	1600	S24 52 30.00	E150 56 30.00	150.9416667	-24.875	56	292055	7247312	9048-920473	Coominglah State Forest, W of Monto. On red gravelly loam, with Euc. decorticans, Dodonaea triangularis. Shrub to 2metres high, flowers red.													7/11/2000	28/11/2003	-24.87341588	150.9427425
717403	1		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Molyneux W.M.	NSW298998	Forrester,S.G.;	12OCT1989	Olde P.M.	APR1995	Queensland	Burnett	COOMINGLAH SF ROCKHOLE OFF TUCKERS RD C. 27.7KM W OF MONTO	+++-000----	-----	T			Unknown	Lat/Long	AGD66	100	S24 52 47.00	E150 56 04.00	150.9344444	-24.87972222	56	291333	7246778	9048-913467	Area at the Rockhole off Tuckers Road, ca. 27.7km W of Monto, Coominglah State Forest.													7/11/2000	29/09/2005	-24.87813811	150.9355203
596655	1		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Makinson R.O.	1380	Telford,I.R.;Nightingale,J.;	09NOV1993	Makinson R.O.	NOV1993	Queensland	Burnett	C 15KM DIRECT W OF MONTO COOMINGLAH SF 'ROCK HOLE' EDGE OF GORGE ON W SIDE OF CK 9048-913467 SCORIA	+++-000----	LTFA-F	F	400		Hrb Convert	GridRef	AGD66	100	S24 52 47.92	E150 56 04.60	150.9346107	-24.87997659	56	291350	7246750	9048-913467	Ca. 15km direct W of Monto, Coominglah State Forest, the Rock Hole, edge of gorge on W side of creek. Steep rocky lip of gorge, NE aspect. Sandstone, skeletal sandy soil. Dry sclerophyll forest with Angophora leiocarpa, Eucalyptus acmenoides, Allocasuarina littoralis, Hovea sp., Pomaderris sp., Acacia, Leptospermum, Xanthorrhoea and Dodonaea. Erect bushy shrub 1-2m tall x up to 3m wide, often many stems from near base, perianth and style pinkish red, ovary light greenish yellow, undersurface of leaves silvery, on young growth with fimuginous hairs along veins. Moderately frequent along upper edge of gorge. All herbarium material from one plant, cuttings from others.													7/11/2000	28/11/2003	-24.87839247	150.9356865
584842	5565		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Bean A.R.	9105	Turpin,G.;	08NOV1995			Queensland	Burnett	BOOGALGOPAL CK COOMINGLAH SF WEST OF MONTO	+++-000----	-DFF--	F	400		Hrb Convert	Lat/Long	AGD66	1600	S24 53 30.00	E150 56 30.00	150.9416667	-24.89166667	56	292083	7245466	9048-920454	Boogalgopal Creek, Coominglah SF, west of Monto. Woodland of Angophora leiocarpa, Eucalyptus acmenoides, E. exserta. Sandy soil. Shrub 2m high, flowers bright red. Occasional at site.													7/11/2000	28/11/2003	-24.89008255	150.9427425
584845	5565		A	Angiosperms	Proteaceae	V	Grevillea hockingsii Molyneux & Olde	73653	Bean A.R.	9108	Turpin,G.;	08NOV1995			Queensland	Burnett	EAST BOOGALGOPAL LA COOMINGLAH SF WEST OF MONTO	+++-000----	-DFF-F	F	450		Hrb Convert	Lat/Long	AGD66	1600	S24 55 30.00	E150 56 30.00	150.9416667	-24.925	56	292138	7241773	9048-921417	East Boogalgopal LA, Coominglah SF, west of Monto. Woodland of Eucalyptus corynodes, E. trachyphloia, E. cloeziana. Sandy soil over sandstone. Shrub 2-2m high, flowers bright red. Common at site.													7/11/2000	28/11/2003	-24.92341588	150.9427425
252666	1		A	Angiosperms	Proteaceae	V	Grevillea venusta R.Br.	15469	Telford I.R.	5482		02JUN1977	McDonald W.J.		Queensland	Port Curtis	MANY PEAKS RA MT CASTLETOWER	+++-000----	-DFA-U		400		Hrb Convert	Lat/Long	AGD66	1600	S24 10 30.00	E151 17 30.00	151.2916667	-24.175	56	326462	7325329	9149-264253	Many Peaks Range, Mt Castletower. Mountainous, base of rock face, W aspect. Skeletal sandy soil on granitic rock. Open Eucalyptus forest - shrub community margin. 3m shrub.													7/11/2000	28/11/2003	-24.17342031	151.2927344
536642	4423		A	Angiosperms	Proteaceae	V	Grevillea venusta R.Br.	15469	Duretto M.F.	274	Bayly,M.;	05SEP1992			Queensland	Port Curtis	MANY PEAKS RA 1KM ALONG OXLEE CK FROM RD TO NETHERLEIGH	+++-000----	B-FA--				Hrb Convert	Lat/Long	AGD66	1600	S24 12 30.00	E151 16 30.00	151.275	-24.20833333	56	324814	7321617	9149-248216	Many Peaks Ra. Oxlee Ck. Very close to ck in eucalypt and Tristania forest; flat flood area with occasional Banksia, Ficus, grasses and herbs. 3-4m open single stemmed plant. Leaves dark green above, lighter below. Flowers: tepals with green yellow midrib, yellow to reddish orange recurved tips, style dark purple to black with sparse white pubescence.													7/11/2000	28/11/2003	-24.20675365	151.2760678
593298	1		A	Angiosperms	Proteaceae	N	Persoonia volcanica P.H.Weston & L.A.S.Johnson	57296	Weston P.H.	1524	Richards,P.G.;	11JAN1990			Queensland	Port Curtis	MAIN RD KROOMBIT TOPS ON RIDGE BETWEEN TA 47 CK & KROOMBIT CK 0.2KM FROM ESCARPMENT TRACK NR AMY'S PK	+--+000----	KDFA-F	F	850		Hrb Convert	Lat/Long	AGD66	1600	S24 22 30.00	E150 59 30.00	150.9916667	-24.375	56	296298	7302772	9049-962027	Main Road, Kroombit Tops, on ridge between TA457 Creek and Kroombit Creek, 0.2km from escarpment track. Near Amys Peak. Ridge top to slight slope. Wet sclerophyll forest dominated by EucaLyptus campanulata, E. saligna, Allocasuarina torulosa, Angophora floribunda, understorey with Imperata, Blechnum, Rubus, Pteridium. Sandstone, grey brown loam. Locally occasional. Erect shrub branching from near base, 3.7m high. Bark brown, smooth with very fine fissures. Tepals and anthers yellow, pedicel green. Fruits green. One seedling found with cotyledons-5. Living Coll. No. 900043.													7/11/2000	21/05/2010	-24.37341811	150.9927418
440936	1		A	Angiosperms	Proteaceae	N	Persoonia volcanica P.H.Weston & L.A.S.Johnson	57296	McDonald W.J.	3875		13DEC1983	Weston P.H.	MAY1995	Queensland	Port Curtis	KROOMBIT TOPS WSW OF GLADSTONE (R)	+++-000----	F-FI-Q	F	880		Hrb Convert	Lat/Long	AGD66	1600	S24 22 30.00	E151 00 30.00	151.0083333	-24.375	56	297989	7302796	9149-979027	Kroombit Tops, WSW of Gladstone. Gentle SW slope near escarpment. Eucalyptus andrewsii subsp. campanulata - E. saligna open forest/tall open forest. Lower trees of E. trachyphloia, Casuarina terulosa. Patchy shrubs of Elaeocarpus reticulatus. Dense ground stratum of Blechnum cartilagineum. A shrub 2m high. Patchy occurrence.			*										7/11/2000	21/05/2010	-24.37342031	151.0094011
771227	6245		A	Angiosperms	Proteaceae	N	Persoonia volcanica P.H.Weston & L.A.S.Johnson	57296	Worthington M.	2449		02MAY2002			Queensland	Port Curtis	KROOMBIT CREEK	+--+000----	--FA--				GPS	Lat/Long	AGD66	100	S24 23 01.00	E151 00 12.00	151.0033333	-24.38361111	56	297495	7301835	9149-974018	Kroombit Creek. Tall trees, side of creek. Eucalyptus saligna open forest with Litsea growth. Seeds open.													17/02/2003	21/05/2010	-24.38203142	151.0044011
339301	1		A	Angiosperms	Proteaceae	N	Persoonia volcanica P.H.Weston & L.A.S.Johnson	57296	Fisher W.J.	1112		31MAR1982	Weston P.H.	MAY1995	Queensland	Port Curtis	KROOMBIT TOPS SFR 316	+--+000----	--FA--				Hrb Convert	Lat/Long	AGD66	1600	S24 23 30.00	E151 00 30.00	151.0083333	-24.39166667	56	298016	7300950	9149-980009	Droombit Tops, SFR 316. Tall open forest dominated by Eucalyptus andrewsii ssp. campanulata.													7/11/2000	21/05/2010	-24.39008698	151.0094011
322519	1		A	Angiosperms	Proteaceae	N	Persoonia volcanica P.H.Weston & L.A.S.Johnson	57296	McDonald W.J.	2291	Stanton,J.P.;	20JUL1978	Weston P.H.	MAY1995	Queensland	Burnett	SF 218 CANIA KROOMBIT TOPS-CEDARVALE RD	++++000----	-DAA--				Map	Lat/Long	AGD66	100	S24 24 35.00	E151 02 29.00	151.0413889	-24.40972222	56	301397	7298998	9149-013989	Kroombit Tops - Cedarvale Road, State Forest 218 Cania. Closed forest (simple notophyll vine forest) with emergent Eucalyptus saligna, Tristania conferta. Soil a dark grey loam on trachyte. A shrub to 2m high and spreading. Common on margins of closed forest.													7/11/2000	21/05/2010	-24.40814253	151.0424567
601372	5489		A	Angiosperms	Proteaceae	N	Persoonia volcanica P.H.Weston & L.A.S.Johnson	57296	Forster P.I.	PIF16286		18FEB1995			Queensland	Port Curtis	BEECH SCIENTIFIC AREA SF316 KROOMBIT TOPS (GPS 24 24 42 151 02 17)	+--+000----	--FA--	F	820		GPS	Lat/Long	AGD66	100	S24 24 42.00	E151 02 17.00	151.0380556	-24.41166667	56	301062	7298778	9149-010987	Beech Scientific Area State Forest 316 Kroombit Tops (GPS 24 24 42 151 01 17) Open forest of Eucalyptus saligna with dense understorey of rainforest species. Shrub to 3m high, young fruit. Very common on area.													7/11/2000	21/05/2010	-24.41008698	151.0391233
634144	5463		A	Angiosperms	Proteaceae	N	Persoonia volcanica P.H.Weston & L.A.S.Johnson	57296	Melzer R.	RM548		09DEC1994	Forster P.I.	MAY1995	Queensland	Port Curtis	KROOMBIT NP BEECH SA	+--000----	--AA--	F			GPS	Lat/Long	AGD84	100	S24 24 45.00	E151 02 20.00	151.0388889	-24.4125	56	301148	7298687	9149-011986	Kroombit National Park, Beech Scientific Area. Rainforest edge. Shrub. Common on edge.													7/11/2000	25/03/2013	-24.41092031	151.0399567
603684	5705		A	Angiosperms	Proteaceae	N	Persoonia volcanica P.H.Weston & L.A.S.Johnson	57296	Forster P.I.	PIF20149		02DEC1996			Queensland	Port Curtis	BEECH SCIENTIFIC AREA SF 316 KROOMBIT (GPS 24 24 45 151 02 20)	+++-000----	--AA--	F			GPS	Lat/Long	AGD66	100	S24 24 45.00	E151 02 20.00	151.0388889	-24.4125	56	301148	7298687	9149-011986	Beech Scientific Area, State Forest 316 Kroombit (GPS 24 24 45 151 02 20). Simple notophyll vineforest with Ceratopetalum on ridges & bangalow palms in gullies. Shrub to 2m high, yellow flowers. Very common on area.													7/11/2000	21/05/2010	-24.41092031	151.0399567

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Corveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
602532	5584		A	Angiosperms	Proteaceae	N	Persoonia volcanica P.H.Weston & L.A.S.Johnson	57296	Forster P.I.	PIF18244		28DEC1995			Queensland	Port Curtis	SF 316 KROOMBIT TOPS (GPS 24 24 45 151 02 20)(P)	+++-000----	--AA--	F			GPS	Lat/Long	AGD66	100	S24 24 45.00	E151 02 20.00	151.0388889	-24.4125	56	301148	7298687	9149-011986	State Forest 316 Kroombit Tops (GPS 24 24 45 151 02 20). Simple notophyll vine forest overtopped by eucalypts and Ceratopetalum. Shrub to 4m high, yellow flowers. Very common in area.		+											7/11/2000	21/05/2010	-24.41092031	151.0399567
667325	5982		A	Angiosperms	Proteaceae	N	Persoonia volcanica P.H.Weston & L.A.S.Johnson	57296	Aspland S.	1770		26NOV1997			Queensland	Port Curtis	KROOMBIT TOPS SF 316 ROADSIDE ALONG RD TO CEDARVALE	+000000----	------	FQ	800		Hrb Convert	Lat/Long	AGD66	1600	S24 25 30.00	E151 01 30.00	151.025	-24.425	56	299759	7297282	9149-997972	Kroombit Tops, State Forest 316, roadside along road to Cedarvale. Small bushy tree 4m high; leaves alternate, sparse reddish hairs on some leaves. New growth and buds with dense covering of reddish hairs, perianth yellow.													7/11/2000	21/05/2010	-24.42342031	151.0260678
571656	5547		A	Angiosperms	Proteaceae	N	Persoonia volcanica P.H.Weston & L.A.S.Johnson	57296	Thompson E.J.	BK145	Manders,J.;	16AUG1995	Thompson E.J.	SEP1995	Queensland	Port Curtis	KROOMBIT TOPS NP WESTERN SECTION (GPS 24 27 37 150 54 13) (SITE 234)	+--+000----	FDWC-F	F	640		GPS	Lat/Long	AGD66	100	S24 27 37.00	E150 54 13.00	150.9036111	-24.46027778	56	287507	7293193	9049-875931	Kroombit Tops NP western section (GPS 24 27 37 150 54 13) (site 234). E facing lower slope of hilly terrain with black loam. Tall woodland of Eucalyptus moluccana. Sandstone.													7/11/2000	21/05/2010	-24.45869589	150.9046862
389587	1		A	Angiosperms	Rhamnaceae	N	Cryptandra ciliata A.R.Bean	96671	Johnson R.W.	809		26JUN1959	Kellermann J.	DEC2006	Queensland	Leichhardt	C 20M FROM CRACOW TAROOM-CRACOW RD (R)(P)	++00000----	--ND--	F			Hrb Convert	Lat/Long	AGD66	16000	S25 05	E150 15	150.25	-25.08333333	56	222616	7222992	8947-226229	C. 20 miles from Cracow on Taroom road. On lancewood ridge. Small shrub to 3ft, flowers white.		+	+										7/11/2000	3/05/2011	-25.08174992	150.2510896
663664	5856		A	Angiosperms	Rhamnaceae	V	Polianthion minutiflorum (E.M.Ross) K.R.Thiele	98126	Melzer A.			AUG1998	Kellermann J.	JAN2006	Queensland	Port Curtis	TR170 CALLIDE REGION NR BILOELA CALLIOPE SHIRE (R)	0000000----	------				Hrb Convert	Lat/Long	AGD66	1600	S24 14 30.00	E150 34 30.00	150.575	-24.24166667	56	253763	7316868	9049-537168	Timber Reserve 170, Callide Region near Biloela, Calliope Shire. Vulnerable.			+										7/11/2000	7/09/2007	-24.24008478	150.5760751
408176	1		A	Angiosperms	Rhamnaceae	V	Polianthion minutiflorum (E.M.Ross) K.R.Thiele	98126	Bean A.R.	683		25OCT1987	Kellermann J.	JAN2006	Queensland	Port Curtis	CALLIDE RA JUST S OF THE BILOELA-CALLIOPE RD	++00000----	-D----				Hrb Convert	Lat/Long	AGD66	1600	S24 14 30.00	E150 35 30.00	150.5916667	-24.24166667	56	255456	7316897	9049-554168	Callide Range, just south of Biloela - Calliope Road. Sandy (skeletal) soil. In association with Eucalyptus sp. aff. paniculata, Eucalyptus cloeziana, Daviesia filipes. Flowering, tiny white flowers. Not a common shrub at this locality.													7/11/2000	7/09/2007	-24.24008478	150.5927418
629573	5414		A	Angiosperms	Rhamnaceae	V	Polianthion minutiflorum (E.M.Ross) K.R.Thiele	98126	McDonald W.J.	6057	Melzer,R.;Johnson,R.W.;	31JUL1994	Kellermann J.	JAN2006	Queensland	Port Curtis	TR 170 SPIER C 18.5KM NE OF BILOELA (CALLIDE RANGE) 9049-544161	++--000----	-DFA--	F#	340		Hrb Convert	GridRef	AGD66	100	S24 14 53.70	E150 34 53.88	150.5816339	-24.24824913	56	254450	7316150	9049-544161	Timber Reserve 170 Spier, c 18.5km NE of Biloela (Callide Range). Map reference Biloela 9049-544161. (Open) woodland of Eucalyptus suffulgens, E. trachyphloia, Callitris endlicheri. Tall shrubs of Acacia blakei, A. pubicosta. Dense low shrub layer of Boronia rasmarinifolia, B. bipinnata, Dodonaea triangularis and Trymalium minutiflorum. Soil a light brown gravelly loam derived from sedimentary rocks. Shrub to 1m high. Occasional.													7/11/2000	7/09/2007	-24.24666724	150.582709
432372	1		A	Angiosperms	Rhamnaceae	V	Polianthion minutiflorum (E.M.Ross) K.R.Thiele	98126	Thompson J.			12FEB1987	Kellermann J.	JAN2006	Queensland	Port Curtis	CALLIOPE RA N OF OAKEY CK SF 170 CA 20KM NE OF BILOELA	+++-000----	K-FA-F	F			Hrb Convert	Lat/Long	AGD66	16000	S24 15	E150 45	150.75	-24.25	56	271554	7316242	9049-715162	Calliope Range, N of Oakey Ck, SF 170, c. 20km NE of Biloela. Sandstone ridges, woodland of Eucalyptus aff. paniculata and E. cloeziana, mostly understorey but some patches of shrubs c. 1-1.5m tall. Shrub c. 1m tall x 1m, somewhat spindly.													7/11/2000	9/09/2011	-24.24841811	150.7510751
571866	5585		A	Angiosperms	Rhamnaceae	V	Polianthion minutiflorum (E.M.Ross) K.R.Thiele	98126	Thompson E.J.	BIL217	Price,R.J.;	13FEB1996			Queensland	Port Curtis	20.5KM NE OF BILOELA (GPS 24 15 22 150 38 23)(SITE 390)	++0-000----	KDFA-F		500		GPS	Lat/Long	AGD66	100	S24 15 22.00	E150 38 23.00	150.6397222	-24.25611111	56	260365	7315380	9049-603153	20.5km NE of Biloela (GPS 24 15 22 150 38 23)(site 390). Crest of hilly terrain with brown sandy loam. Very tall open forest of Eucalyptus decorticans with Euc. cloeziana. Sandstone.													7/11/2000	13/06/2006	-24.25452922	150.6407973
736730	6646		A	Angiosperms	Rhamnaceae	V	Polianthion minutiflorum (E.M.Ross) K.R.Thiele	98126	Rees J.	JR0604077		20APR2006	Guymer G.P.	MAY2006	Queensland	Port Curtis	N OF TRAP GULLY MINE (PART OF THE CALLIDE MINES), C. 15KM NE OF BILOELA	+++-000----	FTFB--	F			GPS	AMG	WGS84	100	S24 16 22.35	E150 34 29.24	150.5747881	-24.27287546	56	253803	7313419	9049-538134	N of Trap Gully Mine (part of the Callide mines), c. 15km NE of Biloela. Upper rocky slopes, vegetation grading into Acacia spp. regrowth (A. shirleyi, A. leiocalyx), with Alphitonia exselsa and Petalostigma pubescens. Shrub to 1.5m.					11	10	13						26/07/2007		-24.27287546	150.5747881
571790	5568		A	Angiosperms	Rhamnaceae	V	Polianthion minutiflorum (E.M.Ross) K.R.Thiele	98126	Thompson E.J.	BIL192	Price,R.J.;	17NOV1995	Kellermann J.	JAN2006	Queensland	Port Curtis	19KM NE OF BILOELA (GPS 24 18 09 150 40 50) (NR SITE 358)	++--000----	FDFA-F		360		GPS	Lat/Long	AGD66	100	S24 18 09.00	E150 40 50.00	150.6805556	-24.3025	56	264598	7310311	9049-645103	19km NE of Biloela (GPS 24 18 09 150 40 50) (site 358). SW facing upper slope of hilly terrain with yellow brown sandy soil. Very tall woodland of Eucalyptus cloeziana and Eucalyptus decorticans.													7/11/2000	7/09/2007	-24.30091811	150.6816307
655812	5737		A	Angiosperms	Rhamnaceae	V	Polianthion minutiflorum (E.M.Ross) K.R.Thiele	98126	Rider E.	8		06AUG1996	Kellermann J.	JAN2006	Queensland	Port Curtis	CALLIDE MINE SITE	+-+-000----	--FF--	F			Hrb Convert	Lat/Long	AGD66	1600	S24 19 30.00	E150 37 30.00	150.625	-24.325	56	259000	7307723	9049-590077	Callide mine site. In open forest with Eucalyptus suffulgens. Shrub 1.5m													7/11/2000	7/09/2007	-24.32341811	150.6260751
584844	5565		A	Angiosperms	Rhamnaceae	V	Polianthion minutiflorum (E.M.Ross) K.R.Thiele	98126	Bean A.R.	9107	Turpin,G.;	08NOV1995			Queensland	Burnett	EAST BOOGALGOPAL LA COOMINGLAH SF WEST OF MONTO	+++-000----	-DFF-U	F	450		Hrb Convert	Lat/Long	AGD66	1600	S24 55 30.00	E150 56 30.00	150.9416667	-24.925	56	292138	7241773	9048-921417	East Boogalgopal LA, Coominglah SF, west of Monto. Woodland of Eucalyptus corynodes, E. trachyphloia, E. cloeziana. Sandy soil over sandstone. Shrub 1.4m high. FLowers white, foliage grey. Rare at site.													7/11/2000	13/06/2006	-24.92341588	150.9427425
641132	5627		A	Angiosperms	Rhamnaceae	V	Polianthion minutiflorum (E.M.Ross) K.R.Thiele	98126	Bean A.R.	10395		09JUN1996	Kellermann J.	JAN2006	Queensland	Burnett	LOCKHART LA COOMINGLAH SF SW OF MONTO	+++-000----	FDFA--	F			Hrb Convert	Lat/Long	AGD66	1600	S24 59 30.00	E151 00 30.00	151.0083333	-24.99166667	56	298981	7234489	9148-989344	Lockhart Logging Area, Coominglah State Forest, SW of Monto. Stony hillside with Eucalyptus cloeziana, E. fibrosa, E. corynodes, Corymbia trachyphloia on sandy soil. Shrub 50cm. high, flowers white. Common over a small area, perhaps 1 hectare, absent in surrounding areas.													7/11/2000	7/09/2007	-24.9900839	151.0094025
641300	5637		A	Angiosperms	Rhamnaceae	E	Pomaderris coomingalensis N.G.Walsh & Coates	85294	Bean A.R.	10435		12JUN1996	Bean A.R.	DEC2009	Queensland	Port Curtis	SF 69 SOUTH EAST OF THANGOOL	++--000----	-DOF--	F	600		Hrb Convert	Lat/Long	AGD66	1600	S24 41 30.00	E150 53 30.00	150.8916667	-24.69166667	56	286689	7267543	9048-866675	SF 69 south east of Thangool. Open forest with Corymbia citriodora, C. trachyphloia, Acacia spp. Pale loamy soil. Shrub 2.5m high. Bark smooth. Common at site.													7/11/2000	18/12/2009	-24.69008255	150.8927425
471365	1		A	Angiosperms	Rhamnaceae	E	Pomaderris coomingalensis N.G.Walsh & Coates	85294	Forster P.I.	PIF6713		28APR1990	Walsh N.G.	FEB1995	Queensland	Burnett	SF 28 GRID REF 9048-919493	----000----	-ZOF--	F	450		Hrb Convert	GridRef	AGD66	100	S24 51 23.73	E150 56 27.37	150.9409359	-24.85659269	56	291950	7249350	9048-919493	SF 28. Eucalyptus maculata, E.decorticans open forest with scrubby understorey, on red soil. Shrub to 3m, sterile.													7/11/2000	29/06/2006	-24.85500857	150.9420117
601261	5449		A	Angiosperms	Rhamnaceae	E	Pomaderris coomingalensis N.G.Walsh & Coates	85294	Forster P.I.	PIF15904		28NOV1994			Queensland	Burnett	ALIENS RD SOUTH END COOMINGLAH RANGE SF28 COOMINGLAH	+++-000+---	QZFF--	TA	460		Hrb Convert	Lat/Long	AGD66	1600	S24 51 30.00	E150 56 30.00	150.9416667	-24.85833333	56	292027	7249158	9048-920491	Aliens road south end, Coominglah Range, State Forest 28 Coominglah. Open forest on red soil jump-up ridge with Eucalyptus decorticans & E. maculata dominant. Small tree to 5m high, flowers cream-yellow. Very common in area. Spirit material at BRI. 2 sheets at BRI.								C1450					7/11/2000	28/11/2003	-24.85674922	150.9427425
627480	5393		A	Angiosperms	Rhamnaceae	E	Pomaderris coomingalensis N.G.Walsh & Coates	85294	Bean A.R.	2084		13AUG1990			Queensland	Burnett	COOMINGLAH SF W OF MONTO	+++-000----	-DFA--	#F			Hrb Convert	Lat/Long	AGD66	1600	S24 52 30.00	E150 56 30.00	150.9416667	-24.875	56	292055	7247312	9048-920473	Coominglah State Forest, W of Monto. On red gravelly loam soil, with Euc. decorticans, Westringia sp. and Phebalium nottii. Shrub 3metres high.													7/11/2000	28/11/2003	-24.87341588	150.9427425
653252	5701		A	Angiosperms	Rubiaceae	E	Oldenlandia gibsonii Halford	87232	Forster P.I.	PIF19165		23MAY1996			Queensland	Port Curtis	SF 583 WIETALABA (GPS 24 17 06 151 13 05) (R)(P)	+++-000----	-IAA--	F			GPS	Lat/Long	AGD66	100	S24 17 06.00	E151 13 05.00	151.2180556	-24.285	56	319138	7313053	9149-191130	State Forest 583 Wietalaba (GPS 24 17 06 151 13 05). Araucarian microphyll vineforest on brownish soil, dominated by Choricarpia & Barklya. Intricately branched woody subshrub to 1m high, dark green foliage, flowers cream with lilac tinge & faint lilac blotches in throat, faint scent, style & filaments cream, anthers purple-grey. Locally common.		+	+										7/11/2000	28/11/2003	-24.28342031	151.2191233
603511	1		A	Angiosperms	Rubiaceae	E	Oldenlandia gibsonii Halford	87232	Forster P.I.	PIF19164		23MAY1996			Queensland	Port Curtis	SF 583 WIETALABA (GPS 24 17 06 151 13 05)	++++000+---	--AA--	TFI			GPS	Lat/Long	AGD66	100	S24 17 06.00	E151 13 05.00	151.2180556	-24.285	56	319138	7313053	9149-191130	SF 583 Wietalaba. Araucarian microphyll vineforest on brownish soil, dominated by Choricarpia and Barklya. Intricately branched woody subshrub to 1m high, dark green foliage. Flowers cream with lilac tinge and faint lilac blotches in throat. Faint scent. Style and filmaents cream, anthers purple-grey. Locally common. Spirit material at BRI.								B669					7/11/2000	29/06/2006	-24.28342031	151.2191233
639706	5560		A	Angiosperms	Rubiaceae	E	Oldenlandia gibsonii Halford	87232	Forster P.I.	PIF18265	Orford,D.;Tucker,M.C.;	29DEC1995			Queensland	Port Curtis	SF 583 WIETALABA (GPS 24 17 12 151 13 30) (R)	+-++000+---	-ZAA--	F	540		GPS	Lat/Long	AGD66	100	S24 17 12.00	E151 13 30.00	151.225	-24.28666667	56	319845	7312878	9149-198128	State Forest 583 Wietalaba (GPS 24 17 12 151 13 30). Araucarian microphyll vineforest, reddish soil, steep slope; canopy dominated by Choricarpia subargentea, Backhousia kingii & Barklya syringifolia. Twiggy subshrub to 1m high, dark green-grey foliage, pale pink-cream tubular flowers, mainly fruit. Occasional in area.			+					D1466					7/11/2000	28/11/2003	-24.28508698	151.2260678
793287	7023		A	Angiosperms	Rubiaceae	E	Oldenlandia gibsonii Halford	87232	Nicholson N.J.	NJN615		21APR2003			Queensland	Port Curtis	WIETALABA STATE FOREST, 1KM FROM CAMP AT END OF ROAD TO HEAD OF CEDAR CREEK	+--+000----	KDAH--	F	350		Collector	AMG	GDA94	100	S24 17 16.24	E151 13 23.53	151.2232025	-24.28784534	56	319665	7312754	9149-196127	Wietalaba State Forest, 1km from camp at end of road to head of Cedar Creek. Ridge; brown loam; microphyll vine forest/sclerophyll forest boundary. Shrub 0.5m, fruiting. Photos by Hugh Nicholson.													3/08/2010		-24.28784534	151.2232025
793286	7023		A	Angiosperms	Rubiaceae	E	Oldenlandia gibsonii Halford	87232	Nicholson N.J.	NJN609		21APR2003			Queensland	Port Curtis	WIETALABA STATE FOREST, 0.9KM FROM CAMP AT END OF ROAD TO HEAD OF CEDAR CREEK, 9.1KM FROM BOYNE VALLEY ROAD	0000000----	K-AH--	FB	350		Collector	AMG	GDA94	100	S24 17 16.66	E151 13 23.31	151.2231418	-24.28796201	56	319659	7312741	9149-196127	Wietalaba State Forest, 0.9km from camp at end of road to head of Cedar Creek, 9.1km from Boyne Valley Road. Ridge, disturbed microphyll vine forest. Shrub 0.5m, leaves discolorous. Photos by Hugh Nicholson.													3/08/2010		-24.28796201	151.2231418
659087	5785		A	Angiosperms	Rubiaceae	E	Oldenlandia gibsonii Halford	87232	Halford D.	Q3453	Brushe,J.;Snow,N.;	19NOV1997			Queensland	Port Curtis	WIETALABA SF C 31KM S OF CALLIOPE (GPS 24 17 19 151 12 40)	+-+-000----	-DAA--	F	440		GPS	Lat/Long	AGD66	100	S24 17 19.00	E151 12 40.00	151.2111111	-24.28861111	56	318438	7312644	9149-184126	Wietalaba SF c 31km S of Calliope (GPS 24 17 19 151 12 40). Hilly terrain, steep slope, easterly aspect, brown loam. Microphyll vine forest. Shrub 1m high. Locally common.													7/11/2000	28/11/2003	-24.28703142	151.2121789
658670	5780		A	Angiosperms	Rubiaceae	E	Oldenlandia gibsonii Halford	87232	Halford D.	Q3445		20NOV1997			Queensland	Port Curtis	WIETALABA SF 31KM S OF CALLIOPE (GPS 24 17 20 151 13 23)	+0+0000----	--AA--	F	340		GPS	Lat/Long	AGD66	100	S24 17 20.00	E151 13 23.00	151.2230556	-24.28888889	56	319651	7312629	9149-196126	Wietalaba SF 31km S of Calliope (GPS 24 17 20 151 13 23). Hilly terrain, steep hillslope, southerly aspect brown loam, low closed forest, dominated by Choricarpa subargentea. Shrub 1m high, flowers white, branches divaricata. Common.													7/11/2000	13/05/2004	-24.2873092	151.2241233
568109	5286		A	Angiosperms	Rubiaceae	E	Oldenlandia gibsonii Halford	87232	Gibson N.	TOI1315		17JUN1992	Halford D.	JAN1996	Queensland	Port Curtis	SF 583 WIETALABA 32KM S OF CALLIOPE	+-+-000----	--AH--	F	450		Hrb Convert	Lat/Long	AGD66	1600	S24 17 30.00	E151 12 30.00	151.2083333	-24.29166667	56	318160	7312302	9149-181123	State Forest 585, Wietalaba, 32km S of Callipe. In araucarian microphyll vineforest. Shrub 1 metre. Bark whitish; leaves green; petals white. Common.													7/11/2000	28/11/2003	-24.29008698	151.2094011
632217	5436		A	Angiosperms	Rubiaceae	E	Oldenlandia gibsonii Halford	87232	Gibson N.	1344		13APR1994	Halford D.	JAN1996	Queensland	Port Curtis	SF 583 WIETALABA 32KM S OF CALLIOPE	+--+000----	F-AA--	F	400		Hrb Convert	Lat/Long	AGD66	1600	S24 17 30.00	E151 12 30.00	151.2083333	-24.29166667	56	318160	7312302	9149-181123	State Forest 583, Wietalaba, 32km S of Calliope. Scree hillside, dry rainforest. Spindly shrub, 1.5 metres high. Bark creamy white; leaves green above, lighter green under, fruit green. Locally common.													7/11/2000	28/11/2003	-24.29008698	151.2094011
632216	5436		A	Angiosperms	Rubiaceae	E	Oldenlandia gibsonii Halford	87232	Gibson N.	1343		11NOV1993	Halford D.	JAN1996	Queensland	Port Curtis	SF 583 WIETALABA 32KM S OF CALLIOPE	+--+000+---	F-AA--	F	400		Hrb Convert	Lat/Long	AGD66	1600	S24 17 30.00	E151 12 30.00	151.2083333	-24.29166667	56	318160	7312302	9149-181123	State Forest 583, Wietalaba, 32km S of Calliope. Scree hillside, dry rainforest. Straggling shrub 1.5 metres high. Bark cream; leaves glossy green above, dull lighter green under with darker green midrib; fruit green. Spirit collection at BRI.								E2730					7/11/2000	28/11/2003	-24.29008698	151.2094011
659086	5785		A	Angiosperms	Rubiaceae	E	Oldenlandia gibsonii Halford	87232	Halford D.	Q3454	Snow,N.;	18NOV1997			Queensland	Port Curtis	WIETALABA SF C 31KM S OF CALLIOPE (GPS 24 17 36 151 13 05)	+-+-000----	KD----	F	200		GPS	Lat/Long	AGD66	100	S24 17 36.00	E151 13 05.00	151.2180556	-24.29333333	56	319150	7312130	9149-191121	Wietalaba SF, c 31km S of Calliope (GPS 24 17 36 151 13 05). Hilly terrain, ridge top, brown loam. Microphyll vine forest with emergent hoop pine. Shrub 80cm high. Only 1 plant seen, locally rare.													7/11/2000	28/11/2003	-24.29175365	151.2191233
872325	7019		A	Angiosperms	Rutaceae	E	Clausena smyrelliana P.I.Forst.	90992	Worthington M.	2972		JAN2009	Forster P.I.	NOV2009	Queensland	Port Curtis	4 MILE SCRUB. BOYNE VALLEY.	+00+000----	C-AA--	A			GPS	Lat/Long	WGS84	100	S24 14 25.98	E151 18 02.00	151.3005556	-24.24055	56	327454	7318090	9149-274180	4 mile scrub. Boyne valley. 6m tall tree. Found in dry rainforest up on top of creek bank amidst other dry sp. Another specimen has been sent by Joy Brush.													22/07/2010		-24.24055	151.3005556
322535	1		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	McDonald W.J.	3258	Fisher,W.J.;Ryan,P.;	17APR1980	Hartley T.G.	JUN1984	Queensland	Port Curtis	SF 67 BULBURIN NEAR PODARGUS CK UPPER GRANITE CK VALLEY	++++000----	--AA--		270		Map	Lat/Long	GDA94	1600	S24 31 30.00	E151 30 30.00	151.5083333	-24.525	56	348892	7286830	9248-488868	Bulburin State Forest 67, near Podargus Creek, uppre Granite creek Valley. Closed forest (complex notophyll vine forest - drier phase tending to low microphyll vine forest). Selectively logged of Araucaria cunninghamii emergents. Rocky soil derived from andesite, some metamorphic rocks. A tall shrub/small tree of 4m in height. Flowers white. Some immature fruit.													7/11/2000	4/07/2012	-24.525	151.5083333
296356	1		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	McDonald W.J.	2384	Stanton,J.P.;	22JUL1978	Hartley T.G.	JUN1984	Queensland	Port Curtis	SF 67 BULBURIN CA 24KM W OF LOWMEAD	++++000----	D-AC--	T			Map	Lat/Long	GDA94	1600	S24 31 30.00	E151 30 30.00	151.5083333	-24.525	56	348892	7286830	9248-488868	State Forest 67 Bulburin, C. 24km W of Lowmead. Granite Creek. Araucarian notophyll vine forest along upper creek. Substrate andesite/alluvium. Very common understorey species along creek. A low tree to 7m tall.													7/11/2000	4/07/2012	-24.525	151.5083333
339628	1		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	Sarnadsky K.D.	327		03JUL1983	Guymer G.P.		Queensland	Port Curtis	DAWES RA SF 391 BULBURIN	++--000----	--AA--	A			Map	Lat/Long	GDA94	1600	S24 31 30.00	E151 30 30.00	151.5083333	-24.525	56	348892	7286830	9248-488868	Dawes Range State Forest 391, Bulburin. Dense rainforest. Tree ca 6m.													7/11/2000	20/05/2014	-24.525	151.5083333
679153	5964		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	Forster P.I.	PIF25464	Booth,R.;	22MAR2000			Queensland	Port Curtis	SF 391 BULBURIN 10KM E OF BUILYAN 9148-463865	+++-000+---	-ZAA--	F	520		Hrb Convert	GridRef	AGD66	100	S24 31 37.90	E151 28 59.62	151.4832273	-24.52719359	56	346350	7286550	9148-463865	State Forest 391 Bulburin, 10km East of Builyan Grid ref: 9148-463865 Araucarian notophyll vineforst with emergent Araucana and Argyrodendron on red- brown soil. Shrub to 4m high, cream flowers. Very common in area Spirit material at BRI.								B1159					7/11/2000	28/11/2003	-24.52561082	151.4842965
756464	6937		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	Nicholson N.	NJN520		17MAR2003			Queensland	Port Curtis	2.1KM S OF BULBURIN FOREST CAMP, GRANITE CREEK STATE FOREST, NE SIDE OF ROAD	++-+000----	-H----	A	600		GPS	AMG	GDA94	100	S24 32 18.60	E151 28 39.67	151.4776865	-24.5385004	56	345803	7285301	9148-458853	2.1km S of Bulburin Forest Camp, Granite Creek State Forest, NE side of road. Complex notophyll vine forest regrowth. Grey-brown clay loam, ridge. 4m tree. White flowers; green lobed fruit, split when dry, oil dots numerous.													21/06/2010		-24.5385004	151.4776865

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Corveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
602546	5584		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	Forster P.I.	PIF18291	Orford,D.;Tucker,M.C.;	30DEC1995			Queensland	Port Curtis	BOYNE LA SF 391 BULBURIN (GPS 24 32 25 151 29 19)(P)	+-+-000-+--	--AA--	F	560		GPS	Lat/Long	AGD66	100	S24 32 25.00	E151 29 19.00	151.4886111	-24.54027778	56	346911	7285107	9148-469851	Boyne Logging Area, State Forest 391 Bulburin (GPS 24 32 25 151 29 19). Complex notophyll vine forest on red soil. Shrub to 3m high, cream flowers. Common in area.		+											7/11/2000	28/11/2003	-24.53869501	151.4896803
622909	5337		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	Forster P.I.	PIF14561	Orford,D.;Smyrell,G.;Tucker,M.C.;	31DEC1993			Queensland	Port Curtis	BOYNE LA SF 391 BULBURIN 0.5KM ALONG SCOTT RD OFF BOYNE RD	++++000+---	-ZAA--	A	580		Hrb Convert	Lat/Long	AGD66	1600	S24 32 30.00	E151 29 30.00	151.4916667	-24.54166667	56	347223	7284957	9148-472849	Boyne Logging Area, State Forest 391 Bulburin, 0.5km along Scott road off Boyne road. Araucarian notophyll vineforest on red-brown soil. Tree to 5m high, white flowers, fruit. Very common in area. Spirit material at BRI.								D1240					7/11/2000	28/11/2003	-24.5400839	151.4927359
662802	5825		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	Worthington M.	1499		14DEC1995			Queensland	Port Curtis	GRANITE CK SF 391 9KM E OF BUILYAN (R)	+000000----	--FF--	F	580		Hrb Convert	Lat/Long	AGD66	1600	S24 32 30.00	E151 29 30.00	151.4916667	-24.54166667	56	347223	7284957	9148-472849	Granite Creek SF 391, 9km E of Builyan. Forest edge. Shrub 3.5 m, bark light brown with coloured lichens, brown branchlets, white flowers. Leaves dark glossy green top, matt underneath, fruit green.			+										7/11/2000	28/11/2003	-24.5400839	151.4927359
488603	5600		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	Worthington M.	1659		14DEC1995			Queensland	Port Curtis	GRANITE CREEK 9KM E BUILYAN	+-+-000----	------	J	580		Hrb Convert	Lat/Long	AGD66	1600	S24 32 30.00	E151 29 30.00	151.4916667	-24.54166667	56	347223	7284957	9148-472849	Granite Creek, 9km E Builyan. (Vine common, edge forest road, brown rough bark, matt hard leaves lighter green underneath, fruit turning orange, latex. This information appears to be incorrect, A.Bolin May 2002.)													7/11/2000	28/11/2003	-24.5400839	151.4927359
636354	5487		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	Barry S.		Thomas,G.;Brushe,J.;Gale,M.;	30MAY1993			Queensland	Port Curtis	BULBURIN SF CA 0.3KM ALONG SCOTT'S RD HEADING E	----000----	FDAA--		550		Hrb Convert	Lat/Long	AGD66	1600	S24 33 30.00	E151 29 30.00	151.4916667	-24.55833333	56	347243	7283111	9148-472831	About 0.3km along Scott's Road heading E, Bulburin State Forest. Complex notophyll very tall mixed closed forest with Argyrodendron, Ficus and Lophostemon emergents to 40m.													7/11/2000	28/11/2003	-24.55675057	151.4927359
458811	1		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	Forster P.I.	PIF5852	Tucker,M.C.;Orford,D.;	26OCT1989			Queensland	Port Curtis	BULBURIN SF 391 0.5KM ALONG SCOTT RD OFF BAYNE RD BAYNE LA	++--000----	-YAA--	F	500		Hrb Convert	Lat/Long	AGD66	1600	S24 33 30.00	E151 29 30.00	151.4916667	-24.55833333	56	347243	7283111	9148-472831	0.5km along Scott Road, off Bayne Road, Bayne Logging area, Bulburin State Forest 391. Complex notophyll vine forest, on red krasnozem soil. Shrub to 3m.													7/11/2000	29/06/2006	-24.55675057	151.4927359
322214	1		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	McDonald W.J.	3163	Fisher,W.J.;Ryan,P.;	15APR1980	Hartley T.G.	JUN1984	Queensland	Port Curtis	BULBURIN SF 67 W SIDE OF BOYNE LA ADJACENT TO PLANTATIONS 2KM NE OF FOREST STN	+000000----	KTFA--		570		Map	Lat/Long	GDA94	1600	S24 30 30.00	E151 29 30.00	151.4916667	-24.50833333	56	347183	7288657	9148-471886	Bulburin State Forest 67 Bulburin, western side of Boyne Logging Area, adjacent to Plantations, 2km NE of Forest station. Closed forest (complex notophyll vine forest), formerly with Araucaria cunninghamii emergents. Upper slopes of ridge, easterly aspect. Fairly shallow soil, rocky in places. Parent material basalt. A shrub/small tree 5m high growing on lower slopes adjacent to minor drainage line. Flowers white.													7/11/2000	4/07/2012	-24.50833333	151.4916667
322534	1		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	McDonald W.J.	3172	Fisher,W.J.;Ryan,P.;	15APR1980	Hartley T.G.	JUN1984	Queensland	Port Curtis	SF 67 BULBURIN UPPER BOYNE RIVER NEAR SCOTT RD CROSSING	+000000----	C-AA--		550		Hrb Convert	Lat/Long	GDA94	1600	S24 30 30.00	E151 29 30.00	151.4916667	-24.50833333	56	347183	7288657	9148-471886	Bulburin State Forest 67, Upper Boyne River near Scott Road crossing. Closed forest)complex notophyll vine forest) with occasional emergent Ficus macrophylla, Tristania conferta. Parent material includes basalt, greenstone. A shrub 4m high close to stream bed.													7/11/2000	4/07/2012	-24.50833333	151.4916667
407827	1		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	McDonald W.J.	3444A		29DEC1981			Queensland	Port Curtis	SCOTT RD BULBURIN SF SSW OF GLADSTONE	+++-000----	------	A	450		Map	Lat/Long	GDA94	1600	S24 31 30.00	E151 30 30.00	151.5083333	-24.525	56	348892	7286830	9248-488868	State Forest 391 Bulburin Scott Road, ca 6km E of Forest Station. Now known as Granite Creek State Forest. Closed forest (complex notophyll vine forest. Heavily logged and infested with Lantana camara. Moderate slope, NW aspect. Parent rock basic volcanic. A small tree.													7/11/2000	4/07/2012	-24.525	151.5083333
296355	1		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	McDonald W.J.	2394	Stanton,J.P.;	22JUL1978	Hartley T.G.	JUN1984	Queensland	Port Curtis	SF 67 BULBURIN CA 24KM W OF LOWMEAD	++++000----	D-AC--				Map	Lat/Long	GDA94	1600	S24 31 30.00	E151 30 30.00	151.5083333	-24.525	56	348892	7286830	9248-488868	State Forest 67 Bulburin, ca 24km W of Lowmead. Araucarian notophyll vine forest along upper Granite Creek. Substrate andesite/alluvium. A small tree to 7m high. Very common understorey species.													7/11/2000	4/07/2012	-24.525	151.5083333
635710	5481		A	Angiosperms	Rutaceae	V	Medicosma elliptica T.G.Hartley	48546	Barry S.	RFR149	Thomas,G.;Brushe,J.;Gale,M.;	30MAY1993			Queensland	Port Curtis	BULBURIN SF CA 0.3KM ALONG SCOTTS RD HEADING E	----000----	FDAA--		550		Hrb Convert	Lat/Long	AGD66	1600	S24 33 30.00	E151 29 30.00	151.4916667	-24.55833333	56	347243	7283111	9148-472831	About 0.3km along Scott's Road heading E, Bulburin State Forest. Complex notophyll very tall mixed closed forest with Argyrodendron, Ficus and Lophostemon emergents to 40m.													7/11/2000	28/11/2003	-24.55675057	151.4927359
818047	7183		A	Angiosperms	Rutaceae	E	Zieria actites Duretto & P.I.Forst.	93555	Forster P.I.	PIF38224		19JUN2011	Forster P.I.	JUN2011	Queensland	Port Curtis	MT LARCOM SUMMIT AREA; 2.5KM WSW OF TARGINIE.	++++000----	KTHH-Q	VFZ			GPS	AMG	WGS84	100	S23 48 17.83	E151 05 07.79	151.0854985	-23.80495314	56	304957	7366052	9150-049660	Mt Larcom summit area; 2.5km WSW of Targinie. Low shrubland of Allocasuarina littoralis, Lophostemon confertus, exposed trachyte rockfaces, western slopes. Small subshrub to 60cm high; foliage smelly aromatic, mid green; flowers white, fruit. Very common at locality; however, the top of the mountain is quite a small area. Voucher for molecular analysis by R.Barrett (Univ. Melbourne).			+										9/12/2011	9/12/2011	-23.80495314	151.0854985
632222	5436		A	Angiosperms	Rutaceae	E	Zieria actites Duretto & P.I.Forst.	93555	Brushe J.	1358	Williams,J.;	16SEP1993	Duretto M.F.	MAR2003	Queensland	Port Curtis	MT LARCOM PEAK 7KM NW OF YARWUN	+++-000----	KT----		632		GPS	Lat/Long	AGD66	100	S23 48 55.00	E151 04 58.00	151.0827778	-23.81527778	56	304694	7364896	9150-046648	Mount Larcom peak, 7km NW of Yarwun. Rocky peak.													7/11/2000	30/11/2009	-23.81369907	151.0838448
487691	5579		A	Angiosperms	Rutaceae	E	Zieria actites Duretto & P.I.Forst.	93555	Brushe J.	JB260	Sinclair,G.;Brushe,L.;	29APR1995	Duretto M.F.	MAR2003	Queensland	Port Curtis	MT LARCOM SOUTH PEAK 17.5KM WNW OF GLADSTONE	+-+-000----	-D----	F			GPS	Lat/Long	AGD66	100	S23 48 55.00	E151 04 58.00	151.0827778	-23.81527778	56	304694	7364896	9150-046648	Mt Larcom south peak, 17.5km WNW of Gladstone. Shrub. Occasional at site.													7/11/2000	30/11/2009	-23.81369907	151.0838448
439322	1		A	Angiosperms	Rutaceae	E	Zieria actites Duretto & P.I.Forst.	93555	Gibson N.	TOI8		25MAY1988	Duretto M.F.	MAR2003	Queensland	Port Curtis	MT LARCOM RA MT LARCOM 6KM NW OF YARWUN	++++000----	LT----		632		GPS	Lat/Long	AGD66	100	S23 48 55.00	E151 04 58.00	151.0827778	-23.81527778	56	304694	7364896	9150-046648	Mt Larcom Range, Mt Larcom 6km NW of Yarwun. Rocky peak. Height to about 1m. Leaves green, new stems green. Old stems woody, rich brown. Petals whitish (faintly mauve).													7/11/2000	30/11/2009	-23.81369907	151.0838448
338428	1		A	Angiosperms	Rutaceae	E	Zieria actites Duretto & P.I.Forst.	93555	Blake S.T.	22446		22MAR1966	Duretto M.F.	MAR2003	Queensland	Port Curtis	MT LARCOM TOP OF	++++000----	L-----	F	600		GPS	Lat/Long	AGD66	100	S23 48 55.00	E151 04 58.00	151.0827778	-23.81527778	56	304694	7364896	9150-046648	Top of Mt Larcom. Green shrub, 70cm, strong aniseed smell, white flowers.													7/11/2000	30/11/2009	-23.81369907	151.0838448
623976	5351		A	Angiosperms	Rutaceae	E	Zieria actites Duretto & P.I.Forst.	93555	Forster P.I.	PIF14654		25JAN1994	Duretto M.	FEB2006	Queensland	Port Curtis	MT LARCOM 5KM NW OF YARWUN SUMMIT	+++-000----	L-FF--	TF	630		GPS	Lat/Long	AGD66	100	S23 48 55.00	E151 04 58.00	151.0827778	-23.81527778	56	304694	7364896	9150-046648	Mt Larcom, 5km north-west of Yarwun. Summit. Cliffines and exposed outcrops with scattered vegetation in open woodland/shrubland. Wiry bush to 50cm high, pungent foliage, cream flowers. Occasional in area.													7/11/2000	30/11/2009	-23.81369907	151.0838448
584877	5565		A	Angiosperms	Rutaceae	E	Zieria inexpectata Duretto & P.I.Forst.	93559	Bean A.R.	9185		13NOV1995	Duretto M.F.	MAR2003	Queensland	Burnett	RAINBOW LA COOMINGLAH SF SOUTH WEST OF MONTO	+++-000----	-DFF--	F			Hrb Convert	Lat/Long	AGD66	1600	S24 59 30.00	E151 01 30.00	151.025	-24.99166667	56	300664	7234514	9148-006345	Rainbow Logging Area, Coominglah SF, south west of Monto. Open forest of Eucalyptus cloeziana, E. fibrosa, Angophora leiocarpa, Lysicarpus. Sandy soil. Shrub 40cm high, flowers white. Rare at site.													7/11/2000	30/11/2009	-24.9900839	151.0260692
604855	5789		A	Angiosperms	Sapindaceae	N	Arytera dictyoneura S.T.Reynolds	19159	Forster P.I.	PIF22091	Booth,R.;	21JAN1998			Queensland	Port Curtis	SF 391 BULBURIN RESUMPTION LA (GPS 24 31 19 151 28 04)	+--+000----	-YAA--	F			GPS	Lat/Long	AGD66	100	S24 31 19.00	E151 28 04.00	151.4677778	-24.52194444	56	344778	7287114	9148-447871	State Forest 391 Bulburin, Resumption Logging Area (GPS 24 31 19 151 28 04). Araucarian notophyll vine forest on volcanic soil. Shrub to 4m high, orange fruit. Very common in area.													7/11/2000	21/05/2010	-24.52036168	151.468847
322351	1		A	Angiosperms	Sapindaceae	N	Arytera dictyoneura S.T.Reynolds	19159	McDonald W.J.	3159	Fisher,W.J.;Ryan,P.;	15APR1980	Reynolds S.T.		Queensland	Port Curtis	SF 67 BULBURIN BOYNE LA	----000----	KTAA--		570		Map	Lat/Long	AGD66	1600	S24 31 30.00	E151 29 30.00	151.4916667	-24.525	56	347202	7286802	9148-472868	Bulburin SF67, W side of Boyne Logging Area, adjacent to Plantations, 2km NE of Forest Station. Closed forest (complex notophyll vine forest), formerly with Araucaria cunninghamii emergents. upper slopes of ridge (10 degree slope), easterly aspect. Fairly shallow soil, rocky in places. Parent material basalt. A shrub of 2m height. Infrequent.													7/11/2000	2/02/2011	-24.52341723	151.4927359
636208	5486		A	Angiosperms	Sapindaceae	N	Arytera dictyoneura S.T.Reynolds	19159	Barry S.		Thomas,G.;Brushe,J.;Gale,M.;	01JUN1993			Queensland	Port Curtis	BULBURIN SF	----000----	FHAA-S	B	500		Hrb Convert	Lat/Long	AGD66	1600	S24 31 30.00	E151 29 30.00	151.4916667	-24.525	56	347202	7286802	9148-472868	Bulburin SF, southern edge of hoop plantation E of forestry barracks. Dark olive brown sandy clay loam. Complex notophyll very tall mixed closed forest with Argyrodendron emergents to 40m.													7/11/2000	21/05/2010	-24.52341723	151.4927359
322352	1		A	Angiosperms	Sapindaceae	N	Arytera dictyoneura S.T.Reynolds	19159	McDonald W.J.	3230	Fisher,W.J.;Ryan,P.;	17APR1980	Reynolds S.T.		Queensland	Port Curtis	SF 67 BULBURIN	+000000----	-YAA-S		590		GPS	Lat/Long	GDA94	100	S24 31 40.00	E151 28 07.00	151.4686111	-24.52777778	56	344870	7286478	9148-448864	Bulburin SF67, vicinity of Forest Station. Closed forest/tall closed forest (complex notophyll vine forest). Deep red loam soil derived from basalt. Juvenile foliage from a shrub 2m high. An infrequent species.													7/11/2000	2/02/2011	-24.52777778	151.4686111
756488	6937		A	Angiosperms	Sapindaceae	N	Arytera dictyoneura S.T.Reynolds	19159	Nicholson N.	NJN505		16MAR2003			Queensland	Port Curtis	BULBURIN FOREST CAMP, GRANITE CK SF, C. 200M N OF CAMP SITE	----000----	KD----	A	600		Map	AMG	GDA94	100	S24 31 40.41	E151 28 07.76	151.4688228	-24.52789125	56	344892	7286466	9148-448864	Bulburin Forest Camp, Granite Ck SF, c. 200m N of camp site. West side of road. Complex notophyll vine forest, red loam, ridgetop. Tree 3m, 4 leaflets, dark; fruit yellow, 2 lobed, each flattened.													21/06/2010	6/07/2010	-24.52789125	151.4688228
407836	1		A	Angiosperms	Sapindaceae	N	Arytera dictyoneura S.T.Reynolds	19159	McDonald W.J.	3427		29DEC1981			Queensland	Port Curtis	BULBURIN SF SSW OF MIRIAM VALE	+--+000----	-Y----	F	590		GPS	Lat/Long	GDA94	100	S24 31 41.00	E151 28 07.00	151.4686111	-24.52805556	56	344871	7286448	9148-448864	Bulburin SF (SF391 Bulburin) (now known as Granite Creek SF). Vicinity of old Forest Station. Closed forest/tall closed forest (complex notophyll vine forest). Deep red loam soil derived from basalt/andesite. A shrub to 5m high. Mature fruit 15mm in width, yellow-orange in colour.													7/11/2000	2/02/2011	-24.52805556	151.4686111
339027	1		A	Angiosperms	Sapindaceae	N	Arytera dictyoneura S.T.Reynolds	19159	Sarnadsky K.D.	284B		04OCT1982	Reynolds S.T.		Queensland	Port Curtis	SF 391 BULBURIN	----+------	--AA--	A			Hrb Convert	Lat/Long	AGD66	1600	S24 32 30.00	E151 28 30.00	151.475	-24.54166667	56	345534	7284938	9148-455849	SF391, Bulburin. Rainforest. Tree.													7/11/2000	21/05/2010	-24.5400839	151.4760692
602551	5584		A	Angiosperms	Sapindaceae	N	Arytera dictyoneura S.T.Reynolds	19159	Forster P.I.	PIF18286	Orford,D.;Tucker,M.C.;	30DEC1995			Queensland	Port Curtis	RESUMPTION LA SF 391 BULBURIN 1KM FROM BARRACKS (PUBREF)	+--+000----	--AA--	A			Hrb Convert	Lat/Long	AGD66	1600	S24 32 30.00	E151 28 30.00	151.475	-24.54166667	56	345534	7284938	9148-455849	Resumption Logging Area, State Forest 391 Bulburin, 1km from barracks. Complex notophyll vine forest on red soil. Tree to 5m high, orange-yellow fruit. Common in area.		+											7/11/2000	21/05/2010	-24.5400839	151.4760692
622678	5334		A	Angiosperms	Sapindaceae	N	Arytera dictyoneura S.T.Reynolds	19159	Forster P.I.	PIF14548	Orford,D.;Smyrell,G.;Tucker,M.C.;	31DEC1993			Queensland	Port Curtis	BOYNE RD 1KM FROM OLD BARRACKS SITE BOYNE LA SF 391 BULBURIN	+--+000+---	-ZAA--	F	600		Hrb Convert	Lat/Long	AGD66	1600	S24 32 30.00	E151 28 30.00	151.475	-24.54166667	56	345534	7284938	9148-455849	Boyne road, 1km from old barracks site, Boyne Logging Area, State Forest 391 Bulburin. Araucarian notophyll vineforest on red-brown soil. Shrub to 4m high, orange fruit. Common in area. Spirit material at BRI.								D1236					7/11/2000	21/05/2010	-24.5400839	151.4760692
622697	5335		A	Angiosperms	Sapindaceae	N	Arytera dictyoneura S.T.Reynolds	19159	Forster P.I.	PIF14525	Orford,D.;Smyrell,G.;Tucker,M.C.;	30DEC1993			Queensland	Port Curtis	RESUMPTION LA SF 391 BULBURIN	++--000----	-ZAA--	A	590		Hrb Convert	Lat/Long	AGD66	1600	S24 32 30.00	E151 28 30.00	151.475	-24.54166667	56	345534	7284938	9148-455849	Resumption Logging Area, State Forest 391 Bulburin. Complex notophyll vine forest on red soil. Tree to 8m high, yellow flowers. Common in area.													7/11/2000	21/05/2010	-24.5400839	151.4760692
488609	5600		A	Angiosperms	Sapindaceae	N	Arytera dictyoneura S.T.Reynolds	19159	Worthington M.	1658		14DEC1995	Guymer G.P.	DEC2007	Queensland	Port Curtis	GRANITE CREEK 9KM E BUILYAN	+--+000----	------	A	580		Hrb Convert	Lat/Long	AGD66	1600	S24 32 30.00	E151 29 30.00	151.4916667	-24.54166667	56	347223	7284957	9148-472849	Granite Creek, 9km E Builyan. 4.5m tree, forest road edge, straggly overhanging smooth tight brown trunk with white lichen branchlets, light brown leaves dark glossy green matt green underneath. Pods green/orangeish near stem.													7/11/2000	20/05/2014	-24.5400839	151.4927359
314070	1		A	Angiosperms	Sapindaceae	N	Arytera dictyoneura S.T.Reynolds	19159	McDonald W.J.	2403	Stanton,J.P.;	22JUL1978			Queensland	Port Curtis	SF 67 BULBURIN ABOUT 3KM S OF OLD BULBURIN FORESTRY STN	----000----	K-ACK-				Map	Lat/Long	AGD66	1600	S24 33 30.00	E151 29 30.00	151.4916667	-24.55833333	56	347243	7283111	9148-472831	SF67, Bulburin, c 3km S of old Bulburin Forestry Station. Araucarian microphyll vine forest on basalt on crest of Dawes Range. Heavily logged and infested with lantana. A shrub 2m high.													7/11/2000	2/02/2011	-24.55675057	151.4927359
423327	1		A	Angiosperms	Sapindaceae	N	Arytera dictyoneura S.T.Reynolds	19159	McDonald W.J.	3439		29DEC1981	Turner H.	NOV1992	Queensland	Port Curtis	BULBURIN SF SCOTT RD C 6KM FROM FOREST STN	+--+000+---	F-AA-S	TF	450		Hrb Convert	Lat/Long	AGD66	16000	S24 35	E151 35	151.5833333	-24.58333333	56	356556	7280441	9248-565804	Bulburin State Forest, SF 391 Bulburin, Scott Road, C. 6km from Forest Station, NE of Boyne River Crossing. Closed forest, complex notophyll vineforest tending towards low microphyll vineforest. Heavily logged for emergent Araucaria cunninghamii. Areas of dense Lantana camara. Moderate slope, NW aspect. Parent material a basic volcanic rock (?andesite). Erect shrub to 4m, fruit 15mm in width, yellow-orange in colour. Fruit in spirit at BRI.								B104					7/11/2000	22/08/2013	-24.58175153	151.5843961
636198	5486		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Thomas G.		Gibson,N.;Hoy,N.;	22OCT1992	Guymer G.P.	DEC2007	Queensland	Port Curtis	BOYLES RD YARWUN AREA	----000----	FH----		60		Hrb Convert	Lat/Long	AGD66	1600	S23 52 30.00	E151 06 30.00	151.1083333	-23.875	56	307387	7358316	9150-073583	Boyles Rd, Yarwun area. Brownish black clay loam. Low isolated clumps of trees.													7/11/2000	20/05/2014	-23.87342129	151.1094004
636193	5486		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Thomas G.		Gibson,N.;Hoy,N.;	22OCT1992			Queensland	Port Curtis	BOYLES RD YARWUN AREA (REFSET)	----000----	FH----		60		Hrb Convert	Lat/Long	AGD66	1600	S23 52 30.00	E151 06 30.00	151.1083333	-23.875	56	307387	7358316	9150-073583	Boyles Rd Yarwun Area. Brownish black clay loam. Low isolated clumps of trees.			+										7/11/2000	15/05/2008	-23.87342129	151.1094004
440574	1		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Gibson N.	469		11OCT1982			Queensland	Port Curtis	MT SUGARLOAF AREA YARWUN CALLIOPE SHIRE	+++-000----	--AH--	A			Hrb Convert	Lat/Long	AGD66	1600	S23 52 30.00	E151 06 30.00	151.1083333	-23.875	56	307387	7358316	9150-073583	Mt Sugarloaf area, Yarwun, Calliope Shire. Remnant dry scrub. Small tree 5m, white petals. Very attractive to bees.													7/11/2000	15/05/2008	-23.87342129	151.1094004
743407	6760		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Nicholson N.	NJN428		09MAR2003			Queensland	Port Curtis	LESTER BOYLE PROPERTY, END OF BOYLE'S ROAD, YARWUN, 15KM WSW OF GLADSTONE - NW OF HOUSE ON HILL AND 100M S OF CREEK	----000----	AZAH--	AB	50		Map	Lat/Long	AGD66	100	S23 52 36.00	E151 06 06.00	151.1016667	-23.87666667	56	306710	7358123	9150-067581	Lester Boyle property, end of Boyle's Road, Yarwun, 15km WSW of Gladstone - NW of house on hill and 100m S of creek. Dry rainforest, largely cleared; bottom of N hillslope; isolated trees; yellow-brown earth. Tree 5m (trunk 2m); grey bark; leaves dark green; new growth sparsely, finely hairy; dense rounded crown; sterile. Hugh Nicholson Photo No: 30/23.													19/09/2008		-23.87508796	151.1027337
447371	1		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Gibson N.			20DEC1990			Queensland	Port Curtis	M.BOYLE'S PROPERTY SUB 1 OF LOT 84 4KM SSW OF YARWUN	+--+000----	------		50		Hrb Convert	Lat/Long	AGD66	1600	S23 53 30.00	E151 06 30.00	151.1083333	-23.89166667	56	307411	7356470	9150-074564	M.Boyle's property, Sub 1 of Lot 84, 4km SSW of Yarwun. Seeds of Gibson 950.													7/11/2000	15/05/2008	-23.89008796	151.1094004
447373	1		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Gibson N.			07JAN1991			Queensland	Port Curtis	M.BOYLE'S PROPERTY SUB 1 OF LOT 84 4KM SSW OF YARWUN	----000----	------		50		Hrb Convert	Lat/Long	AGD66	1600	S23 53 30.00	E151 06 30.00	151.1083333	-23.89166667	56	307411	7356470	9150-074564	M.Boyle's Property, Sub 1 of Lot 84, 4km SSW of Yarwun. Seedlings of Gibson 950.													7/11/2000	15/05/2008	-23.89008796	151.1094004
447372	1		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Gibson N.			24DEC1990			Queensland	Port Curtis	M.BOYLE'S PROPERTY SUB 1 OF LOT 84 4KM SSW OF YARWUN	++--000*---	------		50		Hrb Convert	Lat/Long	AGD66	1600	S23 53 30.00	E151 06 30.00	151.1083333	-23.89166667	56	307411	7356470	9150-074564	M.Boyle's Property, Sub 1 of Lot 84, 4km SSW of Yarwun. Dicotyledons of Gibson 950. Spirit material only at BRI.								E1190					7/11/2000	15/05/2008	-23.89008796	151.1094004

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Corveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
447370	1		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Gibson N.	950		10NOV1990			Queensland	Port Curtis	M.BOYLE'S PROPERTY SUB 1 OF LOT 84 4KM SSW OF YARWUN	+++-000----	F-----	TBA	50		Hrb Convert	Lat/Long	AGD66	1600	S23 53 30.00	E151 06 30.00	151.1083333	-23.89166667	56	307411	7356470	9150-074564	M. Boyle's Property, Sub 1 of Lot 84, 4km SSW of Yarwun. Grassy hillside, cleared rainforest, dry, studded with remaining trees. Remaining trees on adjacent hillsides Alstonia constricta, Carissa ovata, Notelaea microcarpa, Alalaya virens?, Acacia fasciculifera, A. aulacocarpa, Bridelia leichhardtii, Alphitonia excelsa and Citriobatus spinescens. Small tree 4.5m. Two main boles, one bole branching from C. 0.5m above base. Branches spreading from C. 1.5m to 2m from base. Bark light grey-brown, blotched. Leaves glossy green above, less glossy green under, midrib green above, creamy-green under. Leaf rachis green,sometimes brown, pulvinule brown. Petiole green or brownish, pulvinus brown. Branchlets creamy-brown with raised light spots. Inflorescence axis green. Petals white. Calyx whitish, green at base. Receptacle shiny light brown. Abundant blossoms over tree. Two trees in spectacular flower on hillside, one other in lesser flower. Only a handful of trees of same species seen on hillside. No other trees discerned flowering on the nearby landscape.													7/11/2000	15/05/2008	-23.89008796	151.1094004
502613	5038		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Gibson N.	TOI953		05DEC1990			Queensland	Port Curtis	SUB 1 OF LOT 84 4KM SSW OF YARWUN	+--+000----	F-AA--	BA			Hrb Convert	Lat/Long	AGD66	1600	S23 53 30.00	E151 06 30.00	151.1083333	-23.89166667	56	307411	7356470	9150-074564	Sub 1, of Lot 84, 4km SSW of Yarwun. Hillside, cleared, dry rainforest. Small tree to 4.5metres tall. Bark light grey-brown, rough. Leaves glossy green; immature fruit green.													7/11/2000	15/05/2008	-23.89008796	151.1094004
502616	5038		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Gibson N.	TOI955		05DEC1990			Queensland	Port Curtis	SUB 1 OF LOT 84 4KM SSW OF YARWUN	+++-000----	F-AA--	BA	50		Hrb Convert	Lat/Long	AGD66	1600	S23 53 30.00	E151 06 30.00	151.108333	-23.891667	56	307411	7356470	9150-074564	Sub 1, of Lot 84, 4km SSW of Yarwun. Hillside, dry rainforest, cleared. Small tree to 3metres high. Straight boled to 1.8metres. Leaves glossy green, midrib yellowish, leaf rachis brown/green. Branchlets light coloured with raised spots. Petals white.		+											7/11/2000	15/05/2008	-23.89008829	151.1094
502612	5038		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Gibson N.	TOI952		05DEC1990			Queensland	Port Curtis	SUB 1 OF LOT 84 4KM SSW OF YARWUN	+--+000----	F-AA--	BA	50		Hrb Convert	Lat/Long	AGD66	1600	S23 53 30.00	E151 06 30.00	151.1083333	-23.89166667	56	307411	7356470	9150-074564	Sub 1, Lot 84, 4km SSW of Yarwun. On hillside, cleared, dry rainforest. Small tree to 4.5metres high. Bark light grey-brown, rough. Leaves glossy green; immature fruit green.													7/11/2000	15/05/2008	-23.89008796	151.1094004
398489	1		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Gibson N.			03DEC1983			Queensland	Port Curtis	YARWUN (PROPERTY OF M A C BOYLE SW OF MT SUGARLOAF VIA BOYLES RD)	+--++------	------	A			Hrb Convert	Lat/Long	AGD66	16000	S23 55	E151 05	151.0833333	-23.91666667	56	304903	7353667	9150-049536	Property of M.A.C.Boyle, Yarwun (W of Spring Valley and Boyle's Roads, SW of Mt Sugarloaf). Fairly common tree.													7/11/2000	15/05/2008	-23.91508796	151.0844004
636196	5486		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Thomas G.		Gale,M.;Gibson,N.;Hoy,N.;	24OCT1992	Guymer G.P.	NOV2007	Queensland	Port Curtis	KOOLKOOROON CK LOT 3 DEGALGIL BOYNE VALLEY	+-+-000----	ADAA--	#	140		Hrb Convert	Lat/Long	AGD66	1600	S24 25 30.00	E151 13 30.00	151.225	-24.425	56	320041	7297557	9149-200975	Koolkooroon Ck, Lot 3 Degalgil, Boyne Valley. Black gravelly clayey sand. Simple notophyll mixed very tall closed forest with Casuarina and Melaleuca emergents.													7/11/2000	20/05/2014	-24.42342031	151.2260678
632218	5436		A	Angiosperms	Sapindaceae	E	Atalaya collina S.T.Reynolds	61575	Gibson N.	1349		24OCT1992	Guymer G.P.	NOV2007	Queensland	Port Curtis	KOOLKOOROOM CK 12KM SW OF NAGOORIN	+++-000----	--FF--	AB			Hrb Convert	Lat/Long	AGD66	1600	S24 25 30.00	E151 14 30.00	151.2416667	-24.425	56	321731	7297578	9149-217975	Koolkooroom Creek, 12km SW of Nagoorin. Semi-cleared open forest/dry rainforest. Tree 5-6 metres; bark rough grey; leaves green; flowers white.													7/11/2000	20/05/2014	-24.42342031	151.2427344
771204	6245		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Braddick B.	2218		20SEP2001	McDonald W.J.	DEC2002	Queensland	Port Curtis	PRIOR PARK	----000----	CH----	A			Gazetteer	Lat/Long	AGD66	16000	S23 55	E150 35	150.5833333	-23.91666667	56	253990	7352886	9050-539528	Prior Park. Creek bank surrounded by steep hills. Rocky clay loam soil, dry vine scrub. Tree 6m - light brown single trunk. Bark brown - branchlets dark brown, leaf dark green above slightly hairy, light green underside. Not common.													17/02/2003	15/05/2008	-23.91508774	150.5844081
457439	1		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Forster P.I.	PIF5711	Bean,A.R.;	06SEP1989			Queensland	Port Curtis	TR 170 CALLIDE RA GRID REF 9049-500207	+--+000----	-ZAH--	F	350		Hrb Convert	GridRef	AGD66	100	S24 12 21.76	E150 32 20.86	150.5391287	-24.20604565	56	250050	7320750	9049-500207	TR 170, Callide Range. Semi-evergreen vine thicket, red soil. Shrub to 4m, fruiting.													7/11/2000	15/05/2008	-24.20446376	150.5402038
759067	7276		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Pollock A.B.	ABP2852	McDonald,W.J.;	06APR2011	Pollock A.B.	JUL2011	Queensland	Port Curtis	C. 5KM DUE SW OF BOTTLE TREE MOUNTAIN, TIMBER RESERVE 170, CALLIDE RANGE N OF BILOELA.	----000----	AAAH--	A	410		GPS	AMG	WGS84	100	S24 12 34.51	E150 33 19.40	150.5553891	-24.20958659	56	251710	7320396	9049-517203	C. 5km due SW of Bottle Tree Mountain, Timber Reserve 170, Callide Range N of Biloela. Gentle slopes of red sands and clays. Ecotone of semi-evergreen vine thicket dominated by a tree layer of Croton insularis, Drypetes deplanchei, Planchonella cotinifolia, lower layers with Strychnos psilosperma and Alyxia ruscifolia, with groundlayer of Scleria sphacelata and Austrostipa spp. Tall open forest of Corymbia citriodora and Eucalyptus crebra adjacent. Small tree to 3.5m tall. C. 8 individuals observed. Specimen sterile, no fruit seen. Occasional on vine forest margins. Perhaps threatened by very heavy feral pig digging closely adjacent.													11/12/2012	4/03/2013	-24.20958659	150.5553891
758710	7264		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Pollock A.B.	ABP2816	McDonald,W.J.;	12FEB2011	Pollock A.B.	APR2011	Queensland	Port Curtis	NORTHERN PORTION OF TIMBER RESERVE 170, CALLIDE RANGE, C. 4.5KM DUE SW OF BOTTLE TREE MOUNTAIN.	----000----	FDAJ-F	F	400		GPS	AMG	WGS84	100	S24 12 54.76	E150 33 49.95	150.563874	-24.21521076	56	252583	7319788	9049-525197	N portion of Timber Reserve 170, Callide Range, c. 4.5km due SW of Bottle Tree Mountain. Gently sloping lower slopes and very broad gully lines of grey sandy soils. Semievergreen vine thicket with occasional emergent Corymbia citriodora, dominated by Excoecaria dallachyana, Diospyros geminata, Owenia venosa and Harpullia pendula, lower tree layers of Siphonodon australis and Exocarpos latifolius, shrublayer of Alchornea ilicifolia, Strychnos psilosperma and Croton acronychioides, sparse groundlayer of Oplismenus spp. Common vines include Cissus oblonga, Trophis scandens, Cayratia acris and Tinospora smilacina. Small shrub to 2m tall. Sprawling low shrub, 2 individuals observed. Sterile specimen. Rare at this locality, growing on the margin of semievergreen vine thicket.													12/11/2012	26/11/2012	-24.21521076	150.563874
618872	6645		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Woodland M.			30NOV2005			Queensland	Port Curtis	CALLIDE MINE, BILOELA	+-++000----	A-AH-S				GPS	AMG	WGS84	100	S24 18 29.89	E150 39 05.98	150.6516613	-24.3083039	56	261676	7309628	9049-616096	Callide Mine, Biloela. Semi evergreen vine thicket in drainage lines and gullies in ranges. Mostly fine frained sediments with occasional basalt on slopes.					11	9	49						26/07/2007	15/05/2008	-24.3083039	150.6516613
396680	1		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Goodman R.			NOV1984			Queensland	Port Curtis	MINERS HS LEASE 429 10M FROM UBOBO BOYNE VALLEY	+++-000----	--AH--				Hrb Convert	Lat/Long	AGD66	16000	S24 25	E151 15	151.25	-24.41666667	56	322564	7298512	9149-225985	Miners Homestead Lease 429, 10 miles from Ubobo, Boyne Valley. Growing amongst regrowth of scrub on edge of vine scrub.													7/11/2000	15/05/2008	-24.41508698	151.2510678
396681	1		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Goodman R.			01FEB1985			Queensland	Port Curtis	MINERS HS LEASE 429 10M FROM UBOBO BOYNE VALLEY	+--+000----	--AH--				Hrb Convert	Lat/Long	AGD66	16000	S24 25	E151 15	151.25	-24.41666667	56	322564	7298512	9149-225985	Miners Homestead Lease 429, 10 miles from Ubobo, Boyne Valley. Growing amongst regrowth of scrub on edge of vine scrub.													7/11/2000	15/05/2008	-24.41508698	151.2510678
872324	7019		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Braddick B.	3901		10JUL2009	Guymer G.P.	OCT2009	Queensland	Port Curtis	DENNIS MARTIN PROPERTY BOYNE VALLEY LITTLEMORE.	0000000----	ADAA--	F			Unknown	Lat/Long	AGD66	1600	S24 29 30.00	E151 17 30.00	151.2916667	-24.49166667	56	326893	7290258	9149-268902	Dennis Martin property Boyne Valley Littlemore. Flat area clay loam soil, rocky. Vine scrub. Shrub 1.2m. Single trunk at base. Brown bark and branchlets. Dark green leaf above, silvery underside. Not common.													22/07/2010		-24.49008698	151.2927344
772150	6257		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Bean A.R.	19802		08JAN2003			Queensland	Port Curtis	NE CORNER OF SF69, SE OF BILOELA	+++-000+---	-DFF--	F	700		GPS	Lat/Long	AGD84	100	S24 38 03.00	E150 53 47.00	150.8963889	-24.63416667	56	287069	7273920	9048-870739	NE corner of SF69, SE of Biloela. Open forest of Eucalyptus intermedia, E. trachyphloia, E. acmenoides with scrubby understorey. Brown loam soil. Shrub 4m high, forming a large clump with many stems in close proximity. Flowers white, in showy terminal bunches. Rare at site. Spirit material at BRI.								D2238					24/04/2003	15/05/2008	-24.63258255	150.8974647
640863	5601		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Bean A.R.	10124		14MAR1996	Bean A.R.	APR1996	Queensland	Port Curtis	SF 69 SOUTH-EAST OF THANGOOL	+--+000----	-YAA--	F			Hrb Convert	Lat/Long	AGD66	1600	S24 38 30.00	E150 53 30.00	150.8916667	-24.64166667	56	286603	7273082	9048-866730	State Forest 69, south-east of Thangool. CLosed forest with Grevillea helmsiae, Owenia venosa, Euroschinus. Red loam. Shrub 4m high on scrub margins. Bark smooth. Seeds black. Rare. at site.													7/11/2000	15/05/2008	-24.64008255	150.8927425
576496	6369		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Forster P.I.	PIF29867		20JAN2004			Queensland	Burnett	STATE FOREST 695 KALPOWAR, MT FORT WILLIAM, 4.5KM NE OF KALPOWAR	+--+000----	-ZAA-S	A	600		GPS	Lat/Long	AGD84	100	S24 38 48.00	E151 20 36.00	151.3433333	-24.64666667	56	332335	7273155	9148-323731	State Forest 695 Kalpowar, Mt Fort William, 4.5km NE of Kalpowar. Araucarian microphyll vineforest on red soil, basalt. Small trees to 4m high, foliage silver below, green fruit. Suckering & layering. 2 individual plants seen.													22/11/2004	15/05/2008	-24.6450839	151.3444025
679148	5964		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Forster P.I.	PIF25437	Booth,R.;	21MAR2000			Queensland	Burnett	SF695 KALPOWAR MT FORT WILLIAM ROAD 9148-327729	----000----	-ZAA-S	A	480		Hrb Convert	GridRef	AGD66	100	S24 38 54.82	E151 20 50.66	151.3474044	-24.64856217	56	332750	7272950	9148-327729	State Forest 695 Kalpowar,Mt Fort William Grid ref; 9148-327729 Araucarian notophyll vineforest with emergent Argyrodendron and Araucaria on red soil derived from basalt. Tree to 8m high, foliage silver below Three individuals seen.													7/11/2000	15/05/2008	-24.64697941	151.3484735
663169	5838		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Brushe J.	JB1166	Teague,N.;Hendry,R.;	30OCT1997	Francis R.	JAN1998	Queensland	Port Curtis	P. FRANCES PROPERTY (GPS 24 41 13 150 56 26)	----000----	FDAA-F	F			GPS	Lat/Long	AGD66	100	S24 41 13.00	E150 56 26.00	150.9405556	-24.68694444	56	291628	7268142	9048-916681	P.Frances property. Hillslope, sandy soil, rainforest with Eucalyptus crebra and Ficus virens emergents, precipice sandstone. Shrub approximately 2 m. From a clump of about 10 individuals which were apparently suckers from the same plant.													7/11/2000	15/05/2008	-24.68536033	150.9416314
629706	5416		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Rider E.			AUG1994			Queensland	Burnett	SCRUB OWNED BY HECTOR GARLICH US 319 MONTO	----000----	--FB--	FA			Hrb Convert	Lat/Long	AGD66	1600	S24 52 30.00	E151 07 30.00	151.125	-24.875	56	310581	7247580	9148-105475	Scrub owned by Hector Garlich, US 319, Monto [probably c. 20km E of Monto]. On semi evergreen vine thicket with emergents of Acacia fasciculifera, Ficus obliqua, Flindersia australis, Owenia venosa, Geigera spp. and Siphonodon australe. Shrub small tree.													7/11/2000	27/08/2013	-24.87341723	151.1260692
770808	6240		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Bean A.R.	19484		19OCT2002			Queensland	Leichhardt	SF 219, AUBURN RANGE, C. 55KM W OF MONTO	----000----	-HAH--	F			GPS	Lat/Long	AGD84	100	S24 53 44.00	E150 33 36.00	150.56	-24.89555556	56	253523	7244397	9048-535443	SF 219, Auburn Range, C. 55km W of Monto. Semi-evergreen vine thicket with Brachychiton rupestris, Owenia venosa, Acacia fasciculifera, Geijera parviflora. Clay-loam. Flat terrain. Shrub 4m high, sterile. Only 2 plants seen.													31/01/2003	15/05/2008	-24.89397144	150.5610758
733015	6249		A	Angiosperms	Sapindaceae	E	Cossinia australiana S.T.Reynolds	11380	Bean A.R.	19732		05JAN2003			Queensland	Burnett	BOGDANOFF LOGGING AREA, COOMINGLAH SF, SW OF MONTO	+++-000----	FTAH--	F			GPS	Lat/Long	AGD84	100	S24 57 27.00	E151 00 46.00	151.0127778	-24.9575	56	299374	7238280	9148-993382	Bogdanoff Logging Area, Coominglah SF, SW of Monto. Semi-evergreen vine thicket on rocky hillside, with Brachychiton rupestris, Austromyrtus bidwillii, Owenia, Flindersia. Shrub 4m high, flowers white, buds yellow-brown. 2 plants seen.													31/03/2003	15/05/2008	-24.95591723	151.013847
872129	7018		A	Angiosperms	Simaroubaceae	V	Samadera bidwillii Hook.f.	101165	Braddick B.	2894		12AUG1999			Queensland	Port Curtis	MOUNT LARCOM.	0000000----	L-FF--	F			Unknown	Lat/Long	AGD66	100	S23 48 21.00	E151 05 00.13	151.0833683	-23.80583333	56	304741	7365942	9150-047659	Mount Larcom. Rocky face of east facing escarpment. Woodland. Sprawling shrub 1m high. Multi trunked bark brown and slightly rough. Branchlets brown. Leaf leathery, green on top, goldy green under with distinct veins. Common in area.													22/07/2010	12/08/2010	-23.80425462	151.0844354
572784	5764		A	Angiosperms	Simaroubaceae	V	Samadera bidwillii Hook.f.	101165	Thompson E.J.	GLA52	Turpin,G.P.;	17APR1997	Guymer G.P.	AUG2010	Queensland	Port Curtis	MT LARCOM CA 13KM NW OF GLADSTONE (GPS 23 48 37 151 05 01)	----000----	KTFF--	F			GPS	Lat/Long	AGD66	100	S23 48 37.00	E151 05 01.00	151.0836111	-23.81027778	56	304772	7365451	9150-047654	Mt Larcom, about 13km NW of Gladstone (GPS 23 48 37 151 05 01). Ridge top. Small shrub growing from cracks in boulders. Uncommon.													7/11/2000	20/05/2014	-23.80869907	151.0846782
820871	6906		A	Angiosperms	Simaroubaceae	V	Samadera bidwillii Hook.f.	101165	Bean A.R.	28755		10MAY2009	Guymer G.P.	JUL2010	Queensland	Port Curtis	CALLIDE RANGE, NNE OF BILOELA	----000----	QAOD--	FIZ			GPS	Lat/Long	AGD84	100	S24 13 25.00	E150 33 53.00	150.5647222	-24.22361111	56	252685	7318850	9049-526188	Callide Range, NNE of Biloela. Plateau top with Eucalyptus suffulgens, Corymbia trachyphloia, shrubby understorey of Acacia spp., Dampiera discolor, Dodonaea triquetra. Shallow sandy soil. Multi-stemmed shrub to 50cm high, sterile. Leaves bright green. About 20 plants seen.													1/02/2010	4/08/2010	-24.22202922	150.5657973
487701	5579		A	Angiosperms	Simaroubaceae	V	Samadera bidwillii Hook.f.	101165	Brushe J.	JB267	Brushe,L.;	24APR1995	Guymer G.P.	JUL2010	Queensland	Port Curtis	S OF DAWSON HWY JUST TO THE E OF THE TOP OF THE RANGE 20KM NE OF BILOELA	----000----	KH---F				Hrb Convert	Lat/Long	AGD66	1600	S24 14 30.00	E150 35 30.00	150.5916667	-24.24166667	56	255456	7316897	9049-554168	South of Dawson highway, just to the east of the top of the range, 20km NE of Biloela. Regrowth after fire, approx 30cm high growing on rocky outcrop on site in rock crevices. Stiff leaves, darker on upper surface. Occasional at site, only in rock crevices.													7/11/2000	4/08/2010	-24.24008478	150.5927418
571862	5585		A	Angiosperms	Simaroubaceae	V	Samadera bidwillii Hook.f.	101165	Thompson E.J.	BIL213	Price,R.J.;	13FEB1996	Guymer G.P.	JUL2010	Queensland	Port Curtis	18KM NE OF BILOELA (GPS 24 18 01 150 40 53)(SITE 393)	----000----	FDOF-F		510		GPS	Lat/Long	AGD66	100	S24 18 01.00	E150 40 53.00	150.6813889	-24.30027778	56	264678	7310558	9049-646105	18km NE of Biloela (GPS 24 18 01 150 10 53)(site 393). S facing mid-slope of hilly terrain with brown sandy loam. Very tall woodland of Eucalyptus citriodora and Euc. cloeziana.													7/11/2000	4/08/2010	-24.29869589	150.682464
571789	5568		A	Angiosperms	Simaroubaceae	V	Samadera bidwillii Hook.f.	101165	Thompson E.J.	BIL191	Price,R.J.;	17NOV1995	Guymer G.P.	JUL2010	Queensland	Port Curtis	19KM NE OF BILOELA (GPS 24 18 09 150 40 50) (NR SITE 358)	+++-000----	FDFA-F		360		GPS	Lat/Long	AGD66	100	S24 18 09.00	E150 40 50.00	150.6805556	-24.3025	56	264598	7310311	9049-645103	19km NE of Blloela (GPS 24 18 09 150 40 50) (site 358). SW facing upper slope of hilly terrain with yellow brown sandy soil. Very tall woodland of Eucalyptus cloeziana and Eucalyptus decorticans.													7/11/2000	4/08/2010	-24.30091811	150.6816306
544849	5145		A	Angiosperms	Simaroubaceae	V	Samadera bidwillii Hook.f.	101165	Thompson E.J.	BIL17		03JUL1992	Guymer G.P.	JUL2010	Queensland	Port Curtis	15KM NE OF BILOELA	----000----	FCFF-F	F	300		Hrb Convert	Lat/Long	AGD66	1600	S24 20 30.00	E150 38 30.00	150.6416667	-24.34166667	56	260723	7305906	9049-607059	15km NE of Biloela 3km N of Callide dam in range. Woodland of Eucalyptus cloeziana with E. suffulgens and Callitris endlicheri. Uncommon shrub to 1.8m high.													7/11/2000	4/08/2010	-24.34008478	150.6427418
457635	1		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Clamfield D.	4776		29SEP1989	Bean A.R.	AUG1999	Queensland	Port Curtis	CA 22KM S OF DULULU	+++-000----	AHFB--	OF			Hrb Convert	Lat/Long	AGD66	1600	S24 01 30.00	E150 19 30.00	150.325	-24.025	56	227908	7340409	8949-279404	C. 22km S of Dululu. Plain, clay soil, pulled Acacia harpophylla regrowth. Shrub to C. 1m, flowering.													7/11/2000	30/11/2009	-24.02341664	150.3260827

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality
852893	7359		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Halford J.J.	JJH331	Williams,B.;	14MAR2014			Queensland	Port Curtis	'LOAMFIELDS', OPPOSITE INTERSECTION OF BURNETT HWY AND SMITH RD IN LARGE REMNANT
852424	7339		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Halford J.J.	JJH320	Williams,B.;	13NOV2013			Queensland	Port Curtis	'LOAMFIELDS', OPPOSITE INTERSECTION OF BURNETT HWY AND SMITH RD, FRONT PADDOCK NR DAM
852892	7359		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Halford J.J.	JJH333	Williams,B.;	14MAR2014			Queensland	Port Curtis	GOOVIGEN, MARTINS RD, APPROX 1KM FROM ENGLES RD
723951	6560		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Bean A.R.	23501		25MAR2005			Queensland	Leichhardt	1KM W OF KOKOTUNGO, NEAR BARALABA.
876179	7310		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Halford J.J.	JJH133	Bush,S.;	23JAN2013			Queensland	Leichhardt	'NIRVANA', IN PADDOCK APPROX 3KM N ALONG RYDERS RD FROM BANANA-MUNGI RD.
774486	6285		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Bean A.R.	20167		18APR2003			Queensland	Leichhardt	NIRVANA, C. 15KM WNW OF BANANA
455377	1		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Philips R.E.			10FEB1989	Bean A.R.	AUG1999	Queensland	Leichhardt	PORTION 2 PARISH OF CAPAYAN BANANA SHIRE
389479	1		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Johnson R.W.	870		12JUL1959	Symon D.E.	APR1992	Queensland	Port Curtis	C 6M W OF BILOELA
389480	1		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Johnson R.W.	858		02JUL1959	Symon D.E.	APR1992	Queensland	Port Curtis	W OF THANGOOL
332399	1		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Brooks			12SEP1966	Symon D.E.	APR1992	Queensland	Port Curtis	BILOELA
824773	7348		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Milburn D.			27FEB2014	Bean A.R.	MAR2014	Queensland	Leichhardt	THEODORE-BARALABA RD, MOURA.
332398	1		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Everist S.L.	3	et al.,;	01JUL1966	Symon D.E.	APR1992	Queensland	Leichhardt	MC CRAE PROPERTY 50M S OF DUARINGA
852425	7339		A	Angiosperms	Solanaceae	E	Solanum dissectum Symon	78018	Halford J.J.	JJH317	Williams,B.;	11NOV2013			Queensland	Leichhardt	ROUNDSTONE CP, 25KM W MOURA ON DAWSON HWY
774485	6285		A	Angiosperms	Solanaceae	E	Solanum elachophyllum F.Muell.	12045	Bean A.R.	20166		18APR2003			Queensland	Leichhardt	NIRVANA, C. 15KM WNW OF BANANA
852428	7339		A	Angiosperms	Solanaceae	E	Solanum elachophyllum F.Muell.	12045	Halford J.J.	JJH311	Williams,B.;	09NOV2013			Queensland	Leichhardt	THE HERMIT BLOCK, THEODORE-BARALABA RD, 2KM N OF BANANA-MUNGI RD
852429	7339		A	Angiosperms	Solanaceae	E	Solanum elachophyllum F.Muell.	12045	Halford J.J.	JJH310		08NOV2013			Queensland	Leichhardt	CAMPING AND WATER RESERVE ON FOUR MILE CK, BANANA-BARALABA RD CA 7.5KM N BANANA
833894	7234		A	Angiosperms	Solanaceae	E	Solanum elachophyllum F.Muell.	12045	Eddie C.	CPE2202	Jeffers,B.; Hoffmann,A.;	01JUN2012			Queensland	Leichhardt	STOCK ROUTE FOLLOWING LEICHHARDT HIGHWAY (BANANA - THEODORE), C. 5.2KM SOUTH OF BANANA.
39038	1		A	Angiosperms	Solanaceae	E	Solanum elachophyllum F.Muell.	12045	Henderson R.	H220		01MAR1967			Queensland	Leichhardt	4M E OF MOURA
771811	6253		A	Angiosperms	Solanaceae	E	Solanum elachophyllum F.Muell.	12045	Bean A.R.	18254		14DEC2001			Queensland	Leichhardt	BRIGALOW RESEARCH STATION, SW OF MOURA
337749	1		A	Angiosperms	Solanaceae	E	Solanum elachophyllum F.Muell.	12045	Dillewaard H.A.	621	Johnson,R.W.;	15MAY1981			Queensland	Leichhardt	BRIGALOW RESEARCH STN NW OF THEODORE (PUBREF)
39040	1		A	Angiosperms	Solanaceae	E	Solanum elachophyllum F.Muell.	12045	Johnson R.W.	2874		21SEP1969			Queensland	Leichhardt	THOMBY 20M NW OF THEODORE
818848	7248	E	A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Forster P.I.	PIF38782	Leiper,G.;	21JUN2012	Bean A.R.	JUL2012	Queensland	Port Curtis	CULTIVATED BEENLEIGH (EX 1.6KM ALONG HIBBS ROAD, N OF JAMBIN).
774484	6285		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Bean A.R.	20225		20APR2003	Bean A.R.	DEC2004	Queensland	Port Curtis	1.6KM ALONG HIBBS ROAD, N OF JAMBIN
781453	6361		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Bean A.R.	20709		01SEP2003	Bean A.R.	JAN2005	Queensland	Port Curtis	1.6KM ALONG HIBBS ROAD, N OF JAMBIN
852891	7359		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Halford J.J.	JJH334	Williams,B.;	14MAR2014			Queensland	Leichhardt	KOKOTUNGO, BARALABA-RANNES RD APPROX 1KM W OF BILOELA-DUARINGA RD INTERSECTION.
414809	1		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Johnson R.W.	854		30JUN1959	Bean A.R.	DEC2004	Queensland	Port Curtis	ORANGE CREEK CA 20M NW OF BILOELA
414804	1		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Johnson R.W.	1708		13MAY1960	Bean A.R.	DEC2004	Queensland	Leichhardt	COTTENHAM CA 10M NW OF BANANA
414803	1		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Johnson R.W.	1709		13MAY1960	Bean A.R.	DEC2004	Queensland	Leichhardt	COTTENHAM CA 10M NW OF BANANA
876178	7310		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Halford J.J.	JJH134	Bush,S.;	23JAN2013			Queensland	Leichhardt	'NIRVANA', IN PADDOCK APPROX 3KM N ALONG RYDERS RD FROM BANANA-MUNGI RD.

Aq_Nr	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid
852893	+--+000----	ZHFB--				GPS	Lat/Long	GDA94	100	S24 02 52.70	E150 20 02.40	150.334	-24.04797222	56	228873	7337891	8949-288378
852424	+--+000----	------	G	143		GPS	Lat/Long	WGS84	100	S24 02 53.00	E150 19 59.00	150.3330556	-24.04805556	56	228777	7337879	8949-287378
852892	+++-000----	FHMC--	QG			GPS	Lat/Long	WGS84	100	S24 04 48.20	E150 14 27.50	150.2409722	-24.08005556	56	219477	7334153	8949-194341
723951	+--+000----	-KMC--	F	120		GPS	AMG	AGD84	100	S24 08 30.00	E149 59 28.00	149.9911111	-24.14166667	55	803989	7326832	8849-039268
876179	+-+-000----	AKMC--		147		GPS	Lat/Long	GDA94	100	S24 23 47.60	E149 58 47.40	149.9798333	-24.39655556	55	802236	7298620	8849-022986
774486	+--+000+---	KKFF--	F			GPS	Lat/Long	AGD84	100	S24 24 10.00	E149 58 53.00	149.9813889	-24.40277778	55	802381	7297918	8849-023979
455377	+-++000----	-KMC--	GB			Hrb Convert	Lat/Long	AGD66	16000	S24 25	E150 05	150.0833333	-24.41666667	56	204220	7296518	8949-042965
389479	++--000----	ZKMC--	ZF			Hrb Convert	Lat/Long	AGD66	16000	S24 25	E150 25	150.4166667	-24.41666667	56	238040	7297190	8949-380971
389480	+++0000----	-HMC--	TZ			Hrb Convert	Lat/Long	AGD66	16000	S24 25	E150 35	150.5833333	-24.41666667	56	254947	7297495	9049-549974
332399	+000000----	------	Q			Hrb Convert	Lat/Long	AGD66	16000	S24 25	E150 35	150.5833333	-24.41666667	56	254947	7297495	9049-549974
824773	+--+000----	ZQPC--	G			GPS	Lat/Long	GDA94	100	S24 30 22.76	E149 59 58.93	149.9997028	-24.50632222	55	803989	7286412	8848-039864
332398	+0++000----	-H----				Hrb Convert	Lat/Long	AGD66	16000	S24 35	E149 45	149.75	-24.58333333	55	778502	7278397	8848-785783
852425	++--000----	------	G	128		GPS	Lat/Long	WGS84	100	S24 38 07.00	E149 44 20.00	149.7388889	-24.63527778	55	777260	7272673	8848-772726
774485	+--+000+---	KKFF--	F			GPS	Lat/Long	AGD84	100	S24 24 10.00	E149 58 53.00	149.9813889	-24.40277778	55	802381	7297918	8849-023979
852428	+--+000----	AH----	G			GPS	Lat/Long	WGS84	100	S24 24 48.70	E149 55 51.20	149.9308889	-24.41352778	55	797229	7296845	8849-972968
852429	+--+000----	AD----	G	126		GPS	Lat/Long	WGS84	100	S24 24 58.00	E150 05 25.00	150.0902778	-24.41611111	56	204924	7296604	8949-049966
833894	+--+000----	AKFB--	F			GPS	Lat/Long	WGS84	100	S24 31 02.00	E150 07 35.00	150.1263889	-24.51722222	56	208821	7285476	8948-088854
39038	+-+-000----	-QMC--				Unknown	Lat/Long	AGD66	1600	S24 35 30.00	E149 54 30.00	149.9083333	-24.59166667	55	794526	7277143	8848-945771
771811	+++-000+---	-D----	F			GPS	Lat/Long	AGD66	100	S24 49 14.00	E149 44 57.00	149.7491667	-24.82055556	55	777890	7252112	8848-778521
337749	+--+000----	------	Z			Unknown	Lat/Long	AGD66	1600	S24 49 30.00	E149 44 30.00	149.7416667	-24.825	55	777121	7251635	8848-771516
39040	+-+-000----	-KMC--	B			Hrb Convert	Lat/Long	AGD66	1600	S24 50 30.00	E149 48 30.00	149.8083333	-24.84166667	55	783825	7249651	8848-838496
818848	++++000----	------	GVZ			GPS	AMG	GDA94	100	S24 06 52.32	E150 22 07.89	150.3688575	-24.11453212	56	232558	7330583	8949-325305
774484	+--+000----	------	QF	170		GPS	Lat/Long	AGD84	100	S24 06 58.00	E150 22 04.00	150.3677778	-24.11611111	56	232451	7330397	8949-324303
781453	+++-000+---	------				GPS	Lat/Long	AGD66	100	S24 06 58.00	E150 22 05.00	150.3680556	-24.11611111	56	232479	7330397	8949-324303
852891	+++-000----	Z-MC--	Q			GPS	Lat/Long	WGS84	100	S24 08 42.70	E149 58 53.50	149.9815278	-24.14519444	55	803005	7326471	8849-030264
414809	+++-000----	-QMC--	ZB			Unknown	Lat/Long	AGD66	1600	S24 19 30.00	E150 22 30.00	150.375	-24.325	56	233620	7307267	8949-336072
414804	+++-000----	--MC--	F			Unknown	Lat/Long	AGD66	1600	S24 20 30.00	E150 02 30.00	150.0416667	-24.34166667	56	199815	7304740	8949-998047
414803	+--+000----	--MC--	F			Unknown	Lat/Long	AGD66	1600	S24 20 30.00	E150 02 30.00	150.0416667	-24.34166667	56	199815	7304740	8949-998047
876178	+-+-000----	AKMC--	G	174		GPS	Lat/Long	GDA94	100	S24 23 47.60	E149 58 46.40	149.9795556	-24.39655556	55	802208	7298620	8849-022986

Aq_Nr	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Corveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
852893	'Loamfields', opposite intersection of Burnett Hwy and Smith Rd in large remnant. Substantial remnant of Acacia harpophylla on gilgaied loamy clay with Geijera parviflora, and occasional Eucalyptus cambageana and Casuarina cristata. Berry red. Sterile component of specimen showing subterranial root connectivity between stems.													28/05/2014	21/07/2014	-24.04797222	150.334
852424	'Loamfields', opposite intersection of Burnett Hwy and Smith Rd, front paddock nr dam. Acacia harpophylla with Casuarina cristata and or Eucalyptus cambageana in melonhole country, some wilga in the midstorey, much Solanum johnsonianum in the groundlayer throughout. Remnant of considerable size for these parts. Erect, sparse herb to 40cm tall. Spiny, leaves lobed, red berries. Three large colonies seen in a relatively small area (1.5km lineal search), the largest with an estimate of 2500 plants over 63m2.													20/02/2014	20/03/2014	-24.04805556	150.3330556
852892	Goovigen, Martins Rd, approx 1km from Engles Rd. Brigalow on gently undulating foot slope of clay-loam with Eucalyptus cambageana, E. thozetiana, native grasses and much Carissa ovata. Also Solanum johnsonianum. Slender, erect herb to 60cm tall, spiny, leaves deeply lobed. Old flowers, buds, somewhat drought stressed. Colony of 15 or more plants at the road verge. Small colonies also scattered in the understorey of remnant in adjoining property.													28/05/2014	21/07/2014	-24.08005556	150.2409722
723951	1km W of Kokotungo, near Baralaba. Open forest of Acacia harpophylla, with Eucalyptus thozetiana, some Eremophila mitchellii in understorey. Clay soil. Road reserve. Shrub 70cm high, leaves bright green, fruits red. A single clump only, comprising 6 mature plants and a few juveniles.													31/10/2006	30/11/2009	-24.14008283	149.9922019
876179	'Nirvana', in paddock approx. 3km N along Ryders Rd from Banana-Mungi Rd. Small brigalow remnant with Eucalyptus thozetiana emergents on clay soils of flat to gently undulating terrain. Other species include Geijera parviflora, Ehretia membranifolia, Carissa ovata, Solanum dissectum (JJH133), S. elachophyllum (18 sterile plants total). Spindly, erect, sparse, spiny to 30cm. Leaves deeply lobed. Fruit a small berry, pale green striped with darker green. Rare at sight with 27 plants (1 fertile) in a single 5 x 5m patch.													1/10/2013	8/10/2013	-24.39655556	149.9798333
774486	Nirvana, c. 15km WNW of Banana. Open forest of Eucalyptus thozetiana, Acacia harpophylla, with understorey of Geijera parviflora. Low ridgetop. Flat. Brown clay soil. Shrub 60cm high. Fruits juicy, bright red. 12 plants in this population, possibly all connected by rhizome. A further 5 plants found about 150m away. Spirit material at BRI.								D2276					9/09/2003	30/11/2009	-24.40119394	149.9824797
455377	Port 2, Parish of Capayan, Banana Shire. Cleared brigalow scrub, brigalow clay. Semi-prostrate herb with open growth habit.													7/11/2000	30/11/2009	-24.41508331	150.084416
389479	C. 6M W of Biloela. Grey melonholey clay. Recently burnt and pulled brigalow suckers. Perennial shrub to 2ft. Fruit red.													7/11/2000	30/11/2009	-24.41508331	150.4177494
389480	W of Thangool. In chocolate clay loam growing in rung brigalow scrub. Erect perennial. Flowers pale mauve. Fruits red.													7/11/2000	30/11/2009	-24.41508478	150.5844084
332399	Biloela. Near roadside.													7/11/2000	30/11/2009	-24.41508478	150.5844084
824773	Theodore-Baralaba Rd, Moura. Road reserve (10-15m width). Eucalyptus cambagei woodland/ Acacia harpophylla, Geijera parviflora. Depressions - cracking clay, plants above depressions. Herb to 60cm; shrivelled, weathered leaves, bright red berries. 35 initial population. Individuals in a tight community. 6 populations discovered in survey. Site restricted in length.			+										1/04/2014		-24.50632222	149.9997028
332398	McCrae Property, 50M S of Duaringa. Clay loam soil. Erect sub-shrub slender branches to 30cms leaves dark green, spines reddish brown, fruit dark crimson													7/11/2000	30/11/2009	-24.58174859	149.7510935
852425	Roundstone CP, 25km W Moura on Dawson Hwy. Whipstick brigalow to 5m tall though most about 3m, with Eucalyptus thozetiana emergents to 18m tall. Also Eremophila mitchellii, Carissa ovata, Solanum dissectum, S. elachophyllum, S. johnsonianum. Slender erect herb to 40cm tall, spiny, leaves lobed. Buds. Drought stressed. One colony seen of ca. 250 plants.													20/02/2014	20/03/2014	-24.63527778	149.7388889
774485	Nirvana, c. 15km WNW of Banana. Open forest of Eucalyptus thozetiana, Acacia harpophylla, with understorey of Geijera parviflora. Low ridgetop. Flat. Brown clay soil. Woody subshrub 15cm high, fruits green with dark streaks. Occasional at site. Spirit material at BRI.								E4930					9/09/2003	30/11/2009	-24.40119394	149.9824797
852428	The Hermit block, Theodore-Baralaba Rd, 2km N of Banana-Mungi Rd. Brigalow remnant on undulating plain of brown clay-loam. Assoc. sp. Acacia harpophylla, Casuarina cristata, Carissa ovata, Alectryon diversifolius, Myoporum acuminatum, Geijera parviflora, Capparis lasiantha, Solanum johnsonianum. Emergents of Eucalyptus cambageana and E. thozetiana uncommon. Small, prickly herb to 15cm tall, yellow globose fruit. Approx 150stems in 6x6m colony, the largest of 12 colonies counted in search effort.													20/02/2014	20/03/2014	-24.41352778	149.9308889
852429	Camping and water reserve on Four Mile Ck, Banana-Baralaba Rd ca. 7.5km N Banana. Brigalow regrowth of 4-6m tall with emergent (retained) Lysiphyllum carronii on a flat plain of grey-brown sandy loam. Occasional Eremophila mitchellii in the midlayer and buffel in the groundlayer. Low spreading wiry, spiny herb to 15cm tall. Berries yellow. 2 colonies found, one of 15 plants, the other 3 plants. Also nearby in young brigalow regrowth on neighbouring Loch Lomond property 3 blocks west (GPS 24 24 18, 150 3 26) where 2 sterile plants seen.													20/02/2014	20/03/2014	-24.41611111	150.0902778
833894	Stock Route following Leichhardt Highway (Banana - Theodore), c. 5.2km south of Banana. Acacia harpophylla open forest; low tree and shrub layers of Geijera parviflora, Eremophila mitchellii and Santalum lanceolatum; ground layer of Cenchrus ciliaris, Dichanthium sericeum and Megathyrsus maximus with sparse herbs. Plain (possibly flood plain) with micro relief of shallow channels, banks and gilgais. Substrate: black clay. Low branching shrub to c. 10cm high; leaves glabrous above, sparsely stellate hairy below; fruit slightly globular to c. 1.5cm diameter, pale green to almost white, some with purplish stripes, yellow-green when ripe. 15 plants isolated within 5m radius.													30/07/2012	3/10/2012	-24.51722222	150.1263889
39038	C. 4M E of Moura. Heavy clay soil associated with Acacia harpophylla. Erect herb with blue flowers.													7/11/2000	30/11/2009	-24.59008193	149.9094268
771811	Brigalow Research Station, SW of Moura. Edge of softwood scrub with Acacia harpophylla, Macropteranthes leichhardtii, Lysiphyllum. Brown clay loam. Prostrate shrub to 10cm high. Leaves tiny, flowers purple. Rare at site. Spirit material at BRI.								E4866					8/04/2003	30/11/2009	-24.81897082	149.7502602
337749	Brigalow Research Station, NW of Theodore. Brigalow-Belah-Dawson Gum forest with wilga understory. Grey-brown clay soil. Perennial to 10cm, spreading branches		+											7/11/2000	30/11/2009	-24.82341526	149.7427602
39040	Thomby, 20M NW of Theodore. Dark grey clay on cleared Acacia harpophylla - Geijera parviflora scrub country. Perennial to 1ft. Leaves green above paler beneath. Flowers mauve. Fruit green with paler vertical stripes													7/11/2000	30/11/2009	-24.84008193	149.8094268
818848	Cultivated Beenleigh (ex 1.6km along Hibbs Road, N of Jambin). Habitat at original place of collection: roadside, with scattered clumps of Acacia harpophylla trees, with understorey of exotic pasture grasses. Small perennial herb to 30cm tall; softly pubescent leaves; flowers purple, fruit soft fleshy red. Voucher for SEQ Rainforest molecular barcoding project for the Smithsonian (US).													5/09/2012	5/09/2012	-24.11453212	150.3688575
774484	1.6km along Hibbs Road, N of Jambin. Roadside, with scattered clumps of Acacia harpophylla trees, with understorey of exotic pasture grasses. Subshrub 20cm high, prickles absent; fruits succulent, bright red. Three clumps of plants seen, each covering about one square metre.													9/09/2003	30/11/2009	-24.11452775	150.3688605
781453	1.6km along Hibbs Road, N of Jambin. Road reserve, with Acacia harpophylla. Small perennial shrub 25cm high, flowers mauve to purple. Rare at site. Spirit material at BRI.								D2327					11/11/2004	30/11/2009	-24.11452775	150.3691382
852891	Kokotungo, Baralaba-Rannes Rd approx 1km W of Biloela-Duaringa Rd intersection. Small patch of Brigalow roadside, gilgais few, much green panic and harissa cactus. Other species incl. Geijera parviflora, Santalum lanceolatum and Carissa ovata. Slightly drought-stressed. Withered flower (calyx present), buds 2 colonies, the largest with 95 stems													28/05/2014	21/07/2014	-24.14519444	149.9815278
414809	Orange Creek, approx 20 miles NW of Biloela. In heavy clay on recently burnt brigalow country. Perennial with erect and ascending branches; flowers jacaranda blue													7/11/2000	30/11/2009	-24.32341664	150.3760827
414804	Cottenham, approx. 10 miles NW of Banana. In brigalow scrub. Small shrub; flowers violet.													7/11/2000	30/11/2009	-24.34008331	150.0427494
414803	Cottenham, approx. 10 miles NW of Banana. In brigalow scrub. Small shrub to 1ft; fruit red succulent.													7/11/2000	30/11/2009	-24.34008331	150.0427494
876178	'Nirvana', in paddock approx. 3km N along Ryders Rd from Banana-Mungi Rd. Small brigalow remnant with Eucalyptus thozetiana emergents on clay soils of flat to gently undulating terrain. Other species include Geijera parviflora, Ehretia membranifolia, Carissa ovata, Solanum dissectum (JJH133), S. elachophyllum (18 sterile plants total). Small herb with soft hairy leaves. Small berries somewhat concealed. Rare at site. 21 plants total in 2 colonies (14 and 7), 2 plants fertile.													1/10/2013	8/10/2013	-24.39655556	149.9795556

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Corveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
694986	127		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Bean A.R.	20165		18APR2003	Bean A.R.	OCT2003	Queensland	Leichhardt	'NIRVANA', C 15KM WNW OF BANANA.	+--+000+---	KQFF--	TF			GPS	Lat/Long	AGD84	100	S24 24 10.00	E149 58 53.00	149.9813889	-24.40277778	55	802381	7297918	8849-023979	'Nirvana', c 15km WNW of Banana. Open forest of Eucalyptus thozetiana, Acacia harpophylla, with understorey of Geijera parviflora. Low ridgetop, flat, brown clay soil. Small woody subshrub 20cm high, prickles absent. Fruits bright red, juicy. Plants rhizomatous with numerous stems in close proximity. Occasional at site, always underneath Wilga plants. Spirit material at BRI.								C2995					22/07/2003	30/11/2009	-24.40119394	149.9824797
816803	4843		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Halford J.J.	JJH30	Regeer,R.;Grigg,L.;	03AUG2012			Queensland	Leichhardt	THEODORE-BARALABA RD, C. 16KM NNW OF DAWSON HWY	+++-000----	-KMC--		177		GPS	Lat/Long	WGS84	100	S24 24 57.90	E149 55 41.20	149.9281111	-24.41608333	55	796942	7296568	8849-969965	Theodore-Baralaba road, c. 16km NNW of Dawson Hwy. Brigalow in road reserve. Heavy clay soil. Associated species Acacia harpophylla, Casuarina cristata, Carissa ovata, Diospyros geminata, Notelaea microcarpa. Subshrub 20-40cm tall, appearing unarmed, densely hairy. Flowers mauve; fruit infrequent, globular, red. 317 stems counted.													29/04/2008	29/10/2013	-24.41608333	149.9281111
816575	7102		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Wain A.	201000101		12SEP2010	Bean A.R.	OCT2010	Queensland	Leichhardt	THEODORE TO BARALABA ROAD, NW OF BANANA TOWNSHIP; C. 110M S OF THE JEMENA SUBSTATION.	+++-000----	AQMC--	FZ			GPS	Lat/Long	GDA94	100	S24 25 01.56	E149 55 42.96	149.9286	-24.4171	55	796989	7296454	8849-969964	Theodore to Baralaba Road, NW of Banana township; c. 110m S of the Jemena Substation. Brigalow/below fragment; fragmented and heavily disturbed with a weedy ground strata. Perennial subshrub; mauve/pale purple coloured flower, lacking prickles but densely hairy all over. Very common at locality.													14/02/2011		-24.4171	149.9286
852430	7339		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Halford J.J.	JJH307	Williams,B.;	07NOV2013			Queensland	Leichhardt	BANANA, 2KM S OF TOWNSHIP IN STOCK ROUTE BESIDE LEICHHARDT HWY	++--000----	AH----	F	158		GPS	Lat/Long	WGS84	100	S24 29 22.80	E150 07 19.40	150.1220556	-24.48966667	56	208318	7288520	8949-083885	Banana, 2km S of township in stock route beside Leichhardt Hwy. Acacia harpophylla and Casuarina cristata on a flat plain of grey clay loam. Groundlayer native grasses. Sarcostemma viminale, Sclerolaena etc. but mostly heavily invaded with green panic and buffel. Solanum elachophyllum also present, rare. Small, spreading twiggy subshrub to 20cm tall, hairy. Buds. Mostly small colonies of 10 or more individuals scattered throughout.													20/02/2014	20/03/2014	-24.48966667	150.1220556
852723	7354		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Jeffers B.	CPE2203	Hoffmann,A.;	06JUN2012			Queensland	Leichhardt	STOCK ROUTE FOLLOWING LEICHHARDT HIGHWAY (BANANA - THEODORE), C. 10.6KM S OF BANANA.	+--+000----	AQ----	BF			GPS	Lat/Long	WGS84	100	S24 34 15.00	E150 08 20.00	150.1388889	-24.57083333	56	210212	7279562	8948-102795	Stock Route following Leichhardt Highway (Banana - Theodore), c. 10.6km S of Banana. Acacia harpophylla disturbed regrowth; sparse low tree and shrub layers dominated by A. harpophylla, Geijera parviflora and Eremophila mitchellii; ground layer dominated by Cenchrus ciliaris & Megathyrsus maximus. Undulating plain. Black clay. Erect branching low shrub to c. 20cm high; leaves densely hairy above and below; fruit globular, c. 1cm diameter, glossy red when ripe. Rare at site.			+										13/05/2014	11/07/2014	-24.57083333	150.1388889
39435	1		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Henderson R.	223		01MAR1967	Bean A.R.	DEC2004	Queensland	Leichhardt	4M E OF MOURA	----000----	-QMC--				Unknown	Lat/Long	AGD66	1600	S24 35 30.00	E149 54 30.00	149.9083333	-24.59166667	55	794526	7277143	8848-945771	Ca 4 miles E of Moura. On heavy clay soil. Associated with Acacia harpophylla. Low woody herb to 20cm, flowers blue.													7/11/2000	30/11/2009	-24.59008193	149.9094268
852426	7339		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Halford J.J.	JJH316	Williams,B.;	11NOV2013			Queensland	Leichhardt	ROUNDSTONE CP, 25KM W MOURA ON DAWSON HWY	+--+000----	------	G			GPS	Lat/Long	WGS84	100	S24 38 07.00	E149 44 20.00	149.7388889	-24.63527778	55	777260	7272673	8848-772726	Roundstone CP, 25km W Moura on Dawson Hwy. Whipstick brigalow to 5m tall though most about 3m, with Eucalyptus thozetiana emergents to 18m tall. Also Eremophila mitchellii, Carissa ovata, Solanum dissectum, S. elachophyllum, S. johnsonianum. Small spreading herb to 25cm tall. Softly hairy. red berries. Most drought stressed. 60 plants counted in the largest of only a very few colonies seen.													20/02/2014	20/03/2014	-24.63527778	149.7388889
415410	1		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Johnson R.W.	2473		09AUG1962	Bean A.R.	DEC2004	Queensland	Leichhardt	THE RHYDDINGS CA 38KM SW OF MOURA	+++-000----	--AH--				Unknown	Lat/Long	AGD66	1600	S24 45 30.00	E149 42 30.00	149.7083333	-24.75833333	55	773897	7259089	8848-738590	The Rhyddings, about 38km SW of Moura. In brigalow-softwood scrub.													7/11/2000	30/11/2009	-24.75674859	149.7094268
39431	1		A	Angiosperms	Solanaceae	E	Solanum johnsonianum A.R.Bean	96683	Johnson R.W.	2621		25APR1963	Bean A.R.	DEC2004	Queensland	Leichhardt	BRIGALOW RESEARCH STN 20M NW OF THEODORE	+-++000----	-HMC--	B			Unknown	Lat/Long	AGD66	1600	S24 49 30.00	E149 44 30.00	149.7416667	-24.825	55	777121	7251635	8848-771516	Site of Brigalow Research Station, 20 miles NW of Theodore; in brown clay soil on cleared brigalow-belah scrub. Erect perennial; flowers mauve.													7/11/2000	30/11/2009	-24.82341526	149.7427602
676049	5902		A	Angiosperms	Solanaceae	V	Solanum lythrocarpum A.R.Bean	96691	Bean A.R.	14430		11DEC1998	Bean A.R.	JAN2005	Queensland	Burnett	EAST OF SCRUBBY DAM COOMINGLAH SF NEAR MONTO (GPS 24 58 25 150 59 41)	++++000+---	-DFF--	TF			GPS	Lat/Long	AGD66	100	S24 58 25.00	E150 59 41.00	150.9947222	-24.97361111	56	297577	7236469	9048-975364	East of Scrubby Dam, Coominglah SF, near Monto. (GPS 24 58 25 150 59 41) Open woodland of Eucalyptus corynodes, Acacia crassa subsp. longicoma, Phebalium nottii, Hibiscus heterophyllus ssp. lutens. Dense shrubby understorey. Brown loamy soil. Shrub 90cm high. Bark not corky. Flowers purple, fruits bright red. Occasional at site. Spirit at BRI.								E4304					7/11/2000	24/05/2010	-24.972027	150.9957981
640887	5601		A	Angiosperms	Solanaceae	V	Solanum lythrocarpum A.R.Bean	96691	Bean A.R.	10155		19MAR1996	Bean A.R.	JAN2005	Queensland	Burnett	SIXTEEN MILE LA COOMINGLAH SF SOUTH-WEST OF MONTO	----000----	-DFA--				Hrb Convert	Lat/Long	AGD66	1600	S24 58 30.00	E150 59 30.00	150.9916667	-24.975	56	297271	7236310	9048-972363	Sixteen Mile LA, Coominglah SF, south-west of Monto. Open forest of Eucalyptus corynodes, E. fibrosa, E. cloeziana with shrubby understorey. Brown loamy soil.													7/11/2000	24/05/2010	-24.97341588	150.9927425
641125	5627		A	Angiosperms	Solanaceae	V	Solanum lythrocarpum A.R.Bean	96691	Bean A.R.	10389		09JUN1996	Bean A.R.	JAN2005	Queensland	Burnett	W EDGE OF BOGDANOFF LA COOMINGLAH SF SW OF MONTO	+++-000----	-DFA--	F	460		Hrb Convert	Lat/Long	AGD66	1600	S24 58 30.00	E150 59 30.00	150.9916667	-24.975	56	297271	7236310	9048-972363	W edge of Bogdanoff Logging Area, Coominglah State Forest, SW of Monto. Open forest of Eucalyptus corynodes, E. decorticans, with dense shrubby understorey, brown loamy soil. Shrub 60cm. high, flowers purple. Locally common for 100m along track.													7/11/2000	24/05/2010	-24.97341588	150.9927425
679134	5963		A	Angiosperms	Solanaceae	V	Solanum lythrocarpum A.R.Bean	96691	Bean A.R.	15936		01JAN2000	Bean A.R.	JAN2005	Queensland	Burnett	BOGDANOFF LA COOMINGLAH SF SW OF MONTO (GPS 24 58 33 150 59 49)	+-++000+---	-DFA--	FZ	460		GPS	Lat/Long	AGD66	100	S24 58 33.00	E150 59 49.00	150.9969444	-24.97583333	56	297805	7236226	9048-978362	Bogdanoff L A, Coominglah SF, SW of Monto GPS 2458331505949 Eucalyptus corynodes and E. decoricans open woodland with dense shrubby understorey of Phebalium woombye, Bertya opponens, Croton insularis, Acacia blakei. Brown loamy soil. Shrub 50cm high. Stems prickly, a short-lived perennial. Flowers purple; fruits red; succulent. Rare at site Spirit material at BRI								E4274					7/11/2000	24/05/2010	-24.97424922	150.9980203
672718	5854		A	Angiosperms	Sparrmanniaceae	X	Corchorus thozetii Halford	77627	McDonald W.J.	6609		16DEC1998	Halford D.	JUN2006	Queensland	Leichhardt	NW CORNER HERITAGE BLOCK YARRA STATION MAP REF 8850-882944	+++0000----	DGAH-B	G			Hrb Convert	GridRef	AGD66	100	S23 32 04.62	E149 49 23.35	149.8231519	-23.53461763	55	788250	7394450	8850-882944	NW corner of Heritage block, Yarra Station, NW of Gogango. Map reference 8850-882944. Alluvial terrace adjacent to main gully. Semievergreen vine thicket with Backhousia kingii, Homalium alnifolium, Acacia fasciculifera and emergent Brachychiton australis and Melaleuca bracteata. Aherb c. 15cm high. Yellow flowers. Rare at site.													7/11/2000	19/06/2014	-23.53303942	149.8242409
677125	5926		A	Angiosperms	Stackhousiaceae	N	Stackhousia tryonii F.M.Bailey	6659	Wilson G.	42		25OCT1998			Queensland	Port Curtis	TUNGAMULL	+0+-000----	--FA-Y				Hrb Convert	Lat/Long	AGD66	1600	S23 20 30.00	E150 43 30.00	150.725	-23.34166667	56	267402	7416818	9051-674168	Tungamull, central Queensland. Eucalyptus crebra woodland on edge of serpentine geology.													7/11/2000	21/05/2010	-23.34008903	150.7260754
37457	1		A	Angiosperms	Surianaceae	V	Cadellia pentastylis F.Muell.	11335	Nagle A.	3					Queensland	Port Curtis	GREYCLIFFE NEAR GOOVEGAN CALLIDE VALLEY	----000----	------				Map	Lat/Long	AGD66	1600	S24 21 30.00	E150 13 30.00	150.225	-24.35833333	56	218465	7303277	8949-184032	Parish of Greycliffe, near Goovegan, Callide Valley. Tall trees up to 2ft diameter; rough grey-brown bark. Local names: apple tree, red ash.													7/11/2000	12/03/2010	-24.35674998	150.2260827
733143	6254		A	Angiosperms	Surianaceae	V	Cadellia pentastylis F.Muell.	11335	Bean A.R.	19754		06JAN2003			Queensland	Burnett	8.9KM ALONG CEDAR CREEK ROAD, NW OF MONTO	----000----	------	ASB			GPS	Lat/Long	AGD84	100	S24 44 54.00	E150 59 46.00	150.9961111	-24.74833333	56	297350	7261425	9048-973614	8.9km along Cedar Creek Road, NW of Monto. Scattered trees, ex-rainforest, grazing paddock. Tree 12m high with dense canopy. Leaves yellow-green. Sterile. Rare at site.													8/04/2003	28/11/2003	-24.74674922	150.997187
490885	5986		A	Angiosperms	Surianaceae	V	Cadellia pentastylis F.Muell.	11335	Ryan T.S.	1004		03JUL1998			Queensland	Leichhardt	5KM NW OF ROOKWOOD STATION (BULL PADDOCK) (GPS 23 26 14 149 47 35)	----000----	-----B	A			GPS	Lat/Long	AGD66	100	S23 26 14.00	E149 47 35.00	149.7930556	-23.43722222	55	785385	7405301	8851-853053	5km NW of Rookwood Station (Bull Paddock). (GPS 23 26 14 149 47 35). Few isolated trees within cleared brigalow softwood scrub on older alluvium. Tree to 20m. Rare.													7/11/2000	28/11/2003	-23.43564801	149.7941424
774834	6288		A	Angiosperms	Surianaceae	V	Cadellia pentastylis F.Muell.	11335	Fox S.			12MAY2003			Queensland	Leichhardt	DURINGA APIS CREEK ROAD, 7.2KM NORTH OF MCKENZIE RIVER	----000----	-K----				GPS	Lat/Long	AGD66	100	S23 27 54.00	E149 41 44.00	149.6955556	-23.465	55	775360	7402414	8851-753024	Duringa Apis Creek Road, 7.2km north of McKenzie River. Grey clay loam. Trees to 15m. 100 trees over buffel grass.													14/11/2003	28/11/2003	-23.46342579	149.6966424
752092	6705		A	Angiosperms	Surianaceae	V	Cadellia pentastylis F.Muell.	11335	Evans S.	NES069		31OCT2006			Queensland	Leichhardt	33.4KM FROM GAINSFORD ON 'FOLEYVALE'	----000----	C-----	A			GPS	AMG	AGD66	100	S23 30 34.50	E149 39 32.84	149.6591211	-23.50958229	55	771545	7397544	8850-715975	33.4km from Gainsford on 'Foleyvale'. Upper edge of river bank. Between cultivation and RE 11.3.25. Tree, 25m, rough bark. Few amongst brigalow scrub.													25/03/2008	11/04/2008	-23.50800409	149.66021
37456	1		A	Angiosperms	Surianaceae	V	Cadellia pentastylis F.Muell.	11335	White C.T.	10851					Queensland	Port Curtis	GREYCLIFFE CALLIDE VALLEY	----000----	--AA--				Map	Lat/Long	AGD66	1600	S24 21 30.00	E150 13 30.00	150.225	-24.35833333	56	218465	7303277	8949-184032	Greycliffe, Callide Valley. Dominant tree in light dry rainforest.													7/11/2000	11/03/2010	-24.35674998	150.2260827
550772	6118		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Healy R.	RH0108004		28AUG2001	Forster P.I.	SEP2001	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	--FF-T				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Hillside above gully. Volcanic soil, Trachyte flows, tuff, rhyolite. Open forest - E. crebra/ C. citriodora. Very scattered. Leaves bright green.													6/12/2001	28/11/2003	-23.25	150.0833333
550771	6118		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Healy R.	RH0108003		28AUG2001	Forster P.I.	SEP2001	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	--FF-T				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Hillside above gully. Volcanic soil, trachyte flows, tuff, rhyolite. Open forest - E. crebra/C. citriodora. 40cm high.													6/12/2001	28/11/2003	-23.25	150.0833333
550769	6118		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Healy R.	RH0108002		28AUG2001	Forster P.I.	SEP2001	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000--+-	--FF-T				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Hillside above gully, volcanic soil, trachyte flows, tuff, rhyolite. Open forest - Eucalyptus crebra / C. citriodora, plus numerous Xanthorrhoea. 1m high, blue leaflets with rounded ends. Carpological specimen at BRI.													6/12/2001	28/11/2003	-23.25	150.0833333
550773	6118		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Healy R.			28AUG2001	Forster P.I.	SEP2001	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	--FF-T				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Gully head on mountain, Volcanic soil, trachyte flows, tuff, rhyolite open forest, Eucalyptus crebra/C. citriodora. 0.5m high, bright green leaves.													6/12/2001	28/11/2003	-23.25	150.0833333
550770	6118		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Healy R.	RH0108001		28AUG2001	Forster P.I.	SEP2001	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	-----T				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Hillside above gully. Volcanic soil, Trachyte flows, tuff, rhyolite. Open forest - E. crebra / C. citriodora. 1.6m Cycad, very scattered. Leaves bright green. 10 per ha.													6/12/2001	28/11/2003	-23.25	150.0833333
550774	6118		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Healy R.			28AUG2001	Forster P.I.	SEP2001	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	A-----				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Creek flat at foot of ridge. 2.2m high cycad. Bright green leaves.													6/12/2001	28/11/2003	-23.25	150.0833333
698544	6554		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Fox S.	1		22JUL2005	Stephens K.M.	AUG2005	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+-+-0+0----	FYOD--				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Rocky slope; red soil; under Eucalyptus crebra woodland. Trunk to 1m; leaf length 90cm; leaflet number 186; leaflet length 156mm; leaflet width 5.5-6mm. Only one plant observed with male cone. Few scattered individuals. 2 sheets at BRI.													20/09/2006		-23.58333333	150.4166667
831950	7186		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	McPherson K.	2.1		OCT2011	Wang J.	OCT2011	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000--+-	------	O			GPS	Lat/Long	GDA94	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Cycad to 4m. Fruit in carpological material at BRI.					11	11	15						19/12/2011		-23.58333333	150.5833333
369295	1		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Maconochie J.R.	2760		28JUN1981	Forster P.I.	SEP2001	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+00+--+--+-	FTFA--				Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Female plant, 113cm high, 57cm circum. Both new and old fruit, large orange. Growing in open eucalypt forest steep rocky hill slope on western slope. See Carpological collection.									Box 98				7/11/2000	25/03/2013	-23.58333333	150.4166667
481092	1		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Hill K.	3799	Stanberg,L.;	08AUG1990	Forster P.I.	SEP2001	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000----	FHFF--				Unknown	GridRef	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Grassy woodland on steep N slope. Euc. melanophloia, Corymbia erythrophloia. Shallow red clay-loam on metasediments. Locally frequent. Cycad to 4m. Stiff erect foliage, deep glossy green to bluish green, linnae at 90-150 deg, 2-4 seeds per sporophyll.													7/11/2000	25/03/2013	-23.58333333	150.4166667
780552	4708		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Hill K.D.	5657	Stanberg,L.;Liu,N.;	01AUG2001			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000----	KTFF--				Label	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Site 2. Open grassy woodland on ridge crest (dominant Eucalyptus melanophyloia, Corymbia erythrophloia) on skeletal loamy soil.													30/04/2003	17/12/2008	-23.58333333	150.4166667
780432	4702		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Hill K.D.	5658	Stanberg,L.;Liu,N.;	01AUG2001			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	KTFA--		250		Label	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Site 2. Open grassy woodland on ridge crest (dominant Eucalyptus melanophloia, Corymbia erythrophloia) on skeletal loamy soil.													28/03/2003	17/12/2008	-23.58333333	150.4166667
141927	1		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	White C.T.	3406		27FEB1927	Forster P.I.	MAR2004	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000----	F-----				Unknown	GridRef	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Hillsides - associated with Macrozania Miquelic. Little above sea level. Tree, 4-6ft.													7/11/2000	25/03/2013	-23.58333333	150.4166667
418803	1		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Smith G.				Forster P.I.	MAR2004	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000--*-	------				Unknown	GridRef	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Carpological material only.									Box 98				7/11/2000	25/03/2013	-23.58333333	150.4166667
517087	5402		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Machin P.			OCT1991	Forster P.I.	SEP2001	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	------		400		Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Pressed material (2 sheets) at BRI. See also AQ 517061 and 517062 (pressed and carpological material) collected from same population.													7/11/2000	25/03/2013	-23.58333333	150.4166667

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid
517061	5402		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Machin P.			OCT1991	Forster P.I.	SEP2001	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+--+--+-	FTFA--		400		Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
517062	5402		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Machin P.			OCT1991	Forster P.I.	SEP2001	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+00--+---+-	FTFA--		400		Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
768277	6601		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Halford D.	Q8744	Batianoff,G.;	10NOV2004	Halford D.	MAY2005	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+--+----	FTFA--				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
440251	1		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF2000		08APR1985	Forster P.I.	SEP2001	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000+-+-	KTFA--		200		Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
551377	6126		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Healy R.			JUL2001	Forster P.I.	JUL2001	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000--+-	------				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
616673	6565		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Fox S.	4		13MAY2005			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	--FA--				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
577657	6393		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29712	Halford,D.A.;	23NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	K-OD--	#			GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
577661	6393		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29707	Halford,D.A.;	23NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	--OD--				GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
698543	6554		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Fox S.	7		19JUL2004	Forster P.I.	AUG2005	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+00+--+-	D-FA--				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
698542	6554		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Fox S.	6		21JUL2005	Stephens K.	AUG2005	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+00+--+-	D-FA--				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
744293	6777		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Wain A.			14OCT2008	Forster P.I.		Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+-++000--+-	F-FA--				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
577662	6393		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29706	Halford,D.A.;	23NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	--OD--		80		GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
749965	6882		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Healy R.	RH809004		27AUG2009			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000--+-	BYFA-T				GPS	AMG	GDA94	16000	0	0	0	0	0	0	0	0
648015	6380		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29678	Halford,D.A.;	22NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	LTFA--		200		GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
577578	6391		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29674	Halford,D.A.;	22NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	K-FF--	#	300		GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
577576	6391		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29673	Halford,D.A.;	22NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	------		9		GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
647811	6359		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29671		22NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+-+-000--+-	FTFA--				Label	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
648016	6380		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29678A	Halford,D.A.;	22NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	FTFA--		300		GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
818092	7183		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF38316		21SEP2011	Forster P.I.	SEP2011	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	FTOF-U	FZ	320		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0
749879	6874		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Catchpoole S.			25AUG2009	Stephens K.	SEP2009	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000--+-	K-OD-U				GPS	Lat/Long	GDA94	16000	0	0	0	0	0	0	0	0
744208	6774		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Wain A.			12SEP2008			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000--+-	F-OD--				Map	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
577663	6393		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29693	Halford,D.A.;	23NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	--OD--				GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
753944	6752		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Todd C.		McLeod,A.;	03JUL2008			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000--+-	--FA--				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
664738	5904		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Olsen M.			11OCT1998			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000--+-	--OF--	I	680		Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
772387	6262		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Antcliff S.			25MAR2002	Fechner N.	MAR2003	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	A-----				GPS	AMG	AGD66	16000	0	0	0	0	0	0	0	0
578569	6407		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29774	Halford,D.A.;	22NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	A-FF--	#	340		GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
780553	4708		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Hill K.D.	5656	Stanberg,L.;	31JUL2001			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	-TFF-P				Label	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
780438	4702		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Hill K.D.	5656A	Stanberg,L.;Liu,N.;	31JUL2001			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	-TFF-P		400		Label	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
578560	6407		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29777	Halford,D.A.;	22NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000--+-	--FF--	#	500		GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
843513	7035		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Bird M.	15		17MAY2010			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000---+	--FF-U				Map	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
647797	6359		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29668	Halford,D.A.;	21NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	--FA--				GPS	Lat/Long	WGS84	16000	0	0	0	0	0	0	0	0

Aq_Nr	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Corveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
517061	Sensitive Species. Precise locality withheld. Open eucalypt forest on steep stony slope. Pressed material, 2 sheets + carpological material (female) at BRI. See also AQ 517062 (male cone) + 517087 collected from same population.									Box 82				7/11/2000	25/03/2013	-23.58333333	150.4166667
517062	Sensitive Species. Precise locality withheld. Open eucalypt forest on steep slope. Presses material (2 sheets) + carpological material (male) at BRI. See also AQ 517061 (female cone) and 517087 collected from same population.									Box 82				7/11/2000	25/03/2013	-23.58333333	150.4166667
768277	Sensitive Species. Precise locality withheld. Steep hill slope, shallow rocky soil, eucalypt open forest with grassy understorey. Trunk 1.5m high, seed green with glaucous bloom. Common on hills to the W of road.													6/02/2007	15/02/2007	-23.58333333	150.4166667
440251	Sensitive Species. Precise locality withheld. Open eucalypt forest on dry stony ridge. Cycad to 2.5m. Many female plants with young fruit. A few old seed at bases and some old microsporophylls. Many individuals at site with a few Macrozamia miquelii. Material in carpological and spirit collections at BRI.								A55	H14				7/11/2000	25/03/2013	-23.58333333	150.4166667
551377	Sensitive Species. Precise locality withheld. White Mahogany, Narrow leaved Ironbark with Acacias, top of hill. Carpological material at BRI.													21/12/2001	28/11/2003	-23.75	150.4166667
616673	Sensitive Species. Precise locality withheld. Eucalypt woodland dominated by Corymbia citriodora var. citriodora, E. crebra and and E. moluccana. Macrozamia miquelii also present. Hillside. Aerial trunk to 1.3m (x 20cm diam.). (Specimen is one complete mature leaf). Dozens across forested hillside.													17/10/2006	14/04/2011	-23.75	150.75
577657	Sensitive Species. Precise locality withheld.													7/04/2005		-23.75	150.5833333
577661	Sensitive Species. Precise locality withheld. Woodland of Eucalyptus crebra, E. acmenoides, E. tereticornis, Corymbia citriodora, Allocasuarina torulosa & Livistona decipiens. Trunked cycad to 2m high; leaves to 1m long, dark green glossy. Very common in area. 2 sheets at BRI.													7/04/2005		-23.75	150.5833333
698543	Sensitive Species. Precise locality withheld. Rocky gully under Eucalyptus crebra, E. erythrophloia, Corymbia citriodora. Acacia fasciculifera in mid-storey. Macrozamia miquellii common in area. Trunk 1.2m tall; 37 living leaves and 50 dead leaves hanging to ground. More than 20 along and near gully. Carpological material at BRI. 2 sheets at BRI.													20/09/2006		-23.75	150.9166667
698542	Sensitive Species. Precise locality withheld. In rocky gully near saddle in range under Eucalyptus crebra, E.erythrophloia, Corymbia citriodora. Acacia fasciculifera in mid-storey. Macrozamia miquellii common in area. Trunk to 1.3m tall and 16cm width at narrowest. Scattered along and near gully. Carpological material at BRI. 3 sheets at BRI.													20/09/2006		-23.75	151.0833333
744293	Sensitive Species. Precise locality withheld. Side of mountain (also on top but not as abundant); open sclerophyll forest. Cycad; new pollen cone and orange fruit. Quite abundant, c. 100 seen on mid/upper and top of slope. Carpological material at BRI.					11	11	4						24/11/2008		-23.75	151.0833333
577662	Sensitive Species. Precise locality withheld. Woodland of Eucalyptus crebra, E. melanophloia & Corymbia erythrophloia. Trunked cycad to 2m high; leaves to 1m long, dark green glossy. Occasional in area. 28 plants seen.													7/04/2005		-23.75	150.5833333
749965	Sensitive Species. Precise locality withheld. Creek flat; light brown soil with volcanic rocks (geology describes: acid or intermediate tuff and flows; ash flow tuff; tuffaceous arenite; conglomerate; mudstone; coralline limestone but is most likely alluvial plain); dry sclerophyll forest with Eucalyptus crebra, E. tereticornis, E. melanophloia, Corymbia tessellaris, C. erythrophloia, Lophostemon suaveolens, 3 species of Acacia, Capparis sp., Cycas miquelii, kangaroo grass, black spear grass. Plant with seeds (healthy plant). Numerous plants. Numerous plants with seeds. Very healthy looking, ranging from seedlings to 7.5m high. Hundreds observed in close vicinity. Many thousands throughout the area. Carpological material at BRI.					11	3	4						12/11/2009		-23.91666667	150.75
648015	Sensitive Species. Precise locality withheld. Wodland of Corymbia citriodora and Eucalyptus crebra on steep rocky slope. Trunked cycad to 1m high; leaves to 1m long, dark green. 5 plants in area. 2 sheets at BRI.													7/04/2005		-24.08333333	150.5833333
577578	Sensitive Species. Precise locality withheld. Woodland of Corymbia citriodora, C. clarksoniana, Eucalyptus crebra & E. tereticornis, stony ridges. Trunked cycad to 6m high; leaves dark green, to 1m long; male cones fawn-tan, shedding pollen. Very common in area.													6/04/2005		-24.08333333	150.5833333
577576	Sensitive Species. Precise locality withheld. Woodland of Corymbia citriodora, C.clarksoniana & Eucalyptus crebra. Trunked cycad to 6m high; foliage dark green or sometimes pruinose; male cones fawn, shedding pollen. Very common in area.													6/04/2005		-24.08333333	150.5833333
647811	Sensitive Species. Precise locality withheld. Woodland of Corymbia citriodora, C. clarksoniana & Eucalyptus crebra; steep slope, stony. Trunked cycad to 2m high; leaves dark green often with pruinose waxy cover to 1m long; male cones fawn, shedding pollen; seed coats orange when ripe. Very common in area. Carpological material at BRI.													22/12/2004		-24.08333333	150.5833333
648016	Sensitive Species. Precise locality withheld.													7/04/2005		-24.08333333	150.5833333
818092	Sensitive Species. Precise locality withheld. Woodland of Corymbia citriodora, C. erythrophloia and Eucalyptus crebra, moderate north-east slope with steep gullies; gravelly soil derived from granite. Trunked cycad to 4m tall; leaves to 1.5m tall; leaflets grey-green. Very common (over 4000) at locality. Preferred translocation site for Gas Pipeline subpopulations.													9/12/2011		-24.08333333	150.75
749879	Sensitive Species. Precise locality withheld. Ridge top in granitic soil; vegetation of narrow-leaved ironbark. 50 sq.m. clump. Carpologicial material at BRI.													16/11/2009		-24.08333333	150.75
744208	Sensitive Species. Precise locality withheld. Slopes and drainage of area; open Eucalyptus crebra dominated woodland, also present in vinethicket. Some fruiting/pollen cones. C. 1061 found in area. Carpological material at BRI.													5/11/2008		-24.08333333	150.75
577663	Sensitive Species. Precise locality withheld. Woodland of Eucalyptus crebra, Corymbia citriodora & C. clarksoniana, granite. Trunked cycad to 1m high; leaves to 1m long, dark green. Occasional in area. 19 individuals seen with 3 in road reserve.													7/04/2005		-24.08333333	150.75
753944	Sensitive Species. Precise locality withheld. Eucalyptus crebra - E. melanophloia, Corymbia erythrophloia shrubby woodland. On ranges on igneous rocks. Carpological material at BRI.													3/09/2008	18/09/2008	-24.08333333	150.75
664738	Sensitive Species. Precise locality withheld. Open forest of Corymbia citriodora. Woody cycad. Common in sparse understorey. Carpological Material at BRI.													7/11/2000	19/03/2004	-24.08333333	150.75
772387	Sensitive Species. Precise locality withheld. Sides slopes of creek bank.													14/05/2003	19/03/2004	-24.25	151.5833333
578569	Sensitive Species. Precise locality withheld. Woodland of Eucalyptus crebra and Corymbia citriodora on stony slope. Trunked cycad to 2.5m high; leaves to 1m long, leaflets dark green. Locally common in area. 18 individuals on road reserve (N side). Population continues both sides of road into private land.													9/06/2005		-24.25	150.5833333
780553	Sensitive Species. Precise locality withheld. Steep N slope. Grassy woodland with dominant Eucalyptus drepanophylla on skeletal loamy soil over acid volcanics.													30/04/2003	28/11/2003	-24.25	150.5833333
780438	Sensitive Species. Precise locality withheld. Site 1. Steep N slope. Grassy woodland with Eucalyptus drepanophylla dominant. On skeletal loamy soil over acid volcanics.													28/03/2003	17/12/2008	-24.25	150.5833333
578560	Sensitive Species. Precise locality withheld. Woodland of Eucalyptus crebra, Corymbia clarksoniana & C. citriodora, stony rise. Trunked cycad to 4m high; leaves to 1m long with dark green glossy leaves; megasporophylls with ripe seed, sarcotesta soft & orange. Locally common in area. 35 plants in 200 x 200m. Carpological material at BRI.													9/06/2005		-24.25	150.75
843513	Sensitive Species. Precise locality withheld. C. 150 individuals. Open forest. Granite derived soils. Photos at BRI with specimen.													28/07/2010	21/07/2011	-24.25	150.5833333
647797	Sensitive Species. Precise locality withheld. Regrowth woodland of Eucalyptus crebra and Corymbia clarksoniana. Cycad <1m tall, regrowth from stump. 33 plants in area. 25 in road reserve and 8 on private land.													22/12/2004		-24.25	150.9166667

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality
833177	7213		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Healy R.	RH20212		23FEB2012			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
647796	6359		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29667	Halford,D.A.;	21NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
617030	6577		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Halford D.A.	Q3752	Batianoff,G.N.;	24NOV2004	Halford D.A.	MAY2005	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
647810	6359		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29669		21NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
756724	7064		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Mathieson M.T.	MTM656		19MAR2010	Forster P.I.	MAR2010	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
635158	5471		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF16233		16FEB1995			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
620757	5314		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF13977	Machin,P.;	24SEP1993			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
590158	5299		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF12278	Machin,P.;	05NOV1992			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
663488	5850		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Watson K.			01DEC1998	Forster P.I.	DEC1998	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
579812	6427		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29661	Halford,D.A.;	20NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
579813	6427		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF29662	Halford,D.A.;	20NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
560116	1		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Hill K.D.	4142	Stanberg,L.;	01OCT1991			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
590160	5299		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Forster P.I.	PIF12286	Machin,P.;	05NOV1992			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
626413	1		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Hind P.	3279		28DEC1989			Queensland	Burnett	Sensitive Species. Precise locality withheld.
661063	5733		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Melzer R.	RM913		11JUN1997	Melzer R.	JUN1997	Queensland	Burnett	Sensitive Species. Precise locality withheld.
830749	7144		G	Gymnosperms	Cycadaceae	E	Cycas megacarpa K.D.Hill	67480	Healy R.	RH110611		24JUN2011	Forster P.I.	AUG2011	Queensland	Burnett	Sensitive Species. Precise locality withheld.
618729	6643		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	Campbell M.			12APR2007			Queensland	Port Curtis	BETWEEN ROCKHAMPTON & YEPPOON ALONG YEPPOON RD
753943	6752		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	Grant B.			24JUN2008	Forster P.I.	JUL2008	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
726508	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES013		21APR2006	Forster P.I.	AUG2006	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
653197	5699		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.	CJ2		12FEB1997	Forster P.I.	FEB1997	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
757136	7097		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	Healy R.			JUL2010			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
481085	1		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	Hill K.	3796	Stanberg,L.;	07AUG1990	Forster P.I.	OCT1992	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
726473	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES005		18APR2006	Forster P.I.	AUG2006	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
726506	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES011		20APR2006	Forster P.I.	AUG2006	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
726471	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES003		18APR2006	Forster P.I.	AUG2006	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
590148	5299		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	Forster P.I.	PIF12258	Machin,P.;	03NOV1992			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.
726472	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES004		18APR2006	Forster P.I.	AUG2006	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.

Aq_Nr	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid
833177	----000----	K-FA-U	F	162		GPS	AMG	GDA94	16000	0	0	0	0	0	0	0	0
647796	+--+000----	-TFA--				GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
617030	----000----	ADFA--				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
647810	----000----	FTFA--				GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
756724	+--+--+--+-	A-FA--	FUZ	590		GPS	AMG	GDA94	16000	0	0	0	0	0	0	0	0
635158	+--+000----	--FA--				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
620757	+--+00+--+-	F-FA--		220		Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
590158	+00--+---+-	K-FA--		300		Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
663488	+--+000--+-	FTOD-F				Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
579812	----000----	--FF--	#	120		GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
579813	----000----	C-FF--		120		GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0
560116	+--+000----	DDFA-U	T	0		Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
590160	+00--+---+-	KTFA--		240		Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
626413	----000----	K-FA--				Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
661063	+--+000--+-	FHOF-G	QB			GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
830749	+--+000--+-	FDFA-H	F	460		GPS	AMG	GDA94	16000	0	0	0	0	0	0	0	0
618729	+--+000----	--FF--	B			GPS	Lat/Long	AGD66	16000	S23 15	E150 35	150.5833333	-23.25	56	252743	7426737	9051-527267
753943	+--+000--+-	------				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
726508	----000----	KTFA--		59		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0
653197	+-++000----	A-FA--		80		Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
757136	000-000--+-	AD----				GPS	AMG	GDA94	16000	0	0	0	0	0	0	0	0
481085	----000----	FHFF-Y				Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0
726473	+----+-----	KHFA-R		68		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0
726506	----000----	FD----	#	15		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0
726471	------+----	F-FA--		80		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0
590148	+--+00+--+-	FTFA--		80		Map	GridRef	AGD66	16000	0	0	0	0	0	0	0	0
726472	+--+--+----	FHFA--		50		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0

Aq_Nr	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Corveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
833177	Sensitive Species. Precise locality withheld. On ridge top at foot of slope with a south eastern aspect. Soil type not recorded although most appears to be derived from granite. Geology is described as granodiorite, tonalite, diorite. Open forest; RE 12.11.6/12.11.7 Corymbia citriodora, C. intermedia, Eucalyptus crebra, E. tereticornis, one Acacia, Capparis spp., Heteropogon contortus and three other grasses and Lantana camara. Bush to 3.5 metres. Some plants had healthy foliage while others had been defoliated by insects. One large plant had fresh seeds. 25 plus plants were observed in one group of 0.3 ha with several plants observed 300 metres to the south west.					12	11	6						12/04/2012	27/04/2012	-24.25	151.4166667
647796	Sensitive Species. Precise locality withheld. Woodland of Corymbia citriodora, C. tessellaris and Eucalyptus crebra on stony soil. Cycad, cut off at 50cm, resprouting from base. Rare in area. Single plant on roadside.													22/12/2004		-24.25	151.0833333
617030	Sensitive Species. Precise locality withheld. Steep rocky slope, shallow loam soil, eucalypt open forest. Trunkless plant. 20 plants seen up slope.													30/11/2006		-24.25	150.5833333
647810	Sensitive Species. Precise locality withheld. Woodland of Eucalyptus crebra & Corymbia citriodora. Rocky hillslope. Trunked cycad to 3m tall; leaves to 1m tall, dark green; seeds green. Locally common in area.													22/12/2004		-24.25	150.9166667
756724	Sensitive Species. Precise locality withheld. Grassy eucalypt woodland dominated by Corymbia citriodora and Eucalyptus crebra on steep slopes. Metamorphic rocks. Large trunked cycad. Locally common. Genetic sample (from 6 infertile plants) to P.I.Forster. Carpological at BRI.													17/09/2010	7/02/2011	-24.41666667	150.9166667
635158	Sensitive Species. Precise locality withheld. Woodland of Eucalyptus crebra, E> intermedia & E. longirostrata. Trunked cycad to 3m high, fruiting. Very common in area; extensive population. Lilioceris nigripes on new foliage.													7/11/2000	28/11/2003	-24.41666667	150.9166667
620757	Sensitive Species. Precise locality withheld. Open eucalypt forest on steep slopes. Small, trunked cycad to 2m high, female; blue-green foliage. Occasional in area. Carpological material at BRI.									Box 71				7/11/2000	19/03/2004	-24.41666667	151.25
590158	Sensitive Species. Precise locality withheld. Eucalyptus macualta, E. crebra open foerst on ridge. Trunked cycad to 2m high. Male plant with young cone. Very common in area. Carpological material at BRI.									Box 71				7/11/2000	27/04/2007	-24.41666667	151.4166667
663488	Sensitive Species. Precise locality withheld. Mountain slope, rocky sandstone with ironbark, lemon scented spotted gum. To 1.5 m tall. Carpological Material at BRI.													7/11/2000	19/03/2004	-24.41666667	151.4166667
579812	Sensitive Species. Precise locality withheld. Woodland of Corymbia citriodora, Eucalyptus crebra & E. tereticornis on stony soil. Trunked cycad to 1m high; leaves to 1m long, dark green; no cones present. Twelve plants seen.													18/07/2005		-24.41666667	151.4166667
579813	Sensitive Species. Precise locality withheld. Woodland of Corymbia citriodora, Eucalyptus crebra and Lophostemon suaveolens along dry watercourse. Trunked cycad to 6m high; leaves to 1m long, dark green. 65 plants seen.													18/07/2005		-24.41666667	151.4166667
560116	Sensitive Species. Precise locality withheld. Steep mesic gully in grassy eucalypt forest on shallow sandy soil over acid igneous rocks, Corymbia maculata, Eucalyptus acmenoides. Rare cycad to 2.5m., occ. 4m. Glossy deep green leaves. Living Coll. No: 912859													7/11/2000	16/08/2013	-24.41666667	151.4166667
590160	Sensitive Species. Precise locality withheld. Eucalypt open forest on steep stony ridge. Trunked cycad to 2m high. Male plant with young cone. Occasional in area. Carpological material at BRI.									Box 71				7/11/2000	19/03/2004	-24.58333333	151.4166667
626413	Sensitive Species. Precise locality withheld. Open Eucalypt forest near ridgetop. Uncommon. Trunk to 3-4 metres.													7/11/2000	30/08/2011	-24.58333333	151.4166667
661063	Sensitive Species. Precise locality withheld. Low hills, gently inclined, mudstone, sandy clay loam. Corymbia citriodora. Eucalyptus crebra open forest with a generally sparse midstratum but clumps of whipstick Lophostemon confertus. Carpological material at BRI.													7/11/2000	28/11/2003	-24.75	151.4166667
830749	Sensitive Species. Precise locality withheld. 6 degree slope above gully - north west aspect. Open forest; RE 12.11.6/12.114.17/12.3.3; Corymbia citriodora, Eucalyptus longirostrata; E. crebra; 1 Acacia; Allocasuarina torulosa; Themeda triandra; Blady grass and 2 other grasses. Bush to 2m. Some plants had healthy foliage while others had defoliated. Several plants with fresh seeds were observed. Plants were observed in several small groups (1 to 30 per group) over a distance of 2.2km. Carpological material at BRI.					12	11	6						19/09/2011	9/01/2012	-24.75	151.4166667
618729	Between Rockhampton and Yeppoon along Yeppoon road. Disturbed woodland. Only 1 observed in the vicinity.													12/07/2007	2/08/2007	-23.24842236	150.5844087
753943	Sensitive Species. Precise locality withheld. Hillside, land zone 12. Cycad. Carpological material at BRI.													3/09/2008	18/09/2008	-23.25	150.5833333
726508	Sensitive Species. Precise locality withheld. Lower ridge. Stony . Grassy woodland. Eucalyptus crebra 16m, Corymbia erythrophloia, Corymbia dallachiana, Eucalyptus sp. Mid layer: 5% Cycas ophiolitica, Alphitonia excelsa. Ground layer: Themeda sp. 80%, black spear grass. Population estimate: Plants/ha: 5-20. % adults >0.5m: 50. Juvenile <0.5m ?50. Altitudinal range: 59m (60-120m).													21/12/2007	2/01/2008	-23.25	150.5833333
653197	Sensitive Species. Precise locality withheld. Foot slopes of Mt Arden Hills, E. crebra open forest/woodland. Zamia to 1.5m. Common locally.													7/11/2000	19/03/2004	-23.25	150.5833333
757136	Sensitive Species. Precise locality withheld. Western aspect of steep, rocky hillside down to flats along gullies. Brown to grey loam with rocks. Dry sclerophyll forest. Eucalyptus tereticornis on lower slopes, gullies and flats; E. crebra; Corymbia dallachiana; C. erythrophloia; Planchonia careya; Alphitonia excelsa; Cycas ophiolitica; Kangaroo grass and black spear grass. Numerous plants, some with seeds. Carpological material at BRI.					11	12	1						16/11/2010	18/11/2010	-23.25	150.5833333
481085	Sensitive Species. Precise locality withheld. Open grassy woodland on slope, C. erthrophloia, E. crebra. Shallow red clay loam on serpentinite. Locally frequent. Cycad to 1.5m. Semi glossy deep green or slightly bluish leaves, Stiff habit, pinnae at 135-180 deg.													7/11/2000	25/03/2013	-23.25	150.5833333
726473	Sensitive Species. Precise locality withheld. Lower spur, north aspect. Loamy clay on andesite. Tall open woodland (11.12.2). Camopy 18m: Eucalyptus melanophloia, Eucalyptus sp. (grey bark), Corymbia intermedia, Corymbia erythrophloia. Mid layer 1-4m, <10%:Ficus opposita, Lantana camara, Cycas ophiolitica, Pogonobolus reticulatus, Breynia oblongifolia, Hibiscus sp. Ground layer: 80% 0.7m, Themeda sp., red natal grass, blue spear grass, Eustrephus latifolius, Capparis sp, Passiflora sp. Cycad, mature male. Specimen: leaf and male cone tip. Population size estimate: 10+; plants/ha 16. %adults > 0.5m: 25%; juveniles < 0.5m: 75%. Uncommon; small groups scattered about landscape.													21/12/2007	5/02/2008	-23.25	150.5833333
726506	Sensitive Species. Precise locality withheld. Low slope. Loamy gravel or gravelly clay loam. Open forest 18-20m (11.11.4). Corymbia citriodora (30)%, Eucalyptus crebra 20%, Eucalyptus acmenoides?, Corymbia intermedia. Mid layer: Lantana camara, Pogonolobus reticulatus, Dodonaea sp., Cycas, Macrozamia miquelii and Planchonia careya. Ground layer: Xanthorrhoea sp. Aristida sp., Eustrephus latifolius. Population size estimate: plants/ha 6+. Altitudinal range 15m (10-30m). Cycad; 30cm caudex. Uncommon and sporadic.													21/12/2007	2/01/2008	-23.25	150.75
726471	Sensitive Species. Precise locality withheld. Lower slope, southern aspect. Soil/geology: Berserker beds. Open forest (11.12.3). Eucalyptus tereticornis 30%, Lophostemon suaveolens 30%, Corymbia sp. 10%, Eucalyptus crebra 20%, Corymbia intermedia 10%. Shrub layer: Lophostemon suaveolens, Lantana camara, Cycas ophiolitica, Archidendropsis basaltica, Pogonlobus reticulatus, and Hibiscus sp. About 20-30% 1-2m. Black speargrass and tall speargrass also present. Cycad., 1-3m. Female; mature and fruiting (no fruit at BRI). Population size: over 100:. 50-100 plants/ha average. In dense clumps on site. %adults > 0.5m: 90. Juveniles< 0.5m: 10. Locally very common in patchy clumps.													21/12/2007	5/02/2008	-23.25	150.5833333
590148	Sensitive Species. Precise locality withheld. Eucalypt woodland on steep slope. Cycad to 2m high. Female plant with immature seed. Very common in area. Carpological material at BRI.									Box 71				7/11/2000	23/08/2005	-23.25	150.5833333
726472	Sensitive Species. Precise locality withheld. Footslope NNW aspect. Stony clay loam. Berserker beds. Tall woodland. (11.12.6a/11.12.3). Eucalyptus crebra, Lophostemon suaveolens, Corymbia dallachyana, Corymbia erythrophloia, Eucalyptus sp. (grey ironbark). Midlayer: Cycas, Acacia spp., Hibiscus sp., Pogonolobus reticulatus, . Ground layer: Themeda, speargrass, Grewia latifolia, Scaevola sp. Cycad. Mature female. Locally common through habitat. Population size estimate: 50+; plants/ha <170/ha. %adults > 0.5m: 30% Juvenile< 0.5m: 70%. Altitudinal range 40-60m.													21/12/2007	2/01/2008	-23.25	150.5833333

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precison	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Coreg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
726476	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES008		20APR2006	Forster P.I.	AUG2006	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+000000----	FKOD--	#	96		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Hillslope. Gravelly soil and reddish clay. Tall open forest/woodland 11.11.4/11.11.7. Eucalyptus crebra 90%, Corymbia intermedia, and Corymbia tesselaris. Mid layer: Alphitonia excelsa, Lantana camara, Melia azedarach, Hibiscus sp. and Macrozamia miquelii. Ground layer mostly Stachytarphaeta sp. (snake weed), and Grewia latifolia. Cycad - sub adult, 30cm ht. Uncommon - many macrozamias in shrubby forest. Population size estimate: very scattered. %adults > 0.5m: 50. Juveniles <0.5m: 50. Altitudinal range 96m.																	21/12/2007	2/01/2008	-23.25	150.75
726470	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES002		18APR2006	Forster P.I.	AUG2006	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+--+----	KTFA--		63		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Hill slope. Ridge WNW aspect. Stony soil. Frequent fire events evident by fire scaring and regenerating species. Altitudinal range: 63m (40-70m). Grassy woodland/open woodland. (11.12.3). Eucalyptus crebra (80%), Corymbia dallachyana (5%), and in lower canopy Lophostemon suaveolens (5%). Midstorey very sparse c. 2-6m: Erythrina vespertilio, Archidendropsis basaltica and Alphitonia excelsa. Black speargrass, red Natal grass and Kangaroo grass. Grewia, Passiflora abo present. Cycad 1.3m, mature plant. Poor condition. Persistent female fruiting stalks. Population estimate: plants/ha 0 to 5 to 20. %adults > 0.5m: 20-58%. Juveniles<0.5m ?-42% (unreadable). Uncommon in habitat locally, scattered 'family' clusters.																	21/12/2007	13/03/2014	-23.41666667	150.5833333
726474	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES006		20APR2006	Forster P.I.	AUG2006	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	F-FA--				GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Hillslope. Berserker beds. Tall woodland/open forest. (11.12.6). Corymbia citriodora, Eucalyptus crebra shrubby woodland. Lophostemon suaveolens, Cycas and Acacia abio present. Locally common. Population size estimate: plants/ha 40 %adults > 0.5m: 85%. Juveniles < 0.5m: 15%.																	21/12/2007	2/01/2008	-23.41666667	150.75
726469	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES001		18APR2006	Forster P.I.	AUG2006	Queensland	Leichhardt	Sensitive Species. Precise locality withheld.	----000----	F-FA--	B	108		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Hillslope +/- towards south facing gully. Grey loamy clay. Berserker beds. Shrubby Eucalyptus open forest (11.12.6A), 18m. Eucalyptus crebra, Lophostemon suaveolens, E. acmenosides, Corymbia sp. Mid storey: Acacia ?aulacocarpa, Alphitonia excelsa, Diospyros sp. Mallotus philippensis, Lantana camara, celerywood. Partially disturbed habitat. Lantana very common in parts. Cycad. Leaf specimen. Adult plant with new shoots following rain. Locally common in patchy groupings. Population size estimate: plants/ha 40 - 160+ (varies). %adults > 0.5m: 35%. Juveniles< 0.5m: 65%. Altitudinal range: 108m, 100-120m.																	21/12/2007	2/01/2008	-23.41666667	150.5833333
726511	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES017		21APR2006			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+--+--+-	KTFA--		65		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Ridge. Stony earth. Berserker beds. Shrubby open forest/woodland (11.12.6). Corymbia citriodora dominant, Eucalyptus crebra, Corymbia intermedia, indet. stringybark. Mid layer: 1.5-5m 50% Lophostemon confertus, Lantana camara, Pogonolobus reticulatus. Ground layer: Xanthorrhoea sp., Themeda sp. Cycad, 40cm caudex; female, fruiting. Plants/ha: 50-200+. Probably greater last 50 years due to timber treatment for railway. % adults >0.5m: <40. Juvenile <0.5m: >60. Very common on site. Common on ridge reserve where trees treated for safety Carpological material at BRI.																	21/12/2007	5/02/2008	-23.41666667	150.5833333
726478	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES010		20APR2006	Forster P.I.	AUG2006	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+--+----	-FFF-C		37		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Footslope. Western aspect. Stony earth +/- laterite. Shrubby woodland of 11.3.4 - 11.11.4. Eucalyptus crebra, 18m , Corymbia intermedia, C. tesselaris. Mid layer: Acacia disparrima, Alphitonia excelsa, Cycas ophiolitica, Macrozamia miquelii, Ficus opposita, Lantana camara. Ground layer: Themeda sp., Imperata sp., black speargrass, red natal grass, Passiflora sp., Stachytarphaeta sp. (snakeweed). Cycad, 50cm with old male cone remnants. Population size estimate: plants/ha 400. %adults > 0.5m: 40; juvenile < 0.5m: 60. Very common. Specimen from road reserve adjacent large population in private land.																	21/12/2007	5/02/2008	-23.41666667	150.75
590153	5299		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	Forster P.I.	PIF12264	Machin,P.;	04NOV1992			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+00--+---+-	KDFA--		80		Hib Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Open eucalypt forest on red sandy ridge. Trunked cycad to 1.5m high, male plant with young cone. Very common in area. Carpological material at BRI. Located plant								Box 71				7/11/2000	19/03/2004	-23.41666667	150.75
726477	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES009		20APR2006	Forster P.I.	AUG2006	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	K-CL-C		22		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Quarry Reserve. Low ridge. Laterite. Mallee/woodland - disturbed, 11.11.15. Fragmented landscape - Council. Shrubby woodland/ open forest 8-12m. Mallee Eucalyptus exserta with eucalypt emergents - Corymbia citriodora, Eucalyptus crebra. Mid layer: Jacksonia scoparia, Pogonolobus reticulatus, Alphitonia excelsa. Ground layer mostly leaves, disturbed with Aristida sp (very sparse), Themeda sp. (very sparse) and Pimelea sp (linifolia?). Cycad, infertile, c. 30cm caudex. Population size estimate: plants/hectare: 4. %adults > 0.5m: 100. Juvenile, 0.5m: nil seen. Uncommon.																	21/12/2007	5/02/2008	-23.41666667	150.75
726512	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES018		21APR2006			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+--+--+-	FTOF--		108		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Footslope. Stony lithosol. Berserker beds. Tall woodland/tall open forest, 20m (11.12.6). Coorymbia citriodora dominant, plus Corymbia intermedia. Allocasuarina torulosa as understorey, +/- Polyscias elegans. Mid layer: 30% cover, Cycas ophiolitica, Macrozamia miquelii, Acacia sp., Planchonia careya. Ground layer: 50% cover, Aristida, spear grass, Lomandra sp., Stachytarphaeta (snakeweed), Sida sp., Passiflora sp., Gahnia s.p. Cycad, female in fruit. Locally common over wide area. Common in state forest adjacent and at lower altitude. Plants/ha: 50+. % adults > 0.5m: 30. Juveniles < 0.5m: 70. Altitudinal range: 100m (45-160m). Carpological material at BRI.																	21/12/2007	2/01/2008	-23.41666667	150.5833333
726475	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES007		20APR2006	Forster P.I.	AUG2006	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	0---+-----	KTFA--		116		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Ridge crest. Stony. Berserker beds. Tall open forest/woodland. Corymbia citriodora 80% - 16.20m; Eucalyptus crebra 5%, E. acmenosides 5%. Mid layer: Pogonolobus reticulatus, Alphitonia excelsa, Cycas ophiolitica, Macrozamia miquelii , Hibiscus sp., Acacia sp. Ground layer: Grewia sp. and Gahnia sp. Mostly leaf litter and stone. Cycad, adult male. Common in patches in elevated country; not on lower slopes. Very poor fertile material on this ridge. Population size estimate: plants/ha. 10-50 in limited parts of habitat. %adults > 0.5m: 40%; juveniles < 0.5m: 60%. Altitudinal range 116m (90-120m).																	21/12/2007	2/01/2008	-23.41666667	150.75
755494	6854		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	Halford J.	BGQLD0621	Merklinger,F.;	24APR2009	Forster P.I.	JUL2012	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000+--+	--FA--	AV			GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Eucalyptus woodland associated with Eucalyptus crebra, E. tereticornis, Corymbia erythrophloia, Livistona decora, Erythrina vespertilio, Ficus opposita, Poaceae spp. Red brown soil, clay loam. Cycad with aerial trunk, often to 2m, rarely to 6m. Trunk scaly. Leaves to 2m long in dense crown, occasionally some dead leaves persisting. Leaflets with prominent mid-vein, lightly covered in rust-brown hairs. Female sporophylls 20-30cm long, acuminate at apex, toothed margins, 3-6 ovules. Fruit green ripening orange-brown. Seeds ovoid to globose, 3cm dia. Voucher for Seeds for Life Project. Spirit material at BRI. Photo at BRI.							B1931					13/07/2009	25/03/2013	-23.41666667	150.5833333
780435	4702		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	Hill K.D.	5661	Stanberg,L.;Liu ,N.;	01AUG2001			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000----	-TOD--		380		Label	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Site 3. Open grassy forest, dominant Eucalyptus drepanophylla with Corymbia intermedia and Eucalyptus tereticornis on steep NW slope, skeletal loamy soil.													28/03/2003	17/12/2008	-23.41666667	150.5833333
726851	6702		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES037		08MAY2006			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+--+--+-	KCFA--	#	22		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Ridge. Laterific gravel. Mixed eucalypt open forest (11.11.4) of Corymbia citriodora, Eucalyptus crebra, +/_ Corymbia intermedia, Lophostemon suaveolens and Eucalyptus tereticornis. Understorey: Lophostemon suaveolens, Jagera pseudorhus and canopy species saplings. Mid layer, 1-5m: Livistona sp., Macrozamia miquelii, Acacia sp., Cycas ophiolitica, Acacia disparrima, Jacksonia scoparia, Pogonolobus reticulatus. Ground layer: Aristida sp., Eustrephus latifolius, Dianella sp., kangaroo grass, Xanthorrhoea sp., and snakeweed; 70% leaf litter. Population size estimate: -. Plants/hectare: >100. % adults >0.5m: 40; (3) 40x 10m. Juvenile <0.5m: 60 (4) including 2 seedlings. Altitudinal range: 10-30m (22). Carpological material at BRI.																	25/03/2008	1/04/2008	-23.41666667	150.75
726853	6702		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES039		09MAY2006			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+--+--+-	KHFA--		357		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Ridge top. Earthy clay loam. Berserker beds. Mixed eucalypt open forest (11.12.6), 12-18m, of Eucalyptus crebra, +/- Corymbia intermedia and Eucalyptus tereticornis. Midlayer: Cycas ophiolitica, Lantana camara, Macrozamia miquelii, Acacia sp., Xanthorrhoea sp. and Lophostemon confertus. Ground layer: 70%, kangaroo grass, black speargrass, Eustrephus latifolius; 20% light leaf litter. Population size estimate: 30-40. Plants/ hectare: 30-40 in 1/4 hectare isolated clump. % Adults > 0.5m: c. 35%. Juvenile < 0.5m: c. 65%. Scarce except in isolated clump. Specimen female, fruiting, caudex c. 0.3m. Carpological material at BRI.																	25/03/2008	30/07/2008	-23.41666667	150.5833333
726854	6702		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES040		09MAY2006			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+--+--+-	KZFA--				GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Population size estimate: c. 150 individuals (extends along ridge to SW). Plants/hectare: <30. %Adults >0.5m: 30. Juvenile <0.5m: 70. Carpological material at BRI.																	25/03/2008	30/07/2008	-23.41666667	150.5833333
726513	6678		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES019		21APR2006			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	----000----	KTFA--		34		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Top of ridge. Stony earth. Berserker beds . Grassy open forest/woodland 18-22m (11.12.5/11.12 6). Corymbia citriodora, Eucalyptus crebra, Lophostemon suaveolens. Mid layer: Hibiscus sp., Cycas ophiolitica, Acacia leiocalyx and Pogonolobus reticulatus. Ground layer of Guinea grass and Passiflora. Alot of forest die back and understorey weeds - fire related. Cycad, adult; sex unknown. Abundant on slopes and ridges. Not common in Corymbia dallachiana woodland on flat ground nearby. Altitudinal range: 34m. Population size estimate: low. Plants/ha: 500. % adults > 0.5m: 60 Juveniles < 0.5m 40.																	21/12/2007	2/01/2008	-23.41666667	150.5833333
652520	5690		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.	CJ1		12FEB1997	Forster P.I.	FEB1997	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000----	-TFA--		40		Map	GridRef	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Low coastal hill Skeletal soil, Eucalyptus open forest, Silvrian sediments. Cycad to 1.5m. Locally common.													7/11/2000	23/08/2005	-23.41666667	150.75

Aq_Nr	Batch_Nr	Cultivated	Group_Code	Group_Name	Family_Name	Status	Botanical_Name	Bc_Nr	Collect_Name	Collect_Code	Additional_Collectors	Collect_Date	Deter_Name	Deter_Date	Region_Name	District_Name	Locality	Floristic	Habitat	Additional	Altitude	Depth	Locn_Der	Geosource	Geodetic	Precision	Latitude	Longitude	Long_Decimal	Lat_Decimal	Amg_Zone	Amg_Easting	Amg_Northing	Grid	Label	Cultiv_Reference_Set	Public_Reference_Set	Reference_Set	Historical	Regional_Ecosystem1	Regional_Ecosystem2	Regional_Ecosystem3	Spirit	Carpological	Wood	Photo	Conveg	Date_Created	Last_Updated	GDA_lat_decimal	GDA_long_decimal
440253	1		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	Forster P.I.	PIF1999		08APR1985	Forster P.I.	OCT1992	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000+-+-	F-FAO-		100		Hrb Convert	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Eucalypt forest with grassy understorey. Southern slope. Cycads to 3m. 3 seen with immature megasporophylls. A few microsporosporophylls seen. Some sprouting seed found around bases of two females. Material in carpological collection at BRI. Spirit material at BRI.							A53	H14				7/11/2000	11/11/2013	-23.41666667	150.5833333
174083	1		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	Blake S.T.	7898		04MAR1935	Hill K.D.	1996	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+000000--+	FTFA--				Map	GridRef	AGD66	16000	0	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Rocky rather steep slopes in open forest. trunk stout up to 15ft., leaves numerous, more or less horizontally deflexed ca.3ft., lower most pinnae abruptly modified into spines. Sub glaucous fertile leaves numerous in side crown pale green, mixed with leaves.												7/11/2000	23/08/2005	-23.41666667	150.5833333
726852	6702		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES038		08MAY2006			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	---000----	DKOF--	#	45		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Valley.Gravelly clay (bulldust type). Berserker beds. Lemon scented gum open forest (11.12.6) of Corymbia citriodora, +/- Eucalyptus crebra, E. acmenoides and E. tereticornis. Understorey Lophostemon suaveolens. Mid-layer: c. 10-15%, Cycas ophiolitica, Macrozamia moquelii and Xanthorrhoea sp. dominate; also Hibiscus sp. and Planchonia careya. Ground layer: 30-60%, black speargrass, Aristida s.p. and Pogonoiolobus reticulatus; also c. 30% leaf litter. Cycad. Caudex c. 1m; male with dry cone. Very, very common. Part of large population; over c. 10ha estimate 1000+ plants. Plants/ha c. 50-200+. % Adults > 0.5m: 70. Juvenile < 0.5m: 30 estimate. Altitudinal range: 30-60m.												25/03/2008	30/07/2008	-23.41666667	150.5833333
737199	6655		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	Main A.			16MAY2007	Forster P.I.	MAY2007	Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+000--+-	C-FA--				GPS	Lat/Long	AGD66	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Creek banks and hillslopes, eucalypt woodland. Cycad, trunked to 4m tall; fruit; Up to 100 individuals at locality. Carpological sample at BRI.					11	12	2						24/08/2007		-23.41666667	150.5833333
699461	6572		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES045		05JUL2006			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	---00+----	KHFA--		40		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Ridge; stony clay loam; shrubby woodland of Eucalyptus crebra, E. tereticornis, Lophostemon suaveolens, Corymbia intermedia. Cycad, female, 1.2m caudex. Uncommon. Fire-scorched, new growth only. Plants/ha: <20. %adults >0.5m: 50. % juveniles <0.5m: 50.					11	11	4						31/10/2006	3/11/2006	-23.41666667	150.75
699459	6572		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES048		05JUL2006			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	---000----	FHFA--	IIH	40		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Hillslope; skeletal gravelly sandy clay loam; open forest with Corymbia intermedia, C. citriodora, Eucalyptus tereticornis; mid-layer: Lophostemon confertus, Xanthorrhoea sp.; groundlayer: Cycas ophiolitica. Cycad, juvenile. Sparse, no adult plants seen nearby. Population size estimate: 20. Plants/ha: <10. Juveniles <0.5m: 100%.					11	12	6						31/10/2006		-23.41666667	150.75
576943	6371		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	Forster P.I.	PIF29719	Halford,D.A.;	25NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	---000----	--FF--				GPS	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Woodland of Corymbia intermedia, C. tessellaris & Eucalyptus crebra along creek bank. Small cycad, multiheaded, caudex to 40cm high, bluish leaflets. 7 plants seen in area.												15/02/2005		-23.41666667	150.75
699458	6572		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES047		05JUL2006			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	---000----	FHFA--	#	45		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Side of ridge; gravelly loam; grassy woodland of Eucalyptus crebra, E. exserta, Corymbia intermedia, Lophostemon confertus; mid- layer: Cycas ophiolitica, Acacia disparnima, Xanthorrhoea sp., Alphitonia excelsa; groundlayer: Themeda sp. 90%. Cycad, caudex 0.8m, no fertile material evident. Uncommon, fire less than 12 months ago. Population size estimate: >15. Plants/ha: <10. % adults >0.5m: 60. % juveniles <0.5m: 40.					11	12	6						31/10/2006		-23.41666667	150.75
699453	6572		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	James C.N.	NES046		05JUL2006			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	+--+00+--+-	FHFF--	#	35		GPS	AMG	WGS84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Footslope; shallow grey loamy clay or lateritic gravel; shrubby woodland 16-18m of Eucalyptus crebra, E. exserta, Corymbia intermedia, C. trachyphloia; mid layer: Lophostemon confertus, Cycas ophiolitica, Acacia disparrima; groundlayer: red natal grass, Panicum sp., black speargrass, Aristida sp., Lomandra sp., Xanthorrhoea sp., Cyperus sp. Cycad, female, 2.1m caudex, fruiting with last season's sporangia persistent. Locally common, patchy in this area. Abundance of adult plant changes at boundary, historic cycad clearing possible. Fire 12 months ago or less. Population size estimate: >50. Plants/ha: >150. % adults >0.5m: 35. % juveniles <0.5m: 65. Carpological material at BRI.					11	3	4						31/10/2006		-23.41666667	150.75
576944	6371		G	Gymnosperms	Cycadaceae	E	Cycas ophiolitica K.D.Hill	67416	Forster P.I.	PIF29721	Halford,D.A.;	25NOV2003			Queensland	Port Curtis	Sensitive Species. Precise locality withheld.	---000----	--FF--		10		Unknown	Lat/Long	AGD84	16000	0	0	0	0	0	0	0	0	Sensitive Species. Precise locality withheld. Woodland of Corymbia intermedia, Eucalyptus crebra & E. exserta, stony rise above high water mark. Trunked cycad to 1.5m high; leaves to 1.2m long, bluish tinge to leaflets. Occasional in area. Mature cone.												15/02/2005	24/08/2005	-23.41666667	150.75

Appendix D

Queensland Museum Database Search Results

Collecting Unit	Taxon - Family	Taxon - Genus	Taxon - Species	Taxon - Common Name	Locality Name	Field Coll Latitude from	Latitude export	Field Coll Longitude from	Longitude export	Field Coll Date	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Adelotus	brevis	Tusked Frog	Kroombit Creek, head of, Kroombit Tops NP	24° 21' 45" South	-24.3625	151° 21" East	151.0058333		23-Nov-05
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Adelotus	brevis	Tusked Frog	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		6-Dec-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Adelotus	brevis	Tusked Frog	Kroombit SF	24° 23' 9" South	-24.38583333	151° 11" East	151.0030556		28-Nov-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Adelotus	brevis	Tusked Frog	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Adelotus	brevis	Tusked Frog	Bindaree Stn, 10Km ENE of Miriam Vale	24° 16' South	-24.26666667	150° 39' East	150.65		5-Nov-81
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Adelotus	brevis	Tusked Frog	Kroombit Tops, 2nd causeway, Ubobo Rd	24° 22' South	-24.36666667	151° 1' East	151.0166667	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Adelotus	brevis	Tusked Frog	Kroombit Crossing, Kroombit Tops	24° 23' 9" South	-24.38583333	151° 11" East	151.0030556	13 Dec 1983-18 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Adelotus	brevis	Tusked Frog	Granite Ck, Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Adelotus	brevis	Tusked Frog	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Adelotus	brevis	Tusked Frog	Bulburin Barracks, via Builyan	24° 32' South	-24.53333333	151° 28' East	151.4666667	Indeterminable {02 Dec 1990 - 16 Jan 1990}	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Adelotus	brevis	Tusked Frog	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		10-Apr-92
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Adelotus	brevis	Tusked Frog	Bania SF 54, Monto	24° 57' South	-24.95	151° 30' East	151.5		29-Apr-92
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Adelotus	brevis	Tusked Frog	Bulburin SF	24° 32' South	-24.53333333	151° 30' East	151.5		16-Dec-92
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	convexiusculus	Marbled Frog	Stanwell Power Stn Site	23° 31' South	-23.51666667	150° 20' East	150.3333333		8-Oct-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	fletcheri	Long-thumbed frog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	fletcheri	Long-thumbed frog	Brigalow Res. Stn, Site 3	24° 48' South	-24.8	149° 46' East	149.7666667	28 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Boyne Island	23° 56' South	-23.93175454	151° 20' East	151.3343913		2-Oct-89
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Boyne Valley	24° 34' 51.6" South	-24.581	151° 15' 12" East	151.2533333		11-Mar-06
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		25-Feb-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		19-Feb-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Stanwell Power Stn Buffer Zone, Stony Ck	23° 31' South	-23.51666667	150° 20' East	150.3333333	13 Jul 1998-24 Jul 1998	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Cania Gorge NP	24° 42' 41" South	-24.71138889	150° 58' 14" East	150.9705556		16-Mar-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Cania Gorge NP	24° 43' 2" South	-24.71722222	150° 59' 21" East	150.9891667		16-Mar-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Neerkol Ck	23° 29' 44" South	-23.49555556	150° 18' 7" East	150.3019444		27-Oct-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Neerkol Ck	23° 29' 44" South	-23.49555556	150° 18' 7" East	150.3019444		25-Oct-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Neerkol Ck	23° 29' 44" South	-23.49555556	150° 18' 7" East	150.3019444		24-Oct-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Stanwell Power Stn Site, Woodlands	23° 31' 30" South	-23.525	150° 20' 10" East	150.3361111		25-Oct-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Gladstone, Sthern Pacific Petroleum Site	23° 48' 59" South	-23.81638889	151° 9' 17" East	151.1547222		21-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Gladstone, Sthern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444		24-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Gladstone, Sthern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444		22-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Gladstone, Sthern Pacific Petroleum Site	23° 45' 16" South	-23.75444444	151° 6' 52" East	151.1144444		22-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		3-Dec-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		4-Dec-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		2-Dec-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 49' South	-23.81666667	151° 9' 19" East	151.1552778	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111		27-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111		19-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111		20-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Awoonga Dam and Calliope R	24° 13' 51" South	-24.23083333	151° 15' 13" East	151.2536111		6-Apr-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Awoonga Dam and Calliope R	23° 52' 24" South	-23.87333333	151° 6' 4" East	151.1011111		7-Apr-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Southern Pacific Petroleum-S2 site, via Gladstone	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		28-Jun-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Southern Pacific Petroleum-S2 site, via Gladstone	23° 49' South	-23.81666667	151° 9' 19" East	151.1552778		27-Jun-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Rockhampton area	23° 19' 9" South	-23.31916667	150° 18' 24" East	150.3066667	01 Oct 1999-31 Oct 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Mt Gavial, 3km SSW	23° 37' South	-23.61666667	150° 28' East	150.4666667	18 Dec 1998-14 Mar 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Mt Gavial, 3kms SSW	23° 37' South	-23.61666667	150° 28' East	150.4666667	18 Dec 1998-14 Mar 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Mt Hopeful, 2kms SSE	23° 45' South	-23.75	150° 32' East	150.5333333	27 Sep 1999-15 Dec 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Mt Beecher, 0.5km NW	23° 55' South	-23.91666667	151° 11' East	151.1833333	27 Sep 1999-15 Dec 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Mt Gavial, 3kms SSE	23° 37' South	-23.61666667	150° 29' East	150.4833333	14 Mar 1999-29 Jun 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Mt Gavial, 3kms SSW	23° 37' South	-23.61666667	150° 28' East	150.4666667	14 Mar 1999-29 Jun 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Mount Morgan	23° 37' 52" South	-23.63111111	150° 21' 55" East	150.3652778		13-Feb-03
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Mount Morgan	23° 38' 37" South	-23.64361111	150° 22' 50" East	150.3805556		20-Feb-03
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		Aug-74
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Bulburin SF, top of range	24° 31' South	-24.51666667	151° 29' East	151.4833333	30 Dec 1974-03 May 1975	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Kroombit Tops, @18km W of campsite Ubobo Rd	24° 22' South	-24.36666667	151° 1' East	151.0166667	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Bindaree Stn, 10Km ENE of Miriam Vale	24° 16' South	-24.26666667	150° 39' East	150.65		7-Nov-81
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667	10 Dec 1983-17 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Three Moon Ck, Kroombit Tops, 45Km SSW of Calliope	24° 22' South	-24.36666667	151° 1' East	151.0166667	09 Dec 1983-19 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Dry Ck, Kroombit Tops, Forestry Barracks	24° 22' South	-24.36666667	151° 1' East	151.0166667		28-Sep-85
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Kroombit Tops, Forestry Camp	24° 27' South	-24.45	150° 48' East	150.8		
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Bulburin SF, top of range	24° 32' South	-24.53333333	151° 29' East	151.4833333	30 Dec 1974-03 May 1975	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		11-Apr-92
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	peronii	Striped Marsh Frog	Mt Coulston SF 471	24° 11' South	-24.18333333	151° 26' East	151.4333333		14-May-92
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Gladstone	23° 51' South	-23.84842183	151° 16' East	151.267725	24 Aug 1994-31 Aug 1994	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Stanwell Power Stn Site, Neerkol Ck	23° 29' 58" South	-23.49944444	150° 18' 24" East	150.3066667		26-Oct-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Brigalow Res. Stn, Site 5	24° 48' South	-24.8	149° 45' East	149.75	16 Dec 2000-28 May 2001	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Brigalow Res. Stn, Site 2	24° 49' South	-24.81666667	149° 45' East	149.75	28 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Brigalow Res. Stn, Site 3	24° 48' South	-24.8	149° 46' East	149.7666667	28 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Brigalow Res. Stn.	24° 48' South	-24.8	149° 47' East	149.7833333	29 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Brigalow Res. Stn, Site 4	24° 48' South	-24.8	149° 47' East	149.7833333	29 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Mt Scoria	24° 32' South	-24.53333333	150° 36' East	150.6	21 Oct 2000-19 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Mt Scoria	24° 32' South	-24.53333333	150° 36' East	150.6	20 Dec 2000-23 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Brigalow Res. Stn, via Theodore	24° 48' South	-24.8	149° 46' East	149.7666667	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Brigalow Res. Stn, via Theodore	24° 49' South	-24.81666667	149° 45' East	149.75	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Brigalow Res. Stn	24° 49' South	-24.81666667	149° 45' East	149.75	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Callide Mine, nr Biloela	24° 19' 23" South	-24.32305556	150° 36' East	150.6		7-Apr-05
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Calliope Shire, Mulligan area	23° 59' 36" South	-23.99333333	151° 12' 44" East	151.2122222		6-Nov-04
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		Aug-74
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	salmini	Salmon-striped Frog	Brown St, N Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Gladstone	23° 51' South	-23.85	151° 15' East	151.25		21-Jan-86
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333		22-Jan-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		19-Feb-98

Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	24-Feb-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Curtis Is	23° 38' 30" South	-23.64166667	151° 11' 30" East	151.1916667	12-May-74
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Curtis Is	23° 38' South	-23.63175632	151° 10' East	151.1677248	12-May-74
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Gladstone	23° 51' South	-23.84842183	151° 16' East	151.267725	23 Aug 1974-30 Aug 1974
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Stanwell Power Stn Site, Quarry Ck	23° 31' South	-23.51666667	150° 20' East	150.3333333	4-Oct-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Stanwell Power Stn Site	23° 30' 4" South	-23.50111111	150° 18' 52" East	150.3144444	26-Oct-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Gladstone, Sthern pacific Petroleum Site	23° 46' 15" South	-23.77083333	151° 7' 43" East	151.1286111	25-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Gladstone, Sthern Pacific Petroleum Site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	25-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Gladstone, Sthern Pacific Petroleum Site	23° 48' 7" South	-23.80194444	151° 9' 6" East	151.1516667	25-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Gladstone, Sthern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444	24-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Gladstone, Sthern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444	22-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Gladstone, Sthern Pacific Petroleum Site	23° 44' 50" South	-23.74722222	151° 6' 32" East	151.1088889	26-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	3-Dec-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Southertn Pacific Petroleum	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	20-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Southern Pacific Petroleum	23° 44' 55" South	-23.74861111	151° 6' 29" East	151.1080556	24-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Southern Pacific Petroleum	23° 44' 55" South	-23.74861111	151° 6' 29" East	151.1080556	20-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Southern Pacific Petroleum	23° 44' 55" South	-23.74861111	151° 6' 29" East	151.1080556	28-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Southern Pacific Petroleum	23° 44' 55" South	-23.74861111	151° 6' 29" East	151.1080556	25-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Awoonga Dam and Calliope R	23° 52' 18" South	-23.87166667	151° 6' 4" East	151.1011111	7-Apr-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Southern Pacific Petroleum-S2 site, via Gladstone	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	26-Jun-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Southern Pacific Petroleum-S2 site, via Gladstone	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	28-Jun-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Awoonga Dam, Boyne R Valley-Miriam Vale	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	29-Mar-00
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Roxborough,17.5k upstream from Capricorn Hwy Bridg	23° 53' 52" South	-23.89777778	149° 49' 57" East	149.8325	05 May 2000-12 May 2000
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Brigalow Res. Stn, Site 4	24° 48' South	-24.8	149° 47' East	149.7833333	29 Oct 2000-16 Dec 2000
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Brigalow Res. Stn, via Theodore	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	29-Mar-01
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Mt Scoria	24° 32' South	-24.53333333	150° 36' East	150.6	20 Dec 2000-23 Dec 2000
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Brigalow Res. Stn, via Theodore	24° 48' South	-24.8	149° 46' East	149.7666667	16 Dec 2000-28 Mar 2001
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Brigalow Res. Stn	24° 48' South	-24.8	149° 47' East	149.7833333	16 Dec 2000-28 Mar 2001
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Brigalow Res. Stn	24° 49' South	-24.81666667	149° 45' East	149.75	16 Dec 2000-28 Mar 2001
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Marine Plains, Curtis Is	23° 35' 30" South	-23.59166667	151° 11' 30" East	151.1916667	9-May-74
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Marine Plain Camp, Curtis Is	23° 35' 30" South	-23.59166667	151° 11' 30" East	151.1916667	12-May-74
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	Aug-74
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Rundle Ra	23° 39' South	-23.65	150° 59' East	150.9833333	25 Mar 1975-31 Mar 1975
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	tasmaniensis	Spotted Marshfrog	Kabra	23° 28' South	-23.46666667	150° 24' East	150.4	22 Apr 1990-19 Jul 1990
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Boyne Island	23° 56' South	-23.93175454	151° 20' East	151.3343913	Oct-89
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Boyne Valley	24° 35' South	-24.58333333	151° 15' 18.6" East	151.2551667	15-Mar-06
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Targinie, via Gladstone	23° 47' South	-23.78175615	151° 8' East	151.1343931	16-Jan-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Stanwell Power Stn Site, Quarry Ck	23° 31' 51" South	-23.53083333	150° 19' 35" East	150.3263889	26-Oct-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Gladstone, Sthern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444	22-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Gladstone, Sthern Pacific Petroleum Site	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	22-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	3-Dec-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Calliope R, to W of Banaraby	23° 58' 36" South	-23.97666667	151° 3' 27" East	151.0575	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Gladstone area, Southern Pacific Petroleum Stage 2	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Gladstone area, Southern Pacific Petroleum Stage 2	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Southern Pacific Petroleum	23° 44' 55" South	-23.74861111	151° 6' 29" East	151.1080556	20-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Southern Pacific Petroleum	23° 44' 55" South	-23.74861111	151° 6' 29" East	151.1080556	24-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Southern Pacific Petroleum	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	20-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Southern Pacific Petroleum-S2 site, via Gladstone	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	27-Jun-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Southern Pacific Petroleum-S2 site, via Gladstone	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	25-Jun-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Rockhampton area	23° 19' 9" South	-23.31916667	150° 18' 24" East	150.3066667	01 Oct 1999-31 Oct 1999
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Mt Gavial, 1km S	23° 36' South	-23.6	150° 29' East	150.4833333	17 Dec 1998-14 Mar 1999
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Awoonga Dam, Boyne Valley to Miriam Vale	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889	30-Mar-00
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Awoonga Dam, Boyne R Valley-Miriam Vale	24° 22' 38" South	-24.37722222	151° 19' 8" East	151.3188889	2-Apr-00
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Mt Hopeful, 2kms SSE	23° 45' South	-23.75	150° 32' East	150.5333333	27 Sep 1999-15 Dec 1999
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Mt Beecher, 0.5km NW	23° 55' South	-23.91666667	151° 11' East	151.1833333	27 Sep 1999-15 Dec 1999
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Brigalow Res. Stn, Site 2	24° 49' South	-24.81666667	149° 45' East	149.75	28 Oct 2000-16 Dec 2000
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Brigalow Res. Stn, Site 5	24° 48' South	-24.8	149° 45' East	149.75	29 Oct 2000-16 Dec 2000
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Brigalow Res. Stn, via Theodore	24° 48' South	-24.8	149° 46' East	149.7666667	16 Dec 2000-28 Mar 2001
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Mt Scoria	24° 32' South	-24.53333333	150° 36' East	150.6	28 Mar 2000-29 Jun 2000
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Boyne Valley & Awoonga	24° 2' South	-24.03333333	151° 19' 5" East	151.3180556	20-Nov-01
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Awoonga Dam	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333	16-May-02
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Mt Morgan Gold Mine	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222	17-Jul-02
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Callide Mine, nr Biloela	24° 17' 57" South	-24.29916667	150° 36' 33" East	150.6091667	7-Apr-05
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Mount Morgan	23° 38' 41" South	-23.64472222	150° 21' 26" East	150.3572222	22-Feb-03
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Boyne Island	23° 55' South	-23.91666667	151° 20' East	151.3333333	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Limnodynastes	terraereginae	Scarlet-sided Pobblebonk	Kroombit Tops, Annie Ck	24° 22' South	-24.36666667	151° 2' East	151.0333333	11-Apr-92
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333	17-Jan-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Targinie, via Gladstone	23° 47' South	-23.78175615	151° 8' East	151.1343931	18-Jan-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	19-Feb-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Neerkol Ck	23° 29' 44" South	-23.49555556	150° 18' 7" East	150.3019444	27-Oct-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Neerkol Ck	23° 29' 44" South	-23.49555556	150° 18' 7" East	150.3019444	24-Oct-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Neerkol Ck	23° 29' 44" South	-23.49555556	150° 18' 7" East	150.3019444	23-Oct-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Stanwell Power Stn Site	23° 31' South	-23.51666667	150° 20' East	150.3333333	4-Oct-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Gladstone, Sthern Pacific Petroleum Site	23° 48' 59" South	-23.81638889	151° 9' 17" East	151.1547222	22-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Gladstone, Sthern Pacific Petroleum Site	23° 48' 59" South	-23.81638889	151° 9' 17" East	151.1547222	21-Nov-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	3-Dec-98
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Calliope R, to W of Banaraby	23° 58' 36" South	-23.97666667	151° 3' 27" East	151.0575	12 Feb 1999-19 Feb 1999

Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Calliope R, to W of Banaraby	23° 59' 22" South	-23.98944444	151° 7' 24" East	151.1233333	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 47' 10" South	-23.78611111	151° 7' 10" East	151.1194444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Southern Pacific Petroleum	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		27-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111		25-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111		20-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111		20-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111		27-Jan-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Awoonga Dam and Calliope R	24° 13' 51" South	-24.23083333	151° 15' 13" East	151.2536111		5-Apr-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Southern Pacific Petroleum-S2 site, via Gladstone	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444		1-Jul-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Southern Pacific Petroleum-S2 site, via Gladstone	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444		26-Jun-99
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Hurdle Gully, 10.8kms WSW	24° 54' South	-24.9	151° 1' East	151.0166667	20 Dec 1997-26 Apr 1998	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Hurdle Gully, 10.8kms WSW Monto	24° 54' South	-24.9	151° 1' East	151.0166667	23 Sep 1997-20 Dec 1997	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Awoonga Dam, Boyne Valley to Miriam Vale	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333		30-Mar-00
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Awoonga Dam, Boyne Valley to Miriam Vale	23° 59' 22" South	-23.98944444	151° 7' 25" East	151.1236111		30-Mar-00
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Awoonga Dam, Boyne Valley to Miriam Vale	23° 59' 22" South	-23.98944444	151° 7' 25" East	151.1236111		29-Mar-00
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Mt Beecher, 0.5km NW	23° 55' South	-23.91666667	151° 11' East	151.1833333	15 Dec 1999-20 Mar 2000	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Mt Beecher, 0.5km NW	23° 55' South	-23.91666667	151° 11' East	151.1833333	27 Sep 1999-15 Dec 1999	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Mt Beecher, 0.5km NW	23° 55' South	-23.91666667	151° 11' East	151.1833333	20 Mar 2000-03 Jun 2000	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Brigalow Res. Stn, Site 2	24° 49' South	-24.81666667	149° 45' East	149.75	28 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Brigalow Res. Stn, Site 3	24° 48' South	-24.8	149° 46' East	149.7666667	28 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Brigalow Res. Stn, Site 5	24° 48' South	-24.8	149° 45' East	149.75	29 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Brigalow Res. Stn, Site 5	24° 48' South	-24.8	149° 45' East	149.75	16 Dec 2000-28 May 2001	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Brigalow Res. Stn, via Theodore	24° 48' South	-24.8	149° 46' East	149.7666667	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Brigalow Res. Stn, via Theodore	24° 49' South	-24.81666667	149° 45' East	149.75	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Brigalow Res. Stn	24° 48' South	-24.8	149° 46' East	149.7666667	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Awoonga Dam	24° 22' 55" South	-24.38194444	151° 19' East	151.3166667		7-May-02
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Callide Mine, nr Biloela	24° 18' South	-24.3	150° 37' East	150.6166667		7-Apr-05
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Boyne Island	23° 56' 5" South	-23.93472222	151° 20' 55" East	151.3486111		
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Curtis Island	23° 38' 40" South	-23.64444444	151° 13' 25" East	151.2236111		8-May-74
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Bouldercombe	23° 34' South	-23.56666667	150° 28' East	150.4666667		
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Turtle St, Curtis Is	23° 38' 30" South	-23.64166667	151° 13' 30" East	151.225		8-Jun-74
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		Aug-74
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Rundle Ra	23° 39' South	-23.65	150° 59' East	150.9833333	25 Mar 1975-31 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Bindaree Stn, 10Km ENE of Miriam Vale	24° 16' South	-24.26666667	150° 39' East	150.65		5-Nov-81
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Gladstone-Fishermans Landing Rd, nr Clinker Plant	23° 55' South	-23.91666667	151° 15' East	151.25		28-Jan-82
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	May 1982-Jun 1982	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Nth Rockhampton	23° 32' South	-23.53333333	150° 31' East	150.5166667	21 Apr 1990-18 Jul 1990	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Glenmore	23° 20' South	-23.33333333	150° 30' East	150.5	23 Oct 1990-22 Mar 1991	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Mt Chalmers	23° 18' South	-23.3	150° 38' East	150.6333333	23 Oct 1990-22 Mar 1991	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Frenchville	23° 20' South	-23.33333333	150° 34' East	150.5666667	22 Oct 1990-21 Mar 1991	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Bouldercombe	23° 32' South	-23.53333333	150° 26' East	150.4333333	22 Oct 1990-21 Mar 1991	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Glenmore	23° 20' South	-23.33333333	150° 30' East	150.5	21 Mar 1991-03 Sep 1991	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Bushley Stn	23° 32' South	-23.53333333	150° 15' East	150.25		3-Sep-91
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Koongal	23° 23' South	-23.38333333	150° 33' East	150.55	21 Mar 1991-04 Sep 1991	
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Frenchville	23° 20' South	-23.33333333	150° 34' East	150.5666667		
Herpetology/Vertebrates/Biodiversity	Limnodynastidae	Platyplectrum	ornatum	Ornate Burrowing Frog	Bania SF 54, via Monto	24° 57' South	-24.95	151° 30' East	151.5		7-Nov-92
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Crinia	deserticola	Desert Froglet	Curtis Island, S Connor's Bluff	23° 44' 30" South	-23.74166667	151° 17' 30" East	151.2916667		10-May-74
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Crinia	deserticola	Desert Froglet	R64, south end, Curtis Is	23° 44' 30" South	-23.74166667	151° 17' 30" East	151.2916667		10-May-74
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Crinia	deserticola	Desert Froglet	Curtis Is, Boat Ck	23° 36' South	-23.6	151° 11' East	151.1833333		27-Oct-93
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Crinia	deserticola	Desert Froglet	Curtis Is, Boat Ck	23° 36' South	-23.6	151° 11' East	151.1833333		26-Oct-93
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Crinia	parinsignifera	Beeping Froglet	Mt Beecher, 0.5km NW	23° 55' South	-23.91666667	151° 11' East	151.1833333	15 Dec 1999-20 Mar 2000	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Crinia	parinsignifera	Beeping Froglet	Calliope Ra, Kroombit Tops	24° 15' South	-24.25	150° 52' East	150.8666667	10 Dec 1983-18 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Crinia	signifera	Clicking Froglet	Dry Ck, Kroombit Tops, Forestry Barracks	24° 22' South	-24.36666667	151° 1' East	151.0166667		28-Sep-85
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Crinia	signifera	Clicking Froglet	Kroombit Top, Scientific Area 48	24° 22' South	-24.36666667	151° 2' East	151.0333333		12-Apr-92
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Crinia	signifera	Clicking Froglet	Kroombit Top, Scientific Area 48	24° 22' South	-24.36666667	151° 2' East	151.0333333		12-Apr-92
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Crinia	signifera	Clicking Froglet	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		9-Apr-92
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Mixophyes	fasciolatus	Great Barred-frog	Kroombit Forest Dve crossing of Kroombit Ck, Kroombit Tops NP	24° 23' 2" South	-24.38388889	151° 5" East	151.0013889		9-Dec-10
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Mixophyes	fasciolatus	Great Barred-frog	Munholme Ck head, Beech Scientific Area, Kroombit Tops NP	24° 24' 55" South	-24.41527778	151° 2' 19" East	151.0386111		9-Dec-10
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Mixophyes	fasciolatus	Great Barred-frog	Kroombit Tops, 2nd causeway, Ubobo Rd	24° 22' South	-24.36666667	151° 1' East	151.0166667	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Mixophyes	fasciolatus	Great Barred-frog	Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667	10 Dec 1983-17 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Mixophyes	fasciolatus	Great Barred-frog	Upper Kroombit Ck, Kroombit Tops, via Calliope	24° 22' South	-24.36666667	151° 1' East	151.0166667		12-Dec-83
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Mixophyes	fasciolatus	Great Barred-frog	Barracks, Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667	10 Dec 1983-18 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Mixophyes	fasciolatus	Great Barred-frog	Kroombit Tops	24° 27' South	-24.45	150° 48' East	150.8		8-Mar-93
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	coriacea	Keferstein's Toadlet	Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1		20-Jan-98
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Mt Larcom	23° 51' 55" South	-23.86527778	151° 1' 38" East	151.0272222		12-Jul-10
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Trevethan Ck, Camboon SF	25° 6' 23" South	-25.10638889	150° 34' 28" East	150.5744444		21-Oct-98
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Southern Pacific Petroleum	23° 44' 55" South	-23.74861111	151° 6' 29" East	151.1080556		21-Jan-99
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Morinish SF 878	23° 19' 6" South	-23.31833333	150° 8' 17" East	150.1380556		12-Apr-99
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Southern Pacific Petroleum-S2 site, via Gladstone	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		29-Jun-99
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Southern Pacific Petroleum-S2 site, via Gladstone	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		29-Jun-99
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Boyne Island	23° 56' South	-23.93333333	151° 20' 41" East	151.3447222		
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Emu Park Rd, 26km NE of Rockhampton	23° 17' South	-23.28333333	150° 43' East	150.7166667		31-Mar-61
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Kroombit Tops, 2nd causeway, Ubobo Rd	24° 22' South	-24.36666667	151° 1' East	151.0166667	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Curtis Is	23° 38' South	-23.63333333	151° 10' East	151.1666667		
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	North Rockhampton	23° 32' South	-23.53333333	150° 31' East	150.5166667		29-Aug-88

Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Curtis Is, nr Turtle St beach on rd going inland	23° 40' South	-23.66666667	151° 14' East	151.2333333		
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Frenchville	23° 20' South	-23.33333333	150° 34' East	150.5666667	22 Oct 1990-21 Mar 1991	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Dan Dan SF	24° 9' South	-24.15	151° 5' East	151.0833333		20-Mar-92
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Mt Larcom	23° 49' South	-23.81666667	151° 5' East	151.0833333		12-Apr-92
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	major	Great Brown Broodfrog	Bania SF 54, Monto	24° 57' South	-24.95	151° 30' East	151.5		27-Apr-92
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	raveni	Copper-backed Broodfrog	Curtis I, south end	23° 46' 4" South	-23.76777778	151° 13' 1" East	151.2169444		24-Jul-10
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	raveni	Copper-backed Broodfrog	Kroombit Tops, 2nd causeway, Ubobo Rd	24° 22' South	-24.36666667	151° 1' East	151.0166667	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	raveni	Copper-backed Broodfrog	Bindaree Stn, 10 km ENE of Miriam Vale	24° 16' South	-24.26666667	150° 39' East	150.65		7-Nov-81
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	raveni	Copper-backed Broodfrog	Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667	10 Dec 1983-17 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	raveni	Copper-backed Broodfrog	Three Moon Ck, Kroombit Tops, 45 km SSW of Calliope	24° 22' South	-24.36666667	151° 1' East	151.0166667	09 Dec 1983-19 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	raveni	Copper-backed Broodfrog	Barracks, Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667	10 Dec 1983-18 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	raveni	Copper-backed Broodfrog	Lower Dry Ck, Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667	11 Dec 1983-20 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	raveni	Copper-backed Broodfrog	Callide Ck, Kroombit Tops	24° 6' South	-24.1	150° 17' East	150.2833333	14 Dec 1983-18 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	raveni	Copper-backed Broodfrog	Callide Ra, Kroombit Tops	24° 15' South	-24.25	150° 52' East	150.8666667	13 Dec 1983-18 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	raveni	Copper-backed Broodfrog	Dan Dan SF	24° 9' South	-24.15	151° 5' East	151.0833333		20-Mar-92
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	raveni	Copper-backed Broodfrog	Mt Larcom	23° 49' South	-23.81666667	151° 5' East	151.0833333		12-Apr-92
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Pseudophryne	raveni	Copper-backed Broodfrog	Mt Gavial, 3kms SSE	23° 37' South	-23.61666667	150° 29' East	150.4833333	14 Mar 1999-29 Jun 1999	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Taudactylus	pleione	Kroombit Tinker Frog	Degalgil Creek, Kroombit Tops NP	24° 22' 25" South	-24.37361111	151° 1' 56" East	151.0322222		23-Feb-08
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Taudactylus	pleione	Kroombit Tinker Frog	Kroombit Ck headwaters, Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667	06 Feb 1984-10 Feb 1984	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Taudactylus	pleione	Kroombit Tinker Frog	Kroombit Ck headwaters, Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667		23-Feb-84
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Taudactylus	pleione	Kroombit Tinker Frog	Kroombit Creek headwaters, Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667		11-Dec-83
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Taudactylus	pleione	Kroombit Tinker Frog	Kroombit Ck headwaters. Kroombit SF. SA 48	24° 21' 52" South	-24.36444444	151° 18" East	151.005		27-Jan-95
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Taudactylus	pleione	Kroombit Tinker Frog	Kroombit Creek headwaters, Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667	06 Feb 1984-10 Feb 1984	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Taudactylus	pleione	Kroombit Tinker Frog	Kroombit Creek headwaters, Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667		23-Feb-84
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia		Frog	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		5-Dec-98
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia		Frog	Gyranda, Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333		
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia	fusca	Sandy Gungan	Bulburin Barracks	24° 31' South	-24.51666667	151° 28' East	151.4666667		8-Oct-99
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia	fusca	Sandy Gungan	Ubobo Rd, Kroombit Tops, SW of Gladstone	24° 26' 9" South	-24.43583333	151° 2' 25" East	151.0402778		28-Nov-00
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia	fusca	Sandy Gungan	Barracks, Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667	10 Dec 1983-18 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia	fusca	Sandy Gungan	Dry Ck, Kroombit Tops, Forestry Barracks	24° 22' South	-24.36666667	151° 1' East	151.0166667		28-Sep-85
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia	fusca	Sandy Gungan	Rundle Ra NP	23° 39' South	-23.65	150° 59' East	150.9833333		15-Apr-92
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia	laevigata	Eastern Gungan	Eidsvold-Theodore Rd, Camboon SF	25° 6' 46" South	-25.11277778	150° 32' 12" East	150.5366667		23-Oct-98
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia	rugosa	Chubby Gungan	Eidsvold-Theodore Rd, Camboon SF	25° 6' 46" South	-25.11277778	150° 32' 12" East	150.5366667		23-Oct-98
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia	rugosa	Chubby Gungan	Gladstone, Sthern Pacific Petroleum Site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		26-Nov-98
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia	rugosa	Chubby Gungan	Gladstone, Sthern Pacific Petroleum Site	23° 44' 50" South	-23.74722222	151° 6' 32" East	151.1088889		26-Nov-98
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia	rugosa	Chubby Gungan	Gladstone, Sthern Pacific Petroleum Site	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		25-Nov-98
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia	rugosa	Chubby Gungan	Awoonga Dam and Calliope R	24° 6' 37" South	-24.11027778	151° 14' 45" East	151.2458333		11-Apr-99
Herpetology/Vertebrates/Biodiversity	Myobatrachidae	Uperoleia	rugosa	Chubby Gungan	Brigalow Res. Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556		28-Sep-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Curtis Island	23° 37' South	-23.6150898	151° 9' East	151.1510583		12-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Gladstone, Sthern pacific Petroleum Site	23° 46' 15" South	-23.77083333	151° 7' 43" East	151.1286111		25-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Gladstone, Sthern Pacific Petroleum Site	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		27-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Southern Pacific Petroleum	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		20-Jan-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Awoonga Dam and Calliope R	23° 58' 20" South	-23.97222222	151° 3' 3" East	151.0508333		12-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Awoonga Dam and Calliope R	23° 58' 36" South	-23.97666667	151° 3' 28" East	151.0577778		9-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Brigalow Res. Stn, Site 2	24° 49' South	-24.81666667	149° 45' East	149.75	28 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Colosseum T'off, 4kms from Miriam Vale	24° 19' 40" South	-24.32777778	151° 4' 30" East	151.075		12-Dec-84
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Brigalow Res. Stn, Site 5	24° 48' South	-24.8	149° 45' East	149.75	16 Dec 2000-28 May 2001	
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Brigalow Res. Stn, via Theodore	24° 48' South	-24.8	149° 46' East	149.7666667	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Brigalow Res. Stn, via Theodore	24° 49' South	-24.81666667	149° 45' East	149.75	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Brigalow Res. Stn	24° 48' South	-24.8	149° 47' East	149.7833333	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Gyranda, Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333		
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Marine Plain Camp, Curtis Is	23° 35' 30" South	-23.59166667	151° 11' 30" East	151.1916667		12-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Bororen	24° 15' South	-24.25	151° 30' East	151.5		1-Sep-84
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	alboguttata	Green-stripe Frog	Duaringa, 21.4km E	23° 44' South	-23.73333333	149° 53' East	149.8833333		28-Dec-85
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	brevipes	Superb Collared-frog	Dawson Highway, 28km SE of Bauhinia	24° 38' 18" South	-24.63833333	149° 33' 10" East	149.5527778		1-Dec-04
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	brevipes	Superb Collared-frog	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333		13-Jan-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	brevipes	Superb Collared-frog	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		18-Feb-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	brevipes	Superb Collared-frog	Mt Scoria	24° 32' South	-24.53333333	150° 36' East	150.6	21 Oct 2000-19 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	brevipes	Superb Collared-frog	Brigalow Res. Stn, Site 5	24° 48' South	-24.8	149° 45' East	149.75	16 Dec 2000-28 May 2001	
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	brevipes	Superb Collared-frog	Nth Rockhampton	23° 32' South	-23.53333333	150° 31' East	150.5166667	21 Apr 1990-18 Jul 1990	
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	cultripes	Knife-footed Frog	Dawson Highway, 28km SE of Bauhinia	24° 38' 18" South	-24.63833333	149° 33' 10" East	149.5527778		1-Dec-04
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	novaehollandiae	New Holland Frog	Wandal, Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	novaehollandiae	New Holland Frog	Moura	24° 34' South	-24.56666667	149° 59' East	149.9833333	01 Jan 1974-31 Dec 1974	
Herpetology/Vertebrates/Biodiversity	Hylidae	Cyclorana	verrucosa	Rough Frog	Brigalow Res. Stn	24° 48' South	-24.8	149° 47' East	149.7833333	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria		Tree Frog	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 6' East	151.1		18-Jan-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Stanwell Power Stn Site	23° 30' 4" South	-23.50111111	150° 18' 52" East	150.3144444		28-Oct-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Stanwell Power Stn Site	23° 30' 4" South	-23.50111111	150° 18' 52" East	150.3144444		30-Oct-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Gladstone, Sthern pacific Petroleum Site	23° 46' 15" South	-23.77083333	151° 7' 43" East	151.1286111		27-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Gladstone, Sthern Pacific Petroleum Site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		26-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		12-Dec-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111		27-Jan-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Southern Pacific Petroleum	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		21-Jan-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Southern Pacific Petroleum	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		25-Jan-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Southern Pacific Petroleum Stage 2 site	23° 48' 24" South	-23.80666667	151° 9' 26" East	151.1572222	01 Apr 1999-30 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Southern Pacific Petroleum Stage 2 site	23° 48' 7" South	-23.80194444	151° 9' 7" East	151.1519444	01 Apr 1999-30 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Southern Pacific Petroleum, S2 site, via Gladstone	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		27-Jun-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Southern Pacific Petroleum, S2 site, via Gladstone	23° 46' 26" South	-23.77388889	151° 9' 7" East	151.1519444		26-Jun-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Brigalow Res. Stn, Site 2	24° 49' South	-24.81666667	149° 45' East	149.75	28 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Brigalow Res. Stn, Site 3	24° 48' South	-24.8	149° 46' East	149.7666667	28 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Brigalow Res. Stn, Site 4	24° 48' South	-24.8	149° 47' East	149.7833333	29 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Mt Gavial, 3kms SSE	23° 37' South	-23.61666667	150° 29' East	150.4833333	14 Mar 1999-29 Jun 1999	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Brigalow Res. Stn, Site 5	24° 48' South	-24.8	149° 45' East	149.75	16 Dec 2000-28 May 2001	

Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Brigalow Res. Stn, via Theodore	24° 48' South	-24.8	149° 46' East	149.7666667	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Brigalow Res. Stn, via Theodore	24° 49' South	-24.81666667	149° 45' East	149.75	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Brigalow Res. Stn	24° 48' South	-24.8	149° 47' East	149.7833333	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Builyan to Monto road area	24° 55' South	-24.91666667	151° 4' East	151.0666667		
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Rundle Ra	23° 39' South	-23.65	150° 59' East	150.9833333	25 Mar 1975-31 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	caerulea	Green Treefrog	Rundle Ra site	23° 39' South	-23.65	150° 59' East	150.9833333	25 Mar 1975-31 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	chloris	Southern Orange-eyed Treefrog	Kroombit Creek, crossing of Kroombit Forest Drive, Kroombit Tops NP, SW of Gladstone	24° 23' 3" South	-24.38416667	151° 5" East	151.0013889		25-Nov-05
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	chloris	Southern Orange-eyed Treefrog	Bulburin SF	24° 21' South	-24.35	151° 26' East	151.4333333		27-Dec-76
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	dentata	Bleating Treefrog	Larcom Ck, S Mt Larcom	23° 52' 16" South	-23.87111111	151° 1' 1" East	151.0169444		12-Jul-10
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Boyne Island	23° 56' South	-23.93175454	151° 20' East	151.3343913		Oct-89
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Kroombit Creek, crossing of Kroombit Forest Drive, Kroombit Tops NP, SW of Gladstone	24° 23' 3" South	-24.38416667	151° 5" East	151.0013889		25-Nov-05
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Curtis I, northern end	23° 36' South	-23.6	151° 11' East	151.1833333		26-Oct-92
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Targinie, via Gladstone, nr dam	23° 46' South	-23.76666667	151° 8' East	151.1333333		15-Jan-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Curtis Is, Monte Christo Holding	23° 33' 30" South	-23.55833333	151° 4' 30" East	151.075		9-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Curtis Is, nr Marine Plains	23° 35' 50" South	-23.59722222	151° 11' 20" East	151.1888889		12-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Gladstone, Sthern Pacific Petroleum Site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		26-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		2-Dec-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Calliope R, to W of Banaraby	23° 59' 22" South	-23.98944444	151° 7' 24" East	151.1233333	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Southern Pacific Petroleum	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		20-Jan-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Awoonga Dam and Calliope R	23° 58' 36" South	-23.97666667	151° 3' 28" East	151.0577778		11-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Awoonga Dam and Calliope R	24° 4' 33" South	-24.07583333	150° 50' 15" East	150.8375		11-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Awoonga Dam, Boyne Valley to Miriam Vale	24° 4' 33" South	-24.07583333	151° 15" East	151.0041667		30-Mar-00
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Boyne Island	23° 56' South	-23.93333333	151° 20' 41" East	151.3447222		
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	R64, south end, Curtis Is	23° 44' 30" South	-23.74166667	151° 17' 30" East	151.2916667		10-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Curtis Is	23° 35' 30" South	-23.59166667	151° 11' 30" East	151.1916667		9-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Black Harry Is, via Gladstone	23° 54' South	-23.9	151° 18' East	151.3		28-Jan-82
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667	10 Dec 1983-17 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Upper Kroombit Ck, Kroombit Tops, via Calliope	24° 22' South	-24.36666667	151° 1' East	151.0166667		12-Dec-83
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Dry Ck, Kroombit Tops, Forestry Barracks	24° 22' South	-24.36666667	151° 1' East	151.0166667		28-Sep-85
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	8Km E of Duaringa	23° 44' South	-23.73333333	149° 40' East	149.6666667		28-Dec-85
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Mt Coulston SF 471	24° 11' South	-24.18333333	151° 26' East	151.4333333		14-May-92
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Curtis Is Nth end	23° 36' South	-23.6	151° 11' East	151.1833333		26-Oct-92
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Curtis Is, Boat Ck	23° 36' South	-23.6	151° 11' East	151.1833333		27-Oct-93
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Curtis Is, Boat Ck	23° 36' South	-23.6	151° 11' East	151.1833333		26-Oct-93
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	fallax	Eastern Sedgefrog	Curtis Is, airstrip	23° 36' South	-23.6	151° 11' East	151.1833333		26-Oct-93
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	gracilenta	Graceful Treefrog	Kroombit Creek, crossing of Kroombit Forest Drive, Kroombit Tops NP, SW of Gladstone	24° 23' 3" South	-24.38416667	151° 5" East	151.0013889		25-Nov-05
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	gracilenta	Graceful Treefrog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 24" South	-23.80666667	151° 9' 26" East	151.1572222	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	gracilenta	Graceful Treefrog	Mt Hopeful, 2kms SSE	23° 45' South	-23.75	150° 32' East	150.5333333	27 Sep 1999-15 Dec 1999	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	gracilenta	Graceful Treefrog	Mount Morgan	23° 38' 37" South	-23.64361111	150° 22' 50" East	150.3805556		13-Feb-03
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Targinie, via Gladstone	23° 47' South	-23.78175615	151° 8' East	151.1343931		18-Jan-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		19-Feb-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Neerkol Ck	23° 29' 44" South	-23.49555556	150° 18' 7" East	150.3019444		27-Oct-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Gladstone, Nuffers dam	23° 51' South	-23.85	151° 16' East	151.2666667		27-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Gladstone, Nuffers mango orchard	23° 51' South	-23.85	151° 16' East	151.2666667		26-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Gladstone, Sthern Pacific Petroleum Site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		26-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		12-Dec-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Calliope R, to W of Banaraby	23° 58' 20" South	-23.97222222	151° 3' 2" East	151.0505556	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Southern Pacific Petroleum	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		20-Jan-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Awoonga Dam and Calliope R	23° 58' 20" South	-23.97222222	151° 3' 3" East	151.0508333		12-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Awoonga Dam and Calliope R	24° 13' 51" South	-24.23083333	151° 15' 13" East	151.2536111		8-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Morinish SF 878	23° 18' 33" South	-23.30916667	150° 8' 41" East	150.1447222		16-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Gladstone Power Stn	23° 51' 45" South	-23.8625	151° 12' 57" East	151.2158333		23-Oct-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Awoonga Dam, Boyne Valley to Miriam Vale	24° 2' South	-24.03333333	151° 19' 5" East	151.3180556		28-Mar-00
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Awoonga Dam, Boyne Valley to Miriam Vale	23° 59' 16" South	-23.98777778	151° 6' 4" East	151.1011111		5-Apr-00
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Roxborough,12.5k upstream from Capricorn Hwy Bridg	23° 53' 52" South	-23.89777778	149° 49' 57" East	149.8325	05 May 2000-12 May 2000	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Awoonga Dam, Boyne R. Valley-Miriam Vale	23° 59' 45" South	-23.99583333	151° 7' 24" East	151.1233333	12 Aug 2000-24 Aug 2000	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Kennedy St, North Rockhampton	23° 22' South	-23.36509435	150° 31' East	150.5177322		17-Oct-00
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Awoonga Dam	24° 22' 38" South	-24.37722222	151° 19' 8" East	151.3188889		8-May-02
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Mount Morgan	23° 38' 37" South	-23.64361111	150° 22' 50" East	150.3805556		29-Jul-02
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Curtis Is	23° 35' 30" South	-23.59166667	151° 11' 30" East	151.1916667		10-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		Aug-75
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Curtis Is, Centre Rd behind Turtle St	23° 38' 30" South	-23.64166667	151° 13' 30" East	151.225		10-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	inermis	Peters' Frog	Gladstone	23° 51' South	-23.85	151° 15' East	151.25	Aug 1974 {last week}	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Munholme Creek head, Kroombit Tops NP	24° 24' 55" South	-24.41527778	151° 2' 19" East	151.0386111		2-Dec-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Munholme Ck head, Beech Scientific Area, Kroombit Tops NP	24° 24' 55" South	-24.41527778	151° 2' 19" East	151.0386111		9-Dec-10
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Kroombit Forest Dve crossing of Kroombit Ck, Kroombit Tops NP	24° 23' 2" South	-24.38388889	151° 55" East	151.0152778		7-Dec-10
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Kroombit Forest Dve crossing of Kroombit Ck, Kroombit Tops NP	24° 23' 2" South	-24.38388889	151° 55" East	151.0152778		4-Feb-11
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Kroombit Tops. Headwaters Munholme Ck.	24° 24' 55" South	-24.41527778	151° 2' 19" East	151.0386111		19-Dec-10
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Kroombit SF	24° 23' 9" South	-24.38583333	151° 11" East	151.0030556		28-Nov-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Kroombit SF	24° 23' 9" South	-24.38583333	151° 11" East	151.0030556		29-Nov-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Kroombit SF	24° 22' 7" South	-24.36861111	150° 59' 50" East	150.9972222		26-Nov-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Kroombit Tops, Kroombit Ck crossing, Ubobo Rd	24° 22' South	-24.36666667	151° 1' East	151.0166667	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Kroombit Tops, Kroombit Creek crossing, Ubobo Rd	24° 22' South	-24.36666667	151° 1' East	151.0166667	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667	10 Dec 1983-17 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Beauty Spot 98, Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667		3-Feb-84
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Lower Dry Ck, Kroombit Tops, 45Km SSW of Calliope	24° 22' South	-24.36666667	151° 1' East	151.0166667	09 Dec 1983-19 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Three Moon Ck, Kroombit Tops, 45 km SSW of Calliope	24° 22' South	-24.36666667	151° 1' East	151.0166667	09 Dec 1983-19 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Kroombit Tops	24° 27' South	-24.45	150° 48' East	150.8		18-Aug-83

Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	kroombitensis	Kroombit Treefrog	Kroombit Tops, Dry Ck	24° 22' South	-24.36666667	151° 2' East	151.0333333	8-Apr-92
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Boyne Valley	24° 35' South	-24.58333333	151° 15' 18.6" East	151.2551667	18-Mar-06
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Kroombit Tops Forestry Barracks, Kroombit Tops NP, SW of Gladstone	24° 21' 26" South	-24.35722222	150° 57' 44" East	150.9622222	25-Nov-05
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Gladstone, 4 km W	23° 53' South	-23.88333333	151° 10' East	151.1666667	21-Jan-86
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Targinie, via Gladstone	23° 47' South	-23.78175615	151° 8' East	151.1343931	14-Jan-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Targinie, via Gladstone, nr gully	23° 47' South	-23.78333333	151° 8' East	151.1333333	22-Jan-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	19-Feb-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Neerkol Ck	23° 29' 44" South	-23.49555556	150° 18' 7" East	150.3019444	27-Oct-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Neerkol Ck	23° 29' 44" South	-23.49555556	150° 18' 7" East	150.3019444	27-Oct-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Gladstone, Sthern pacific Petroleum Site	23° 46' 15" South	-23.77083333	151° 7' 43" East	151.1286111	24-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Gladstone, Sthern Pacific Petroleum Site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	26-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Southern Pacific Petroleum	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	20-Jan-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Awoonga Dam and Calliope R	23° 58' 47" South	-23.97972222	151° 4' 2" East	151.0672222	12-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Morinish SF 878	23° 19' 6" South	-23.31833333	150° 8' 17" East	150.1380556	14-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Gladstone Power Stn	23° 51' 45" South	-23.8625	151° 12' 57" East	151.2158333	23-Oct-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Awoonga Dam, Boyne R. Valley-Miriam Vale	23° 59' 16" South	-23.98777778	151° 6' 4" East	151.1011111	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Awoonga Dam, Boyne R Valley-Miriam Vale	24° 4' 33" South	-24.07583333	151° 15" East	151.0041667	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Awoonga Dam, Boyne R Valley-Miriam Vale	24° 22' 38" South	-24.37722222	151° 19' 8" East	151.3188889	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Brigalow Res. Stn, via Theodore	24° 48' South	-24.8	149° 46' East	149.7666667	16 Dec 2000-28 Mar 2001
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Brigalow Res. Stn, via Theodore	24° 49' South	-24.81666667	149° 45' East	149.75	16 Dec 2000-28 Mar 2001
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Awoonga Dam	24° 22' 38" South	-24.37722222	151° 19' 8" East	151.3188889	8-May-02
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Mount Morgan	23° 38' 37" South	-23.64361111	150° 22' 50" East	150.3805556	19-Feb-03
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Gyranda, Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Don R, 64Km N of Biloela	23° 59' South	-23.98333333	150° 17' East	150.2833333	30-Oct-63
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	R64, south end, Curtis Is	23° 44' 30" South	-23.74166667	151° 17' 30" East	151.2916667	10-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Curtis Is	23° 38' 30" South	-23.64166667	151° 11' 30" East	151.1916667	12-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Mt Rose	24° 38' South	-24.63333333	150° 57' East	150.95	8-Nov-79
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	Feb-82
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Curtis Is	23° 38' 30" South	-23.64166667	151° 13' 30" East	151.225	10-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Mimosa Ck, Blackdown Tableland, via Dingo	23° 22' South	-23.36666667	150° 32' East	150.5333333	21-Nov-73
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	Monto	24° 52' South	-24.86666667	151° 7' East	151.1166667	26-Jan-84
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	latopalmata	Broad-palmed Rocketfrog	8Km E of Duaringa, 73Km E of Bluff	23° 44' South	-23.73333333	149° 40' East	149.6666667	28-Dec-85
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Gladstone	23° 51' South	-23.85	151° 15' East	151.25	21-Jan-86
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Gladstone, 4 km W	23° 53' South	-23.88333333	151° 10' East	151.1666667	20-Jan-86
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333	22-Jan-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Stanwell Power Station Site, Reed Rd	23° 31' South	-23.51666667	150° 20' East	150.3333333	30-Oct-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Stanwell Power Stn Site, Reed Rd	23° 31' South	-23.51666667	150° 20' East	150.3333333	30-Oct-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Gladstone, Sthern Pacific Petroleum Site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	26-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	14-Dec-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 49' South	-23.81666667	151° 9' 19" East	151.1552778	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Awoonga Dam and Calliope R	24° 13' 31" South	-24.22527778	151° 16' 2" East	151.2672222	8-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Awoonga Dam, Boyne R. Valley-Miriam Vale	23° 59' 23" South	-23.98972222	151° 7' 25" East	151.1236111	29-Mar-00
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Awoonga Dam, Boyne Valley to Miriam Vale	24° 22' 38" South	-24.37722222	151° 19' 8" East	151.3188889	30-Mar-00
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Awoonga Dam, Boyne R. Valley-Miriam Vale	23° 59' 16" South	-23.98777778	151° 6' 4" East	151.1011111	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	North Rockhampton	23° 22' South	-23.36666667	150° 31' East	150.5166667	4-May-01
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Boyne Valley & Awoonga	24° 22' 38" South	-24.37722222	151° 19' 8" East	151.3188889	21-Nov-01
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Awoonga Dam	24° 22' 55" South	-24.38194444	151° 19' East	151.3166667	7-May-02
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Mount Morgan	23° 38' 37" South	-23.64361111	150° 22' 50" East	150.3805556	13-Feb-03
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	R64, south end, Curtis Is	23° 44' 30" South	-23.74166667	151° 17' 30" East	151.2916667	10-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	North end of Curtis Is	23° 27' 30" South	-23.45833333	151° 1' 30" East	151.025	7-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Bindaree Stn, 10Km ENE of Miriam Vale	24° 16' South	-24.26666667	150° 39' East	150.65	5-Nov-81
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Gladstone-Fishermans Landing Rd, nr Clinker Plant	23° 55' South	-23.91666667	151° 15' East	151.25	28-Jan-82
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	May 1982-Jun 1982
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Granite Ck, Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Bulburin SF, Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Curtis Is, Turtle St Beach	23° 38' 30" South	-23.64166667	151° 14' 30" East	151.2416667	8-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Curtis Is, nr Turtle St Beach	23° 38' 30" South	-23.64166667	151° 13' 30" East	151.225	8-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Mt Coulston SF 471	24° 11' South	-24.18333333	151° 26' East	151.4333333	14-May-92
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Curtis Is Nth end	23° 36' South	-23.6	151° 11' East	151.1833333	26-Oct-92
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Curtis Is, Boat Ck	23° 37' South	-23.61666667	151° 11' East	151.1833333	26-Oct-93
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	nasuta	Striped Rocketfrog	Curtis Is	23° 36' South	-23.6	151° 11' East	151.1833333	Oct-93
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	peronii	Green-spotted Tree Frog	Kroombit Creek, head of, Kroombit Forest Drive, Kroombit Tops NP	24° 23' 3" South	-24.38416667	151° 5" East	151.0013889	25-Nov-05
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	peronii	Green-spotted Tree Frog	Kroombit Tops, Kroombit Ck crossing	24° 20' South	-24.33333333	150° 26' East	150.4333333	13-Dec-83
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	peronii	Green-spotted Tree Frog	Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667	10 Dec 1983-17 Dec 1983
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	peronii	Green-spotted Tree Frog	Gyranda, Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Targinie, via Gladstone	23° 47' South	-23.78175615	151° 8' East	151.1343931	22-Jan-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Curtis Is	23° 38' 30" South	-23.64166667	151° 13' 30" East	151.225	15-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Neerkol Ck	23° 29' 44" South	-23.49555556	150° 18' 7" East	150.3019444	27-Oct-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Gladstone, Sthern Pacific Petroleum Site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	26-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Calliope R, to W of Banaraby	23° 58' 20" South	-23.97222222	151° 3' 2" East	151.0505556	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Nuffers Dam	23° 45' 11" South	-23.75305556	151° 5' 50" East	151.0972222	22-Jan-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Southern Pacific Petroleum	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	20-Jan-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Awoonga Dam and Calliope R	24° 13' 51" South	-24.23083333	151° 15' 13" East	151.2536111	8-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Awoonga Dam and Calliope R	23° 58' 36" South	-23.97666667	151° 3' 28" East	151.0577778	12-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Awoonga Dam, Boyne Valley to Miriam Vale	24° 4' 33" South	-24.07583333	151° 15" East	151.0041667	30-Mar-00
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Awoonga Dam, Boyne R Valley-Miriam Vale	24° 22' 38" South	-24.37722222	151° 19' 8" East	151.3188889	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Boat Ck, Curtis Is	23° 37' 30" South	-23.625	151° 7' 30" East	151.125	11-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Curtis Is	23° 35' 30" South	-23.59166667	151° 11' 30" East	151.1916667	12-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Black Harry Is, via Gladstone	23° 54' South	-23.9	151° 18' East	151.3	28-Jan-82
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rothii	Roth's Tree-frog	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	Feb-82

Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Larcom Ck, S Mt Larcom	23° 52' 16" South	-23.87111111	151° 1' 1" East	151.0169444	12-Jul-10
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Curtis I, south end	23° 46' 4" South	-23.76777778	151° 13' 1" East	151.2169444	24-Jul-10
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Targinie, via Gladstone	23° 47' South	-23.78175615	151° 8' East	151.1343931	22-Jan-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	19-Feb-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Gladstone, Nuffers mango orchard	23° 51' South	-23.85	151° 16' East	151.2666667	26-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Gladstone, Sthern Pacific Petroleum Site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	26-Nov-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	15-Dec-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Calliope R, to W of Banaraby	23° 58' 52" South	-23.98111111	151° 1' 29" East	151.0247222	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Calliope R, to W of Banaraby	23° 58' 36" South	-23.97666667	151° 3' 27" East	151.0575	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Gladstone area, Southern Pacific Petroleum Stage 2	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Southern Pacific Petroleum	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	20-Jan-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Awoonga Dam and Calliope R	24° 13' 35" South	-24.22638889	151° 16' 2" East	151.2672222	8-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Awoonga Dam and Calliope R	24° 6' 37" South	-24.11027778	151° 14' 45" East	151.2458333	10-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Awoonga Dam and Calliope R	24° 13' 8" South	-24.21888889	151° 15' 25" East	151.2569444	8-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Southern Pacific Petroleum Stage 2 site	23° 48' 24" South	-23.80666667	151° 9' 26" East	151.1572222	01 Apr 1999-30 Apr 1999
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Awoonga Dam	24° 22' 55" South	-24.38194444	151° 19' East	151.3166667	7-May-02
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Callide Mine, nr Biloela	24° 19' 23" South	-24.32305556	150° 36' East	150.6	7-Apr-05
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Gyranda, Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Between Builyan and Monto	24° 55' South	-24.91666667	151° 4' East	151.0666667	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Keppel Sands area, via Rockhampton	23° 20' South	-23.33333333	150° 47' East	150.7833333	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Turtle St, Curtis Is	23° 38' 30" South	-23.64166667	151° 13' 30" East	151.225	8-Jun-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Gladstone-Fishermans Landing Rd, nr Clinker Plant	23° 55' South	-23.91666667	151° 15' East	151.25	28-Jan-82
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Three Moon Ck, Kroombit Tops, 45Km SSW of Calliope	24° 22' South	-24.36666667	151° 1' East	151.0166667	09 Dec 1983-19 Dec 1983
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Bulburin SF, Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Rundle Ra	23° 39' South	-23.65	150° 59' East	150.9833333	25 Mar 1975-31 Mar 1975
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Curtis Is	23° 38' 30" South	-23.64166667	151° 11' East	151.1833333	12-May-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	Aug-74
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Bouldercombe	23° 32' South	-23.53333333	150° 26' East	150.4333333	22 Oct 1990-21 Mar 1991
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Dan Dan SF	24° 9' South	-24.15	151° 5' East	151.0833333	20-Mar-92
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Bania SF 54, Monto	24° 57' South	-24.95	151° 30' East	151.5	29-Apr-92
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	rubella	Naked Treefrog	Mt Coulston SF 471	24° 11' South	-24.18333333	151° 26' East	151.4333333	14-May-92
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Munholme Creek, head of, Kroombit Tops NP, SW of Gladstone	24° 25' 42" South	-24.42833333	151° 2' 30" East	151.0416667	17-Feb-04
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Munholme Creek, head of, Kroombit Forest Reserve, SW of Gladstone	24° 25' 19" South	-24.42194444	151° 2' 23" East	151.0397222	19-Feb-04
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Kroombit Tops	24° 22' South	-24.36666667	151° 1' East	151.0166667	
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	5-Dec-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	4-Dec-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	15-Dec-98
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Calliope R, to W of Banaraby	23° 59' 15" South	-23.9875	151° 6' 4" East	151.1011111	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111	25-Jan-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Awoonga Dam and Calliope R	24° 13' 51" South	-24.23083333	151° 15' 13" East	151.2536111	6-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Awoonga Dam and Calliope R	24° 13' 35" South	-24.22638889	151° 6' 2" East	151.1005556	6-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Awoonga Dam and Calliope R	24° 13' 8" South	-24.21888889	151° 15' 25" East	151.2569444	8-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Awoonga Dam and Calliope R	24° 13' 35" South	-24.22638889	151° 16' 2" East	151.2672222	8-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Awoonga Dam and Calliope R	24° 13' 51" South	-24.23083333	151° 15' 13" East	151.2536111	8-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Southern Pacific Petroleum Stage 2 site	23° 48' 7" South	-23.80194444	151° 9' 7" East	151.1519444	01 Apr 1999-30 Apr 1999
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Morinish SF 878	23° 19' 8" South	-23.31888889	150° 8' 9" East	150.1358333	14-Apr-99
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Awoonga Dam, Boyne Valley to Miriam Vale	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333	29-Mar-00
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Channel of Dawson River, Olinda, north of Baralaba	24° 1' 39" South	-24.0275	149° 48' 33" East	149.8091667	7-Mar-00
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Awoonga Dam, Boyne R Valley-Miriam Vale	24° 4' 33" South	-24.07583333	151° 15" East	151.0041667	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Boyne Valley & Awoonga	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333	20-Nov-01
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Awoonga Dam	24° 22' 55" South	-24.38194444	151° 19' East	151.3166667	7-May-02
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Awoonga Dam	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333	7-May-02
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Bindaree Stn, 10Km ENE of Miriam Vale	24° 16' South	-24.26666667	150° 39' East	150.65	5-Nov-81
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Kroombit Tops, 2nd causeway, Ubobo Rd	24° 22' South	-24.36666667	151° 1' East	151.0166667	22 Feb 1982-26 Feb 1982
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Dry Ck, Kroombit Tops, Forestry Barracks	24° 22' South	-24.36666667	151° 1' East	151.0166667	28-Sep-85
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Bulburin SF, Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Granite Ck, Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Baffle Ck, Bindaree Stn, 10Km ENE of Mirian Vale	24° 16' South	-24.26666667	150° 39' East	150.65	3-Nov-81
Herpetology/Vertebrates/Biodiversity	Hylidae	Litoria	wilcoxii		Mt Coulston SF 471	24° 11' South	-24.18333333	151° 26' East	151.4333333	14-May-92
Herpetology/Vertebrates/Biodiversity	Bufonidae	Rhinella	marina	Cane Toad	Phaesant Ck, Wowan	23° 46' South	-23.76666667	150° 9' East	150.15	9-Jun-94
Herpetology/Vertebrates/Biodiversity	Bufonidae	Rhinella	marina	Cane Toad	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333	13-Jan-98
Herpetology/Vertebrates/Biodiversity	Bufonidae	Rhinella	marina	Cane Toad	Targinie, via Gladstone, Belenogoff's Dam	23° 47' South	-23.78175615	151° 8' East	151.1343931	19-Jan-98
Herpetology/Vertebrates/Biodiversity	Bufonidae	Rhinella	marina	Cane Toad	Southern Pacific Petroleum Stage 2 site	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	01 Apr 1999-30 Apr 1999
Herpetology/Vertebrates/Biodiversity	Bufonidae	Rhinella	marina	Cane Toad	Brigalow Res. Stn, Site 5	24° 48' South	-24.8	149° 45' East	149.75	29 Oct 2000-16 Dec 2000
Herpetology/Vertebrates/Biodiversity	Bufonidae	Rhinella	marina	Cane Toad	Brigalow Res. Stn, via Theodore	24° 48' South	-24.8	149° 46' East	149.7666667	16 Dec 2000-28 Mar 2001
Herpetology/Vertebrates/Biodiversity	Bufonidae	Rhinella	marina	Cane Toad	Biloela Golf Course	24° 24' South	-24.4	150° 31' East	150.5166667	4-Feb-93
Herpetology/Vertebrates/Biodiversity	Bufonidae	Rhinella	marina	Cane Toad	Bushley Stn	23° 32' South	-23.53333333	151° 15' East	151.25	22 Oct 1990-21 Mar 1991
Herpetology/Vertebrates/Biodiversity	Bufonidae	Rhinella	marina	Cane Toad	Glenmore	23° 20' South	-23.33333333	150° 30' East	150.5	23 Oct 1990-22 Mar 1991
Herpetology/Vertebrates/Biodiversity	Bufonidae	Rhinella	marina	Cane Toad	Kabra	23° 28' South	-23.46666667	150° 24' East	150.4	22 Oct 1990-21 Mar 1991
Herpetology/Vertebrates/Biodiversity	Bufonidae	Rhinella	marina	Cane Toad	Coowonga	23° 18' South	-23.3	150° 44' East	150.7333333	21 Mar 1991-04 Sep 1991
Herpetology/Vertebrates/Biodiversity	Bufonidae	Rhinella	marina	Cane Toad	Mt Chalmers	23° 18' South	-23.3	150° 38' East	150.6333333	21 Mar 1991-04 Sep 1991
Herpetology/Vertebrates/Biodiversity	Chelidae	Chelodina	canni	Cann's Longneck Turtle	Stanwell Power Stn Site	23° 31' South	-23.51666667	150° 20' East	150.3333333	10-Oct-98
Herpetology/Vertebrates/Biodiversity	Chelidae	Chelodina	expansa	Broad-shelled Turtle	Dawson R, Theodore	24° 57' South	-24.95	150° 5' East	150.0833333	16-Jan-86
Herpetology/Vertebrates/Biodiversity	Chelidae	Chelodina	longicollis	Eastern Long-necked Turtle	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	
Herpetology/Vertebrates/Biodiversity	Chelidae	Chelodina	longicollis	Eastern Long-necked Turtle	Double Ck, nr Westwood	23° 59' South	-23.98333333	150° 13' East	150.2166667	
Herpetology/Vertebrates/Biodiversity	Chelidae	Elseya			Fitzroy River	23° 32' South	-23.53175843	150° 52' East	150.8677284	21-Sep-04
Herpetology/Vertebrates/Biodiversity	Chelidae	Elseya	albagula	White-throated Snapping Turtle	Nunns Crossing, upstream, Dawson River	24° 47' 41" South	-24.79472222	149° 58' 20" East	149.9722222	17-Oct-09
Herpetology/Vertebrates/Biodiversity	Chelidae	Elseya	albagula	White-throated Snapping Turtle	Rockhampton, lgn 18km W	23° 17' South	-23.28333333	150° 25' East	150.4166667	22-Oct-80
Herpetology/Vertebrates/Biodiversity	Chelidae	Elseya	albagula	White-throated Snapping Turtle	Dawson R, Theodore	24° 57' South	-24.95	150° 5' East	150.0833333	16-Jan-86
Herpetology/Vertebrates/Biodiversity	Chelidae	Elseya	albagula	White-throated Snapping Turtle	Dawson R, nr Theodore	24° 57' South	-24.95	150° 5' East	150.0833333	17-Jan-86
Herpetology/Vertebrates/Biodiversity	Chelidae	Elseya	albagula	White-throated Snapping Turtle	Dawson R, Theodore Weir	24° 57' South	-24.95	150° 5' East	150.0833333	17-Jan-86
Herpetology/Vertebrates/Biodiversity	Chelidae	Elseya	albagula	White-throated Snapping Turtle	Fitzroy River	23° 30' South	-23.5	150° 40' East	150.6666667	1994
Herpetology/Vertebrates/Biodiversity	Chelidae	Elseya	irwini	Irwins Snapping Turtle	Theodore	24° 56' South	-24.93333333	150° 4' East	150.0666667	17-May-02

Herpetology/Vertebrates/Biodiversity	Chelidae	Emydura	macquarii	Krefft's River Turtle	Boat Creek, via Gladstone	23° 49' 20" South	-23.82222222	151° 8' 40" East	151.1444444		
Herpetology/Vertebrates/Biodiversity	Chelidae	Emydura	macquarii	Krefft's River Turtle	Cania Dam	24° 38' 55" South	-24.64861111	150° 58' 54" East	150.9816667		29-Jan-99
Herpetology/Vertebrates/Biodiversity	Chelidae	Emydura	macquarii	Krefft's River Turtle	Raglan Ck	23° 38' South	-23.63333333	150° 49' East	150.8166667		12-Jun-02
Herpetology/Vertebrates/Biodiversity	Chelidae	Emydura	macquarii	Krefft's River Turtle	Dawson R, E bank, 3 km N of Hway Bridge 66	23° 46' South	-23.76666667	149° 46' East	149.7666667		1-Nov-84
Herpetology/Vertebrates/Biodiversity	Chelidae	Emydura	macquarii	Krefft's River Turtle	Dawson R, E bank, 3.3 km N of Hway Bridge 66	23° 46' South	-23.76666667	149° 46' East	149.7666667		1-Nov-84
Herpetology/Vertebrates/Biodiversity	Chelidae	Emydura	macquarii	Krefft's River Turtle	Dawson R, nr Theodore	24° 57' South	-24.95	150° 5' East	150.0833333		16-Jan-86
Herpetology/Vertebrates/Biodiversity	Chelidae	Emydura	macquarii	Krefft's River Turtle	Dawson R, Theodore	24° 57' South	-24.95	150° 5' East	150.0833333		6-Jan-86
Herpetology/Vertebrates/Biodiversity	Chelidae	Emydura	macquarii	Krefft's River Turtle	Dawson R, Theodore	24° 57' South	-24.95	150° 5' East	150.0833333		16-Jan-86
Herpetology/Vertebrates/Biodiversity	Chelidae	Emydura	macquarii	Krefft's River Turtle	Deepwater Ck, 65km NW Bundaberg, rd Xing	24° 24' South	-24.4	151° 28' East	151.4666667		26-Sep-92
Herpetology/Vertebrates/Biodiversity	Chelidae	Rheodytes	leukops	Fitzroy River Turtle	Fitzroy River	23° 32' South	-23.53333333	150° 52' East	150.8666667		21-Sep-04
Herpetology/Vertebrates/Biodiversity	Chelidae	Rheodytes	leukops	Fitzroy River Turtle	Moura Weir, Dawson R	24° 35' South	-24.58333333	149° 54' 17" East	149.9047222		17-Oct-09
Herpetology/Vertebrates/Biodiversity	Chelidae	Rheodytes	leukops	Fitzroy River Turtle	Windah Ck, near Gogango	23° 37' South	-23.61666667	150° 2' East	150.0333333		15-Sep-76
Herpetology/Vertebrates/Biodiversity	Chelidae	Rheodytes	leukops	Fitzroy River Turtle	Fitzroy River	23° 30' South	-23.5	150° 40' East	150.6666667		12-Jun-02
Herpetology/Vertebrates/Biodiversity	Chelidae	Wollumbinia	latisternum	Common Sawshell Turtle	Kroombit Tops (West) NP	24° 24' South	-24.4	150° 58' East	150.9666667		15-Oct-94
Herpetology/Vertebrates/Biodiversity	CROCODYLIDAE	Crocodylus	porosus	Saltwater Crocodile	Fitzroy R, upper reaches	23° 24' South	-23.4	149° 55' East	149.9166667		
Herpetology/Vertebrates/Biodiversity	Cheloniidae	Chelonia	mydas	Green Turtle	Coconut National Park (proposed) Beach	23° 17' South	-23.28175938	150° 49' East	150.8177273		27-Nov-03
Herpetology/Vertebrates/Biodiversity	Cheloniidae	Chelonia	mydas	Green Turtle	Gravely Beach, Tide Island, Gladstone	23° 48' South	-23.79842226	151° 13' East	151.2177253		1-Jun-06
Herpetology/Vertebrates/Biodiversity	Cheloniidae	Chelonia	mydas	Green Turtle	Kawana	23° 20' South	-23.33333333	150° 30' East	150.5		8-Dec-91
Herpetology/Vertebrates/Biodiversity	Cheloniidae	Natator	depressus	Flatback Turtle	Peak Island	23° 21' South	-23.34842515	150° 56' East	150.9343928		2003
Herpetology/Vertebrates/Biodiversity	Cheloniidae	Natator	depressus	Flatback Turtle	Keppel Bay	23° 25' South	-23.41666667	150° 55' East	150.9166667		
Herpetology/Vertebrates/Biodiversity	Cheloniidae	Natator	depressus	Flatback Turtle	Curtis Is, Sth Beach	23° 38' South	-23.63333333	151° 10' East	151.1666667		
Herpetology/Vertebrates/Biodiversity	Cheloniidae	Natator	depressus	Flatback Turtle	Curtis Is, Sth Beach	23° 45' South	-23.75	151° 17' East	151.2833333		2-Jan-70
Herpetology/Vertebrates/Biodiversity	Cheloniidae	Natator	depressus	Flatback Turtle	Gladstone, Curtis Is, S Ocean Beach	23° 38' South	-23.63333333	151° 10' East	151.1666667		2-Jan-70
Herpetology/Vertebrates/Biodiversity	Cheloniidae	Natator	depressus	Flatback Turtle	Gladstone, Curtis Is, S Ocean Beach	23° 38' South	-23.63333333	151° 10' East	151.1666667		3-Jan-70
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Nephrurus	asper	Prickly Knob-tailed Gecko	Stanwell Power Stn Site	23° 31' 51" South	-23.53083333	150° 19' 10" East	150.3194444		31-Oct-98
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Nephrurus	asper	Prickly Knob-tailed Gecko	Rockhampton, Dalma, Waroula	23° 20' South	-23.33333333	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Nephrurus	asper	Prickly Knob-tailed Gecko	Dawson Valley, Castle Ck	24° 50' South	-24.83333333	150° 20' East	150.3333333		
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Nephrurus	asper	Prickly Knob-tailed Gecko	Moura, 4 km S, junction Theodore & Gibihi Rds	24° 38' South	-24.63333333	149° 59' East	149.9833333		13-Aug-83
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Phyllurus	caudiannulatus	Ringed Thin-tail Gecko	Bulburin SF, Granite Ck, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333		1-Apr-72
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Phyllurus	caudiannulatus	Ringed Thin-tail Gecko	Bulburin SF, nr old barracks clearing	24° 31' South	-24.51508557	151° 29' East	151.4843934		8-Oct-99
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Phyllurus	caudiannulatus	Ringed Thin-tail Gecko	Bulburin SF, Granite Ck, via Many Peaks	24° 35' South	-24.58333333	151° 29' East	151.4833333		1-Apr-72
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Phyllurus	caudiannulatus	Ringed Thin-tail Gecko	Bulburin SF, 24 km SW Miriam Vale	24° 31' South	-24.51666667	151° 29' East	151.4833333		
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Phyllurus	caudiannulatus	Ringed Thin-tail Gecko	Bulburin SF, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333		13-Apr-74
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Phyllurus	caudiannulatus	Ringed Thin-tail Gecko	Bulburin SF, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333		3-May-75
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Phyllurus	caudiannulatus	Ringed Thin-tail Gecko	Bulburin SF, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333		26-Mar-77
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Phyllurus	caudiannulatus	Ringed Thin-tail Gecko	Bulburin SF, Granite Ck, rock face	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Phyllurus	caudiannulatus	Ringed Thin-tail Gecko	Bulburin SF, Site 1a	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Phyllurus	caudiannulatus	Ringed Thin-tail Gecko	Bulburin SF, adjoining Site 1a	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Phyllurus	caudiannulatus	Ringed Thin-tail Gecko	Bulburin SF, Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333		18-May-90
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Phyllurus	caudiannulatus	Ringed Thin-tail Gecko	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333		18-May-90
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Phyllurus	caudiannulatus	Ringed Thin-tail Gecko	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Saltuarius	salebrosus	Rough-throated Leaf-tail Gecko	Kroombit Tops Forest Reserve Barracks	24° 12' 9" South	-24.2025	150° 57' 39" East	150.9608333		
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Saltuarius	salebrosus	Rough-throated Leaf-tail Gecko	Kroombit Barracks, near, Kroombit Tops Forest Reserve	24° 21' 9" South	-24.3525	150° 57' 39" East	150.9608333		
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Saltuarius	salebrosus	Rough-throated Leaf-tail Gecko	Monto	24° 52' South	-24.86666667	151° 7' East	151.1166667		
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Saltuarius	salebrosus	Rough-throated Leaf-tail Gecko	Coomooboolaroo Stn	23° 52' South	-23.86666667	149° 34' East	149.5666667		
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Saltuarius	salebrosus	Rough-throated Leaf-tail Gecko	Granite Ck trib Xing to Forestry Camp, nr rd	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Saltuarius	salebrosus	Rough-throated Leaf-tail Gecko	Cania Kroombit Goldfield, nr Dames Ra, via Monto	24° 38' South	-24.63333333	150° 58' East	150.9666667		
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Saltuarius	salebrosus	Rough-throated Leaf-tail Gecko	Bulburin SF, Granite Ck, via Many Peaks	24° 35' South	-24.58333333	151° 29' East	151.4833333		1-Apr-72
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Saltuarius	salebrosus	Rough-throated Leaf-tail Gecko	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333		18-May-90
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Saltuarius	salebrosus	Rough-throated Leaf-tail Gecko	Bulburin SF, 4km E Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Saltuarius	salebrosus	Rough-throated Leaf-tail Gecko	Bulburin SF, adjoining Rd	24° 31' South	-24.51666667	151° 29' East	151.4833333		23-Mar-75
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Saltuarius	salebrosus	Rough-throated Leaf-tail Gecko	Bania SF 54, via Monto	24° 57' South	-24.95	151° 30' East	151.5		7-Nov-92
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Underwoodisaurus	milii	Thick-tailed Gecko	Coominglah SF, nr Monto	24° 48' 4" South	-24.80111111	150° 56' 32" East	150.9422222		26-Aug-01
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Underwoodisaurus	milii	Thick-tailed Gecko	Coominglah SF, nr Monto	24° 47' 57" South	-24.79916667	150° 55' 10" East	150.9194444		30-Aug-01
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Underwoodisaurus	milii	Thick-tailed Gecko	Coominglah SF, nr Monto	24° 48' 25" South	-24.80694444	150° 57' 27" East	150.9575		30-Aug-01
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Underwoodisaurus	milii	Thick-tailed Gecko	Mount Morgan	23° 38' 41" South	-23.64472222	150° 21' 26" East	150.3572222		20-Feb-03
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Underwoodisaurus	milii	Thick-tailed Gecko	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Underwoodisaurus	milii	Thick-tailed Gecko	Biloela	24° 24' South	-24.4	150° 31' East	150.5166667		
Herpetology/Vertebrates/Biodiversity	Carphodactylidae	Underwoodisaurus	milii	Thick-tailed Gecko	Cania Gorge	24° 43' South	-24.71666667	150° 59' East	150.9833333		7-Jul-94
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	jacovae	Clouded Gecko	Kroombit Tops SF	24° 28' 57" South	-24.4825	150° 56' 28" East	150.9411111		28-Aug-97
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	jacovae	Clouded Gecko	Kroombit Tops NP	24° 22' South	-24.36508888	151° 1' East	151.0177325		3-Jul-92
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	jacovae	Clouded Gecko	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	jacovae	Clouded Gecko	Kroombit Tops, Forestry Camp	24° 26' South	-24.43333333	150° 43' East	150.7166667		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 8' East	151.1333333		14-Jan-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333		15-Jan-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		19-Feb-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Stanwell Power Stn Site, Reed Rd	23° 31' South	-23.51666667	150° 20' East	150.3333333		27-Oct-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Gladstone, Sthern Pacific Petroleum Site	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		25-Nov-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Gladstone, Sthern Pacific Petroleum Site	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		23-Nov-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		8-Dec-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		10-Dec-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		5-Dec-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Southern Pacific Petroleum	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115		23-Jan-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Southern Pacific Petroleum	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115		19-Jan-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Awoonga Dam and Calliope R	23° 58' 36" South	-23.97666667	151° 3' 28" East	151.0577778		13-Apr-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Awoonga Dam and Calliope R	24° 4' 54" South	-24.08166667	151° 18' 43" East	151.3119444		10-Apr-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Morinish SF 878	23° 18' 55" South	-23.31527778	150° 8' 20" East	150.1388889		12-Apr-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Southern Pacific Petroleum, S2 site, via Gladstone	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115		25-Jun-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Southern Pacific Petroleum, S2 site, via Gladstone	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115		25-Jun-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Mt Morgan Gold Mine	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222		18-Jul-02
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Mt Larcom, SF, E of	23° 49' South	-23.81666667	151° 5' East	151.0833333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Theodore	24° 57' South	-24.95	150° 5' East	150.0833333		

Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Amalosia	rhombifer	ZigZag Velvet Gecko	Gladstone, Mt Miller T'off, coastal flats	23° 51' South	-23.85	151° 16' East	151.2666667		23-Sep-84
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 8' East	151.1333333		19-Jan-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Camboon SF, via Cracow	25° 6' 25" South	-25.10694444	150° 32' 24" East	150.54		20-Oct-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Gladstone, Sthern Pacific Petroleum Site	23° 45' 16" South	-23.75444444	151° 6' 52" East	151.1144444		22-Nov-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Calliope R, to W of Banaraby	23° 58' 36" South	-23.97666667	151° 3' 27" East	151.0575	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		10-Dec-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		9-Nov-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Southern Pacific Petroleum	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		19-Jan-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Southern Pacific Petroleum	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115		25-Jan-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Awoonga Dam and Calliope R	24° 6' 37" South	-24.11027778	151° 14' 45" East	151.2458333		15-Apr-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Awoonga Dam and Calliope R	24° 6' 37" South	-24.11027778	151° 14' 45" East	151.2458333		10-Apr-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Morinish SF 878	23° 18' 41" South	-23.31138889	150° 8' 47" East	150.1463889		14-Apr-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Southern Pacific Petroleum, S2 site, via Gladstone	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		1-Jul-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Southern Pacific Petroleum, S2 site, via Gladstone	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		26-Jun-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Turtle St camp, Curtis Is	23° 38' 30" South	-23.64166667	151° 13' 30" East	151.225		8-May-74
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Callide Mine, nr Biloela	24° 17' 57" South	-24.29916667	150° 36' 33" East	150.6091667		11-Apr-05
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Dandan Scrub, via Kroombit Tops	24° 15' South	-24.25	151° 5' East	151.0833333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Diplodactylus	vittatus	Stone Gecko	Bania SF 54, via Monto	24° 57' South	-24.95	151° 30' East	151.5		7-Nov-92
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Nebulifera	robusta	Robust Velvet Gecko	Morinish SF 878	23° 18' 33" South	-23.30916667	150° 8' 41" East	150.1447222		15-Apr-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Nebulifera	robusta	Robust Velvet Gecko	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 4' 33" South	-24.07583333	151° 15" East	151.0041667		3-Apr-00
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Nebulifera	robusta	Robust Velvet Gecko	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 4' 33" South	-24.07583333	151° 15" East	151.0041667		2-Apr-00
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Nebulifera	robusta	Robust Velvet Gecko	Callide Mine, nr Biloela	24° 17' 49" South	-24.29694444	150° 36' 32" East	150.6088889		11-Apr-05
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Nebulifera	robusta	Robust Velvet Gecko	Rockhampton?	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Nebulifera	robusta	Robust Velvet Gecko	Monto-Builyan Rd, nr Many Peaks	24° 32' South	-24.53333333	151° 23' East	151.3833333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Nebulifera	robusta	Robust Velvet Gecko	Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura			Rockhampton?	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura			Bulburin SF, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura			Blackmans Gap Rd, via Miriam Vale	24° 26' South	-24.43333333	151° 26' East	151.4333333		7-Apr-85
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura			Bulburin SF, Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura			Bania SF 54, Monto	24° 57' South	-24.95	151° 30' East	151.5		29-Apr-92
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Callide Range	24° 15' South	-24.24842503	150° 37' East	150.6177374		Nov-07
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Kroombit Tops NP, SW Gladstone	24° 21' 25" South	-24.35694444	150° 57' 43" East	150.9619444		3-Feb-09
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Brigalow Research Stn	24° 48' 11" South	-24.80305556	149° 47' 30" East	149.7916667		11-Mar-05
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1		Jan-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		19-Feb-98
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Morinish SF 878	23° 18' 55" South	-23.31527778	150° 8' 20" East	150.1388889		13-Apr-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Brigalow Res. Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556		6-Nov-99
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Mt Morgan Gold Mine	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222		16-Jul-02
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Mt Morgan Gold Mine	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222		17-Jul-02
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Mount Morgan	23° 38' 6" South	-23.635	150° 21' 44" East	150.3622222		17-Feb-03
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Rockhampton?	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Moura, 7.5km S, then E, via Theodore & Gibihi Rd	24° 35' South	-24.58333333	150° East	150		14-Aug-83
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Moura, 4 km S, junction Theodore & Gibihi Rds	24° 38' South	-24.63333333	149° 59' East	149.9833333		13-Aug-83
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	ocellata	Ocellated Velvet Gecko	Moura, 3 km S, on Theodore Rd	24° 38' South	-24.63333333	149° 59' East	149.9833333		21-Aug-83
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Razorback Ridge Rd, Kroombit Tops NP	24° 25' 6" South	-24.41833333	150° 55' East	150.9166667		8-Dec-10
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Kroombit Tops barracks, Kroombit Tops NP	24° 21' 25" South	-24.35694444	150° 57' 43" East	150.9619444		7-Dec-10
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Kroombit Forest Dve, Kroombit Tops NP	24° 21' 13" South	-24.35361111	150° 57' 33" East	150.9591667		9-Dec-10
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Kroombit Tops SF	24° 28' 57" South	-24.4825	150° 56' 28" East	150.9411111		27-Aug-97
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Hurdle Gully, 10.8km WSW Monto	24° 54' South	-24.9	151° 1' East	151.0166667	20 Dec 1997-26 Apr 1998	
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Kroombit Tops NP	24° 22' South	-24.36508888	151° 1' East	151.0177325		3-Jul-92
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	2nd granite creek crossing, Bruce Highway	24° 33' South	-24.54841926	151° 25' East	151.417728		27-Jan-76
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Granite Creek	24° 35' South	-24.58175209	151° 29' East	151.4843939		28-Jan-76
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Kroombit Tops NP, Dry Gully Lookout	24° 22' 24" South	-24.37333333	150° 56' 13" East	150.9369444	01 Nov 1999-30 Nov 1999	
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Coominglah SF, nr Monto	24° 48' 56" South	-24.81555556	150° 55' 49" East	150.9302778		25-Aug-01
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Coominglah SF, nr Monto	24° 44' 5" South	-24.73472222	150° 56' 15" East	150.9375		26-Aug-01
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Coominglah SF, nr Monto	24° 46' 22" South	-24.77277778	150° 57' 15" East	150.9541667		26-Aug-01
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Coominglah SF, nr Monto	24° 46' 22" South	-24.77277778	150° 57' 15" East	150.9541667		28-Aug-01
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Coominglah SF, nr Monto	24° 47' 57" South	-24.79916667	150° 55' 10" East	150.9194444		28-Aug-01
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Callide Mine, nr Biloela	24° 17' 57" South	-24.29916667	150° 36' 33" East	150.6091667		7-Apr-05
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Rockhampton?	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Dawson Valley, Castle Ck	24° 50' South	-24.83333333	150° 20' East	150.3333333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Bulburin SF, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Bulburin SF, Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Kroombit Tops, N Escarpment	24° 22' South	-24.36666667	150° 59' East	150.9833333		15-Dec-83
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Builyan, nr, W of Bulburin Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Bania SF 54, Monto	24° 57' South	-24.95	151° 30' East	151.5		27-Apr-92
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667		12-Mar-92
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Oedura	tryoni	Southern Spotted Velvet Gecko	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667		5-Aug-92
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Strophurus	taenicauda	Northern Golden-tailed Gecko	Brigalow Research Station	24° 48' 1" South	-24.80027778	149° 46' 13" East	149.7702778		13-Mar-05
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Strophurus	taenicauda	Central Golden-tailed Gecko	Coominglah SF, nr Monto	24° 48' 56" South	-24.81555556	150° 55' 49" East	150.9302778		25-Aug-01
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Strophurus	taenicauda	Central Golden-tailed Gecko	Coominglah SF, nr Monto	24° 48' 25" South	-24.80694444	150° 57' 27" East	150.9575		26-Aug-01
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Strophurus	taenicauda	Central Golden-tailed Gecko	Coominglah SF, near Monto	24° 52' 54" South	-24.88166667	150° 56' 10" East	150.9361111		29-Aug-01
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Strophurus	taenicauda	Central Golden-tailed Gecko	Coominglah SF, near Monto	24° 48' 56" South	-24.81555556	150° 55' 49" East	150.9302778		29-Aug-01
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Strophurus	taenicauda	Central Golden-tailed Gecko	Coominglah SF, near Monto	24° 52' 54" South	-24.88166667	150° 56' 10" East	150.9361111		30-Aug-01
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Strophurus	taenicauda	Central Golden-tailed Gecko	Callide	24° 15' 28" South	-24.2561946	150° 37' 1" East	150.6180277		14-Aug-05
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Strophurus	taenicauda	Northern Golden-tailed Gecko	Dawson Valley, Castle Ck	24° 50' South	-24.83333333	150° 20' East	150.3333333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Strophurus	taenicauda	Northern Golden-tailed Gecko	Edungalba	23° 43' South	-23.71666667	149° 51' East	149.85		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Strophurus	taenicauda	Northern Golden-tailed Gecko	Goovigen, via Rockhampton	24° 9' South	-24.15	150° 17' East	150.2833333		
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Strophurus	williamsi	Eastern Spiny-tailed Gecko	Mount Morgan	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222		18-Feb-03
Herpetology/Vertebrates/Biodiversity	Diplodactylidae	Strophurus	williamsi	Eastern Spiny-tailed Gecko	Spring Ck	24° 6' South	-24.1	150° 30' East	150.5		1-Dec-92

Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Brigalow Research Station, Roundstone Creek	24° 49' 10" South	-24.81944444	149° 44' 51" East	149.7475	12-Mar-05
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Nogo River, Abercorn	25° South	-24.99842258	150° 46' East	150.7677411	19-Jul-73
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 8' East	151.1333333	22-Jan-98
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	25-Feb-98
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Camboon SF, via Cracow	25° 7' 11" South	-25.11972222	150° 32' 42" East	150.545	22-Oct-98
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Stanwell Power Stn Site, Reed Rd	23° 31' South	-23.51666667	150° 20' East	150.3333333	27-Oct-98
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Gladstone, Sthern pacific Petroleum Site	23° 46' 15" South	-23.77083333	151° 7' East	151.1166667	24-Nov-98
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Gladstone, Sthern Pacific Petroleum Site	23° 48' 7" South	-23.80194444	151° 9' 6" East	151.1516667	25-Nov-98
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Gladstone, Sthern Pacific Petroleum Site	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	23-Nov-98
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Calliope R, to W of Banaraby	23° 58' 36" South	-23.97666667	151° 3' 27" East	151.0575	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Calliope R, to W of Banaraby	23° 58' 36" South	-23.97666667	151° 3' 27" East	151.0575	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52' East	151.0144444	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Southern Pacific Petroleum	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	21-Jan-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Southern Pacific Petroleum	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	21-Jan-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Awoonga Dam and Calliope R	23° 58' 20" South	-23.97222222	151° 3' 3" East	151.0508333	12-Apr-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Awoonga Dam and Calliope R	23° 58' 36" South	-23.97666667	151° 3' 28" East	151.0577778	12-Apr-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Awoonga Dam and Calliope R	24° 6' 37" South	-24.11027778	151° 14' 45" East	151.2458333	10-Apr-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Southern Pacific Petroleum Stage 2 site	23° 48' 24" South	-23.80666667	151° 9' 21" East	151.1558333	01 Apr 1999-30 Apr 1999
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Morinish SF 878	23° 18' 55" South	-23.31527778	150° 8' 20" East	150.1388889	15-Apr-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Morinish SF 878	23° 18' 33" South	-23.30916667	150° 8' 41" East	150.1447222	15-Apr-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Morinish SF 878	23° 18' 42" South	-23.31166667	150° 9' 10" East	150.1527778	15-Apr-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Southern Pacific Petroleum, S2 site, via Gladstone	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	27-Jun-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Southern Pacific Petroleum, S2 site, via Gladstone	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	25-Jun-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Southern Pacific Petroleum, S2 site, via Gladstone	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	26-Jun-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Southern Pacific Petroleum, S2 site, via Gladstone	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	25-Jun-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Theodore, Brigalow Research Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	16-Sep-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Abercorn	25° 8' South	-25.13175326	151° 8' East	151.1344034	20-Jul-73
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333	31-Mar-00
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Awoonga Dam, Boyne R Valley-Miriam Vale	23° 52' 18" South	-23.87166667	151° 52' East	151.0144444	4-Apr-00
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Awoonga Dam, Boyne Valley to Miriam Vale	24° 4' 33" South	-24.07583333	151° 15" East	151.0041667	2-Apr-00
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Broadmeadow Stn, S. of Baralaba	24° 14' 53" South	-24.24805556	149° 49' 22" East	149.8227778	31-May-00
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Brigalow Res. Stn, via Theodore	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	01 Jan 2001-31 Jan 2001
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Coominglah SF, nr Monto	24° 47' 57" South	-24.79916667	150° 55' 10" East	150.9194444	26-Aug-01
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Coominglah SF, nr Monto	24° 48' 25" South	-24.80694444	150° 57' 27" East	150.9575	26-Aug-01
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Coominglah SF, nr Monto	24° 52' 54" South	-24.88166667	150° 56' 10" East	150.9361111	27-Aug-01
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Coominglah SF, nr Monto	24° 52' 17" South	-24.87138889	151° 1' 35" East	151.0263889	28-Aug-01
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Coominglah SF, nr Monto	24° 48' 4" South	-24.80111111	150° 56' 32" East	150.9422222	29-Aug-01
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Mt Morgan Gold Mine	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222	17-Jul-02
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Callide Mine, nr Biloela	24° 19' 35" South	-24.32638889	150° 37' 56" East	150.6322222	7-Apr-05
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Southside Holiday Village, Dawson St, Rockhampton	23° 24' 16" South	-23.40444444	150° 30' 14" East	150.5038889	10-Oct-05
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Mount Morgan	23° 38' 37" South	-23.64361111	150° 22' 50" East	150.3805556	21-Feb-03
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Mount Morgan	23° 37' 59" South	-23.63305556	150° 21' 22" East	150.3561111	18-Feb-03
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Marmor, 5 km W	23° 40' South	-23.66666667	150° 39' East	150.65	
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333	
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Curtis Is	23° 35' 30" South	-23.59166667	151° 11' 30" East	151.1916667	13-May-74
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Rundle Ra, adjoining Site 5	23° 39' South	-23.65	150° 59' East	150.9833333	
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Moura, 6km S, then E, via Theodore & Gibihi Rd	24° 35' South	-24.58333333	150° East	150	14-Aug-83
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Moura, 3 km S, on Theodore Rd	24° 38' South	-24.63333333	149° 59' East	149.9833333	21-Aug-83
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Moura, 3 km S, on Theodore Rd	24° 38' South	-24.63333333	149° 59' East	149.9833333	21-Aug-83
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Curtis Is, centre road behind Turtle St	23° 38' 30" South	-23.64166667	151° 13' 30" East	151.225	10-May-74
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667	6-Aug-92
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Curtis Is	23° 35' South	-23.58333333	151° 14' East	151.2333333	27-Oct-92
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Gehyra	dubia	Dubious Dtella	Bouldercombe	23° 34' South	-23.56666667	150° 28' East	150.4666667	
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Hemidactylus	frenatus	Asian House Gecko	Southside Holiday Village, Dawson St, Rockhampton	23° 24' 16" South	-23.40444444	150° 30' 14" East	150.5038889	10-Oct-05
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Brigalow Research Station	24° 48' 1" South	-24.80027778	149° 46' 13" East	149.7702778	12-Mar-05
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Pheasant Ck, W of Rockhampton	23° 46' South	-23.76509572	150° 9' East	150.1510738	30-Sep-93
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Cania Gorge NP	24° 42' 41" South	-24.71138889	150° 58' 14" East	150.9705556	18-Mar-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Camboon SF, via Cracow	25° 7' 3" South	-25.1175	150° 33' 56" East	150.5655556	23-Oct-98
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Stanwell Power Stn Site	23° 31' South	-23.51666667	150° 20' East	150.3333333	5-Oct-98
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Gladstone, Sthern Pacific Petroleum Site	23° 48' 59" South	-23.81638889	151° 9' 17" East	151.1547222	21-Nov-98
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Gladstone, Sthern Pacific Petroleum Site	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	23-Nov-98
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Calliope R, to W of Banaraby	23° 58' 46" South	-23.97944444	151° 4' 2" East	151.0672222	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	6-Dec-98
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Southern Pacific Petroleum	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	21-Jan-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Awoonga Dam and Calliope R	24° 6' 37" South	-24.11027778	151° 14' 45" East	151.2458333	10-Apr-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Awoonga Dam and Calliope R	24° 6' 37" South	-24.11027778	151° 14' 45" East	151.2458333	10-Apr-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Morinish SF 878	23° 18' 55" South	-23.31527778	150° 8' 20" East	150.1388889	13-Apr-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Southern Pacific Petroleum, S2 site, via Gladstone	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	26-Jun-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Southern Pacific Petroleum, S2 site, via Gladstone	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	26-Jun-99
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Awoonga Dam, Boyne Valley to Miriam Vale	24° 4' 33" South	-24.07583333	151° 15" East	151.0041667	31-Mar-00
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Awoonga Dam, Boyne Valley to Miriam Vale	24° 2' 1" South	-24.03361111	151° 19' 5" East	151.3180556	28-Mar-00
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Awoonga Dam, Boyne R Valley-Miriam Vale	24° 10' 54" South	-24.18166667	151° 9' 30" East	151.1583333	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Brigalow Res. Stn	24° 49' South	-24.81666667	149° 45' East	149.75	16 Dec 2000-28 Mar 2001
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Coominglah SF, nr Monto	24° 46' 22" South	-24.77277778	150° 57' 15" East	150.9541667	26-Aug-01
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Coominglah SF, nr Monto	24° 44' 57" South	-24.74916667	150° 57' 29" East	150.9580556	26-Aug-01
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Coominglah SF, nr Monto	24° 44' 57" South	-24.74916667	150° 57' 29" East	150.9580556	27-Aug-01
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Coominglah SF, nr Monto	24° 53' 51" South	-24.8975	151° 2' 21" East	151.0391667	27-Aug-01
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Boyne Valley & Awoonga	24° 2' South	-24.03333333	151° 19' 5" East	151.3180556	22-Nov-01
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Awoonga Dam	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333	9-May-02
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Mt Morgan Gold Mine	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222	17-Jul-02
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Callide Mine, nr Biloela	24° 17' 49" South	-24.29694444	150° 36' 32" East	150.6088889	7-Apr-05

Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Dawson Valley, Castle Ck	24° 50' South	-24.83333333	150° 20' East	150.3333333		
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	12 Mile Ck, N of Bororen	24° 6' South	-24.1	151° 28' East	151.4666667		30-Oct-63
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Gladstone Harbour Is	23° 51' South	-23.85	151° 15' East	151.25		
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Mt Larcom, SF 60	23° 49' South	-23.81666667	151° 5' East	151.0833333		
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333		
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Hobble Gully Landing, W of Curtis Is	23° 42' 30" South	-23.70833333	151° 14' 30" East	151.2416667		6-May-74
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Curtis Is	23° 34' 30" South	-23.575	151° 13' 30" East	151.225		12-May-74
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Rockhampton, 32km S	23° 39' South	-23.65	150° 38' East	150.6333333		4-Jul-74
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Pincers Ra, Isla Plain Stn, 16km NE Isla Gorge NP	25° 6' South	-25.1	150° 3' East	150.05	14 Aug 1976-21 Aug 1976	
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Rundle Ra, adjoining Site 5, in clearing	23° 39' South	-23.65	150° 59' East	150.9833333	Indeterminable {25 Mar 1978 - 31 Mar 1975}	
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Rundle Ra, Site 5a	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Rundle Ra, Site 5	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Rundle Ra, adjoining Site 5	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Rundle Ra, crest	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Rundle Ra, clearing adjoining Site 5	23° 40' South	-23.66666667	151° East	151		
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Gladstone area	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Kroombit Tops, N Escarpment,ca. 14km N logging hut	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Kroombit Tops, N Escarpment	24° 22' South	-24.36666667	150° 59' East	150.9833333		16-Dec-83
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Kroombit Tops, N Escarpment	24° 26' South	-24.43333333	150° 43' East	150.7166667		29-Sep-85
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Bouldercombe, 20.8km SW Rockhampton	23° 34' South	-23.56666667	150° 28' East	150.4666667		16-Mar-87
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Curtis Is, Hobble Gully, Grahams Ck	23° 40' 30" South	-23.675	151° 13' 30" East	151.225		8-May-74
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Bushley Stn	23° 32' South	-23.53333333	151° 15' East	151.25	22 Oct 1990-21 Mar 1991	
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Koongal	23° 23' South	-23.38333333	150° 33' East	150.55	23 Oct 1990-21 Mar 1991	
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Bouldercombe	23° 34' South	-23.56666667	150° 28' East	150.4666667	21 Mar 1991-03 Sep 1991	
Herpetology/Vertebrates/Biodiversity	Gekkonidae	Heteronotia	binoei	Bynoe's Gecko	Separation Stn, ca.12.8km NE Duaringa	23° 35' South	-23.58333333	149° 47' East	149.7833333		12-Jun-94
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Delma	tincta	Excitable Delma	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		21-Feb-98
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Delma	tincta	Excitable Delma	Parkhurst	23° 18' 44" South	-23.31222222	150° 31' 14" East	150.5205556		4-Apr-01
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Delma	tincta	Excitable Delma	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Delma	tincta	Excitable Delma	Nr Keppel Sands, nr Rockhampton	23° 20' South	-23.33333333	150° 47' East	150.7833333		
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Delma	tincta	Excitable Delma	N Rockhampton	23° 21' South	-23.35	150° 32' East	150.5333333		14-Nov-88
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Delma	torquata	Collared Delma	Boyne Valley	24° 34' 52" South	-24.58111111	151° 15' 12" East	151.2533333		8-Mar-06
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Delma	torquata	Collared Delma	Razorback Ridge Rd, Kroombit Tops NP	24° 25' 6" South	-24.41833333	150° 55' East	150.9166667		8-Dec-10
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Stanwell Power Stn Site	23° 30' 4" South	-23.50111111	150° 18' 52" East	150.3144444		30-Oct-98
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Gladstone, Sthern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444		21-Nov-98
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Gladstone, Sthern Pacific Petroleum Site	23° 45' 16" South	-23.75444444	151° 6' 52" East	151.1144444		23-Nov-98
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Southertn Pacific Petroleum	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		28-Jan-99
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Rockhampton, along Fitzroy R	23° 22' South	-23.36509425	150° 32' East	150.5343987		24-Mar-00
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 3' 6" South	-24.05166667	151° 19' 26" East	151.3238889		1-Apr-00
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Mount Morgan	23° 38' 6" South	-23.635	150° 21' 44" East	150.3622222		21-Feb-03
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Dawson Valley, Castle Ck	24° 50' South	-24.83333333	150° 20' East	150.3333333		
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Monto	24° 52' South	-24.86666667	151° 7' East	151.1166667		
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Argoon	24° 15' South	-24.25	150° 26' East	150.4333333		
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Goovigen, via Rockhampton	24° 9' South	-24.15	150° 17' East	150.2833333		
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Moura, Dawson Valley	24° 34' South	-24.56666667	149° 59' East	149.9833333		
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Rundle Ra, S of Site 5	23° 29' South	-23.48333333	150° 59' East	150.9833333	25 Mar 1975-31 Mar 1975	
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Rundle Ra, Site 5	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Gibihi Rd & Theodore-Moura Rd, 3 km S of junction	24° 40' South	-24.66666667	150° East	150		28-Aug-83
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Gibihi Rd & Theodore-Moura Rd, 3 km S of junction	24° 40' South	-24.66666667	150° East	150		28-Aug-83
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Bouldercombe, 20.8km SW Rockhampton	23° 34' South	-23.56666667	150° 28' East	150.4666667		16-Mar-87
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Benaraby	24° South	-24	151° 19' East	151.3166667		1-Mar-85
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		13-Dec-84
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Yarwun	23° 51' South	-23.85	151° 8' East	151.1333333		
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Lialis	burtonis	Burton's Snake Lizard	Yarwun	23° 51' South	-23.85	151° 8' East	151.1333333		20-Dec-84
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Paradelma	orientalis	Brigalow Scaly-foot	Roundstone Ck, Brigalow Research Stn	24° 49' 10" South	-24.81944444	149° 44' 51" East	149.7475		11-May-05
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Paradelma	orientalis	Brigalow Scaly-foot	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		20-Feb-98
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Paradelma	orientalis	Brigalow Scaly-foot	Morinish SF 878	23° 18' 41" South	-23.31138889	150° 8' 47" East	150.1463889		13-Apr-99
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Paradelma	orientalis	Brigalow Scaly-foot	Coominglah SF, nr Monto	24° 52' 17" South	-24.87138889	151° 1' 35" East	151.0263889		28-Aug-01
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Paradelma	orientalis	Brigalow Scaly-foot	Coominglah SF, nr Monto	24° 52' 17" South	-24.87138889	151° 1' 35" East	151.0263889		30-Aug-01
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Paradelma	orientalis	Brigalow Scaly-foot	Mount Morgan	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222		19-Feb-03
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Paradelma	orientalis	Brigalow Scaly-foot	Wandoo Stn, 40km from Moura to Baralaba	24° 20' South	-24.33333333	149° 59' East	149.9833333		
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Paradelma	orientalis	Brigalow Scaly-foot	Moura, 7.5km S, then E, via Theodore & Gibihi Rd	24° 35' South	-24.58333333	150° East	150		14-Aug-83
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Paradelma	orientalis	Brigalow Scaly-foot	Boyne Island	23° 56' South	-23.93333333	151° 21' East	151.35		8-Dec-89
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Paradelma	orientalis	Brigalow Scaly-foot	Coominglah SF	24° 45' South	-24.75	150° 50' East	150.8333333		1-May-91
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Pygopus	schraderi	Eastern Hooded Scaly-foot	Calliope	23° 59' 37" South	-23.99361111	151° 12' 42" East	151.2116667		1-Oct-02
Herpetology/Vertebrates/Biodiversity	PYGOPODIDAE	Pygopus	schraderi	Eastern Hooded Scaly-foot	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	brevicollis	Short-necked Worm-skink	Callide Range	24° 15' South	-24.24842503	150° 37' East	150.6177374		Nov-07
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	brevicollis	Short-necked Worm-skink	Dawson Valley, Castle Ck	24° 50' South	-24.83333333	150° 20' East	150.3333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	brevicollis	Short-necked Worm-skink	Callide Mine, nr Biloela	24° 17' 49" South	-24.29694444	150° 36' 32" East	150.6088889		7-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	brevicollis	Short-necked Worm-skink	Callide	24° 17' 57" South	-24.29916667	150° 36' 33" East	150.6091667		20-Aug-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	brevicollis	Short-necked Worm-skink	Callide	24° 17' 57" South	-24.29916667	150° 36' 33" East	150.6091667		21-Aug-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	brevicollis	Short-necked Worm-skink	N of Stanwell, W of Mt Misery	23° 29' South	-23.48333333	150° 19' East	150.3166667	28 Sep 1985-29 Sep 1985	
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	brevicollis	Short-necked Worm-skink	Rockhampton, 1 km E of Frenchville Rd	23° 22' South	-23.36666667	150° 32' East	150.5333333		21-Aug-76
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	brevicollis	Short-necked Worm-skink	Rockhampton area, Mt Archer, E side	23° 20' South	-23.33333333	150° 36' East	150.6		18-Sep-88
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	brevicollis	Short-necked Worm-skink	Mt Archer summit. 7km NE Rockhampton	23° 20' 15" South	-23.3375	150° 34' 25" East	150.5736111		25-Jul-94
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	leuckartii	Two-clawed Worm-skink	Gyranda, Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Kennedy Street, Zilzie, North Rockhampton	23° 17' South	-23.28175927	150° 50' East	150.8343938		17-Jan-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Brigalow Research Station, Turkey Lane	24° 48' 54" South	-24.815	149° 45' 8" East	149.7522222		13-Mar-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1		21-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Gladstone, Sthern Pacific Petroleum Site	23° 48' 7" South	-23.80194444	151° 9' 6" East	151.1516667		26-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Gladstone, Sthern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444		23-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Gladstone/Mt Larcon area	23° 44' 56" South	-23.74888889	151° 6' 33" East	151.1091667		28-Jan-99

Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		5-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		4-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Awoonga Dam and Calliope R	24° 13' 35" South	-24.22638889	151° 16' 2" East	151.2672222		15-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Awoonga Dam and Calliope R	24° 6' 37" South	-24.11027778	151° 14' 45" East	151.2458333		13-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889		2-Apr-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Avondale, Boolburra Rd, WSW of Duaringa	23° 44' 40" South	-23.74444444	149° 47' 59" East	149.7997222		1-Mar-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Ferguson Cres., Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		2-Oct-95
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Coominglah SF, nr Monto	24° 53' 51" South	-24.8975	151° 2' 21" East	151.0391667		28-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Coominglah SF, nr Monto	24° 53' 51" South	-24.8975	151° 2' 21" East	151.0391667		27-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Katherine Rd, Calliope	23° 59' 39" South	-23.99416667	151° 12' 38" East	151.2105556		20-May-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Boyne Valley & Awoonga	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889		29-Nov-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Awoonga Dam	24° 2' South	-24.03333333	151° 19' East	151.3166667		9-May-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Rockhampton, Black Gin Ck	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Bulburin Forestry Camp, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333	02 Apr 1972-05 Apr 1972	
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	11 Dec 1983-13 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Kroombit Tops, Dry Ck at Forestry Barracks	24° 22' South	-24.36666667	151° 1' East	151.0166667		28-Sep-85
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Bulburin SF, Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Kroombit Tops, nr campsite, on Ubobo Rd	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Dan Dan SF	24° 9' South	-24.15	151° 5' East	151.0833333		20-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Coominglah SF	24° 53' South	-24.88333333	151° 1' East	151.0166667		12-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Anomalopus	verreauxii	Verreaux's Skink	Bania SF 54, via Monto	24° 57' South	-24.95	151° 30' East	151.5		6-Nov-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Bulburin SF, Bobby Ra	24° 31' South	-24.51508557	151° 29' East	151.4843934		18-Jan-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Kroombit Tops SF	24° 28' 28" South	-24.47444444	150° 57' 23" East	150.9563889		28-Aug-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Kroombit Tops	24° 24' 52" South	-24.41444444	151° 2' 15" East	151.0375		13-Dec-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Bulburin SF, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333		13-Apr-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Bulburin SF, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333	26 Mar 1977-27 Mar 1977	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Bulburin SF, Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Bulburin SF, Granite Ck, via Many Peaks	24° 35' South	-24.58333333	151° 29' East	151.4833333		25-Mar-78
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Bulburin SF, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333		26-Mar-77
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Kroombit Tops, ca.1.5km E campsite	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Kroombit Tops, via Many Peaks	24° 22' South	-24.36666667	150° 59' East	150.9833333		25-Feb-82
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Kroombit Tops, Dawes Ra, 45km SSW Calliope	24° 22' South	-24.36666667	151° 1' East	151.0166667	09 Dec 1983-19 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Kroombit Tops, Lower Dry Ck, 45km SSW Calliope	24° 22' South	-24.36666667	151° 1' East	151.0166667	09 Dec 1983-19 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Kroombit Tops, Calliope Ra, 45km SSW Calliope	24° 15' South	-24.25	150° 52' East	150.8666667	09 Dec 1983-19 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Kroombit Tops	24° 20' South	-24.33333333	150° 59' East	150.9833333	27 Dec 1987-08 Jan 1988	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Rockhampton area, Mt Archer, E side	23° 20' South	-23.33333333	150° 36' East	150.6		18-Sep-88
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Bulburin SF 391, Boyne R	24° 31' South	-24.51666667	151° 29' East	151.4833333		25-Jun-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Bulburin SF 391	24° 35' South	-24.58333333	151° 30' East	151.5		25-Jun-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	lepidorostrum	Cone-eared Calyptotis	Bulburin SF	24° 32' South	-24.53333333	151° 30' East	151.5		16-Dec-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Mount Robert southern slopes, Dawes NP	24° 30' 53" South	-24.51472222	151° 16' 38" East	151.2772222		14-Feb-04
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Diglum Ck head, Kroombit Tops NP	24° 21' 39" South	-24.36083333	151° 1' 21" East	151.0225		7-Dec-10
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops SF	24° 28' 59" South	-24.48305556	150° 56' 28" East	150.9411111		Aug-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops	24° 22' 34" South	-24.37611111	150° 57' 56" East	150.9655556		11-Dec-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops	24° 24' 52" South	-24.41444444	151° 2' 15" East	151.0375		13-Dec-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops SF	24° 22' South	-24.36666667	151° 1' East	151.0166667		27-Aug-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Mt Robert, via Builyan	24° 31' South	-24.51508696	151° 16' East	151.26773		5-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Mt Archer, 0.5km WNW	23° 30' South	-23.5	150° 34' East	150.5666667	19 Dec 2000-24 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops SF, 30km WSW Nagoorin, via Monto	24° 25' South	-24.41666667	151° 2' East	151.0333333		5-Mar-81
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops, campsite, on Ubobo Rd	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops, ca.1.5km E campsite	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops, nr campsite, Ubobo Rd	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops, campsite	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops, Three Moon Ck, 45km SSW Calliope	24° 27' South	-24.45	151° 1' East	151.0166667	09 Dec 1983-19 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops, Lower Dry Ck, 45km SSW Calliope	24° 22' South	-24.36666667	151° 1' East	151.0166667	09 Dec 1983-19 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops, Calliope Ra, 45km SSW Calliope	24° 15' South	-24.25	150° 52' East	150.8666667	09 Dec 1983-19 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Escarpment Rd, Kroombit Tops	24° 26' South	-24.43333333	150° 43' East	150.7166667		
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops	24° 25' South	-24.41666667	151° 2' East	151.0333333		3-Jul-91
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops	24° 25' South	-24.41666667	151° 2' East	151.0333333		14-Jul-91
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		8-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	scutirostrum	Scute-snouted Calyptotis	Bania SF 54, via Monto	24° 57' South	-24.95	151° 30' East	151.5		5-Nov-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	temporalis	Broad-templed Calyptotis	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	temporalis	Broad-templed Calyptotis	Mt Archer summit, via Rockhampton	23° 20' South	-23.33333333	150° 35' East	150.5833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Calyptotis	temporalis	Broad-templed Calyptotis	Bouldercombe, 20.8km SW Rockhampton	23° 34' South	-23.56666667	150° 28' East	150.4666667		16-Mar-87
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Stanwell Power Stn Site	23° 30' 4" South	-23.50111111	150° 18' 52" East	150.3144444		24-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Stanwell Power Stn Site	23° 30' 4" South	-23.50111111	150° 18' 52" East	150.3144444		26-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Stanwell Power Stn Site	23° 31' 30" South	-23.525	150° 20' 10" East	150.3361111		29-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Gladstone, Sthern Pacific Petroleum Site	23° 48' 7" South	-23.80194444	151° 9' 6" East	151.1516667		21-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Calliope R, to W of Banaraby	23° 58' 20" South	-23.97222222	151° 3' 2" East	151.0505556	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Calliope R, to W of Banaraby	23° 58' 46" South	-23.97944444	151° 4' 2" East	151.0672222	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		14-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Southertn Pacific Petroleum	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		27-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Southertn Pacific Petroleum	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		19-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Awoonga Dam and Calliope R	23° 52' 18" South	-23.87166667	151° 6' 4" East	151.1011111		11-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Awoonga Dam and Calliope R	24° 13' 51" South	-24.23083333	151° 15' 13" East	151.2536111		15-Apr-99

Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Southern Pacific Petroleum, S2 site, via Gladstone	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		1-Jul-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Coominglah, NNW of Baralaba	24° 4' 49" South	-24.08027778	149° 47' 27" East	149.7908333		12-Mar-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Curtis Is	23° 41' South	-23.68333333	151° 13' East	151.2166667		10-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Hobble Gully Landing, W of Curtis Is	23° 42' 30" South	-23.70833333	151° 14' 30" East	151.2416667		6-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Curtis Is, W of Portion 14	23° 42' 30" South	-23.70833333	151° 15' 30" East	151.2583333		10-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Mt Larcom	23° 49' South	-23.81666667	150° 59' East	150.9833333		7-Dec-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Stanwell, 25km SW Rockhampton	23° 29' South	-23.48333333	150° 19' East	150.3166667		5-Feb-83
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Bouldercombe, 20.8km SW Rockhampton	23° 34' South	-23.56666667	150° 28' East	150.4666667		16-Mar-87
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Mt Larcom SF, foothills	23° 49' South	-23.81666667	151° 5' East	151.0833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Bushley Stn	23° 32' South	-23.53333333	150° 15' East	150.25		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		10-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	munda	Shaded-litter Rainbow-skink	Bania SF 54	24° 57' South	-24.95	151° 30' East	151.5		24-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Brigalow Research Station, Turkey Lane	24° 48' 54" South	-24.815	149° 45' 8" East	149.7522222		13-Mar-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Brigalow Research Station	24° 48' 1" South	-24.80027778	149° 46' 13" East	149.7702778		12-Mar-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Pheasant Ck, W of Rockhampton	23° 46' South	-23.76509572	150° 9' East	150.1510738		30-Sep-93
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333		19-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Targinie, via Gladstone, nr gully	23° 47' South	-23.78333333	151° 8' East	151.1333333		15-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 6' East	151.1		21-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333		21-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 6' East	151.1		17-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333		16-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		23-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		20-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Stanwell Power Stn, Buffer Zone	23° 31' South	-23.51666667	150° 20' East	150.3333333		19-Jul-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Stanwell Power Stn Site	23° 31' 51" South	-23.53083333	150° 19' 10" East	150.3194444		26-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Stanwell Power Stn Site	23° 31' South	-23.51666667	150° 20' East	150.3333333		8-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Gladstone, Sthern Pacific Petroleum Site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		22-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Gladstone, Sthern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444		21-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Gladstone, Sthern Pacific Petroleum Site	23° 44' 50" South	-23.74722222	151° 6' 32" East	151.1088889		22-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Gladstone, Sthern Pacific Petroleum Site	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		24-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Gladstone/Mt Larcon area	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115		21-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Gladstone/Mt Larcon area	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		21-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Gladstone area, Southern Pacific Petroleum Stage 2	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Gladstone area, Southern Pacific Petroleum Stage 2	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Gladstone area, Southern Pacific Petroleum Stage 2	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		15-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		1-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		7-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Southern Pacific Petroleum	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115		19-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Southern Pacific Petroleum	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		19-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Awoonga Dam and Calliope R	24° 13' 35" South	-24.22638889	151° 16' 2" East	151.2672222		8-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Morinish SF 878	23° 18' 55" South	-23.31527778	150° 8' 20" East	150.1388889		15-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Morinish SF 878	23° 19' 4" South	-23.31777778	150° 8' 19" East	150.1386111		15-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Morinish SF 878	23° 18' 41" South	-23.31138889	150° 8' 47" East	150.1463889		16-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Morinish SF 878	23° 18' 53" South	-23.31472222	150° 8' 21" East	150.1391667		12-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Southern Pacific Petroleum, S2 site, via Gladstone	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		26-Jun-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Theodore, Brigalow Research Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556		14-Sep-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Theodore, Brigalow Research Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556		14-Sep-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Theodore, Brigalow Research Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556		15-Sep-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Brigalow Res. Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556		6-Nov-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Brigalow Res. Stn, via Theodore	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556		24-Jan-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 2' South	-24.03333333	151° 19' 5" East	151.3180556		1-Apr-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Duaringa Stn, northern boundary near Dawson River	23° 38' 16" South	-23.63777778	149° 45' 19" East	149.7552778		27-Feb-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Brigalow Res. Stn, via Theodore	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556		20-Jun-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Awoonga Dam, Boyne R. Valley-Miriam Vale	24° 2' South	-24.03333333	151° 19' 5" East	151.3180556	12 Aug 2000-24 Aug 2000	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Brigalow Res. Stn, Site 2	24° 49' South	-24.81666667	149° 45' East	149.75	28 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Brigalow Res. Stn, Site 5	24° 48' South	-24.8	149° 45' East	149.75	29 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Brigalow Res. Stn, Site 5	24° 48' South	-24.8	149° 45' East	149.75	16 Dec 2000-28 May 2001	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Brigalow Res. Stn, via Theodore	24° 49' South	-24.81666667	149° 45' East	149.75	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Mt Scoria	24° 32' South	-24.53333333	150° 36' East	150.6	28 Mar 2000-29 Jun 2000	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Brigalow Res. Stn	24° 48' South	-24.8	149° 47' East	149.7833333	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Brigalow Res. Stn	24° 49' South	-24.81666667	149° 45' East	149.75	16 Dec 2000-28 Mar 2001	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Coominglah SF, nr Monto	24° 46' 22" South	-24.77277778	150° 57' 15" East	150.9541667		26-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Awoonga Dam	24° 2' South	-24.03333333	151° 19' East	151.3166667		9-May-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Callide Mine, nr Biloela	24° 17' 57" South	-24.29916667	150° 36' 33" East	150.6091667		7-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Callide Mine, nr Biloela	24° 17' 57" South	-24.29916667	150° 36' 33" East	150.6091667		7-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Mt Larcom, SF, foothills of mt	23° 49' South	-23.81666667	151° 5' East	151.0833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Mt Larcom, SF, foothills E of Mt Larcom	23° 49' South	-23.81666667	151° 5' East	151.0833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Curtis Is, N end	23° 27' 30" South	-23.45833333	151° 1' 30" East	151.025		7-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Rundle Ra Site, clearing adjoining	23° 40' South	-23.66666667	151° East	151	25 Mar 1975-31 Mar 1978	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Rundle Ra, Site 5a	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Rundle Ra, Site 5	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Rundle Ra, crest	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Theodore	24° 57' South	-24.95	150° 5' East	150.0833333		12-Nov-80
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Bauhinia Ck, W of Rockhampton	23° 45' South	-23.75	149° 53' East	149.8833333	01 Feb 1981-06 Feb 1981	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Kroombit Tops, via Calliope, Dry Ck Escarpment	24° 22' South	-24.36666667	151° 1' East	151.0166667		23-Feb-84
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Gibihi Rd & Theodore-Moura Rd, 3 km S of junction	24° 40' South	-24.66666667	150° East	150		28-Aug-83
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Moura, 4 km S, junction Theodore & Gibihi Rds	24° 38' South	-24.63333333	149° 59' East	149.9833333		13-Aug-83
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Kroombit Tops, Upp Kroombit Ck, 45km SSW Calliope	24° 27' South	-24.45	150° 52' East	150.8666667	12 Dec 1983-18 Dec 1983	

Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Gainsford Stn	23° 48' South	-23.8	149° 46' East	149.7666667		19-Feb-80
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Curtis Is	23° 34' 30" South	-23.575	151° 13' 30" East	151.225		13-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Port Curtis, Warro	23° 24' South	-23.4	150° 30' East	150.5		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Bushley	23° 32' South	-23.53333333	150° 15' East	150.25		22-Oct-90
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Dan Dan SF	24° 9' South	-24.15	151° 5' East	151.0833333		20-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Bania SF 54, Monto	24° 57' South	-24.95	151° 30' East	151.5		26-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667		11-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Mt Coulston SF 471	24° 11' South	-24.18333333	151° 26' East	151.4333333		14-May-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Mt Coulston	24° 11' South	-24.18333333	151° 26' East	151.4333333		14-May-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Boat Ck, via Gladstone	23° 48' South	-23.8	151° 4' East	151.0666667		3-Jul-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667		6-Aug-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Spring Ck	24° 6' South	-24.1	150° 30' East	150.5		1-Dec-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Bania SF 54, via Monto	24° 57' South	-24.95	151° 30' East	151.5		5-Nov-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Mt Castletower NP	24° 10' South	-24.16666667	151° 20' East	151.3333333		4-Nov-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Rundle Ra	23° 39' South	-23.65	150° 59' East	150.9833333		25-Oct-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Dan Dan Scrub SF53	24° 9' South	-24.15	151° 5' East	151.0833333		17-Aug-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Dan Dan Scrub SF53	24° 9' South	-24.15	151° 5' East	151.0833333		17-Aug-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Boyne Island	23° 55' 23" South	-23.92305556	151° 20' 41" East	151.3447222		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Boyne Island	23° 55' 23" South	-23.92305556	151° 20' 41" East	151.3447222		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Boyne Island	23° 56' South	-23.93333333	151° 20' 41" East	151.3447222		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Boyne Island	23° 55' 23" South	-23.92305556	151° 20' 41" East	151.3447222		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Boyne Island	23° 55' South	-23.91666667	151° 20' East	151.3333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Boyne Island	23° 55' 20" South	-23.92222222	151° 20' 45" East	151.3458333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Boyne Island	23° 55' South	-23.91666667	151° 20' East	151.3333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	pectoralis	Open-litter Rainbow-skink	Separation Stn, ca.12.8km NE Duaringa	23° 35' South	-23.58333333	149° 47' East	149.7833333		12-Jun-94
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Upper section of Roundstone Creek, Theodore State Forest	24° 57' 5" South	-24.95138889	149° 36' 41" East	149.6113889		18-Jan-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Callide Range	24° 15' South	-24.24842503	150° 37' East	150.6177374		Nov-07
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Pheasant Ck, W of Rockhampton	23° 46' South	-23.76509572	150° 9' East	150.1510738		30-Sep-93
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Targinie, via Gladstone, nr gully	23° 46' South	-23.76666667	151° 6' East	151.1		19-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1		15-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Gladstone, Sthern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444		22-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Gladstone, Sthern Pacific Petroleum Site	23° 44' 50" South	-23.74722222	151° 6' 32" East	151.1088889		26-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Calliope R, to W of Banaraby	23° 58' 36" South	-23.97666667	151° 3' 27" East	151.0575	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Calliope R, to W of Banaraby	23° 58' 46" South	-23.97944444	151° 4' 2" East	151.0672222	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		6-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		9-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		4-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Southern Pacific Petroleum	23° 44' 55" South	-23.74861111	151° 6' 29" East	151.1080556		20-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111		25-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Awoonga Dam and Calliope R	24° 4' 54" South	-24.08166667	151° 18' 43" East	151.3119444		10-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Awoonga Dam and Calliope R	23° 58' 47" South	-23.97972222	151° 4' 2" East	151.0672222		12-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Morinish SF 878	23° 18' 55" South	-23.31527778	150° 8' 20" East	150.1388889		13-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Morinish SF 878	23° 19' 4" South	-23.31777778	150° 8' 14" East	150.1372222		16-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Morinish SF 878	23° 18' 24" South	-23.30666667	150° 8' 41" East	150.1447222		14-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Rockhampton area	23° 19' 9" South	-23.31916667	150° 18' 24" East	150.3066667	01 Oct 1999-31 Oct 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 2' South	-24.03333333	151° 19' 5" East	151.3180556		1-Apr-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Awoonga Dam, Boyne Valley to Miriam Vale	24° 2' South	-24.03333333	151° 19' 5" East	151.3180556		1-Apr-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Baralaba racecourse, 2km NW	24° 8' 52" South	-24.14777778	149° 46' 11" East	149.7697222		30-May-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Awoonga Dam, Boyne R Valley-Miriam Vale	24° 4' 33" South	-24.07583333	151° 15" East	151.0041667	12 Aug 2000-24 Aug 2000	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Awoonga Dam, Boyne R Valley-Miriam Vale	24° 2' South	-24.03333333	151° 19' 4" East	151.3177778	12 Aug 2000-24 Aug 2000	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Coominglah SF, nr Monto	24° 47' 57" South	-24.79916667	150° 55' 10" East	150.9194444		26-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Boyne Valley & Awoonga	24° 2' South	-24.03333333	151° 19' 5" East	151.3180556		20-Nov-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Awoonga Dam	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889		9-May-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Mt Morgan Gold Mine	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222		11-Jul-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Mount Morgan	23° 38' 6" South	-23.635	150° 21' 44" East	150.3622222		21-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Mount Morgan	23° 38' 17" South	-23.63805556	150° 21' 46" East	150.3627778		17-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Mt Barney	23° 33' South	-23.55	151° 9' East	151.15		15-Aug-71
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Rundle Ra, Site 5	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Rundle Ra, Site 5a	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Rundle Ra, crest	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Rundle Ra, clearing adjoining Site 5	23° 40' South	-23.66666667	151° East	151		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Stanwell, 25km SW Rockhampton	23° 29' South	-23.48333333	150° 19' East	150.3166667		5-Feb-83
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Table Mt, 20km SW Rockhampton	23° 31' South	-23.51666667	150° 23' East	150.3833333		10-Feb-83
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Gladstone area	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Curtis Is, Boat Ck area	23° 37' 30" South	-23.625	151° 7' 30" East	151.125		10-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Mt Archer, Frenchville, nr Rockhampton	23° 20' South	-23.33333333	150° 35' East	150.5833333	18 Jul 1990-22 Oct 1990	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Mt Larcom	23° 49' South	-23.81666667	151° 5' East	151.0833333		12-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Dan Dan SF	24° 9' South	-24.15	151° 5' East	151.0833333		20-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Mt Coulston SF 471	24° 11' South	-24.18333333	151° 26' East	151.4333333		14-May-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667		11-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Boat Ck, via Gladstone	23° 48' South	-23.8	151° 4' East	151.0666667		3-Jul-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667		6-Aug-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Spring Ck	24° 6' South	-24.1	150° 30' East	150.5		1-Dec-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Rundle Ra	23° 39' South	-23.65	150° 59' East	150.9833333		26-Oct-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Curtis Is	23° 35' South	-23.58333333	151° 11' East	151.1833333		11-Feb-93
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Boyne Island	23° 56' South	-23.93333333	151° 20' 41" East	151.3447222		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Boyne Island	23° 55' South	-23.91666667	151° 20' East	151.3333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Boyne Island	23° 56' South	-23.93333333	151° 20' 50" East	151.3472222		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Boyne Island	23° 55' South	-23.91666667	151° 20' East	151.3333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	schmeltzii	Robust Rainbow-skink	Boyne Island	23° 55' 20" South	-23.92222222	151° 20' 45" East	151.3458333		

Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Raglan	23° 38' 31" South	-23.64194444	150° 53' 41" East	150.8947222	14 Dec 2011-22 Dec 2011
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Wowan, Pheasant Ck	23° 55' South	-23.91509508	150° 12' East	150.2010742	9-Jun-94
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333	18-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 8' East	151.1333333	13-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333	13-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	19-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Stanwell Power Stn Site, Woodlands	23° 31' 30" South	-23.525	150° 20' 10" East	150.3361111	24-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Stanwell Power Stn Site, Neerkol Ck	23° 29' 58" South	-23.49944444	150° 18' 25" East	150.3069444	2-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Gladstone, Sthern Pacific Petroleum Site	23° 46' South	-23.76508963	151° 7' East	151.1177265	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Gladstone, Sthern Pacific Petroleum Site	23° 48' 7" South	-23.80194444	151° 9' 6" East	151.1516667	22-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Gladstone, Sthern Pacific Petroleum Site	23° 44' 50" South	-23.74722222	151° 6' 32" East	151.1088889	24-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Calliope R, to W of Banaraby	23° 58' 36" South	-23.97666667	151° 3' 27" East	151.0575	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 49' South	-23.81666667	151° 9' 19" East	151.1552778	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	14-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	8-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Southertn Pacific Petroleum	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	20-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Southern Pacific Petroleum	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	20-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Awoonga Dam and Calliope R	24° 13' 51" South	-24.23083333	151° 15' 13" East	151.2536111	11-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Awoonga Dam and Calliope R	23° 58' 36" South	-23.97666667	151° 3' 28" East	151.0577778	9-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Awoonga Dam and Calliope R	24° 6' 37" South	-24.11027778	151° 14' 45" East	151.2458333	8-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Awoonga Dam and Calliope R	23° 52' 18" South	-23.87166667	151° 6' 4" East	151.1011111	9-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Southern Pacific Petroleum Stage 2 site	23° 44' 50" South	-23.74722222	151° 6' 33" East	151.1091667	01 Apr 1999-30 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Morinish SF 878	23° 19' 4" South	-23.31777778	150° 8' 14" East	150.1372222	16-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Southern Pacific Petroleum, S2 site, via Gladstone	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	24-Jun-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Southern Pacific Petroleum, S2 site, via Gladstone	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	24-Jun-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Theodore, Brigalow Research Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	21-Sep-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Brigalow Res. Stn, via Theodore	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	28-Mar-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 2' South	-24.03333333	151° 19' 4" East	151.3177778	30-Mar-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 2' South	-24.03333333	151° 19' 5" East	151.3180556	1-Apr-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Rio,11kms upstream from Capricorn Hwy Bridg	23° 49' 26" South	-23.82388889	149° 46' 48" East	149.78	05 May 2000-12 May 2000
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Awoonga Dam, Boyne R. Valley-Miriam Vale	23° 59' 16" South	-23.98777778	151° 6' 4" East	151.1011111	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Awoonga Dam, Boyne R Valley-Miriam Vale	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Brigalow Res. Stn, via Theodore	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	24-Mar-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Curtis Is	23° 53' South	-23.88333333	151° 23' East	151.3833333	11-May-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Granite Creek, first crossing	24° 35' South	-24.58333333	151° 29' East	151.4833333	25-Jan-76
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Mt Morgan Gold Mine	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222	18-Jul-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	12 Mile Ck, N of Bororen	24° 6' South	-24.1	151° 28' East	151.4666667	30-Oct-63
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Curtis Is, R64, S end	23° 45' 30" South	-23.75833333	151° 18' 30" East	151.3083333	10-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Curtis Is, W of Portion 14	23° 42' 30" South	-23.70833333	151° 15' 30" East	151.2583333	10-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Curtis Is, Turtle St	23° 38' 30" South	-23.64166667	151° 13' 30" East	151.225	16-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Curtis Is	23° 34' 30" South	-23.575	151° 13' 30" East	151.225	10-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Boat Ck, Curtis Is	23° 37' 30" South	-23.625	151° 7' 30" East	151.125	11-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Rundle Ra Site, clearing adjoining	23° 40' South	-23.66666667	151° East	151	Indeterminable {25 Mar 1978 - 31 Mar 1975}
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Rundle Ra, clearing adjoining Site 5	23° 40' South	-23.66666667	151° East	151	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Rundle Ra, Site 5	23° 39' South	-23.65	150° 59' East	150.9833333	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Rundle Ra, crest	23° 39' South	-23.65	150° 59' East	150.9833333	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Gladstone area	23° 51' South	-23.85	151° 16' East	151.2666667	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Edungalba	23° 43' South	-23.71666667	149° 51' East	149.85	29-Mar-84
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Curtis Is, Black Head	23° 40' 30" South	-23.675	151° 15' 30" East	151.2583333	12-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Bouldercombe	23° 32' South	-23.53333333	150° 26' East	150.4333333	19 Jul 1990-22 Oct 1990
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Dan Dan SF	24° 9' South	-24.15	151° 5' East	151.0833333	20-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Rundle Ra	23° 39' South	-23.65	150° 59' East	150.9833333	25-Oct-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Curtis Is	23° 35' South	-23.58333333	151° 11' East	151.1833333	12-Feb-93
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Curtis Is	23° 35' South	-23.58333333	151° 11' East	151.1833333	10-Feb-93
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Boyne Island	23° 55' 23" South	-23.92305556	151° 20' 41" East	151.3447222	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Boyne Island	23° 55' 23" South	-23.92305556	151° 20' 41" East	151.3447222	
Herpetology/Vertebrates/Biodiversity	Scincidae	Carlia	vivax	Lively Skink	Pleasant Creek, Wowan	23° 55' South	-23.91666667	150° 12' East	150.2	25-Jan-94
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	plagiocephalus	Callose-palmed Shinning-skink	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	20-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	plagiocephalus	Callose-palmed Shinning-skink	Cania Gorge NP	24° 43' 41" South	-24.72805556	150° 58' 22" East	150.9727778	18-Mar-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	plagiocephalus	Callose-palmed Shinning-skink	Theodore, Brigalow Research Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	18-Sep-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	plagiocephalus	Callose-palmed Shinning-skink	Capayan camp & Water Reserve, S Baralaba	24° 23' 46" South	-24.39611111	149° 51' 39" East	149.8608333	2-Jun-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	plagiocephalus	Callose-palmed Shinning-skink	Brigalow Res. Stn, Site 4	24° 48' South	-24.8	149° 47' East	149.7833333	29 Oct 2000-16 Dec 2000
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	pulcher	Elegant Snake-eyed Skink	Boyne Valley	24° 35' South	-24.58333333	151° 15' 18.6" East	151.2551667	18-Mar-06
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	pulcher	Elegant Snake-eyed Skink	Mt Larcom, SF 96km E of mt, in foothills	23° 49' South	-23.81666667	151° 5' East	151.0833333	
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	pulcher	Elegant Snake-eyed Skink	Mt Larcom	23° 49' South	-23.81666667	151° 5' East	151.0833333	12-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Brigalow Research Station	24° 48' 11" South	-24.80305556	149° 47' 30" East	149.7916667	12-May-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333	17-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Stanwell Power Stn Site, Reed Rd	23° 31' South	-23.51666667	150° 20' East	150.3333333	27-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Stanwell Power Stn Site	23° 30' 4" South	-23.50111111	150° 18' 52" East	150.3144444	30-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Gladstone, Sthern pacific Petroleum Site	23° 46' 15" South	-23.77083333	151° 7' East	151.1166667	24-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Gladstone, Sthern Pacific Petroleum Site	23° 44' 50" South	-23.74722222	151° 6' 32" East	151.1088889	22-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Gladstone, Sthern Pacific Petroleum Site	23° 45' 16" South	-23.75444444	151° 6' 52" East	151.1144444	21-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Calliope R, to W of Banaraby	23° 58' 36" South	-23.97666667	151° 3' 27" East	151.0575	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Calliope R, to W of Banaraby	23° 59' 15" South	-23.9875	151° 6' 4" East	151.1011111	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 49' South	-23.81666667	151° 9' 19" East	151.1552778	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 44' 50" South	-23.74722222	151° 6' 33" East	151.1091667	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	3-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	6-Dec-98

Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Southern Pacific Petroleum	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		23-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Southern Pacific Petroleum	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		21-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Southern Pacific Petroleum	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		20-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Awoonga Dam and Calliope R	24° 13' 8" South	-24.21888889	151° 15' 25" East	151.2569444		8-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Southern Pacific Petroleum, S2 site, via Gladstone	23° 49' South	-23.81666667	151° 9' 19" East	151.1552778	01 Jun 1999-30 Jun 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Southern Pacific Petroleum, S2 site, via Gladstone	23° 49' South	-23.81666667	151° 9' 19" East	151.1552778	01 Jun 1999-30 Jun 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Awoonga Dam, from Boyne Valley to Miriam Vale	23° 59' 23" South	-23.98972222	151° 7' 25" East	151.1236111		29-Mar-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Capayan camp & Water Reserve, S Baralaba	24° 23' 46" South	-24.39611111	149° 51' 39" East	149.8608333		2-Jun-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Awoonga Dam, Boyne R. Valley-Miriam Vale	23° 59' 16" South	-23.98777778	151° 6' 4" East	151.1011111	12 Aug 2000-24 Aug 2000	
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Awoonga Dam, Boyne R. Valley-Miriam Vale	23° 59' 45" South	-23.99583333	151° 7' 24" East	151.1233333	12 Aug 2000-24 Aug 2000	
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Brigalow Res. Stn, Site 4	24° 48' South	-24.8	149° 47' East	149.7833333	29 Oct 2000-16 Dec 2000	
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Coominglah SF, nr Monto	24° 52' 54" South	-24.88166667	150° 56' 10" East	150.9361111		27-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Coominglah SF, nr Monto	24° 48' 56" South	-24.81555556	150° 55' 49" East	150.9302778		27-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Coominglah SF, nr Monto	24° 46' 22" South	-24.77277778	150° 57' 15" East	150.9541667		28-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Coominglah SF, nr Monto	24° 52' 17" South	-24.87138889	151° 1' 35" East	151.0263889		28-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Mt Morgan Gold Mine	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222		18-Jul-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Callide Mine, nr Biloela	24° 17' 49" South	-24.29694444	150° 36' 32" East	150.6088889		7-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Mount Morgan	23° 38' 17" South	-23.63805556	150° 21' 46" East	150.3627778		20-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Curtis Is	23° 34' 30" South	-23.575	151° 13' 30" East	151.225		11-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Rockhampton, 32km S	23° 39' South	-23.65	150° 38' East	150.6333333		4-Jul-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Rundle Ra, Site 5a	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Rundle Ra, Site 5	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Theodore	24° 57' South	-24.95	150° 5' East	150.0833333		12-Nov-80
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Gibihi Rd & Theodore-Moura Rd, 3 km S of junction	24° 40' South	-24.66666667	150° East	150		28-Aug-83
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Struck Oil Rd, ca.8km NE Mt Morgan	23° 22' South	-23.36666667	150° 32' East	150.5333333		16-Mar-87
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Curtis Is	23° 35' 30" South	-23.59166667	151° 11' 30" East	151.1916667		12-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Bushley	23° 32' South	-23.53333333	150° 15' East	150.25		22-Oct-90
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Glenmore	23° 20' South	-23.33333333	150° 30' East	150.5	21 Apr 1990-23 Oct 1990	
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		10-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Spring Ck	24° 6' South	-24.1	150° 30' East	150.5		1-Dec-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Cryptoblepharus	virgatus	Wall Skink	Dan Dan Scrub SF53	24° 9' South	-24.15	151° 5' East	151.0833333		17-Aug-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	allotropis	Brown-blazed Wedgesnout Ctenotus	Brigalow Res. Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556		6-Nov-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	arcanus	Arcane Ctenotus	Razorback Ridge Rd, Kroombit Tops NP	24° 25' 6" South	-24.41833333	150° 55' East	150.9166667		8-Dec-10
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	arcanus	Arcane Ctenotus	Kroombit Tops, N Escarpment,ca. 14km N logging hut	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	arcanus	Arcane Ctenotus	Kroombit Tops, logging huts	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	arcanus	Arcane Ctenotus	Kroombit Tops, via Calliope, Dry Ck Escarpment	24° 22' South	-24.36666667	151° 1' East	151.0166667		23-Feb-84
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	arcanus	Arcane Ctenotus	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		10-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	arcanus	Arcane Ctenotus	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		8-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	eurydice	Brown-backed Yellow-lined Ctenotus	Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Brigalow Research Station, Roundstone Creek	24° 49' 10" South	-24.81944444	149° 44' 51" East	149.7475		12-Mar-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1		17-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Brigalow Res. Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556		6-Nov-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Alberta Camp &Water Res., 2k W Baralaba racecourse	24° 9' 22" South	-24.15611111	149° 46' 32" East	149.7755556		30-May-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Zilzie, Claude St	23° 17' South	-23.28333333	150° 48' East	150.8		30-Mar-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Callide Mine, nr Biloela	24° 19' 35" South	-24.32638889	150° 37' 56" East	150.6322222		13-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Rockhampton	23° 22' 3" South	-23.3675	150° 29' 36" East	150.4933333		2-Mar-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Mount Morgan	23° 38' 17" South	-23.63805556	150° 21' 46" East	150.3627778		18-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Alton Downs, via Rockhampton	23° 19' South	-23.31666667	150° 23' East	150.3833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Curtis Is, R64, S end	23° 45' 30" South	-23.75833333	151° 18' 30" East	151.3083333		10-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Gladstone area	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Gibihi Rd & Theodore-Moura Rd, 3 km S of junction	24° 40' South	-24.66666667	150° East	150		28-Aug-83
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Moura, 3 km SE Rail Xing, via Theodore Rd	24° 42' South	-24.7	150° 1' East	150.0166667		19-Aug-83
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Kalapa	23° 31' South	-23.51666667	150° 16' East	150.2666667		16-Mar-87
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Curtis Is	23° 35' South	-23.58333333	151° 14' East	151.2333333		28-Oct-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Spring Ck	24° 6' South	-24.1	150° 30' East	150.5		1-Dec-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Curtis Is	23° 35' South	-23.58333333	151° 11' East	151.1833333		10-Feb-93
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Pheasant Ck, Rockhampton area	23° 50' South	-23.83333333	150° 4' East	150.0666667		
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	robustus	Eastern Striped Skink	Boyne Island	23° 56' South	-23.93333333	151° 19' 40" East	151.3277778		
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Boyne Valley	24° 34' 51.6" South	-24.581	151° 15' 12" East	151.2533333		16-Mar-06
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333		13-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		20-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Gladstone, Sthern Pacific Petroleum Site	23° 48' 7" South	-23.80194444	151° 9' 6" East	151.1516667		21-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Gladstone, Sthern Pacific Petroleum Site	23° 45' 16" South	-23.75444444	151° 6' 52" East	151.1144444		21-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Calliope R, to W of Banaraby	23° 58' 52" South	-23.98111111	151° 1' 29" East	151.0247222	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Calliope R, to W of Banaraby	23° 58' 36" South	-23.97666667	151° 3' 27" East	151.0575	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 44' 50" South	-23.74722222	151° 6' 33" East	151.1091667	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Gladstone area, Southern Pacific Petroleum Stage 2	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		7-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		14-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		2-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		18-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Southern Pacific Petroleum	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		22-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Southern Pacific Petroleum	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		19-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Morinish SF 878	23° 18' 55" South	-23.31527778	150° 8' 20" East	150.1388889		13-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Morinish SF 878	23° 18' 41" South	-23.31138889	150° 8' 47" East	150.1463889		14-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Morinish SF 878	23° 18' 41" South	-23.31138889	150° 8' 47" East	150.1463889		13-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Southern Pacific Petroleum, S2 site, via Gladstone	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		1-Jul-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Brigalow Res. Stn, via Theodore	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556		23-Jan-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333		31-Jan-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 2' South	-24.03333333	151° 19' 4" East	151.3177778		31-Mar-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Awoonga Dam, Boyne R Valley-Miriam Vale	24° 10' 54" South	-24.18166667	151° 9' 30" East	151.1583333	12 Aug 2000-24 Aug 2000	

Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Brigalow Res. Stn, Site 5	24° 48' South	-24.8	149° 45' East	149.75	16 Dec 2000-28 May 2001	
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Coominglah SF, nr Monto	24° 52' 17" South	-24.87138889	151° 1' 35" East	151.0263889		28-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Awoonga Dam	24° 22' 38" South	-24.37722222	151° 19' 8" East	151.3188889		8-May-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Callide Mine, nr Biloela	24° 17' 57" South	-24.29916667	150° 36' 33" East	150.6091667		7-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Mount Morgan	23° 38' 41" South	-23.64472222	150° 21' 26" East	150.3572222		21-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Mount Morgan	23° 38' 17" South	-23.63805556	150° 21' 46" East	150.3627778		17-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Rundle Ra, clearing adjoining Site 5	23° 40' South	-23.66666667	151° East	151		
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Rundle Ra, crest	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Blackmans Gap Rd, via Miriam Vale	24° 26' South	-24.43333333	151° 26' East	151.4333333		7-Oct-84
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Bulburin SF, Granite Ck Xing, 2nd crossing	24° 35' South	-24.58333333	151° 29' East	151.4833333		25-Jan-76
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Curtis Is, nr Black Head	23° 40' 30" South	-23.675	151° 15' 30" East	151.2583333		12-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Monto	24° 52' South	-24.86666667	151° 7' East	151.1166667		2-Dec-89
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Dan Dan SF	24° 9' South	-24.15	151° 5' East	151.0833333		20-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667		10-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Bania SF 54, Monto	24° 57' South	-24.95	151° 30' East	151.5		29-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667		11-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Bania SF 54, via Monto	24° 57' South	-24.95	151° 30' East	151.5		6-Nov-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Rundle Ra	23° 39' South	-23.65	150° 59' East	150.9833333		26-Oct-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Curtis Is	23° 35' South	-23.58333333	151° 11' East	151.1833333		11-Feb-93
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Dan Dan Scrub SF53	24° 9' South	-24.15	151° 5' East	151.0833333		17-Aug-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ctenotus	taeniolatus	Copper-tailed Skink	Boyne Island	23° 56' South	-23.93333333	151° 21' 41" East	151.3613889		
Herpetology/Vertebrates/Biodiversity	Scincidae	Cyclodomorphus	gerrardii	Pink-tongued Skink	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Cyclodomorphus	gerrardii	Pink-tongued Skink	Dawson Valley, Castle Ck	24° 50' South	-24.83333333	150° 20' East	150.3333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Cyclodomorphus	gerrardii	Pink-tongued Skink	Rockhampton	23° 32' South	-23.53333333	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Cyclodomorphus	gerrardii	Pink-tongued Skink	Calliope	24° South	-24	151° 12' East	151.2		
Herpetology/Vertebrates/Biodiversity	Scincidae	Cyclodomorphus	gerrardii	Pink-tongued Skink	Bulburin Forest Camp, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333		13-Dec-84
Herpetology/Vertebrates/Biodiversity	Scincidae	Egernia	rugosa	Yakka Skink	Banana	24° 28' South	-24.46666667	150° 8' East	150.1333333	1975?	
Herpetology/Vertebrates/Biodiversity	Scincidae	Egernia	striolata	Tree Skink	Dawson Valley, Castle Ck	24° 50' South	-24.83333333	150° 20' East	150.3333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Egernia	striolata	Tree Skink	Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Eremiascincus	fasciolatus	Narrow-banded Sand-swimmer	Marble Creek, Boyne Valley	24° 16' South	-24.2650874	151° 17' East	151.2843945		2009
Herpetology/Vertebrates/Biodiversity	Scincidae	Eremiascincus	fasciolatus	Narrow-banded Sand-swimmer	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		6-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Eremiascincus	fasciolatus	Narrow-banded Sand-swimmer	Port Curtis	23° 24' South	-23.4	150° 30' East	150.5		
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus			Callide Mine, nr Biloela	24° 17' 57" South	-24.29916667	150° 36' 33" East	150.6091667		7-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Marble Mountain	23° 54' South	-23.89842558	150° 39' East	150.6510676		2009
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Bulburin, Granite Ck Crossing	24° 31' South	-24.51508557	151° 29' East	151.4843934		18-Jan-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1	01 Jan 1998-31 Jan 1998	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		25-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		24-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Calliope R, to W of Banaraby	23° 58' 46" South	-23.97944444	151° 4' 2" East	151.0672222	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Calliope R, to W of Banaraby	23° 59' 22" South	-23.98944444	151° 7' 2" East	151.1172222	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Theodore, Brigalow Research Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556		14-Sep-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Coominglah SF, nr Monto	24° 48' 56" South	-24.81555556	150° 55' 49" East	150.9302778		27-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Coominglah SF, nr Monto	24° 48' 25" South	-24.80694444	150° 57' 27" East	150.9575		28-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Mount Morgan	23° 37' 59" South	-23.63305556	150° 21' 22" East	150.3561111		18-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Table Mt, 20km SW Rockhampton	23° 31' South	-23.51666667	150° 23' East	150.3833333		10-Feb-83
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Fairybower Rd, ca.8-10km W Rockhampton	23° 23' South	-23.38333333	150° 25' East	150.4166667		15-Mar-87
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	brachysoma		Mt Archer, nr Rockhampton	23° 20' South	-23.33333333	150° 35' East	150.5833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Blackmans Gap	24° 27' South	-24.44841937	151° 26' East	151.4343937		2009
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Kroombit Tops SF, campsite	24° 28' 56" South	-24.48222222	150° 56' East	150.9333333		27-Aug-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Coominglah SF, nr Monto	24° 48' 56" South	-24.81555556	150° 55' 49" East	150.9302778		27-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Coominglah SF, nr Monto	24° 48' 56" South	-24.81555556	150° 55' 49" East	150.9302778		29-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Coominglah SF, nr Monto	24° 44' 57" South	-24.74916667	150° 57' 29" East	150.9580556		27-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Coominglah SF, nr Monto	24° 44' 57" South	-24.74916667	150° 57' 29" East	150.9580556		29-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Coominglah SF, nr Monto	24° 52' 17" South	-24.87138889	151° 1' 35" East	151.0263889		28-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Coominglah SF, nr Monto	24° 44' 5" South	-24.73472222	150° 56' 15" East	150.9375		29-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Coominglah SF, nr Monto	24° 48' 25" South	-24.80694444	150° 57' 27" East	150.9575		28-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Callide Mine, nr Biloela	24° 17' 57" South	-24.29916667	150° 36' 33" East	150.6091667		7-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Callide	24° 17' 49" South	-24.29694444	150° 36' 32" East	150.6088889		19-Aug-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Kroombit Tops, ca.1.5km E campsite	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Kroombit Tops, N Escarpment,ca. 14km N logging hut	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Kroombit Tops, nr campsite, Ubobo Rd	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Kroombit Tops, Upp Dry Ck, 45km SSW Calliope	24° 22' South	-24.36666667	151° 1' East	151.0166667	09 Dec 1983-19 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Kroombit Tops	24° 20' South	-24.33333333	150° 59' East	150.9833333	27 Dec 1987-08 Jan 1988	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Kroombit Tops, campsite, on Ubobo Rd	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		9-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	martini	Martin's Skink	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		9-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 49' South	-23.81666667	151° 9' 19" East	151.1552778	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		6-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		9-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111		25-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111		19-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Awoonga Dam and Calliope R	24° 13' 8" South	-24.21888889	151° 15' 25" East	151.2569444		8-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333		31-Jan-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Ferguson Cres., Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		15-Jul-94
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Granite Creek, second crossing	24° 33' South	-24.55	151° 25' East	151.4166667		24-Jan-76
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		

Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Bulburin SF, 32km SW Miriam Vale	24° 31' South	-24.51666667	151° 29' East	151.4833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Kroombit Tops, campsite	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Bulburin SF, Granite Ck	24° 35' South	-24.58333333	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Bulburin SF, Site 1a	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Bulburin SF, 9km E Forestry Stn	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Bulburin SF, Granite Ck tributary Xing	24° 35' South	-24.58333333	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		8-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	quoyii	Eastern Water Skink	Kroombit Tops, Scientific Area 47	24° 22' South	-24.36666667	151° 2' East	151.0333333		10-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	sokosoma		Theodore State Forest, 8.47km NNE of Ghinghinda	25° 1' 52" South	-25.03111111	149° 46' 3" East	149.7675		19-Jan-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	sokosoma		Mount Larcom	23° 48' South	-23.79842309	151° 5' East	151.0843939		2009
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	sokosoma		Blackdown Tableland, NP181	23° 47' 52" South	-23.79777778	149° 41' 10" East	149.6861111		21-Nov-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	sokosoma		Rundle Ra	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Boyne Valley	24° 35' South	-24.58333333	151° 15' 18.6" East	151.2551667		16-Mar-06
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Mount Robert summit, adjacent to Dawes NP	24° 30' 34" South	-24.50944444	151° 16' 29" East	151.2747222		14-Feb-04
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Blackmans Gap	24° 27' South	-24.44841937	151° 26' East	151.4343937		2009
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Tannum Sands	23° 56' South	-23.93175433	151° 22' East	151.3677241		2009
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Kalpowar	24° 41' South	-24.68175306	151° 18' East	151.3010641		2009
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Phillipies Landing Rd, 1 km S, Targinie	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115		16-Jul-10
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Kroombit Tops	24° 24' 52" South	-24.41444444	151° 2' 15" East	151.0375		13-Dec-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 8' East	151.1333333		14-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Hurdle Gully, 10.8km WSW Monto	24° 54' South	-24.9	151° 1' East	151.0166667	20 Dec 1997-26 Apr 1998	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Camboon SF, via Cracow	25° 6' 54" South	-25.115	150° 32' 11" East	150.5363889		3-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Gladstone, Sthern pacific Petroleum Site	23° 46' 15" South	-23.77083333	151° 7' 43" East	151.1286111		24-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		9-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		8-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Southertn Pacific Petroleum	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		27-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Southern Pacific Petroleum Stage 2 site	23° 48' 7" South	-23.80194444	151° 9' 7" East	151.1519444	01 Apr 1999-30 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Southern Pacific Petroleum Stage 2 site	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	01 Apr 1999-30 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Morinish SF 878	23° 19' 4" South	-23.31777778	150° 8' 14" East	150.1372222		16-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Dawson River, 'Roxborough', north of Baralaba	23° 53' 43" South	-23.89527778	149° 50' 9" East	149.8358333		11-Mar-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Granite Creek, second crossing	24° 33' South	-24.55	151° 25' East	151.4166667		24-Jan-76
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Granite Creek, second crossing	24° 33' South	-24.55	151° 25' East	151.4166667		25-Jan-76
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Rockhampton, Botanic Gardens	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Bulburin SF, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333		26-Mar-77
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Rundle Ra, clearing adjoining Site 5	23° 40' South	-23.66666667	151° East	151		
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Kroombit Tops SF, 30km WSW Nagoorin, via Monto	24° 25' South	-24.41666667	151° 2' East	151.0333333		7-Mar-81
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Kroombit Tops SF, 30km WSW Nagoorin, via Monto	24° 25' South	-24.41666667	151° 2' East	151.0333333		6-Mar-81
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Kroombit Tops, Upp Dry Ck	24° 22' South	-24.36666667	150° 59' East	150.9833333		13-Dec-83
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Bulburin SF, Site 1a	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Double Ck, nr Westwood	23° 59' South	-23.98333333	150° 13' East	150.2166667		
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667		12-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Bania SF 54, Monto	24° 57' South	-24.95	151° 30' East	151.5		27-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333		10-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Bania SF 54, via Monto	24° 57' South	-24.95	151° 30' East	151.5		5-Nov-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Eulamprus	tenuis	Bar-sided Skink	Bulburin SF	24° 32' South	-24.53333333	151° 30' East	151.5		16-Dec-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Gladstone, W	23° 45' 52" South	-23.76286749	151° 6' 15" East	151.1052267	17 Feb 2007-10 May 2007	
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1		18-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1		14-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1		22-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		23-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Stanwell Power Stn Site	23° 31' 30" South	-23.525	150° 20' 10" East	150.3361111		30-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Gladstone, Sthern pacific Petroleum Site	23° 46' 15" South	-23.77083333	151° 7' East	151.1166667		26-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Gladstone, Sthern pacific Petroleum Site	23° 46' 15" South	-23.77083333	151° 7' East	151.1166667		22-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Gladstone area, Southern Pacific Petroleum Stage 2	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Rockhampton area	23° 19' 9" South	-23.31916667	150° 18' 24" East	150.3066667	01 Oct 1999-31 Oct 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Rockhampton	23° 21' South	-23.35	150° 32' 30" East	150.5416667		10-Oct-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Mt. Gavial, 3kms SSE	23° 37' South	-23.61666667	150° 29' East	150.4833333	18 Dec 1998-14 Mar 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Granite Ck, second crossing	24° 33' South	-24.55	151° 25' East	151.4166667		25-Jan-76
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Raglan	23° 43' South	-23.71666667	150° 49' East	150.8166667		
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Mount Morgan	23° 38' 6" South	-23.635	150° 21' 44" East	150.3622222		20-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Mount Morgan	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222		21-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Mount Morgan	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222		19-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		29-Mar-75
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Rundle Ra, Site 5	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Rundle Ra, Site 5a	23° 39' South	-23.65	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Mt Archer, Frenchville, nr Rockhampton	23° 20' South	-23.33333333	150° 35' East	150.5833333	18 Jul 1990-22 Oct 1990	
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Mt Archer	23° 20' South	-23.33333333	150° 35' East	150.5833333	04 Sep 1991-11 Nov 1991	
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Mt Coulston SF 471	24° 11' South	-24.18333333	151° 26' East	151.4333333		14-May-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Rundle Ra	23° 39' South	-23.65	150° 59' East	150.9833333		27-Oct-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Glaphyromorphus	punctulatus	Fine-spotted Mulch-skink	Separation Stn, ca.12.8km NE Duaringa	23° 35' South	-23.58333333	149° 47' East	149.7833333		12-Jun-94
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis			Bulburin SF, Granite Ck, via Many Peaks	24° 35' South	-24.58333333	151° 29' East	151.4833333	29 Dec 1974-03 May 1975	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Boyne Valley	24° 35' South	-24.58333333	151° 15' 18.6" East	151.2551667		12-Mar-06
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Mount Robert summit, adjacent to Dawes NP	24° 30' 34" South	-24.50944444	151° 16' 29" East	151.2747222		14-Feb-04
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF	24° 32' South	-24.53175284	151° 23' East	151.384395		12-Dec-94
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, Bobby Ra	24° 31' South	-24.51508557	151° 29' East	151.4843934		18-Jan-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Many Peaks, Timber Reserve 353	24° 32' 18" South	-24.53833333	151° 16' 21" East	151.2725	07 Jul 1997-11 Jul 1997	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1		20-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Targinie, via Gladstone, nr gully	23° 49' South	-23.81666667	151° 6' East	151.1		17-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1		16-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Cania Gorge NP	24° 43' 2" South	-24.71722222	150° 59' 21" East	150.9891667		16-Mar-99

Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Mt Robert, via Builyan	24° 31' South	-24.51508696	151° 16' East	151.26773	5-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	9-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	2-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	11-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, Granite Ck, via Many Peaks	24° 35' South	-24.58333333	151° 29' East	151.4833333	29 Dec 1974-03 May 1975
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, top of range	24° 34' South	-24.56666667	151° 29' East	151.4833333	30 Dec 1974-03 May 1975
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin Barracks, via Builyan	24° 32' South	-24.53333333	151° 28' East	151.4666667	02 Dec 1989-16 Jan 1990
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Cania Gorge NP, Spring Ck branch	24° 38' South	-24.6317552	150° 59' East	150.9844017	01 Nov 1999-30 Nov 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Awoonga Dam, from Boyne Valley to Miriam Vale	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889	2-Apr-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Awoonga Dam, Boyne R. Valley-Miriam Vale	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Awoonga Dam, Boyne R. Valley-Miriam Vale	24° 2' South	-24.03333333	151° 19' 5" East	151.3180556	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Boyne Valley & Awoonga	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889	21-Nov-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Boyne Valley & Awoonga	24° 2' South	-24.03333333	151° 19' 5" East	151.3180556	29-Nov-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Awoonga Dam	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889	10-May-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, Granite Ck, via Many Peaks	24° 35' South	-24.58333333	151° 29' East	151.4833333	05 Oct 1974-29 Dec 1974
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, top of ra	24° 34' South	-24.56666667	151° 29' East	151.4833333	30 Dec 1974-03 May 1975
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, top of ra	24° 34' South	-24.56666667	151° 29' East	151.4833333	05 Oct 1974-30 Dec 1974
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, Granite Ck, 13k SE Miriam Vale	24° 22' South	-24.36666667	151° 29' East	151.4833333	15 May 1985-18 May 1985
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, Site 1a	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, adjoining Site 1a	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, Granite Ck, 2nd Xing	24° 31' South	-24.51666667	151° 29' East	151.4833333	24-Jan-76
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, 9 km E Forestry Stn	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin Barracks, via Builyan	24° 32' South	-24.53333333	151° 28' East	151.4666667	Indeterminable {02 Dec 1990 - 16 Jan 1990}
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Mt Larcom, nr Gladstone	23° 48' South	-23.8	151° 5' East	151.0833333	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Mt Larcom	23° 49' South	-23.81666667	151° 5' East	151.0833333	12-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Mt Coulston SF 471	24° 11' South	-24.18333333	151° 26' East	151.4333333	14-May-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bania SF 54, Monto	24° 57' South	-24.95	151° 30' East	151.5	26-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bania SF 54, Monto	24° 57' South	-24.95	151° 30' East	151.5	1-May-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Boat Ck, via Gladstone	23° 48' South	-23.8	151° 4' East	151.0666667	3-Jul-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF 391	24° 35' South	-24.58333333	151° 30' East	151.5	25-Jun-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF 391, Boyne R	24° 31' South	-24.51666667	151° 29' East	151.4833333	25-Jun-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bania SF 54, via Monto	24° 57' South	-24.95	151° 30' East	151.5	5-Nov-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF, Dawes Ra	24° 6' South	-24.1	150° 30' East	150.5	14-Dec-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF	24° 32' South	-24.53333333	151° 30' East	151.5	15-Dec-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin	24° 32' South	-24.53333333	151° 30' East	151.5	15-Dec-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin barracks via Builyan	24° 32' South	-24.53333333	151° 30' East	151.5	02 Dec 1989-16 Jan 1990
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	adonis		Bulburin SF	24° 32' South	-24.53333333	151° 23' East	151.3833333	12-Dec-94
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	amicula	Secretive Skink	Kroombit Tops SF	24° 28' 28" South	-24.47444444	150° 57' 23" East	150.9563889	29-Aug-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	amicula	Secretive Skink	Hurdle Gully, 10.8km WSW Monto	24° 54' South	-24.9	151° 1' East	151.0166667	20 Dec 1997-21 Dec 1997
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	amicula	Secretive Skink	Hurdle Gully, 13kms WSW Monto	24° 54' South	-24.9	151° East	151	23 Sep 1997-20 Dec 1997
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	amicula	Secretive Skink	Kroombit Tops, N Escarpment,ca. 14km N logging hut	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	amicula	Secretive Skink	Kroombit Tops, N Escarpment	24° 22' South	-24.36666667	150° 59' East	150.9833333	11 Dec 1983-18 Dec 1983
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	amicula	Secretive Skink	Kroombit Tops, Dawes Ra	24° 22' South	-24.36666667	151° 1' East	151.0166667	11 Dec 1983-18 Dec 1983
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	amicula	Secretive Skink	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	9-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	amicula	Secretive Skink	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667	12-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	amicula	Secretive Skink	Pine Mtn, nr Kalpowar	24° 39' South	-24.65	151° 12' East	151.2	2-Jul-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	amicula	Secretive Skink	Bania SF 54, via Monto	24° 57' South	-24.95	151° 30' East	151.5	5-Nov-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	couperi	Couper's Skink	Logger site, Boyne Valley	24° 24' 33" South	-24.40916667	151° 2' 47" East	151.0463889	16-Dec-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	couperi	Couper's Skink	North Branch of Degalgil Creek, head of, Kroombit Tops NP, SW of Gladstone	24° 22' 10" South	-24.36944444	151° 1' 58" East	151.0327778	23-Apr-04
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	couperi	Couper's Skink	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	couperi	Couper's Skink	Kroombit Tops, 45 km SSW Calliope	24° 22' South	-24.36666667	151° 1' East	151.0166667	09 Dec 1983-19 Dec 1983
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	couperi	Couper's Skink	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	couperi	Couper's Skink	Kroombit Tops, Ubobo Rd	24° 22' South	-24.36666667	151° 1' East	151.0166667	22 Feb 1982-26 Feb 1982
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	couperi	Couper's Skink	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	couperi	Couper's Skink	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	8-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	couperi	Couper's Skink	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	11-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	couperi	Couper's Skink	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	10-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	couperi	Couper's Skink	Bania SF 54, via Monto	24° 57' South	-24.95	151° 30' East	151.5	5-Nov-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Mount Robert southern slopes, Dawes NP	24° 30' 53" South	-24.51472222	151° 16' 38" East	151.2772222	14-Feb-04
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops SF	24° 28' 20" South	-24.47222222	150° 58' 55" East	150.9819444	27-Aug-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Gladstone, Sthern Pacific Petroleum Site	23° 48' 59" South	-23.81638889	151° 9' 17" East	151.1547222	21-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Calliope R, to W of Banaraby	23° 59' 15" South	-23.9875	151° 6' 4" East	151.1011111	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Calliope R, to W of Banaraby	23° 59' 22" South	-23.98944444	151° 1' 24" East	151.0233333	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Gladstone area, Southern Pacific Petroleum Stage 2	23° 49' South	-23.81666667	151° 9' 19" East	151.1552778	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	12-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	11-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111	22-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Awoonga Dam and Calliope R	24° 13' 35" South	-24.22638889	151° 16' 2" East	151.2672222	7-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Awoonga Dam and Calliope R	24° 4' 33" South	-24.07583333	150° 50' 15" East	150.8375	9-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Awoonga Dam and Calliope R	24° 13' 35" South	-24.22638889	151° 16' 7" East	151.2686111	12-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Southern Pacific Petroleum Stage 2 site	23° 48' 7" South	-23.80194444	151° 9' 7" East	151.1519444	01 Apr 1999-30 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Rockhampton area	23° 19' 9" South	-23.31916667	150° 18' 24" East	150.3066667	01 Oct 1999-31 Oct 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Awoonga Dam, Boyne Valley to Miriam Vale	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333	29-Mar-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Dawson River, 'Roxborough', north of Baralaba	23° 53' 43" South	-23.89527778	149° 50' 9" East	149.8358333	11-Mar-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Awoonga Dam, Boyne R. Valley-Miriam Vale	23° 59' 22" South	-23.98944444	151° 7' 25" East	151.1236111	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Boyne Valley & Awoonga	24° 22' 38" South	-24.37722222	151° 19' 8" East	151.3188889	20-Nov-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Boyne Valley & Awoonga	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889	22-Nov-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Bulburin SF, Granite Ck, 13 km SE Miriam Vale, inside boundary of old Warro Stn	24° 22' South	-24.36666667	151° 29' East	151.4833333	15 May 1985-18 May 1985
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Granite Ck, 2nd crossing	24° 33' South	-24.55	151° 25' East	151.4166667	8-Jan-76
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Rockhampton, Botanic Gardens	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Mt Barney	23° 33' South	-23.55	151° 9' East	151.15	7-May-62

Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Boat Ck, Curtis Is	23° 37' 30" South	-23.625	151° 7' 30" East	151.125		11-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Bulburin SF, top of ra	24° 34' South	-24.56666667	151° 29' East	151.4833333	05 Oct 1974-30 Dec 1974	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Bulburin SF, Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Gladstone area	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops SF, 30km WSW Nagoorin, via Monto	24° 25' South	-24.41666667	151° 2' East	151.0333333		5-Mar-81
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops, campsite, on Ubobo Rd	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops, campsite	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops, via Calliope, Dry Ck Escarpment	24° 22' South	-24.36666667	151° 1' East	151.0166667		23-Feb-84
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops, Lower Dry Ck, 45km SSW Calliope	24° 22' South	-24.36666667	151° 1' East	151.0166667	11 Dec 1983-18 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops, N Escarpment	24° 22' South	-24.36666667	150° 59' East	150.9833333	11 Dec 1983-18 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops, Dawes Ra	24° 22' South	-24.36666667	151° 1' East	151.0166667	11 Dec 1983-18 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops, Upp Kroombit Ck, 45km SSW Calliope	24° 27' South	-24.45	150° 52' East	150.8666667	12 Dec 1983-18 Dec 1983	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Bulburin SF, Granite Ck, 13k SE Miriam Vale	24° 22' South	-24.36666667	151° 29' East	151.4833333	15 May 1985-18 May 1985	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Struck Oil Rd, ca.8km NE Mt Morgan	23° 22' South	-23.36666667	150° 32' East	150.5333333		16-Mar-87
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops	24° 20' South	-24.33333333	150° 59' East	150.9833333	27 Dec 1987-08 Jan 1988	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Boat Ck, Curtis Is	23° 37' 30" South	-23.625	151° 7' 30" East	151.125		12-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops, Scientific Area 48	24° 22' South	-24.36666667	151° 2' East	151.0333333		8-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		10-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		9-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333		11-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Bania SF 54, Monto	24° 57' South	-24.95	151° 30' East	151.5		1-May-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Boat Ck, via Gladstone	23° 48' South	-23.8	151° 4' East	151.0666667		3-Jul-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Boyne Island	23° 51' 55" South	-23.86527778	151° 18' 24" East	151.3066667		
Herpetology/Vertebrates/Biodiversity	Scincidae	Lampropholis	delicata	Garden Skink	Rockampton, Lakes Creek Rd, Landfill	23° 22' South	-23.36666667	150° 32' East	150.5333333		20-Jul-95
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Brigalow Research Station, Turkey Lane	24° 48' 54" South	-24.815	149° 45' 8" East	149.7522222		15-Mar-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Brigalow Research Station, Turkey Lane	24° 48' 54" South	-24.815	149° 45' 8" East	149.7522222		13-Mar-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 6' East	151.1		14-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Targinie, via Gladstone, nr gully	23° 46' South	-23.76666667	151° 6' East	151.1		16-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		22-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		19-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Cania Gorge NP	24° 43' 41" South	-24.72805556	150° 58' 22" East	150.9727778		18-Mar-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Stanwell Power Stn Site	23° 30' 4" South	-23.50111111	150° 18' 52" East	150.3144444		24-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Gladstone, Sthern Pacific Petroleum Site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		22-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		5-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		8-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Southern Pacific Petroleum	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		19-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Awoonga Dam and Calliope R	24° 6' 37" South	-24.11027778	151° 14' 45" East	151.2458333		10-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Awoonga Dam and Calliope R	23° 52' 18" South	-23.87166667	151° 6' 4" East	151.1011111		11-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Southern Pacific Petroleum Stage 2 site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	01 Apr 1999-30 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Southern Pacific Petroleum, S2 site, via Gladstone	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145		24-Jun-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Brigalow Res. Stn, Site 5	24° 48' South	-24.8	149° 45' East	149.75	16 Dec 2000-28 May 2001	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Coominglah SF, nr Monto	24° 47' 57" South	-24.79916667	150° 55' 10" East	150.9194444		28-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Coominglah SF, nr Monto	24° 46' 22" South	-24.77277778	150° 57' 15" East	150.9541667		28-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Coominglah SF, nr Monto	24° 52' 54" South	-24.88166667	150° 56' 10" East	150.9361111		29-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Coominglah SF, nr Monto	24° 52' 17" South	-24.87138889	151° 1' 35" East	151.0263889		30-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Coominglah SF, nr Monto	24° 52' 25" South	-24.87361111	150° 57' 29" East	150.9580556		30-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Coominglah SF, nr Monto	24° 52' 54" South	-24.88166667	150° 56' 10" East	150.9361111		30-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Brigalow Res. Stn, site 14	24° 48' South	-24.8	149° 45' East	149.75	12 Oct 2001-13 Oct 2001	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Callide Mine, nr Biloela	24° 17' 49" South	-24.29694444	150° 36' 32" East	150.6088889		7-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Callide Mine, nr Biloela	24° 17' 57" South	-24.29916667	150° 36' 33" East	150.6091667		11-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Mount Morgan	23° 38' 37" South	-23.64361111	150° 22' 50" East	150.3805556		19-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Mount Morgan	23° 38' 15" South	-23.6375	150° 21' 20" East	150.3555556		21-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Mt Larcom	23° 49' South	-23.81666667	150° 59' East	150.9833333		7-Dec-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	fragilis	Eastern Mulch-slider	Dawson R, Newstella Xing, 24km S Theodore	24° 33' South	-24.55	149° 52' East	149.8666667	14 Aug 1976-21 Aug 1976	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lerista	punctatovittata	Eastern Robust Slider	Dawson Valley, Castle Ck	24° 50' South	-24.83333333	150° 20' East	150.3333333		
Herpetology/Vertebrates/Biodiversity	Scincidae	Liburnascincus	mundivensis	Outcrop Rainbow-skink	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		25-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Liburnascincus	mundivensis	Outcrop Rainbow-skink	Stanwell Power Stn, Buffer Zone	23° 31' South	-23.51666667	150° 20' East	150.3333333		18-Jul-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Liburnascincus	mundivensis	Outcrop Rainbow-skink	Stanwell Power Stn Buffer Zone	23° 31' South	-23.51666667	150° 20' East	150.3333333		22-Jul-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Liburnascincus	mundivensis	Outcrop Rainbow-skink	Marble Mt	23° 54' South	-23.9	150° 39' East	150.65		
Herpetology/Vertebrates/Biodiversity	Scincidae	Liburnascincus	mundivensis	Outcrop Rainbow-skink	Marble Mt	23° 54' South	-23.9	150° 39' East	150.65		28-Jan-91
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Boyne Valley	24° 35' South	-24.58333333	151° 15' 18.6" East	151.2551667		12-Mar-06
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone, W	23° 44' 25" South	-23.73870091	151° 5' 59" East	151.1007821	17 Feb 2007-10 May 2007	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone, W	23° 44' 52" South	-23.74620079	151° 6' 59" East	151.1174486	17 Feb 2007-10 May 2007	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone, W	23° 45' 30" South	-23.75675642	151° 6' 5" East	151.1024489	17 Feb 2007-10 May 2007	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone, W	23° 47' 6" South	-23.78342278	151° 8' 19" East	151.1396708	17 Feb 2007-10 May 2007	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone, W	23° 45' 52" South	-23.76286749	151° 6' 15" East	151.1052267	17 Feb 2007-10 May 2007	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Pheasant Ck, W of Rockhampton	23° 46' South	-23.76509572	150° 9' East	150.1510738		30-Sep-93
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1		22-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333		16-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333		13-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333		18-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Hurdle Gully, 14.8km WSW Monto	24° 55' South	-24.91666667	150° 59' East	150.9833333	23 Sep 1997-20 Dec 1997	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Stanwell Power Stn Buffer Zone	23° 31' South	-23.51666667	150° 20' East	150.3333333		17-Jul-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Neerkol Ck	23° 29' 44" South	-23.49555556	150° 18' 7" East	150.3019444		27-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Stanwell Power Stn Site	23° 31' 25" South	-23.52361111	150° 19' 17" East	150.3213889		30-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Stanwell Power Stn Site, Neerkol Ck	23° 29' 58" South	-23.49944444	150° 18' 25" East	150.3069444		24-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Stanwell Power Stn Site, Neerkol Ck	23° 29' 58" South	-23.49944444	150° 18' 25" East	150.3069444		29-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Stanwell Power Stn Site, Quarry Ck	23° 31' 51" South	-23.53083333	150° 19' 35" East	150.3263889		24-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Stanwell Power Stn Site	23° 31' South	-23.51666667	150° 20' East	150.3333333		5-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone, Sthern Pacific Petroleum Site	23° 48' 7" South	-23.80194444	151° 9' 6" East	151.1516667		21-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone, Sthern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444		21-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone, Sthern Pacific Petroleum Site	23° 44' 50" South	-23.74722222	151° 6' 32" East	151.1088889		22-Nov-98

Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone, Sthern Pacific Petroleum Site	23° 45' 16" South	-23.75444444	151° 6' 52" East	151.1144444	21-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone, Sthern Pacific Petroleum Site	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	5-Nov-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone/Mt Larcon area	23° 48' 8" South	-23.80222222	151° 9' 8" East	151.1522222	23-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Calliope R, to W of Banaraby	23° 59' 15" South	-23.9875	151° 6' 4" East	151.1011111	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone area, Southern Pacific Petroleum Stage 2	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone area, Southern Pacific Petroleum Stage 2	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	2-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	6-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	3-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Southertn Pacific Petroleum	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	19-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Southern Pacific Petroleum	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	19-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Southern Pacific Petroleum, Boat Ck	23° 49' South	-23.81666667	151° 9' 13" East	151.1536111	19-Jan-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam and Calliope R	24° 13' 8" South	-24.21888889	151° 15' 25" East	151.2569444	6-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam and Calliope R	24° 13' 8" South	-24.21888889	151° 15' 25" East	151.2569444	11-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam and Calliope R	24° 13' 35" South	-24.22638889	151° 16' 2" East	151.2672222	7-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam and Calliope R	24° 13' 8" South	-24.21888889	151° 15' 25" East	151.2569444	11-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam and Calliope R	24° 13' 8" South	-24.21888889	151° 15' 25" East	151.2569444	9-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Southern Pacific Petroleum Stage 2 site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	01 Apr 1999-30 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Morinish SF 878	23° 18' 55" South	-23.31527778	150° 8' 20" East	150.1388889	15-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Morinish SF 878	23° 18' 41" South	-23.31138889	150° 8' 47" East	150.1463889	13-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Southern Pacific Petroleum, S2 site, via Gladstone	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	26-Jun-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Southern Pacific Petroleum, S2 site, via Gladstone	23° 49' South	-23.81666667	151° 9' 19" East	151.1552778	23-Jun-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Theodore, Brigalow Research Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	15-Sep-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Theodore, Brigalow Research Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	15-Sep-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Theodore, Brigalow Research Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	16-Sep-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Rockhampton area	23° 19' 9" South	-23.31916667	150° 18' 24" East	150.3066667	01 Oct 1999-31 Oct 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Brigalow Res. Stn, via Theodore	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	23-Jan-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Brigalow Res. Stn, via Theodore	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	27-Jan-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam, Boyne Valley to Miriam Vale	23° 59' 16" South	-23.98777778	151° 6' 4" East	151.1011111	29-Mar-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam, Boyne R Valley-Miriam Vale	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	29-Mar-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam, Boyne R Valley-Miriam Vale	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	1-Apr-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Mt. Gavial, 3kms SSE	23° 37' South	-23.61666667	150° 29' East	150.4833333	18 Dec 1998-14 Mar 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam, Boyne R. Valley-Miriam Vale	23° 59' 16" South	-23.98777778	151° 6' 4" East	151.1011111	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Graham Creek, Curtis Is	23° 43' 30" South	-23.725	151° 13' 30" East	151.225	8-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Brigalow Res. Stn	24° 49' South	-24.81666667	149° 45' East	149.75	16 Dec 2000-28 Mar 2001
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Coominglah SF, nr Monto	24° 54' 4" South	-24.90111111	151° 1' 5" East	151.0180556	30-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Coominglah SF, nr Monto	24° 53' 51" South	-24.8975	151° 2' 21" East	151.0391667	29-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Boyne Valley & Awoonga	24° 2' South	-24.03333333	151° 19' 5" East	151.3180556	21-Nov-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Boyne Valley & Awoonga	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889	23-Nov-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Boyne Valley & Awoonga	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889	28-Nov-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Bruce Hwy, 3km N of Munduran t'off	24° 55' South	-24.91666667	151° 22' East	151.3666667	25-Jan-76
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Bruce Hwy, 3km N of Munduran t'off	24° 55' South	-24.91666667	151° 22' East	151.3666667	25-Jan-76
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam	24° 2' South	-24.03333333	151° 19' East	151.3166667	9-May-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Awoonga Dam	24° 2' South	-24.03333333	151° 19' East	151.3166667	11-May-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Callide Mine, nr Biloela	24° 17' 49" South	-24.29694444	150° 36' 32" East	150.6088889	7-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Mt Larcom, SF 60	23° 49' South	-23.81666667	151° 5' East	151.0833333	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Hobble Gully Landing, W of Curtis Is	23° 42' 30" South	-23.70833333	151° 14' 30" East	151.2416667	6-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Curtis Is, Monte Christo Holding	23° 36' 30" South	-23.60833333	151° 10' 30" East	151.175	6-May-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Rundle Ra Site, clearing adjoining	23° 40' South	-23.66666667	151° East	151	Indeterminable {25 Mar 1978 - 31 Mar 1975}
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Rundle Ra, Site 5	23° 39' South	-23.65	150° 59' East	150.9833333	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Rundle Ra, crest	23° 39' South	-23.65	150° 59' East	150.9833333	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Gladstone area	23° 51' South	-23.85	151° 16' East	151.2666667	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Dawson R Xing, 1.7km N, at Baralaba	24° 8' South	-24.13333333	149° 48' East	149.8	26-Aug-83
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Struck Oil Rd, ca.8km NE Mt Morgan	23° 22' South	-23.36666667	150° 32' East	150.5333333	16-Mar-87
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Coowonga	23° 18' South	-23.3	150° 44' East	150.7333333	20 Apr 1990-18 Jul 1990
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Coowonga	23° 18' South	-23.3	150° 44' East	150.7333333	23-Oct-90
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Bouldercombe	23° 32' South	-23.53333333	150° 26' East	150.4333333	18 Jul 1990-23 Oct 1990
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Dan Dan SF	24° 9' South	-24.15	151° 5' East	151.0833333	20-Mar-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Boat Ck, via Gladstone	23° 48' South	-23.8	151° 4' East	151.0666667	3-Jul-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Rundle Ra	23° 39' South	-23.65	150° 59' East	150.9833333	27-Oct-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Rundle Ra	23° 39' South	-23.65	150° 59' East	150.9833333	26-Oct-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Mt Castletower NP	24° 10' South	-24.16666667	151° 20' East	151.3333333	4-Nov-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Curtis Is	23° 35' South	-23.58333333	151° 11' East	151.1833333	13-Feb-93
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Curtis Is	23° 35' South	-23.58333333	151° 11' East	151.1833333	11-Feb-93
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Curtis Is	23° 35' South	-23.58333333	151° 11' East	151.1833333	10-Feb-93
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Dan Dan Scrub SF53	24° 9' South	-24.15	151° 5' East	151.0833333	17-Aug-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Glenmore, Rockhampton	23° 20' South	-23.33333333	150° 30' East	150.5	21 Mar 1991-03 Apr 1991
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Pheasant Ck, Rockhampton area	23° 50' South	-23.83333333	150° 4' East	150.0666667	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Boyne Island	23° 56' South	-23.93333333	151° 20' 41" East	151.3447222	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Boyne Island	23° 56' South	-23.93333333	151° 21' 41" East	151.3613889	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Boyne Island	23° 56' South	-23.93333333	151° 20' 48" East	151.3466667	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Boyne Island	23° 55' 15" South	-23.92083333	151° 20' 10" East	151.3361111	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Boyne Island	23° 55' 23" South	-23.92305556	151° 20' 41" East	151.3447222	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Boyne Island	23° 55' 15" South	-23.92083333	151° 20' 10" East	151.3361111	
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Pleasant Creek, Wowan	23° 55' South	-23.91666667	150° 12' East	150.2	25-Jan-94
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Wowan, Pheasant Ck	23° 46' South	-23.76666667	150° 9' East	150.15	3-Sep-93
Herpetology/Vertebrates/Biodiversity	Scincidae	Lygisaurus	foliorum	Burnett's Skink	Separation Stn, ca.12.8km NE Duaringa	23° 35' South	-23.58333333	149° 47' East	149.7833333	12-Jun-94
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 8' East	151.1333333	18-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	21-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Calliope R, to W of Banaraby	23° 58' 36" South	-23.97666667	151° 3' 27" East	151.0575	12 Feb 1999-19 Feb 1999

Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Gladstone area, Southern Pacific Petroleum Stage 2	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Awoonga Dam and Calliope R	23° 58' 36" South	-23.97666667	151° 3' 28" East	151.0577778	15-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Awoonga Dam and Calliope R	23° 58' 36" South	-23.97666667	151° 3' 28" East	151.0577778	13-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Boyne Island	23° 56' South	-23.93175454	151° 20' East	151.3343913	24-Jan-95
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Gladstone, Southern Pacific Petroleum	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	25-Jun-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Awoonga Dam, Boyne Valley to Miriam Vale	23° 59' 23" South	-23.98972222	151° 7' 25" East	151.1236111	1-Apr-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Burnley Rd, 10kms E, SF44	25° 2' 6" South	-25.035	149° 37' 45" East	149.6291667	9-Mar-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Brigalow Res. Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	27-Sep-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Callide Mine, nr Biloela	24° 17' 49" South	-24.29694444	150° 36' 32" East	150.6088889	12-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Callide Mine, nr Biloela	24° 19' 35" South	-24.32638889	150° 36' 56" East	150.6155556	16-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	greyii	Common Dwarf Skink	Boyne Island	23° 55' 23" South	-23.92305556	151° 20' 41" East	151.3447222	
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Boyne Valley	24° 35' South	-24.58333333	151° 15' 18.6" East	151.2551667	18-Mar-06
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Coominglah SF, W of Monto, 8km S Mt Margaret	24° 54' 30" South	-24.90833333	150° 53' East	150.8833333	10-Sep-97
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	20-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	17-Feb-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Hurdle Gully, 14.8km WSW Monto	24° 55' South	-24.91666667	150° 59' East	150.9833333	23 Sep 1997-20 Dec 1997
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Stanwell Power Stn Site, Woodlands	23° 31' 30" South	-23.525	150° 20' 10" East	150.3361111	24-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Neerkol Ck	23° 29' 44" South	-23.49555556	150° 18' 7" East	150.3019444	24-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Neerkol Ck	23° 29' 44" South	-23.49555556	150° 18' 7" East	150.3019444	23-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Stanwell Power Stn Site	23° 31' 25" South	-23.52361111	150° 19' 17" East	150.3213889	30-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Stanwell Power Stn Site	23° 31' South	-23.51666667	150° 20' East	150.3333333	
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	09 Feb 1999-12 Feb 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	13-Dec-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Awoonga Dam and Calliope R	24° 13' 8" South	-24.21888889	151° 15' 25" East	151.2569444	11-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Awoonga Dam and Calliope R	24° 4' 33" South	-24.07583333	150° 50' 15" East	150.8375	11-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Morinish SF 878	23° 18' 55" South	-23.31527778	150° 8' 20" East	150.1388889	13-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Awoonga Dam, Boyne Valley to Miriam Vale	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333	29-Mar-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Perch camping & Water Reserve, N of Moura	24° 29' 14" South	-24.48722222	149° 50' 12" East	149.8366667	3-Jun-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Awoonga Dam, Boyne R Valley-Miriam Vale	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Coominglah SF, nr Monto	24° 47' 57" South	-24.79916667	150° 55' 10" East	150.9194444	28-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Coominglah SF, nr Monto	24° 52' 54" South	-24.88166667	150° 56' 10" East	150.9361111	29-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Mount Larcom	23° 49' South	-23.81666667	150° 59' East	150.9833333	3-Feb-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Mt Morgan Gold Mine	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222	18-Jul-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Mt Morgan Gold Mine	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222	19-Jul-02
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Callide Mine, nr Biloela	24° 17' 49" South	-24.29694444	150° 36' 32" East	150.6088889	7-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Callide Mine, nr Biloela	24° 19' 35" South	-24.32638889	150° 36' 56" East	150.6155556	16-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Mount Morgan	23° 38' 37" South	-23.64361111	150° 22' 50" East	150.3805556	17-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Menetia	timlowi	Dwarf Litter-skink	Mount Morgan	23° 38' 37" South	-23.64361111	150° 22' 50" East	150.3805556	21-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	boulengeri	South-eastern Morethia Skink	Wowan, Pheasant Ck	23° 55' South	-23.91509508	150° 12' East	150.2010742	9-Jun-94
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	boulengeri	South-eastern Morethia Skink	Pheasant Ck, W of Rockhampton	23° 46' South	-23.76509572	150° 9' East	150.1510738	30-Sep-93
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	boulengeri	South-eastern Morethia Skink	Stanwell Power Stn Site, Woodlands	23° 31' 30" South	-23.525	150° 20' 10" East	150.3361111	29-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	boulengeri	South-eastern Morethia Skink	Theodore, Brigalow Research Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	18-Sep-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	boulengeri	South-eastern Morethia Skink	Baralaba, 3km NE, (road verge)	24° 9' 14" South	-24.15388889	149° 49' 26" East	149.8238889	31-May-00
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	boulengeri	South-eastern Morethia Skink	Gibihi Rd & Theodore-Moura Rd, 3 km S of junction	24° 40' South	-24.66666667	150° East	150	28-Aug-83
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	boulengeri	South-eastern Morethia Skink	Dawson R Xing, 1.7km N, at Baralaba	24° 8' South	-24.13333333	149° 48' East	149.8	26-Aug-83
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Callide Range	24° 15' South	-24.24842503	150° 37' East	150.6177374	Nov-07
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Raglan	23° 39' 43" South	-23.66194444	150° 53' 42" East	150.895	14 Dec 2011-22 Dec 2011
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Wowan, Pheasant Ck	23° 55' South	-23.91509508	150° 12' East	150.2010742	9-Jun-94
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333	15-Jan-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Stanwell Power Stn Site, Neerkol Ck	23° 29' 58" South	-23.49944444	150° 18' 25" East	150.3069444	29-Oct-98
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Awoonga Dam and Calliope R	24° 6' 37" South	-24.11027778	151° 14' 45" East	151.2458333	10-Apr-99
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Brooms Beach, Curtis I	23° 36' 30" South	-23.60833333	151° 13' 30" East	151.225	9-Mar-74
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Coominglah SF, nr Monto	24° 47' 57" South	-24.79916667	150° 55' 10" East	150.9194444	28-Aug-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Callide Mine, nr Biloela	24° 17' 49" South	-24.29694444	150° 36' 32" East	150.6088889	12-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Callide Mine, nr Biloela	24° 19' 35" South	-24.32638889	150° 37' 56" East	150.6322222	13-Apr-05
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Mount Morgan	23° 38' 17" South	-23.63805556	150° 21' 46" East	150.3627778	20-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Mount Morgan	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222	19-Feb-03
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Builyan to Monto, on rd	24° 55' South	-24.91666667	151° 4' East	151.0666667	
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Mt Larcom, SF 60	23° 49' South	-23.81666667	151° 5' East	151.0833333	
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Gladstone area	23° 51' South	-23.85	151° 16' East	151.2666667	
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Fairybower Rd, ca.8-10km W Rockhampton	23° 23' South	-23.38333333	150° 25' East	150.4166667	15-Mar-87
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Bouldercombe	23° 32' South	-23.53333333	150° 26' East	150.4333333	19 Jul 1990-22 Oct 1990
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Pheasant Ck, Rockhampton area	23° 50' South	-23.83333333	150° 4' East	150.0666667	
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Boyne Island	23° 55' 23" South	-23.92305556	151° 20' 41" East	151.3447222	
Herpetology/Vertebrates/Biodiversity	Scincidae	Morethia	taeniopleura	North-eastern Firetail Skink	Boyne Island	23° 55' 20" South	-23.92222222	151° 20' 20" East	151.3388889	
Herpetology/Vertebrates/Biodiversity	Scincidae	Ophioscincus	cooloolensis	Cooloola Snake-skink	Kroombit Tops, Kroombit Ck	24° 27' South	-24.45	150° 52' East	150.8666667	20-Jan-82
Herpetology/Vertebrates/Biodiversity	Scincidae	Ophioscincus	cooloolensis	Cooloola Snake-skink	Aldoga, Gladstone	23° 48' South	-23.8	151° 4' East	151.0666667	3-Jul-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ophioscincus	ophioscincus	Yolk-bellied Snake-skink	Bulburin State Forest	24° 31' 47.111" South	-24.52975306	151° 28' 41.7" East	151.47825	24-Apr-01
Herpetology/Vertebrates/Biodiversity	Scincidae	Ophioscincus	ophioscincus	Yolk-bellied Snake-skink	Bulburin Forestry Camp, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333	02 Apr 1972-05 Apr 1972
Herpetology/Vertebrates/Biodiversity	Scincidae	Ophioscincus	ophioscincus	Yolk-bellied Snake-skink	Bulburin SF, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333	
Herpetology/Vertebrates/Biodiversity	Scincidae	Ophioscincus	ophioscincus	Yolk-bellied Snake-skink	Bulburin SF, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333	26-Mar-77
Herpetology/Vertebrates/Biodiversity	Scincidae	Ophioscincus	ophioscincus	Yolk-bellied Snake-skink	Bulburin SF, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333	26 Mar 1977-27 Mar 1977
Herpetology/Vertebrates/Biodiversity	Scincidae	Ophioscincus	ophioscincus	Yolk-bellied Snake-skink	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Scincidae	Ophioscincus	ophioscincus	Yolk-bellied Snake-skink	Bulburin SF, Site 1a	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Scincidae	Ophioscincus	ophioscincus	Yolk-bellied Snake-skink	Bulburin SF 391, Dawes Ra	24° 35' South	-24.58333333	151° 30' East	151.5	25-Jun-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Ophioscincus	ophioscincus	Yolk-bellied Snake-skink	Bulburin SF 391, Boyne R	24° 31' South	-24.51666667	151° 29' East	151.4833333	25-Jun-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Saiphos	equalis	Three-toed Skink	Kroombit Tops, ca.1.5km E campsite	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982
Herpetology/Vertebrates/Biodiversity	Scincidae	Saiphos	equalis	Three-toed Skink	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983
Herpetology/Vertebrates/Biodiversity	Scincidae	Saiphos	equalis	Three-toed Skink	Kroombit Tops, via Gladstone	24° 22' South	-24.36666667	150° 59' East	150.9833333	8-Oct-78
Herpetology/Vertebrates/Biodiversity	Scincidae	Saiphos	equalis	Three-toed Skink	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	9-Apr-92
Herpetology/Vertebrates/Biodiversity	Scincidae	Tiliqua	scincoides	Eastern Blue-tongue Lizard	Cammoo Caves, via Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	

Herpetology/Vertebrates/Biodiversity	Agamidae	Amphibolurus	burnsi	Burns' Dragon	Brigalow Res. Stn	24° 48' 11" South	-24.80305556	149° 47' 30" East	149.7916667	11-Mar-05
Herpetology/Vertebrates/Biodiversity	Agamidae	Amphibolurus	burnsi	Burns' Dragon	Theodore, Brigalow Research Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	21-Sep-99
Herpetology/Vertebrates/Biodiversity	Agamidae	Amphibolurus	burnsi	Burns' Dragon	Moura	24° 34' South	-24.56666667	149° 59' East	149.9833333	
Herpetology/Vertebrates/Biodiversity	Agamidae	Chlamydosaurus	kingii	Frilled Lizard	Gladstone area, Southern Pacific Petroleum Stage 2	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Agamidae	Chlamydosaurus	kingii	Frilled Lizard	Southern Pacific Petroleum	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	25-Jan-99
Herpetology/Vertebrates/Biodiversity	Agamidae	Chlamydosaurus	kingii	Frilled Lizard	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Agamidae	Chlamydosaurus	kingii	Frilled Lizard	Rundle Ra, crest	23° 39' South	-23.65	150° 59' East	150.9833333	
Herpetology/Vertebrates/Biodiversity	Agamidae	Chlamydosaurus	kingii	Frilled Lizard	Fairybower Rd, ca.8km W Rockhampton	23° 23' South	-23.38333333	150° 25' East	150.4166667	15-Mar-87
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Gladstone, 2 km W	23° 53' South	-23.88333333	151° 11' East	151.1833333	20-Jan-86
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Wowan, Pheasant Ck	23° 55' South	-23.91509508	150° 12' East	150.2010742	9-Jun-94
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Stanwell Power Stn Site	23° 31' 51" South	-23.53083333	150° 19' 10" East	150.3194444	30-Oct-98
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Stanwell Power Stn Site	23° 31' South	-23.51666667	150° 20' East	150.3333333	7-Oct-98
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Gladstone, Sthern Pacific Petroleum Site	23° 48' 7" South	-23.80194444	151° 9' 6" East	151.1516667	22-Nov-98
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Gladstone, Sthern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444	24-Nov-98
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Gladstone, Sthern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444	22-Nov-98
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Gladstone/Mt Larcon area	23° 44' 56" South	-23.74888889	151° 6' 33" East	151.1091667	27-Jan-99
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Calliope R, to W of Banaraby	23° 58' 20" South	-23.97222222	151° 3' 2" East	151.0505556	12 Feb 1999-19 Feb 1999
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	5-Dec-98
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	6-Dec-98
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Awoonga Dam and Calliope R	24° 4' 54" South	-24.08166667	151° 18' 43" East	151.3119444	8-Apr-99
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Awoonga Dam and Calliope R	24° 13' 35" South	-24.22638889	151° 6' 2" East	151.1005556	11-Apr-99
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Awoonga Dam and Calliope R	23° 52' 18" South	-23.87166667	151° 6' 4" East	151.1011111	11-Apr-99
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Awoonga Dam, Boyne R Valley-Miriam Vale	24° 10' 54" South	-24.18166667	151° 9' 30" East	151.1583333	12 Aug 2000-24 Aug 2000
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Awoonga Dam	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333	12-May-02
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Callide Mine, nr Biloela	24° 17' 49" South	-24.29694444	150° 36' 32" East	150.6088889	7-Apr-05
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Mount Morgan	23° 38' 15" South	-23.6375	150° 21' 20" East	150.3555556	18-Feb-03
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Rundle Ra Site, clearing adjoining	23° 40' South	-23.66666667	151° East	151	25 Mar 1975-31 Mar 1978
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Theodore	24° 57' South	-24.95	150° 5' East	150.0833333	20-Sep-80
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Moura, 3 km SE Rail Xing, via Theodore Rd	24° 42' South	-24.7	150° 1' East	150.0166667	19-Aug-83
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Tannum Sands	23° 57' South	-23.95	151° 22' East	151.3666667	18-Dec-84
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	australis	Tommy Round-head	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	13-Dec-84
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	nobbi	Nobbi Dragon	Curtis Island	23° 41' South	-23.68333333	151° 13' East	151.2166667	10-May-74
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	nobbi	Nobbi Dragon	Kroombit Tops, N Escarpment,ca. 14km N logging hut	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	nobbi	Nobbi Dragon	Kroombit Tops, Dry Ck area	24° 22' South	-24.36666667	150° 59' East	150.9833333	
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	nobbi	Nobbi Dragon	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	nobbi	Nobbi Dragon	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	
Herpetology/Vertebrates/Biodiversity	Agamidae	Diporiphora	nobbi	Nobbi Dragon	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	10-Apr-92
Herpetology/Vertebrates/Biodiversity	Agamidae	Intellagama	lesueurii	Eastern Water Dragon	Awoonga Dam and Calliope R	24° 13' 8" South	-24.21888889	151° 15' 25" East	151.2569444	8-Apr-99
Herpetology/Vertebrates/Biodiversity	Agamidae	Intellagama	lesueurii	Eastern Water Dragon	Kroombit Tops, campsite, on Ubobo Rd	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982
Herpetology/Vertebrates/Biodiversity	Agamidae	Pogona	barbata	Common Bearded Dragon	Awoonga Dam, Gladstone	23° 55' South	-23.91666667	151° 9' East	151.15	17-Feb-86
Herpetology/Vertebrates/Biodiversity	Agamidae	Pogona	barbata	Common Bearded Dragon	Gladstone	23° 51' South	-23.85	151° 15' East	151.25	18-Aug-85
Herpetology/Vertebrates/Biodiversity	Agamidae	Pogona	barbata	Common Bearded Dragon	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	25-Feb-98
Herpetology/Vertebrates/Biodiversity	Agamidae	Pogona	barbata	Common Bearded Dragon	Rockhampton	23° 52' South	-23.86509328	150° 30' East	150.5010695	15-May-00
Herpetology/Vertebrates/Biodiversity	Agamidae	Pogona	barbata	Common Bearded Dragon	Callide Mine, nr Biloela	24° 17' 57" South	-24.29916667	150° 36' 33" East	150.6091667	7-Apr-05
Herpetology/Vertebrates/Biodiversity	Agamidae	Pogona	barbata	Common Bearded Dragon	Mt Rose	24° 38' South	-24.63333333	150° 57' East	150.95	8-Nov-79
Herpetology/Vertebrates/Biodiversity	Agamidae	Pogona	barbata	Common Bearded Dragon	Mowra-Springsure rd	24° 38' South	-24.63333333	149° 35' East	149.5833333	11-Sep-92
Herpetology/Vertebrates/Biodiversity	Agamidae	Pogona	barbata	Common Bearded Dragon	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	sp	Goanna	Gogango Ra, 64km SW Rockhampton	23° 54' South	-23.9	150° 4' East	150.0666667	
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	gouldii	Sand Goanna	Kalpowar	24° 42' South	-24.69841969	151° 18' East	151.3010642	Oct-93
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	gouldii	Sand Goanna	Zilzie, Rockhampton	23° 17' South	-23.28333333	150° 48' East	150.8	28-Feb-02
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	gouldii	Sand Goanna	Baralaba	24° 11' South	-24.18333333	149° 49' East	149.8166667	
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	panoptes	Yellow-spotted Monitor	Benaraby	24° South	-23.99842115	151° 19' East	151.3177253	Apr-06
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	semiremex	Rusty Monitor	Gladstone, Boyne Is turnoff	23° 56' South	-23.93333333	151° 18' East	151.3	24-Mar-85
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	tristis	Black-headed Monitor	Stanwell Power Stn Site	23° 31' 30" South	-23.525	150° 20' 10" East	150.3361111	30-Oct-98
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	tristis	Black-headed Monitor	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 44' 50" South	-23.74722222	151° 6' 33" East	151.1091667	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	tristis	Black-headed Monitor	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	6-Dec-98
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	tristis	Black-headed Monitor	Southertn Pacific Petroleum	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	20-Jan-99
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	tristis	Black-headed Monitor	Phillipies Landing Rd, 200m W Kozloff's Gates	23° 43' South	-23.71666667	151° 7' East	151.1166667	21-Jan-99
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	tristis	Black-headed Monitor	Awoonga Dam and Calliope R	24° 4' 53" South	-24.08138889	151° 18' 43" East	151.3119444	11-Apr-99
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	tristis	Black-headed Monitor	Awoonga Dam and Calliope R	23° 58' 36" South	-23.97666667	151° 3' 28" East	151.0577778	12-Apr-99
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	tristis	Black-headed Monitor	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333	20-Jan-98
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	tristis	Black-headed Monitor	Brigalow Res. Stn, via Theodore	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	29-Jan-00
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	tristis	Black-headed Monitor	Brigalow Res. Stn, via Theodore	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	20-Jun-00
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	tristis	Black-headed Monitor	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	tristis	Black-headed Monitor	Gyranda, Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333	
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	tristis	Black-headed Monitor	Mt Larcom, SF, foothills of mt	23° 49' South	-23.81666667	151° 5' East	151.0833333	
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	varius	Lace Monitor	Coominglah SF, Monto	24° 45' South	-24.75	150° 50' East	150.8333333	
Herpetology/Vertebrates/Biodiversity	Varanidae	Varanus	varius	Lace Monitor	Bulburin SF, adjoining Site 1a	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	affinis	Small-headed Blind Snake	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	25-Feb-98
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	affinis	Small-headed Blind Snake	Stanwell Power Station	23° 31' South	-23.51509514	150° 20' East	150.3344026	Jan-99
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	affinis	Small-headed Blind Snake	North Rockhampton, Kennedy St, Zilzie	23° 17' South	-23.28333333	150° 48' East	150.8	
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	affinis	Small-headed Blind Snake	Moura	24° 34' South	-24.56666667	149° 59' East	149.9833333	
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	ligatus	Robust Blind Snake	Cania Gorge NP	24° 43' 41" South	-24.72805556	150° 58' 22" East	150.9727778	19-Mar-99
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	ligatus	Robust Blind Snake	Brigalow Res. Stn, Theodore	24° 49' South	-24.81666667	149° 45' East	149.75	01 Oct 2001-31 Oct 2001
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	ligatus	Robust Blind Snake	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	ligatus	Robust Blind Snake	Dawson Valley, Theodore	24° 57' South	-24.95	150° 5' East	150.0833333	
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	ligatus	Robust Blind Snake	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	nigrescens	Blackish Blind Snake	Dry Creek crossing, Kroombit Forest Drive, Kroombit Forest Reserve	24° 21' 35" South	-24.35972222	150° 57' 49" East	150.9636111	
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	nigrescens	Blackish Blind Snake	Kroombit Forest Drive, Kroombit Forest Reserve, SW of Gladstone	24° 22' 33" South	-24.37583333	150° 59' 9" East	150.9858333	15-Feb-04
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	nigrescens	Blackish Blind Snake	Kroombit Tops	24° 22' 37" South	-24.37694444	150° 57' 56" East	150.9655556	11-Dec-97
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	nigrescens	Blackish Blind Snake	Madsen Ck, head N branch, Kroombit Tops NP	24° 24' 38" South	-24.41055556	151° 2' 54" East	151.0483333	29-Nov-00
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	nigrescens	Blackish Blind Snake	Kroombit Tops	24° 24' 22" South	-24.40611111	151° 2' 11" East	151.0363889	18-Feb-03

Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	nigrescens	Blackish Blind Snake	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	25-Feb-82
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	nigrescens	Blackish Blind Snake	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	nigrescens	Blackish Blind Snake	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	10 Dec 1983-17 Dec 1983
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	nigrescens	Blackish Blind Snake	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	9-Apr-92
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	proximus	Woodland Blind Snake	Awoonga Dam	24° 2' South	-24.03333333	151° 19' East	151.3166667	10-May-02
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	proximus	Woodland Blind Snake	Moura	24° 34' South	-24.56666667	149° 59' East	149.9833333	
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	unguirostris	Claw-snouted Blind Snake	Callide Range	24° 15' South	-24.24842503	150° 37' East	150.6177374	Nov-07
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	unguirostris	Claw-snouted Blind Snake	Stanwell Power Stn Site	23° 31' South	-23.51666667	150° 20' East	150.3333333	10-Oct-98
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	unguirostris	Claw-snouted Blind Snake	Gladstone, Sthern Pacific Petroleum Site	23° 48' 7" South	-23.80194444	151° 9' 6" East	151.1516667	25-Nov-98
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	unguirostris	Claw-snouted Blind Snake	Boyne Island	23° 56' South	-23.93333333	151° 21' East	151.35	14-Aug-92
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	20-Feb-98
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Gladstone, Sthern Pacific Petroleum Site	23° 48' 7" South	-23.80194444	151° 9' 6" East	151.1516667	23-Nov-98
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Gladstone, Sthern Pacific Petroleum Site	23° 44' 50" South	-23.74722222	151° 6' 32" East	151.1088889	28-Nov-98
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Gladstone, Sthern Pacific Petroleum Site	23° 45' 16" South	-23.75444444	151° 6' 52" East	151.1144444	25-Nov-98
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Gladstone, Sthern Pacific Petroleum Site	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	23-Nov-98
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Gladstone, Sthern Pacific Petroleum Site	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	22-Nov-98
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	8-Dec-98
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Southern Pacific Petroleum	23° 44' 50" South	-23.74722222	151° 6' 33" East	151.1091667	27-Jan-99
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Southern Pacific Petroleum	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	21-Jan-99
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 2' South	-24.03333333	151° 19' 4" East	151.3177778	31-Mar-00
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Calliope, via	23° 59' 39" South	-23.99416667	151° 12' 38" East	151.2105556	15-Feb-01
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Mount Morgan	23° 38' 37" South	-23.64361111	150° 22' 50" East	150.3805556	13-Feb-03
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Wallila, Gin Gin	24° 48' South	-24.8	151° 12' East	151.2	
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Anilios	wiedii	Brown-snouted Blind Snake	Dawson R Xing, 1.7km N, at Baralaba	24° 8' South	-24.13333333	149° 48' East	149.8	26-Aug-83
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Ramphotyphlops	sp	Blind Snake	Kroombit Tops	24° 20' 29" South	-24.34138889	150° 56' 49" East	150.9469444	11-Dec-97
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Ramphotyphlops	sp	Blind Snake	Stanwell Power Stn, via Rockhampton	23° 31' South	-23.51666667	150° 20' East	150.3333333	22-Feb-98
Herpetology/Vertebrates/Biodiversity	TYPHLOPIDAE	Ramphotyphlops	sp	Blind Snake	Zilzie, Kennedy St	23° 17' South	-23.28333333	150° 48' East	150.8	29-Apr-02
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Gladstone	23° 51' South	-23.85	151° 15' East	151.25	Jan-86
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Gladstone	23° 51' South	-23.85	151° 15' East	151.25	30-Dec-85
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Yarwun Rd, Gladstone	23° 51' South	-23.85	151° 15' East	151.25	17-Nov-85
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Gladstone	23° 51' South	-23.85	151° 15' East	151.25	18-Jan-86
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Rockhampton	23° 18' 39" South	-23.31083333	150° 31' 20" East	150.5222222	2-Mar-03
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Rockhampton, Gracemere Quarry	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Cape Capricorn	23° 29' South	-23.48333333	151° 14' East	151.2333333	
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Panorama Stn, Alton Downs, 20.8km W Rockhampton	23° 19' South	-23.31666667	150° 23' East	150.3833333	
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Cape Capricorn, Curtis Is	23° 29' South	-23.48333333	151° 14' East	151.2333333	14-Jun-79
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Kroombit Tops, 6km E Tablelands Stn, via Calliope	24° 22' South	-24.36666667	151° 4' East	151.0666667	22-Feb-84
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Moura, 8km S, then E, Theodore Rd, then Gibihi Rd	24° 58' South	-24.96666667	150° 6' East	150.1	20-Aug-83
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Moura, 3 km S, on Theodore Rd	24° 38' South	-24.63333333	149° 59' East	149.9833333	21-Aug-83
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Bouldercombe, 20.8km SW Rockhampton	23° 34' South	-23.56666667	150° 28' East	150.4666667	16-Mar-87
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Yarwun	23° 51' South	-23.85	151° 8' East	151.1333333	22-Dec-84
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Yarwun	23° 51' South	-23.85	151° 8' East	151.1333333	17-Dec-84
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Yarwun	23° 51' South	-23.85	151° 8' East	151.1333333	1-Mar-85
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Yarwun	23° 51' South	-23.85	151° 8' East	151.1333333	7-Apr-85
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	5-May-85
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Antaresia	maculosa	Spotted Python	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	3-Mar-85
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Aspidites	melanocephalus	Black-headed Python	Gin Gin, NW	25° South	-25	151° 7' East	151.1166667	
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Aspidites	melanocephalus	Black-headed Python	Gogango, via Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Aspidites	melanocephalus	Black-headed Python	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Aspidites	melanocephalus	Black-headed Python	Moura, few km W	24° 34' South	-24.56666667	149° 58' East	149.9666667	12-Jun-75
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Morelia	spilota	Carpet Python	Hanson Rd, Yarwun turnoff	23° 50' South	-23.83333333	151° 9' East	151.15	Pre 2008
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Morelia	spilota	Carpet Python	Targinie	23° 48' South	-23.79842288	151° 7' East	151.1177268	20-Jan-98
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Morelia	spilota	Carpet Python	Awoonga Dam and Calliope R	24° 6' 37" South	-24.11027778	151° 14' 45" East	151.2458333	10-Apr-99
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Morelia	spilota	Carpet Python	Bulburin SF, 24km SW Miriam Vale	24° 31' South	-24.51666667	151° 29' East	151.4833333	
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Morelia	spilota	Carpet Python	Bulburin SF, 8km SE Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Morelia	spilota	Carpet Python	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	13-Dec-84
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Morelia	spilota	Carpet Python	Gladstone, Clide Ck	23° 51' South	-23.85	151° 16' East	151.2666667	2-Feb-85
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Morelia	spilota	Carpet Python	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	12-Dec-84
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Morelia	spilota	Carpet Python	Bulburin SF, Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Morelia	spilota	Carpet Python	Benaraby	24° South	-24	151° 19' East	151.3166667	25-Mar-85
Herpetology/Vertebrates/Biodiversity	PYTHONIDAE	Morelia	spilota	Carpet Python	Biloela Ra	24° 24' South	-24.4	150° 31' East	150.5166667	7-Mar-85
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Rockhampton, Frenchville	23° 20' 52" South	-23.34619693	150° 34' 4" East	150.568855	Dec-07
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Taunton	23° 20' 51" South	-23.3475	150° 33' 59" East	150.5663889	11-Feb-09
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Curtis Is	23° 38' South	-23.63333333	151° 10' East	151.1666667	5-Nov-95
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Gladstone area, Southern Pacific Petroleum Stage 2	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Targinnie Rd, 150m N Chernih Rd, nr Targinnie SF	23° 48' South	-23.79842288	151° 7' East	151.1177268	22-Jan-99
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Zilzie, Claude St	23° 17' South	-23.28333333	150° 48' East	150.8	30-Mar-02
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Biloela	24° 24' South	-24.4	150° 31' East	150.5166667	
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Rundle Ra, adjoining Site 5, in clearing	23° 39' South	-23.65	150° 59' East	150.9833333	25 Mar 1975-31 Mar 1975
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Rundle Ra, clearing adjoining Site 5	23° 40' South	-23.66666667	151° East	151	
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Gladstone, Clide Ck	23° 51' South	-23.85	151° 16' East	151.2666667	2-Feb-85
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Yarwun	23° 51' South	-23.85	151° 8' East	151.1333333	11-Jan-85
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Benaraby	24° South	-24	151° 19' East	151.3166667	2-Feb-85
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Benaraby	24° South	-24	151° 19' East	151.3166667	16-Feb-85
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Boiga	irregularis	Brown Tree Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	1-Apr-85
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Awoonga Dam, Gladstone	23° 55' South	-23.91666667	151° 9' East	151.15	22-Feb-86
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Boyne I	23° 57' South	-23.95	151° 21' East	151.35	20-Dec-85
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Benaraby	24° South	-24	151° 19' East	151.3166667	30-Dec-85
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Rockhampton area	23° 22' South	-23.36509425	150° 32' East	150.5343987	
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Stanwell Power Stn Site	23° 31' South	-23.51666667	150° 20' East	150.3333333	7-Oct-98
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Targinnie SF, SE cnr, Targinnie Rd	23° 48' South	-23.79842288	151° 7' East	151.1177268	19-Jan-99
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Awoonga Dam and Calliope R	24° 7' 47" South	-24.12972222	151° 11' 30" East	151.1916667	10-Apr-99

Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Yarwun, Fisherman's Landing Site	23° 51' South	-23.84842266	151° 8' East	151.1343936		19-Feb-93
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Awoonga Dam, Boyne R Valley-Miriam Vale	24° 3' 6" South	-24.05166667	151° 19' 26" East	151.3238889	12 Aug 2000-24 Aug 2000	
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Mount Morgan	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222		20-Feb-03
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Gyranda, Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333		
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Marmor, S of Rockhampton	23° 41' South	-23.68333333	150° 42' East	150.7		
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		1-Sep-74
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Rockhampton, 13km S	23° 31' South	-23.51666667	150° 33' East	150.55		23-Aug-74
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		3-Jul-74
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Rundle Ra, adjoining Site 5	23° 39' South	-23.65	150° 59' East	150.9833333	25 Mar 1975-31 Mar 1975	
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Rundle Ra, adjoining Site 5	23° 39' South	-23.65	150° 59' East	150.9833333	25 Mar 1975-31 Mar 1975	
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Rundle Ra, clearing adjoining Site 5	23° 40' South	-23.66666667	151° East	151		
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Gladstone, 7km N	23° 51' South	-23.85	151° 13' East	151.2166667		
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Yarwun, Boat Ck Rd, Boat Ck	23° 51' South	-23.85	151° 8' East	151.1333333		19-Dec-84
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Dendrelaphis	punctulata	Green Tree Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Boyne I	23° 57' South	-23.95	151° 21' East	151.35		20-Dec-85
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Boat Creek Rd, Yarwun	23° 50' South	-23.83333333	151° 8' East	151.1333333		30-Dec-85
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Stanwell Power Stn Site	23° 31' 30" South	-23.525	150° 20' 10" East	150.3361111		5-Oct-98
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Stanwell Power Stn Site	23° 31' South	-23.51666667	150° 20' East	150.3333333		3-Oct-98
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Calliope R, to W of Banaraby	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444	12 Feb 1999-19 Feb 1999	
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Targinnie Rd, 200m S Flinders Rd intersection	23° 48' South	-23.79842288	151° 7' East	151.1177268		23-Jan-99
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Awoonga Dam and Calliope R	23° 52' 18" South	-23.87166667	151° 6' 4" East	151.1011111		9-Apr-99
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Awoonga Dam, Boyne R Valley-Miriam Vale	23° 52' 18" South	-23.87166667	151° 52" East	151.0144444		30-Mar-00
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Rockhampton, Yeppoon Lagoon	23° 24' 26" South	-23.40722222	150° 29' 40" East	150.4944444		
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Mount Morgan	23° 37' 52" South	-23.63111111	150° 21' 55" East	150.3652778		13-Feb-03
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Mt Larcom	23° 49' South	-23.81666667	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Rockhampton, 13km S	23° 31' South	-23.51666667	150° 33' East	150.55		23-Aug-74
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		3-Jul-74
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Bulburin SF, edge of Granite Ck	24° 35' South	-24.58333333	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Boat Ck	23° 37' South	-23.61666667	151° 7' East	151.1166667		16-Feb-85
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Tannum Sands	23° 57' South	-23.95	151° 22' East	151.3666667		18-Dec-84
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Oakey Ck, Biloela to Calliope	24° 15' South	-24.25	150° 32' East	150.5333333		14-Dec-84
Herpetology/Vertebrates/Biodiversity	COLUBRIDAE	Tropidonophis	mairii	Freshwater Snake	Fitzroy R	23° 30' South	-23.5	150° 40' East	150.6666667		24-Apr-76
Herpetology/Vertebrates/Biodiversity	Elapidae	Acanthophis	antarcticus	Common Death Adder	Marmor Quarry	23° 41' South	-23.68333333	150° 42' East	150.7		
Herpetology/Vertebrates/Biodiversity	Elapidae	Acanthophis	antarcticus	Common Death Adder	Monto	24° 52' South	-24.86666667	151° 7' East	151.1166667		
Herpetology/Vertebrates/Biodiversity	Elapidae	Aipysurus	laevis	Olive Sea Snake	Boyne Island, off Gladstone	23° 56' South	-23.93333333	151° 21' East	151.35		
Herpetology/Vertebrates/Biodiversity	Elapidae	Aipysurus	mosaicus	Mosaic Sea Snake	Rockhampton, Fitzroy R	23° 30' South	-23.5	150° 50' East	150.8333333		
Herpetology/Vertebrates/Biodiversity	Elapidae	Aipysurus	mosaicus	Mosaic Sea Snake	Rodds Bay, via Calliope	24° South	-24	151° 29' East	151.4833333		7-May-71
Herpetology/Vertebrates/Biodiversity	Elapidae	Antairoserpens	warro	North-eastern Plain-nosed Burrow	Port Curtis, Warro Stn	23° 55' South	-23.91666667	151° 23' East	151.3833333		
Herpetology/Vertebrates/Biodiversity	Elapidae	Brachyurophis	australis	Australian Coral Snake	Calliope	24° South	-24	151° 12' East	151.2		18-Jan-86
Herpetology/Vertebrates/Biodiversity	Elapidae	Brachyurophis	australis	Australian Coral Snake	Boyne Valley, Gladstone	24° 8' 26" South	-24.14055556	151° 12' 2" East	151.2005556		25-Oct-11
Herpetology/Vertebrates/Biodiversity	Elapidae	Brachyurophis	australis	Australian Coral Snake	Theodore	25° 5' 15" South	-25.0875	150° 25' 58" East	150.4327778	Unknown	
Herpetology/Vertebrates/Biodiversity	Elapidae	Brachyurophis	australis	Australian Coral Snake	Castle Ck, via Rannes	24° 50' South	-24.83333333	150° 20' East	150.3333333		
Herpetology/Vertebrates/Biodiversity	Elapidae	Brachyurophis	australis	Australian Coral Snake	Theodore, Walloon Stn	24° 53' South	-24.88333333	150° 12' East	150.2		
Herpetology/Vertebrates/Biodiversity	Elapidae	Brachyurophis	australis	Australian Coral Snake	Many Peaks	24° 32' South	-24.53333333	151° 23' East	151.3833333		
Herpetology/Vertebrates/Biodiversity	Elapidae	Brachyurophis	australis	Australian Coral Snake	Biloela	24° 24' South	-24.4	150° 31' East	150.5166667		
Herpetology/Vertebrates/Biodiversity	Elapidae	Brachyurophis	australis	Australian Coral Snake	Baralaba	24° 11' South	-24.18333333	149° 49' East	149.8166667		
Herpetology/Vertebrates/Biodiversity	Elapidae	Brachyurophis	australis	Australian Coral Snake	Biloela Region	24° 24' South	-24.4	150° 31' East	150.5166667		
Herpetology/Vertebrates/Biodiversity	Elapidae	Cacophis	harriettae	White-crowned Snake	Lawrence Ave, Frenchville	23° 21' South	-23.35	150° 33' East	150.55		1-Nov-10
Herpetology/Vertebrates/Biodiversity	Elapidae	Cacophis	harriettae	White-crowned Snake	Hurdle Gully, 13km WSW Monto	24° 51' South	-24.85	151° East	151		20-Dec-97
Herpetology/Vertebrates/Biodiversity	Elapidae	Cacophis	harriettae	White-crowned Snake	Gladstone area, Southern Pacific Petroleum Stage 2	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	05 Apr 1999-16 Apr 1999	
Herpetology/Vertebrates/Biodiversity	Elapidae	Cacophis	harriettae	White-crowned Snake	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 2' South	-24.03333333	151° 19' 5" East	151.3180556		1-Apr-00
Herpetology/Vertebrates/Biodiversity	Elapidae	Cacophis	harriettae	White-crowned Snake	Callide Mine, nr Biloela	24° 17' 57" South	-24.29916667	150° 36' 33" East	150.6091667		7-Apr-05
Herpetology/Vertebrates/Biodiversity	Elapidae	Cacophis	harriettae	White-crowned Snake	Rockhampton	23° 21' 16" South	-23.35444444	150° 32' 28" East	150.5411111		25-Feb-05
Herpetology/Vertebrates/Biodiversity	Elapidae	Cacophis	harriettae	White-crowned Snake	Mt Nicholson, Yeppoon Line	23° 19' South	-23.31666667	150° 39' East	150.65		
Herpetology/Vertebrates/Biodiversity	Elapidae	Cacophis	krefftii	Southern Dwarf Crowned Snake	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Herpetology/Vertebrates/Biodiversity	Elapidae	Cacophis	squamulosus	Golden-crowned Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		
Herpetology/Vertebrates/Biodiversity	Elapidae	Cacophis	squamulosus	Golden-crowned Snake	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333		
Herpetology/Vertebrates/Biodiversity	Elapidae	Cacophis	squamulosus	Golden-crowned Snake	Bulburin SF, 8km E Forestry Camp	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975	
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	boschmai	Carpentaria Snake	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 8' East	151.1333333		19-Jan-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	boschmai	Carpentaria Snake	Southern Pacific Petroleum	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115		28-Jan-99
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	boschmai	Carpentaria Snake	Reef Street, North Rockhampton	23° 22' South	-23.36509435	150° 31' East	150.5177322		3-Jun-00
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	boschmai	Carpentaria Snake	Marmor, S of Rockhampton	23° 41' South	-23.68333333	150° 42' East	150.7		
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	boschmai	Carpentaria Snake	Bouldercombe, 20.8km SW Rockhampton	23° 34' South	-23.56666667	150° 28' East	150.4666667		
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	boschmai	Carpentaria Snake	Monto	24° 52' South	-24.86666667	151° 7' East	151.1166667		
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	boschmai	Carpentaria Snake	Calliope/Nagoorin Rd	24° South	-24	151° 12' East	151.2		17-Mar-87
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	boschmai	Carpentaria Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		26-Apr-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	boschmai	Carpentaria Snake	Biloela Ra	24° 24' South	-24.4	150° 31' East	150.5166667		7-Mar-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	boschmai	Carpentaria Snake	Gladstone	23° 52' South	-23.86666667	151° 15' East	151.25		24-Jul-74
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	boschmai	Carpentaria Snake	Gladstone	23° 54' South	-23.9	151° 17' East	151.2833333		24-Jul-74
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	boschmai	Carpentaria Snake	Kooyong via Monto	24° 52' South	-24.86666667	151° 7' East	151.1166667		
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Kroombit Tops, SF 316	24° 26' 19" South	-24.43861111	150° 59' 29" East	150.9913889		29-Aug-97
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		10-Dec-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		17-Dec-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	2nd Crossing, Granite Creek, Bulburin	24° 33' South	-24.54841926	151° 25' East	151.417728		25-Jan-76
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Theodore, Brigalow Research Stn	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556		18-Sep-99
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333		30-Mar-00
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Coominglah SF, nr Monto	24° 44' 57" South	-24.74916667	150° 57' 29" East	150.9580556		26-Aug-01
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Coominglah SF, nr Monto	24° 48' 56" South	-24.81555556	150° 55' 49" East	150.9302778		29-Aug-01
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Coominglah SF, nr Monto	24° 44' 57" South	-24.74916667	150° 57' 29" East	150.9580556		29-Aug-01
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Coominglah SF, nr Monto	24° 46' 22" South	-24.77277778	150° 57' 15" East	150.9541667		28-Aug-01
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Coominglah SF, nr Monto	24° 52' 25" South	-24.87361111	150° 57' 29" East	150.9580556		30-Aug-01

Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Callide	24° 17' 49" South	-24.29694444	150° 36' 32" East	150.6088889	14-Aug-05
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Bulburin SF, adjoining Site 1a	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Miriam Vale, Blackman Gap Rd, on range	24° 26' South	-24.43333333	151° 26' East	151.4333333	4-Oct-84
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Kroombit Tops, campsite, on Ubobo Rd	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrescens	Small-eyed Snake	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667	12-Mar-92
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrostriatus	Black-striped Snake	Gladstone/Mt Larcon area	23° 44' 56" South	-23.74888889	151° 6' 33" East	151.1091667	26-Jan-79
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrostriatus	Black-striped Snake	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	6-Dec-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrostriatus	Black-striped Snake	Raglan	23° 43' South	-23.71666667	150° 49' East	150.8166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrostriatus	Black-striped Snake	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	3-Jul-74
Herpetology/Vertebrates/Biodiversity	Elapidae	Cryptophis	nigrostriatus	Black-striped Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	1-Oct-96
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	psammophis	Yellow-faced Whip Snake	Boyne Valley	24° 35' South	-24.58333333	151° 15' 18.6" East	151.2551667	13-Mar-06
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	psammophis	Yellow-faced Whip Snake	Gladstone, Sthern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444	25-Nov-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	psammophis	Yellow-faced Whip Snake	Gladstone area, Southern Pacific Petroleum/Stage 2	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	psammophis	Yellow-faced Whip Snake	Gladstone area, Southern Pacific Petroleum Stage 2	23° 45' 15" South	-23.75416667	151° 6' 54" East	151.115	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	psammophis	Yellow-faced Whip Snake	Southern Pacific Petroleum	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	24-Jan-99
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	psammophis	Yellow-faced Whip Snake	Coominglah SF, nr Monto	24° 47' 57" South	-24.79916667	150° 55' 10" East	150.9194444	30-Aug-01
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	psammophis	Yellow-faced Whip Snake	Mount Morgan	23° 38' 37" South	-23.64361111	150° 22' 50" East	150.3805556	13-Feb-03
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	psammophis	Yellow-faced Whip Snake	Grantleigh, via Rockhampton	23° 42' South	-23.7	150° East	150	
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	psammophis	Yellow-faced Whip Snake	Rockhampton, N of	23° 22' South	-23.36666667	150° 32' East	150.5333333	15-Oct-76
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	torquata	Collared Whipsnake	Rockhampton	23° 18' 39" South	-23.31083333	150° 31' 21" East	150.5225	11-Dec-01
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	torquata	Collared Whipsnake	Mount Morgan	23° 38' 11" South	-23.63638889	150° 22' 2" East	150.3672222	19-Feb-03
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	torquata	Collared Whipsnake	Berserker Mts, foot, N of Rockhampton	23° 21' South	-23.35	150° 36' East	150.6	
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	torquata	Collared Whipsnake	Rockhampton, Moore Ck	23° 19' South	-23.31666667	150° 34' East	150.5666667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	torquata	Collared Whipsnake	Mt Larcom, base of	23° 46' South	-23.76666667	151° 1' East	151.0166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Gladstone	23° 51' South	-23.85	151° 15' East	151.25	30-Dec-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Stanwell Power Stn Site, Neerkol Ck	23° 29' 58" South	-23.49944444	150° 18' 25" East	150.3069444	28-Oct-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Stanwell Power Stn Site	23° 31' South	-23.51666667	150° 20' East	150.3333333	01 Oct 1998-31 Oct 1998
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Stanwell Power Stn Site	23° 31' South	-23.51666667	150° 20' East	150.3333333	7-Oct-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Gladstone, Flinders St/Phillipe Landing Rd cnr	23° 51' South	-23.85	151° 16' East	151.2666667	26-Nov-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Gladstone, Sthern Pacific Petroleum Site	23° 48' 7" South	-23.80194444	151° 9' 6" East	151.1516667	23-Nov-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Gladstone, Sthern Pacific Petroleum Site	23° 48' 7" South	-23.80194444	151° 9' 6" East	151.1516667	26-Nov-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Gladstone/Mt Larcon area	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	25-Jan-99
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	9-Dec-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	13-Dec-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Southern Pacific Petroleum	23° 44' 55" South	-23.74861111	151° 6' 29" East	151.1080556	24-Jan-99
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 3' 6" South	-24.05166667	151° 19' 26" East	151.3238889	1-Apr-00
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889	2-Apr-00
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Yeppoon	23° 59' 39" South	-23.99416667	151° 12' 38" East	151.2105556	3-Mar-01
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Boyne Valley & Awoonga	24° 10' 55" South	-24.18194444	151° 9' 30" East	151.1583333	21-Nov-01
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Gladstone, 26km N, on Bruce Hway	23° 50' South	-23.83333333	151° East	151	16-Oct-69
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Rockhampton, Port Curtis Rd	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	3-Jul-74
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Cat Fish Ck, Calliope R Junction	24° 2' South	-24.03333333	151° 2' East	151.0333333	7-Mar-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Bouldercombe, 20.8km SW Rockhampton	23° 34' South	-23.56666667	150° 28' East	150.4666667	16-Mar-87
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	16-Feb-89
Herpetology/Vertebrates/Biodiversity	Elapidae	Demansia	vestigiata	Lesser Black Whipsnake	Aldoga, Gladstone	23° 48' South	-23.8	151° 2' East	151.0333333	3-Jul-92
Herpetology/Vertebrates/Biodiversity	Elapidae	Denisonia	devisi	De Vis' Banded Snake	Biloela	24° 24' South	-24.4	150° 31' East	150.5166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Denisonia	maculata	Ornamental Snake	Dakenba, Biloela	24° 21' South	-24.35	150° 30' East	150.5	21-Dec-72
Herpetology/Vertebrates/Biodiversity	Elapidae	Denisonia	maculata	Ornamental Snake	Rockhampton	23° 22' South	-23.36509425	150° 32' East	150.5343987	
Herpetology/Vertebrates/Biodiversity	Elapidae	Denisonia	maculata	Ornamental Snake	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Denisonia	maculata	Ornamental Snake	Berserker Mts, foot, N of Rockhampton	23° 21' South	-23.35	150° 36' East	150.6	
Herpetology/Vertebrates/Biodiversity	Elapidae	Denisonia	maculata	Ornamental Snake	Dawson Valley, Castle Ck	24° 50' South	-24.83333333	150° 20' East	150.3333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Denisonia	maculata	Ornamental Snake	Biloela, Dawson Valley Line	24° 24' South	-24.4	150° 31' East	150.5166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Denisonia	maculata	Ornamental Snake	Wawan	23° 55' South	-23.91666667	150° 12' East	150.2	
Herpetology/Vertebrates/Biodiversity	Elapidae	Denisonia	maculata	Ornamental Snake	Callide Valley, Jambin	24° 12' South	-24.2	150° 22' East	150.3666667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Denisonia	maculata	Ornamental Snake	Goovigen, via Rockhampton	24° 9' South	-24.15	150° 17' East	150.2833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Denisonia	maculata	Ornamental Snake	Rockhampton, N of	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Denisonia	maculata	Ornamental Snake	Wandoo Stn, 40km from Moura to Baralaba	24° 20' South	-24.33333333	149° 59' East	149.9833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Denisonia	maculata	Ornamental Snake	Banana, 0.8km NW	24° 28' South	-24.46666667	150° 7' East	150.1166667	25-Feb-72
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	barnardi	Yellow-naped Snake	Awoonga Dam	24° 4' South	-24.06666667	151° 18' East	151.3	12-Nov-04
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	barnardi	Yellow-naped Snake	Awoonga Dam, 10 km S Gladstone	23° 55' South	-23.91666667	151° 9' East	151.15	8-Feb-96
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	barnardi	Yellow-naped Snake	Awoonga Dam, 10 km S Gladstone	23° 55' South	-23.91666667	151° 9' East	151.15	3-Jan-97
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	barnardi	Yellow-naped Snake	Awoonga Dam, 10km S Gladstone	23° 55' South	-23.91666667	151° 9' East	151.15	
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Yarwun	23° 51' South	-23.85	151° 8' East	151.1333333	20-Dec-95
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1	23-Jan-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Stanwell Power Stn Buffer Zone	23° 31' South	-23.51666667	150° 20' East	150.3333333	13 Jul 1998-24 Jul 1998
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Gladstone, Sthern Pacific Petroleum Site	23° 48' 59" South	-23.81638889	151° 9' 17" East	151.1547222	21-Nov-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Gladstone, Sthern Pacific Petroleum Site	23° 48' 7" South	-23.80194444	151° 9' 6" East	151.1516667	25-Nov-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Gladstone/Mt Larcon area	23° 48' 8" South	-23.80222222	151° 9' 8" East	151.1522222	27-Jan-99
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Gladstone area, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Awoonga Dam, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	11-Dec-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Southern Pacific Petroleum	23° 44' 55" South	-23.74861111	151° 6' 29" East	151.1080556	21-Jan-99
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Boyne Valley & Awoonga	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889	25-Nov-01
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Rockhampton	23° 21' 3" South	-23.35083333	150° 32' 35" East	150.5430556	4-Oct-05
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Gyranda, Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Dawson Valley, Castle Ck	24° 50' South	-24.83333333	150° 20' East	150.3333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Dawson Valley, Thangool	24° 29' South	-24.48333333	150° 35' East	150.5833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Mulgildie	24° 58' South	-24.96666667	151° 8' East	151.1333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Rockhampton, Raglan Stn	23° 43' South	-23.71666667	150° 49' East	150.8166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Monto	24° 52' South	-24.86666667	151° 7' East	151.1166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Marmor, S of Rockhampton	23° 41' South	-23.68333333	150° 42' East	150.7	

Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Biloela	24° 24' South	-24.4	150° 31' East	150.5166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Monto Rd, 64km from Mt Perry	25° South	-25	151° 13' East	151.2166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Monto, Moonbah SF	24° 52' South	-24.86666667	151° 7' East	151.1166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Double Ck, nr Westwood	23° 59' South	-23.98333333	150° 13' East	150.2166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Boyne Island	23° 56' South	-23.93333333	151° 21' East	151.35	31-Oct-91
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	diadema	Red-naped Snake	Boyne Island	23° 56' South	-23.93333333	151° 21' East	151.35	9-Oct-91
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	dunmalli	Dunmall's Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	01 Jan 1986-31 Dec 1986
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	dunmalli	Dunmall's Snake	Mt Archer, base	23° 21' South	-23.35	150° 34' East	150.5666667	09 Dec 1992 {Recd}
Herpetology/Vertebrates/Biodiversity	Elapidae	Furina	ornata	Orange-naped Snake	Mt Morgan Gold Mine	23° 38' South	-23.63333333	150° 22' East	150.3666667	21-Jun-02
Herpetology/Vertebrates/Biodiversity	Elapidae	Hemiaspis	damelii	Grey Snake	Rockhampton, Bajool Ck	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hemiaspis	damelii	Grey Snake	Rockhampton, Mt Berserker	23° 22' South	-23.36666667	150° 35' East	150.5833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hemiaspis	damelii	Grey Snake	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hemiaspis	signata	Marsh Snake	Kroombit Tops, campsite, on Ubobo Rd	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982
Herpetology/Vertebrates/Biodiversity	Elapidae	Hemiaspis	signata	Marsh Snake	Bulburin SF, Site 1a	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Elapidae	Hemiaspis	signata	Marsh Snake	Bulburin SF, adjoining Site 1a	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Westwood, via Rockhampton	23° 37' South	-23.61666667	150° 9' East	150.15	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Castle Ck, via Rannes	24° 50' South	-24.83333333	150° 20' East	150.3333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Mt Larcom	23° 49' South	-23.81666667	150° 59' East	150.9833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Mulgildie	24° 58' South	-24.96666667	151° 8' East	151.1333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Raglan, Raglan Stn	23° 43' South	-23.71666667	150° 49' East	150.8166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Wowan, Centre Ck	23° 58' South	-23.96666667	150° 28' East	150.4666667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Baralaba	24° 11' South	-24.18333333	149° 49' East	149.8166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Lilly Lgn, nr Rockhampton	23° 20' South	-23.33333333	150° 29' East	150.4833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Dakenba, Biloela	24° 21' South	-24.35	150° 30' East	150.5	21-Dec-72
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	3-Jul-74
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Prospect Peak, 32km S Thangool	24° 43' South	-24.71666667	150° 30' East	150.5	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Rockhampton, CSIRO Stn	23° 22' South	-23.36666667	150° 32' East	150.5333333	23-May-82
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Gladstone area, Machine Ck, Mt Larcom	23° 49' South	-23.81666667	150° 59' East	150.9833333	10-Jan-84
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	bitorquatus	Pale-headed Snake	Thuriba Stn, via Wowan	23° 56' South	-23.93333333	150° East	150	1-Mar-89
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	stephensii	Stephen's Banded Snake	Kroombit Tops	24° 22' South	-24.36666667	150° 59' East	150.9833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hoplocephalus	stephensii	Stephen's Banded Snake	Kroombit Tops, 3km E campsite on Ubobo Rd	24° 22' South	-24.36666667	150° 59' East	150.9833333	22 Feb 1982-26 Feb 1982
Herpetology/Vertebrates/Biodiversity	Elapidae	Hydrophis	sp	Sea Snake	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 8' East	151.1333333	Jan-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Hydrophis	sp	Sea Snake	Gladstone, off	23° 50' South	-23.83333333	151° 15' East	151.25	Oct-72
Herpetology/Vertebrates/Biodiversity	Elapidae	Hydrophis	elegans	Sea Snake	Reef Street, Zilzie	23° 17' South	-23.28175948	150° 48' East	150.8010609	14-Aug-00
Herpetology/Vertebrates/Biodiversity	Elapidae	Hydrophis	elegans	Sea Snake	Berserker Mts, foot, N of Rockhampton	23° 21' South	-23.35	150° 36' East	150.6	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hydrophis	elegans	Sea Snake	Boyne Island, off Gladstone	23° 56' South	-23.93333333	151° 21' East	151.35	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hydrophis	elegans	Sea Snake	Gladstone, Auckland Ck, Gladstone Power Stn	23° 50' South	-23.83333333	151° 15' East	151.25	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hydrophis	kingii	Spectacled Sea Snake	Curtis Is, S end, off Gladstone	23° 45' South	-23.75	151° 18' East	151.3	2-Aug-70
Herpetology/Vertebrates/Biodiversity	Elapidae	Hydrophis	macdowelli		Gladstone, beach	23° 51' South	-23.85	151° 17' East	151.2833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hydrophis	major	Olive-headed Sea Snake	Boyne Island, off Gladstone	23° 56' South	-23.93333333	151° 21' East	151.35	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hydrophis	major	Olive-headed Sea Snake	Curtis Is, lighthouse	23° 38' South	-23.63333333	151° 10' East	151.1666667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Hydrophis	ocellatus		Tannum Sands, E	23° 57' South	-23.95	151° 22' East	151.3666667	8-May-71
Herpetology/Vertebrates/Biodiversity	Elapidae	Oxyuranus	scutellatus	Coastal Taipan	Capricorn Hwy, between Gracemere and Stanwell, W of Rockhampton	23° 28' South	-23.46666667	150° 25' East	150.4166667	2-Feb-92
Herpetology/Vertebrates/Biodiversity	Elapidae	Oxyuranus	scutellatus	Coastal Taipan	Bororen	24° 15' South	-24.25	151° 30' East	151.5	20-Mar-86
Herpetology/Vertebrates/Biodiversity	Elapidae	Oxyuranus	scutellatus	Coastal Taipan	Stanwell Power Stn Buffer Zone, Stony Ck	23° 31' South	-23.51666667	150° 20' East	150.3333333	13 Jul 1998-24 Jul 1998
Herpetology/Vertebrates/Biodiversity	Elapidae	Oxyuranus	scutellatus	Coastal Taipan	Gladstone area, Southern Pacific Petroleum Stage 2	23° 46' 29" South	-23.77472222	151° 8' 1" East	151.1336111	05 Apr 1999-16 Apr 1999
Herpetology/Vertebrates/Biodiversity	Elapidae	Oxyuranus	scutellatus	Coastal Taipan	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Oxyuranus	scutellatus	Coastal Taipan	Yarwun	23° 51' South	-23.85	151° 8' East	151.1333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Oxyuranus	scutellatus	Coastal Taipan	Gladstone, 1.6km from Boyne Is, T'off	23° 57' South	-23.95	151° 19' East	151.3166667	24-Mar-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Oxyuranus	scutellatus	Coastal Taipan	Yarwun	23° 51' South	-23.85	151° 8' East	151.1333333	12-May-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Parasuta	dwyeri	Dwyer's Snake	Mt Morgan	23° 37' South	-23.61509459	150° 23' East	150.3844027	6-Apr-99
Herpetology/Vertebrates/Biodiversity	Elapidae	Parasuta	dwyeri	Dwyer's Snake	Brigalow Res. Stn, via Theodore	24° 49' 20" South	-24.82222222	149° 45' 11" East	149.7530556	29-Mar-01
Herpetology/Vertebrates/Biodiversity	Elapidae	Parasuta	dwyeri	Dwyer's Snake	Dawson Valley, Castle Ck	24° 50' South	-24.83333333	150° 20' East	150.3333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	australis	Mulga Snake	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	australis	Mulga Snake	Dawson Valley, Wowan	23° 55' South	-23.91666667	150° 12' East	150.2	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	australis	Mulga Snake	Baralaba	24° 11' South	-24.18333333	149° 49' East	149.8166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	australis	Mulga Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	australis	Mulga Snake	Thangool	24° 29' South	-24.48333333	150° 35' East	150.5833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	australis	Mulga Snake	Biloela	24° 24' South	-24.4	150° 31' East	150.5166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	australis	Mulga Snake	Mt Larcom	23° 49' South	-23.81666667	150° 59' East	150.9833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	australis	Mulga Snake	Barmundee, via Gladstone	24° 8' South	-24.13333333	151° 12' East	151.2	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	guttatus	Spotted Black Snake	Boondee, Hannaford	24° 19' South	-24.31666667	150° 2' East	150.0333333	10-Apr-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	porphyriacus	Red-bellied Black Snake	Mulgildie Stn, via Eidsvold	24° 58' South	-24.96666667	151° 8' East	151.1333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	porphyriacus	Red-bellied Black Snake	Bulburin SF, Granite Ck	24° 35' South	-24.58333333	151° 29' East	151.4833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	porphyriacus	Red-bellied Black Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	3-Jul-74
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	porphyriacus	Red-bellied Black Snake	Bulburin Forestry Camp, via Many Peaks	24° 31' South	-24.51666667	151° 29' East	151.4833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	porphyriacus	Red-bellied Black Snake	Bulburin SF, Site 1a	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudechis	porphyriacus	Red-bellied Black Snake	Bulburin SF, adjoining Site 1a	24° 31' South	-24.51666667	151° 29' East	151.4833333	17 Mar 1975-24 Mar 1975
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	aspidorhyncha	Strap-snouted Brown Snake	Rockhampton Airport	23° 23' South	-23.38333333	150° 25' 50" East	150.4305556	7-Sep-00
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Gladstone	23° 51' South	-23.85	151° 15' East	151.25	24-Sep-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Gladstone	23° 51' South	-23.85	151° 15' East	151.25	15-Sep-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Rockhampton, 20 km S	23° 33' South	-23.55	150° 29' East	150.4833333	21-Aug-86
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Monto District	24° 52' South	-24.86666667	151° 7' East	151.1166667	15-Dec-97
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Awoonga Dam and Calliope R	23° 52' 18" South	-23.87166667	151° 6' 4" East	151.1011111	8-Apr-99
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Mt Barney, Lower Portals	23° 33' South	-23.5484233	151° 9' East	151.1510578	9-Oct-95
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Rockhampton	23° 22' South	-23.36509425	150° 32' East	150.5343987	25-Aug-00
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Bororen, Bruce Hwy	24° 15' 1" South	-24.25027778	151° 29' 53" East	151.4980556	13-Mar-04
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Rockhampton, N of	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Goovigen, via Rockhampton	24° 9' South	-24.15	150° 17' East	150.2833333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	11km from Moura - Biloela	24° 30' South	-24.5	150° 6' East	150.1	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Biloela	24° 24' South	-24.4	150° 31' East	150.5166667	

Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Calligoran, via Calliope	24° South	-24	151° 12' East	151.2	23-Oct-69
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Rockhampton, Lion Ck Rd	23° 22' South	-23.36666667	150° 24' East	150.4	21-Oct-71
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Bouldercombe, 20.8km SW Rockhampton	23° 34' South	-23.56666667	150° 28' East	150.4666667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Rockhampton District	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Mt Rose Stn	24° 38' South	-24.63333333	150° 57' East	150.95	8-Nov-79
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Yarwun	23° 51' South	-23.85	151° 8' East	151.1333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Many Peaks, Monto Rd, ca.20km NE Monto	24° 52' South	-24.86666667	151° 7' East	151.1166667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	7-Feb-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Benaraby	24° South	-24	151° 19' East	151.3166667	28-Dec-84
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Miriam Vale, 10 Mile Ck	24° 8' South	-24.13333333	150° 16' East	150.2666667	1-Jan-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Benaraby	24° South	-24	151° 19' East	151.3166667	9-Feb-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Bulburin SF, Granite Ck Xing	24° 35' South	-24.58333333	151° 29' East	151.4833333	16-Oct-84
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Biloela Ra	24° 24' South	-24.4	150° 31' East	150.5166667	7-Mar-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Doubtful Ck, Biloela to Caliope	24° 7' South	-24.11666667	150° 50' East	150.8333333	14-Dec-84
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	1-Mar-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Benaraby	24° South	-24	151° 19' East	151.3166667	16-Feb-85
Herpetology/Vertebrates/Biodiversity	Elapidae	Pseudonaja	textilis	Eastern Brown Snake	Gogango, W of Rockhampton	23° 40' South	-23.66666667	150° 2' East	150.0333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Suta	suta	Myall Snake	Duaringa Stn, north of Duaringa	23° 39' 39" South	-23.66083333	149° 45' 14" East	149.7538889	29-Feb-00
Herpetology/Vertebrates/Biodiversity	Elapidae	Suta	suta	Myall Snake	Dawson Valley, Castle Ck	24° 50' South	-24.83333333	150° 20' East	150.3333333	
Herpetology/Vertebrates/Biodiversity	Elapidae	Suta	suta	Myall Snake	Warren, 15km NW, on Reedy Cnr Rd	23° 24' South	-23.4	150° 12' East	150.2	8-Nov-79
Herpetology/Vertebrates/Biodiversity	Elapidae	Vermicella	annulata	Bandy Bandy	Stanwell Power Stn Site, Neerkol Ck	23° 29' 58" South	-23.49944444	150° 18' 24" East	150.3066667	2-Nov-98
Herpetology/Vertebrates/Biodiversity	Elapidae	Vermicella	annulata	Bandy Bandy	Southern Pacific Petroleum	23° 44' 55" South	-23.74861111	151° 6' 29" East	151.1080556	24-Jan-99
Herpetology/Vertebrates/Biodiversity	Elapidae	Vermicella	annulata	Bandy Bandy	Southern Pacific Petroleum	23° 44' 50" South	-23.74722222	151° 6' 33" East	151.1091667	25-Jan-99
Herpetology/Vertebrates/Biodiversity	Elapidae	Vermicella	annulata	Bandy Bandy	Southern Pacific Petroleum Stage 2 site	23° 48' 24" South	-23.80666667	151° 9' 26" East	151.1572222	01 Apr 1999-30 Apr 1999
Herpetology/Vertebrates/Biodiversity	Elapidae	Vermicella	annulata	Bandy Bandy	Dawson Valley, Wowan	23° 55' South	-23.91666667	150° 12' East	150.2	
Herpetology/Vertebrates/Biodiversity	Elapidae	Vermicella	annulata	Bandy Bandy	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	
Herpetology/Vertebrates/Biodiversity	Elapidae	Vermicella	annulata	Bandy Bandy	Boyne R	23° 58' South	-23.96666667	151° 21' East	151.35	15-Jan-86
Birds/Vertebrates/Biodiversity	PODICIPEDIDAE	Tachybaptus	novaehollandiae	Australasian Grebe	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667	01 Jan 1912-31 Dec 1912
Birds/Vertebrates/Biodiversity	DIOMEDEIDAE	Phoebetria	palpebrata	Light-mantled Sooty Albatross	Southern end of Cape Capricorn Headland, Curtis Is	23° 29' South	-23.48333333	151° 14' East	151.2333333	10-Oct-85
Birds/Vertebrates/Biodiversity	DIOMEDEIDAE	Thalassarche	cauta	Shy Albatross	Yeppoon	23° 54' South	-23.9	150° 40' East	150.6666667	16-Nov-00
Birds/Vertebrates/Biodiversity	PROCELLARIIDAE	Pterodroma	nigripennis	Black-winged Petrel	Lakes Creek, Rockhampton	23° 23' South	-23.38333333	150° 34' East	150.5666667	27-Mar-90
Birds/Vertebrates/Biodiversity	PROCELLARIIDAE	Puffinus	gavia	Fluttering Shearwater	Curtis Is	23° 38' South	-23.63333333	151° 10' East	151.1666667	
Birds/Vertebrates/Biodiversity	SULIDAE	Morus	serrator	Australian Gannet	Cape Capricorn	23° 29' South	-23.48333333	151° 14' East	151.2333333	21-Jun-79
Birds/Vertebrates/Biodiversity	SULIDAE	Sula	leucogaster	Brown Booby	Boyne Island, off Gladstone	23° 56' South	-23.93333333	151° 21' East	151.35	Feb-80
Birds/Vertebrates/Biodiversity	Phalacrocoracidae	Phalacrocorax	carbo	Great Cormorant	Lower Dry Ck, Kroombit Tops	24° 27' South	-24.45	150° 48' East	150.8	11-Dec-83
Birds/Vertebrates/Biodiversity	Phalacrocoracidae	Phalacrocorax	sulcirostris	Little Black Cormorant	Nerimbra Stn	23° 24' South	-23.4	150° 35' East	150.5833333	15-Oct-90
Birds/Vertebrates/Biodiversity	ANATIDAE	Anas	superciliosa	Pacific Black Duck	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	Aug 1887-Sep 1887
Birds/Vertebrates/Biodiversity	ANATIDAE	Chenonetta	jubata	Australian Wood Duck	Three Moon Ck, 5Km N of Cania Gorge, NW of Monto	24° 35' South	-24.58333333	151° 1' East	151.0166667	6-Aug-74
Birds/Vertebrates/Biodiversity	ANATIDAE	Cygnus	atratus	Black Swan	Dawson R, near Duaringa	23° 54' South	-23.9	149° 50' East	149.8333333	25-Sep-65
Birds/Vertebrates/Biodiversity	ACCIPITRIDAE	Accipiter	cirrhocephalus	Collared Sparrowhawk	Duaringa	23° 43' South	-23.71666667	149° 40' East	149.6666667	26-Oct-07
Birds/Vertebrates/Biodiversity	ACCIPITRIDAE	Accipiter	cirrhocephalus	Collared Sparrowhawk	Burua	23° 57' South	-23.95	151° 13' East	151.2166667	May-92
Birds/Vertebrates/Biodiversity	ACCIPITRIDAE	Accipiter	fasciatus	Brown Goshawk	Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333	
Birds/Vertebrates/Biodiversity	ACCIPITRIDAE	Accipiter	fasciatus	Brown Goshawk	Mount Morgan	23° 38' 6" South	-23.635	150° 21' 44" East	150.3622222	18-Feb-03
Birds/Vertebrates/Biodiversity	ACCIPITRIDAE	Aviceda	subcristata	Pacific Baza	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	Jun-80
Birds/Vertebrates/Biodiversity	ACCIPITRIDAE	Aviceda	subcristata	Pacific Baza	Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333	
Birds/Vertebrates/Biodiversity	ACCIPITRIDAE	Haliaeetus	leucogaster	White-bellied Sea-Eagle	Port Curtis	23° 24' South	-23.39842771	150° 30' East	150.5010661	30-May-91
Birds/Vertebrates/Biodiversity	ACCIPITRIDAE	Haliaeetus	leucogaster	White-bellied Sea-Eagle	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	1910
Birds/Vertebrates/Biodiversity	ACCIPITRIDAE	Hieraaetus	morphnoides	Little Eagle	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667	
Birds/Vertebrates/Biodiversity	FALCONIDAE	Falco	berigora	Brown Falcon	Worthington-Bruce Highway crossroads Calliope	24° South	-24	151° 11' East	151.1833333	4-Sep-92
Birds/Vertebrates/Biodiversity	FALCONIDAE	Falco	cenchroides	Nankeen Kestrel	Mt Larcom	23° 49' South	-23.81666667	150° 59' East	150.9833333	11-Jun-92
Birds/Vertebrates/Biodiversity	FALCONIDAE	Falco	cenchroides	Nankeen Kestrel	Yarwun	23° 51' South	-23.85	151° 8' East	151.1333333	2-Dec-92
Birds/Vertebrates/Biodiversity	FALCONIDAE	Falco	hypoleucos	Grey Falcon	Duaringa	23° 43' South	-23.71666667	149° 40' East	149.6666667	26-Sep-08
Birds/Vertebrates/Biodiversity	FALCONIDAE	Falco	peregrinus	Peregrine Falcon	Gladstone area	23° 51' South	-23.85	151° 16' East	151.2666667	4-Jan-89
Birds/Vertebrates/Biodiversity	MEGAPODIIDAE	Alectura	lathami	Australian Brush-turkey	Austral site, Bulburin, Dawes Range	24° 34' South	-24.56666667	151° 29' East	151.4833333	19-Mar-75
Birds/Vertebrates/Biodiversity	MEGAPODIIDAE	Alectura	lathami	Australian Brush-turkey	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	1-Oct-61
Birds/Vertebrates/Biodiversity	TURNICIDAE	Turnix	maculosa	Red-backed Button-quail	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	Aug 1887-Sep 1887
Birds/Vertebrates/Biodiversity	TURNICIDAE	Turnix	maculosa	Red-backed Button-quail	Rockhampton District	23° 22' South	-23.36666667	150° 32' East	150.5333333	30-Jan-57
Birds/Vertebrates/Biodiversity	RALLIDAE	Gallirallus	philippensis	Buff-banded Rail	Rockhampton area	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Birds/Vertebrates/Biodiversity	RALLIDAE	Gallirallus	philippensis	Buff-banded Rail	Bracewell nr gladstone	23° 54' South	-23.9	150° 54' East	150.9	10-Jul-91
Birds/Vertebrates/Biodiversity	CHARADRIIDAE	Elseyornis	melanops	Black-fronted Dotterel	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667	
Birds/Vertebrates/Biodiversity	CHARADRIIDAE	Vanellus	miles	Masked Lapwing	Yarwun	23° 51' South	-23.85	151° 8' East	151.1333333	17-May-91
Birds/Vertebrates/Biodiversity	LARIDAE	Anous	minutus	Black Noddy	Rockhampton area	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Birds/Vertebrates/Biodiversity	LARIDAE	Chroicocephalus	novaehollandiae	Silver Gull	Gladstone waterfront	23° 51' South	-23.85	151° 16' East	151.2666667	26-Mar-92
Birds/Vertebrates/Biodiversity	LARIDAE	Thalasseus	bergii	Crested Tern	Rockhampton area	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Chalcophaps	indica	Emerald Dove	Bulburin, 1km from, Dawes Ra	24° 31' South	-24.51666667	151° 29' East	151.4833333	23-Mar-75
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Chalcophaps	indica	Emerald Dove	Bulburin, Dawes Range	24° 31' South	-24.51666667	151° 29' East	151.4833333	23-Mar-75
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Columba	leucomela	White-headed Pigeon	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	3-Oct-61
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Columba	livia	Rock Dove	Gladstone	23° 52' South	-23.86666667	151° 16' East	151.2666667	6-Dec-91
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Geopelia	humeralis	Bar-shouldered Dove	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333	25-Mar-75
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Geopelia	humeralis	Bar-shouldered Dove	Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333	
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Geopelia	striata	Peaceful Dove	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333	30-Mar-75
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Geopelia	striata	Peaceful Dove	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667	
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Geophaps	scripta	Squatter Pigeon	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	01 Aug 1887-30 Sep 1887
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Geophaps	scripta	Squatter Pigeon	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Leucosarcia	melanoleuca	Wonga Pigeon	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	3-Oct-61
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Lopholaimus	antarcticus	Topknot Pigeon	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	28-Sep-61
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Macropygia	amboinensis	Brown Cuckoo-Dove	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	5-Oct-61
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Phaps	chalcoptera	Common Bronzewing	S of Duaringa	23° 43' South	-23.71666667	149° 40' East	149.6666667	01 Aug 1971-30 Sep 1971
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Ptilinopus	magnificus	Wompoo Fruit-Dove	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	3-Oct-61
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Ptilinopus	magnificus	Wompoo Fruit-Dove	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	1-Oct-61
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Ptilinopus	magnificus	Wompoo Fruit-Dove	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	4-Oct-61
Birds/Vertebrates/Biodiversity	COLUMBIDAE	Ptilinopus	superbus	Suberb Fruit-Dove	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	01 Feb 1980-29 Feb 1980
Birds/Vertebrates/Biodiversity	Psittacidae	Glossopsitta	pusilla	Little Lorikeet	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Birds/Vertebrates/Biodiversity	Psittacidae	Trichoglossus	chlorolepidotis	Scaly-breasted Lorikeet	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	1887

Birds/Vertebrates/Biodiversity	Psittacidae	Trichoglossus	chlorolepidotis	Scaly-breasted Lorikeet	Gladstone	23° 52' South	-23.86666667	151° 16' East	151.2666667		15-Nov-91
Birds/Vertebrates/Biodiversity	Psittacidae	Trichoglossus	chlorolepidotis	Scaly-breasted Lorikeet	Calliope R, 20 miles N of Gladstone	23° 55' South	-23.91666667	151° 10' East	151.1666667		27-Jun-58
Birds/Vertebrates/Biodiversity	Psittacidae	Trichoglossus	chlorolepidotis	Scaly-breasted Lorikeet	Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333		
Birds/Vertebrates/Biodiversity	Psittacidae	Trichoglossus	haematodus	Rainbow Lorikeet	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	01 Oct 1910-31 Oct 1910	
Birds/Vertebrates/Biodiversity	Psittacidae	Trichoglossus	haematodus	Rainbow Lorikeet	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	01 Jan 1991-31 Dec 1991	
Birds/Vertebrates/Biodiversity	Psittacidae	Trichoglossus	haematodus	Rainbow Lorikeet	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		28-Jul-92
Birds/Vertebrates/Biodiversity	Psittacidae	Trichoglossus	haematodus	Rainbow Lorikeet	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		7-Jul-58
Birds/Vertebrates/Biodiversity	Psittacidae	Trichoglossus	haematodus	Rainbow Lorikeet	Kolan R, NW of Gin Gin	24° 43' South	-24.71666667	151° 28' East	151.4666667		5-Oct-61
Birds/Vertebrates/Biodiversity	Cacatuidae	Cacatua	galerita	Sulphur-crested Cockatoo	Duaringa	23° 43' South	-23.71666667	149° 40' East	149.6666667		15-Sep-08
Birds/Vertebrates/Biodiversity	Cacatuidae	Eolophus	roseicapillus	Galah	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		14-Oct-91
Birds/Vertebrates/Biodiversity	Cacatuidae	Calyptorhynchus	banksii	Red-tailed Black-Cockatoo	Rockhampton area	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Birds/Vertebrates/Biodiversity	Cacatuidae	Calyptorhynchus	lathami	Glossy Black-Cockatoo	Kroombit Tops, 1km E Forestry Barracks	24° 24' South	-24.4	150° 58' East	150.9666667		19-Apr-91
Birds/Vertebrates/Biodiversity	PSITTACIDAE	Alisteris	scapularis	Australian King-Parrot	[Fitzroy R area]	23° 22' South	-23.36666667	150° 32' East	150.5333333	Aug 1887-Sep 1887	
Birds/Vertebrates/Biodiversity	PSITTACIDAE	Alisteris	scapularis	Australian King-Parrot	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667		2-Oct-61
Birds/Vertebrates/Biodiversity	PSITTACIDAE	Aprosmictus	erythropterus	Red-winged Parrot	Benaraby	24° South	-24	151° 19' East	151.3166667		26-Nov-91
Birds/Vertebrates/Biodiversity	PSITTACIDAE	Aprosmictus	erythropterus	Red-winged Parrot	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667	01 Jan 1872-31 Dec 1872	
Birds/Vertebrates/Biodiversity	PSITTACIDAE	Platycercus	adscitus	Pale-headed Rosella	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333		30-Mar-75
Birds/Vertebrates/Biodiversity	PSITTACIDAE	Platycercus	adscitus	Pale-headed Rosella	Lower Dawson R, Coomooboolaroo Stn	23° 52' South	-23.86666667	149° 34' East	149.5666667		27-Jul-31
Birds/Vertebrates/Biodiversity	PSITTACIDAE	Platycercus	adscitus	Pale-headed Rosella	Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333		
Birds/Vertebrates/Biodiversity	PSITTACIDAE	Platycercus	adscitus	Pale-headed Rosella	Duaringa	23° 43' South	-23.71666667	149° 40' East	149.6666667		
Birds/Vertebrates/Biodiversity	CUCULIDAE	Cacomantis	flabelliformis	Fan-tailed Cuckoo	[Berserker Ra], Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	01 Jul 1887-31 Jul 1887	
Birds/Vertebrates/Biodiversity	CUCULIDAE	Cacomantis	flabelliformis	Fan-tailed Cuckoo	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Birds/Vertebrates/Biodiversity	CUCULIDAE	Cacomantis	flabelliformis	Fan-tailed Cuckoo	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667		3-Oct-61
Birds/Vertebrates/Biodiversity	CUCULIDAE	Chalcites	lucidus	Shining Bronze-Cuckoo	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333		25-Mar-75
Birds/Vertebrates/Biodiversity	CUCULIDAE	Cuculus	optatus	Oriental Cuckoo	Rundle Range NP	23° 39' South	-23.65	150° 59' East	150.9833333		13-Apr-92
Birds/Vertebrates/Biodiversity	CUCULIDAE	Eudynamys	orientalis	Eastern Koel	Wyndham Avenue, Boyne Island	23° 56' South	-23.93333333	151° 21' East	151.35		1-Jan-93
Birds/Vertebrates/Biodiversity	CUCULIDAE	Centropus	phasianinus	Pheasant Coucal	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		Feb-80
Birds/Vertebrates/Biodiversity	TYTONIDAE	Tyto	javanica	Eastern Barn Owl	North Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Birds/Vertebrates/Biodiversity	STRIGIDAE	Ninox	strenua	Powerful Owl	The Plateau, SW Gladstone	24° 25' South	-24.41666667	151° East	151	01 Oct 1982-31 Oct 1982	
Birds/Vertebrates/Biodiversity	PODARGIDAE	Podargus	sp		North escarpment, Kroombit Tops	24° 26' South	-24.43333333	151° East	151		16-Dec-83
Birds/Vertebrates/Biodiversity	PODARGIDAE	Podargus	strigoides	Tawny Frogmouth	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Birds/Vertebrates/Biodiversity	Eurostopodidae	Eurostopodus	mystacalis	White-throated Nightjar	Berserker Range, Rockhampton	23° 21' South	-23.35	150° 36' East	150.6	09 Aug 1887	
Birds/Vertebrates/Biodiversity	Halcyonidae	Dacelo	leachii	Blue-winged Kookaburra	Bruce Hwy, 5Km N of Rockhampton	23° 17' South	-23.28333333	150° 31' East	150.5166667		28-Jun-82
Birds/Vertebrates/Biodiversity	Halcyonidae	Dacelo	leachii	Blue-winged Kookaburra	Rockhampton District	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Birds/Vertebrates/Biodiversity	Halcyonidae	Dacelo	novaeguineae	Laughing Kookaburra	S of Moura	24° 34' South	-24.56666667	149° 59' East	149.9833333		17-Jul-71
Birds/Vertebrates/Biodiversity	Halcyonidae	Dacelo	novaeguineae	Laughing Kookaburra	Bulburin, Dawes Range	24° 31' South	-24.51666667	151° 29' East	151.4833333		20-Mar-75
Birds/Vertebrates/Biodiversity	Halcyonidae	Dacelo	novaeguineae	Laughing Kookaburra	Calliope area	24° South	-24	151° 12' East	151.2		28-Feb-92
Birds/Vertebrates/Biodiversity	Halcyonidae	Dacelo	novaeguineae	Laughing Kookaburra	Boyne Island	23° 56' South	-23.93333333	151° 21' East	151.35		30-Mar-92
Birds/Vertebrates/Biodiversity	Halcyonidae	Dacelo	novaeguineae	Laughing Kookaburra	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667		1912
Birds/Vertebrates/Biodiversity	Halcyonidae	Todiramphus	sanctus	Sacred Kingfisher	Gladstone area	23° 51' South	-23.85	151° 16' East	151.2666667	01 Jan 1992-31 Dec 1992	
Birds/Vertebrates/Biodiversity	MEROPIDAE	Merops	ornatus	Rainbow Bee-Eater	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		30-Dec-00
Birds/Vertebrates/Biodiversity	MEROPIDAE	Merops	ornatus	Rainbow Bee-Eater	Miriam Vale, 15 miles N	24° 10' South	-24.16666667	151° 28' East	151.4666667		24-Jun-72
Birds/Vertebrates/Biodiversity	MEROPIDAE	Merops	ornatus	Rainbow Bee-Eater	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	01 Aug 1887-30 Sep 1887	
Birds/Vertebrates/Biodiversity	MEROPIDAE	Merops	ornatus	Rainbow Bee-Eater	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667	01 Jan 1912-31 Jan 1912	
Birds/Vertebrates/Biodiversity	CORACIIDAE	Eurystomus	orientalis	Dollarbird	Dan Dan Scrub SF	24° 9' South	-24.15	151° 5' East	151.0833333		17-Aug-92
Birds/Vertebrates/Biodiversity	CORACIIDAE	Eurystomus	orientalis	Dollarbird	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667		1-Dec-94
Birds/Vertebrates/Biodiversity	CORACIIDAE	Eurystomus	orientalis	Dollarbird	Gladstone	23° 52' South	-23.86666667	151° 16' East	151.2666667		21-Nov-91
Birds/Vertebrates/Biodiversity	PITTIDAE	Pitta	versicolor	Noisy Pitta	Bulburin, Dawes Range	24° 31' South	-24.51666667	151° 29' East	151.4833333		19-Mar-75
Birds/Vertebrates/Biodiversity	PITTIDAE	Pitta	versicolor	Noisy Pitta	Austral site, Dawes Range	24° 34' South	-24.56666667	151° 29' East	151.4833333		22-Mar-75
Birds/Vertebrates/Biodiversity	PITTIDAE	Pitta	versicolor	Noisy Pitta	Curtis Is	23° 38' South	-23.63333333	151° 10' East	151.1666667		
Birds/Vertebrates/Biodiversity	PITTIDAE	Pitta	versicolor	Noisy Pitta	Austral site, Bulburin, Dawes Range	24° 34' South	-24.56666667	151° 29' East	151.4833333		21-Mar-75
Birds/Vertebrates/Biodiversity	HIRUNDINIDAE	Petrochelidon	ariel	Fairy Martin	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667		1912
Birds/Vertebrates/Biodiversity	CAMPEPHAGIDAE	Coracina	papuensis	White-bellied Cuckoo-shrike	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333		27-Mar-75
Birds/Vertebrates/Biodiversity	CAMPEPHAGIDAE	Coracina	papuensis	White-bellied Cuckoo-shrike	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667		1912
Birds/Vertebrates/Biodiversity	CAMPEPHAGIDAE	Coracina	tenuirostris	Cicadabird	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333		30-Mar-75
Birds/Vertebrates/Biodiversity	CAMPEPHAGIDAE	Lalage	tricolor	White-winged Triller	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667		
Birds/Vertebrates/Biodiversity	TURDIDAE	Zoothera	heinei	Russet-tailed Thrush	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667		3-Oct-61
Birds/Vertebrates/Biodiversity	POMATOSTOMIDAE	Pomatostomus	temporalis	Grey-crowned Babbler	Three Moon Ck, 5Km N of Cania Gorge	24° 35' South	-24.58333333	151° 1' East	151.0166667		6-Aug-74
Birds/Vertebrates/Biodiversity	Megaluridae	Cincloramphus	mathewsi	Rufous Songlark	Mornish, Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Birds/Vertebrates/Biodiversity	Megaluridae	Cincloramphus	mathewsi	Rufous Songlark	Mt Rose	24° 38' South	-24.63333333	150° 57' East	150.95		Dec-79
Birds/Vertebrates/Biodiversity	Megaluridae	Megalurus	timoriensis	Tawny Grassbird	Mt Rose	24° 38' South	-24.63333333	150° 57' East	150.95		8-Nov-79
Birds/Vertebrates/Biodiversity	Megaluridae	Megalurus	timoriensis	Tawny Grassbird	Gladstone area	23° 51' South	-23.85	151° 16' East	151.2666667	01 Jan 1992-31 Dec 1992	
Birds/Vertebrates/Biodiversity	MALURIDAE	Malurus	melanocephalus	Red-backed Fairy Wren	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Birds/Vertebrates/Biodiversity	ACANTHIZIDAE	Acanthiza	nana	Yellow Thornbill	Theodore Rd, 30km W of Glenhaughton Rd	24° 57' South	-24.95	149° 48' East	149.8		18-Mar-77
Birds/Vertebrates/Biodiversity	ACANTHIZIDAE	Acanthiza	pusilla	Brown Thornbill	Austral site, Bulburin, Dawes Range	24° 34' South	-24.56666667	151° 29' East	151.4833333		20-Mar-75
Birds/Vertebrates/Biodiversity	ACANTHIZIDAE	Chthonicola	sagittata	Speckled Warbler	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Birds/Vertebrates/Biodiversity	ACANTHIZIDAE	Gerygone	albogularis	White-throated Gerygone	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	Aug 1887-Sep 1887	
Birds/Vertebrates/Biodiversity	ACANTHIZIDAE	Gerygone	albogularis	White-throated Gerygone	Canya Gorge, Three Moon Ck, 5km N Monto	24° 27' South	-24.45	151° 1' East	151.0166667		6-Aug-74
Birds/Vertebrates/Biodiversity	ACANTHIZIDAE	Gerygone	albogularis	White-throated Gerygone	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		7-Jul-58
Birds/Vertebrates/Biodiversity	ACANTHIZIDAE	Gerygone	palpebrosa	Fairy Gerygone	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	Aug 1887-Sep 1887	
Birds/Vertebrates/Biodiversity	ACANTHIZIDAE	Gerygone	palpebrosa	Fairy Gerygone	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333		29-Mar-75
Birds/Vertebrates/Biodiversity	ACANTHIZIDAE	Gerygone	palpebrosa	Fairy Gerygone	Marmor, Nth Coast Line	23° 41' South	-23.68333333	150° 42' East	150.7		
Birds/Vertebrates/Biodiversity	ACANTHIZIDAE	Sericornis	frontalis	White-browed Scrubwren	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333		29-Mar-75
Birds/Vertebrates/Biodiversity	ACANTHIZIDAE	Sericornis	magnirostris	Large-billed Scrubwren	Bulburin, 1km from, Dawes Ra	24° 31' South	-24.51666667	151° 29' East	151.4833333		20-Mar-75
Birds/Vertebrates/Biodiversity	ACANTHIZIDAE	Sericornis	magnirostris	Large-billed Scrubwren	Bulburin, 1km from, Dawes Ra	24° 31' South	-24.51666667	151° 29' East	151.4833333		19-Mar-75
Birds/Vertebrates/Biodiversity	ACANTHIZIDAE	Sericornis	magnirostris	Large-billed Scrubwren	Austral site, Bulburin, Dawes Range	24° 34' South	-24.56666667	151° 29' East	151.4833333		20-Mar-75
Birds/Vertebrates/Biodiversity	MONARCHIDAE	Symposiarchus	trivirgatus	Spectacled Flycatcher	Mt Beecher, 0.5km NW	23° 55' South	-23.91508885	151° 11' East	151.1843933	15 Dec 1999-20 Mar 2000	
Birds/Vertebrates/Biodiversity	MONARCHIDAE	Myiagra	rubecula	Leaden Flycatcher	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333		25-Mar-75
Birds/Vertebrates/Biodiversity	MONARCHIDAE	Myiagra	rubecula	Leaden Flycatcher	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333		30-Mar-75
Birds/Vertebrates/Biodiversity	Rhipiduridae	Rhipidura	fuliginosa	Grey Fantail	Theodore Rd, 30km W of Glenhaughton Rd	24° 57' South	-24.95	149° 48' East	149.8		18-Mar-77
Birds/Vertebrates/Biodiversity	Rhipiduridae	Rhipidura	leucophrys	Willie Wagtail	Theodore Rd, 30km W of Glenhaughton Rd	24° 57' South	-24.95	149° 48' East	149.8		18-Mar-77
Birds/Vertebrates/Biodiversity	Rhipiduridae	Rhipidura	leucophrys	Willie Wagtail	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667		1912
Birds/Vertebrates/Biodiversity	Rhipiduridae	Rhipidura	leucophrys	Willie Wagtail	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Birds/Vertebrates/Biodiversity	Rhipiduridae	Rhipidura	rufifrons	Rufous Fantail	Bulburin, 1km from, Dawes Ra	24° 31' South	-24.51666667	151° 29' East	151.4833333		20-Mar-75

Birds/Vertebrates/Biodiversity	Rhipiduridae	Rhipidura	rufifrons	Rufous Fantail	Bulburin, 1km from, Dawes Ra	24° 31' South	-24.51666667	151° 29' East	151.4833333	21-Mar-75
Birds/Vertebrates/Biodiversity	MONARCHIDAE	Myiagra	inquieta	Restless Flycatcher	Three Moon Ck, 5Km N of Cania Gorge	24° 35' South	-24.58333333	151° 1' East	151.0166667	6-Aug-74
Birds/Vertebrates/Biodiversity	PETROICIDAE	Eopsaltria	australis	Eastern Yellow Robin	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Birds/Vertebrates/Biodiversity	PETROICIDAE	Eopsaltria	australis	Eastern Yellow Robin	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	1-Oct-61
Birds/Vertebrates/Biodiversity	PETROICIDAE	Eopsaltria	australis	Eastern Yellow Robin	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	2-Oct-61
Birds/Vertebrates/Biodiversity	PETROICIDAE	Eopsaltria	australis	Eastern Yellow Robin	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	5-Oct-61
Birds/Vertebrates/Biodiversity	PETROICIDAE	Melanodryas	cucullata	Hooded Robin	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Birds/Vertebrates/Biodiversity	PETROICIDAE	Melanodryas	cucullata	Hooded Robin	Kurrajong Stn	24° 43' South	-24.71666667	150° 28' East	150.4666667	4-Nov-11
Birds/Vertebrates/Biodiversity	PACHYCEPHALIDAE	Colluricincla	harmonica	Grey Shrike-thrush	Bulburin Ck, Dawes Range	24° 31' South	-24.51666667	151° 29' East	151.4833333	22-Mar-75
Birds/Vertebrates/Biodiversity	PACHYCEPHALIDAE	Colluricincla	harmonica	Grey Shrike-thrush	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333	30-Mar-75
Birds/Vertebrates/Biodiversity	PACHYCEPHALIDAE	Colluricincla	harmonica	Grey Shrike-thrush	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	2-Oct-61
Birds/Vertebrates/Biodiversity	PACHYCEPHALIDAE	Colluricincla	megarhyncha	Little Shrike-thrush	Bulburin, 1km from, Dawes Ra	24° 31' South	-24.51666667	151° 29' East	151.4833333	19-Apr-75
Birds/Vertebrates/Biodiversity	PACHYCEPHALIDAE	Colluricincla	megarhyncha	Little Shrike-thrush	Bulburin, Dawes Range	24° 31' South	-24.51666667	151° 29' East	151.4833333	23-Mar-75
Birds/Vertebrates/Biodiversity	PACHYCEPHALIDAE	Pachycephala	pectoralis	Golden Whistler	Austral logging site, Bulburin, Dawes Range	24° 34' South	-24.56666667	151° 29' East	151.4833333	20-Mar-75
Birds/Vertebrates/Biodiversity	PACHYCEPHALIDAE	Pachycephala	pectoralis	Golden Whistler	Bulburin, 1km from, Dawes Ra	24° 31' South	-24.51666667	151° 29' East	151.4833333	19-Mar-75
Birds/Vertebrates/Biodiversity	PACHYCEPHALIDAE	Pachycephala	pectoralis	Golden Whistler	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	29-Sep-61
Birds/Vertebrates/Biodiversity	PACHYCEPHALIDAE	Pachycephala	rufiventris	Rufous Whistler	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333	30-Mar-75
Birds/Vertebrates/Biodiversity	PACHYCEPHALIDAE	Pachycephala	rufiventris	Rufous Whistler	Theodore Rd, 30km W of Glenhaughton Rd	24° 57' South	-24.95	149° 48' East	149.8	18-Mar-77
Birds/Vertebrates/Biodiversity	PACHYCEPHALIDAE	Pachycephala	rufiventris	Rufous Whistler	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667	1912
Birds/Vertebrates/Biodiversity	PACHYCEPHALIDAE	Pachycephala	olivacea	Olive Whistler	Bulburin, 1km from, Dawes Ra	24° 31' South	-24.51666667	151° 29' East	151.4833333	21-Mar-75
Birds/Vertebrates/Biodiversity	PACHYCEPHALIDAE	Pachycephala	olivacea	Olive Whistler	Bulburin, 1km from, Dawes Ra	24° 31' South	-24.51666667	151° 29' East	151.4833333	20-Mar-75
Birds/Vertebrates/Biodiversity	NEOSITTIDAE	Daphoenositta	chrysoptera	Varied Sittella	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	Aug 1887-Sep 1887
Birds/Vertebrates/Biodiversity	CLIMACTERIDAE	Cormobates	leucophaea	White-throated Treecreeper	Bulburin SF	24° 35' South	-24.58175252	151° 25' East	151.4177283	01 Dec 1992-31 Dec 1992
Birds/Vertebrates/Biodiversity	PARDALOTIDAE	Pardalotus	striatus	Striated Pardelote	Calliope	24° South	-24	151° 12' East	151.2	5-May-92
Birds/Vertebrates/Biodiversity	PARDALOTIDAE	Pardalotus	striatus	Striated Pardelote	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667	1912
Birds/Vertebrates/Biodiversity	NECTARINIDAE	Nectarinia	jugularis	Olive-backed Sunbird	Mt Morgan Gold Mine	23° 38' South	-23.63333333	150° 22' East	150.3666667	21-Jun-02
Birds/Vertebrates/Biodiversity	ZOSTEROPIDAE	Zosterops	lateralis	Silvereye	Bulburin, Dawes Range	24° 31' South	-24.51666667	151° 29' East	151.4833333	19-Mar-75
Birds/Vertebrates/Biodiversity	ZOSTEROPIDAE	Zosterops	lateralis	Silvereye	Bulburin, Dawes Range	24° 31' South	-24.51666667	151° 29' East	151.4833333	23-Mar-75
Birds/Vertebrates/Biodiversity	ZOSTEROPIDAE	Zosterops	lateralis	Silvereye	Theodore Rd, 30km W of Glenhaughton Rd	24° 57' South	-24.95	149° 48' East	149.8	18-Mar-77
Birds/Vertebrates/Biodiversity	ZOSTEROPIDAE	Zosterops	lateralis	Silvereye	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Entomyzon	cyanotis	Blue-faced Honeyeater	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	27-Mar-92
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Entomyzon	cyanotis	Blue-faced Honeyeater	Duaringa	23° 43' South	-23.71666667	149° 40' East	149.6666667	29-Oct-01
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Entomyzon	cyanotis	Blue-faced Honeyeater	Kolan R, NW of Gin Gin	24° 43' South	-24.71666667	151° 28' East	151.4666667	5-Oct-61
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Entomyzon	cyanotis	Blue-faced Honeyeater	Kolan R, NW of Gin Gin	24° 43' South	-24.71666667	151° 28' East	151.4666667	5-Oct-62
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Honeyeater			Marmor, Nth Coast Line	23° 41' South	-23.68333333	150° 42' East	150.7	
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Lichenostomus	fasciogularis	Mangrove Honeyeater	Gladstone	23° 51' South	-23.85	151° 16' East	151.2666667	16-Nov-92
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Lichenostomus	fuscus	Fuscous Honeyeater	Duaringa	23° 43' South	-23.71666667	149° 40' East	149.6666667	20-Nov-01
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Lichenostomus	melanops	Yellow-tufted Honeyeater	Dawson R	23° 54' South	-23.9	149° 50' East	149.8333333	22-Aug-29
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Lichmera	indistincta	Brown Honeyeater	Calliope R, 20 miles N of Gladstone	23° 55' South	-23.91666667	151° 10' East	151.1666667	27-Jun-58
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Lichmera	indistincta	Brown Honeyeater	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Manorina	melanocephala	Noisy Miner	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667	01 Jan 1912-31 Dec 1912
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Meliphaga	lewinii	Lewin's Honeyeater	Dawes Range, 1km from Bulburin	24° 31' South	-24.51666667	151° 29' East	151.4833333	21-Apr-75
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Meliphaga	lewinii	Lewin's Honeyeater	Bulburin, Dawes Range	24° 31' South	-24.51666667	151° 29' East	151.4833333	19-Mar-75
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Meliphaga	lewinii	Lewin's Honeyeater	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333	23-Mar-75
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Melithreptus	albogularis	White-throated Honeyeater	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	30-Mar-75
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Melithreptus	albogularis	White-throated Honeyeater	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333	
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Melithreptus	albogularis	White-throated Honeyeater	Canya Gorge, Three Moon Ck, 5km N Monto	24° 27' South	-24.45	151° 1' East	151.0166667	27-Mar-75
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Melithreptus	albogularis	White-throated Honeyeater	Calliope R, 20 miles N of Gladstone	23° 55' South	-23.91666667	151° 10' East	151.1666667	6-Aug-74
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Myzomela	obscura	Dusky Honeyeater	Bulburrin SF 391, Boyne R	24° 31' South	-24.51666667	151° 29' East	151.4833333	27-Jun-58
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Myzomela	sanguinolenta	Scarlet Honeyeater	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	25-Jun-92
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Myzomela	sanguinolenta	Scarlet Honeyeater	Calliope R, near Gladstone	23° 55' South	-23.91666667	151° 10' East	151.1666667	7-Jul-58
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Philemon	citreogularis	Little Friarbird	Boyne Island	23° 56' South	-23.93333333	151° 20' East	151.3333333	26-Jun-58
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Philemon	citreogularis	Little Friarbird	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Philemon	citreogularis	Little Friarbird	Calliope R, 20 miles N of Gladstone	23° 55' South	-23.91666667	151° 10' East	151.1666667	27-Jun-58
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Philemon	citreogularis	Little Friarbird	Duaringa	23° 43' South	-23.71666667	149° 40' East	149.6666667	1-Nov-01
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Philemon	citreogularis	Little Friarbird	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667	
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Plectorhyncha	lanceolata	Striped Honeyeater	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333	27-Mar-75
Birds/Vertebrates/Biodiversity	MELIPHAGIDAE	Plectorhyncha	lanceolata	Striped Honeyeater	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333	30-Mar-75
Birds/Vertebrates/Biodiversity	ESTRILDIDAE	Neochmia	modesta	Plum-headed Finch	Theodore Rd, 30km W of Glenhaughton Rd	24° 57' South	-24.95	149° 48' East	149.8	18-Mar-77
Birds/Vertebrates/Biodiversity	ESTRILDIDAE	Lonchura	castaneothorax	Chestnut-breasted Mannikin	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	Aug 1887-Sep 1887
Birds/Vertebrates/Biodiversity	ESTRILDIDAE	Lonchura	castaneothorax	Chestnut-breasted Mannikin	Mt Rose	24° 38' South	-24.63333333	150° 57' East	150.95	8-Nov-79
Birds/Vertebrates/Biodiversity	ESTRILDIDAE	Taeniopygia	bichenovii	Double-barred Finch	Theodore Rd, 30km W of Glenhaughton Rd	24° 57' South	-24.95	149° 48' East	149.8	18-Mar-77
Birds/Vertebrates/Biodiversity	ESTRILDIDAE	Taeniopygia	bichenovii	Double-barred Finch	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667	1912
Birds/Vertebrates/Biodiversity	STURNIDAE	Sturnus	vulgaris	Common Starling	Mt Rose	24° 38' South	-24.63333333	150° 57' East	150.95	8-Nov-79
Birds/Vertebrates/Biodiversity	ORIOLIDAE	Oriolus	sagittatus	Olive-backed Oriole	Castle Ck, Rannes, near Rockhampton	24° 50' South	-24.83333333	150° 50' East	150.8333333	
Birds/Vertebrates/Biodiversity	ORIOLIDAE	Sphecotheres	vieilloti	Australasian Figbird	[Black Gin Ck], Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	Aug 1887
Birds/Vertebrates/Biodiversity	ORIOLIDAE	Sphecotheres	vieilloti	Australasian Figbird	[Berserker Ra], Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	Jul 1887
Birds/Vertebrates/Biodiversity	ORIOLIDAE	Sphecotheres	vieilloti	Australasian Figbird	Kolan R, NW of Gin Gin	24° 43' South	-24.71666667	151° 28' East	151.4666667	5-Oct-61
Birds/Vertebrates/Biodiversity	DICRURIDAE	Dicrurus	bracteatus	Spangled Drongo	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333	25-Mar-75
Birds/Vertebrates/Biodiversity	DICRURIDAE	Dicrurus	bracteatus	Spangled Drongo	Rundle Range, E of Mt Larcom	23° 40' South	-23.66666667	151° 5' East	151.0833333	30-Mar-75
Birds/Vertebrates/Biodiversity	Monarchidae	Grallina	cyanoleuca	Magpie-lark	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667	01 Jan 1912-31 Dec 1912
Birds/Vertebrates/Biodiversity	CORCORACIDAE	Corcorax	melanorhamphos	White-winged Chough	Golemlick, 40 miles NE of Monto	24° 36' South	-24.6	151° 19' East	151.3166667	26-Sep-61
Birds/Vertebrates/Biodiversity	CORCORACIDAE	Struthidea	cinerea	Apostlebird	S of Moura	24° 34' South	-24.56666667	149° 59' East	149.9833333	Aug 1971-Sep 1971
Birds/Vertebrates/Biodiversity	ARTAMIDAE	Artamus	cinereus	Black-faced Woodswallow	Mt Rose, Boggonoss Swamp	24° 38' South	-24.63333333	150° 57' East	150.95	7-Nov-79
Birds/Vertebrates/Biodiversity	ARTAMIDAE	Artamus	cinereus	Black-faced Woodswallow	Duaringa	23° 43' South	-23.71666667	149° 40' East	149.6666667	20-Oct-00
Birds/Vertebrates/Biodiversity	ARTAMIDAE	Artamus	leucorynchus	White-breasted Woodswallow	Coomooboolaroo	23° 52' South	-23.86666667	149° 34' East	149.5666667	1912
Birds/Vertebrates/Biodiversity	ARTAMIDAE	Artamus	leucorynchus	White-breasted Woodswallow	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Birds/Vertebrates/Biodiversity	ARTAMIDAE	Artamus	minor	Little Woodswallow	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	Aug 1887-Sep 1887
Birds/Vertebrates/Biodiversity	ARTAMIDAE	Artamus	minor	Little Woodswallow	Duaringa	23° 43' South	-23.71666667	149° 40' East	149.6666667	5-Oct-07
Birds/Vertebrates/Biodiversity	ARTAMIDAE	Artamus	superciliosus	White-browed Woodswallow	Theodore area	24° 57' South	-24.95	150° 5' East	150.0833333	25-Mar-78
Birds/Vertebrates/Biodiversity	ARTAMIDAE	Strepera	graculina	Pied Currawong	Spring Creek	24° 6' South	-24.1	150° 30' East	150.5	10-Aug-92
Birds/Vertebrates/Biodiversity	ARTAMIDAE	Strepera	graculina	Pied Currawong	[Fitzroy R area]	23° 22' South	-23.36666667	150° 32' East	150.5333333	Aug 1887-Sep 1887
Birds/Vertebrates/Biodiversity	PTILONORHYNCHIDAE	Ailuroedus	crassirostris	Green Catbird	Austral site, Bulburin, Dawes Range	24° 34' South	-24.56666667	151° 29' East	151.4833333	20-Mar-75

Birds/Vertebrates/Biodiversity	PTILONORHYNCHIDAE	Ailuroedus	crassirostris	Green Catbird	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667		27-Sep-61
Birds/Vertebrates/Biodiversity	PTILONORHYNCHIDAE	Ptilonorhynchus	violaceus	Satin Bowerbird	Kinma Siding, Dawson Valley	24° 30' South	-24.5	149° 55' East	149.9166667		
Birds/Vertebrates/Biodiversity	PTILONORHYNCHIDAE	Sericulus	chrysocephalus	Regent Bowerbird	Bulburin, 1km from, Dawes Ra	24° 31' South	-24.51666667	151° 29' East	151.4833333		22-Mar-75
Birds/Vertebrates/Biodiversity	PTILONORHYNCHIDAE	Sericulus	chrysocephalus	Regent Bowerbird	Many Peaks Range, 15 miles SW of Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667		28-Sep-61
Birds/Vertebrates/Biodiversity	PARADISAEIDAE	Ptiloris	paradiseus	Paradise Riflebird	Austral site, Bulburin, Dawes Range	24° 34' South	-24.56666667	151° 29' East	151.4833333		20-Mar-75
Birds/Vertebrates/Biodiversity	CORVIDAE	Corvus	orru	Torresian Crow	Duaringa area	23° 43' South	-23.71666667	149° 40' East	149.6666667		18-Oct-55
Mammals/Vertebrates/Biodiversity	Ornithorhynchidae	Ornithorhynchus	anatinus	Platypus	Mulgildie Pta, via Eidsvold	24° 58' South	-24.96666667	151° 7' East	151.1166667		
Mammals/Vertebrates/Biodiversity	Ornithorhynchidae	Ornithorhynchus	anatinus	Platypus	Rockhampton District	23° 23' South	-23.38333333	150° 30' East	150.5		
Mammals/Vertebrates/Biodiversity	Tachyglossidae	Tachyglossus	aculeatus	Short-beaked Echidna	Theodore Rd	24° 57' South	-24.94842721	150° 5' East	150.0844173		9-Sep-96
Mammals/Vertebrates/Biodiversity	Tachyglossidae	Tachyglossus	aculeatus	Short-beaked Echidna	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Antechinus	flavipes	Yellow-footed antechinus	Many Peaks, nr Gladstone	24° 18' South	-24.3	151° 25' East	151.4166667		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Antechinus	flavipes	Yellow-footed antechinus	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Antechinus	flavipes	Yellow-footed antechinus	Bulburin SF, top of range	24° 31' South	-24.51666667	151° 29' East	151.4833333	05 Oct 1974-30 Dec 1974	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Antechinus	flavipes	Yellow-footed antechinus	Bulburin SF, top of range	24° 31' South	-24.51666667	151° 29' East	151.4833333	30 Dec 1974-03 May 1975	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Antechinus	flavipes	Yellow-footed antechinus	Kroombit Tops	24° 23' 56" South	-24.39888889	151° 2' 44" East	151.0455556		9-Apr-92
Mammals/Vertebrates/Biodiversity	Dasyuridae	Dasyurus	hallucatus	Northern quoll	Berserker Ra, Yeppoon	23° 21' South	-23.35	150° 36' East	150.6		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Dasyurus	hallucatus	Northern quoll	Dawson Valley	24° 56' South	-24.93333333	150° 16' East	150.2666667		20-Jun-66
Mammals/Vertebrates/Biodiversity	Dasyuridae	Dasyurus	hallucatus	Northern quoll	Rockhampton District	23° 23' South	-23.38333333	150° 30' East	150.5		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Dasyurus	hallucatus	Northern quoll	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Phascogale	tapoatafa	Brush-tailed phascogale	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Phascogale	tapoatafa	Brush-tailed phascogale	Rockhampton area	23° 23' South	-23.38333333	150° 30' East	150.5		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Kroombit Tops, SF 316	24° 28' 14" South	-24.47055556	150° 54' 56" East	150.9155556		27-Aug-97
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 6' East	151.1		23-Jan-98
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Camboon SF 64, via Theodore	25° 6' 23" South	-25.10638889	150° 32' 24" East	150.54		21-Oct-98
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Stanwell Power Station	23° 29' South	-23.48176199	150° 19' East	150.317736		26-Oct-98
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Gladstone, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		7-Apr-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Gladstone, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		8-Apr-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Gladstone, Southern Pacific Petroleum Site	23° 48' 59" South	-23.81638889	151° 9' 17" East	151.1547222		22-Nov-98
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Gladstone, Southern Pacific Petroleum Site	23° 46' 15" South	-23.77083333	151° 7' East	151.1166667		25-Nov-98
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Gladstone, Southern Pacific Petroleum Site	23° 44' 50" South	-23.74722222	151° 6' 32" East	151.1088889		20-Jan-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Awoonga Dam Area, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		5-Dec-98
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Awoonga Dam Area, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333		14-Dec-98
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Awoonga Dam/Calliope R	24° 13' 8" South	-24.21888889	151° 15' 25" East	151.2569444		10-Apr-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Awoonga Dam/Calliope R	24° 13' 8" South	-24.21888889	151° 15' 25" East	151.2569444		9-Apr-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Calliope R- Larcom Ck Site, W of Banaraby	23° 52' 19" South	-23.87194444	151° 52" East	151.0144444		17-Feb-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Calliope R - W of Banaraby, Wycherpoof Stn	23° 58' 20" South	-23.97222222	151° 3' 3" East	151.0508333		17-Feb-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Gladstone Southern Pacific Petroleum, Stage 2 Site	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		24-Jun-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Gladstone Southern Pacific Petroleum, Stage 2 Site	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444		29-Jun-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Awoonga Dam (from Boyne Valley to Miriam Vale)	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889	27 Mar 2000-07 Apr 2000	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Moore Rd, Gracemere	23° 26' South	-23.43333333	150° 27' East	150.45		30-Nov-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Awoonga Dam, Boyne Valley	24° 3' 6" South	-24.05166667	151° 19' 25" East	151.3236111	20 Nov 2001-30 Nov 2001	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Mt Larcom	23° 48' South	-23.8	151° 5' East	151.0833333		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Calliope	24° South	-24	151° 12' East	151.2		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Biloela	24° 24' South	-24.4	150° 31' East	150.5166667		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Gracemere	23° 26' South	-23.43333333	150° 27' East	150.45		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Bindaree, 10km ENE Miriamvale	24° 16' South	-24.26666667	150° 39' East	150.65		6-Nov-81
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Yarwun, Boyles Rd	23° 51' South	-23.85	150° 8' East	150.1333333		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	13 Dec 1983-18 Dec 1983	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Monto	24° 52' South	-24.86666667	151° 7' East	151.1166667		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	11 Dec 1983-18 Dec 1983	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Black Gin Ck, Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Bulburin State Park, 32.2km W of Lowmead	24° 31' South	-24.51666667	151° 29' East	151.4833333		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667		11-Mar-92
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	maculata	Common planigale	Mt Ford Williams, via Kalpower	24° 42' South	-24.69841969	151° 18' East	151.3010642	02 Dec 1989-06 Jan 1990	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Planigale	tenuirostris	Narrow-nosed planigale	Monto	24° 52' South	-24.86666667	151° 7' East	151.1166667		Sep-68
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	sp		Mt Kroombit, 26km E Biloela, Valentine Plains Rd	24° 26' South	-24.43333333	150° 43' East	150.7166667		Sep-70
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	crassicaudata	Fat-tailed dunnart	Westwood, via Rockhampton	23° 37' South	-23.61666667	150° 9' East	150.15		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	macroura	Stripe-faced dunnart	Dawson Valley	24° 36' 59" South	-24.61638889	150° 7' 52" East	150.1311111		9-Apr-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	macroura	Stripe-faced dunnart	Banana, S of	24° 36' 49" South	-24.61361111	150° 7' 21" East	150.1225		4-Jun-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	macroura	Stripe-faced dunnart	Banana	24° 28' South	-24.46666667	150° 8' East	150.1333333		
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	macroura	Stripe-faced dunnart	Fairview Stn, Injune	24° 20' South	-24.33333333	149° 55' East	149.9166667		1995
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	macroura	Stripe-faced dunnart	Alton Downs, Rockhampton	23° 19' South	-23.31666667	150° 23' East	150.3833333	01 Jan 1996-31 Dec 1996	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	murina	Common dunnart	Stanwell Power Station	23° 29' South	-23.48176199	150° 19' East	150.317736		25-Oct-98
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	murina	Common dunnart	Gladstone, Southern Pacific Petroleum Site	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778		27-Nov-98
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	murina	Common dunnart	Awoonga Dam/Calliope R	23° 58' 36" South	-23.97666667	151° 3' 28" East	151.0577778		13-Apr-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	murina	Common dunnart	Gladstone Southern Pacific Petroleum, Stage 2 Site	23° 48' 59" South	-23.81638889	151° 9' 19" East	151.1552778		28-Jun-99
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	murina	Common dunnart	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	murina	Common dunnart	Black Gin Ck, Rockhampton	23° 20' South	-23.33333333	150° 20' East	150.3333333	01 Jan 1888-31 Dec 1888	
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	murina	Common dunnart	Monto, 20km E	24° 52' South	-24.86666667	151° 19' East	151.3166667		1988
Mammals/Vertebrates/Biodiversity	Dasyuridae	Sminthopsis	murina	Common dunnart	Mt Morgan	23° 39' South	-23.65	150° 23' East	150.3833333		14-Aug-93
Mammals/Vertebrates/Biodiversity	Peramelidae	Isoodon	macrourus	Northern brown bandicoot	Biloela	24° 24' South	-24.4	150° 31' East	150.5166667		27-Sep-73
Mammals/Vertebrates/Biodiversity	Peramelidae	Isoodon	macrourus	Northern brown bandicoot	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333		1-Jan-77
Mammals/Vertebrates/Biodiversity	Peramelidae	Isoodon	macrourus	Northern brown bandicoot	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889	12 Aug 2000-24 Aug 2000	
Mammals/Vertebrates/Biodiversity	Peramelidae	Isoodon	macrourus	Northern brown bandicoot	Baralaba, Dawson Valley	24° 11' South	-24.18333333	149° 49' East	149.8166667		
Mammals/Vertebrates/Biodiversity	Peramelidae	Isoodon	macrourus	Northern brown bandicoot	Theodore	24° 57' South	-24.95	150° 5' East	150.0833333		22-Oct-63
Mammals/Vertebrates/Biodiversity	Peramelidae	Isoodon	macrourus	Northern brown bandicoot	Bulburin SF	24° 32' South	-24.53333333	151° 23' East	151.3833333		4-Apr-68
Mammals/Vertebrates/Biodiversity	Peramelidae	Isoodon	macrourus	Northern brown bandicoot	Rockhampton city	23° 22' South	-23.36666667	150° 32' East	150.5333333		8-Jul-93
Mammals/Vertebrates/Biodiversity	Peramelidae	Isoodon	macrourus	Northern brown bandicoot	Curtis Is, Joey Lee's Bch	23° 38' South	-23.63333333	151° 10' East	151.1666667		30-Jun-94
Mammals/Vertebrates/Biodiversity	Peramelidae	Perameles	nasuta	Long-nosed bandicoot	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978	
Mammals/Vertebrates/Biodiversity	Peramelidae	Perameles	nasuta	Long-nosed bandicoot	Many Peaks Ra, 24km SW Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667		
Mammals/Vertebrates/Biodiversity	Peramelidae	Perameles	nasuta	Long-nosed bandicoot	Bulburin area, on road in rainforest	24° 31' South	-24.51666667	151° 29' East	151.4833333		
Mammals/Vertebrates/Biodiversity	Peramelidae	Perameles	nasuta	Long-nosed bandicoot	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	22 Feb 1982-26 Feb 1982	

Mammals/Vertebrates/Biodiversity	Peramelidae	Perameles	nasuta	Long-nosed bandicoot	Hummock Hil Is, western site	24° South	-24	151° 28' East	151.4666667	Jan-93
Mammals/Vertebrates/Biodiversity	Phascolarctidae	Phascolarctos	cinereus	Koala	Monto-Cainia Gorge turnoff, 30km N	24° 50' South	-24.83333333	151° 2' East	151.0333333	30-Sep-89
Mammals/Vertebrates/Biodiversity	Phascolarctidae	Phascolarctos	cinereus	Koala	Monto, Chess Park	24° 52' South	-24.86666667	151° 7' East	151.1166667	
Mammals/Vertebrates/Biodiversity	Phascolarctidae	Phascolarctos	cinereus	Koala	Monto/Cania Gorge turn off, 30km N	24° 45' South	-24.74842261	150° 50' East	150.8344048	30-Sep-89
Mammals/Vertebrates/Biodiversity	Phascolarctidae	Phascolarctos	cinereus	Koala	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	20-Mar-92
Mammals/Vertebrates/Biodiversity	Petauridae	Petaurus	sp		Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	1978
Mammals/Vertebrates/Biodiversity	Petauridae	Petaurus	norfolcensis	Squirrel glider	Moura	24° 34' South	-24.56666667	149° 59' East	149.9833333	
Mammals/Vertebrates/Biodiversity	Petauridae	Petaurus	norfolcensis	Squirrel glider	Gracemere	23° 26' South	-23.43333333	150° 27' East	150.45	
Mammals/Vertebrates/Biodiversity	Petauridae	Petaurus	norfolcensis	Squirrel glider	Ricketts Is, Gladstone	23° 53' South	-23.88333333	151° 18' East	151.3	14-May-83
Mammals/Vertebrates/Biodiversity	Pseudocheiridae	Petauroides	volans	Greater glider	Banana, 48km S	24° 54' South	-24.9	150° 8' East	150.1333333	
Mammals/Vertebrates/Biodiversity	Pseudocheiridae	Petauroides	volans	Greater glider	Biloela	24° 24' South	-24.4	150° 31' East	150.5166667	
Mammals/Vertebrates/Biodiversity	Pseudocheiridae	Petauroides	volans	Greater glider	Courada, Rolleston 109km ESE	24° 56' South	-24.93333333	149° 35' East	149.5833333	30-Oct-73
Mammals/Vertebrates/Biodiversity	Pseudocheiridae	Petauroides	volans	Greater glider	Moura, 7km W	24° 34' South	-24.56666667	149° 54' East	149.9	May-89
Mammals/Vertebrates/Biodiversity	Pseudocheiridae	Petauroides	volans	Greater glider	Cania Gorge NP	24° 43' 1" South	-24.71694444	150° 54' 13" East	150.9036111	7-Jul-94
Mammals/Vertebrates/Biodiversity	Pseudocheiridae	Pseudocheirus	peregrinus	Common ringtail possum	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Pseudocheiridae	Pseudocheirus	peregrinus	Common ringtail possum	Many Peaks Ra, 24km SW Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	
Mammals/Vertebrates/Biodiversity	Pseudocheiridae	Pseudocheirus	peregrinus	Common ringtail possum	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978
Mammals/Vertebrates/Biodiversity	Phalangeridae	Trichosurus	caninus	Short eared brushtail possum	Many Peaks Ra, 24km NW Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	
Mammals/Vertebrates/Biodiversity	Phalangeridae	Trichosurus	caninus	Short eared brushtail possum	Many Peaks Ra, 24km SW Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	
Mammals/Vertebrates/Biodiversity	Phalangeridae	Trichosurus	caninus	Short eared brushtail possum	Many Peaks Ra, 24km SW Miriam Vale	24° 27' South	-24.45	151° 24' East	151.4	28-Sep-61
Mammals/Vertebrates/Biodiversity	Phalangeridae	Trichosurus	vulpecula	Common brushtail possum	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333	20-Jan-98
Mammals/Vertebrates/Biodiversity	Phalangeridae	Trichosurus	vulpecula	Common brushtail possum	Gladstone area, 17km S of Granite Ck, on Bruce Hwy	23° 50' South	-23.83333333	151° 15' East	151.25	18-Nov-92
Mammals/Vertebrates/Biodiversity	Phalangeridae	Trichosurus	vulpecula	Common brushtail possum	Rockhampton District	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Phalangeridae	Trichosurus	vulpecula	Common brushtail possum	Mt Morgan	23° 39' South	-23.65	150° 23' East	150.3833333	
Mammals/Vertebrates/Biodiversity	Phalangeridae	Trichosurus	vulpecula	Common brushtail possum	Mt Archer, via Rockhampton	23° 20' South	-23.33333333	150° 35' East	150.5833333	30-Sep-73
Mammals/Vertebrates/Biodiversity	Phalangeridae	Trichosurus	vulpecula	Common brushtail possum	South Hill, Fitzroy R mouth, W side	23° 30' South	-23.5	150° 55' East	150.9166667	1988
Mammals/Vertebrates/Biodiversity	Acrobatidae	Acrobates	frontalis	Broad-toed Feathertail glider	Bulburin SF, 2nd Granite Ck Xing	24° 35' South	-24.58175209	151° 29' East	151.4843939	24-Jan-76
Mammals/Vertebrates/Biodiversity	Acrobatidae	Acrobates	frontalis	Broad-toed Feathertail glider	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978
Mammals/Vertebrates/Biodiversity	Acrobatidae	Acrobates	frontalis	Broad-toed Feathertail glider	Banana	24° 28' South	-24.46666667	150° 8' East	150.1333333	
Mammals/Vertebrates/Biodiversity	Acrobatidae	Acrobates	frontalis	Broad-toed Feathertail glider	Jambin Callide Valley	24° 12' South	-24.2	150° 22' East	150.3666667	
Mammals/Vertebrates/Biodiversity	Potoroidae	Aepyprymnus	rufescens	Rufous bettong	Stanwell Power Station	23° 31' South	-23.51666667	150° 20' East	150.3333333	20-Jul-98
Mammals/Vertebrates/Biodiversity	Potoroidae	Aepyprymnus	rufescens	Rufous bettong	Spring Ck	24° 6' South	-24.1	150° 30' East	150.5	10-Aug-92
Mammals/Vertebrates/Biodiversity	Potoroidae	Aepyprymnus	rufescens	Rufous bettong	Cedabah, N of Baralaba	24° 53" South	-24.01472222	149° 50' 12" East	149.8366667	23-Jun-00
Mammals/Vertebrates/Biodiversity	Potoroidae	Aepyprymnus	rufescens	Rufous bettong	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Potoroidae	Aepyprymnus	rufescens	Rufous bettong	Calliope to Biloela rd	24° 8' South	-24.13333333	150° 46' East	150.7666667	12-Jun-76
Mammals/Vertebrates/Biodiversity	Potoroidae	Aepyprymnus	rufescens	Rufous bettong	Yarwun, Calliope-Targinic Rd	23° 51' South	-23.85	151° 8' East	151.1333333	9-Nov-92
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	sp	Kangaroo	Elephant Hole Cave, W side of Mt Etna, Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	2-Apr-88
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	agilis	Agile wallaby	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	agilis	Agile wallaby	Alligator Ck, 24km N Rockhampton	23° 17' South	-23.28333333	150° 27' East	150.45	
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	agilis	Agile wallaby	Fitzroy R	23° 30' South	-23.5	150° 40' East	150.6666667	
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	agilis	Agile wallaby	Alligator Ck, 32.2km N Rockhampton	23° 17' South	-23.28333333	150° 27' East	150.45	5-Jul-58
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	agilis	Agile wallaby	Fitzroy R	23° 25' South	-23.41666667	149° 58' East	149.9666667	
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	dorsalis	Black-striped wallaby	Spring Ck	24° 6' South	-24.1	150° 30' East	150.5	1-Dec-92
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	dorsalis	Black-striped wallaby	Spring Ck	24° 6' South	-24.1	150° 30' East	150.5	10-Aug-92
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	dorsalis	Black-striped wallaby	Monto, 18km N	24° 52' South	-24.86508721	151° 7' East	151.1177349	21-Aug-79
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	dorsalis	Black-striped wallaby	Mt Gavial, 3km SSW	23° 27' South	-23.45	150° 28' East	150.4666667	27-Sep-99
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	dorsalis	Black-striped wallaby	North Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	19-Mar-01
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	dorsalis	Black-striped wallaby	Westwood, via Rockhampton	23° 37' South	-23.61666667	150° 9' East	150.15	
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	dorsalis	Black-striped wallaby	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	20-Mar-75
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	dorsalis	Black-striped wallaby	Moura, area W of	24° 34' South	-24.56666667	149° 54' East	149.9	12-Jun-76
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	dorsalis	Black-striped wallaby	Theodore, on Main Rd	24° 57' South	-24.95	150° 5' East	150.0833333	12-Jun-76
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	dorsalis	Black-striped wallaby	Moura area	24° 34' South	-24.56666667	149° 59' East	149.9833333	12-Jun-76
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	giganteus	Eastern grey kangaroo	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333	20-Jan-98
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	giganteus	Eastern grey kangaroo	Dawson R	23° 38' South	-23.63333333	149° 46' East	149.7666667	
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	giganteus	Eastern grey kangaroo	Rundle Ra	23° 40' South	-23.66666667	151° East	151	25-Mar-75
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	parryi	Whiptail wallaby	Stag Creeek, E of Biloela	24° 18' 24" South	-24.30666667	150° 48' 28" East	150.8077778	26-Aug-97
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	parryi	Whiptail wallaby	Monto, 15km N	24° 47' South	-24.78333333	151° East	151	21-Aug-79
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	parryi	Whiptail wallaby	Westwood, via Rockhampton	23° 37' South	-23.61666667	150° 9' East	150.15	
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	parryi	Whiptail wallaby	Theodore, main rd	24° 57' South	-24.95	150° 5' East	150.0833333	12-Jun-76
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	robustus	Common wallaroo	Dawson R	23° 38' South	-23.63333333	149° 46' East	149.7666667	
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	robustus	Common wallaroo	Moura, area W of	24° 34' South	-24.56666667	149° 54' East	149.9	12-Jun-76
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	robustus	Common wallaroo	Moura area	24° 34' South	-24.56666667	149° 59' East	149.9833333	12-Jun-76
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	robustus	Common wallaroo	Graystone Stn	25° 6' South	-25.1	150° 49' East	150.8166667	11-Mar-87
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	rufogriseus	Red-necked wallaby	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333	20-Jan-98
Mammals/Vertebrates/Biodiversity	Macropodidae	Macropus	rufogriseus	Red-necked wallaby	Coomingla	24° 45' South	-24.75	150° 53' East	150.8833333	21-Aug-79
Mammals/Vertebrates/Biodiversity	Macropodidae	Onychogalea	fraenata	Bridled nailtail wallaby	Taunton, at holding yards on old "Taunton" property	23° 31' South	-23.51666667	149° 50' East	149.8333333	12-Jul-74
Mammals/Vertebrates/Biodiversity	Macropodidae	Onychogalea	fraenata	Bridled nailtail wallaby	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Mammals/Vertebrates/Biodiversity	Macropodidae	Onychogalea	fraenata	Bridled nailtail wallaby	Dawson R	23° 38' South	-23.63333333	149° 46' East	149.7666667	
Mammals/Vertebrates/Biodiversity	Macropodidae	Petrogale	herberti	Herbert's Rock-wallaby	Kroombit Tops, farmland adjacent to SF	24° 26' 10" South	-24.43611111	151° 2' 24" East	151.04	11-Jan-98
Mammals/Vertebrates/Biodiversity	Macropodidae	Petrogale	herberti	Herbert's Rock-wallaby	Cania Gorge, NE of Monto	24° 44' South	-24.73333333	151° 1' East	151.0166667	21-Aug-79
Mammals/Vertebrates/Biodiversity	Macropodidae	Petrogale	herberti	Herbert's Rock-wallaby	Kalpowar, 4km E	24° 42' South	-24.7	151° 21' East	151.35	7-Aug-74
Mammals/Vertebrates/Biodiversity	Macropodidae	Petrogale	herberti	Herbert's Rock-wallaby	Mt Sebastopol, Westwood	23° 39' South	-23.65	150° 8' East	150.1333333	6-Nov-01
Mammals/Vertebrates/Biodiversity	Macropodidae	Petrogale	inornata	Unadorned Rock-wallaby	Rockhampton District	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Macropodidae	Petrogale	inornata	Unadorned Rock-wallaby	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Macropodidae	Thylogale			Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	Mar-75
Mammals/Vertebrates/Biodiversity	Macropodidae	Thylogale	stigmatica	Red-legged pademelon	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Macropodidae	Thylogale	stigmatica	Red-legged pademelon	Bulburin SF	24° 32' South	-24.53333333	151° 23' East	151.3833333	4-Sep-68
Mammals/Vertebrates/Biodiversity	Macropodidae	Thylogale	stigmatica	Red-legged pademelon	Kroombit Tops NP	24° 26' South	-24.43175734	150° 43' East	150.7177374	1992
Mammals/Vertebrates/Biodiversity	Macropodidae	Thylogale	thetis	Red-necked pademelon	Burnett district, in cave	24° 46' South	-24.76666667	151° 24' East	151.4	
Mammals/Vertebrates/Biodiversity	Macropodidae	Thylogale	thetis	Red-necked pademelon	Bulburin	24° 31' South	-24.51666667	151° 29' East	151.4833333	17-Mar-74
Mammals/Vertebrates/Biodiversity	Macropodidae	Wallabia	bicolor	Swamp wallaby	Spring Ck	24° 6' South	-24.1	150° 30' East	150.5	10-Aug-92
Mammals/Vertebrates/Biodiversity	Macropodidae	Wallabia	bicolor	Swamp wallaby	Bulburin	24° 31' South	-24.51666667	151° 29' East	151.4833333	Mar-75
Mammals/Vertebrates/Biodiversity	Macropodidae	Wallabia	bicolor	Swamp wallaby	Kroombit Tops SF	24° 27' South	-24.45	150° 55' East	150.9166667	8-Mar-94
Mammals/Vertebrates/Biodiversity	Macropodidae	Wallabia	bicolor	Swamp wallaby	Boyne Island	23° 55' 25" South	-23.92361111	151° 20' 30" East	151.3416667	May-95

Mammals/Vertebrates/Biodiversity	Pteropodidae	Nyctimene	robinsoni	Queensland tube-nosed bat	Hummock Hill Is, NE	24° South	-24	151° 28' East	151.4666667	23-Jan-93
Mammals/Vertebrates/Biodiversity	Pteropodidae	Nyctimene	robinsoni	Queensland tube-nosed bat	Rockhampton coast	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Mammals/Vertebrates/Biodiversity	Pteropodidae	Pteropus	sp	Flying fox	Spring Ck	24° 6' South	-24.1	150° 30' East	150.5	10-Aug-92
Mammals/Vertebrates/Biodiversity	Pteropodidae	Pteropus	sp	Flying fox	Spring Ck	24° 6' South	-24.1	150° 30' East	150.5	1-Dec-92
Mammals/Vertebrates/Biodiversity	Pteropodidae	Pteropus	sp	Flying fox	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333	20-Jan-98
Mammals/Vertebrates/Biodiversity	Pteropodidae	Pteropus	alecto	Black flying-fox	Mt Larcom, via Gladstone	23° 49' South	-23.81509035	150° 59' East	150.9843955	30-Oct-93
Mammals/Vertebrates/Biodiversity	Pteropodidae	Pteropus	alecto	Black flying-fox	Rockhampton	23° 22' South	-23.36666667	150° 32' East	150.5333333	
Mammals/Vertebrates/Biodiversity	Pteropodidae	Pteropus	poliocephalus	Grey-headed flying-fox	Many Peaks Ra, 24km SW Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	
Mammals/Vertebrates/Biodiversity	Pteropodidae	Pteropus	scapulatus	Little red flying-fox	Targinie, via Gladstone	23° 47' South	-23.78333333	151° 8' East	151.1333333	20-Jan-98
Mammals/Vertebrates/Biodiversity	Emballonuridae	Taphozous	sp	Sheathtail-bat	Kroombit	24° 30' South	-24.5	150° 45' East	150.75	10-Oct-86
Mammals/Vertebrates/Biodiversity	Emballonuridae	Taphozous	sp	Sheathtail-bat	Springsure, 10km N	24° 30' South	-24.5	150° 45' East	150.75	12-Jul-85
Mammals/Vertebrates/Biodiversity	Emballonuridae	Taphozous	sp	Sheathtail-bat	Kroombit	24° 30' South	-24.5	150° 45' East	150.75	3-Mar-87
Mammals/Vertebrates/Biodiversity	Emballonuridae	Taphozous	sp	Sheathtail-bat	Kroombit	24° 30' South	-24.5	150° 45' East	150.75	12-Feb-87
Mammals/Vertebrates/Biodiversity	Emballonuridae	Taphozous	sp	Sheathtail-bat	Springsure, 10km N	24° 30' South	-24.5	150° 45' East	150.75	13-May-85
Mammals/Vertebrates/Biodiversity	Emballonuridae	Taphozous	sp	Sheathtail-bat	Springsure, 10km N	24° 30' South	-24.5	150° 45' East	150.75	14-Feb-86
Mammals/Vertebrates/Biodiversity	Emballonuridae	Taphozous	sp	Sheathtail-bat	Springsure, 10km N	24° 30' South	-24.5	150° 45' East	150.75	15-Feb-86
Mammals/Vertebrates/Biodiversity	Rhinolophidae	Rhinolophus	megaphyllus	Eastern horseshoe-bat	Kroombit Tops SF316, 75kms SW of Gladstone	24° 25' 15" South	-24.42083333	151° 1' 59" East	151.0330556	29-Aug-97
Mammals/Vertebrates/Biodiversity	Rhinolophidae	Rhinolophus	megaphyllus	Eastern horseshoe-bat	Kroombit Tops SF316, 75kms SW of Gladstone	24° 23' 39" South	-24.39416667	150° 59' 22" East	150.9894444	28-Aug-97
Mammals/Vertebrates/Biodiversity	Rhinolophidae	Rhinolophus	megaphyllus	Eastern horseshoe-bat	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Rhinolophidae	Rhinolophus	megaphyllus	Eastern horseshoe-bat	Bulburin	24° 31' South	-24.51666667	151° 29' East	151.4833333	20-Mar-75
Mammals/Vertebrates/Biodiversity	Rhinolophidae	Rhinolophus	megaphyllus	Eastern horseshoe-bat	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	28-Feb-81
Mammals/Vertebrates/Biodiversity	Rhinolophidae	Rhinolophus	megaphyllus	Eastern horseshoe-bat	Double Ck	23° 59' South	-23.98333333	150° 13' East	150.2166667	
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Chalinolobus	gouldii	Gould's wattled bat	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	6-Mar-81
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Chalinolobus	gouldii	Gould's wattled bat	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	6-Mar-81
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Chalinolobus	morio	Chocolate wattled bat	Kroombit Tops	24° 25' 11" South	-24.41972222	151° 3' 18" East	151.055	11-Apr-92
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Chalinolobus	nigrogriseus	Hoary wattled bat	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	5-Mar-81
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Chalinolobus	nigrogriseus	Hoary wattled bat	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	7-Mar-81
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Chalinolobus	nigrogriseus	Hoary wattled bat	Bindaree Stn	24° 23' South	-24.38176275	149° 54' East	149.9010821	11-Jun-82
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Chalinolobus	nigrogriseus	Hoary wattled bat	Wide Bay, Bindaree Stn	24° 16' South	-24.26666667	150° 39' East	150.65	5-Nov-81
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Chalinolobus	nigrogriseus	Hoary wattled bat	Bindaree, 10km ENE Miriamvale	24° 16' South	-24.26666667	150° 39' East	150.65	3-Nov-81
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Chalinolobus	picatus	Little pied bat	Greycliffs SF near Banana	24° 14' 18" South	-24.23833333	150° 14' 27" East	150.2408333	22-May-95
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Kerivoula	papuensis	Golden-tipped Bat	Goodedulla NP	23° 19' 4" South	-23.31777778	150° 8' 19" East	150.1386111	15-Apr-99
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Kerivoula	papuensis	Golden-tipped Bat	Kroombit Tops	24° 25' 11" South	-24.41972222	151° 3' 18" East	151.055	11-Apr-92
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	australis	Little bent-winged bat	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	australis	Little bent-winged bat	Cammoo Caves	23° 22' South	-23.36666667	150° 32' East	150.5333333	9-May-68
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	australis	Little bent-winged bat	Cammoo Caves	23° 22' South	-23.36666667	150° 32' East	150.5333333	9-Sep-68
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	australis	Little bent-winged bat	Bracewell	23° 54' South	-23.9	150° 54' East	150.9	7-Aug-74
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	australis	Little bent-winged bat	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	Feb-75
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	australis	Little bent-winged bat	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	19 Jan 2006?
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	australis	Little bent-winged bat	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	21-Apr-70
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	australis	Little bent-winged bat	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	Feb-70
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	australis	Little bent-winged bat	Dan Dan SF	24° 9' South	-24.15	151° 5' East	151.0833333	20-Mar-92
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	orianae oceanensis	Eastern bent-winged bat	Gladstone, Glen Eden	23° 54' South	-23.8984217	151° 16' East	151.2677253	17-Jun-94
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	orianae oceanensis	Eastern bent-winged bat	Theodore, W bank of Dawson R, old house on ridge	25° 6' South	-25.1	150° 8' East	150.1333333	01 Jan 1980-31 Dec 1980
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	orianae oceanensis	Eastern bent-winged bat	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	6-Mar-81
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	orianae oceanensis	Eastern bent-winged bat	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	5-Mar-81
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	orianae oceanensis	Eastern bent-winged bat	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	Feb-70
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Miniopterus	orianae oceanensis	Eastern bent-winged bat	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	20-Jun-70
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Nyctophilus	bifax	Eastern long-eared bat	Bulburin SF	24° 32' South	-24.53333333	151° 30' East	151.5	14-Dec-92
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Nyctophilus	bifax	Eastern long-eared bat	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	25-Mar-81
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Nyctophilus	gouldi	Gould's long-eared bat	Monto, Bania SF 54	24° 57' South	-24.95	151° 30' East	151.5	7-Nov-92
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Nyctophilus	gouldi	Gould's long-eared bat	Rundle Ra	23° 40' South	-23.66666667	151° East	151	26-Mar-75
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Scoteanax	rueppellii	Greater broad-nosed bat	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	6-Mar-81
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Scoteanax	rueppellii	Greater broad-nosed bat	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667	11-Mar-92
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Scotorepens	sp		Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Scotorepens	greyii	Little broad-nosed bat	Camboon SF 64, 200kms W of Bundaberg	25° 6' 7" South	-25.10194444	150° 32' 32" East	150.5422222	20-Oct-98
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Scotorepens	greyii	Little broad-nosed bat	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667	11-Mar-92
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Scotorepens	sanborni	Northern broad-nosed bat	Curtis Is	23° 35' South	-23.58333333	151° 11' East	151.1833333	9-Feb-93
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Scotorepens	sanborni	Northern broad-nosed bat	Curtis Is	23° 35' South	-23.58333333	151° 11' East	151.1833333	12-Oct-92
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Scotorepens	sanborni	Northern broad-nosed bat	Curtis Is	23° 35' South	-23.58333333	151° 11' East	151.1833333	7-Feb-93
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Scotorepens	sanborni	Northern broad-nosed bat	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	24-Mar-81
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Vespadelus	sp		Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Vespadelus	sp		Kroombit Tops	24° 25' 11" South	-24.41972222	151° 3' 18" East	151.055	11-Apr-92
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Vespadelus	troughtoni	Eastern cave bat	Camboon SF 64, 200kms W of Bundaberg	25° 6' 54" South	-25.115	150° 32' 11" East	150.5363889	21-Oct-98
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Vespadelus	troughtoni	Eastern cave bat	Camboon SF 64, 200kms W of Bundaberg	25° 6' 7" South	-25.10194444	150° 32' 32" East	150.5422222	21-Oct-98
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Vespadelus	troughtoni	Eastern cave bat	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978
Mammals/Vertebrates/Biodiversity	Vespertilionidae	Vespadelus	troughtoni	Eastern cave bat	Cania Gorge NP	24° 43' 1" South	-24.71694444	150° 54' 13" East	150.9036111	7-Jul-94
Mammals/Vertebrates/Biodiversity	Molossidae	Mormopterus	ridei	Ride's Free-tailed Bat	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667	11-Mar-92
Mammals/Vertebrates/Biodiversity	Molossidae	Mormopterus	ridei	Ride's Free-tailed Bat	Kroombit Tops	24° 29' 11" South	-24.48638889	150° 55' 59" East	150.9330556	28-Aug-97
Mammals/Vertebrates/Biodiversity	Molossidae	Mormopterus	ridei	Ride's Free-tailed Bat	Camboon SF64, 200kms W of Bundaberg	25° 6' 7" South	-25.10194444	150° 32' 32" East	150.5422222	20-Oct-98
Mammals/Vertebrates/Biodiversity	Molossidae	Mormopterus	ridei	Ride's Free-tailed Bat	Camboon SF 64, 200kms W of Bundaberg	25° 6' 7" South	-25.10194444	150° 32' 32" East	150.5422222	20-Oct-98
Mammals/Vertebrates/Biodiversity	Molossidae	Mormopterus	cf ridei	Ride's Free-tailed Bat	Kroombit Tops	24° 26' South	-24.43333333	150° 43' East	150.7166667	7-Mar-81
Mammals/Vertebrates/Biodiversity	Delphinidae	Grampus	griseus	Rissos dolphin	Cape Capricorn lighthouse	23° 29' South	-23.48333333	151° 14' East	151.2333333	
Mammals/Vertebrates/Biodiversity	Physeteridae	Physeter	macrocephalus	Sperm whale	Cape Capricorn lighthouse	23° 29' South	-23.48333333	151° 14' East	151.2333333	1-Dec-83
Mammals/Vertebrates/Biodiversity	Physeteridae	Physeter	macrocephalus	Sperm whale	Joskeleigh Bch, via Keppel Sands, Rockhampton	23° 22' South	-23.36666667	150° 47' East	150.7833333	5-Oct-95
Mammals/Vertebrates/Biodiversity	Ziphiidae	Mesoplodon	layardii	Strap-toothed whale	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Balaenopteridae	Megaptera	novaeangliae	Humpback whale	Gladstone	23° 51' South	-23.84842183	151° 16' East	151.267725	13-Aug-99
Mammals/Vertebrates/Biodiversity	Dugongidae	Dugong	dugon	Dugong	Gladstone Harbour, in cave	23° 51' South	-23.85	151° 16' East	151.2666667	
Mammals/Vertebrates/Biodiversity	Equidae	Equus	caballus	Brumby	Cania nr Monto	24° 38' South	-24.63333333	150° 58' East	150.9666667	
Mammals/Vertebrates/Biodiversity	Equidae	Equus	caballus	Brumby	Linda Gully, Mt Morgan	23° 39' South	-23.65	150° 23' East	150.3833333	
Mammals/Vertebrates/Biodiversity	Suidae	Sus	scrofa	Feral pig	Raglan	23° 43' South	-23.71509163	150° 49' East	150.8177305	
Mammals/Vertebrates/Biodiversity	Suidae	Sus	scrofa	Feral pig	Calliungal Stn	23° 37' South	-23.61666667	150° 23' East	150.3833333	
Mammals/Vertebrates/Biodiversity	Bovidae	Bos	taurus	Feral European cattle	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Muridae	Hydromys	chrysogaster	Water rat	Awoonga Dam/Calliope R Area on Larcom Ck	23° 52' 18" South	-23.87166667	151° 6' 4" East	151.1011111	11-Apr-99

Mammals/Vertebrates/Biodiversity	Muridae	Hydromys	chrysogaster	Water rat	Mulgildie Pta, via Eidsvold	24° 58' South	-24.96666667	151° 7' East	151.1166667	
Mammals/Vertebrates/Biodiversity	Muridae	Hydromys	chrysogaster	Water rat	Mulgildie	24° 58' South	-24.96666667	151° 7' East	151.1166667	
Mammals/Vertebrates/Biodiversity	Muridae	Hydromys	chrysogaster	Water rat	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333	17-Mar-75
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	sp	Melomys	Bulburin	24° 31' South	-24.51666667	151° 29' East	151.4833333	23-Mar-75
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	sp	Melomys	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	5-Mar-81
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	sp	Melomys	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	Mar-81
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	sp	Melomys	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	burtoni	Grassland melomys	Targinie, via Gladstone	23° 46' South	-23.76666667	151° 8' East	151.1333333	22-Jan-98
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	burtoni	Grassland melomys	Curtis Is	23° 35' South	-23.58333333	151° 11' East	151.1833333	12-Feb-93
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	burtoni	Grassland melomys	Nth Curtis I	23° 30' 5" South	-23.50138889	151° 11' 20" East	151.1888889	28-Oct-92
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	burtoni	Grassland melomys	Rockhampton	23° 19' 9" South	-23.31916667	150° 18' 24" East	150.3066667	01 Oct 1999-31 Oct 1999
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	burtoni	Grassland melomys	Bulburin	24° 31' South	-24.51666667	151° 29' East	151.4833333	21-Mar-75
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Gladstone, Southern Pacific Petroleum Site	23° 46' 26" South	-23.77388889	151° 8' 42" East	151.145	14-Apr-99
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Awoonga Dam Area, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	14-Dec-98
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Awoonga Dam Area, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	3-Dec-98
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Awoonga Dam Area, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	5-Dec-98
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Awoonga Dam Area, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	16-Dec-98
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Awoonga Dam Area, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	12-Dec-98
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Awoonga Dam Area, nr Gladstone	24° 4' 30" South	-24.075	151° 18' 30" East	151.3083333	4-Dec-98
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Awoonga Dam/Calliope R Area on Boyne River	24° 13' 51" South	-24.23083333	151° 15' 13" East	151.2536111	12-Apr-99
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Awoonga Dam/Calliope R	24° 6' 37" South	-24.11027778	151° 14' 44" East	151.2455556	6-Apr-99
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Awooga Dam/Calliope R	24° 6' 37" South	-24.11027778	151° 14' 44" East	151.2455556	7-Apr-99
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Gladstone Southern Pacific Petroleum, Stage 2 Site	23° 47' South	-23.78333333	151° 7' East	151.1166667	1-Jul-99
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Gladstone Southern Pacific Petroleum, Stage 2 Site	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	27-Jun-99
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Bulburin SF, 2nd Granite Ck Xing	24° 35' South	-24.58175209	151° 29' East	151.4843939	24-Jan-76
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 3' 7" South	-24.05194444	151° 19' 26" East	151.3238889	12 Aug 2000-24 Aug 2000
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Many Peaks Ra, 24km SW Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667	
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Gladstone, Southern Pacific Petroleum Site	23° 47' 9" South	-23.78583333	151° 7' 10" East	151.1194444	14-Apr-99
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Rockhampton	23° 23' South	-23.38333333	150° 30' East	150.5	
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Bulburin SF	24° 32' South	-24.53333333	151° 23' East	151.3833333	4-Sep-68
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Bulburin SF	24° 32' South	-24.53333333	151° 23' East	151.3833333	5-Sep-68
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Bulburin SF	24° 32' South	-24.53333333	151° 23' East	151.3833333	1-Sep-68
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Bulburin SF	24° 32' South	-24.53333333	151° 23' East	151.3833333	4-Sep-68
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Bulburin SF	24° 32' South	-24.53333333	151° 23' East	151.3833333	5-Nov-68
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Bulburin SF	24° 32' South	-24.53333333	151° 23' East	151.3833333	1-Jul-68
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	5-Mar-81
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	5-Mar-81
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	5-Mar-81
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	Mar-81
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Bindaree, 10km ENE Miriamvale	24° 17' South	-24.28333333	150° 40' East	150.6666667	5-Nov-81
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Bulburin SF	24° 32' South	-24.53333333	151° 23' East	151.3833333	1-Sep-68
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Mt Coulston SF471	24° 11' South	-24.18333333	151° 26' East	151.4333333	14-May-92
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Bania SF54, Monto	24° 57' South	-24.95	151° 30' East	151.5	29-Apr-92
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Bania SF54, Monto	24° 57' South	-24.95	151° 30' East	151.5	30-Apr-92
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667	5-Aug-92
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Kroombit Tops	24° 26' South	-24.43175734	150° 43' East	150.7177374	9-Apr-92
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Kroombit Tops	24° 26' South	-24.43175734	150° 43' East	150.7177374	10-Apr-92
Mammals/Vertebrates/Biodiversity	Muridae	Melomys	cervinipes	Fawn-footed melomys	Kroombit Tops	24° 26' South	-24.43175734	150° 43' East	150.7177374	8-Apr-92
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Raglan Caves, Rockhampton - Gladstone	23° 45' 53" South	-23.76472222	150° 52' 43" East	150.8786111	Jul-97
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Stanwell Power Station	23° 31' South	-23.51666667	150° 20' East	150.3333333	20-Feb-98
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Stanwell Power Station	23° 29' South	-23.48176199	150° 19' East	150.317736	25-Oct-98
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Stanwell Power Station	23° 29' South	-23.48176199	150° 19' East	150.317736	1-Nov-98
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Gladstone, Southern Pacific Petroleum Stage 2	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	9-Apr-99
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Gladstone, Southern Pacific Petroleum Site	23° 48' 59" South	-23.81638889	151° 9' 17" East	151.1547222	27-Nov-98
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Gladstone, Southern Pacific Petroleum Site	23° 44' 33" South	-23.7425	151° 6' 28" East	151.1077778	27-Nov-98
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Gladstone, Southern Pacific Petroleum Site	23° 44' 55" South	-23.74861111	151° 7' 55" East	151.1319444	21-Jan-99
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Gladstone, Southern Pacific Petroleum Site	23° 46' 15" South	-23.77083333	151° 7' East	151.1166667	22-Jan-99
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Gladstone, Southern Pacific Petroleum Site	23° 46' 15" South	-23.77083333	151° 7' East	151.1166667	24-Jan-99
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Gladstone Southern Pacific Petroleum, Stage 2 Site	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	28-Jun-99
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Gladstone Southern Pacific Petroleum, Stage 2 Site	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	25-Jun-99
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Rockhampton	23° 19' 9" South	-23.31916667	150° 18' 24" East	150.3066667	01 Oct 1999-31 Oct 1999
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Awoonga Dam, from Boyne Valley to Miriam Vale	23° 59' 15" South	-23.9875	151° 6' 4" East	151.1011111	12 Aug 2000-24 Aug 2000
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Awoonga Dam, from Boyne Valley to Miriam Vale	24° 4' 33" South	-24.07583333	151° 15' East	151.0041667	12 Aug 2000-24 Aug 2000
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Hurdle Gully, 13kms WSW Monto	24° 54' South	-24.9	151° East	151	25-Apr-98
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Stanwell Power Station	23° 31' South	-23.51666667	150° 20' East	150.3333333	24-Feb-98
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	22 Feb 1982-26 Feb 1982
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Coominglah SF, Monto	24° 53' South	-24.88333333	151° 1' East	151.0166667	7-Aug-92
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978
Mammals/Vertebrates/Biodiversity	Muridae	Mus	musculus	House mouse	Boyne I, nr	24° 57' 10" South	-24.95277778	151° 18' East	151.3	13-Jan-93
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	sp		Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	delicatulus	Delicate mouse	Stanwell Power Station	23° 31' South	-23.51666667	150° 20' East	150.3333333	18-Feb-98
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	delicatulus	Delicate mouse	Stanwell Power Station	23° 31' South	-23.51666667	150° 20' East	150.3333333	27-Feb-98
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	delicatulus	Delicate mouse	Stanwell Power Station	23° 29' South	-23.48176199	150° 19' East	150.317736	24-Oct-98
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	delicatulus	Delicate mouse	Brigalow Res. Stn, Theodore	24° 57' South	-24.95	150° 5' East	150.0833333	27-Mar-01
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	delicatulus	Delicate mouse	Kroombit Tops	24° 22' South	-24.36666667	151° 2' East	151.0333333	Mar-81
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	delicatulus	Delicate mouse	Bindaree, 10km ENE Miriamvale	24° 16' South	-24.26666667	150° 39' East	150.65	5-Nov-81
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	delicatulus	Delicate mouse	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Targinie, via Gladstone	23° 49' South	-23.81666667	151° 6' East	151.1	20-Jan-98
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Stanwell Power Station	23° 29' South	-23.48176199	150° 19' East	150.317736	26-Oct-98
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Gladstone Southern Pacific Petroleum, Stage 2 Site	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	29-Jun-99
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Gladstone Southern Pacific Petroleum, Stage 2 Site	23° 48' 8" South	-23.80222222	151° 9' 7" East	151.1519444	30-Jun-99
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Rockhampton	23° 19' 9" South	-23.31916667	150° 18' 24" East	150.3066667	01 Oct 1999-31 Oct 1999
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Calliope River, Larcom Creek	23° 52' 11" South	-23.86972222	151° 31" East	151.0086111	13-Feb-99

Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Mt Archer NP	23° 18' South	-23.3	150° 35' East	150.5833333		9-Sep-00
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Mt Larcom	23° 48' South	-23.8	151° 5' East	151.0833333		
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Mulgildie Pta, via Eidsvold	24° 58' South	-24.96666667	151° 7' East	151.1166667		
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Walwul, nr Rockhampton	23° 43' South	-23.71666667	150° 22' East	150.3666667		
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Mt Archer, nr Rockhampton	23° 20' South	-23.33333333	150° 35' East	150.5833333		
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Monto, 20km E	24° 52' South	-24.86666667	151° 19' East	151.3166667	01 Jul 1990-31 Jul 1990	
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333		
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Rockhampton, 26km NE	23° 19' South	-23.31666667	150° 45' East	150.75		21-Dec-74
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978	
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	gracilicaudatus	Eastern chestnut mouse	Boyne I, nr	24° 57' 10" South	-24.95277778	151° 18' East	151.3		13-Jan-93
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	patrius	Pebble- mound mouse	Many Peaks, Timber Reserve 353	24° 34' 5" South	-24.56805556	151° 18' 4" East	151.3011111		9-Jul-97
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	patrius	Pebble- mound mouse	Camboon SF 64, via Theodore	25° 7' 1" South	-25.11694444	150° 31' 37" East	150.5269444		21-Oct-98
Mammals/Vertebrates/Biodiversity	Muridae	Pseudomys	patrius	Pebble- mound mouse	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978	
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	fuscipes	Bush rat	Bulburin SF	24° 32' South	-24.53333333	151° 23' East	151.3833333		1-Sep-68
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	fuscipes	Bush rat	Walwul, nr Rockhampton	23° 43' South	-23.71666667	150° 22' East	150.3666667		
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	fuscipes	Bush rat	Many Peaks Ra, 24km SW Miriam Vale	24° 18' South	-24.3	151° 25' East	151.4166667		
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	fuscipes	Bush rat	Monto	24° 52' South	-24.86666667	151° 7' East	151.1166667		7-Aug-63
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	fuscipes	Bush rat	Bulburin SF	24° 32' South	-24.53333333	151° 23' East	151.3833333		4-Sep-68
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	fuscipes	Bush rat	Bulburin SF	24° 32' South	-24.53333333	151° 23' East	151.3833333		5-Sep-68
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	fuscipes	Bush rat	Bulburin	24° 31' South	-24.51666667	151° 29' East	151.4833333		23-Mar-75
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	fuscipes	Bush rat	Bulburin SF, top of range	24° 31' South	-24.51666667	151° 29' East	151.4833333	30 Dec 1974-03 May 1975	
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	fuscipes	Bush rat	Bulburin SF391	24° 35' South	-24.58333333	151° 30' East	151.5		25-Jun-92
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	lutreolus	Swamp rat	Boyne I, nr	24° 57' 10" South	-24.95277778	151° 18' East	151.3		13-Jan-93
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	rattus	Black rat	Raglan Caves, Rockhampton - Gladstone	23° 44' 45" South	-23.74583333	150° 45' 31" East	150.7586111		Jul-97
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	rattus	Black rat	Alton Downs, Gin Gin Rd	23° 19' South	-23.31666667	150° 23' East	150.3833333	01 Jan 1997-31 Jan 1997	
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	rattus	Black rat	Rockhampton	23° 22' South	-23.36509425	150° 32' East	150.5343987		23-Apr-98
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	rattus	Black rat	Rockhampton	23° 22' South	-23.36509425	150° 32' East	150.5343987	01 Mar 1989-31 Mar 1989	
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	rattus	Black rat	Rockhampton	23° 19' 9" South	-23.31916667	150° 18' 24" East	150.3066667	01 Oct 1999-31 Oct 1999	
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	rattus	Black rat	Yaamba Road, North Rockhampton	23° 22' South	-23.36666667	150° 31' East	150.5166667	27 Mar 2000-07 Apr 2000	
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	rattus	Black rat	Mt Archer NP	23° 21' South	-23.35	150° 35' East	150.5833333		4-Mar-00
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	rattus	Black rat	Bulburin SF	24° 31' South	-24.51666667	151° 29' East	151.4833333		
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	rattus	Black rat	Hummocky Is, Keppel Bay	23° 24' South	-23.4	151° 9' East	151.15		
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	tunneyi	Pale field rat	Callide Valley	24° 18' 51" South	-24.31416667	150° 25' 57" East	150.4325		8-Apr-99
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	tunneyi	Pale field rat	Awoonga Dam (from Boyne Valley to Miriam Vale)	23° 59' 16" South	-23.98777778	151° 6' 4" East	151.1011111	27 Mar 2000-07 Apr 2000	
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	tunneyi	Pale field rat	Monto	24° 52' South	-24.86666667	151° 7' East	151.1166667		
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	tunneyi	Pale field rat	Cania Gorge	24° 38' South	-24.63333333	150° 58' East	150.9666667	01 Jan 1978-31 Dec 1978	
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	tunneyi	Pale field rat	Walmul, nr Rockhampton	23° 43' South	-23.71666667	150° 22' East	150.3666667		
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	tunneyi	Pale field rat	Walwul, nr Rockhampton	23° 43' South	-23.71666667	150° 22' East	150.3666667		
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	tunneyi	Pale field rat	Biloela	24° 24' South	-24.4	150° 31' East	150.5166667		
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	tunneyi	Pale field rat	Bindaree, 10km ENE Miriamvale	24° 16' South	-24.26666667	150° 39' East	150.65		6-Nov-81
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	tunneyi	Pale field rat	Bindaree, 10km ENE Miriamvale	24° 15' South	-24.25	150° 39' East	150.65		6-Nov-81
Mammals/Vertebrates/Biodiversity	Muridae	Rattus	tunneyi	Pale field rat	Bulburin	24° 31' South	-24.51666667	151° 29' East	151.4833333		23-Mar-75
Mammals/Vertebrates/Biodiversity	Muridae	Zyzomys	argurus	Common Rock-rat	Stanwell Power Station	23° 31' South	-23.51666667	150° 20' East	150.3333333		27-Feb-98
Mammals/Vertebrates/Biodiversity	Leporidae	Lepus	capensis	Brown hare	Milton stn, Nagourin, nr Gladstone	24° 15' South	-24.25	151° 17' East	151.2833333	01 Mar 2000-31 Mar 2000	

Appendix E

Summary of Flora and Fauna Surveys Undertaken

Table E.1 Summary of Flora and Fauna Surveys Undertaken within and Immediately surrounding the Study Area

Project	Field Survey Periods	Fauna Survey Methods	Flora Survey Methods
1. Northern Quoll Surveys Northern Quoll Survey Report (AECOM 2012a)	6th - 9th December 2011	Northern Quoll reconnaissance surveys consisted of: • Infra red camera trapping over bait stations; • 20 hair tubes deployed in the north-eastern section of the Study Area over four nights; and • 45 x 100m transect surveys totalling 20 person hours. Surveys targeted Northern Quoll scats, tracks, latrine and den sites etc.	NA
2. Terrestrial Flora and Fauna Surveys Terrestrial Flora Technical Report (AECOM 2012b) Terrestrial Fauna Technical Report (AECOM 2012b)	Flora surveys: March 2012 (4 days) September 2012 (4 days) Fauna surveys: 17th - 21st April 2012 6th - 10th September 2012	Detailed fauna surveys (five sites) consisted of: • Trapping surveys for mammals and reptiles over four nights including 20 Elliot A traps, 5 Elliot B traps, 5 wire cage traps, 6 20L bucket pitfall traps with a 30m drift fence and 10 hair tubes (five arboreal, 5 terrestrial); • One acoustic receiver deployed over four nights for microbat detection; • Diurnal active searches for reptiles, 30 minute searches by two people over three days (three person hours); • Nocturnal active searches for reptiles, mammals and birds, 20-45 minute searches by two people over two nights (two person hours);	Flora surveys consisted of collection of data from the following types of sites: • Ten secondary sites – detailed full floristic surveys within 50 m x 10 m transects, documenting a list of all species and their abundance using density counts, percentage crown cover and percentage ground cover; • Six tertiary sites – documenting the dominant species and their abundance using crown cover measurements along a either a 50 m or 100 m transect, and were used to determine the height, cover and compositional elements and status of regrowth vegetation; and • 262 quaternary sites - documenting the dominant species of the tree, shrub and grass

Project	Field Survey Periods	Fauna Survey Methods	Flora Survey Methods
		• Four infra-red cameras deployed over four days and four nights; and • 20 minute bird surveys over four mornings by I person (1.3 person hours. Secondary fauna surveys (two sites) consisted of: • infra-red camera trapping over four nights as well as diurnal active searches for fauna and bird surveys; and • spotlighting surveys over two nights (one site only). Habitat assessment surveys (11 sites): • conducted at all detailed and secondary survey sites as well as four other locations. Surveys assessed a range of qualitative and quantitative habitat values	layers, land zone information, and the presence of weeds or threatened species, at a particular point. • Targeted flora searches were also conducted for threatened species known to occur within the vicinity of the Study Area.
3. Targeted Koala Surveys Koala Survey Report (AECOM, 2014)	2 - 6 September 2013	Targeted Koala surveys comprised: • an initial habitat assessment; • line transect surveys across the Study Area; • critical habitat assessment which assessed the canopy tree composition, percentage of canopy cover of tree species, percentage of the ground area of vegetation, leaf litter, bare ground, surface water; Distance to surface water (m); and evidence of dogs in	NA

Project	Field Survey Periods	Fauna Survey Methods	Flora Survey Methods
		the area; • Koala SAT surveys; and • Spotlight and call playback surveys.	
<u>4. Terrestrial Ecology Assessment</u> (this report)	4th - 16th August 2014	Fauna surveys consisted of a targeted Northern Quoll trapping survey, opportunistic diurnal bird surveys and fauna habitat rapid assessments, as follows: Targeted Northern Quoll trapping survey (12 sites): • conducted over three nights at each location, following the recommended referral guidelines, at locations considered to have moderate to marginal habitat utility. Each trap array consisted of: ▪ 20 Elliot B traps deployed in a square, with 10m spacing between each trap; ▪ Four wire cage traps deployed in the corners of each square; and ▪ One infra red camera deployed in the centre of each square over a bait station. • In addition, two infra-red cameras were also deployed over bait stations throughout the entire survey period. Opportunistic bird surveys: • undertaken at all times when in the field with particular attention to threatened species.	Flora surveys consisted of comprehensive flora quadrats, random meander searches and ground truthing, as follows: Flora quadrat surveys (30 quadrats): • located in the major vegetation communities present in the Study Area to further refine earlier vegetation mapping and to compare the vegetation present to the Queensland Regional Ecosystem (RE) flora community database. Random meander survey: • focussing on threatened species and areas occurring within previously mapped REs.

Project	Field Survey Periods	Fauna Survey Methods	Flora Survey Methods
		Fauna habitat rapid assessments (80 sites): • assessments considered a range of fauna habitat features present and determined the suitability at each location for threatened fauna considered to have high or moderate likelihood of occurence within the Study Area.	

Appendix F

Threatened Flora and Fauna Species Survey Requirements and Survey Compliance

Table F.1 Threatened Flora and Fauna Species Survey Requirements and Survey Compliance

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
FAUNA				
Amphibians				
Tusked Frog (*Adelotus brevis*)	-	Vulnerable	Targeted surveys for this species should be preceded by a habitat assessment which considers the proximity and age of sighting records, the extent of suitable habitat in the Study Area and the presence of suitable microhabitat features in the Study Area. Surveys for this species consist of aural/thorough water body surveys (including tadpole surveys), call playback surveys, acoustic recorders and pitfall/funnel trapping for a minimum of two survey periods (DSITIA, 2013b). Surveys for the Tusked Frog should be undertaken during warmer months (September to February), particularly early in spring, when males are most likely to be calling	Spotlight surveys were conducted by two staff members over two nights for 45 minutes on each night in the April 2012 surveys and 30 minutes for each night over three nights in the September 2012 surveys. This amounted to a total of 42 person hours across the five detailed fauna survey points and two secondary survey points. Detailed habitat assessments were conducted at a total of 11 sites and a total of 80 rapid habitat assessments were conducted throughout the Study Area to determine habitat suitability for this species. The majority of surveys were not undertaken during the optimal timing to record this species (i.e. (September to February), with only the September 2012 surveys occurring during optimal survey timing. Detailed habitat assessments, in addition to surveys, were therefore used to assess the likelihood of this species to occur within the Study Area.
Reptiles				
Collared Delma (*Delma torquata*)	Vulnerable	Vulnerable	Targeted surveys for this species should be preceded by a habitat assessment which considers the proximity and age of sighting records, the extent of suitable habitat in the Study	A combination of pitfall and funnel trapping as well as diurnal active and nocturnal spotlight surveys were conducted for reptiles. Pitfall traps comprised six 20L

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
			Area and the presence of suitable microhabitat features in the Study Area. Surveys for this species consist of active searches. The species is more likely to be detected when conditions are warm, not too dry and maximum temperatures are greater than 25°C. Optimal survey times for active searching are early morning (within four hours of dawn) and during the evening on warm nights. Surveys should be conducted during late spring to early summer (SEWPaC, 2011d). Sufficient time is required to thoroughly search the Study Area. The minimum survey effort required includes; • A minimum of three survey days • At least one replicate survey employing all of the recommended techniques, if the species has not already been detected (DotE, 2014k).	buckets evenly spaced along a 30m fence consisting of 30cm high damp course. A funnel trap was placed at either end of the drift fence. Funnel and pitfall traps were left open for three days and four nights totalling 15 trap days and 20 trap nights across all five detailed fauna survey sites. Diurnal searches for reptiles were undertaken in the late afternoon by two personnel over four days with 30 minutes for each search. This amounted to a total of eight person hours. All potential microhabitats were targeted including, tree trucks, leaf litter, fallen timber, decorticating bark and under bush rock. Diurnal active searches totalled 21 person hours. Nocturnal searches for reptiles were undertaken using a spotlight in the early evening. Surveys targeted tree trunks and decorticating bark, as well as riparian areas and remnant pools where frogs were calling and likely to attract frog-eating snakes. Spotlight surveys were conducted by two staff members over two nights for 45 minutes on each night in the April 2012 surveys and 30 minutes for each night over three nights in the September 2012 surveys. This amounted to a total of 42 person hours across the five detailed fauna survey points and two secondary survey points. The two secondary sites survey effort consisted of two infrared cameras at as well as with a diurnal active

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
				reptile search at each location. Detailed habitat assessments were conducted at a total of 11 sites and a total of 80 rapid habitat assessments were conducted throughout the Study Area to determine habitat suitability for this species. Every day that fauna surveys were undertaken in 2012, the maximum temperature recorded was 25°C or greater, while a few days during the August 2014 survey reached a maximum temperature of 25°C or greater, as recorded at the Boundary Hill Mine meteorological station. Surveys were not undertaken during the optimal timing to record this species (i.e. late spring to early summer). Detailed habitat assessments, in addition to surveys, were therefore used to assess the likelihood of this species to occur within the Study Area.
Dunmall's Snake (*Furina dunmalli*)	Vulnerable	Vulnerable	Targeted surveys for this species should be preceded by a habitat assessment which considers the proximity and age of sighting records, the extent of suitable habitat in the Study Area and the presence of suitable microhabitat features in the Study Area. Surveys for this species consist of active searches in suitable habitats, pitfall trapping and road driving at night, transects, spotlighting and opportunistic surveys of roads are recommended. Optimal survey times for active searching are early morning (within two hours of dawn) and during the	A combination of pitfall and funnel trapping as well as diurnal active and nocturnal spotlight surveys were conducted for reptiles. Pitfall traps comprised six 20L buckets evenly spaced along a 30m fence consisting of 30cm high damp course. A funnel trap was placed at either end of the drift fence. Funnel and pitfall traps were left open for three days and four nights totalling 15 trap days and 20 trap nights across all five detailed fauna survey sites. Diurnal searches for reptiles were undertaken in the

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
			evening on warm nights. There is no survey timing recommendation for this species. However, t is considered that the most optimal time to survey this species is from early summer through to the wet season (SEWPaC, 2011d). Sufficient time is required to thoroughly search the Study Area. The minimum survey effort required includes; • A minimum of three survey days • At least one replicate survey employing all of the recommended techniques, if the species has not already been detected (DotE, 2014q)	late afternoon by two personnel over four days with 30 minutes for each search. This amounted to a total of eight person hours. All potential microhabitats were targeted including, tree trucks, leaf litter, fallen timber, decorticating bark and under bush rock. Diurnal active searches totalled 21 person hours. Nocturnal searches for reptiles were undertaken using a spotlight in the early evening. Surveys targeted tree trunks and decorticating bark, as well as riparian areas and remnant pools where frogs were calling and likely to attract frog-eating snakes. Spotlight surveys were conducted by two staff members over two nights for 45 minutes on each night in the April 2012 surveys and 30 minutes for each night over three nights in the September 2012 surveys. This amounted to a total of 42 person hours across the five detailed fauna survey points and two secondary survey points. The two secondary sites survey effort consisted of two infrared cameras at as well as with a diurnal active reptile search at each location. Detailed habitat assessments were conducted at a total of 11 sites and a total of 80 rapid habitat assessments were conducted throughout the Study Area to determine habitat suitability for this species. The majority of surveys were not undertaken during the optimal timing to record this species (i.e. in early

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
				summer through to the wet season), with only the April 2012 surveys occurring in the wet season. Detailed habitat assessments, in addition to surveys, were used to assess the likelihood of this species to occur within the Study Area.
Fitzroy River Turtle (*Rheodytes leukops*)	Vulnerable	Vulnerable	Surveys for this species consist of active searching in riffle zones by diving with a face mask and snorkel or collection via seine netting. Surveys should be undertaken in spring through summer, during the morning or afternoon when the species is more active.(DotE, 2011b).	No survey was required as no suitable habitat occurs within the Study Area.
Ornamental Snake (*Denisonia maculata*)	Vulnerable	Vulnerable	Active searching in and around suitable gilgai habitats especially during warm evenings following rain. The minimum survey effort required includes a minimum of three survey days and nights and at least one replicate survey (SEWPaC, 2011d). There is no survey timing recommendation for this species. However, it is considered that the most optimal time to survey this species is from early summer through to the wet season (SEWPaC, 2011d).	A combination of pitfall and funnel trapping as well as diurnal active and nocturnal spotlight surveys were conducted for reptiles. Pitfall traps comprised six 20 L buckets evenly spaced along a 30 m fence consisting of 30 cm high damp course. A funnel trap was placed at either end of the drift fence. Funnel and pitfall traps were left open for three days and four nights totalling 15 trap days and 20 trap nights across all five detailed fauna survey sites. Diurnal searches for reptiles were undertaken in the late afternoon by two personnel over four days with 30 minutes for each search. This amounted to a total of eight person hours. All potential microhabitats were targeted including, tree trucks, leaf litter, fallen timber, decorticating bark and under bush rock. Diurnal active searches totalled 21 person hours.

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
				Nocturnal searches for reptiles were undertaken using a spotlight in the early evening. Surveys targeted tree trunks and decorticating bark, as well as riparian areas and remnant pools where frogs were calling and likely to attract frog-eating snakes. This amounted to a total of 42 person hours across the five detailed fauna survey points and two secondary survey points. Spotlight surveys were conducted by two staff members over two nights for 45 minutes on each night in the April 2012 surveys and 30 minutes each night over three nights in the September 2012 surveys. This amounted to a total of six person hours. The two secondary sites survey effort consisted of two infrared cameras at as well as with a diurnal active reptile search at each location. Detailed habitat assessments were conducted at a total of 11 sites and a total of 80 rapid habitat assessments were conducted throughout the Study Area to determine habitat suitability for this species. The majority of surveys were not undertaken during the optimal timing to record this species (i.e. in early summer through to the wet season), with only the April 2012 surveys occurring in the wet season. Detailed habitat assessments, in addition to surveys, were therefore used to assess the likelihood of this species to occur within the Study Area.

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
Salt-water Crocodile (*Crocodylus porosus*)	Migratory, Marine	Vulnerable	There are no DotE recommended guidelines for this species and no survey timing is recommended for this species.	Literature review, database assessments and analysis of streams in the Study Area were used to determine whether the species could occur in the Study Area. It was determined via this desktop analysis that no suitable habitat occurs within or nearby the Study Area
Yakka Skink (*Egernia rugosa*)	Vulnerable	Vulnerable	Actively searching suitable open forest, woodland and scrub habitats for potential colony sites and deploying well-shaded Elliott A traps close to burrow entrances. Searching for burrow systems and communal defecation-sites is the most reliable method of detection (SEWPaC, 2011d). The Yakka Skink can be confirmed by Elliott trapping around the burrows, by distant observation with binoculars or by shining a torch down burrows at night (SEWPaC, 2011d). The minimum survey effort required includes a minimum of three survey days and nights and at least one replicate survey (DotE, 2014m). The species is more likely to be detected when conditions are warm, not too dry and maximum temperatures are greater than 25°C. Optimal survey times for active searching are early morning (two hours either side of dawn) and during the evening on warm nights (DotE, 2014m). There is no survey timing recommendation for this species. However, it is considered that the most optimal time to survey this species is from late spring to summer (SEWPaC, 2011d).	A combination of pitfall and funnel trapping as well as diurnal active and nocturnal spotlight surveys were conducted for reptiles. Pitfall traps comprised six 20L buckets evenly spaced along a 30m fence consisting of 30cm high damp course. A funnel trap was placed at either end of the drift fence. Funnel and pitfall traps were left open for three days and four nights totalling 15 trap days and 20 trap nights across all five detailed fauna survey sites. Diurnal searches for reptiles were undertaken in the late afternoon by two personnel over four days with 30 minutes for each search. This amounted to a total of eight person hours. All potential microhabitats were targeted including, tree trucks, leaf litter, fallen timber, decorticating bark and under bush rock. Diurnal active searches totalled 21 person hours. Nocturnal searches for reptiles were undertaken using a spotlight in the early evening. Surveys targeted tree trunks and decorticating bark, as well as riparian areas and remnant pools where frogs were calling and likely to attract frog-eating snakes. Spotlight surveys were

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
				conducted by two staff members over two nights for 45 minutes on each night in the April 2012 surveys and 30 minutes for each night over three nights in the September 2012 surveys. This amounted to a total of 42 person hours across the five detailed fauna survey points and two secondary survey points. The two secondary sites survey effort consisted of two infrared cameras at as well as with a diurnal active reptile search at each location. Detailed habitat assessments were conducted at a total of 11 sites and a total of 80 rapid habitat assessments were conducted throughout the Study Area to determine habitat suitability for this species. Every day that fauna surveys were undertaken in 2012, the maximum temperature recorded was 25°C or greater, while a few days during the August 2014 survey reached a maximum temperature of 25°C or greater, as recorded at the Boundary Hill Mine meteorological station. The fauna surveys were not undertaken during the optimal timing to record this species (i.e. in late spring to summer). Detailed habitat assessments, in addition to surveys, were therefore used to assess the likelihood of this species to occur within the Study Area.
Birds				

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
Australian Painted Snipe (*Rostratula australis*)*	Endangered, Migratory, Marine	Vulnerable	Area searches or transects through suitable wetlands; detection by sighting and flushing. Targeted stationary observations at dawn and dusk of suitable foraging locations within wetlands; detection by sighting. Also a brief spotlight search shortly after dusk may detect birds. The recommended survey effort is: a total of 10 hours over 5 days of targeted stationary observations; and 10 hours over 3 days of land based area searches or line transects (for wetlands <50 ha) (DEWHA, 2010b). There is no survey timing recommended for this species.	Diurnal bird surveys were undertaken using the 20 minute two hectare search area recommended by the Atlas of Australian Birds in the April and September 2012 surveys. Surveys were undertaken on four mornings, and were completed within four hours of dawn. Records were based both on direct observation and species-specific vocalisations. An additional 20 minute diurnal survey was conducted at secondary site one. This amounted to 9.1 person hours across the five detailed fauna survey points and the two secondary sites. In addition opportunistic bird data was recorded throughout the August 2014 survey.
Black-breasted Button-quail (*Turnix melanogaster*)	Vulnerable	Vulnerable	Area searches of suitable habitat with detection of flushing birds or hearing of foraging scratching. Also search for platelets, although not conclusive unless birds also sighted. The recommended survey effort is a total of 15 hours over 3 days of land based area searches for areas < 50 ha (DEWHA, 2010b). There is no survey timing recommended for this species.	Diurnal bird surveys were undertaken using the 20 minute two hectare search area recommended by the Atlas of Australian Birds in the April and September 2012 surveys. Surveys were undertaken on four mornings, and were completed within four hours of dawn. Records were based both on direct observation and species-specific vocalisations. An additional 20 minute diurnal survey was conducted at secondary site one. This amounted to 9.1 person hours across the five detailed fauna survey points and the two secondary sites.

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
				In addition opportunistic bird data was recorded throughout the August 2014 survey.
Black-throated Finch (white-rumped subspecies) (*Poephila cincta cincta*)	Endangered	Endangered	Actions proposed in grassland or grassy woodland within 5 km of a recent (post-1995) Black throated finch (white-rumped subspecies) record will require habitat assessment. Where suitable habitat exists, the subspecies should be presumed to be present. Surveys for the Black-throated finch (white-rumped subspecies) are therefore not essential in these areas, but can be useful. In the tropics, locate and watch suitable waterholes late in the dry season and conduct area searches of savannah woodland. Also check around breeding Black-faced Woodswallow (*Artamus cinereus*) flocks in the early wet season. Elsewhere use area searches of suitable habitat for sightings and checking flocks of other finch species. Recommended survey effort includes land-based area searches of areas less than 50 ha for 10 hours over 5 days; and targeted searches of waterbodies and Wood Swallow nests for 6 hours over 2 days (DEWHA, 2010b). There is no survey timing recommended for this species, however, waterholes should be surveyed in the dry season.	Diurnal bird surveys were undertaken using the 20 minute 2 ha search area recommended by the Atlas of Australian Birds in the April and September 2012 surveys. Surveys were undertaken on four mornings, and were completed within four hours of dawn. Records were based both on direct observation and species-specific vocalisations. An additional 20 minute diurnal survey was conducted at secondary site one. This amounted to 9.1 person hours across the five detailed fauna survey points and the two secondary sites. In addition opportunistic bird data was recorded throughout the August 2014 survey. Three fauna surveys were undertaken in the dry season, in which suitable waterbodies were surveyed.
Glossy Black-cockatoo (*Calyptorhynchus lathami*)	-	Vulnerable	A combination of the following techniques is recommended: diurnal bird surveys; and a search for foraging and nesting signs (DSITIA, 2013a). Area searches or transect surveys is search of signs of recent feeding by the presence of chewed cones that are	Diurnal bird surveys were undertaken using the 20 minute two hectare search area recommended by the Atlas of Australian Birds in the April and September 2012 surveys. Surveys were undertaken on four mornings, and were completed within four hours of

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
			cream, orange or white. Survey efforts should be: five hours total over one day for land-based area searches; and 20 hours total over four days for targeted searches ((DEWHA, 2010b). Present throughout the year in many regions and surveys for this species can be carried out at any time of the year. Birds are most active during the first or last two hours of daylight, so surveys should encompass a dawn or dusk period ((DEWHA, 2010b).	dawn. Records were based both on direct observation and species-specific vocalisations. An additional 20 minute diurnal survey was conducted at secondary site one. This amounted to 9.1 person hours across the five detailed fauna survey points and the two secondary sites. In addition opportunistic bird data was recorded throughout the August 2014 survey.
Red Goshawk (*Erythrotriorchis radiatus*)	Vulnerable	Endangered	Search for their characteristic nests within patches of the tallest forest. For inland sites ground searches should be undertaken along river banks for nests within the tallest trees. Driving slowly through tropical woodland tracks and scanning groups of tall trees for nests can also be effective. Recommended survey effort is 50 hours over 8 days for an area of 50 ha. The use of a vehicle may be warranted for larger areas (DEWHA, 2010b). Surveys should be conducted during the breeding season, most commonly from August to November, although surveys in June and July as well as December might yield results (Aumann & Baker-Gabb 1991; Debus & Czechura 1988b).	Diurnal bird surveys were undertaken using the 20 minute two hectare search area recommended by the Atlas of Australian Birds in the April and September 2012 surveys. Surveys were undertaken on four mornings, and were completed within four hours of dawn. Records were based both on direct observation and species-specific vocalisations. An additional 20 minute diurnal survey was conducted at secondary site one. This amounted to 9.1 person hours across the five detailed fauna survey points and the two secondary sites. In addition opportunistic bird data was recorded throughout the August 2014 survey. The majority of generic fauna surveys were undertaken during the optimal timing to record this species (i.e. August to November, although surveys

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
				can be undertaken in June and July as well as December), with only the April 2012 surveys occurring outside of the recommended survey timing. Detailed habitat assessments, in addition to surveys, were used to assess the likelihood of this species to occur within the Study Area.
Squatter Pigeon (southern subspecies) (*Geophaps scripta scripta*)	Vulnerable	Vulnerable	Area searches or transect surveys in suitable habitat. Flushing surveys also likely to be useful. 15 hours of area searches or transect surveys over 3 days. 10 hours of flushing surveys over 3 days (DEWHA, 2010b). The above survey effort is for an area of 50 ha. Some adjustment may need to be made for larger areas with consideration given to landforms and vegetation present. There is no survey timing recommended for this species.	Diurnal bird surveys were undertaken using the 20 minute two hectare search area recommended by the Atlas of Australian Birds in the April and September 2012 surveys. Surveys were undertaken on four mornings, and were completed within four hours of dawn. Records were based both on direct observation and species-specific vocalisations. An additional 20 minute diurnal survey was conducted at secondary site one. This amounted to 9.1 person hours across the five detailed fauna survey points and the two secondary sites. In addition opportunistic bird data was recorded throughout the August 2014 survey. This species was encountered during both the 2012 and 2014 surveys.
Mammals				
Grey-headed Flying-fox (*Pteropus poliocephalus*)	Vulnerable	-	The Grey-headed Flying-fox occupies most areas in their distribution in highly irregular patterns, and, therefore, surveys based on animal sightings are unlikely to be reliable	Spotlight surveys were conducted for mammals in the April and September survey periods for a combined total of six person hours.

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
			(DotE, 2014,). A more effective survey method is to search appropriate databases and other sources for the locations of camps, and to conduct vegetation surveys to identify feeding habitat. The primary method for determining the presence of unrecorded day roosts is to conduct field surveys. Flying-foxes are recognised easily from a distance while they roost or are in flight, and have distinctive audible calls that are heard most frequently in the early morning or under sunny conditions. Other signs include their distinctive odour and droppings. Both the ground and foliage should be examined for flying-fox scats. Roosts can also be located by surveying for animals exiting at dusk. Vegetation communities, within the core range of Grey-headed Flying-foxes, have been mapped and the significance of each community, as feeding habitat, has been ranked by Eby and Law (2008). This ranking should be consulted to help identify vegetation communities in the Project area. Nocturnal walking transects can also be used for this species. Walking transects should be conducted at intervals of 100 m through the Study Area looking for feeding and flying bats. Smell can also provide a sign of their presence. Alternative methods may include night time audio recordings made at selected sites or where fruiting food plants occur within the Project area (DotE, 2014,).	In addition the detailed habitat assessments considered the presence of habitat suitable for the Grey-headed Flying-fox such as feed tree species. The rapid habitat assessments also considered suitability for the Grey-headed Flying-fox at the 80 points assessed, considering factors such as the presence of suitable feed species, ephemeral drainage lines, farm dams and seasonal wetland. Due to the unreliable nature of food resources for this species (i.e. flowering and fruiting of food plants varies among seasons and years), detailed habitat assessments, in addition to surveys, were used to assess the likelihood of this species to occur within the Study Area.

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
			The presence of this species will be dependent on food resources as the time and location of flowering and fruiting of diet plants varies among seasons and years (DEWHA, 2010a)	
Koala (*Phascolarctos cinereus*)	Vulnerable	Special Least Concern	On-ground Koala surveys should ideally be undertaken between August and January when Koala activity is at a peak (DotE, 2013a). In the inland context, there may be seasonal differences in the use of habitat and it is recommended that Koala surveys that are conducted during dry periods should be centred on riparian areas, upper/mid-slope areas and other potential dry-period refugia (DotE, 2013a). Faecal pellet searches, for example the Spot Assessment Technique (SAT) developed by Phillips and Callaghan (2011) or the Regularised Grid-based Spot Assessment Technique (RGB-SAT), are recommended to determine the occurrence of Koalas indirectly (DotE, 2013a). Diurnal searching of strip transects is recommended for areas < 30 ha and where the number of Koalas is expected to be high (DotE, 2013a). Other techniques include: nocturnal spotlighting, call playback, and remote sensor activated cameras (DotE, 2013a).	Spotlight surveys were conducted for mammals over a period of four nights at all detailed fauna survey also twice at secondary site one, for a combined total of six person hours. In addition the detailed habitat assessments assessed for signs of occupancy for the Koala (scats, claw marks) as well as identification of stands of known feed tree species and other suitable areas of habitat. The rapid habitat assessments also considered suitability for the Koala at the 80 points assessed, considering factors such as the presence of suitable feed species (e.g. *Eucalyptus tereticornis*) and suitable forest density. Targeted surveys were also undertaken for the Koala in September 2013, which comprised an initial habitat assessment, line transect surveys, critical habitat assessment, Koala SAT surveys and spotlight and call playback surveys. The majority of fauna surveys were undertaken during the optimal timing to record this species (i.e. between August and January), with only the April 2012 surveys occurring outside of the recommended survey timing.

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
				Detailed habitat assessments, in addition to surveys, were used to assess the likelihood of this species to occur within the Study Area.
Large-eared Pied Bat (*Chalinolobus dwyeri*)	Vulnerable	Vulnerable	This species should be surveyed using a combination of passive and active acoustic detection and physical trapping techniques. Recorders should be placed in the vicinity of mines, caves and rocky outcrop, and also in foraging sites such as vegetation corridors and flyways, sandstone gorges, over watercourses, isolated waterholes and in representative vegetation types. Active surveys can be performed at the entrances to known roost caves, along roads and walked transects in suitable habitat and should commence at dusk. Where no known roost sites have been identified in the planning stage, several hours may be required to conduct ground-based surveys for caves, mines, rock overhangs and crevices. Success with trapping is most efficient in the vicinity of potential roosts. Harp traps and mistnets are useful for detecting this species, and can be set overnight in forest flyways, near scarps and cliffs and in riparian zones (DotE, 2014g). Surveys are best conducted from October through to March (DEWHA 2010).	Microbats were surveyed for using acoustic bat detectors; either SM2 or SM2BAT+ SongMeters (Wildlife Acoustics) during the 2012 surveys. One bat detector was deployed at each detailed survey site, for a period of four nights, and placed in a likely flyway or close to water features such as ephemeral drainage lines, the seasonal wetland, farm dams or remnant pools. Acoustic bat recordings were analysed by Greg Ford of 'Balance Environmental'. In addition an SM2 was also deployed at secondary site one for a period of four nights. A total of 80 rapid habitat assessments were conducted across all habitat types in the Study Area. This included consideration of available habitat suitability for this species at each location. Fauna surveys were not undertaken during the optimal timing to record this species (i.e. from October through to March). Detailed habitat assessments, in addition to surveys, were therefore used to assess the likelihood of this species to occur within the Study Area.
Northern Quoll (*Dasyurus hallucatus*)	Endangered	-	Surveys for this species should be conducted in two stages, a reconnaissance survey followed by a targeted trapping survey.	During the 2012 reconnaissance surveys trap configurations were deployed at each of the five detailed survey sites to target resident small to

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
			The reconnaissance survey can be conducted at any time of the year. The reconnaissance survey should assess the suitability of habitat for Northern Quolls, both for denning/shelter and dispersal and foraging purposes. Suitable habitat should be mapped during this survey and habitat areas calculated. The targeted survey should be conducted in the months of May to August and at a minimum consider the following: • Carefully configure the trapping program to address project impact and non-impact zones so that results are adequate to inform monitoring programs and project siting options; • Trapping should be concentrated in habitat critical to the survival with some consideration of non-rocky foraging and dispersal habitats; • In the Northern Territory and Queensland, traps should be set for a minimum of three nights with the aim of sampling as many sites possible over the three nights; • Where large Elliott traps are the primary trapping technique, a minimum of four cage traps should be used per trap configuration; • To be considered effective, traps should be baited with oats, sardines and peanut butter. Chicken wings and diced bacon are optional; • Traps should be rebaited at least every second day	medium sized mammals. Each trap configuration consisted of 20 Elliot A's arranged in a square with five traps on each edge. A larger Elliot B was placed in each corner of the square and a cage trap was laid in the centre of the square. The trap configurations were deployed for three days and four nights. All Elliot traps were baited with a combination of rolled oats, honey and sardines with the baits replaced each afternoon. In addition each trap configuration contained four static infrared cameras and ten hair tubes. The infrared cameras were placed overlooking bait stations containing chicken pieces. Each hair tube was baited with rolled oats and honey. Five were placed on the ground and five were deployed in an arboreal configuration. During the dedicated Northern Quoll surveys during the 2014 survey an additional 12 trap configurations were deployed in areas identified as suitable. Each trap configuration was deployed for two days and three nights. Each trap configuration consisted of 20 Elliot B traps arranged in a square with a cage trap deployed in each of the four corners. Bait methodology was the same as for the 2012 surveys. In addition each trap configuration contained an infrared camera in the

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
			(baits should be fresh), cleared within 2–3 hours of sunrise and have adequate shade cover during the day. Consideration should be given to closing traps during the day to eliminate by-catch and potential heat stress issues; and • Targeted surveys may be supplemented by one of several non-invasive survey techniques such as latrine searches in habitat critical to the survival, use of motion sensitive cameras and / or hair tubes. These methods should however not be relied upon to demonstrate Northern Quolls are not present in an area (SEWPaC, 2011c).	centre overlooking a bait station containing chicken necks and offal. The targeted Northern Quoll surveys conducted in August 2014 were undertaken at the correct time of year (i.e. May to August) in accordance with the guidelines (SEWPaC, 2011c). Reconnaissance surveys can be conducted at any time of the year, so the other generic fauna searches and reconnaissance surveys were also undertaken at the correct time of the year.
Short-beaked Echidna (*Tachyglossus aculeatus*)	-	Special Least Concern	No survey requirements or survey timing have been published for this species.	Incidental species were recorded at all times throughout the field survey periods.
South-eastern Long-eared Bat (*Nyctophilus corbeni*)^	Vulnerable	Vulnerable	The following methods should be used to detect this species during surveys (DEWHA, 2010a): • Passive acoustic detection: bat detectors can be used to identify areas used by long-eared bats, even if they cannot be identified to species level. Acoustic detection can then be followed up with an appropriate level of trapping (DEWHA, 2010a). • Trapping*:* both harp traps and mistnets are effective for this species, and either can be used. For large project areas with landscape complexity, traps and	Microbats were surveyed for using acoustic bat detectors; either SM2 or SM2BAT+ SongMeters (Wildlife Acoustics) during the 2012 surveys. One bat detector was deployed at each detailed survey site, for a period of four nights, and placed in a likely flyway or close to water features such as ephemeral drainage lines, the seasonal wetland, farm dams or remnant pools. Acoustic bat recordings were analysed by Greg Ford of 'Balance Environmental'. In addition an SM2 was also deployed at secondary

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
			nets should be distributed so as to give good representation in the major habitat types. The following trapping effort is recommended for areas of 50ha or less (DEWHA, 2010a): • Harp Traps: 20 trap nights over a minimum of five nights; and • Mistnets: 20 mist net nights over a minimum of five nights. Surveys are best conducted on warmer nights from October–April (DEWHA, 2010a).	site one for a period of four nights. A total of 80 rapid habitat assessments were conducted across all habitat types in the Study Area. This included consideration of available habitat suitability for this species at each location. The majority of fauna surveys were not undertaken during the optimal timing to record this species (i.e. from October through to April), with the exception of surveys conducted in April 2012. Detailed habitat assessments, in addition to surveys, were used to assess the likelihood of this species to occur within the Study Area.
FLORA				
Acacia pedleyi	-	Vulnerable	No survey requirements have been published for these species.	A total of 10 secondary quadrats; 6 tertiary plots; 262 quaternary surveys; 30 quadrats; random meander surveys; and targeted threatened flora species surveys were undertaken in the Study Area. No threatened flora species were recorded within the Study Area.
Bertya opponens	Vulnerable	-		
Miniature Moss-orchid (*Bulbophyllum globuliforme*)	Vulnerable	Near Threatened		
Cossinia (*Cossinia australiana*)	Endangered	Endangered		
Cycas megacarpa	Endangered	Endangered		
Cycas ophiolitica	Endangered	Endangered		
King Blue-grass (*Dichanthium queenslandicum*)	Endangered	Vulnerable		

Species Name	Conservation Status[1]		Survey Requirements/Techniques	Survey Effort
	EPBC Act	NC Act		
Grevillea hockingsii	-	Vulnerable		
Macadamia Nut (*Macadamia integrifolia*)	Vulnerable	Vulnerable		
Polianthion minutiflorum	Vulnerable	Vulnerable		
Native Thistle (*Rhaponticum australe*)	Vulnerable	Vulnerable		
Samadera bidwillii	Vulnerable	Vulnerable		
Solanum dissectum	-	Endangered		
Solanum johnsonianum	-	Endangered		
Siah's Backbone (*Streblus pendulinus*)	Endangered	-		
Xerothamnella herbacea	Endangered	Endangered		

1 Threatened and/or migratory fauna and flora species status under the EPBC Act and NC Act (current at 20 January 2015).

* Species listed as marine and migratory under the EPBC Act as Painted Snipe (*Rostratula benghalensis*) (sensu lato).

^ Species listed under the NC Act as Eastern Long-eared Bat (*Nyctophilus timoriensis*).

Appendix G

Flora Likelihood of Occurrence

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
Acacia pedleyi	-	V	-	X	X	A shrub/tree growing to 10 m in height found on alluvial flats, hill slopes and tops of ridges in open forest and woodland communities. *A. pedleyi* occurs in understorey, sometimes with *Acacia crassa*, in open forest with *Corymbia citriodora, E. moluccana* and/or *E. crebra*, and in Popular Box (*E. populnea*) woodland (EHP, 2014a).	This species has not been recorded within the Study Area. There is a moderate likelihood of occurrence within the Study Area due to the presence of low value habitat in patches of RE 11.10.1 (*Corymbia citriodora* woodland) where rocky, relatively intact understorey is present and where cattle grazing is restricted or absent. This species has not been recorded from the Study Area despite extensive flora survey in potential habitats (woodlands) despite its conspicuous nature, as a tree up to 10 m in height. However, it has been recorded by AECOM (2012b) approximately 1 km to the east of the Study Area. Woodlands dominated by *Corymbia citridora* (RE 11.10.1) and *E. crebra* (RE 11.9.9) occur in the Study Area and so there is a moderate likelihood of occurrence. A detailed assessment on this species is

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
							provided in **Section 4.5.2i**.
Acacia spania	-	NT	-	X	-	A shrub that grows mostly on rocky sandstone ridges and hills in sandy to loamy soils in eucalypt or Acacia dominated woodland communities. The species sometimes forms relatively pure stands within these communities, and has also been recorded in vine thickets along scarp edges (EHP, 2014b).	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. Rocky sandstone ridges are not present within the Study Area. This shrub has not been recorded from the Study Area despite extensive flora survey in potential habitats (woodlands. For this reason it is considered unlikely to occur within the Study Area.
Bertya opponens	V	-	X	X	-	This shrub, which grows to 4 m in height, has been recorded from a variety of community types including mixed shrubland, lancewood woodland, mallee woodland, eucalypt/Acacia open forest with shrubby understorey,	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. Most of the published habitat types that this species is known to occur in do not occur in the Study Area including mixed shrubland, lancewood woodland, mallee woodland,

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
						eucalypt/Callitris open woodland and semi-evergreen vine-thicket (EHP, 2014d).	eucalypt/Acacia open forest with shrubby understorey, eucalypt/Callitris open woodland and semi-evergreen vine-thicket. One of the RE's on the subject site, RE 11.10.1: *Corymbia citriodora* woodland may conceivably have suitable habitat, as there have been some occurrences of the species in eucalypt woodland. However, it has not been found within the Study Area despite extensive flora surveys of the Study Area and, as a shrub of up to several metres high, it is not cryptic or seasonal. It is not known from the immediate locality surrounding the Study Area. The species is known to be threatened by vegetation clearing, frequent low-intensity fires to promote pasture for cattle and the Study Area has been subjected to these disturbances. For this reason, it is not considered likely to

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
							occur in the Study Area.
Miniature Moss-orchid (*Bulbophyllum globuliforme*)	V	NT	X	-	-	The Miniature Moss-orchid is a host-specific ephiphytic species, only growing on the Hoop Pine, where it colonises the upper branches of mature trees (Jones, 2006).	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. This species is known to only grow on Hoop Pines, which have not been recorded from the Study Area. The species has not been found during targeted surveys and it is considered unlikely to occur within the Study Area.
Cerbera dumicola		NT	-	X	-	A shrub or small tree that occurs across a range of habitats in central and southern Queensland. Associated vegetation and dominant tree species include: sandstone hills in open *E. umbra* subsp. *carnea*; on plateaus, in woodland of *Acacia shirleyi* with *Corymbia*	Low likelihood of occurrence within the Study Area. The Study Area lacks suitable habitat for this species. It is not known to occur within the woodland types that occur within the Study Area including *Corymbia citriodora* woodland, *E. tereticornis* woodland or *E. crebra woodland.*

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
						dolichocarpa; acidic soils in mine rehabilitation areas; woodland of *A. catenulata* and *A. shirleyi* with *E. thozetiana* on a slope of sand/clay soil; semi-deciduous notophyll-microphyll vine forest; semi-evergreen vine thicket with *Corymbia citriodora* and *Corymbia aureola* emergents; woodland of *A. rhodoxylonon* brown, sandy loam; and in *Corymbia tessellaris - Acacia aneura* open woodland (EHP, 2014e).	The shrub/small tree has not been detected in the Study Area and is considered unlikely to occur.
Cossinia (*Cossinia australiana*)	E	E	X	X	X	A tree that grows in relict patches of Araucarian vine forest and vine thickets and relict semi-evergreen vine thicket on a variety of soils, including red volcanic soil and black loam (EHP, 2014f).	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. Araucarian vine forest and vine thickets and relict semi-evergreen vine thicket

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
							are absent from the Study Area. This species has not been recorded during flora surveys and is considered unlikely to occur.
Cycas megacarpa	E	E	-	X	X	*Cycas megacarpa* is a small to medium sized Cycad with an erect trunk standing around 3 m tall and approximately 15 cm wide. This species occurs in Spotted Gum (*Eucalyptus maculata*) and Narrow-Leaved Ironbark (*Eucalyptus crebra*) woodland, open forest with a grassy understorey, and also on rainforest margins. It is often found on hill tops and steep slopes (EHP, 2014g).	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. Potentially suitable habitat is present within the Study Area in the form of *E. crebra* woodland (RE 11.9.9). However, the species is conspicuous as it is a large palm-like plant and has not been found during extensive flora surveys of potential habitat in the Study Area. For this reason it is considered to have a low likelihood of occurrence within the Study Area.
Cycas ophiolitica	E	E	X	-	-	*Cycas ophiolitica* grows to 2 m tall, though it can reach 4 m, with a trunk diameter of 4–20 cm. This species occurs on hills and slopes	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. One suitable associated tree species

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
						in sparse, grassy open forest on shallow, stony, infertile soils, on sandstone and serpentinite with *Corymbia dallachiana, C. erythrophloia, C. xanthope* and *Eucalyptus fibrosa*. Also on mudstone with *Corymbia dallachiana, C. erythrophloia* and *Eucalyptus crebra*, and on alluvial loams with *Corymbia intermedia, Eucalyptus drepanophylla* and *E. tereticornis* (DotE, 2014i).	(*Eucalyptus crebra*) is present in the Study Area. However, *Cycas ophiolitica* is a relatively conspicuous palm-like cycad and has not been found during extensive flora surveys of potential habitat in the Study Area. For this reason it is considered to have a low likelihood of occurrence within the Study Area.
King Blue-grass (*Dichanthium queenslandicum*)	E	V	X	-	X	This perennial native grass occurs on black clay soils within tussock grasslands mainly in association with other species of blue grasses (*Dichanthium* spp. and *Bothriochloa* spp.) but also with other grasses restricted to this soil type (EHP, 2014h).	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species as no black clay soils within the Study Area. The soils that predominate the Study Area are red earths and duplex and gradational soils (see the EIS Land and Soil

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
							Capability Report). Due to the absence of suitable soils to support this species, the Study Area does not support natural tussock grasslands and is unlikely to have supported them prior to European settlement. This perennial grass has not been found during surveys and is considered unlikely to occur in the Study Area.
Eucalyptus decolor		NT	X	-	-	*Eucalyptus decolor* is a small to medium-sized tree that grows up to 25 m tall. This species occurs in open forest or open tall woodland on ridges, crest or steep slopes on grey loams or shallow soils derived from granite or sandstone (EHP, 2014i). Associated species include: *Corymbia citriodora, C. trachyphloia* subsp. *trachyphloia, Eucalyptus major,*	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. No granitic habitat is present in the Study Area, and, although *Corymbia citriodora* (a species associated with *Eucalyptus decolor*) occurs on sandstone slopes (RE 11.10.1) within the Study Area, such woodlands in the Study Area do not include crests or steep

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
						E. moluccana, E. acmenoides, E. montivaga, E. exserta, Allocasuarina littoralis, Lophostemon confertus, Leptospermum neglectum, Pomaderris argyrophylla, Arundinella nepalensis and *Eremochloa bimaculata*, and at the highest altitudes, *E. montivaga.*	slopes. The species is conspicuous as it is a large tree (25 m) and has not been found during flora surveys of potential habitat in the Study Area. This tree species has not been recorded from the Study Area and is considered unlikely to occur.
Grevillea hockingsii	-	V	-	X	X	This is a large shrub found on slopes in hilly sandstone country on shallow sandy to sandy loam soils which are light brown to red in colour and occasionally stony or gravelly. It grows in woodland or open forest communities mostly dominated by either Gum-Topped Ironbark (*E. decorticans*) and *Corymbia citriodora* subsp.	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. This large shrub species can potentially occur in *Corymbia citriodora* woodland (RE 11.10.1) which occurs in the Study Area. However, the species is conspicuous because it is a tall shrub species and has not been found during extensive flora surveys of potential habitat in the Study Area. For this reason it is

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
						variegata, *E. suffulgens* or White Mahogany (*E.* acmenoides) (EHP, 2014j).	considered to have a low likelihood of occurrence within the Study Area.
Macadamia Nut (*Macadamia integrifolia*)	V	V	-	X	-	The Macadamia Nut is a medium-sized tree which can grow to approximately 20 m in height with a similar crown width. The Macadamia Nut grows in remnant rainforest, preferring partially open areas such as rainforest edges (DotE, 2014y).	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. No rainforest habitat is present in the Study Area. The species is conspicuous as it is a large tree and has not been recorded from the Study Area or the immediate surrounds and is considered unlikely to occur.
Grove's Paperbark (*Melaleuca groveana*)		NT	-	-	X	Small tree which is generally 2 to 5 m tall that grows on exposed rocky ridges, high mountain slopes and the summits of mountains, at altitudes between 340-600 m above sea level. It generally occurs in heaths and eucalypt woodlands and forests	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. No habitat for this species in the form of exposed rocky ridges or mountain slopes are present within the Study Area. Suitable habitat for this species occurs to the east of the Study

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
						with heath understoreys. It is also found in tall open forest with a grassy understorey and in microphyll vine forests (EHP, 2014k).	Area in the Callide State Forest, where a record occurs 3-4 km from the project site. The shrub has not been found during flora surveys and is not expected to occur within the Study Area.
Polianthion minutiflorum	V	V	X	X	X	Small shrub which grows to 1 m in height. Grows in forest and woodland on sandstone slopes and gullies with skeletal soil, or deeper soils adjacent to deeply weathered laterite (EHP, 2014l).	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. No sandstone slopes or gullies with skeletal soil occur in the Study Area and no deeply weathered laterites occur. This species has not been recorded from the Study Area and is not expected to occur.
Native Thistle (*Rhaponticum australe*)	V	V	-	-	X	Native Thistle is an erect, herbaceous perennial that grows up to 60 cm high. This species occurs in eucalypt woodlands and disturbed roadsides on black clay	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable soil habitat (i.e. black clay soil) for this species. There are no

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
						soil (DotE, 2014ƒ).	black clay soils present within the Study Area and the soils that predominate are red earths and duplex and gradational soils (see EIS Land and Soil capability Report). This species has not been recorded from the Study Area and is not expected to occur.
Samadera bidwillii	V	V	X	X	X	*Samadera bidwillii* is a small shrub or tree that grows to about 6 m in height, with red flowers and red fruit occurring from November to March. Habitat for this species occurs in lowland rainforest and rainforest margins (DotE, 2014‡). Recorded 3 km to the east (DotE, 2014‡).	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. No lowland rainforest habitat occurs in the Study Area. The species is conspicuous as it grows to around 6 m in height and has not been found during flora surveys of potential habitat in the Study Area. The species has not been detected during flora surveys and is not expected to occur within the Study Area.
Solanum dissectum	-	E	-	X	X	*Solanum dissectum* is a perennial shrub 0.3 to 1 m high. This	Low likelihood of occurrence within the Study Area. This species has not been recorded

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
						species occurs in open forest and woodland of Brigalow (*Acacia harpophylla*) or *Eucalyptus thozetiana* on solodic clay soils (EHP, 2014p).	within the Study Area. The Study Area lacks suitable habitat for this species as no solodic clay soils are present within the Study Area. The soils that predominate the Study Area are red earths and duplex and gradational soils (see EIS Land and Soil Capability Report). Consequently, there is also no Brigalow present within the Study Area. This species has not been recorded from the Study Area and is not expected to occur.
Solanum johnsonianum	-	E	-	X	X	Occurs on heavy cracking clay soils in Brigalow vegetation (EHP, 2014q).	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species as no heavy clay cracking soils are present within the Study Area. The soils that predominate Study Area are red earths and duplex and gradational soils (see EIS Land

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
							and Soil Capability Report). Consequently, there is also no Brigalow present within the Study Area. The species has not been detected during flora surveys and is not expected to occur within the Study Area.
Siah's Backbone (*Streblus pendulinus*)	E	-	X	-	-	Siah's Backbone is a tree or large shrub that grows to 6 m in height. This species occurs in warmer rainforests, chiefly along watercourses (DotE, 2014ˆ).	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. The Study Area does not contain rainforest habitat or permanent watercourses in which this species occurs. The species is conspicuous as it grows to around 6 m in height and has not been detected during flora surveys and is not expected to occur within the Study Area.
Xerothamnella herbacea	E	E	-	-	X	*Xerothamnella herbacea* occurs in Brigalow (*Acacia harpophylla*)	Low likelihood of occurrence within the Study Area. This species has not been recorded

Table G.1 Likelihood of Occurrence of Threatened Flora Species within the Study Area

Species Name	Status[1]		Database			Habitat Requirements	Likelihood of Occurrence
	EPBC Act	NC Act	EPBC Act Protected Matters Search Tool (Appendix A)	Queensland Wildlife Online Search (Appendix B)	HERBRECS Database (Appendix C)		
						dominated communities in shaded situations, often in leaf litter and is associated with gilgais (shallow ground depressions) (EHP, 2014t).	within the Study Area. The Study Area lacks suitable habitat for this species as no solodic clay soils or heavy cracking clays necessary for Brigalow are present within the Study Area. Consequently, there is also no Brigalow present within the Study Area. The soils that predominate the Study Area are red earths and duplex and gradational soils (see EIS Land and Soil Capability Report). Gilgais are also absent from the Study Area. The species has not been detected during flora surveys and is not expected to occur within the Study Area.

1 Threatened flora species status under the EPBC Act and NC Act (current at 20 January 2015).
NT = Near Threatened, V = Vulnerable, E = Endangered

Appendix H

Fauna Likelihood of Occurrence

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
Fish								
Bidyanus bidyanus	Silver Perch	CE	-	X	X	-	**General habitat requirements/preferences:** The species prefers lowland, turbid and slow-flowing rivers (Murray-Darling Basin Commission, 2007). **Foraging requirements/preferences:** Their diet consists of aquatic plants, snails, shrimps and aquatic insect larvae (Murray-Darling Basin Commission, 2007). **Microhabitat requirements/preferences:** The species prefers lowland, turbid and slow-flowing rivers (Murray-	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. No permanent streams occur in or immediately adjacent to the Study Area. The Study Area is characterised by highly ephemeral drainage lines that only flow for short durations after periods of heavy rainfall. This species has not been recorded from the Study Area and is unlikely to occur.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Darling Basin Commission, 2007). **Breeding requirements/preferences:** They spawn in spring and summer after an upstream migration, most commonly in times of flood (Murray-Darling Basin Commission, 2007).	
Amphibians								
Adelotus brevis	Tusked Frog	-	V	-	-	X	**General habitat requirements/preferences:** This species is found in wet forest and dry forest environments usually along streams, but also around dams (Hines *et al.*, 2004, 2014).	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. This species has not been recorded from the Study Area during frog surveys. Very limited suitable habitat for this species is

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Foraging requirements/preferences: The species most common prey are Arthropods, with beetles being the largest group consumed followed by true insects (BAAM, 2005). **Microhabitat requirements/preferences:** The Tusked Frog can be found in hollows, under logs, and areas where debris builds up along waterways (BAAM, 2005). **Breeding requirements/preferences:** Breeding takes place in streams	present within the Study area in the form of the three artificial farm dams and ephemeral drainage lines. This species is threatened by disturbance to riparian habitats and reductions in water quality. The three farm dams and ephemeral drainage lines within the Study Area are all heavily modified and disturbed by cattle grazing. These areas are unlikely to provide suitable habitat for this species due to their degraded state, and lack of permanent water present in the ephemeral drainage lines. For this reason it is considered to have a low likelihood of occurrence.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							and ponds and its eggs are laid in a foam nest hidden from the light (BAAM, 2005).	
Reptiles								
Acanthophis antarcticus	Common Death Adder	-	NT	-	-	X	**General habitat requirements/preferences:** The Common Death Adder occurs where there is deep leaf litter, in various habitats such as rainforest, woodland, grassland, coastal heathland and wet sclerophyll forest. Occurs from the Gulf region of the Northern Territory across to central and eastern Queensland and New South Wales, and through to the southern parts of South Australia and Western Australia (EHP, 2013a) .	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Common Death Adder is sensitive to overgrazing and trampling by cattle and is also susceptible to poisoning after eating Cane Toads (EHP, 2013a). The entire Study Area has been subject to cattle grazing and clearing and Cane Toads occur along ephemeral drainage lines and farm dams present within the Study Area.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Foraging requirements/preferences: The main dietary component consists of lizards and small mammals, and less often frogs and birds (EHP, 2013a). **Microhabitat requirements/preferences:** A secretive species which hides half-buried in sand, soil or litter (EHP, 2013a). **Breeding requirements/preferences:** Mating often occurs in spring, and live young typically born in autumn. Females only reproduce every 2 years (EHP, 2013a).	This snake species has not been found on the Study Area and is considered unlikely to occur, though it is likely to occur in less disturbed habitats in the Callide Timber Reserve to the east of the Study Area.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
Delma torquata	Collared Delma	V	V	X	-	-	**General habitat requirements/preferences:** This species is found in predominantly open rocky country, such as ridgelines, in association with dry open eucalypt and/or acacia woodland. It is known to occur in RE 11.10.1 *Corymbia citriodora* open forest (DotE, 2014k), which occurs on the Study Area. **Foraging requirements/preferences:** The Collared Delma feeds on insects and spiders, with small cockroaches the most common	High likelihood of occurrence within the Study Area due to the presence of low value habitat in patches of RE 11.10.1 (*Corymbia citriodora* woodland) where rocky, relatively intact understorey is present and where cattle grazing is restricted or absent. This species has not been recorded within the Study Area. The species is threatened by habitat clearing and overgrazing, predation by foxes and cats and weed invasion (DotE, 2014k). All of these threats operate within the Study Area. Low value woodland habitat for

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							prey item. Some individuals have been captured in subterranean termite colonies (DotE, 2014k). **Microhabitat requirements/preferences:** The species is found in areas where rocks, logs, bark and other coarse debris are present (DotE, 2014k). **Breeding requirements/preferences:** The species is known to produce two eggs in December that hatch in February to March (DotE, 2014k).	this species that is subject to cattle grazing occurs in the Study Area in the form of Lemon-scented Gum (*Corymbia citriodora*) woodland which occurs in less disturbed patches of RE 11.10.1. A detailed assessment on this species is provided in **Section 4.5.8i**.
Furina dunmalli	Dunmall's Snake	V	V	X	-	-	**General habitat requirements/preferences:**	Low likelihood of occurrence within the Study Area. This

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							In Queensland, the species is found in a range of habitats, primarily in the Brigalow Belt region in the south-eastern interior of the state, between 200–500 m above sea level (DotE, 2014q). It is found in open forest and woodland, particularly Brigalow forest and woodland growing on cracking clay soils (DotE, 2014q). **Foraging requirements/preferences:** The species feeds on small skinks and geckos (DotE, 2014q). **Microhabitat requirements/preferences:**	species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species in the form of Brigalow forest. Preferred habitats (cracking alluvial clay soils) are not present in the Study Area (see EIS Land and Soil Capability Report). Similarly, Brigalow woodland is absent from the Study Area. This species has not been recorded from the Study Area and is considered unlikely to occur due to a lack of suitable habitat.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							The species is known to shelter under fallen timber, ground litter, and may use cracks in alluvial clay soils (DotE, 2014q). **Breeding requirements/preferences:** Little is known about the life cycle or reproduction behaviour of Dunmall's Snake, but it is known to lay eggs, not live young (DotE, 2014q).	
Rheodytes leukops	Fitzroy River Turtle	V	V	X	-	-	**General habitat requirements/preferences:** The Fitzroy River turtle is found only in the drainage system of the	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Fitzroy River, in areas with large deep pools with rocky, gravelly or sandy substrates, connected by shallow riffles (DotE, 2014„). **Foraging requirements/preferences:** The species forages along the river bottom, feeding on insects, snails and plant material (DotE, 2014„). **Microhabitat requirements/preferences:** Preferred areas have high water clarity, and are often associated with ribbonweed *Vallisneria* sp. beds (DotE, 2014„).	No suitable habitat is present in the Study Area as only minor ephemeral drainage lines occur. These ephemeral drainage lines do not contain deep pools with rocky, gravelly or sandy substrates, connected by shallow riffles. The species has not been detected and is not expected to occur within the Study Area due to lack of suitable aquatic habitat. For this reason it is considered unlikely to occur.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Breeding requirements/preferences: The species nests between September and October, on river sandbanks, generally 1–4 m above water level (DotE, 2014„).	
Denisonia maculata	Ornamental Snake	V	V	X	-	X	**General habitat requirements/preferences:** The species is known to prefer woodlands and open forests associated with moist areas, particularly gilgai (melon-hole) mounds and depressions, and also lake margins and wetlands (DotE, 2014l). **Foraging**	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. This species is not considered likely to occur because the Study Area lacks gilgai mounds and depressions (see EIS Land and Soil Capability Report), which are

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							requirements/preferences: The Ornamental Snake's preferred habitat is within, or close to, habitat that is favoured by its prey – frogs (DotE, 2014l). **Microhabitat requirements/preferences:** The species is known to shelter under coarse woody debris, ground litter, and logs. During the dry season it will seek refuge in soil cracks on gilgai mounds (DotE, 2014l). **Breeding requirements/preferences:** The species breeds from	key habitat components for this species. Cane Toads are present within the Study Area (AECOM 2012b). In areas where water was available, they were abundant and found to congregate in very large numbers in small remnant pools. Ingestion of cane toads (including eggs and tadpoles) resulting in poisoning is the primary effect of Cane Toads on native species such as the Ornamental Snake. Cane Toads are a primary threat to this species. Numerous intensive studies, in seemingly optimal Ornamental Snake habitats, have resulted in no snakes being

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							September to November (Curtis *et al.*, 2012)	found where Cane Toads were in abundance (DotE, 2014l). This species was not detected during reptile surveys. Due to a lack of suitable habitat. Cane Toads present within the Study Area (AECOm 2012b) and lack of records it is considered unlikely that this species would occur in the Study Area.
Crocodylus porosus	Salt-water Crocodile	Mi, M	V	X	-	-	**General habitat requirements/preferences:** The Salt-water Crocodile inhabits tidal rivers, coastal floodplains and channels, billabongs and swamps. It may be found up to 150 km inland from the coast, in habitats where salinity levels are sufficient (DotE, 2014h).	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. No suitable habitat for this species occurs in the Study Area. Rivers, coastal floodplains and channels, billabongs and swamps are absent from the

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Foraging requirements/preferences: Primary food sources for the Salt-water Crocodile are crustaceans, insects and mammals. In high salinity, more crab are consumed, while in freshwater, more insects are consumed (DotE, 2014h). **Microhabitat requirements/preferences:** The species is often found exposed in the mid-day sun, but under cover and shaded during the morning and late evening (DotE, 2014h).	Study Area. For this reason it is considered unlikely to occur.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Breeding requirements/preferences: Preferred nesting habitat for the species included isolated freshwater swamps that do not have tidal fluctuations (DotE, 2014h).	
Egernia rugosa	Yakka Skink	V	V	X	-	-	**General habitat requirements/preferences:** The Yakka Skink is typically found in open dry sclerophyll forest or woodland (DotE, 2014m). **Foraging requirements/preferences:** The species is omnivorous, consuming soft plant materials and fruits and a wide variety of	Moderate likelihood of occurrence within the Study Area due to a record of the species (date unknown) from the Callide Timber Reserve approximately 1.5km away (Parsons Brinkerhoff, 2006) and the presence of low value habitat in patches of RE 11.9.9 (*Eucalyptus crebra* woodland) within the Study Area where rocky, relatively intact

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							invertebrates that wander near the entrance of their burrow (DotE, 2014m). **Microhabitat requirements/preferences:** This skink seeks refuge in dense ground vegetation, in hollow logs, cavities in soil-bound root systems and beneath rocks (DotE, 2014m). **Breeding requirements/preferences:** The species exhibits high site fidelity and produces live young, with around six per litter (DotE, 2014m).	understorey is present and where cattle grazing is restricted or absent. This species has not been recorded from the Study Area. It is sensitive to over clearing, cattle grazing and predation by cats and foxes (DotE, 2014m). Low value habitat is present in the woodland areas of the Study Area. A detailed assessment on this species is provided in **Section 4.5.8ii**.
Strophurus taenicauda	Golden-tailed Gecko	-	NT	-	-	X	**General habitat**	Low likelihood of occurrence

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							requirements/preferences: The Golden-tailed Gecko is found in dry open woodland and open forest including Cypress Pine, Ironbark, eucalypts with flaky bark, Bulloak and Belah. Occurs over the Darling Downs in southern Queensland and north to coastal central Queensland from near Rockhampton west to Emerald (EHP, 2013b). **Foraging requirements/preferences:** Feeding occurs at night on insects (EHP, 2013b). **Microhabitat requirements/preferences:**	within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks the majority of preferred trees for this species with only Ironbarks occurring in the Study Area within RE 11.9.9. It is known to be susceptible to habitat clearing and disturbance, overgrazing and inappropriate fire regimes ((EHP, 2013b). It is also thought to be susceptible to predation by feral cats and foxes. All of the aforementioned threats to the species apply in the ironbark grassy woodland that occurs in the Study Area. The species has not been

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Shelters under loose bark (on ground or on trees), hollow limbs, and less often in the open on stems during the day (EHP, 2013b). It particularly occurs where there are trees with flaky bark, including Ironbarks, Cypress Pine, and Brigalow. **Breeding requirements/preferences:** Females only lay 2 eggs in a clutch in areas where they roost (EHP, 2013b).	detected on Study Area or within the immediate vicinity of the Study Area. As the potential habitat in the Study Area has been disturbed and as there are no records for the species, it is considered to have a low likelihood of occurrence.
Birds								
*Rostratula australis**	Australian Painted Snipe	E, Mi, M	V	X	-	-	**General habitat requirements/preferences:**	Moderate likelihood of occurrence within the Study Area

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							The Australian Painted Snipe is usually found in shallow inland wetlands, either freshwater or brackish, that are either permanently or temporarily filled (DotE, 2014m). **Foraging requirements/preferences:** The species eats vegetation, seeds, insects, worms, molluscs, crustaceans and other invertebrates. The preferred foraging habitat is not well known (DotE, 2014m). **Microhabitat**	due to the presence of low value habitat in the form of farm dams and seasonal wetland. This species has not been recorded from the Study Area. A seasonal wetland and three farm dams are present in the Study Area but these are considered to comprise low value habitat for the species as they are subject to disturbance from cattle grazing. Notwithstanding this, the species has moderate likelihood of occurrence within the Study Area on occasion. A detailed assessment on this species is provided in **Section 4.5.8iii**.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							requirements/preferences: Nesting primarily occurs on or near small islands in freshwater wetlands (DotE, 2014m). **Breeding requirements/preferences:** Breeding habitat requires shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby (DotE, 2014m).	
Hirundo rustica	Barn Swallow	Mi, M	-	X	-	-	**General habitat requirements/preferences:** The Barn Swallow occurs in open areas in coastal lowlands, in close proximity to water, towns and cities, as well as around freshwater wetlands, paperbark Melaleuca	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The majority of the Study Area lacks suitable habitat for this species. This species occurs

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							woodland, and tussock grassland. It is often recorded sitting on overhead wires or bare branches (DotE, 2014w). **Foraging requirements/preferences:** The species prefers to feed on insects by aerial pursuit or by skimming plants or water surface. It is occasionally seen feeding on roads, paths and beaches (DotE, 2014w). **Microhabitat requirements/preferences:** The Barn Swallow nests in on small vertical surfaces, such as	around freshwater wetlands, paperbark Melaleuca woodland, and tussock grassland. The Study Area contains one seasonal wetland which may provide very limited habitat for this species during times when it contains water. However, this habitat would be intermittent in nature and would not be permanent. In addition, this species has not been recorded from the Study Area. It is therefore considered unlikely to occur within the Study Area based on the absence of preferred permanent habitat within the Study Area and lack of species records.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							window-ledges of buildings, typically, two to five metres from the ground (DotE, 2014w). **Breeding requirements/preferences:** The species does not breed in Australia (DotE, 2014w).	
Turnix melanogaster	Black-breasted Button-quail	V	V	X	-	-	**General habitat requirements/preferences:** Restricted to rainforests and forests, mostly in areas with 770-1200 mm rainfall per annum. They prefer drier low closed forests, particularly semi-evergreen vine thicket and low notophyll vine forest (DotE, 2014Š).	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. Rainforests and low closed forests, particularly semi-evergreen vine thicket, low notophyll vine forest are absent

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Foraging requirements/preferences: The species feeds mostly on invertebrates, taken from litter on the forest floor (DotE, 2014Š). **Microhabitat requirements/preferences:** Nests are often made in areas where Bracken, Rasp Fern and Lantana are present (DotE, 2014Š). **Breeding requirements/preferences:** The species breeds from September to April-May (DotE, 2014Š).	from the Study Area. In addition, annual average rainfall at the Study Area is generally less than 770-1200 mm rainfall per annum This species has not been recorded from the Study Area. It is therefore considered unlikely to occur within the Study Area based on the absence of habitat within the Study Area and lack of records within the Study Area.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
Monarcha melanopsis	Black-faced Monarch	Mi, Ma	-	X	-	-	**General habitat requirements/preferences:** The Black-faced Monarch occurs in rainforests, although it may occur in sclerophyll forests, woodlands, and open woodland during migration (DotE, 2014{). **Foraging requirements/preferences:** The species is known to forage mostly in rainforest but also in open eucalypt forest (DotE, 2014{). **Microhabitat requirements/preferences:** The species generally nests near the top of trees with large leaves,	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. Preferred rainforest habitat is not present in the Study Area. However, there is the potential for this species to occur in transit while migrating. Due to a lack of preferred habitat (i.e. rainforest) and a lack of records for this species within the Study Area, it is considered unlikely to occur.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							in the tops of small saplings, or in lower shrubs (DotE, 2014{). **Breeding requirements/preferences:** The species breeds in rainforest habitat and has been recorded breeding from the Atherton Region in Queensland to the Paluma Range, inland to the Atherton Tableland, and from 26° S in south-eastern Queensland (DotE, 2014{).	
Poephila cincta cincta	Black-throated Finch (white-rumped subspecies)	E	E	X	-	-	**General habitat requirements/preferences:** The Black-throated Finch (white-rumped subspecies) typically occurs in grassy open woodlands	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Black-throated Finch (white-

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							and forests dominated by *Eucalyptus*, *Corymbia* and *Melaleuca*, often along or near watercourses and occasionally in tussock grasslands or freshwater wetlands (DotE, 2014). **Foraging requirements/preferences:** The species requires access to seeding grasses and water, and utilises a variety of different habitats for foraging (DotE, 2014). **Microhabitat requirements/preferences:** The species is known to nest in a	rumped subspecies) has largely disappeared from the southern half or its original range (DotE, 2014) and has not been found to occur recently in the locality of the Study Area. This species is readily detectable during surveys but has not been recorded from the Study Area. Farm dams and ephemeral drainage lines present within the Study Area are disturbed due to cattle grazing and such disturbances are considered to be one of the major threats to the species (DotE, 2014). As the Study Area is outside of this species range and only contains suitable habitat in the

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							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 tall grass, amongst mistletoe, beneath active raptor nests, or in an old nest of a Babbler (DotE, 2014). **Breeding requirements/preferences:** The species breeds in colonies, primarily in non-remnant native vegetation associated with solodic soils and alluvial plains (DotE, 2014).	form of degraded farms dams and a seasonal wetland, this species is not considered likely to occur in the Study Area.
Hydroprogne caspia	Caspian Tern	Mi	-	-	X	-	**General habitat requirements/preferences:** The Caspian Tern is mostly found	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							in sheltered coastal embayments. Embayments with sandy or muddy margins are preferred. They are also known to occur near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes, waterholes, reservoirs, rivers and creeks (DotE, 2014x). **Foraging requirements/preferences:** The species primarily feeds on fish and forages over open wetlands, including lakes and rivers, and is known to prefer sheltered shallow water (DotE, 2014x).	The Study Area lacks suitable habitat for this species. The Study Area is remote from any large aquatic habitat features and is not located near the coast. The small farm dams and seasonal wetland in the Study Area are unlikely to provide habitat for this species due to their degraded conditions and lack of permanent water in the seasonal wetland. This species has not been recorded from the Study Area and is considered unlikely to occur due to the lack of suitable habitat.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Microhabitat requirements/preferences: The Caspian Tern nests in the open, or among low or sparse vegetation, including herbfield, tussocks, samphire or other prostrate sand-binding plants (DotE, 2014x). **Breeding requirements/preferences:** The species breeds at variable habitats including low islands, cays, spits, banks, ridges, beaches of sand or shell, terrestrial wetlands and stony or rocky islets or banks (DotE, 2014x).	
Ardea ibis	Cattle Egret	Mi, M	-	X	X	-	**General habitat**	High likelihood of occurrence

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							requirements/preferences: The Cattle Egret occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands. It occasionally occurs in arid and semi-arid regions, however this is extremely rare. It prefers moist, low-lying poorly drained pastures with an abundance of high grass; and avoids low grass. It is commonly found amongst farm animals, particularly cattle, but also pigs, sheep, horses and deer (DotE, 2014c). **Foraging requirements/preferences:** The species often forages on low lying grasslands and croplands	within the Study Area within the Study Area due to the presence of low value habitat in the form of the farm dams and seasonal wetland in the Study Area. This species has not been recorded from the Study Area. This species is commonly encountered throughout the bioregion in a wide variety of landscapes including disturbed areas. Low value habitat for this species occurs in the Study Area during the wet season, when the seasonal wetland contains water. A detailed assessment on this species is provided in **Section 4.5.9**.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							away from water. It is often found around cattle and sometimes in rubbish tips (DotE, 2014c). **Microhabitat requirements/preferences:** The Cattle Egret roosts amongst ground vegetation near water, and in trees (DotE, 2014c). **Breeding requirements/preferences:** Breeding habitats include wooded swamps, and artificial or urban areas where the nests are located on inundated trees (DotE, 2014c).	
Actitis hypoleucos	Common Sandpiper	Mi, M	-	-	X	-	**General habitat requirements/preferences:**	Low likelihood of occurrence within the Study Area. This

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							This species is most commonly found near the coast and utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats (DotE, 2014a). **Foraging requirements/preferences:** The species primarily forages in shallow water and on bare soft mud at the edges of wetlands; often where obstacles project from substrate(DotE, 2014a). **Microhabitat**	species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. The Study Area is remote from any large aquatic habitat features and is not located near the coast. The small farm dams and seasonal wetland in the Study Area are unlikely to provide habitat for this species due to their degraded conditions and lack of permanent water in the seasonal wetland. This species has not been recorded from the Study Area and is considered unlikely to occur due to the lack of suitable habitat.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							requirements/preferences: Roost sites are typically on rocks or in roots or branches of vegetation, especially mangroves (DotE, 2014a). **Breeding requirements/preferences:** The species does not breed in Australia (DotE, 2014a).	
Ardea modesta	Eastern Great Egret	Mi, M+	-	X	X	-	**General habitat requirements/preferences:** Prefer shallow waters and other watered areas including rank grasslands (DotE, 2014d). **Foraging requirements/preferences:**	High likelihood of occurrence within the Study Area within the Study Area due to the presence of low value habitat in the form of the farm dams and seasonal wetland in the Study Area. This species has not been recorded from the Study Area.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							The Eastern Great Egret mostly forages in shallow to moderately deep water (DotE, 2014d). **Microhabitat requirements/preferences:** Nests are located in the upper strata of trees or shrubs in or near water or inundated reed beds (DotE, 2014d). **Breeding requirements/preferences:** Breeding usually occurs from November to April and breeding colonies are known in the Channel Country of south-western Queensland. Breeding sites are	Low value habitat for this species occurs in the Study Area during the wet season, when the seasonal wetland contains water. A detailed assessment on this species is provided in **Section 4.5.9**.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							usually located in wooded and shrubby swamps including mangrove forests (DotE, 2014d).	
Apus pacificus	Fork-tailed Swift	Mi, M	-	X	-	-	**General habitat requirements/preferences:** The Fork-tailed Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. The species mostly occurs over inland plains, open habitats, riparian woodland, tea-tree swamps, and occasionally above foothills or in coastal areas. They also occur over settled areas, including towns, urban areas and cities (DotE, 2014b). **Foraging**	High likelihood of occurrence within the Study Area due to the presence of low value foraging habitat across the Study Area in the form of woodland habitats. This species has not been recorded from the Study Area. However, the species has an extremely widespread distribution and has been found in a wide variety of habitat types. It is considered likely to forage across the Study Area on occasion. A detailed assessment on this species is provided in

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							requirements/preferences: The species forages aerially, often in updraughts, near cliffs (DotE, 2014b). **Microhabitat requirements/preferences:** The species is likely to roost aerially, but are occasionally observed to land (DotE, 2014b). **Breeding requirements/preferences:** The Fork-tailed Swift does not breed in Australia (DotE, 2014b).	**Section 4.5.9**.
Calyptorhynchus lathami	Glossy Black- cockatoo	-	V	-	X	-	**General habitat requirements/preferences:** Found in habitat dominated by	Low likelihood of occurrence within the Study Area. This species has not been recorded

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							She-oaks *Allocasuarina* sp. and in areas with patches of *Allocasuarina* sp., such as farmlands (DotE, 2014f). **Foraging requirements/preferences:** The species feeds almost exclusively on *Allocasuarina* seeds (DotE, 2014f). **Microhabitat requirements/preferences:** The species roosts in tree hollows (DotE, 2014f). **Breeding requirements/preferences:** The	within the Study Area. The Study Area lacks suitable habitat for this species. No habitats dominated by She-oaks are present in the Study Area. This species has not been recorded from the Study Area and is considered unlikely to occur.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							species requires tree hollows for breeding (DotE, 2014f).	
Plegadis falcinellus	Glossy Ibis	Mi, M	-	-	X	-	**General habitat requirements/preferences:** The Glossy Ibis occurs in fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation. It is occasionally found in coastal locations such as estuaries, deltas, saltmarshes and coastal lagoons (DotE, 2014). **Foraging requirements/preferences:** Preferred habitats for foraging are	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. Potential habitat for the Glossy Ibis is extremely limited in the Study Area. Although a seasonal wetland occurs, it is subject to cattle grazing and it would provide only marginal habitat for a short time of the year when it contains water. This species has not been recorded from the Study Area and is considered unlikely to occur.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation (DotE, 2014). **Microhabitat requirements/preferences:** Nests are usually located less than one metre above water in tall dense stands of emergent vegetation (DotE, 2014). **Breeding requirements/preferences:** The species breeds from mid spring to the end of summer and	

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							prefers fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation (DotE, 2014).	
Gallinago hardwickii	Latham's Snipe	Mi, M	-	X	X	-	**General habitat requirements/preferences:** Within Australia, Latham's snipe uses a variety of freshwater or brackish wetlands, preferring to be close to protective vegetation cover (DotE, 2014r). **Foraging requirements/preferences:** Foraging habitats for the species	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. Potential habitat for the Latham's Snipe is extremely limited in the Study Area. Although a seasonal wetland occurs, it is subject to cattle grazing and it would provide only marginal habitat for a short time of the year when it contains water.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							are characterised by areas of mud and some form of cover (DotE, 2014r). **Microhabitat requirements/preferences:** The species roosts on the ground near their foraging areas, usually in sites that provide some degree of shelter, such as: clumps of vegetation, among dense tea-tree, in forests, in drainage ditches or plough marks, among boulders, or in shallow water if cover is unavailable (DotE, 2014r). **Breeding requirements/preferences:**	This species has not been recorded from the Study Area and is considered unlikely to occur.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							The species does not breed in Australia (DotE, 2014r).	
Tringa stagnatilis	Marsh Sandpiper	Mi, M	-	-	X	-	**General habitat requirements/preferences:** The Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks (DotE, 2014‰). **Foraging requirements/preferences:** The species commonly forages in shallow water at the edge of	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. This species has not been recorded from the Study Area and the Study Area only contains some very marginal habitat for this species. Although a small seasonal wetland and three farm dams are present in the Study Area, these provide very little habitat for this species. The farm dams and seasonal wetland are subject to cattle grazing and the seasonal wetland would provide only marginal habitat for a short

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							wetlands where they feed among marshy vegetation (DotE, 2014‰). **Microhabitat requirements/preferences:** The Marsh Sandpiper is known to roost on tidal mudflats, near low saltmarsh, and around inland swamps (DotE, 2014‰). **Breeding requirements/preferences:** The species does not breed in Australia (DotE, 2014‰).	time of the year when it contains water. This species has not been recorded from the Study Area and is considered unlikely to occur.
Merops ornatus	Rainbow bee-eater	Mi, M	-	X	X	-	**General habitat requirements/preferences:** Open forests and woodlands, shrublands, and in various cleared	Present within the Study Area. This species was recorded in the Study Area. Low value habitat for this species is present in wooded

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							or semi-cleared habitats, including farmland and areas of human habitation. It usually occurs in open, cleared or lightly-timbered areas that are often, but not always, located in close proximity to permanent water. It also occurs in various other habitat types including heathland, sedgeland, vine forest and vine thicket, and on beaches (DotE, 2014z). **Foraging requirements/preferences:** The species usually forages aerially from open perches but is also known to forage on the ground. It is found around beehives, foraging on the	and semi-cleared areas of the Study Area. A detailed assessment on this species is provided in **Section 4.5.9**.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							European Honey Bee (*Apis mellifera*) (DotE, 2014z). **Microhabitat requirements/preferences:** The species builds nests in a chamber at the end of a long tunnel in sloped ground, banks of rivers, creeks, dams or in cliff-faces (DotE, 2014z). **Breeding requirements/preferences:** Breeding occurs from August to January in areas where individuals can excavate tunnels for their nests. Suitable breeding habitat includes, flat and sloped ground,	

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							banks of rivers creeks, dams, cliff faces, or road-side cuttings (DotE, 2014z).	
Erythrotriorchis radiatus	Red Goshawk	V	E	X	-	-	**General habitat requirements/preferences:** Red Goshawks prefer woodlands and forests with a mosaic of vegetation types that are open enough for fast manoeuvring flight. These favoured areas contain permanent water and have large populations of birds of other species (DotE, 2014p). **Foraging requirements/preferences:** Red Goshawks generally avoid very dense or very open habitats,	Moderate likelihood of occurrence within the Study Area within the Study Area due to the presence of low value habitat in the form of woodland habitats that can support potential prey. This species has not been recorded from the Study Area. The Study Area is dominated by woodland habitat, and this may be used on occasion by this species. A detailed assessment on this species is provided in **Section 4.5.8iv**.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							preferring to hunt along their ecotones (DotE, 2014p). **Microhabitat requirements/preferences:** The species nests in tall trees in open forest and woodland near permanent water bodies. Their nest is usually placed on a horizontal branch against a vertical branch (DotE, 2014p). **Breeding requirements/preferences:** Breeding generally occurs from August to November and nesting territories are reused by breeding pairs year after year (DotE, 2014p).	

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
Rhipidura rufifrons	Rufous Fantail	Mi, M	-	X	X	-	**General habitat requirements/preferences:** In north and north-east Australia, the species has been recorded mainly in tropical and monsoon rainforest (DotE, 2014…). **Foraging requirements/preferences:** The species prefers to forage in the low to middle strata of forests and sometimes in the canopy of on the ground. They are known to forage in mangroves in northern Australia (DotE, 2014…). **Microhabitat requirements/preferences:**	Present within the Study Area. This species has been recorded from the Study Area. Low value habitat for this species is present in wooded and semi-cleared areas of the Study Area. A detailed assessment on this species is provided in **Section 4.5.9**.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Roosting occurs in nests made from grass, roots, bark, wood, moss and spider web. Nests are found in trees, shrubs, and vines, typically lower than 6 metres from the ground (DotE, 2014…). **Breeding requirements/preferences:** Breeding occurs from September to February (DotE, 2014…).	
Myiagra cyanoleuca	Satin Flycatcher	Mi, M	-	X	X	-	**General habitat requirements/preferences:** Inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, preferring eucalypt forests near wetlands or watercourses (DotE, 2014|).	High likelihood of occurrence within the Study Area due to the presence of low value habitat in the form of the form of woodland habitats. This species has not been recorded from the Study Area. Vegetated gullies occur in

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Foraging requirements/preferences: The species is insectivorous, foraging high up in the subcanopy and canopy of trees (DotE, 2014|). **Microhabitat requirements/preferences:** There is no information about roosting behaviour for the species (DotE, 2014|). **Breeding requirements/preferences:** The species commonly nests in a fork of outer branches of trees, such as paperbarks, eucalypts,	the Study Area that may be utilised by this species. A detailed assessment on this species is provided in **Section 4.5.9**.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							and banksias (DotE, 2014|).	
Calidris acuminata	Sharp-tailed Sandpiper	Mi, M	-	-	X	-	**General habitat requirements/preferences:** The species prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland (DotE, 2014e). **Foraging requirements/preferences:** Foraging habitat includes: the edge	Low likelihood of occurrence within the Study Area. This species has not been recorded from the Study Area and the Study Area only contains some very marginal habitat for this species. Although a small seasonal wetland and some farm dams are present in the Study Area, these provide very little habitat for this species. The farm dams and seasonal wetland are subject to cattle grazing and the seasonal wetland would provide only marginal habitat for a short time of the year when it contains water. This species has not been

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							of the water of wetlands or intertidal mudflats, either on bare wet mud or sand, or in shallow water; among inundated vegetation of saltmarsh, grass or sedges; in sewage ponds; and after rain in paddocks of short grass, well away from water (DotE, 2014e). **Microhabitat requirements/preferences:** The species is known to roost at the edges of wetlands, on wet open mud or sand, in shallow water, in short sparse vegetation, on sandy beaches, stony shores, or on rocks in water(DotE, 2014e). **Breeding requirements/preferences:**	recorded from the Study Area and is considered unlikely to occur.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							The species does not breed in Australia (DotE, 2014e).	
Monarcha trivirgatus~	Spectacled Monarch	Mi, M	-	X	-	-	**General habitat requirements/preferences:** The Spectacled Monarch prefers thick understorey in rainforests, wet gullies and waterside vegetation, as well as mangroves (Birds in Backyards, 2014). **Foraging requirements/preferences:** The species feeds on insects, foraging mostly below the canopy in foliage and on tree trunks or vines (Birds in Backyards, 2014). **Microhabitat**	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Study Area lacks suitable habitat for this species. The preferred habitats of rainforest, wet gullies, and waterside vegetation are not present in the Study Area. This species has not been recorded from the Study Area and is not expected to occur.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							requirements/preferences: The species prefers rainforests, wet gullies and waterside vegetation, as well as mangroves (Birds in Backyards, 2014). **Breeding requirements/preferences:** The species builds its nest in a tree fork or amongst vines,1-6 m above the ground, often near water (Birds in Backyards, 2014).	
Geophaps scripta scripta	Squatter Pigeon (southern subspecies)	V	V	X	X	-	**General habitat requirements/preferences:** The species prefers: open-forests to sparse, open-woodlands and scrub that are dominated by *Eucalyptus*, *Corymbia*, *Acacia* or	Present within the Study Area. The species has been recorded within the Study Area. Suitable high value and low value habitat for this species is present in areas of open woodland in the

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Callitris species; are within 3 km of water; and are remnant, regrowth or partly modified vegetation (DotE, 2014s). **Foraging requirements/preferences:** Preferred foraging habitat is any remnant or regrowth open-forest to sparse, open-woodland or scrub dominated by *Eucalyptus*, *Corymbia*, *Acacia* or *C allitris* species, on sandy or gravelly soils, within 3 km of a suitable, permanent or seasonal waterbody (DotE, 2014s). **Microhabitat**	Study Area. A detailed assessment on this species is provided in **Section 4.5.8v**.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							requirements/preferences: The species roosts in areas of well drained soils, in shallow depressions in the ground (DotE, 2014s). **Breeding requirements/preferences:** Breeding habitat occurs on stony rises occurring on sandy or gravelly soils, within 1 km of a suitable, permanent waterbody (DotE, 2014s).	
Neochmia ruficauda ruficauda	Star Finch (eastern subspecies)	E	E	X	-	-	**General habitat requirements/preferences:** This species has been recorded from damp grasslands, sedgelands or grassy woodlands near	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. The Star Finch is extremely rare

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							permanent water or areas of regular inundation (DotE, 2014}). **Foraging requirements/preferences:** The foraging requirements of the species are largely unknown, but it has been observed foraging in fig trees, and in the shade of *Eucalyptus* trees (DotE, 2014}). **Microhabitat requirements/preferences:** The species prefers damp grasslands, sedgelands or grassy woodlands near permanent water or areas of regular inundation (DotE, 2014}).	in Queensland and not known to occur in the vicinity of the Study Area. The former range of the eastern subspecies is poorly understood but there have been no reliable sightings of the species in Queensland since 1995 (DEHP 2012). The precise reasons for the decline of the species are unknown but almost certainly related to habitat clearance, cattle grazing impacts and impacts to permanent waters that sustain finches during dry seasons. Broadly suitable habitat for this species is present in the form of the grassy woodlands that occur

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Breeding requirements/preferences: The species has been recorded nesting in November with the nests being in trees between 3 and 9 metres in height (DotE, 2014}).	in the Study Area, particularly RE 11.3.25 and RE 11.10.1). However owing to the history of disturbance within the Study Area and the lack of species records the bird almost certainly does not occur. This species is considered to have a very low likelihood of occurrence.
Haliaeetus leucogaster	White-bellied sea eagle	Mi, M	-	X	X	-	**General habitat requirements/preferences:** The species is known to occupy habitats characterised by the presence of large areas of open water (larger rivers, swamps, lakes, the sea), but have been recorded in (or flying over) a variety of terrestrial habitats (DotE,	Low likelihood of occurrence within the Study Area. This species has not been recorded within the Study Area. This raptor can occur well inland, but is generally found associated with permanent inland waters. This readily detectable species has not been recorded from the

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							2014t). **Foraging requirements/preferences:** The species primarily forages over water, but will also forage of terrestrial areas (DotE, 2014t). **Microhabitat requirements/preferences:** Nests are built in a variety of sites including tall trees (especially *Eucalyptus* species), bushes, mangroves, cliffs, rocky outcrops, caves, crevices, on the ground or even on artificial structures (DotE, 2014t).	Study Area. It is considered unlikely to occur based upon the lack of permanent waters and records.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Breeding requirements/preferences: Breeding territories are located close to water, and mainly in tall open forest or woodland, although nests are sometimes located in other habitats such as dense forest, closed scrub or in remnant trees on cleared land (DotE, 2014t).	
Hirundapus caudacutus	White-throated Needletail	Mi, M	-	X	-	-	**General habitat requirements/preferences:** In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground, most often above wooded areas (DotE, 2014v).	High likelihood of occurrence within the Study Area within the Study Area due to the presence of low value foraging habitat across the Study Area in the form of woodland habitats. This species has not been recorded from the Study Area. The species has an extremely

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Foraging requirements/preferences: The species almost always forage aerially, above a wide variety of habitats including: heavily treed forests, farmland, heathland, mudflats, recently disturbed areas, paddocks ridges, cliffs or sand-dunes (DotE, 2014v). **Microhabitat requirements/preferences:** The species is known to roost in forests and woodlands, both among dense foliage in the canopy or in hollows. It is also thought to roost aerially (DotE, 2014v).	widespread distribution and tolerance for most habitat types. It is considered likely to fly over and forage over the Study Area. A detailed assessment on this species is provided in **Section 4.5.9**.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Breeding requirements/preferences: The species does not breed in Australia (DotE, 2014v).	
Mammals								
Dasyurus hallucatus	Northern Quoll	E	-	X	-	-	**General habitat requirements/preferences:** The broadly described habitats of the Northern Quoll include rocky areas, eucalypt forests and woodlands, sandy lowlands, grasslands, shrublands, and deserts (DotE, 2014j). **Foraging requirements/preferences:**	High likelihood of occurrence within the Study Area due to the presence of low value habitat in the form of woodland, and because there is one potential scat record to the east of the Study Area. This species has not been recorded from the Study Area. However, one possible degraded scat record was recorded approximately 1 km to the east of

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							The species is known to feed on a wide range of prey including mammals, insects, fruit and human refuse (DotE, 2014j). **Microhabitat requirements/preferences:** Main habitat requirements for denning include rock crevices, hollow logs and termite mounds (DotE, 2014j). **Breeding requirements/preferences:** Breeding occurs in mid-dry season and breeding territory is likely inherited by female offspring (DotE, 2014j).	the Study Area in the Callide Timber Reserve. Cane Toads, which are the major threat to the Northern Quoll, occur in the farm dams and ephemeral drainage lines of the Study Area. This almost certainly renders the Study Area unsuitable for all but transient occurrences of the Northern Quoll. Forest and woodland habitat in the Study Area offer some low value habitat, particularly in the northern portion, where tree hollows and limited rocky outcrops occur. A detailed assessment on this species is provided in

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
								Section 4.5.8vi.
Phascolarctus cinereus	Koala	V	SLC	X	X	-	**General habitat requirements/preferences:** The species lives in a range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by eucalypt species (DotE, 2012b). **Foraging requirements/preferences:** The species only eats eucalypt leaves (DotE, 2012b). **Microhabitat requirements/preferences:** The species spends most of its time in trees, with a home range	High likelihood of occurrence within the Study Area due to the presence of low value habitat in the form of woodlands within the Study Area containing trees that can be used for browsing by the Koala (RE 11.3.25 and RE 11.9.9). This species has not been recorded from the Study Area. AECOM (2012b) recorded that previous surveys at Callide Mine (located approximately 7 km to the south-east of the Study Area) confirmed the presence of the Koala adjacent to the Southern operations in 1998. However, this record is unsubstantiated as

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							that varies according to quality of habitat, ranging from less than two hectares to several hundred hectares (OEH, 2013). **Breeding requirements/preferences:** The species usually breeds between September and February (OEH, 2013).	it has never been confirmed. Suitable feed trees (e.g. *E. tereticornis* and *E. moluccana*) are present in limited areas of the Study Area within RE 11.3.25 and 11.9.9. The Study Area has been relatively disturbed but Koalas may use the Study Area on occasion. A detailed assessment on this species is provided in **Section 4.5.8vii**.
Pteropus poliocephalus	Grey-headed Flying-fox	V	-	X	-	-	**General habitat requirements/preferences:** The species occurs in rainforest, eucalypt forest, urban and production landscapes (DotE,	Moderate likelihood of occurrence within the Study Area due to the presence of low value habitat in the form of woodlands in the northern, eastern and western portions of the Study

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							2014,). **Foraging requirements/preferences:** The species is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, *Melaleuca* swamps and *Banksia* woodlands. It also feeds on commercial fruit crops and on introduced tree species in urban areas (DotE, 2014,). **Microhabitat requirements/preferences:** This species roosts in large,	Area. This species has not been recorded from the Study Area. No roosting sites are present in the Study Area, although some low value foraging habitat is present. A detailed assessment on this species is provided in **Section 4.5.8viii**.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							communal camps, usually in dense forest close to the coast that are adjacent to water bodies, mangrove, *Casuarina* spp., or *Melaleuca viridiflora* (DotE, 2014,). **Breeding requirements/preferences:** Mating occurs in early autumn while the species is still in large camps (DotE, 2014,).	
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	X	-	-	**General habitat requirements/preferences:** Sandstone cliffs and fertile woodland valley habitat within close proximity of each other is habitat of importance to the Large-eared Pied Bat. Records from	Moderate likelihood of occurrence within the Study Area due to the presence of low value habitat in the form of more intact woodland that contains potential foraging habitat for this species, including various riparian and sclerophyll woodland in well-

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							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 (DotE, 2014g). **Foraging requirements/preferences:** Foraging behaviour for the species is not well known but it is thought to forage below the canopy in close proximity to roost sites (DotE, 2014g). **Microhabitat requirements/preferences:**	timbered areas immediately adjacent to ephemeral drainage lines. This species has not been recorded within the Study Area. This species preferred habitat, sandstone cliffs with fertile woodland habitats nearby are not present in the Study Area. However, some potential roosting areas may occur in the Callide Timber Reserve to the east of the Study Area. To take a precautionary approach it is considered that the woodland in the Study Area may provide low value (potential) habitat for foraging by the species. A detailed assessment on this

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							The species roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Hirundo ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features. Found in well- timbered areas containing gullies (DotE, 2014g). **Breeding requirements/preferences:** Mating is thought to occur in early winter and has been recorded in disused mine tunnel (DotE, 2014g).	species is provided in **Section 4.5.8ix**.
Nyctophilus corbeni^	South-eastern Long-eared Bat	V	V	X	-	-	**General habitat requirements/preferences:**	Moderate likelihood of occurrence within the Study Area

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							The species inhabits a variety of vegetation types, including Mallee, Bulloke (*Allocasuarina leuhmanni*) and eucalypt-dominated communities (including *E. crebra*) (DotE, 2014~). **Foraging requirements/preferences:** Foraging is concentrated around patches of trees in the landscape. The species also forages on insects within the eucalyptus tree it dwells in (DotE, 2014~). **Microhabitat requirements/preferences:** The species commonly roosts in a	due to the presence of low value habitat in the form of more intact woodland that contains potential foraging habitat for this species, including various riparian and sclerophyll woodland in well-timbered areas immediately adjacent to ephemeral drainage lines. This species has not been recorded from the Study Area. Low value habitat exists in the Study Area in the form of eucalypt woodland and tree-hollows suitable for roosting. A detailed assessment on this species is provided in **Section 4.5.8x**.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							location for only a day, before moving on to a new location the next night. It is known to roost in deadwood, or hollow trunks and branches (DotE, 2014~). **Breeding requirements/preferences:** Little is known about the species reproduction, but they are likely similar to other sympatric long-eared bat species (DotE, 2014~).	
Hipposideros semoni	Semon's Leaf-nosed Bat	E	E	X	-	-	**General habitat requirements/preferences:** Found in tropical rainforest, monsoon forest, wet sclerophyll forest and open savannah woodland (DotE, 2014u).	Low likelihood of occurrence within the Study Area. This species has not been recorded from the Study Area due to a lack of suitable habitat. Suitable foraging vegetation

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Foraging requirements/preferences: The species forages within dense vegetation within a metre of the ground, hawking prey in the undergrowth and gleaning prey from surfaces such as tree trunks, rock surfaces and the ground (DotE, 2014u). **Microhabitat requirements/preferences:** Daytime roost sites include tree hollows, deserted buildings in rainforest, road culverts and shallow caves amongst granite boulders or in fissures (DotE,	types (i.e. tropical rainforest, monsoon forest, wet sclerophyll forest and open savannah woodland) do not occur in the Study Area. Due to the lack of habitat and records of this species from the Study Area it is considered to have a low likelihood of occurrence.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							2014u). **Breeding requirements/preferences:** The breeding season occurs from October to February (Queensland Government, 2012).	
Tachyglossus aculeatus	Short-beaked Echidna	-	SLC	-	X	-	**General habitat requirements/preferences:** The species inhabits a wide range of terrestrial habitats wherever there are enough ants or termites: including desert, rainforest, open forest, bushland, farmland, suburban backyards (Wildlife Preservation Society of Queensland, 2013).	Present within the Study Area. The species has been recorded within the Study Area. Suitable habitat is present across the majority of the Study Area due to the wide habitat preferences of this species. A detailed assessment on this species is provided in **Section 4.5.11**.

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Foraging requirements/preferences: The species eats ants, termites, and is also known to eat earthworms, beetles and moth larvae (Wildlife Preservation Society of Queensland, 2013). **Microhabitat requirements/preferences:** The species has no fixed nest or shelter sites (Wildlife Preservation Society of Queensland, 2013). **Breeding requirements/preferences:** Breeding occurs in spring and lasts for 2 to 3 months (Wildlife	

Table H.1 Likelihood of Occurrence of Threatened Fauna Species within the Study Area

Scientific Name	Common Name	Status[1]		Databases			Habitat Requirements	Likelihood of Occurrence
		EPBC Act	NC Act	EPBC Act Protected Matters Search (Appendix A)	Queensland Wildlife Online Database (Appendix B)	Queensland Museum Database (Appendix D)		
							Preservation Society of Queensland, 2013).	

[1] Threatened fauna species status under the EPBC Act and NC Act (current at 20 January 2015).

SLC = Special Least Concern; NT = Near Threatened, V = Vulnerable, E = Endangered; Mi = Migratory; M = Marine

* Species listed as marine and migratory under the EPBC Act as Painted Snipe (*Rostratula benghalensis*) (sensu lato).

\+ Species listed as a marine species under the EPBC Act as Great Egret (*Ardea alba*).

` Species listed as a migratory species under the EPBC Act as *Symposiachrus trivirgatus*.

^ Species listed under the NC Act as Eastern Long-eared Bat (*Nyctophilus timoriensis*).

Appendix I

Threatened Species Habitat Mapping

I.1 Criteria Applied to Threatened Species Habitat Mapping

Threatened species listed under the NC Act and/or EPBC Act recorded from the Study Area and surrounds were mapped and used to provide information about habitat usage by threatened species, alongside published distribution maps where relevant.

Vegetation types and RE mapping of the Study Area were also considered alongside the published habitat preferences of each threatened species, and the potential presence of relevant, documented key threatening processes.

As this provided general information, further detailed information was used in order to refine the mapping. The criteria used to map threatened species habitat is summarised in **Table G.1**. This information included where applicable; the presence of topographic features required by some species (e.g. cliffs and crevices for cave-roosting bat species), permanent water sources, preferred food plants, tree hollows; and the presence of harmful feral species on the Study Area, as well as areas subject to the most intensive cattle grazing. This information was gathered using a combination of analysis of digital mapping and aerial photography alongside ground-truthing conducted by Cumberland Ecology zoologists during the August 2014 survey.

Table I.1 Threatened Species Habitat Mapping Criteria

Habitat Analysis Criteria	Explanation
Pre-existing models for threatened species habitat	Previously mapped habitat models can be used as a basis to inform habitat mapping.
Threatened species records in the Study Area and surrounds	Threatened species records obtained during the surveys for the Study Area and surrounds were mapped to provide an indication of where species occurred. These were interpreted based upon the frequency of records and the habitats within which they were found. Where relevant, these were interpreted to extrapolate habitat mapping across the Study Area, including consideration of RE mapping.
Presence of suitable vegetation	RE mapping and vegetation mapping of the Study Area was used to identify potential habitat for each species.
Presence of suitable topography and soils	Where published information existed to indicate that a species was more likely to occur, or breed in one form of topography, preferred topography was overlain across preferred vegetation polygons to filter the habitat map.
Presence of permanent water sources (fauna only)	Presence of permanent water sources was used to help delineate the preferred habitats and to filter the habitat map.
Presence of preferred foods (fauna only)	Presence of preferred food resources, where known, was considered as a potential filter for habitat mapping.
Presence of tree hollows (fauna only)	Presence of tree hollows, or hollows of a certain size, where known, was considered as a potential filter for habitat

Table I.1 Threatened Species Habitat Mapping Criteria

Habitat Analysis Criteria	Explanation
	mapping.
Documented foraging distances around permanent water (fauna only)	Presence of permanent water sources was used to help delineate the preferred foraging habitats and to filter the habitat map.
Documented sensitivity to habitat clearance and/or fragmentation.	Sensitivity to past habitat clearance and fragmentation. Some species have shown an ability to persist in semi-cleared, fragmented habitats. Others require large blocks of relatively undisturbed habitat to survive and are intolerant of clearance and fragmentation.
Occurrence of harmful feral species that are a known threat to the species	Where feral animals / key threatening processes harmful to a threatened species were known or were considered likely to be concentrated in a portion of the Study Area, this was used as a factor to influence the mapping of threatened species habitat.
Documented sensitivity to cattle grazing pressure	Where cattle grazing pressure was considered likely to be a factor in significantly reducing the suitability of a habitat for a threatened species, this was used to filter habitat maps.

High value habitat was considered to contain key habitat criteria for individual species, and generally evidence that the species was present in that habitat on the Study Area.

Low value habitat was considered to contain some key habitat criteria as above, but where no records or evidence of the species had been detected on the Study Area and where threats are likely to be in operation that may prevent the species from utilising these areas.

The specific criteria and assumptions used in creating habitat models for each threatened species are presented below.

I.2 *Acacia pedleyi*

Habitat modelling for the shrub *Acacia pedleyi* focussed on the presence of suitable soils and woodland types, the nature and extent of vegetation disturbance that has occurred, and the impacts of cattle and feral animals, as summarised in **Table G.2**.

Table I.2 Habitat Analysis Criteria for Acacia pedleyi

Habitat Analysis Criteria	Acacia pedleyi
Pre-existing models for threatened species habitat	No pre-existing habitat models exist for the species.

Table I.2 Habitat Analysis Criteria for Acacia pedleyi

Habitat Analysis Criteria	Acacia pedleyi
Threatened species records in the Study Area and surrounds	One record exists approximately 1 km to the east of the Study Area.
Presence of suitable vegetation	The species is known to occur in *Corymbia citriodora* woodland (RE 11.10.1) which occurs within the Study Area. The species is also known to occur in within Landforms 3, 9, and 10, all of which are present in the Study Area.
Presence of suitable topography and soils	Grows in red loamy soil on slopes and ridge tops, in open eucalypt forest or woodland. Open eucalypt woodland has been recorded in patches across the Study Area as RE 11.10.1..
Documented sensitivity to habitat clearance and/or fragmentation.	Habitat clearance and fragmentation is likely to impact this species. The majority of the Study Area has been cleared through grazing and is highly fragmented.
Occurrence of harmful feral species that are a known threat to the species	Unknown.
Documented sensitivity to cattle grazing pressure.	Grazing by cattle may also be a threat as cattle are known to graze *Acacia* spp. Annual burning in late winter/spring to promote grass for cattle grazing has been a management practice in forest types in which this species occurs, and may also constitute a threat (Barker, 1995). A large part of the Study Area has historically been used for cattle grazing and currently cattle occur in the central and southern parts of the Study Area.

Acacia pedleyi is endemic to Queensland and typically occurs in small isolated populations throughout its distribution.

Acacia pedleyi normally inhabits eucalypt-dominated woodlands and open-forests in Queensland Regional Ecosystem Land Zones (LZ):

- LZ 3 - Alluvium (river and creek flats);
- LZ 9 - Undulating country on fine-grained sedimentary rocks; and
- LZ 10 - Sandstone ranges.

Locally, REs that provide habitat for this species include:

- RE 11.10.1 - Lemon-scented Gum (Blue Spotted Gum) (Corymbia citriodora) open forest on coarse-grained sedimentary rocks; and

Based on the criteria above, habitat for *Acacia pedleyi* in the Study Area has been defined as follows:

- High Value Habitat: Due to the lack of records from the Study Area despite targeted searches, a lack of undisturbed woodland understorey, its potential sensitivity to cattle grazing and historic clearing and lack of records, no areas within the Study Area have been mapped as high value habitat.
- Low Value Habitat: Patches of RE 11.10.1 (*Corymbia citriodora* woodland) where rocky, relatively intact understorey is present and where cattle grazing is restricted or absent.
- Unsuitable Habitat: other RE woodlands (i.e. RE 11.3.25 [*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines] and 11.9.9 [*Eucalyptus crebra* woodland on fine-grained sedimentary rocks]) within the Study Area, non-remnant vegetation and grassland were mapped as unsuitable *Acacia pedleyi* due to a lack of suitable soil types and/or disturbance.

I.3 Collared Delma

Habitat modelling for the Collared Delma focussed on the presence of suitable soils and woodland types, the nature and extent of vegetation disturbance that has occurred, and the impacts of cattle and feral animals, as summarised in **Table G.3**.

Table I.3 Habitat Analysis Criteria for the Collared Delma

Habitat Analysis Criteria	Collared Delma
Pre-existing models for threatened species habitat	No pre-existing habitat models exist for the species.
Threatened species records in the Study Area and surrounds	No records occur within the Study Area or within the locality. This species or its habitat were predicted to occur in the EPBC Act Protected Matters Search Tool (**Appendix A**).
Presence of suitable vegetation	RE 11.10.1 has been identified as an important vegetation community for the species (DotE, 2011a) and occurs within the Study Area. The species occurs also within Landforms 3, 9, and 10, all of which are present in the Study Area.
Presence of suitable topography	No specific topography requirements are needed for this species, however the presence of rocks, logs, bark and other coarse woody debris, and mats of leaf litter are important to the species. Rocks, logs, bark and other coarse woody debris, and mats of leaf litter are present within the woodland habitats within the Study Area.
Presence of permanent water sources	No specific requirement for permanent water known.
Presence of preferred foods	The species is insectivorous and as such all remnant

Table I.3 Habitat Analysis Criteria for the Collared Delma

Habitat Analysis Criteria	Collared Delma
	woodland habitats are important for the species (DotE, 2014k). Patches of remnant woodland are present across the Study Area.
Presence of tree hollows	The species does not associate primarily with tree hollows.
Documented foraging distances around permanent water	Very little is known about the home ranges and movement patterns of the Collared Delma.
Documented sensitivity to habitat clearance and/or fragmentation.	Habitat clearance and fragmentation is likely to severely impact this species as it lacks the mobility to recolonise areas by moving across cleared farmlands. The majority of the Study Area has been previously cleared for grazing and is highly fragmented.
Occurrence of harmful feral species that are a known threat to the species	Introduced predators are not likely to impact the species.
Documented sensitivity to cattle grazing pressure.	The species is highly sensitive to grazing pressure. The species utilises leaf litter and loose soils for shelter, which is destroyed by compaction by cattle (DotE, 2014k). A large part of the Study Area has historically been used for cattle grazing and currently cattle occur in the central and southern parts of the Study Area.

The Collared Delma is endemic to Queensland and typically occurs in small isolated populations throughout its distribution.

Regionally, the Collared Delma normally inhabits eucalypt-dominated woodlands and open-forests in Queensland Regional Ecosystem Land Zones (LZ) (SEWPaC, 2011a):

- LZ 3 - Alluvium (river and creek flats);
- LZ 9 - Undulating country on fine-grained sedimentary rocks; and
- LZ 10 - Sandstone ranges.

REs that provide habitat for this species include (DotE, 2014k):

- RE 11.3.2 - Poplar Box (*Eucalyptus populnea*) woodland on alluvial plains;
- RE 11.9.10 - Poplar Box/ Brigalow (*Acacia harpophylla*) open-forest on fine-grained sedimentary rocks;
- RE 11.10.1 - Lemon-scented Gum (Blue Spotted Gum) (*Corymbia citriodora*) open forest on coarse-grained sedimentary rocks; and

- RE 11.10.4 - Gum-topped Ironbark (*Eucalyptus decorticans*), Budgeroo/ Brown Hazelwood (*Lysicarpus angustifolius*) +/- Eucalyptus species, Corymbia species, Acacia species woodland on coarse-grained sedimentary rocks.

The presence of rocks, logs, bark and other coarse woody debris, and mats of leaf litter (typically 30–100 mm thick) are characteristics of the Collared Delma microhabitat and are always present where the species occurs (SEWPaC, 2011a).

Based on the criteria above, habitat for Collared Delma in the Study Area has been defined as follows:

- High Value Habitat: Due to the lack of local records; lack of essential habitat in the form of dense groundcover and loose bush rocks; no important habitat for this species, as discussed in **Section 4.5.8i**; and disturbance of the Study Area from cattle grazing and historic clearing no habitats within the Study Area have been mapped as high value.

- Low Value Habitat: Patches of RE 11.10.1 (*Corymbia citriodora* woodland) where rocky, relatively intact understorey is present and where cattle grazing is restricted or absent.

- Unsuitable Habitat: other RE woodlands (i.e. RE 11.3.25 [*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines] and 11.9.9 [*Eucalyptus crebra* woodland on fine-grained sedimentary rocks]) within the Study Area, non-remnant vegetation and grassland were mapped as unsuitable for the Collared Delma due to a lack of habitat features relevant for this species.

I.4 Yakka Skink

Habitat modelling for the Yakka Skink focussed on the presence of suitable land zones and woodland types, the nature and extent of vegetation disturbance that has occurred, and the impacts of cattle and feral animals, as summarised in **Table G.4**.

Table I.4 Habitat Analysis Criteria for Yakka Skink

Habitat Analysis Criteria	Yakka Skink
Pre-existing models for threatened species habitat	No pre-existing habitat models exist for the species.
Threatened species records in the Study Area and surrounds	No records occur within the Study Area. One previous record occurs within the locality (date unknown) approximately 1.5km to the north east of the Study Area (Parsons Brinkerhoff, 2006). This species or its habitat were predicted to occur in the EPBC Act Protected Matters Search Tool (**Appendix A**).
Presence of suitable vegetation	The species can occur in ironbark woodlands including

Table I.4 Habitat Analysis Criteria for Yakka Skink

Habitat Analysis Criteria	Yakka Skink
	RE 11.9.9 (*Eucalyptus crebra* grassy woodland), which occurs in the western, northern and eastern portions of the Study Area.
Presence of suitable topography	Occurs over a wide variety of landforms.
Presence of permanent water sources	No specific requirement for permanent water known.
Presence of preferred foods	The species is insectivorous and as such all remnant woodland habitats are important for the species. Patches of remnant woodland are present across the Study Area.
Presence of tree hollows	The species does not associate primarily with tree hollows.
Documented foraging distances around permanent water	No specific requirement for permanent water known.
Documented sensitivity to habitat clearance and/or fragmentation.	Habitat clearance and fragmentation is likely to severely impact this species as it lacks the mobility to recolonise areas by moving across cleared farmlands. The majority of the Study Area has been cleared through grazing and is highly fragmented.
Occurrence of harmful feral species that are a known threat to the species	Introduced predators are not likely to impact the species in the Study Area.
Documented sensitivity to cattle grazing pressure.	The species is not influenced by grazing pressure directly, however clearing of habitat for pasture lands is a key threat to the species (DotE, 2014m). A large part of the Study Area has historically been cleared for cattle grazing and currently cattle occur in the central and southern parts of the Study Area.

The known distribution of the Yakka Skink extends from the coast to the hinterland of sub-humid to semi-arid eastern Queensland. This vast area covers portions of the Brigalow Belt (North and South), Mulga Lands, South-east Queensland, Einasleigh Uplands, Wet Tropics and Cape York Peninsula Biogeographical Regions. Locations range from the Queensland/New South Wales border to Mungkan Kandju National Park (NP) on Cape York Peninsula, and from Bundaberg and the region west of Gympie to Mariala NP west of Charleville (DotE, 2014m). The core habitat of this species is within the Mulga Lands and Brigalow Belt South Bioregions (DotE, 2014m).

The Yakka Skink is known to occur in open dry sclerophyll forest, woodland and scrub, dominated by: Brigalow (*Acacia harpophylla*), Mulga (*A. aneura*), Bendee (*A. catenulata*), Lancewood (*A. shirleyi*), Belah (*Casuarina cristata*), Poplar Box (*Eucalyptus populnea*), Ironbark (*Eucalyptus* spp.) and White Cypress Pine (*Callitris glaucophylla*) (DotE, 2014m).

This species occurs in a wide variety of vegetation types within the following Queensland Regional Ecosystem Land Zones (LZ) (DotE, 2014m):

- LZ 3 - Alluvium (river and creek flats);
- LZ 4 - Clay plains not associated with current alluvium;
- LZ 5 - Old loamy and sandy plains;
- LZ 7 - Ironstone jump-ups;
- LZ 9 - Undulating country on fine-grained sedimentary rocks; and
- LZ 10 - Sandstone ranges.

This species is also known to occur in the following landforms: alluvium (river and creek flats), clay pans not associated with current alluvium, old loamy and sandy plains, ironstone jump-ups, undulating country on fine-grained sedimentary rocks and sandstone ranges (DotE, 2014m).

The Yakka Skink is commonly found in cavities under and between partly buried rocks, logs or tree stumps, root cavities and abandoned animal burrows (DotE, 2011a). The species often takes refuge in large hollow logs and has been known to excavate deep burrow systems, sometimes under dense ground vegetation (Cogger, 2014). In cleared habitat, this species can persist where there are shelter sites such as raked log piles, deep gullies, tunnel erosion/sinkholes and rabbit warrens. The species has also been found sheltering under sheds and loading ramps (DotE, 2011a).

The Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (DotE, 2011a) state that populations are small and often hard to find. As such, those guidelines list important habitat as:

- Any contiguous patch of suitable habitat, particularly remnant vegetation, where a colony is known or identified; and
- Any microhabitat where colonies are likely to be found.

Based on the criteria above, habitat for Yakka Skink in the Study Area has been defined as follows:

- High Value Habitat: Due to the lack of records from within the Study Area; lack of the majority of preferred tree types; and disturbance of the site from cattle grazing and historic clearing, no habitats have been mapped as high value for Yakka Skink.
- Low Value Habitat: Patches of RE 11.9.9 (*Eucalyptus crebra* woodland) where rocky, relatively intact understorey is present and where cattle grazing is restricted or absent.

- Unsuitable Habitat: other RE woodlands (i.e. RE 11.3.25 [*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines] and 11.9.9 [*Eucalyptus crebra* woodland on fine-grained sedimentary rocks]) within the Study Area, non-remnant vegetation and grassland were mapped as unsuitable for the Yakka Skink due to a lack of habitat features relevant for this species.

I.5 Australian Painted Snipe

Habitat modelling for the Australian Painted Snipe focussed on the presence of wetland habitats, and the potential impacts of feral animals and cattle within such wetlands, as summarised in **Table G.5**.

Table I.5 Habitat Analysis Criteria for Australian Painted Snipe

Habitat Analysis Criteria	Australian Painted Snipe
Pre-existing models for threatened species habitat	None available, however the species generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans (DotE, 2014†).
Threatened species records in the Study Area and surrounds	No records of the species within the Study Area or locality. This species or its habitat were predicted to occur in the EPBC Act Protected Matters Search Tool (**Appendix A**).
Presence of suitable vegetation	No natural permanent wetlands occur in the Study Area. The two large farm dams in the north and the seasonal wetland mapped in the central portion of the Study Area have sedges and other wetland plants that could provide habitat for the Australian Painted Snipe.
Presence of suitable topography	The species is associated exclusively with wetlands which are typically found on flat or gently undulating country. Such topography occurs in the central portion of the Study Area where the seasonal wetland has developed.
Presence of permanent water sources	The species is not exclusively associated with permanent water sources, and can move to forage and breed around seasonal wetlands (DotE, 2014†). One seasonal wetland is present in the centre of the Study Area.
Presence of preferred foods	The species feeds on insects and some aquatic vegetation. Such resources occur around the northern farm dams and the seasonal wetland (when water is present).
Presence of tree hollows	The species does not require tree hollows.
Documented foraging distances around permanent water	This is a wetland specialist where foraging is likely to be confined to the wetlands.
Documented sensitivity to habitat clearance and/or fragmentation.	Clearance and fragmentation of wetlands, particularly by draining, is thought to be a major reason for the decline of

Table I.5 Habitat Analysis Criteria for Australian Painted Snipe

Habitat Analysis Criteria	Australian Painted Snipe
	the species (DotE, 2014†). The seasonal wetland in the centre of the Study Area will be cleared for the project.
Occurrence of harmful feral species that are a known threat to the species	Known introduced predators of the species include European Red Foxes and Feral Cats (DotE, 2014†). European Red Foxes and Feral Cats have both been recorded within the Study Area and are likely to forage across the Study Area.
Documented sensitivity to cattle grazing pressure	The species is impacted by grazing due to loss and degradation of wetland habitats, including grazing and trampling of food plants by cattle, and trampling of nests, which are constructed on the ground. A large part of the Study Area has historically been used for cattle grazing and currently cattle occur in the central and southern parts of the Study Area.

The Australian Painted Snipe is a small, stocky wading bird with a long pinkish bill. The species is distributed throughout all states of Australia and is associated with wetlands. It is widespread in eastern Australia with scattered records throughout Queensland (DotE, 2014†).

The Australian Painted Snipe generally inhabits shallow freshwater wetlands including temporary and permanent lakes, swamps, and claypans. The species also uses inundated or waterlogged grassland, saltmarsh, dams, rice crops, sewage farms, and bore drains. Breeding habitat requirements are quite specific, requiring a combination of shallow wetlands, areas of bare wet mud, and both upper and canopy cover nearby. Nesting records are nearly all from islands in freshwater wetlands. The species is mobile and will move during drought conditions (DotE, 2014†).

The species feeds on aquatic vegetation, seeds, insects, worms and molluscs, crustaceans and other invertebrates.

Using the criteria above, habitats for the Australian Painted Snipe within the Study Area have been defined as follows:

- High Value Habitat: no high value habitat is present within the Study Area due to the lack of permanent water at the seasonal wetland and the degraded condition of the farm dams due to stock access and pugging. In addition, fringing vegetation within these habitats is also limited.

- Low Value Habitat: the farm dams and seasonal wetland have been mapped as low value habitat. They contain potential habitat for the Australian Painted Snipe,

but there have been no records of the species using these areas. The habitats are subject to disturbances from cattle grazing and feral animals.

- Unsuitable Habitat: all other habitats within the Study Area have been mapped as unsuitable for this wetland specialist.

I.6 Red Goshawk

Habitat modelling for the Red Goshawk focussed on the presence of suitable forest and woodland vegetation and permanent water, as summarised in **Table G.6**.

Table I.6 Habitat Analysis Criteria for Red Goshawk

Habitat Analysis Criteria	Red Goshawk
Pre-existing models for threatened species habitat	No pre-existing habitat models exist for the species. However, the species published habitat requirements provide scope for modelling and mapping the species habitat: it prefers forest and woodland with a mosaic of vegetation types, large prey populations (birds) and permanent water (DotE, 2014p); nesting is within 1 km of and often beside permanent water (DotE, 2014p). Two permanent water sources in the form of the two northern farm dams have been recorded within the Study Area.
Threatened species records in the Study Area and surrounds	No records of the species exist in the Study Area or in the locality. This species or its habitat were predicted to occur in the EPBC Act Protected Matters Search Tool (**Appendix A**).
Presence of suitable vegetation	All remnant REs within the Study Area are suitable for the species to forage within as they all comprise woodland habitats.
Presence of suitable topography	The species has no specific topographic requirements.
Presence of permanent water sources.	As stated above, Red Goshawk needs permanent water, especially within 1 km of nesting sites. Natural permanent waters (i.e. permanent wetlands) are absent from the Study Area, as the wetland located in the central portion of Study Area is ephemeral in nature. The species forages on other birds, primarily Psittaciformes (parrots and lorikeets) which are found near water or in woodlands. Two permanent water sources in the form of the two northern farm dams have been recorded within the Study Area.
Presence of preferred foods	High densities of smaller birds, such as those that occur around riparian woodlands, are required to support the species. The only habitat of this nature within the Study Area are around the two large northern farm dams along

Table I.6 Habitat Analysis Criteria for Red Goshawk

Habitat Analysis Criteria	Red Goshawk
	the northern ephemeral drainage line within the Study Area.
Presence of tree hollows	The species does not directly use tree hollows, but parrots, which it preys upon, roost in hollows. The Red Goshawk is more likely to occur in older growth woodland with tree hollows than in young regrowth. The major concentrations of older trees with hollows within the Study Area are around the ephemeral drainage lines in the northern portion of the Study Area.
Documented foraging distances around permanent water	The species can forage for at least 7 km from nesting sites (DotE, 2014p).
Documented sensitivity to habitat clearance and/or fragmentation.	This species is likely to be threatened by habitat clearance and fragmentation, which would remove nest sites and also reduce the availability of smaller birds that it preys upon. The majority of the Study Area has been cleared through grazing and is highly fragmented.
Occurrence of harmful feral species that are a known threat to the species	The species is not known to be affected by feral species.
Documented sensitivity to cattle grazing pressure	The species is not affected directly by cattle grazing pressure, however degradation of foraging resources by cattle has been identified as a current threat to the species (DotE, 2014p). A large part of the Study Area has historically been used for cattle grazing and currently cattle occur in the central and southern parts of the Study Area.

The Red Goshawk is a large rufous-brown hawk with a wingspan of 100-130cm. The species is endemic to Australia and is very sparsely distributed across 15% of coastal and sub-coastal areas.

The species occurs in coastal and sub-coastal woodlands and forests of tropical and warm-temperate Australia. Riverine forests are also utilised. The species prefers forest and woodland with a mosaic of vegetation types, large prey populations (birds) and permanent water (DotE, 2014p). Nesting is within 1km of and often beside permanent water (DotE, 2014p).

The species preys predominantly on birds and over 80% of their diet is on birds over 100g in weight. Home ranges in Queensland vary between 50 and 220 km^2 depending on available habitat nearby.

Using the criteria above, habitats for the Red Goshawk within the Study Area have been defined as follows:

- High Value Habitat: due to lack of species records, clearing and disturbance of potential habitats within the Study Area and a lack of natural permanent water, no high value habitat has been mapped for this species within the Study Area.
- Low Value Habitat: woodland habitats within the Study Area have all been mapped as low value habitat for the species as they can support potential prey.
- Unsuitable Habitat: comprises all other areas not classified as high value or low value habitat based on the categories above, based on a lack of suitable habitat requirements (i.e. woodland habitat).

I.7 Squatter Pigeon (southern subspecies)

Habitat modelling for the Squatter Pigeon (southern subspecies) focussed on the presence of suitable foraging and nesting habitat and proximity to permanent water, as summarised in **Table G.7**.

Table I.7 Habitat Analysis Criteria for Squatter Pigeon (southern subspecies)

Habitat Analysis Criteria	Squatter Pigeon (southern subspecies)
Pre-existing models for threatened species habitat	No habitat models exist. The species forages widely across all open woodland and grassland habitats, and breeding is generally on stony rises occurring on sandy or gravelly soils, within 1 km of a suitable, permanent or semi-permanent waterbody (DotE, 2014s). Two permanent water sources in the form of the two northern farm dams have been recorded within the Study Area, while a smaller southern farm dam and seasonal wetland have been recorded in the south and centre of the Study Area, respectively.
Threatened species records in the Study Area and surrounds	Four records of the species have been recorded within and surrounding the Study Area; one record from AECOM in 2012 (inside the Study Area to the north of the two northern farm farms); and three records from Cumberland Ecology in 2014 (one record to the east of the two northern farm farms and two records to the north of the Study Area). All records are in the northern part of the Study Area, within 1 km of the northern farm dams.
Presence of suitable vegetation	The species is a generalist and can use all RE's for foraging that include an overstorey dominated by *Eucalyptus*, *Corymbia*, *Acacia*, or *Callitris* species, including remnant and regenerating vegetation communities, provided there are grasses in the ground stratum (DotE, 2014s). All RE types found within the Study Area are suitable for foraging.

Table I.7 Habitat Analysis Criteria for Squatter Pigeon (southern subspecies)

Habitat Analysis Criteria	Squatter Pigeon (southern subspecies)
	RE 11.10.1 (*Corymbia citriodora* woodland) in the north of the Study Area, where the species has been recorded is potential breeding habitat for the species where it occurs within 1 km of permanent water sources in the form of the two northern farm dams (**Figure 19**).
Presence of suitable topography and soils	The species can occur on a variety of topographic situations. It is most often found on well drained, gravelly, sandy or loamy soils that support open-forest to woodland communities (DotE, 2014s). The topography and soils of the Study Area are generally suitable for the species.
Presence of permanent water sources	The species requires permanent water resources as it requires access to drinking water daily (DotE, 2014s). Foraging areas are generally within 3 km of permanent water, and breeding areas are generally within 1 km of permanent water (DotE, 2014s). Potential foraging and breeding habitat occurs within the Study Area.
Presence of preferred foods	The Squatter Pigeon (southern subspecies) feeds on a wide range of seeds from grasses, legumes and herbs that it obtains from the ground (DotE, 2014s). To a lesser extent it also feeds on seeds of trees and shrubs, as well as insects. Such food resources are available within all of the REs and non-remnant vegetation on the Study Area.
Presence of tree hollows	The species does not utilise tree hollows.
Documented foraging distances around permanent water	The species forages for up to 3 km from permanent water sources (DotE, 2014s). Two permanent water sources in the form of the two northern farm dams have been recorded within the Study Area.
Documented sensitivity to habitat clearance and/or fragmentation.	The Squatter Pigeon (southern subspecies) can occur in semi-cleared woodland habitats and can co-exist with livestock and other disturbances to a degree. However, the Squatter Pigeon (southern subspecies) nests on the ground; sometimes among or sheltered by vegetation, including short dray grass, grass tussocks or bushes (Higgins & Davies 1996; DotE 2014o) and such nesting makes the species vulnerable to feral animals and to the impacts of cattle and sheep grazing (Higgins & Davies 1996). For this reason clearance and modification of vegetation for farming impacts the native ground flora on which this species relies and also increases the distribution and abundance of feral predators - particularly European

Table I.7 Habitat Analysis Criteria for Squatter Pigeon (southern subspecies)

Habitat Analysis Criteria	Squatter Pigeon (southern subspecies)
	Red Foxes and Feral Cats. As such, heavily cleared landscapes are likely to be less suited for the Squatter Pigeon (southern subspecies) than lightly cleared or uncleared vegetation. The majority of the Study Area has been cleared through grazing and is highly fragmented. Feral predators are established on the Study Area and the European Red Fox and Feral Cat have both been recorded within the Study Area.
Occurrence of harmful feral species that are a known threat to the species	The Squatter Pigeon (southern subspecies) is known to be susceptible to predation by Red Foxes, and Cats (DotE, 2014s), which are implicated in the decline of the species. European Red Foxes and Feral Cats are prevalent across the Study Area and are likely to occur in all habitats.
Documented sensitivity to cattle grazing pressure	As it feeds and shelters within grassy ground cover, the Squatter Pigeon (southern subspecies) is susceptible to grazing and trampling of its habitat by domestic herbivores, particularly cattle (DotE, 2014s). A large part of the Study Area has historically been used for cattle grazing and currently cattle occur in the central and southern parts of the Study Area.

Using the criteria above, habitat for the Squatter Pigeon (southern subspecies) in the Study Area has been defined as follows:

- High Value Habitat: probable breeding habitat, and has been mapped to include suitable vegetation within 1 km of permanent water. For the purposes of this modelling, “permanent water” was taken to include the two farm dams in the north of the Study Area.
- Low Value Habitat: potential foraging areas that occur throughout the Study Area and include all areas of woodland within 3 km of permanent water.
- Unsuitable Habitat: non-remnant grassland subject to cattle grazing and generally not in proximity to permanent water.

Using these criteria, high value habitat occurs in the north of the Study Area. The remaining woodland is low value habitat, while all grassland areas are classified as unsuitable habitat. The southern farm dam and seasonal wetland are not permanent and as such, these areas only contain intermittent potential habitat for this species and have therefore not been used as a mapping criteria for this species.

I.8 Northern Quoll

Habitat modelling for the Northern Quoll focussed on the presence of blocks of undisturbed, complex habitat, the threat from Cane Toads and feral predators (European Red Fox and Feral Cat). This has been summarised in **Table G.8**.

Table I.8 Habitat Analysis Criteria for Northern Quoll

Habitat Analysis Criteria	Northern Quoll
Pre-existing models for threatened species habitat	No habitat models exist. The species can occur within a wide variety of forest and woodland habitats (DotE, 2014j), however, in areas occupied by the Cane Toad, it is only likely to persist in rugged/rocky terrain (DotE, 2014j). Cane Toads were found in the remnant pools in the ephemeral drainage lines within the Study Area.
Threatened species records in the Study Area and surrounds	Two records of the Northern Quoll (one being an unconfirmed record) have been made to the east of the Study Area. The unconfirmed record occurs to the immediate east of the Study Area (AECOM, 2012b). A second record was of an individual recorded at Callide Power Station, located approximately 12 km south-east of the Study Area (J. Dunlop *pers. comm.* 28/04/12, in AECOM 2012b).
Presence of suitable vegetation	Northern Quolls can inhabit a wide variety of habitats in the absence of Cane Toads. It is likely that all types of woodland that occur on the Study Area would have been suitable habitat prior to the introduction of Cane Toads. However, given the presence of Cane Toads, the Northern Quoll habitat is limited to rugged/rocky terrain. There is limited rugged/rocky terrain in the Study Area.
Presence of suitable topography	Historically, the species occurred across a range of landscapes. However, since the spread of the Cane Toad, it has been found that Northern Quoll populations collapse soon after Cane Toads colonise an area (DotE 2013c). Due to Cane Toads, Northern Quolls have become confined to offshore islands, or, on the mainland, in extensive areas of rocky habitats where drinking water is available, theoretically free from the threat of Cane Toads (Woinarski et al 2008, DotE 2013c). Cane Toads were found in the remnant pools in the ephemeral drainage lines within the Study Area.
Presence of permanent water sources	The species average home range is approximately 35 ha which would include some form of water source (permanent/ephemeral). Northern Quolls need to drink and require permanent water to survive, but such water should

Table I.8 Habitat Analysis Criteria for Northern Quoll

Habitat Analysis Criteria	Northern Quoll
	be free of Cane Toads. The farm dams within the Study Area and remnant pools along the ephemeral drainage lines support Cane Toads.
Presence of preferred foods	The Northern Quoll is an omnivore and the various foods it requires (e.g. invertebrates, small vertebrates, some plant materials) are likely to be present in the woodlands of the Study Area.
Presence of tree hollows	The species is primarily ground dwelling but can use hollows that are low to the ground. Fallen logs are more important for the species. Fallen logs are present in the woodland areas within the Study Area.
Documented foraging distances around permanent water	The species average home range is approximately 35 ha which would include some form of water source (permanent/ephemeral). Cane Toads were found in the remnant pools in the ephemeral drainage lines within the Study Area.
Documented sensitivity to habitat clearance and/or fragmentation.	According to the Northern Quoll Recovery Plan, this species is greatly impacted by land clearance and fragmentation and on the mainland is confined to large blocks of habitats in rocky landscapes that where Cane Toads are rare or absent (Hill and Ward, 2010). The majority of the Study Area has been cleared through grazing and is highly fragmented and Cane Toads are established throughout the Study Area.
Occurrence of harmful feral species that are a known threat to the species	Cane Toads are present in the farm dams and remnant pools along drainage lines within the Study Area. Known introduced predators of the species include Dingo, European Red Fox and Feral Cat (DotE, 2014j). Abundance of feral species was similar across the Study Area and the Dingo, European Red Fox and Feral Cat were all recorded within the Study Area.
Documented sensitivity to cattle grazing pressure	The species is impacted by grazing pressure as cattle adversely affect habitat for the species by compacting soils, trampling of shrubs, and secondary impacts due to clearing for grazing (DotE, 2014j). A large part of the Study Area has historically been used for cattle grazing and currently cattle occur in the central and southern parts of the Study Area.

The modelled distribution of the Northern Quoll shows that the Study Area is within the known distribution of this species (DotE, 2014j). However, targeted surveys conducted in

and around the Study Area showed no evidence of Northern Quolls occurring in the Study Area, though there is some evidence they occur in the extensive wooded areas to the east of the Study Area (**Section 4.5.8vi**). A potential scat from this species was recorded less than 1 km east of the Study Area in a large block of dense woodland and forest habitat. Visually, Northern Quoll scats are fairly distinctive and can usually be differentiated from fox or cat scats with a reasonable degree of confidence (Triggs, 2012). The scat was sent for analysis of hair structures by Barbara Triggs of Dead Finish Pty Ltd., however, analysis could not positively confirm the scat as belonging to a Northern Quoll, as grooming hairs were not present (AECOM 2012b).

Northern Quolls do not have highly specific habitat requirements. They are opportunistic foragers occurring in a variety of habitat types across their range. Den sites are important for their shelter and protection and can include rocky outcrops, tree hollows, hollow logs and termite mounds (Hill and Ward, 2010) However, Northern Quolls are known to be highly susceptible to threats, particularly from Cane Toads, but also from predation, fire and habitat loss (DotE, 2014j).

The rapid decline of the Northern Quoll has been linked to the spread of the Cane Toad across northern Australia, with a general pattern of rapid decline to local extinction in most Northern Quoll populations following the arrival of Cane Toads (Hill and Ward, 2010). Northern Quolls have shown a highly significant pattern of loss from lowland areas, likely accentuated by the presence of Cane Toads, and persisting populations now occur mostly in the rugged parts of their former range (Hill and Ward, 2010).

Due to the influence of threats on the distribution and survival of Northern Quolls, the Northern Quoll Recovery Plan (Hill and Ward, 2010) notes that habitat critical to the survival of this species occurs where Northern Quolls are least exposed to threats or least likely to be in the future; namely rocky areas and offshore islands.

Cane Toads are known to occur in abundance around the permanent water sources (i.e. the two northern farm dams) on the Study Area, rendering it unlikely for Northern Quolls to persist in these areas.

Using the criteria above, habitat for the Northern Quoll in the Study Area has been defined as follows:

- High Value Habitat: due to lack of species records in the Study Area; the presence of Cane Toads in farm dams and remnant pools along ephemeral drainage lines; and the clearing and fragmentation that has occurred to woodland habitats, no high value habitat has been mapped in the Study Area.

- Low Value Habitat: as the Northern Quoll occurs in a variety of woodland, and because there is one recorded sighting of the Northern Quoll and one unconfirmed scat record to the east of the Study Area, all woodlands on the Study Area have been mapped as low value habitat for the Northern Quoll.

- Unsuitable Habitat: grasslands on the Study Area have been mapped as unsuitable for the Northern Quoll because they are open, lack shelter, and animals

within them would be greatly exposed to predation by the Feral Cat and European Red Fox.

I.9 Koala

Koala distribution is very strongly correlated with the distribution and abundance of preferred food trees, particularly those within fertile and/or well-watered portions of the landscape. The introduction of disease (*Chlamydia*) and clearing/fragmenting of habitat have also strongly influenced the occurrence of the Koala.

Habitat modelling for the Koala focussed on the presence of preferred feed trees, as summarised in **Table G.9**.

Table I.9 Habitat Analysis Criteria for Koala

Habitat Analysis Criteria	Koala
Pre-existing models for threatened species habitat	The *EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)* (herein referred to as the "Koala Guideline") (DotE, 2014n) was used to determine if the study Area contains any critical habitat for the Koala. Previous studies by AECOM (2012b) have modelled Koala habitat as woodland with mature eucalypts. That model was relatively non-specific and included trees such as Lemon-scented Gum (*Corymbia citriodora*), which are not preferred foods of Koala. For this reason, the updated model has been refined to exclude habitats dominated by Lemon-scented Gum.
Threatened species records in the Study Area and surrounds	No database records occur within the Study Area or within the locality. AECOM (2012b) stated that one Koala was recorded during studies at Callide Mine approximately 7 km to the south-east of the Study Area in 1998. However, this record is unsubstantiated. This species or its habitat were predicted to occur in the EPBC Act Protected Matters Search Tool and located from the locality in the Queensland Wildlife Online Database (**Appendices A** and **B**).
Presence of suitable vegetation	The species uses Blue Gum (*Eucalyptus tereticornis*) as a primary feed species (DotE, 2013a; OEH, 2014). RE 11.3.25 is dominated by this tree and there are other scattered Blue Gums outside the mapped areas of RE 11.3.25 along ephemeral drainage lines that could also serve as feed trees.
Presence of suitable topography	No specific topography requirements by the species.
Presence of permanent water sources	There is a strong association between Koala occurrences

Table I.9 Habitat Analysis Criteria for Koala

Habitat Analysis Criteria	Koala
	and water resources in central and northern Queensland (DotE 2013d). Two permanent farm dams have been recorded in the north of the Study Area.
Presence of preferred foods	Primary feed species includes Blue Gum and Gum-topped Box, which are present in both remnant RE 11.3.25 and RE 11.9.9, respectively, and also as scattered trees along ephemeral drainage lines across the Study Area.
Presence of tree hollows	The species does not associate primarily with tree hollows.
Documented foraging distances around permanent water	The home range of Koala in central Queensland is estimated to be approximately 120 ha and the species can travel up to 10 km in a day, though it is typically less mobile than this (DotE, 2014).
Documented sensitivity to habitat clearance and/or fragmentation	Koalas have been significantly impacted by habitat clearing and fragmentation. They have low rates of reproduction and dispersal and are more vulnerable to a wide range of key threatening processes (including predation by feral predators) in areas where there has been significant habitat clearance (DotE, 2014). The majority of the Study Area has been cleared for grazing and is highly fragmented.
Occurrence of harmful feral species that are a known threat to the species	Known introduced predators of the species include the Dingo and European Red Fox (DotE, 2014) which are both present across the Study Area. However, published literature indicates the Koala would be most vulnerable in open semi-cleared habitats (DotE, 2014). The Study Area contains semi-cleared habitats.
Documented sensitivity to cattle grazing pressure	The species is not influenced by grazing pressure directly, however clearing of habitat for pasture lands is a key threat to the species (DotE, 2014). A large part of the Study Area has historically been used for cattle grazing and currently cattle occur in the central and southern parts of the Study Area.

The concept of Koala food trees is central to habitat mapping for this species. The *EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)* (herein referred to as the "Koala Guideline") (DotE, 2014n) defines Koala food trees as: *Species of tree whose leaves are consumed by koalas. See lists of known koala food trees prepared by state and local government and non-government organisations*. It refers to the following references to identify potential food trees:

- NSW Office of Environment and Heritage Koala habitat web page: www.environment.nsw.gov.au/animals/koalahabitat.htm;
- QLD EHP protection Koala habitat webpage: www.ehp.qld.gov.au/wildlife/koalas/koala-ecology.html;
- Australian Koala Foundation tree list: www.savethekoala.com/about-koalas/trees-koalas (identifies known food trees by Local Government Area); and
- The New South Wales Recovery Plan for the Koala: www.environment.nsw.gov.au/resources/threatenedspecies/08450krp.pdf

These references have been consulted in identifying Koala food trees. In the Study Area, Blue Gum occurs in both remnant RE 11.3.25 and also as scattered trees along ephemeral drainage lines across the Study Area. Gum-topped Box has been recorded within remnant RE 11.9.9 and is present but not dominant. These species are known to be an important feed trees for Koalas (see NSW Office of Environment and Heritage webpage, referenced above) and therefore they are considered to be important habitat trees for Koalas in the Study Area.

For the purposes of habitat modelling, potential Koala food trees recorded within the Study Area (based on the references cited above) have been grouped into two categories: primary food trees (food trees most preferred by the Koala) and secondary food trees (less preferred trees by the Koala but still with the potential for these tree species to be used as a food resource). The primary and secondary food trees for the Koala within the Study Area are listed in **Table G.10**.

Table I.10 Primary and Secondary Food Trees of the Koala within the Study Area

Scientific Name	**Common Name**
Primary Food Trees	
Eucalyptus tereticornis	Blue Gum
Eucalyptus moluccana	Gum-topped Box
Secondary Food Trees	
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus populnea	Bimble Box

According to the EPBC Act Koala Referral Guidelines, habitat critical to the survival of the Koala is habitat that is considered to be important for the specie's long-term survival and recovery (DotE, 2013a). An impact area that scores five or more using the habitat assessment tool for the Koala in the Referral Guidelines contains habitat critical to their survival. The habitat assessment tool is to be applied once to the entire impact area of the proposed action.

The habitat assessment tool is reproduced in **Table G.11** with a column showing the ranking of the Study Area against each attribute. Using the criteria in the DotE Koala habitat assessment tool presented below, the Study Area receives a score of 5 and is therefore considered to contain habitat critical to the survival of the Koala. However, given that the EPBC Act Koala Referral Guidelines are broad and non-selective for the purpose of habitat modelling (i.e. do not reflect that different parts of the Study Area may provide different habitat value for the Koala), detailed habitat modelling was undertaken based on the field work. The detailed analysis of the relative quality of Koala habitat within the Study Area indicates that the Study Area only contains areas of low and unsuitable habitat for the Koala.

Table I.11 Koala Habitat Assessment Tool

Attribute	Score	Inland	Project Assessment
Koala occurrence	2 (high)	Evidence of one or more Koalas within the last 5 years.	No.
	1 (medium)	Evidence of one or more Koalas within 2 km of the edge of the impact area within the last 10 years.	No.
	0 (low)	None of the above.	Yes - AECOM (2012b) recorded that one Koala was recorded during studies at Callide Mine approximately 7 km to the south-east of the Study Area in 1998. However, this record is unsubstantiated.
Vegetation composition	**2 (high)**	Has forest, woodland or shrubland with emerging trees with 2 or more known Koala food tree species in the canopy, **OR** 1 food tree species that alone accounts for >50% of the vegetation in the relevant strata.	Yes – there are 2 or more Koala food tree species within the Koala habitat within the Study Area.
	1 (medium)	Has forest, woodland or shrubland with emerging trees with only 1 species of known Koala food tree present.	No.
	0 (low)	None of the above.	No.
Habitat connectivity	**2 (high)**	Area is part of a contiguous landscape ≥1,000 ha.	Yes – it is highly likely that there is more than 1,000 ha of Koala habitat adjoining the Study Area, particularly to the east and north-east of the survey area.
	1 (medium)	Area is part of a contiguous landscape <1,000 ha but ≥ 500 ha.	No.

Table I.11 Koala Habitat Assessment Tool

Attribute	Score	Inland	Project Assessment
	0 (low)	None of the above.	No.
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.	No.
	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.	Yes – as Koala Occurrence scored a 0 and vehicle threat from the existing mobile mining equipment at Boundary Hill Mine is 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.	No.
Recovery value	2 (high)	Habitat is likely to be important for achieving the interim recovery objectives for the relevant context.	No.
	1 (medium)	Uncertain whether whether the habitat is important for achieving the interim recovery objectives for the relevant context.	No.
	0 (low)	Habitat is unlikely to be important for achieving the interim recovery objectives for the relevant context.	Yes – the interim recovery values are: • Protect and conserve the quality and extent of habitat refuges for the persistence of the species during droughts and periods of extreme heat, especially in riparian environments and other areas with

Table I.11 Koala Habitat Assessment Tool

Attribute	Score	Inland	Project Assessment
			reliable soil moisture and fertility; and • Maintain the quality, extent and connectivity of large areas of Koala habitat surrounding habitat refuges. There are no habitat refuges (i.e. riparian environments or areas with reliable soil moisture and fertility) within the Study Area. There is also a significant amount of similar habitat in the surrounding area which contains, or connects to, Koala refuge habitats without the presence of any large barriers or natural obstructions. Therefore, the Koala habitat within the project site is unlikely to be important for achieving the interim recovery objective.
Total Score: 5			

Based on the information provided above, habitat modelling for the Koala included consideration of known records in the locality of Study Area, RE mapping, ground-truthing and published information on the habitat preferences of this species. The entire Study Area is within the historic range of the Koala.

Habitat within the Study Area for the Koala have been defined as follows:

- High Value Habitat: due to lack of species records, a paucity of primary food trees and past clearing and fragmentation of woodland habitat, no high value habitat has been mapped within the Study Area.
- Low Value Habitat: woodlands within the Study Area containing trees that can be used for browsing by the Koala (RE 11.3.25 and RE 11.9.9) have been mapped as low value Koala habitat.
- Unsuitable Habitat: areas of the Study Area that contain trees that are not considered likely to provide a food source for the Koala, or grasslands. Although these areas may be used periodically for dispersal purposes, due to the lack of food trees, they have been mapped as unsuitable habitat.

I.10 Grey-headed Flying-fox

Habitat modelling for the Grey-headed Flying-fox focussed on the presence of primary food sources, permanent water for drinking and the proximity to other known roost sites, as summarised in **Table G.11**.

Table I.12 Habitat Analysis Criteria for Grey-headed Flying-fox

Habitat Analysis Criteria	Grey-headed Flying-fox
Pre-existing models for threatened species habitat	No pre-existing habitat models exist for the species.
Threatened species records in the Study Area and surrounds	There are no records of the species from the Study Area or locality. This species or its habitat were predicted to occur in the EPBC Act Protected Matters Search Tool (**Appendix A**).
Presence of suitable vegetation	All REs within the Study Area have suitable forage vegetation for the Grey-headed Flying-fox when in flower.
Presence of suitable topography	The species has no specific topography requirements.
Presence of permanent water sources	The species commonly roosts near permanent water sources and requires water daily to drink (DotE, 2014,). Two permanent farm dams have been recorded in the north of the Study Area.
Presence of preferred foods	Primary food species include blossom and nectar from various eucalypts and Lemon-scented Gum and flowers. These are present seasonally in the woodlands within the Study Area. There are also a variety of other vascular plants within the Study Area that could provide some blossoms, nectar or fruits.
Presence of tree hollows	The species does not use tree hollows.
Documented foraging distances around permanent water	The species generally forages up to 14 km from roost sites, but can forage more widely in some circumstances (DotE, 2014,).
Documented sensitivity to habitat clearance and/or fragmentation.	Habitat loss and fragmentation is a key existing threat for this species. Habitat clearing and modification has removed broad areas of feeding and sheltering resources for this species, which feeds on the fruits and blossoms of trees and shrubs. The majority of the Study Area has been cleared through grazing and is highly fragmented.
Occurrence of harmful feral species that are a known threat to the species	The species is not affected by feral species.
Documented sensitivity to cattle grazing pressure	The species is not generally affected by grazing pressure.

The Grey-headed Flying-fox is one of the largest bats in the world and is Australia's only endemic flying-fox. The species occurs along coastal regions from Rockhampton to Melbourne. The species only uses a small portion of this range at any one time, as the species forages selectively where food is available(DotE, 2014,).

Grey-headed Flying-foxes roost in large camps where colonies of several thousand may occur at one time. Camps are generally located near water such as lakes, rivers or the coast. Colonies can occur in highly modified vegetation in urban environments(DotE, 2014,). The species feeds on fruits and nectar in vegetation communities including rainforests, open forests, and closed and open woodlands(DotE, 2014,).

Grey-headed Flying-foxes generally forage for up to 15 km from roosting sites, but can travel up to 50 km from roosting sites depending on available food resources (DotE, 2014,).

Based on the criteria above, habitat for Grey-headed Flying-fox in the Study Area has been defined as follows:

- High Value Habitat: has not been mapped as no areas within the Study Area were considered high value for the species due to a lack of the clearing and fragmentation of the woodlands of the Study Area, the general lack of high value food resources and the lack of Flying-fox camps.
- Low Value Habitat: occurs in the form of woodlands in the northern, eastern and western portions of the Study Area.
- Unsuitable Habitat: grasslands have been mapped as unsuitable habitat for the species, due to an absence of foraging resources and roost trees.

I.11 Large-eared Pied Bat

Habitat modelling for the Large-eared Pied Bat focussed on the presence of crevices for roosting, woodland for foraging and the occurrence of permanent water for drinking, as summarised in **Table G.12**.

Table I.13 Habitat Analysis Criteria for Large-eared Pied Bat

Habitat Analysis Criteria	Large-eared Pied Bat
Pre-existing models for threatened species habitat	No pre-existing habitat models exist for the Large-eared Pied Bat.
Threatened species records in the Study Area and surrounds	No records occur within the Study Area or within the locality. This species or its habitat were predicted to occur in the EPBC Act Protected Matters Search Tool (**Appendix A**).
Presence of suitable vegetation	The species occurs within a wide range of woodland vegetation types including a variety of eucalypt dominated woodlands (Churchill, 2009; DotE, 2014g). All REs within the Study Area are consistent with the species

Table I.13 Habitat Analysis Criteria for Large-eared Pied Bat

Habitat Analysis Criteria	Large-eared Pied Bat
	requirements.
Presence of suitable topography	The Large-eared Pied Bat is a cave-roosting species that roosts in cliffs, caves, disused mine shafts and other rocky habitats. This species often forages between valleys. Overhangs and crevices are present in the Study Area wihich may provide suitable habitat for this species.
Presence of permanent water sources	All microbats require drinking water to be freely available when they are active. Permanent and seasonally available water areas required to support the species and would be present within the Study Area in the farm dams, ephemeral drainage lines and the seasonal wetland within the Study Area.
Presence of preferred foods	The species is insectivorous and insects within woodland habitats are potentially important for the species (Churchill, 2009). Patches of remnant woodland are present across the Study Area.
Presence of tree hollows	Tree hollows are important for the species for roosting and breeding habitat (Churchill, 2009). Tree hollows are present in the remnant woodland within the Study Area.
Documented foraging distances around permanent water	No specific requirement for permanent water is known. Foraging distances from roosting sites can be up to 3 km (Churchill, 2009).
Documented sensitivity to habitat clearance and/or fragmentation.	Habitat clearance is a key threat to this species and includes removing foraging habitat and larger trees with hollows that are used for roosting. Fragmentation is also likely to be significant but there is little documentation to support this. The majority of the Study Area has been cleared through grazing and is highly fragmented.
Occurrence of harmful feral species that are a known threat to the species	Introduced predators are not likely to significantly impact the species.
Documented sensitivity to cattle grazing pressure	The species is highly sensitive to grazing pressure. The species forages within the shrubby understorey of remnant woodlands (Churchill, 2009; DotE, 2014g). Grazing pressure tramples the understorey eliminating foraging habitat for the species. A large part of the Study Area has historically been used for cattle grazing and currently cattle occur in the central and southern parts of the Study Area.

There is very little information about this species available for Central Queensland, and as such the majority of information used has been sourced from the New South Wales

occurrences of this species. The Large-eared Pied Bat is a medium sized insectivorous bat that has shiny black fur on the body and a white stripe on the ventral side of the torso. The species distribution is sporadic and records exist intermittently between Ulladulla New South Wales to Rockhampton Queensland. The species is more frequently observed in sandstone escarpments along the Great Dividing Range in New South Wales.

The species uses maternity roosting caves, of which four are known form New South Wales and none are known from Queensland. The species feeds on insects and has been observed flying along creek beds (Churchill, 2009), but little else is known about their foraging behaviours. Although dispersals from maternity roosts have been observed up to 100 km, no data exists for home ranges or daily movement patterns.

Based on the criteria above, habitat for Large-eared Pied Bat in the Study Area has been defined as follows:

- High Value Habitat: has not been mapped as no areas contain caves or disused mine shafts that could contain roosting habitat.
- Low Value Habitat: the more intact woodland within the Study Area has been recognised as potential foraging habitat for this species, including various riparian and sclerophyll woodland in well-timbered areas immediately adjacent to ephemeral drainage lines.
- Unsuitable Habitat: open, highly modified woodland and grasslands have been mapped as unsuitable habitat for this species.

I.12 South-eastern Long-eared Bat

Habitat modelling for the South-eastern Long-eared Bat focussed on the presence of tree hollows for roosting and the occurrence of permanent water, as summarised in **Table G.13**.

Table I.14 Habitat Analysis Criteria for South-eastern Long-eared Bat

Habitat Analysis Criteria	South-eastern Long-eared Bat
Pre-existing models for threatened species habitat	No pre-existing habitat models exist for the South-eastern Long-eared Bat.
Threatened species records in the Study Area and surrounds	No records occur within the Study Area or within the locality. This species or its habitat were predicted to occur in the EPBC Act Protected Matters Search Tool (**Appendix A**).
Presence of suitable vegetation	The species occurs within a wide range of woodland vegetation types including a variety of eucalypt dominated woodlands (Churchill, 2009; DotE, 2014~). All REs within the Study Area are consistent with the species requirements.
Presence of suitable topography	No specific topography features are required by this

Table I.14 Habitat Analysis Criteria for South-eastern Long-eared Bat

Habitat Analysis Criteria	South-eastern Long-eared Bat
	species.
Presence of permanent water sources	All microbats require drinking water to be freely available when they are active. Permanent and seasonally available water is required to support the species and would be present in the farm dams, ephemeral drainage lines and the seasonal wetland within the Study Area.
Presence of preferred foods	The species is insectivorous and insects within woodland habitats are potentially important for the species (Churchill, 2009). Patches of remnant woodland are present across the Study Area.
Presence of tree hollows	Tree hollows are important for the species for roosting and breeding habitat (Churchill, 2009). Tree hollows are present in the remnant woodland within the Study Area.
Documented foraging distances around permanent water	No specific requirement for permanent water known. Foraging distances from roosting sites can be up to 3 km (Churchill, 2009).
Documented sensitivity to habitat clearance and/or fragmentation.	Habitat clearance is a key threat to this species, removing foraging habitat and larger trees with hollows that are used for roosting. Fragmentation is also likely to be significant but there is little documentation to support this. The majority of the Study Area has been cleared through grazing and is highly fragmented.
Occurrence of harmful feral species that are a known threat to the species	Introduced predators are not likely to significantly impact the species.
Documented sensitivity to cattle grazing pressure	The species is highly sensitive to grazing pressure. The species forages within the shrubby understorey of remnant woodlands (Churchill, 2009; DotE, 2014~). Grazing pressure tramples the understorey eliminating foraging habitat for the species. A large part of the Study Area has historically been used for cattle grazing and currently cattle occur in the central and southern parts of the Study Area.

Little is known about the biology or social structure of South-eastern Long-eared Bat. It is considered, however, that they roost solitarily under exfoliated bark and in the crevices on trees. During maternity, females are believed to form roosting colonies in larger tree cavities. They probably forage within 1 km of their roosting site (Van Dyck and Strahan, 2008).

South-eastern Long-eared Bat is believed to forage for insects over a broad range of vegetation communities, including eucalypt and acacia woodlands. Suitable foraging habitat for this species occurs across the Study Area in areas of Eucalyptus woodland.

Based on the criteria above, habitat for South-eastern Long-eared Bat in the Study Area has been defined as follows:

- High Value Habitat: based on the lack of records for the species, the fragmentation of habitats in the area and presence of cattle, no high value habitat has been mapped.
- Low Value Habitat: the more intact woodland within the Study Area has been recognised as potential foraging habitat for this species, including various riparian and sclerophyll woodland in well-timbered areas immediately adjacent to ephemeral drainage lines.
- Unsuitable Habitat: grasslands, and highly disturbed non-remnant wooded vegetation areas have been mapped as unsuitable for the species.

Appendix J

Flora Species List

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Acanthaceae	*Brunoniella australis*		-	-	X		X	X	X	X
Acanthaceae	*Pseuderanthemum variabile*	Pastel Flower	-	-	X			X	X	
Acanthaceae	*Rostellularia adscendens*	Pinktongues	-	-	X		X	X	X	
Adiantaceae	*Cheilanthes sieberi subsp. sieberi*	Mulga Fern	-	-	X	X	X			
Amaranthaceae	*Achyranthes aspera*		-	-		X	X			X
Amaranthaceae	*Alternanthera nana*	Native Carpet Weed	-	-	X			X		X
Amaranthaceae	*Nyssanthes diffusa*		-	-		X				X
Amaranthaceae	*Deeringia amaranthoides*		-	-	X			X		
Amaranthaceae	*Gomphrena celosioides**		-	-	X	X	X	X	X	
Anacardiaceae	*Euroschinus falcatus*	Ribbonwood	-	-	X			X	X	X
Anacardiaceae	*Pleiogynium timorense*	Burdekin Plum	-	-	X		X		X	
Apocynaceae	*Alstonia constricta*	Bitter bark	-	-	X	X	X	X	X	X
Apocynaceae	*Carissa ovata*	Currant Bush	-	-	X	X	X	X	X	X
Apocynaceae	*Gomphocarpus physocarpus**	Balloon Cotton	-	-	X			X	X	X
Apocynaceae	*Marsdenia viridiflora*	Native Pear	-	-	X	X		X		
Apocynaceae	*Sarcostemma viminale subsp. brunonianum*	Caustic Bush	-	-	X			X		
Asteraceae	*Acanthospermum hispidum**	Starburr	-	-	X			X		

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Asteraceae	*Bidens pilosa**	Cobbler's Pegs	-	-	X			X	X	X
Asteraceae	*Calotis cuneifolia*		-	-		X	X	X		
Asteraceae	*Cassinia laevis*	Wild Rosemary	-	-	X	X		X	X	X
Asteraceae	*Cyanthillium cinereum*		-	-	X	X		X	X	X
Asteraceae	*Emilia sonchifolia**	Purple Sowthistle	-	-	X		X	X	X	X
Asteraceae	*Epaltes australis*		-	-	X		X			
Asteraceae	*Praxelis clematidea**	Praxelis	-	-	X			X	X	X
Asteraceae	*Pterocaulon serrulatum var. serrulatum*		-	-	X	X		X		X
Asteraceae	*Pterocaulon sphacelatum*	-	-	-	X	-	-	X		
Asteraceae	*Sigesbeckia orientalis*	Sticky Weed	-	-	X			X	X	
Asteraceae	*Tagetes minuta**	Stinking Roger	-	-	X			X		X
Asteraceae	*Vittadinia cuneata*		-	-	X			X		
Asteraceae	*Vittadinia pustulata*		-	-		X		X		X
Azollaceae	*Azolla pinnata*	Ferny Azolla	-	-	X		X			
Bignoniaceae	*Pandorea pandorana*	Wonga Vine	-	-	X	X		X	X	
Boraginaceae	*Ehretia membranifolia*		-	-		X		X		
Byttneriaceae	*Seringia corollata*		-	-		X	X			X
Byttneriaceae	*Keraudrenia lanceolata*		-	-	X			X		
Byttneriaceae	*Waltheria indica*		-	-	X	X		X		

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Cactaceae	*Opuntia stricta**	Prickly Pear	-	-	X	X		X	X	X
Cactaceae	*Opuntia tomentosa**	Hairy Prickly Pear	-	-	X			X	X	X
Caesalpiniacaea	*Chamaecrista mimosoides*		-	-	X			X	X	
Caesalpiniacaea	*Chamaecrista rotundifolia**	Wynn Cassia	-	-	X	X		X	X	X
Capparaceae	*Capparis arborea*		-	-		X		X	X	
Capparaceae	*Capparis loranthifolia*		-	-		X		X	X	
Capparaceae	*Capparis lasiantha*	Bush Caper	-	-	X	X	X	X	X	
Celastraceae	*Denhamia cunninghamii*		-	-		X			X	
Celastraceae	*Denhamia oleaster*		-	-		X		X		
Celastraceae	*Elaeodendron australe*		-	-		X	X			
Celastraceae	*Denhamia pittosporoides*	Orange Boxwood	-	-	X				X	
Celastraceae	*Maytenus cunninghamii*	Yellowberry Bush	-	-	X				X	
Chenopodiaceae	*Einadia hastata*	Berry Saltbush	-	-	X			X		
Commelinaceae	*Commelina diffusa*	Scurvey Weed	-	-	X		X	X		
Commelinaceae	*Murdannia graminea*	Grass Lilly	-	-	X		X			
Convolvulaceae	*Evolvulus alsinoides*	Tropical Speedwell	-	-	X			X	X	X
Cupressaceae	*Callitris endlicheri*	Black Cypress	-	-	X				X	
Cyperaceae	*Cyperus fulvus*		-	-		X	X			
Cyperaceae	*Cyperus gracilis*		-	-		X	X			

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Cyperaceae	*Eleocharis equisetina*		-	-			X			X
Cyperaceae	*Scleria mackaviensis*		-	-		X			X	
Cyperaceae	*Bulbostylis barbata*		-	-	X			X	X	
Cyperaceae	*Cyperus victoriensis*		-	-	X		X			
Cyperaceae	*Fimbristylis dichotoma*		-	-	X	X	X			
Cyperaceae	*Gahnia aspera*	Red-fruit Saw Sedge	-	-	X		X			
Cyperaceae	*Scleria brownii*		-	-	X		X	X	X	
Ebenaceae	*Diospyros humilis*		-	-		X			X	
Erythroxylaceae	*Erythroxylum sp. (Splityard Creek L.Pedley 5360)*	Kerosenewood	-	-	X	X	X	X	X	
Euphorbiaceae	*Acalypha eremorum*	Native Acalypha	-	-	X				X	
Euphorbiaceae	*Croton acronychioides*	Thick-leaved Croton	-	-	X				X	
Euphorbiaceae	*Croton insularis*		-	-		X	X			
Euphorbiaceae	*Euphorbia tannensis*	Desert Spurge	-	-	X			X	X	
Euphorbiaceae	*Sauropus trachyspermus*		-	-	X			X		
Fabaceae	*Clitoria ternatea**	Buttefly Pea	-	-	X			X		X
Fabaceae	*Crotalaria montana*		-	-	X			X	X	X
Fabaceae	*Crotalaris brevis*		-	-	X			X	X	
Fabaceae	*Desmodium macrocarpum*		-	-	X			X		

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Fabaceae	*Desmodium rhytidophyllum*		-	-	X				X	
Fabaceae	*Desmodium varians*		-	-	X			X	X	X
Fabaceae	*Erythrina vespertilio*	Bat's Wing Coral Tree	-	-	X	X			X	
Fabaceae	*Galactia tenuiflora*		-	-	X	X		X	X	X
Fabaceae	*Glycine clandestina var. clandestina*		-	-		X	X	X		
Fabaceae	*Glycine tomentella*	Hairy Glycine	-	-	X	X		X	X	X
Fabaceae	*Indigofera hirsuta*	Hairy Indigo	-	-	X		X	X	X	X
Fabaceae	*Indigofera pratensis*	Indigo Bush	-	-	X			X	X	
Fabaceae	*Macroptilium atropurpureum**	Siratro	-	-	X			X		X
Fabaceae	*Rhynchosia minima*		-	-	X			X	X	X
Fabaceae	*Stylosanthes scabra**	Secca	-	-	X	X		X	X	X
Fabaceae	*Tephrosia filipes*		-	-	X			X	X	
Fabaceae	*Zornia dyctiocarpa*		-	-	X				X	
Fabaceae	*Zornia muriculata*		-	-		X		X		
Goodeniaceae	*Goodenia glabra*		-	-		X	X	X		
Goodeniaceae	*Goodenia rotundifolia*		-	-	X				X	
Hemerocallidaceae	*Dianella brevipedunculata*		-	-		X	X	X		
Hemerocallidaceae	*Dianella longifolia*		-	-		X		X		
Hemerocallidaceae	*Dianella caerulea*	Blue Flax Lily	-	-	X				X	

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Juncaceae	*Juncus aridicola*		-	-	X		X			
Lamiaceae	*Ajuga australis*		-	-		X	X	X		
Lamiaceae	*Clerodendrum floribundum*	Lolly Bush	-	-	X	X			X	X
Laxmanniaceae	*Laxmannia gracilis*		-	-		X		X	X	
Laxmanniaceae	*Lomandra filiformis subsp. filiformis*		-	-		X		X		
Laxmanniaceae	*Lomandra multiflora subsp. multiflora*		-	-		X	X	X		
Laxmanniaceae	*Eustrephus latifolius*	Wombat Berry	-	-	X	X		X	X	
Laxmanniaceae	*Lomandra multiflora*	Many-flowered Matrush	-	-	X			X		
Loranthaceae	*Amyema sp.*		-	-		X		X	X	
Loranthaceae	*Lysiana subfalcata*		-	-		X		X	X	
Malvaceae	*Abutilon oxycarpum*		-	-		X		X		
Malvaceae	*Hibiscus heterophyllus*	Native Hibiscus	-	-	X				X	
Malvaceae	*Hibiscus sturtii*		-	-		X		X	X	
Malvaceae	*Malvastrum americanum**	Spiked Mallow	-	-	X	X		X	X	X
Malvaceae	*Sida acuta**	Spinyhead Sida	-	-	X		X	X		X
Malvaceae	*Sida cordifolia**		-	-		X				X
Malvaceae	*Sida hackettiana*		-	-	X	X		X	X	X
Malvaceae	*Sida rhombifolia**	Paddy's Lucerne	-	-	X	X	X	X		X
Malvaceae	*Sida spinosa**		-	-		X				X

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Marsileaceae	*Marsilea mutica*	Nardoo	-	-	X		X			
Meliaceae	*Owenia acidula*		-	-		X		X		
Meliaceae	*Melia azedarach*	White Cedar	-	-	X				X	
Meliaceae	*Owenia venosa*	Emu Apple	-	-	X		X	X	X	X
Mimosaceae	*Acacia bidwillii*	Corkwood	-	-	X			X	X	
Mimosaceae	*Acacia crassa*	Curracabah	-	-	X	X	X		X	X
Mimosaceae	*Acacia decora*	Pretty Wattle	-	-	X	X	X	X	X	X
Mimosaceae	*Acacia disparrima subsp. disparrima*		-	-		X	X	X		
Mimosaceae	*Acacia excelsa subsp. excelsa*	Ironwood	-	-	X	X			X	
Mimosaceae	*Acacia harpophylla*	Brigalow	-	-	X		X			
Mimosaceae	*Acacia julifera subsp. julifera*		-	-	X	X		X	X	X
Mimosaceae	*Acacia leiocalyx*	Black Wattle	-	-	X			X	X	X
Mimosaceae	*Acacia polifolia*		-	-	X		X		X	
Mimosaceae	*Acacia salicina*	Sally Wattle	-	-	X	X	X	X	X	X
Mimosaceae	*Acacia sparsiflora*	Currawang	-	-	X				X	
Mimosaceae	*Leucaena leucocephala**	Leucaena	-	-	X					X
Moraceae	*Ficus opposita*	Sandpaper Fig	-	-	X				X	
Moraceae	*Ficus rubiginosa forma glabrescens*		-	-		X			X	
Myoporaceae	*Eremophila debilis*		-	-		X		X		

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Myoporaceae	*Eremophila mitchellii*	False Sandalwood	-	-	X	X		X		X
Myrtaceae	*Corymbia citriodora subsp. citriodora*	Lemon-scented Gum	-	-	X	X	X	X	X	X
Myrtaceae	*Corymbia clarksoniana*	Grey Bloodwood	-	-	X	X	X	X	X	X
Myrtaceae	*Corymbia tessellaris*	Moreton Bay Ash	-	-	X	X	X	X		X
Myrtaceae	*Corymbia trachyphloia*	Brown Bloodwood	-	-	X			X	X	
Myrtaceae	*Eucalyptus crebra*	Ironbark	-	-	X	X	X	X	X	X
Myrtaceae	*Eucalyptus exserta*	Peppermint	-	-	X	X		X	X	X
Myrtaceae	*Eucalyptus melanoleuca*	Ironbark	-	-	X				X	
Myrtaceae	*Eucalyptus moluccana*	Gum-topped Box	-	-	X	X		X		X
Myrtaceae	*Eucalyptus populnea*	Polar Box	-	-	X					X
Myrtaceae	*Eucalyptus suffulgens*	Ironbark	-	-	X				X	
Myrtaceae	*Eucalyptus tereticornis*	Blue Gum	-	-	X	X	X			
Nyctaginaceae	*Boerhavia dominii*		-	-	X			X		
Oleaceae	*Jasminum didymum*		-	-		X	X			
Oleaceae	*Jasminum simplicifolium subsp. australiense*	Native Jasmine	-	-	X	X		X		
Oleaceae	*Notelaea microcarpa*	Mock Orange	-	-	X				X	
Orchidaceae	*Cymbidium canaliculatum*		-	-		X		X		
Oxalidaceae	*Oxalis corniculata*		-	-	X			X	X	

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Pentapetaceae	*Melhania oblongifolia*	Velvet Hibiscus	-	-	X			X	X	
Phyllanthaceae	*Breynia oblongifolia*	Coffee Bush	-	-	X	X		X	X	
Phyllanthaceae	*Phyllanthus fuernrohrii*		-	-	X	X		X	X	
Phyllanthaceae	*Phyllanthus virgatus*		-	-	X			X	X	X
Picrodendraceae	*Petalostigma pubescens*	Quinine Bush	-	-	X	X		X	X	X
Pittosporaceae	*Pittosporum angustifolium*		-	-		X		X	X	
Pittosporaceae	*Bursaria incana*	Box Thorn	-	-	X	X		X	X	X
Poaceae	*Alloteropsis cimicina*	Annual Cockatoo Grass	-	-	X				X	
Poaceae	*Alloteropsis semialata*	Cockatoo grass	-	-	X		X		X	
Poaceae	*Aristida benthamii var. benthamii*		-	-		X	X	X		X
Poaceae	*Aristida calycina var. calycina*	Wiregrass	-	-	X	X		X	X	X
Poaceae	*Aristida latifolia*	Wiregrass	-	-	X			X	X	X
Poaceae	*Aristida lignosa*		-	-		X		X	X	
Poaceae	*Arundinella nepalensis*	Reed grass	-	-	X	X	X	X	X	
Poaceae	*Bothriochloa bladhii*	Forest Bluegrass	-	-	X		X	X		X
Poaceae	*Bothriochloa decipiens*	Pitted Bluegrass	-	-	X			X	X	
Poaceae	*Bothriochloa ewartiana*	Desert Bluegrass	-	-	X			X	X	
Poaceae	*Bothriochloa pertusa**	Indian Couch	-	-	X		X	X	X	X
Poaceae	*Bothriochloa sp.*		-	-		X		X	X	X

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Poaceae	*Calyptochloa gracillima*		-	-		X		X		X
Poaceae	*Capillipedium spicigerum*		-	-		X		X	X	
Poaceae	*Cenchrus ciliaris**		-	-		X		X		X
Poaceae	*Chloris pectinata*	Comb Chloris	-	-	X			X	X	X
Poaceae	*Chloris ventricosa*		-	-		X		X		X
Poaceae	*Chrysopogon fallax*	Golden Beardgrass	-	-	X		X	X	X	
Poaceae	*Cleistochloa subjuncea*		-	-	X				X	X
Poaceae	*Cymbopogon bombycinus*	Lemon Grass	-	-	X			X	X	
Poaceae	*Cymbopogon refractus*	Barbed Wire Grass	-	-	X	X		X	X	X
Poaceae	*Cynodon dactylon**	Couch	-	-	X		X			
Poaceae	*Dichanthium sericeum*	Queensland Bluegrass	-	-	X			X	X	X
Poaceae	*Digitaria breviglumis*		-	-	X			X	X	X
Poaceae	*Digitaria brownii*		-	-	X	X		X	X	
Poaceae	*Enneapogon lindleyanus*		-	-	X	X		X	X	X
Poaceae	*Enneapogon polyphyllus*	Bottle Washers	-	-	X			X	X	X
Poaceae	*Enneapogon sp.*		-	-		X		X	X	X
Poaceae	*Enteropogon acicularis*		-	-	X			X	X	
Poaceae	*Entolasia stricta*	Wiry Panic	-	-	X			X	X	X
Poaceae	*Eragrostis elongata*		-	-		X	X	X		X

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Poaceae	*Eragrostis lacunaria*		-	-		X		X		X
Poaceae	*Eragrostis sororia*		-	-		X		X		X
Poaceae	*Eragrostis spartinoides*		-	-		X		X		X
Poaceae	*Eragrostis tenellula*	Delicate Lovegrass	-	-	X			X	X	X
Poaceae	*Eriachne obtusa*		-	-		X		X	X	X
Poaceae	*Heteropogon contortus*	Black Speargrass	-	-	X	X	X	X	X	X
Poaceae	*Hyparrhenia rufa**	Thatch Grass	-	-	X					X
Poaceae	*Imperata cylindrica*		-	-		X	X			
Poaceae	*Megathyrsus maximus var. pubiglumis**	Green Panic	-	-	X	X	X	X	X	X
Poaceae	*Melinis repens**	Red Natal Grass	-	-	X	X	X	X	X	X
Poaceae	*Oplismenus aemulus*	Creeping Shade Grass	-	-	X		X	X	X	
Poaceae	*Panicum decompositum var. decompositum*		-	-		X	X	X		X
Poaceae	*Panicum effusum*		-	-	X	X		X	X	X
Poaceae	*Paspalidium albovillosum*	Pale Summer grass	-	-	X			X	X	
Poaceae	*Pennisetum ciliare**	Buffel Grass	-	-	X		X	X	X	X
Poaceae	*Setaria surgens*	Pigeon Grass	-	-	X			X	X	X
Poaceae	*Themeda avenacea*	Native Oatgrass	-	-	X	X	X		X	
Poaceae	*Themeda triandra*	Kangaroo Grass	-	-	X		X	X	X	X

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Poaceae	*Tragus australianus*	Burrgrass	-	-	X				X	
Poaceae	*Urochloa mosambicensis**	Sabi grass	-	-	X	X	X	X	X	X
Polygonaceae	*Persicaria attenuata*		-	-	X		X			
Polygonaceae	*Persicaria orientalis*		-	-	X		X			
Portulacaceae	*Portulaca pilosa**		-	-		X	X			X
Portulacaceae	*Portulaca oleracea*	Pigweed	-	-	X			X		
Proteaceae	*Grevillea striata*	Beefwood	-	-	X	X		X	X	X
Putranjivaceae	*Drypetes deplanchei*		-	-		X	X			
Rhamnaceae	*Alphitonia excelsa*	Red Ash	-	-	X	X	X	X	X	X
Rubiaceae	*Coelospermum reticulatum*		-	-		X		X		
Rubiaceae	*Pogonolobus reticulatus*		-	-	X			X	X	
Rubiaceae	*Psydrax attenuata*		-	-		X	X	X		
Rubiaceae	*Psydrax odorata*	Canthium	-	-	X	X	X	X	X	X
Rubiaceae	*Spermacoce brachystema*		-	-	X			X	X	X
Rutaceae	*Citrus glauca*		-	-		X			X	X
Rutaceae	*Boronia bipinnata*		-	-	X				X	
Rutaceae	*Geijera parviflora*	Narrow-leaved Wilga	-	-	X	X	X		X	
Rutaceae	*Geijera salicifolia*	Wilga	-	-	X				X	
Santalaceae	*Exocarpos latifolius*	Native Cherry	-	-	X	X	X		X	

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Santalaceae	*Santalum lanceolatum*	Sandalwood	-	-	X	X	X	X	X	
Sapindaceae	*Alectryon diversifolius*		-	-		X		X		
Sapindaceae	*Alectryon oleifolius subsp. elongatus*		-	-	X	X		X		
Sapindaceae	*Atalaya hemiglauca*	Whitewood	-	-	X	X	X	X	X	X
Sapindaceae	*Cupaniopsis anacardioides*	Tuckeroo	-	-	X				X	
Sapindaceae	*Dodonaea stenophylla*	Narrow-leaved Hopbush	-	-	X		X	X		
Sapindaceae	*Dodonaea triangularis*	Triangle-leaved Hopbush	-	-	X				X	
Solanaceae	*Solanum tetrathecum*	Bush Tomato	-	-	X		X		X	
Solanaceae	*Solanum ellipticum*	Bush Tomato	-	-	X			X		
Sparrmanniaceae	*Grewia latifolia*	Dog's Balls	-	-	X	X	X		X	X
Sterculiaceae	*Brachychiton populneus subsp. trilobus*	Kurrajong	-	-	X	X		X	X	
Sterculiaceae	*Brachychiton australis*	Broad-leafed Bottle Tree	-	-	X	X			X	
Sterculiaceae	*Brachychiton rupestris*	Bottle Tree	-	-	X			X		
Stylidiaceae	*Stylidium eglandulosum*	Trigger Plant	-	-	X			X		
Verbenaceae	*Glandularia aristigera**		-	-		X	X			X
Verbenaceae	*Lantana camara**	Lantana	-	-	X	X				X
Verbenaceae	*Lantana montevidensis **	Creeping Lantana	-	-	X	X	X	X	X	X

Table J.1 Flora Species Recorded During Surveys

Family	Scientific Name	Common Name	Species Status[1]		Record		RE Species Recorded from			
			EPBC Act	NC Act	AECOM	CE	11.3.25	11.9.9	11.10.1	Non-remnant
Verbenaceae	*Verbena aristigera**	Mayne's Pest	-	-	X			X		X
Violaceae	*Hybanthus stellarioides*		-	-	X			X	X	X
Vitaceae	*Cayratia clematidea*	Native Grape	-	-	X			X	X	

[1] Threatened flora species status under the EPBC Act and NC Act (current at 20 January 2015).

* denotes exotic species.

Appendix K

Fauna Species List

Table K.1 Fauna Species Recorded During the Surveys

Scientific Name	Common Name	Status[1]		Survey	
		EPBC Act	NC Act	AECOM	Cumberland Ecology
Amphibians					
*Rhinella marinus**	Cane Toad*			X	
Litoria caerulea	Green Tree Frog			X	
Limnodynastes ornatus	Ornate Burrowing Frog			X	
Reptiles					
Diporiphora australis	Tommy Roundhead Dragon			X	
Pogona barbata	Bearded Dragon			X	
Aspidites melanocephalus	Black-headed Python			X	
Morelia spilota	Carpet Python			X	
Furina diadema	Red-naped Snake			X	
Diplodactylus vittatus	Eastern Stone Gecko			X	
Gehyra dubia	Dubious Gecko			X	
Oedura rhombifer	Zigzag Velvet Gecko			X	
Carlia munda	-			X	
Carlia vivax	Lively Rainbow Skink			X	
Birds					
Accipiter fasciatus	Brown Goshawk	Mar		X	
Aviceda subcristata	Pacific Baza				X

Table K.1 Fauna Species Recorded During the Surveys

Scientific Name	Common Name	Status[1]		Survey	
		EPBC Act	NC Act	AECOM	Cumberland Ecology
Elanus axillaris	Black-shouldered Kite			X	
Hieraaetus morphnoides	Little Eagle				X
Milvus migrans	Black Kite			X	
Anas gracilis	Grey Teal				X
Anas superciliosa	Pacific Black Duck				X
Chenonetta jubata	Australian Wood Duck				X
Podargus strigoides	Tawny Frogmouth			X	
Dromaius novaehollandiae	Emu				X
Elseyornis melanops	Black-fronted Dotterel				X
Vanellus miles	Masked Lapwing			X	X
Stiltia isabella	Australian Pratincole	Mar		X	
Sterna nilotica	Gull-billed Tern	Mar			X
Himantopus mexicanus	Black-necked Stilt				X
Ardea intermedia	Intermediate Egret	Mar			X
Ardea pacifica	White-necked Heron				X
Platalea flavipes	Yellow-billed Spoonbill				X
Platalea regia	Royal Spoonbill				X
Threskiornis molucca	Australian White Ibis	Mar			X

Table K.1 Fauna Species Recorded During the Surveys

Scientific Name	Common Name	Status[1]		Survey	
		EPBC Act	NC Act	AECOM	Cumberland Ecology
Threskiornis spinicollis	Straw-necked Ibis	Mar		X	
Chalcophaps indica	Emerald Dove			X	
Geopelia humeralis	Bar-shouldered Dove			X	
Geopelia striata	Peaceful Dove			X	
Geophaps scripta scripta	Squatter Pigeon (southern subspecies)	V	V	X	X
Ocyphaps lophotes	Crested Pigeon			X	
Phaps chalcoptera	Common Bronzewing			X	
Dacelo leachii	Blue-winged Kookaburra				X
Dacelo novaeguineae	Laughing Kookaburra			X	X
Todiramphus macleayii	Forest Kingfisher	Mar		X	
Merops ornatus	Rainbow Bee-eater	Mig, Mar	-	X	X
Cacomantis flabelliformis	Fan-tailed Cuckoo	Mar			X
Centropus phasianinus	Pheasant Coucal			X	X
Chalcites lucidus	Shining Bronze-Cuckoo	Mar			X
Falco berigora	Brown Falcon			X	
Falco cenchroides	Nankeen Kestrel	Mar		X	
Falco peregrinus	Peregrine Falcon				X
Coturnix ypsilophora	Brown Quail			X	

Table K.1 Fauna Species Recorded During the Surveys

Scientific Name	Common Name	Status[1]		Survey	
		EPBC Act	NC Act	AECOM	Cumberland Ecology
Grus rubicunda	Brolga			X	X
Ardeotis australis	Australian Bustard			X	X
Fulica atra	Eurasian Coot				X
Acanthiza nana	Yellow Thornbill			X	X
Gerygone fusca	Western Gerygone				X
Gerygone olivacea	White-throated Gerygone			X	X
Smicrornis brevirostris	Weebill			X	X
Artamus leucorynchus	White-breasted Wood Swallow			X	
Cracticus nigrogularis	Pied Butcherbird			X	X
Cracticus tibicen	Australian Magpie			X	X
Cracticus torquatus	Grey Butcherbird			X	
Strepera graculina	Pied Currawong			X	X
Coracina novaehollandiae	Black-faced Cuckoo-shrike	Mar		X	
Corcorax melanorhamphos	White-winged Chough			X	X
Struthidea cinerea	Apostlebird			X	
Corvus coronoides	Australian Raven				X
Corvus orru	Torresian Crow			X	X
Taeniopygia bichenovii	Double-barred Finch			X	X

Table K.1 Fauna Species Recorded During the Surveys

Scientific Name	Common Name	Status[1]		Survey	
		EPBC Act	NC Act	AECOM	Cumberland Ecology
Hirundo neoxena	Welcome Swallow	Mar		X	
Malurus melanocephalus	Red-backed Fairy-wren			X	X
Entomyzon cyanotis	Blue-faced Honeyeater			X	X
Lichenostomus chrysops	Yellow-faced Honeyeater			X	
Lichenostomus leucotis	White-eared Honeyeater			X	
Lichenostomus virescens	Singing Honeyeater			X	
Manorina melanocephala	Noisy Miner			X	X
Meliphaga lewinii	Lewin's Honeyeater			X	
Melithreptus albogularis	White-throated Honeyeater			X	X
Melithreptus gularis	Black-chinned Honeyeater		NT	X	
Philemon buceroides	Helmeted Friarbird			X	
Philemon citreogularis	Little Friar Bird				X
Philemon corniculatus	Noisy Friarbird			X	X
Phylidonyris nigra	White-cheeked Honeyeater				X
Plectorhyncha lanceolata	Striped Honeyeater				X
Grallina cyanoleuca	Magpie Lark	Mar		X	X
Anthus novaeseelandiae	Australasian Pipit	Mar			X
Oriolus sagittatus	Olive-backed Oriole			X	

Table K.1 Fauna Species Recorded During the Surveys

Scientific Name	Common Name	Status[1]		Survey	
		EPBC Act	NC Act	AECOM	Cumberland Ecology
Pachycephala rufiventris	Rufous Whistler			X	X
Pardalotus punctatus	Spotted Pardalote			X	
Pardalotus striatus	Striated Pardalote			X	X
Pomatostomus temporalis	Grey-crowned Babbler			X	X
Rhipidura albiscapa	Grey Fantail			X	X
Rhipidura leucophrys	Willy Wagtail			X	X
Rhipidura rufifrons	Rufous Fantail	Mig, Mar			X
Anhinga novaehollandiae	Australasian Darter				X
Microcarbo melanoleucos	Little Pied Cormorant				X
Tachybaptus novaehollandiae	Australasian Grebe			X	X
Cacatua galerita	Sulphur-crested Cockatoo			X	X
Cacatua sanguinea	Little Corella			X	
Calyptorhynchus banksii	Red-tailed Black Cockatoo				X
Eolophus roseicapilla	Galah			X	X
Nymphicus hollandicus	Cockatiel			X	X
Alisterus scapularis	Australian King Parrot			X	X
Aprosmictus erythropterus	Red-winged Parrot			X	
Platycercus adscitus	Pale-headed Rosella			X	X

Table K.1 Fauna Species Recorded During the Surveys

Scientific Name	Common Name	Status[1]		Survey	
		EPBC Act	NC Act	AECOM	Cumberland Ecology
Trichoglossus haematodus	Rainbow Lorikeet			X	X
Ninox novaeseelandiae	Southern Boobook Owl	Mar		X	
Tyto javanica	Eastern Barn Owl			X	
Mammals					
*Bos taurus**	Cattle*				X
*Sus scrofa**	Feral Pig*			X	X
*Canis lupus dingo/familiaris**	Dingo/Dog*			X	
*Vulpes vulpes**	European Red Fox*			X	
*Felis catus**	Feral Cat*			X	
Rhinolophus megaphyllus	Eastern Horseshoe Bat			X	
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat			X	
Chaerephon jobensis	Northern Freetail Bat			X	
Mormopterus beccarii	Beccari's Freetail-bat			X	
Mormopterus sp.	Freetail Bat species			X	
Tadarida australis	White-striped Freetail Bat			X	
Chalinolobus gouldii	Gould's Wattled Bat			X	
Chalinolobus picatus	Little Pied Bat		NT	X	
Miniopterus australis	Little Bentwing-bat			X	

Table K.1 Fauna Species Recorded During the Surveys

Scientific Name	Common Name	Status[1]		Survey	
		EPBC Act	NC Act	AECOM	Cumberland Ecology
Miniopterus schreibersii	Eastern Bent-wing Bat			X	
Nyctophilus sp.	Long-eared Bat species			X	
Scotorepens greyii	Little Broad-nosed Bat			X	
Vespadelus troughtoni	Eastern Cave Bat			X	
Macropus giganteus	Eastern Grey Kangaroo			X	X
Macropus parryi	Whiptail Wallaby			X	X
Wallabia bicolor	Swamp/Black Wallaby			X	X
Petaurus norfolcensis	Squirrel Glider			X	
Petaurus volans	Greater Glider			X	
*Oryctolagus cuniculus**	European Rabbit*			X	X
Tachyglossus aculeatus	Short-beaked Echidna		SLC	X	
Isoodon macrourus	Northern Brown Bandicoot			X	
*Mus musculus**	House Mouse*			X	X

1 Threatened and/or migratory species status under the EPBC Act and/or NC Act (current at 20 January 2015).

V = Vulnerable; NT = Near Threatened, SLC = Special Least Concern; Mar = Marine; Mig = Migratory

* denotes exotic species

Appendix L

Significant Impact Assessment

This appendix contains formal Assessments of Significance for threatened or migratory flora and fauna species listed under the EPBC Act recorded or assessed with a high or moderate likelihood of occurrence within the Study Area (**Table L.1**).

The assessments have been undertaken in accordance with the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (DotE, 2013b) (herein referred to as the Significant Impact Guidelines). The Significant Impact Guidelines assist in determining whether a project will have a significant impact on a MNES.

Table L.1 EPBC Act Listed Threatened and Migratory Species Recorded or with a High or Moderate Likelihood of Occurrence within the Study Area

Scientific Name	Common Name	Status under the EPBC Act[1]	Section Reference
Reptiles			
Delma torquata	Collared Delma	V	L.1
Ergernia rugosa	Yakka Skink	V	L.2
Birds			
Rostratula australis	Australian Painted Snipe	E, M*, Mi*	L.3
Erythrotriorchis radiatus	Red Goshawk	V	L.4
Geophaps scripta scripta	Squatter Pigeon (southern subspecies)	V	L.5
Ardea ibis	Cattle Egret	M, Mi	L.11
Ardea modesta	Eastern Great Egret	Mi, M+	L.11
Apus pacificus	Fork-tailed Swift	M, Mi	L.11
Merops ornatus	Rainbow Bee-eater	M, Mi	L.11
Rhipidura rufifrons	Rufous Fantail	M, Mi	L.11
Myiagra cyanoleuca	Satin Flycatcher	M, Mi	L.11
Hirundapus caudacutus	White-throated Needletail	M, Mi	L.11
Mammals			
Dasyurus hallucatus	Northern Quoll	E	L.6
Phascolarctos cinereus	Koala	V	L.7
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	L.8
Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	L.9
Nyctophilis corbeni	South-eastern Long-eared Bat^	Vulnerable	L.10

[1] Threatened, migratory and/or marine species status under the EPBC Act (current at 20 January 2015).
V = Vulnerable, E = Endangered, Mi = Migratory, M = Marine

* Species listed as Threatened under the EPBC Act as Painted Snipe (*Rostratula australis*) (sensu lato).

\+ Species listed as a marine species under the EPBC Act as Great Egret (*Ardea alba*).

^ Species listed under the NC Act as Eastern Long-eared Bat (*Nyctophilus timoriensis*).

A brief summary on the habitat requirements and distribution of each species is provided, followed by an assessment of whether or not each species forms part of an "important population" as defined under the EPBC Act. Each significant impact criterion is then shown as italicised text below for which a response has been supplied beneath in plain text.

L.1 Collared Delma

EPBC Act Status: Vulnerable

Occurrence within Study Area: High potential

Important Population Assessment:

The Collared Delma is endemic to Queensland and typically occurs in small isolated populations throughout its distribution (SEWPaC, 2011a). Regionally, this species inhabits eucalypt-dominated woodlands, open-forests and adjacent exposed rocky areas in the following Queensland Regional Ecosystem Land Zones (LZ) (SEWPaC, 2011a):

- LZ 3 - Alluvium (river and creek flats);
- LZ 9 - Undulating country on fine-grained sedimentary rocks; and
- LZ 10 - Sandstone ranges.

The Collared Delma has been recorded within Queensland from the following REs (DotE, 2014k):

- RE 11.3.2 - Poplar Box (*Eucalyptus populnea*) woodland on alluvial plains.
- RE 11.9.10 - Poplar Box/ Brigalow (*Acacia harpophylla*) open-forest on fine-grained sedimentary rocks.
- RE 11.10.1 - Lemon-scented Gum (Blue Spotted Gum) (*Corymbia citriodora*) open forest on coarse-grained sedimentary rocks
- RE 11.10.4 - Gum-topped Ironbark (*Eucalyptus decorticans*), Budgeroo/ Brown Hazelwood (*Lysicarpus angustifolius*) +/- *Eucalyptus species, Corymbia* species, *Acacia* species woodland on coarse-grained sedimentary rocks.

The presence of rocks, logs, bark and other coarse woody debris, and mats of leaf litter (typically 30–100 mm thick) appears to be an essential characteristic of the Collared Delma microhabitat and is always present where the species occurs (DotE, 2014k).

Canopy tree species present in suitable habitat for this species generally comprise: Silver-leaved Ironbark (*Eucalyptus melanophloia*), Moreton Bay Ash (*E. tessellaris*), Gum Top Box (*E. moluccana*) and Tallowood (*E. microcorys*) (DotE, 2014k).

There are no records of the Collared Delma from the Study Area. Although the woodlands that occur in the Study Area occur within the aforementioned landscape zones, and contain microhabitats such as fallen trees and tree stumps that could provide habitat for this reptile, the Study Area has been mostly cleared and used for cattle grazing. The Collared Delma is known to be sensitive to grazing (SEWPaC, 2011a). It is also thought likely to be susceptible to predation by feral cats and foxes, both of which occur in the Study Area (SEWPaC, 2011a).

The Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (DotE, 2011a) state that populations are small and often hard to find. As such, using those guidelines, important habitat includes:

- Suitable habitat within the Known / Likely-to-occur distribution of the species (see Map 8 in Appendix 1 of SEWPaC (2011a)) and the Toowoomba Range; and/or
- Suitable habitat between grazed or cropped areas, along road reserves, and travelling stock routes, especially the Donnybrook Stock Route region.

The majority of the Study Area does not contain essential habitat in the form of dense ground cover as well as loose bush rocks for this species as defined by the DotE (2014k). Although some areas of potential habitat are present in the form of boulders and rocky outcrops in the northern portion of the Study Area, large patches of contiguous, suitable habitat are not present.

Using the criteria above, habitats for the Collared Delma (**Figure 16**) have been defined as follows:

- High Value Habitat: due to the lack of local records; lack of essential habitat in the form of dense groundcover and loose bush rocks; no important habitat for this species, as discussed in **Section 4.5.8i**; and disturbance of the Study Area from cattle grazing and historic clearing, no habitats within the Study Area have been mapped as high value.
- Low Value Habitat: patches of RE 11.10.1 (*Corymbia citriodora* woodland) where rocky, relatively intact understorey is present and where cattle grazing is restricted or absent.
- Unsuitable Habitat: other RE woodlands (i.e. RE 11.3.25 [*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines] and RE 11.9.9 [*Eucalyptus crebra* woodland on fine-grained sedimentary rocks]) within the Study Area, non-remnant vegetation and grassland, were mapped as unsuitable for the Collared Delma due to a lack of habitat features relevant for this species.

The Study Area is not mapped as known/likely-to-occur within Map 8 of the Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (SEWPaC, 2011a). It is also not in an ungrazed corridor or travelling stock route.

On this basis, the population of Collared Delma, should it be present within the Study Area, is not considered to be an "*important population*", as defined by Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (DotE, 2011a).

According to the Significant Impact Guidelines (DotE, 2013b), an 'important population' of any Vulnerable species 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:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

Based upon all available data, the species is not known to occur within the Study Area, has limited potential habitat and so the Study Area cannot be said to support key source populations for breeding or dispersal, or for maintaining genetic diversity. If it were to be found within the Study Area, the occurrence would not be near the limit of the species range.

It is concluded that no important population of the species occurs in the Study Area.

Significant Impact Criteria:

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

lead to a long-term decrease in the size of an important population of a species

Not applicable as it is not deemed an important population.

reduce the area of occupancy of an important population

Not applicable as it is not deemed an important population.

fragment an existing important population into two or more populations

Not applicable as it is not deemed an important population.

adversely affect habitat critical to the survival of a species

The potential low value habitat provided by the Study Area is not considered to be critical for the survival of the Collared Delma. Large areas of similar habitat occur outside the Study Area that will remain, and it is considered likely that this species will persist in these areas. In particular, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for numerous fauna species. The

vegetation within the Callide Timber Reserve comprises remnant vegetation, mostly in the form of eucalypt woodlands, and contains habitat features such as dense leaf litter and logs, which can provide habitat for reptile species such as the Collared Delma.

disrupt the breeding cycle of an important population

Not applicable as it is not deemed an important population.

modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The Collared Delma is unlikely to decline as a result of low value habitat removed for the project. Large areas of similar habitat occur in the locality that will remain, and this species will remain viable in these areas. As described above, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for the Collared Delma.

result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat

It is considered unlikely that the project will result in an invasive species becoming established in low value habitat for the Collared Delma. Significant numbers of feral animals already occur in the Study Area and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project.

introduce disease that may cause the species to decline, or

It is considered unlikely that the project will introduce a disease that may cause the Collared Delma to decline.

interfere substantially with the recovery of the species.

The project will not interfere with the recovery of the Collared Delma. There is no important population in the area and the low value habitat that will be removed is already fragmented. Large areas of much higher quality habitat also occur in the locality that will remain and this species will remain viable in these areas.

Conclusion

Based on the above assessment, it is considered that the project will not have a residual significant impact to this species. This species has not been recorded from the Study Area and it is unlikely that large numbers of this species would utilise habitats in the Study Area. The project willl remove low value habitat for the Collared Delma and large areas of much higher quality habitat also occur in the locality (i.e. the Callide Timber Reserve). Therefore no significant impact is predicted to occur as a result of the project.

L.2 Yakka Skink

EPBC Act Status: Vulnerable

Occurrence within Study Area: Moderate potential

Important Population Assessment:

The Yakka Skink is known to occur in open dry sclerophyll forest, woodland and scrub, dominated by: Brigalow (*Acacia harpophylla*), Mulga (*A. aneura*), Bendee (*A. catenulata*), Lancewood (*A. shirleyi*), Belah (*Casuarina cristata*), Poplar Box (*Eucalyptus populnea*), Ironbark (*Eucalyptus* spp.) and White Cypress Pine (*Callitris glaucophylla*) (DotE, 2014m).

This species occurs in a wide variety of vegetation types within the following Queensland Regional Ecosystem Land Zones (LZ) (DotE, 2014m):

- LZ 3 - Alluvium (river and creek flats);
- LZ 4 - Clay plains not associated with current alluvium;
- LZ 5 - Old loamy and sandy plains;
- LZ 7 - Ironstone jump-ups;
- LZ 9 - Undulating country on fine-grained sedimentary rocks; and
- LZ 10 - Sandstone ranges.

The Yakka Skink is commonly found in cavities under and between partly buried rocks, logs or tree stumps, root cavities and abandoned animal burrows (SEWPaC, 2011a). This lizard species often takes refuge in large hollow logs and has been known to excavate deep burrow systems, sometimes under dense ground vegetation (Cogger, 2014). In cleared habitat, this species can persist where there are shelter sites such as raked log piles, deep gullies, tunnel erosion/sinkholes and rabbit warrens. The species has also been found sheltering under sheds and loading ramps (SEWPaC, 2011a).

The Yakka Skink lives in small, localised populations that are thought likely to be susceptible to local extinctions, and the species is considered to be negatively impacted by grazing by livstock (SEWPaC, 2011a).

There are no records of the Yakka Skink from the Study Area. A single record exists within the Callide Timber Reserve 1.5 km to the north east of the Study Area and on that basis, the species has been considered to have a moderate likelihood of occurrence within the more intact woodlands that occur.

The Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (SEWPaC, 2011a) state that populations are small and often hard to find. As such, those guidelines list important habitat as:

- Any contiguous patch of suitable habitat, particularly remnant vegetation, where a colony is known or identified; and

- Any microhabitat where colonies are likely to be found.

In accordance with the Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (SEWPaC, 2011a) the Study Area does not contain important habitat for this species as it does not include habitats or microhabitats where a colony is known to occur. Additionally, the habitat within the Study Area is not contiguous with the vegetation within the Callide Timber Reserve where a previous record is known from, being separated by both a powerline corridor and a haul road. Given the disturbance of the Study Area by past clearing and cattle grazing, the potential habitats within the Study Area are not considered likely to support the species.

Using the criteria above, habitats for the Yakka Skink (**Figure 17**) have been defined as follows:

- High Value Habitat: due to the lack of records within the Study Area; lack of the majority of preferred tree types; and disturbance of the Study Area from cattle grazing and historic clearing, no habitats have been mapped as high value for Yakka Skink.

- Low Value Habitat: patches of RE 11.9.9 (*Eucalyptus crebra* woodland) where rocky, relatively intact understorey is present and where cattle grazing is restricted or absent.

- Unsuitable Habitat: other RE woodlands (i.e. RE 11.3.25 [*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines] and 11.9.9 [*Eucalyptus crebra* woodland on fine-grained sedimentary rocks]) within the Study Area, non-remnant vegetation and grassland were mapped as unsuitable for the Yakka Skink due to a lack of habitat features relevant for this species.

The Study Area does not include habitats where a colony is known to occur or has been identified or any microhabitat where colonies are likely to be found. Given the disturbance of the Study Area by past clearing and cattle grazing, the potential habitats within the Study Area are not considered likely to support the species.

On this basis, the Study Area does not support an "*important population*", as defined by Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (SEWPaC, 2011a).

According to the Significant Impact Guidelines (DotE, 2013b), an 'important population' of any Vulnerable species 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:

- key source populations either for breeding or dispersal

- populations that are necessary for maintaining genetic diversity, and/or

- populations that are near the limit of the species range.

Based upon all available data, the species is not known to occur within the Study Area, has limited potential habitat and so the Study Area cannot be said to support key source populations for breeding or dispersal, or for maintaining genetic diversity. If it were to be found within the Study Area, the occurrence would not be near the limit of the species range.

It is concluded that no important population of the species occurs in the Study Area.

Significant Impact Criteria:

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

lead to a long-term decrease in the size of an important population of a species

Not applicable as it is not deemed an important population.

reduce the area of occupancy of an important population

Not applicable as it is not deemed an important population.

fragment an existing important population into two or more populations

Not applicable as it is not deemed an important population.

adversely affect habitat critical to the survival of a species

The potential low value habitat provided by the Study Area is not considered to be critical for the survival of the Yakka Skink. Large areas of similar habitat occur outside the Study Area that will remain, and it is considered likely that this species will persist in these areas. In particular, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for many fauna species. The vegetation within the Callide Timber Reserve comprises remnant vegetation, mostly in the form of eucalypt woodlands and contains habitat features such as dense leaf litter and logs, which can provide habitat for reptile species such as the Yakka Skink.

disrupt the breeding cycle of an important population

Not applicable as it is not deemed an important population.

modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The Yakka Skink is unlikely to decline as a result of low value habitat removed for the project. Large areas of similar habitat occur in the locality that will remain, and this species will remain viable in these areas. As described above, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for the Yakka Skink.

result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat

It is considered unlikely that the project will result in an invasive species becoming established in low value habitat for the Yakka Skink. Significant numbers of feral animals already occur in the Study Area and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project.

introduce disease that may cause the species to decline, or

It is considered unlikely that the project will introduce a disease that may cause the Yakka Skink to decline.

interfere substantially with the recovery of the species.

The project will not interfere with the recovery of the Yakka Skink. There is no important population in the area and the low value habitat that will be removed is already fragmented. Additionally, the habitat within the Study Area is not contiguous with the vegetation within the Callide Timber Reserve where a previous record is known from, being separated by both a powerline corridor and a haul road. Large areas of much higher quality habitat also occur in the locality that will remain, and this species will remain viable in these areas.

Conclusion

Based on the above assessment, it is considered that the project will not have a residual significant impact to this species. This species has not been recorded from the Study Area and it is unlikely that large numbers of this species would utilise habitats in the Study Area. The project willl remove low value habitat for the Yakka Skink and large areas of much higher quality habitat also occur in the locality (i.e. the Callide Timber Reserve where the species has been recorded from). Therefore no significant impact is predicted to occur as a result of the project.

L.3 Australian Painted Snipe

EPBC Act Status: Endangered

Occurrence within Study Area: Moderate potential

The Australian Painted Snipe is a small, stocky wading bird with a long pinkish bill. The species is distributed throughout all states of Australia and is associated with wetlands. It is widespread in eastern Australia with scattered records throughout Queensland (DotE, 2014†).

The Australian Painted Snipe generally inhabits shallow freshwater wetlands including temporary and permanent lakes, swamps, and claypans. The species also uses inundated or waterlogged grassland, saltmarsh, dams, rice crops, sewage farms, and bore drains. Breeding habitat requirements are quite specific, requiring a combination of shallow wetlands, areas of bare wet mud, and both upper and canopy cover nearby. Nesting records are nearly all from islands in freshwater wetlands. The species is mobile and will move during drought conditions (DotE, 2014†).

The species feeds on aquatic vegetation, seeds, insects, worms and molluscs, crustaceans and other invertebrates.

The Australian Painted Snipe was not recorded during the field survey. There are limited areas of low value habitat present in the Study Area that are suitable for this species and comprise a small area of the seasonal wetland and the two northern farm dams. These areas may provide potential foraging and breeding habitat for this species when they contain water (**Figure 17**).

Using the criteria above, habitats for the Australian Painted Snipe within the Study Area (**Figure** 18) have been defined as follows:

- High Value Habitat: no high value habitat is present within the Study Area due to the lack of permanent water at the seasonal wetland and the degraded condition of the farm dams due to stock access and pugging. In addition, fringing vegetation within these habitats is also limited.

- Low Value Habitat: the farm dams and seasonal wetland have been mapped as low value habitat. They contain potential habitat for the Australian Painted Snipe, but there have been no records of the species using these areas. The habitats are subject to disturbances from cattle grazing and feral animals.

- Unsuitable Habitat: all other habitats within the Study Area have been mapped as unsuitable for this wetland specialist.

According to the Significant Impact Guidelines (DotE, 2013b), a 'population' of any Endangered species is an occurrence of the species in a particular area. Occurrences include but are not limited to:

- a geographically distinct regional population, or collection of local populations; or

- a population, or collection of local populations, that occurs within a particular bioregion.

Significant Impact Criteria

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

lead to a long-term decrease in the size of a population

The project will not lead to a long term decrease in the size of a population of the Australian Painted Snipe. This species was not recorded from the Study Area and only small areas of low value wetland habitat are present, the majority of which will be retained.

reduce the area of occupancy of the species

The project will not reduce the area of occupancy of the Australian Painted Snipe. One small area of seasonal wetland and two farm dams are present in the Study Area. These areas provide low value habitat for this species. The two farm dams will not be removed as a component of the project.

fragment an existing population into two or more populations

The project will not fragment an existing population into two or more populations. The project would remove one small seasonal wetland in the Study Area and no significant fragmentation of habitat would occur. This is a highly mobile species that utilises a variety of spatially separate habitats and is capable of flying over non-habitat areas in order to access suitable habitat.

adversely affect habitat critical to the survival of a species

The low value habitat to be removed in the Study Area is not considered to be critical to the survival of the Australian Painted Snipe. Only small areas of wetland are present in the Study Area.

disrupt the breeding cycle of a population

The project will not disrupt the breeding cycle of a population of the Australian Painted Snipe. One small area of seasonal wetland and two farm dams are present in the Study Area; the two farm dams will be retained.

modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The Australian Painted Snipe is unlikely to decline as a result of the low value habitat proposed to be cleared for the project. The majority of the potential low value habitat that exists for this species in the Study Area will remain.

result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat

It is considered unlikely that the project will result in an invasive species becoming established in low value habitat for the Australian Painted Snipe. Significant numbers of feral animals already occur in the Study Area and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project.

introduce disease that may cause the species to decline, or

It is considered unlikely that the project will introduce a disease that may cause the Australian Painted Snipe to decline.

interfere with the recovery of the species.

The project will not interfere with the recovery of the Australian Painted Snipe. Only small areas of wetland are present in the Study Area.

Conclusion

This is only a minor area of low value habitat for the Australian Painted Snipe and no records of the species occurs within the Study Area. Based on the above assessment, it is considered that the project will not have a residual significant impact to this species. This species has not been recorded from the Study Area and it is unlikely that large numbers of this species would utilise habitats in the Study Area.

L.4 Red Goshawk

EPBC Act Status: Vulnerable

Occurrence within Study Area: Moderate potential

Important Population Assessment:

The Red Goshawk is a large rufous-brown hawk with a wingspan of 100-130cm. The species is endemic to Australia and is very sparsely distributed across 15% of coastal and sub-coastal areas (DotE, 2014p).

The species occurs in coastal and sub-coastal woodlands and forests of tropical and warm-temperate Australia. Riverine forests are also utilised. The species prefers forest and woodland with a mosaic of vegetation types, large prey populations (birds) and permanent water (DotE, 2014p). Nesting is within 1 km of and often beside permanent water (DotE, 2014p).

The species preys predominantly on birds and over 80% of their diet is on birds over 100g in weight. Home ranges in Queensland vary between 50 and 220 km^2 depending on available habitat nearby (DotE, 2014p).

Using the criteria above, habitats for the Red Goshawk within the Study Area (**Figure 19**) have been defined as follows:

- High Value Habitat: due to lack of species records, clearing and disturbance of potential habitats within the Study Area and a lack of natural permanent water, no high value habitat has been mapped for this species within the Study Area.
- Low Value Habitat: woodland habitats within the Study Area have all been mapped as low value habitat for the species as they can support potential prey.
- Unsuitable Habitat: comprises all other areas not classified as high value or low value habitat based on the categories above, based on a lack of suitable habitat requirements (i.e. woodland habitat).

The Red Goshawk was not recorded during the field survey, although it has moderate likelihood of occurrence within the Study Area based on the presence of low value habitat (see **Figure 18**).

According to the Significant Impact Guidelines (DotE, 2013b), an 'important population' of any Vulnerable species 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:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or

- populations that are near the limit of the species range.

This species has a large home range and is sparsely dispersed across most of the top third of Australia, though it is uncommon across its distribution. The territory of the northern Australian population vastly exceeds the size of the Study Area. The Study Area is too small to support a population, though, in theory it may provide foraging habitat for individuals of the species.

The Study Area is not located near the limit of the range of the Red Goshawk. It is very sparsely dispersed across approximately 15% of coastal and sub-coastal Australia, from western Kimberley Division (north of 19°S) to north-eastern New South Wales (DotE, 2014p).

Based upon all available data, the species is not known to occur within the Study Area, has limited potential habitat and so the Study Area cannot be said to support key source populations for breeding or dispersal, or for maintaining genetic diversity. If it were to be found within the Study Area, the occurrence would not be near the limit of the species range.

It is concluded that no important population of the species occurs in the Study Area.

Significant Impact Criteria:

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

lead to a long-term decrease in the size of an important population of a species

Not applicable as it is not deemed an important population.

reduce the area of occupancy of an important population

Not applicable as it is not deemed an important population.

fragment an existing important population into two or more populations

Not applicable as it is not deemed an important population.

adversely affect habitat critical to the survival of a species

The low value habitat provided by the Study Area is not considered to be critical for the survival of the Red Goshawk. Large areas of similar habitat occur outside the Study Area that will remain, and it is considered likely that this species will persist in these areas.

disrupt the breeding cycle of an important population

Not applicable as it is not deemed an important population.

modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The Red Goshawk is unlikely to decline as a result of low value habitat removed for the project. Large areas of similar habitat occur in the locality that will remain, and this species will remain viable in these areas. As described above, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for the Red Goshawk.

> *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

It is considered unlikely that the project will result in an invasive species becoming established in low value habitat for the Red Goshawk. Significant numbers of feral animals already occur in the Study Area and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project.

> *introduce disease that may cause the species to decline, or*

It is considered unlikely that the project will introduce a disease that may cause the Red Goshawk to decline.

> *interfere substantially with the recovery of the species.*

The project will not interfere with the recovery of the Red Goshawk. There is no important population in the area and the low value habitat that will be removed is already fragmented. Large areas of much higher quality habitat also occur in the locality that will remain, and this species will remain viable in these areas.

Conclusion

Based on the above assessment, it is considered that the project will not have a residual significant impact to the Red Goshawk. This species has not been recorded from the Study Area and it is unlikely that large numbers of this species would utilise habitats in the Study Area. Large areas of much higher quality habitat also occur in the locality (i.e. the Callide Timber Reserve). A minor area of low value habitat for the Red Goshawk will be removed and no significant impact is predicted to occur as a result of the project.

L.5 Squatter Pigeon (southern subspecies)

EPBC Act Status: Vulnerable

Occurrence within Study Area: Present

Important Population Assessment:

The Squatter Pigeon (southern subspecies) can occur in semi-cleared woodland habitats and can co-exist with livestock and other disturbances to a degree. However, the Squatter Pigeon nests on the ground; sometimes among or sheltered by vegetation, including short dry grass, grass tussocks or bushes (Higgins and S.J.J.F, 1996; DotE, 2014s) and such nesting makes the species vulnerable to feral animals and to the impacts of cattle and sheep grazing (Higgins & Davies 1996). For this reason clearance and modification of vegetation for farming impacts the native ground flora on which this species relies and also increases the distribution and abundance of feral predators - particularly Red Foxes and Cats. As such, heavily cleared landscapes are likely to be less suited for the pigeon than lightly cleared or uncleared vegetation.

The Squatter Pigeon (southern subspecies) is known to be susceptible to predation by Red Foxes, and Cats (DotE, 2014s), which are implicated in the decline of the species. Foxes and Cats have been detected in the Study Area and are likely to occur in all habitats.

The Squatter Pigeon has been found within the Study Area (two records) and immediately adjacent to the Study Area (two records). There are also records of the species in the wider locality.

Based upon the habitat known to be preferred by the Squatter Pigeon (southern subspecies) in the Study Area (**Figure 20**) has been defined as follows:

- High Value Habitat: probable breeding habitat, and has been mapped to include suitable vegetation within 1 km of permanent water. For the purposes of this modelling, “permanent water” was taken to include the two farm dams in the north of the Study Area.
- Low Value Habitat: potential foraging areas that occur throughout the Study Area and include all areas of woodland within 3 km of permanent water.
- Unsuitable Habitat: non-remnant grassland subject to cattle grazing and generally not in proximity to permanent water.

Using these criteria, high value habitat occurs in the north of the Study Area. The remaining woodland is low value habitat, while all grassland areas are classified as unsuitable habitat.

According to the Significant Impact Guidelines (DotE, 2013b), an ‘important population’ of any Vulnerable species 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:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

The occurrence of the Squatter Pigeon (southern subspecies) that occurs in and near the Study Area is part of a larger population that occurs within the locality and region. According to the species profile (DotE, 2014s):

> *The subspecies remains common north of the Carnarvon Ranges in Central Queensland and is considered to be distributed as a single, continuous (i.e. inter-breeding) sub-population (Squatter Pigeon Workshop 2011). Numerous, recent records of the subspecies in the region between Injune and the Carnarvon Ranges (QLD DEHP 2012) suggest that Squatter Pigeons (southern) found in this region are also part of the northern, continuous sub-population. South of Augathella, Injune and Tin Can Bay, Queensland, the subspecies' population has been fragmented due to the removal of woodlands and forests for agriculture (Squatter Pigeon Workshop 2011). While potential habitat connectivity still occurs between the Carnarvon Ranges and the Nandewar and southern Brigalow Belt bioregions in southern Queensland and northern NSW, only small, isolated and sparsely distributed sub-populations of the subspecies occur in this part of its range (Cooper et al. 2014; Squatter Pigeon Workshop 2011).*
>
> *The total population size of the Squatter Pigeon (southern) was estimated at 40,000 breeding birds in 2000. This estimate was considered to be of low reliability (Garnett & Crowley 2000).*

Important populations ("sub-populations") of the species are defined within the species profile as follows:

> *The southern boundary of the known distribution of the Squatter Pigeon (southern) is contracting northwards. Therefore, all of the relatively small, isolated and sparsely distributed sub-populations occurring south of the Carnarvon Ranges in Central Queensland are considered to be important sub-populations of the subspecies (Squatter Pigeon Workshop 2011). This includes, but is not limited to (Squatter Pigeon Workshop 2011):*
>
> 1. *populations occurring in the Condamine River catchment and Darling Downs of southern Queensland*
> 2. *the populations known to occur in the Warwick-Inglewood-Texas region of southern Queensland, and*
> 3. *any populations potentially occurring in northern NSW.*

The Study Area is not within any of the three aforementioned areas. This species is known to occur in the locality and due to the widespread habitat that is available; it is locally abundant. As such the small number of birds that occur in the Study Area (possibly one to

several pairs) do not represent a key source population. Rather, they are a few individuals from the large northern population described above and estimated at 40,000 birds. Furthermore, DotE advises that '*No populations have been identified as being especially important to the long-term survival or recovery of the Squatter Pigeon'* (DotE 2014g).

The Study Area is not located near the limit of the range of the Squatter Pigeon (southern subspecies). It occurs from central New South Wales to Cape York Peninsular and from the coast to as far west as Longreach.

Based upon all available data, the Study Area does not in itself support a source population for breeding or dispersal, or for maintaining genetic diversity. The occurrence of this species within the Study Area is not near the limit of the species range.

The threatened species status of the Squatter Pigeon (southern subspecies) in Australia under the EPBC Act is currently under review by the DotE and this species may be delisted from the EPBC Act. The DotE is considering the removal of this species from the EPBC Act as evidence suggests that this species does not meet any of the EPBC Act criteria and regulations for listing a vulnerable species under the EPBC Act. While the application to delist this species is still under review, this suggests that there are no 'important populations' of this species as this species may not in fact meet the criteria to be listed as a threatened species under the EPBC Act

It is concluded that no important population of the species occurs in the Study Area.

Significant Impact Criteria:

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

lead to a long-term decrease in the size of an important population of a species

Not applicable as it is not deemed an important population.

reduce the area of occupancy of an important population

Not applicable as it is not deemed an important population.

fragment an existing important population into two or more populations

Not applicable as it is not deemed an important population.

adversely affect habitat critical to the survival of a species

The habitat provided by the Study Area is not considered to be critical for the survival of the Squatter Pigeon (southern subspecies). Large areas of similar habitat occur outside the Study Area that will remain, and it is considered likely that this species will persist in these areas. Large areas of suitable vegetation occur outside of the Study Area that may provide habitat for this species In particular, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for many fauna species.

The vegetation within the Callide Timber Reserve comprises remnant vegetation, mostly in the form of eucalypt woodlands and contains suitable habitat features for the Squatter Pigeon (southern subspecies) such as woodlands with a grassy understorey.

disrupt the breeding cycle of an important population

Not applicable as it is not deemed an important population.

modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The removal of habitat for the project will not cause the Squatter Pigeon (southern subspecies) as a species to decline. Approximately 48.5 ha of high value habitat for the Squatter Pigeon (southern subspecies) would be cleared as a result of the project. This represents a very small proportion of the habitat for the species in the locality. As previously discussed, the threatened species status of the Squatter Pigeon (southern subspecies) in Australia under the EPBC Act is currently under review by the DotE and this species may be delisted from the EPBC Act.

The Squatter Pigeon (southern subspecies) is unlikely to decline as a result of habitat removed for the project. Large areas of similar habitat occur outside the Study Area that will remain, and it is considered likely that this species will persist in these areas. As described above, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for the Squatter Pigeon (southern subspecies).

result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat

It is considered unlikely that the project will result in an invasive species becoming established in habitat for the Squatter Pigeon (southern subspecies). Significant numbers of feral animals already occur in the Study Area and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project.

introduce disease that may cause the species to decline, or

It is considered unlikely that the project will introduce a disease that may cause the Squatter Pigeon (southern subspecies) to decline.

interfere substantially with the recovery of the species.

The project will result in the removal of some areas of foraging habitat for this species, and will result in a reduction in the area of habitat available to this species. However, large areas of similar habitat occur in the locality that will remain, and this species will remain viable in these areas. Furthermore, mined areas will be rehabilitated to contain woodland habitats that will provide suitable habitat for this species in the long term. As previously discussed, the threatened species status of the Squatter Pigeon (southern subspecies) in Australia under the EPBC Act is currently under review by the DotE and this species may be delisted from the EPBC Act.

The project is unlikely to interfere substantially with the recovery of the species.

Conclusion

Based on the above assessment, it is considered that the project will not have a residual significant impact to this species. Large areas of much higher quality habitat also occur in the locality (i.e. the Callide Timber Reserve). A minor area of high value habitat for the Squatter Pigeon (southern subspecies) will be removed and no significant impact is predicted to occur as a result of the project.

L.6 Northern Quoll

EPBC Act Status: Endangered

Occurrence within Study Area: High potential

Important Population Assessment:

The modelled distribution of the Northern Quoll shows that the Study Area is within the known distribution of this species (DotE, 2014j). However, targeted surveys conducted in and around the Study Area showed no evidence of Northern Quolls occurring in the Study Area, although there is some evidence they occur in the extensive wooded areas to the east of the Study Area (**Section 4.5.8vi**).

Northern Quolls do not have highly specific habitat requirements. They are opportunistic foragers occurring in a variety of habitat types across their range. Den sites are important for their shelter and protection and can include rocky outcrops, tree hollows, hollow logs and termite mounds (Hill and Ward, 2010) However, Northern Quolls are known to be highly susceptible to threats, particularly from Cane Toads, but also from predation, fire and habitat loss (DotE, 2014j).

The rapid decline of the Northern Quoll has been linked to the spread of the Cane Toad across northern Australia, with a general pattern of rapid decline to local extinction in most Northern Quoll populations following the arrival of Cane Toads (Hill and Ward, 2010). Northern Quolls have shown a highly significant pattern of loss from lowland areas, likely accentuated by the presence of Cane Toads, and persisting populations now occur mostly in the rugged parts of their former range (Hill and Ward, 2010).

Historically, the species occurred across a range of landscapes, however, since the spread of the Cane Toad, it has been found that Northern Quoll populations collapse soon after Cane Toads colonise an area. Due to Cane Toads, Northern Quolls have become confined to offshore islands, or, on the mainland, in extensive areas of rocky habitats where drinking water is available, theoretically free from the threat of Cane Toads (Woinarski *et al.*, 2008; DotE, 2014j).

Due to the influence of threats on the distribution and survival of Northern Quolls, the Northern Quoll Recovery Plan (Hill and Ward, 2010) notes that habitat critical to the survival of this species occurs where Northern Quolls are least exposed to threats or least likely to be in the future; namely extensive rocky areas and offshore islands.

Cane Toads are known to occur in abundance around the permanent water sources (i.e. the two northern farm dams) on the Study Area, rendering it unlikely for Northern Quolls to persist in these areas.

Using the criteria above, habitat for the Northern Quoll in the Study Area (**Figure 21**) has been defined as follows:

- High Value Habitat: due to lack of species records in the Study Area; the presence of Cane Toads in farm dams and remnant pools along ephemeral drainage lines; and the clearing and fragmentation that has occurred to woodland habitats, no high value habitat has been mapped in the Study Area.

- Low Value Habitat: as the Northern Quoll occurs in a variety of woodland, and because there is one recorded sighting of the Northern Quoll and one potential scat record to the east of the Study Area, all woodlands on the Study Area have been mapped as low value habitat for the Northern Quoll.

- Unsuitable Habitat: grasslands on the Study Area have been mapped as unsuitable for the Northern Quoll because they are open, lack shelter, and animals within them would be greatly exposed to predation by the Feral Cat and European Red Fox.

Although low value habitat for Northern Quoll is present within the Study Area, no individuals were encountered during the targeted Northern Quoll surveys. The Study Area lacks caves and contains a very low density of termite mounds or hollow bearing trees and, as such, there are few denning opportunities for this species. On this basis, a population of this species within the Study Area is unlikely to be present.

According to the Significant Impact Guidelines (DotE, 2013b), a 'population' of any Endangered species is an occurrence of the species in a particular area. Occurrences include but are not limited to:

- a geographically distinct regional population, or collection of local populations; or

- a population, or collection of local populations, that occurs within a particular bioregion.

The Referral Guidelines for the Endangered Northern Quoll (SEWPaC, 2011b) state that:

"A population of northern quoll is presumed to occur in any area with recent evidence of a single northern quoll. Evidence of a northern quoll is considered recent if it is post 1980 and may include, but not be limited to, a database record, scat, latrine site, hair sample, remote camera detection or a trapped or sighted animal by a qualifed practitioner".

Despite a potential record of this species occurring approximately 1 km to the east of the Study Area in densely wooded habitat, based on available data, the Northern Quoll is not known to occur within the Study Area itself, and has limited potential habitat within the Study Area (and such habitat has Cane Toads present). Therefore, although individuals of Northern Quoll may occasionally be present within the Study Area, it cannot be considered to support a geographically distinct regional or collection of local population of the species or a population or collection of population that occurs in a particular bioregion.

On this basis it is concluded that no population of the species occurs in the Study Area.

Significant Impact Criteria:

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

lead to a long-term decrease in the size of a population

The Study Area does not support a population of Northern Quoll. This species has not been recorded from the Study Area and only low value habitat is present within the Study Area. Due to the presence of Cane Toads in farm dams and remnant pools along ephemeral drainage lines; and the clearing and fragmentation that has occurred to woodland habitats, no high value habitat has been mapped in the Study Area. Therefore, the project is unlikely to lead to a long term decrease in the size of a population of the Northern Quoll.

reduce the area of occupancy of the species

The project will only remove potential low value habitat for this species as no high value habitat has been mapped within the Study Area (refer to **Section 4.5.8vi**). The Northern Quoll has not been recorded from the Study Area and is considered unlikely to occur other than on occasion. Therefore the project is unlikely to reduce the area of occupancy of the Northern Quoll.

fragment an existing population into two or more populations

The project is unlikely to fragment an existing population into two or more populations as no populations are considered to occur within the Study Area.

adversely affect habitat critical to the survival of a species

The low value habitat provided by the Study Area is not considered to be critical for the survival of the Northern Quoll. Large areas of similar habitat occur outside the Study Area that will remain, and it is considered likely that this species will persist in these areas. Large areas of potentially suitable vegetation occur to the east of the Study Area that may provide habitat for this species. The vegetation within the Callide Timber Reserve comprises remnant vegetation, mostly in the form of eucalypt woodlands and contains rocky outcrops and associated crevices and overhangs which can provide shelter sites for the Northern Quoll. Broad areas of rocky habitats can support higher densities and/or longer lived individuals within the species range, due principally to the fact that such areas can remain free from Cane Toads. The broad rocky areas within the Callide Timber Reserve are naturally vegetated, relatively undisturbed and may be used by the Northern Quoll for foraging and dispersal

disrupt the breeding cycle of a population

The project is unlikely to disrupt the breeding cycle of a population of the Northern Quoll because the Study Area does not support a population and no high value (i.e breeding) habitat has been mapped.

modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The project will only remove low value habitat for the Northern Quoll within the Study Area. Whilst this will decrease the availablity and quality of this habitat, because of its low value, its removal is unlikely to cause the species to decline, as large areas of similar and better quality habitat occur in the locality. As described above, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for the Northern Quoll.

> *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

It is considered unlikely that the project will result in an invasive species becoming established in low value habitat for the Northern Quoll. Significant numbers of feral animals already occur in the Study Area and these will be controlled as part of the project, including the Cane Toad which is a key threat to the Northern Quoll. It is unlikely that any other invasive plant or animal will become established as a result of the project.

> *introduce disease that may cause the species to decline, or*

The increased degree of isolation of Northern Quoll populations increases the potential for disease to have a locally detrimental effect (Hill and Ward, 2010). Elsewhere in Australia, there is widespread, but largely anecdotal evidence of episodes of sudden population crashes of Northern Quolls (and other larger dasyurids), possibly being caused by disease.

It is considered unlikely that the project will introduce a disease that may cause the Northern Quoll to decline.

> *interfere substantially with the recovery of the species.*

The project will not substantially interfere with the recovery of the Northern Quoll through the removal of suitable low value foraging habitat. However, large areas of similar and higher quality habitat occur in the locality that will remain, and this species will remain viable in these areas. The recovery of the species in this locality is likely limited by the prevalence of Cane Toads which already existed within the Study Area prior to the commencement of the project.

Conclusion

Based on the above assessment, it is considered that the project will not have a residual significant impact to this species. Only potential low value habitat for this species will be removed. This species has not been recorded from the Study Area and it is unlikely that the Northern Quoll would utilise habitats in the Study Area other than for occasional foraging. Large areas of higher quality habitat occur in the locality (i.e. the Callide Timber Reserve), as such no significant impact is predicted to occur as a result of the project.

L.7 Koala

EPBC Act Status: Vulnerable

Occurrence within Study Area: High potential

Important Population Assessment:

As noted in **Appendix I** (**Section I.9**), Koala distribution is very strongly correlated with the distribution and abundance of preferred food trees, particularly those within fertile and/or well-watered portions of the landscape. The introduction of disease (*Chlamydia*) and clearing/fragmenting of habitat have also strongly influenced the occurrence of the Koala.

The concept of Koala food trees is central to habitat mapping for this species. The *EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)* (herein referred to as the "Koala Guideline") (DotE, 2014n) defines Koala food trees as: *Species of tree whose leaves are consumed by koalas. See lists of known koala food trees prepared by state and local government and non-government organisations*. It refers to the following references to identify potential food trees:

- NSW Office of Environment and Heritage Koala habitat web page: www.environment.nsw.gov.au/animals/koalahabitat.htm;
- QLD EHP protection Koala habitat webpage: www.ehp.qld.gov.au/wildlife/koalas/koala-ecology.html;
- Australian Koala Foundation tree list: www.savethekoala.com/about-koalas/trees-koalas (identifies known food trees by Local Government Area); and
- The New South Wales Recovery Plan for the Koala: www.environment.nsw.gov.au/resources/threatenedspecies/08450krp.pdf

These references have been consulted in identifying Koala food trees. In the Study Area, Blue Gum occurs in both remnant RE 11.3.25 and also as scattered trees along ephemeral drainage lines across the Study Area. Gum-topped Box has been recorded within remnant RE 11.9.9 and is present in the RE but not dominant. These species are known to be an important feed trees for Koalas (see NSW Office of Environment and Heritage webpage, referenced above) and therefore they are considered to be important habitat trees for Koalas in the Study Area.

For the purposes of habitat modelling, potential Koala food trees recorded within the Study Area (based on the references cited above) have been grouped into two categories: primary food trees (food trees most preferred by the Koala) and secondary food trees (less preferred trees by the Koala but still with the potential for these tree species to be used as a food resource). The primary and secondary food trees for the Koala within the Study Area are listed in **Table L.2**.

Table L.2 Primary and Secondary Food Trees of the Koala within the Study Area

Scientific Name	Common Name
Primary Food Trees	
Eucalyptus tereticornis	Blue Gum
Eucalyptus moluccana	Gum-topped Box
Secondary Food Trees	
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus populnea	Poplar Box

According to the EPBC Act Koala Referral Guidelines, habitat critical to the survival of the Koala is habitat that is considered to be important for the species long-term survival and recovery (DotE, 2013a). An impact area that scores five or more using the habitat assessment tool for the Koala in the Referral Guidelines contains habitat critical to their survival. The habitat assessment tool is to be applied once to the entire impact area of the proposed action.

The habitat assessment tool is reproduced in **Table L.3** with a column showing the ranking of the Study Area against each attribute. Using the criteria in the DotE Koala habitat assessment tool presented below, the Study Area receives a score of 5 and is therefore considered to contain habitat critical to the survival of the Koala. However, given that the EPBC Act Koala Referral Guidelines are broad and non-selective for the purpose of habitat modelling (i.e. do not reflect that different parts of the Study Area may provide different habitat value for the Koala), detailed habitat modelling was undertaken based on the field work. The detailed analysis of the relative quality of Koala habitat within the Study Area indicates that the Study Area only contains areas of low and unsuitable habitat for the Koala.

Table L.3 Koala Habitat Assessment Tool

Attribute	Score	Inland	Project Assessment
Koala occurrence	2 (high)	Evidence of one or more Koalas within the last 5 years.	No.
	1 (medium)	Evidence of one or more Koalas within 2 km of the edge of the impact area within the last 10 years.	No.
	0 (low)	None of the above.	Yes - AECOM (2012b) recorded that one Koala was recorded during studies at Callide Mine approximately 7 km to the south-east of the Study Area in 1998.

Table L.3 Koala Habitat Assessment Tool

Attribute	Score	Inland	Project Assessment
			However, this record is unsubstantiated as it has never been confirmed.
Vegetation composition	**2 (high)**	Has forest, woodland or shrubland with emerging trees with 2 or more known Koala food tree species in the canopy, **OR** 1 food tree species that alone accounts for >50% of the vegetation in the relevant strata.	Yes – there are 2 or more Koala food tree species within the Koala habitat within the Study Area.
	1 (medium)	Has forest, woodland or shrubland with emerging trees with only 1 species of known Koala food tree present.	No.
	0 (low)	None of the above.	No.
Habitat connectivity	**2 (high)**	Area is part of a contiguous landscape ≥1,000 ha.	Yes – it is highly likely that there is more than 1,000 ha of Koala habitat adjoining the Study Area, particularly to the east and north-east of the survey area.
	1 (medium)	Area is part of a contiguous landscape <1,000 ha but ≥ 500 ha.	No.
	0 (low)	None of the above.	No.
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.	No.
	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.	Yes – as Koala Occurrence scored a 0 and vehicle threat from the existing mobile mining equipment at Boundary Hill Mine is present.

Table L.3 Koala Habitat Assessment Tool

Attribute	Score	Inland	Project Assessment
	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.	No.
Recovery value	2 (high)	Habitat is likely to be important for achieving the interim recovery objectives for the relevant context.	No.
	1 (medium)	Uncertain whether whether the habitat is important for achieving the interim recovery objectives for the relevant context.	No.
	0 (low)	Habitat is unlikely to be important for achieving the interim recovery objectives for the relevant context.	Yes – the interim recovery values are: • Protect and conserve the quality and extent of habitat refuges for the persistence of the species during droughts and periods of extreme heat, especially in riparian environments and other areas with reliable soil moisture and fertility; and • Maintain the quality, extent and connectivity of large areas of Koala habitat surrounding habitat refuges. There are no habitat refuges (i.e. riparian environments or areas with reliable soil moisture and fertility) within the Study Area. There is also a significant amount of similar habitat in the surrounding area which contains, or connects to, Koala refuge habitats without the presence of any large barriers or natural obstructions. Therefore, the Koala habitat within the project site is unlikely to be important for achieving the interim recovery objective.
Total Score: 5			

Based on the information provided above, habitat modelling for the Koala included consideration of known records in the locality of Study Area, RE mapping, ground-truthing and published information on the habitat preferences of this species the entire Study Area is within the historic range of the Koala.

Habitat within the Study Area for the Koala (**Figure 22**) have been defined as follows:

- High Value Habitat: due to lack of species records, a paucity of primary food trees and past clearing and fragmentation of woodland habitat, no high value habitat has been mapped within the Study Area.
- Low Value Habitat: woodlands within the Study Area containing trees that can be used for browsing by the Koala (RE 11.3.25 and RE 11.9.9) have been mapped as low value Koala habitat.
- Unsuitable Habitat: areas of the Study Area that contain trees that are not considered likely to provide a food source for the Koala, or grasslands. Although these areas may be used periodically for dispersal purposes, due to the lack of food trees, they have been mapped as unsuitable habitat.

Although low value habitat for Koala is present within the Study Area, no individuals were encountered during the surveys. The Study Area contains a very low density of suitable feed trees for this species and there are few recent records of Koalas in the locality. On this basis, a population of this species within the project area is unlikely to be present. Hence, it is unlikely to be a key source for breeding or dispersal, or for maintaining genetic diversity.

According to the Significant Impact Guidelines (DotE, 2013b), an 'important population' of any Vulnerable species 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:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

Based upon all available data, the species is not known to occur within the Study Area, has limited potential habitat and so the Study Area cannot be said to support key source populations for breeding or dispersal, or for maintaining genetic diversity. If it were to be found within the Study Area, the occurrence would not be near the limit of the species range.

On this basis, the population of Koala, should it be present within the project area, is not considered to be an "*important population*", as defined by National Koala Conservation and Management Strategy. It is concluded that no important population of the species occurs in the Study Area.

Significant Impact Criteria:

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

lead to a long-term decrease in the size of an important population of a species

Not applicable as it is not deemed an important population.

reduce the area of occupancy of an important population

Not applicable as it is not deemed an important population.

fragment an existing important population into two or more populations

Not applicable as it is not deemed an important population.

adversely affect habitat critical to the survival of a species

The low value habitat provided by the Study Area is not considered to be critical for the survival of the Koala. Large areas of similar habitat occur outside the Study Area that will remain, and it is considered likely that this species will persist in these areas. Large areas of suitable vegetation occur outside of the Study Area that may provide habitat for this species In particular, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation. The vegetation within the Callide Timber Reserve comprises remnant vegetation, mostly in the form of eucalypt woodlands and contains some areas of preferred food trees including Blue Gum

disrupt the breeding cycle of an important population

Not applicable as it is not deemed an important population.

modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The Koala is unlikely to decline as a result of low value habitat removed for the project. Large areas of similar habitat occur in the locality that will remain, and this species will remain viable in these areas. As described above, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for the Koala.

result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat

It is considered unlikely that the project will result in an invasive species becoming established in low value habitat for the Koala. Significant numbers of feral animals already occur in the Study Area and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project.

introduce disease that may cause the species to decline, or

It is considered unlikely that the project will introduce a disease that may cause the Koala to decline.

interfere substantially with the recovery of the species.

The project will not interfere with the recovery of the Koala. There is no important population in the area and the low value habitat that will be removed is already fragmented. Large areas of much higher quality habitat also occur in the locality that will remain, and this species will remain viable in these areas.

Conclusion

Based on the above assessment, it is considered that the project will not have a residual significant impact to this species. This species has not been recorded from the Study Area and it is unlikely that large numbers of this species would utilise habitats in the Study Area. Low value habitat for the Koala will be removed, however large areas of higher quality habitat also occur in the locality (i.e. the Callide Timber Reserve). Therefore, no significant impact is predicted to occur as a result of the project.

L.8 Grey-headed Flying-fox

EPBC Act Status: Vulnerable

Occurrence within Study Area: Moderate potential

Important Population Assessment:

The Grey-headed Flying-fox is one of the largest bats in the world and is Australia's only endemic flying-fox. The species occurs along coastal regions from Rockhampton to Melbourne. The species only uses a small portion of this range at any one time, as the species forages selectively where food is available (DotE, 2014,).

Grey-headed Flying-foxes roost in large camps where colonies of several thousand may occur at one time. Camps are generally located near water such as lakes, rivers or the coast. Colonies can occur in highly modified vegetation in urban environments (DotE, 2014,). The species feeds on fruits and nectar in vegetation communities including rainforests, open forests, and closed and open woodlands.

Grey-headed Flying-foxes generally forage for up to 15 km from roosting sites, but can travel up to 50 km from roosting sites depending on available food resources (DotE, 2014,).

Based on the criteria above, habitat for Grey-headed Flying-fox in the Study Area (**Figure 23**) has been defined as follows:

- High Value Habitat: has not been mapped as no areas within the Study Area were considered high value for the species due to clearing and fragmentation of the woodlands of the Study Area, the general lack of high value food resources and the lack of Flying-fox camps.
- Low Value Habitat: theoretically, most of the woodland within the Study Area could provide low value habitat if the species was present.
- Unsuitable Habitat: grasslands have been mapped as unsuitable habitat for the species, due to an absence of foraging resources and roost trees.

Although low value habitat for the Grey-headed Flying-fox is present, no individuals were encountered during the surveys. No breeding occurs in the Study Area as no camps were observed, and if it occurs, this species would only utilise the Study Area periodically for seasonally available resources. Hence, it is unlikely to be a key source for breeding or dispersal, or for maintaining genetic diversity.

According to the Significant Impact Guidelines (DotE, 2013b), an 'important population' of any Vulnerable species 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:

- key source populations either for breeding or dispersal

- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

Based upon all available data, the species is not known to occur within the Study Area, has limited potential habitat and so the Study Area cannot be said to support key source populations for breeding or dispersal, or for maintaining genetic diversity. If it were to be found within the Study Area, the occurrence would not be near the limit of the species range.

It is concluded that no important population of the Grey-headed Flying-fox occurs in the Study Area.

Significant Impact Criteria:

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

lead to a long-term decrease in the size of an important population of a species

Not applicable as it is not deemed an important population.

reduce the area of occupancy of an important population

Not applicable as it is not deemed an important population.

fragment an existing important population into two or more populations

Not applicable as it is not deemed an important population.

adversely affect habitat critical to the survival of a species

The low value habitat provided by the Study Area is not considered to be critical for the survival of the Grey-headed Flying-fox. Large areas of similar habitat occur outside the Study Area that will remain, and it is considered likely that this species will persist in these areas.

Large areas of potentially suitable vegetation occur to the east of the Study Area that may provide habitat for this species. In particular, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for several different fauna species. The vegetation within the Callide Timber Reserve comprises remnant vegetation, mostly in the form of eucalypt woodlands and contains broad areas of potential foraging habitat for the species.

.disrupt the breeding cycle of an important population

Not applicable as it is not deemed an important population.

modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The Grey-headed Flying-fox is unlikely to decline as a result of low value habitat removed for the project. Large areas of similar habitat occur in the locality that will remain, and this species will remain viable in these areas. Furthermore, mined areas will be rehabilitated to contain woodland habitats that will provide suitable habitat for this species in the long term. As described above, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for the Grey-headed Flying-fox.

> *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

It is considered unlikely that the project will not result in an invasive species becoming established in low value habitat for the Grey-headed Flying-fox. Significant numbers of feral animals already occur in the Study Area and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project.

> *introduce disease that may cause the species to decline, or*

It is considered unlikely that the project will introduce a disease that may cause the Grey-headed Flying-fox to decline.

> *interfere substantially with the recovery of the species.*

The project will not interfere with the recovery of the Grey-headed Flying-fox as no breeding habitat will be removed and only a very small area of low value foraging habitat will be removed. However, large areas of similar habitat occur in the locality that will remain, and this species will remain viable in these areas.

Conclusion

Based on the above assessment, it is considered that the project will not have a residual significant impact to this species. This species has not been recorded from the Study Area and it is unlikely that large numbers of this species would utilise habitats in the Study Area. Low value habitat for the Grey-headed Flying-fox will be removed. However, large areas of much higher quality habitat also occur in the locality (i.e. the Callide Timber Reserve). Therefore, no significant impact is predicted to occur as a result of the project.

L.9 Large-eared Pied Bat

EPBC Act Status: Vulnerable

Occurrence within Study Area: Moderate potential

Important Population Assessment:

The Large-eared Pied Bat is a medium sized insectivorous bat that has shiny black fur on the body and a white stripe on the ventral side of the torso. The species distribution is sporadic and records exist intermittently between Ulladulla New South Wales to Rockhampton Queensland. The species is more frequently observed in sandstone escarpments along the Great Dividing Range in New South Wales.

The species uses maternity roosting caves, of which four are known form New South Wales and none are known from Queensland. The species feeds on insects and has been observed flying along creek beds (Churchill, 2009), but little else is known about their foraging behaviours. Although dispersals from maternity roosts have been observed up to 100 km, no data exists for home ranges or daily movement patterns.

Based on the criteria above, habitat for Large-eared Pied Bat in the Study Area (**Figure 24**) has been defined as follows:

- High Value Habitat: has not been mapped as no areas contain caves or disused mine shafts that could contain roosting habitat.
- Low Value Habitat: the more intact woodland within the Study Area has been recognised as potential foraging habitat for this species, including various riparian and sclerophyll woodland in well-timbered areas immediately adjacent to ephemeral drainage lines.
- Unsuitable Habitat: open, highly modified woodland and grasslands have been mapped as unsuitable habitat for this species.

Although low value habitat for Large-eared Pied Bat is present no individuals were encountered during the bat surveys. Little breeding habitat is present in the sandstone areas, and if present, a population of this species within the Study Area is likely to be small (if any). Hence, it is unlikely to be a key source for breeding or dispersal, or for maintaining genetic diversity.

According to the Significant Impact Guidelines (DotE, 2013b), an 'important population' of any Vulnerable species 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:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or

- populations that are near the limit of the species range.

Based upon all available data, the species is not known to occur within the Study Area, has limited potential habitat and so the Study Area cannot be said to support key source populations for breeding or dispersal, or for maintaining genetic diversity. If it were to be found within the Study Area, the occurrence would not be near the limit of the species range.

It is concluded that no important population of the species occurs in the Study Area.

Significant Impact Criteria:

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

lead to a long-term decrease in the size of an important population of a species

Not applicable as it is not deemed an important population.

reduce the area of occupancy of an important population

Not applicable as it is not deemed an important population.

fragment an existing important population into two or more populations

Not applicable as it is not deemed an important population.

adversely affect habitat critical to the survival of a species

The low value habitat provided by the Study Area is not considered to be critical for the survival of the Large-eared Pied Bat. Large areas of similar habitat occur outside the Study Area that will remain, and it is considered likely that this species will persist in these areas.

Large areas of suitable less disturbed forest and woodland occur outside of the Study Area that are likely to provide habitat for this species. In particular, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of forest and woodland that is potentially suitable for the species, for both foraging and roosting. The Callide Timber Reserve contains rocky outcrops and associated crevices and overhangs that could provide roosting habitat for the Large-eared Pied Bat. These rocky areas within the Callide Timber Reserve are surrounded by woodland which could potentially be used by the Large-eared Pied Bat for foraging.

disrupt the breeding cycle of an important population

Not applicable as it is not deemed an important population.

modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The Large-eared Pied Bat is unlikely to decline as a result of low value habitat removed for the project. Large areas of similar habitat occur in the locality that will remain, and this

species will remain viable in these areas. Furthermore, mined areas will be rehabilitated to contain woodland habitats that will provide suitable habitat for this species in the long term. As described above, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for the Large-eared Pied Bat.

> *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

It is considered unlikely that the project will result in an invasive species becoming established in low value habitat for the Large-eared Pied Bat. Significant numbers of feral animals already occur in the Study Area and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project.

> *introduce disease that may cause the species to decline, or*

It is considered unlikely that the project will introduce a disease that may cause the Large-eared Pied Bat to decline.

> *interfere substantially with the recovery of the species.*

The project will interfere to some degree with the recovery of the Large-eared Pied Bat through the removal of low value foraging habitat and some low value roosting habitat. However, large areas of similar habitat occur in the locality that will remain, and this species will remain viable in these areas.

Conclusion

Based on the above assessment, it is considered that the project will not have a residual significant impact to this species. This species has not been recorded from the Study Area and it is unlikely that large numbers of this species would utilise habitats in the Study Area. Low value habitat for the Large-eared Pied Bat will be removed. However, large areas of much higher quality habitat also occur in the locality (i.e. the Callide Timber Reserve). Therefore, no significant impact is predicted to occur as a result of the project.

L.10 South-eastern Long-eared Bat

EPBC Act Status: Vulnerable

Occurrence within Study Area: Moderate potential

Important Population Assessment:

Little is known about the biology or social structure of South-eastern Long-eared Bat. It is considered, however, that they roost solitarily under exfoliated bark and in the crevices on trees. During maternity, females are believed to form roosting colonies in larger tree cavities. They probably forage within 1 km of their roosting site (Van Dyck and Strahan, 2008).

South-eastern Long-eared Bat is believed to forage for insects over a broad range of vegetation communities, including eucalypt and acacia woodlands (Van Dyck and Strahan, 2008). Suitable foraging habitat for this species occurs across the Study Area in areas of *Eucalyptus* woodland.

Based on the criteria above, habitat for South-eastern Long-eared Bat in the Study Area (**Figure 24**) has been defined as follows:

- High Value Habitat: Based on the lack of records for the species and the fragmentation of habitats in the area, no high value habitat has been mapped.
- Low Value Habitat: the more intact woodland within the Study Area has been recognised as potential foraging habitat for this species, including various riparian and sclerophyll woodland in well-timbered areas immediately adjacent to ephemeral drainage lines.
- Unsuitable Habitat: grasslands, and highly disturbed non-remnant wooded vegetation areas have been mapped as unsuitable for the species.

Although low value habitat for South-eastern Long-eared Bat is present no individuals were encountered during the bat surveys. The Study Area contains a very low density of hollow bearing trees and, as such, competition for these hollows would be high. On this basis, if present a population of this species within the Study Area is likely to be small (if any). Hence, it is unlikely to be a key source for breeding or dispersal, or for maintaining genetic diversity.

According to the Significant Impact Guidelines (DotE, 2013b), an 'important population' of any Vulnerable species 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:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

Based upon all available data, the species is not known to occur within the Study Area, has limited potential habitat and so the Study Area cannot be said to support key source populations for breeding or dispersal, or for maintaining genetic diversity. If it were to be found within the Study Area, the occurrence would not be near the limit of the species range.

It is concluded that no important population of the species occurs in the Study Area.

Significant Impact Criteria:

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

lead to a long-term decrease in the size of an important population of a species

Not applicable as it is not deemed an important population.

reduce the area of occupancy of an important population

Not applicable as it is not deemed an important population.

fragment an existing important population into two or more populations

Not applicable as it is not deemed an important population.

adversely affect habitat critical to the survival of a species

Although possible night time works may impact foraging behaviour this is not predicted to be any more than current night time work noise from the Boundary Hill Mine and the low value habitat provided by the Study Area is not considered to be critical for the survival of the South-eastern Long-eared Bat. Large areas of similar habitat occur outside the Study Area that will remain, and it is considered likely that this species will persist in these areas.

Large areas of potentially suitable vegetation occur to the east of the Study Area that may provide habitat for this species. The Callide Timber Reserve to the east of the Study Area provides a large continuous patch of forest and woodland vegetation potentially suitable for this species. It includes open woodland vegetation, with some patches on dense woodland, which is suitable for the South-eastern Long-eared Bat.

disrupt the breeding cycle of an important population

Not applicable as it is not deemed an important population.

modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The South-eastern Long-eared Bat is unlikely to decline as a result of low value habitat removed for the project. Large areas of similar habitat occur in the locality that will remain, and this species will remain viable in these areas. Furthermore, mined areas will be rehabilitated to contain woodland habitats that will provide suitable habitat for this species in

the long term. As described above, the Callide Timber Reserve to the east of the Study Area provides a large continuous patch of woodland vegetation suitable for the South-eastern Long-eared Bat.

result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat

It is considered unlikely that the project will result in an invasive species becoming established in low value habitat for the South-eastern Long-eared Bat. Significant numbers of feral animals already occur in the Study Area and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project.

introduce disease that may cause the species to decline, or

It is considered unlikely that the project will introduce a disease that may cause the South-eastern Long-eared Bat to decline.

interfere substantially with the recovery of the species.

The project will not significantly interfere with the recovery of the South-eastern Long-eared Bat even though the project will require the removal of low value foraging habitat. However, large areas of similar habitat occur in the locality that will remain, and this species will remain viable in these areas.

Conclusion

Based on the above assessment, it is considered that the project will not have a residual significant impact to this species. This species has not been recorded from the Study Area and it is unlikely that large numbers of this species would utilise habitats in the Study Area. Low value habitat for the Large-eared Pied Bat will be removed. However, large areas of much higher quality habitat also occur in the locality (i.e. the Callide Timber Reserve). Therefore, no significant impact is predicted to occur as a result of the project.

L.11 Migratory Species

This assessment of the significance of impacts is for the following migratory species:

- **Cattle Egret (high likelihood of occurrence within the Study Area);**

The Cattle Egret occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands (DotE, 2014c). It has occasionally been seen in arid and semi-arid regions however this is extremely rare. High numbers have been observed in moist, low-lying poorly drained pastures with an abundance of high grass; it avoids low grass pastures. It has been recorded on earthen dam walls and ploughed fields. It is commonly associated with the habitats of farm animals, particularly cattle (DotE, 2014c).

- **Eastern Great Egret (high likelihood of occurrence within the Study Area);**

The Eastern Great Egret has been reported in a wide range of wetland habitats including for inland and coastal habitats, freshwater and saline habitats, permanent and ephemeral habitats, open and vegetated habitats, large and small habitats and natural and artificial habitats. These include swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pastures or agricultural lands; reservoirs; sewage treatment ponds; drainage channels; salt pans and salt lakes; salt marshes (DotE, 2014d). The species usually frequents shallow waters.

- **Fork-tailed Swift (high likelihood of occurrence within the Study Area – fly-over);**

The Fork-tailed Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. They also occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. The sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines (DotE, 2014b).

- **Rainbow Bee-eater (present);**

The Rainbow Bee-eater occurs over most of mainland Australia and is considered to be seasonally common and locally abundant throughout much of its range. It forages in a wide variety of habitats including in open forests and woodlands, shrublands, and in various cleared or semi-cleared habitats, including farmland and areas of human habitation (DotE, 2014z). This species breeds in tunnels, often constructed in riverbanks. Two Rainbow Bee-eaters were recorded from woodland outside of the Study Area along the boundary of the north eastern corner of the Study Area (**Figure 14**). Due to its wide habitat tolerances, all of the woodland areas in the Study Area are likely to provide potential foraging habitat for this species, while potential breeding habitat is present along the ephemeral drainage lines.

- **Rufous Fantail (present).**

The Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts usually with a dense shrubby understorey often including ferns (DotE, 2014…). They occasionally occur in secondary regrowth, following logging or disturbance in forests or rainforests. When on passage, they are sometimes recorded in drier sclerophyll forests and woodlands, including Spotted Gum (*Eucalyptus maculata*), Yellow Box (*E. melliodora*), ironbarks or stringybarks, often with a shrubby or heath understorey. They are also recorded from parks and gardens when on passage. In north and north-east Australia, they often occur in tropical rainforest and monsoon rainforests, including semi-evergreen mesophyll vine forests, semi-deciduous vine thickets or thickets of Paperbarks (*Melaleuca* spp.) One record of Rufous Fantail was made near the large farm dams in the north of the Study Area (**Figure 14**).

- **Satin Flycatcher (high likelihood of occurrence within the Study Area);**

The Satin Flycatcher inhabits and breeds in vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests (DotE, 2014|). This species was not recorded from the Study Area, however woodland habitat occurs that is likely to provide habitat for this species and it has high likelihood of occurrence within the Study Area. It is unlikely to breed in the Study Area, however it may utilise woodland habitats while on migration.

- **White-throated Needletail (high likelihood of occurrence within the Study Area – fly-over)**

The White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground (DotE, 2014v). Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps (DotE, 2014v).

According to the Significant Impact Guidelines (DotE, 2013b), important habitat of any listed migratory species is defined as follows:

An area of 'important habitat' for a migratory species is:

- *habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species, and/or*

- *habitat that is of critical importance to the species at particular life-cycle stages, and/or*

- *habitat utilised by a migratory species which is at the limit of the species range, and/or*

- *habitat within an area where the species is declining.*

Of these species, only the Rufous Fantail and the Rainbow Bee-eater are known to occur in the Study Area or immediate surrounds (**Figure 14**). Small numbers (potentially several to a few pairs) of both of those bird species occur make occasional use of the woodlands of the Study Area. They do not occur in the Study Area in significant (ecologically important) concentrations and the Study Area is not of critical importance to the species, though individuals may breed there. Neither species is at the limit of its known range.

Five other bird species (Cattle Egret, Eastern Great Egret, Fork-tailed Swift, Satin Flycatcher and White-throated Needletail) have a high likelihood of occurrence within the Study Area based upon habitats and records for the species within the locality. However, potential habitat in the Study Area is replicated and extensive within both the locality and region. For this reason, they are highly unlikely occur in the Study Area in significant (ecologically important) concentrations and the Study Area is not critical to the importance of the species. None of these species are are the limit of their ranges.

Based upon all available data, the aforementioned migratory species have limited actual or potential habitat and so the Study Area cannot be said to support key source populations for breeding or dispersal, or for maintaining genetic diversity. The habitat that occurs for these species is not "important habitat".

Significant Impact Criteria

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

Habitat for the migratory species that are known or considered likely to occur in the Study Area is not important habitat.

The low value habitat available for wetland species is relatively small and seasonal, and the majority is not present in the dry season. Woodland habitat for the Rainbow Bee-eater, Rufous Fantail and Satin Flycatcher will be retained within the Study Area. The Fork-tailed Swift and White-throated Needletail are only considered to forage aerially above the Study Area.

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

As outlined above, the Study Area is not considered to comprise important habitat for migratory species. That notwithstanding, the project is unlikely to result in an invasive

species becoming established that would impact on any of the migratory species known or considered likely to occur.

> *Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.*

There is no evidence to suggest that the Study Area supports an ecologically significant proportion of the population of any of these migratory species. Accordingly, the project is considered unlikely to disrupt an ecologically significant proportion of the population of any of these migratory species.

Conclusion

Based on the above assessment, it is considered that the project will not have a residual significant impact upon any listed migratory species. It is unlikely that large numbers of these migratory species would utilise habitats in the Study Area. Large areas of much higher quality habitat also occur in the locality (i.e. the Callide Timber Reserve). A minor area of low value habitat for these migratory will be removed and no significant impact is predicted to occur as a result of the project.

APPENDIX C

Boundary Hill South Project Threated Species Profile Report

BOUNDARY HILL SOUTH PROJECT

Threatened Species Profile Report

AngloAmerican

BOUNDARY HILL SOUTH PROJECT

THREATENED SPECIES PROFILE REPORT

Prepared by:

HANSEN BAILEY
Level 15, 215 Adelaide Street
Brisbane QLD 4000

6 October 2015

For:

ANGLO COAL (CALLIDE MANAGEMENT) PTY LTD
201 Charlotte Street
Brisbane QLD 4001

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 DOCUMENT STRUCTURE 2

2 BACKGROUND 3
2.1 PROJECT DESCRIPTION 3
2.1.1 Existing Operations 3
2.1.2 The Project 3
2.2 DESCRIPTION OF SURROUNDING AREA 4
2.3 DESCRIPTION OF THE PROJECT SITE 5

3 ASSESSMENT METHODOLOGY 6
3.1 SURVEY METHODOLOGIES 6
3.1.1 Study Area 6
3.1.2 Desktop Assessment 6
3.1.3 Field Survey Overview 7
3.1.4 Reconnaissance Northern Quoll Surveys – 2011 8
3.1.5 Flora Surveys – 2012 9
3.1.6 Fauna Surveys – 2012 11
3.1.7 Koala Surveys – 2013 15
3.1.8 Terrestrial Ecology Surveys – August 2014 17
3.1.9 Summary of Survey Effort 22
3.1.10 Terms of Reference Requirements 23
3.2 LIKELIHOOD OF OCCURRENCE ASSESSMENT 24
3.3 HABITAT ASSESSMENT 24
3.3.1 Habitat Modelling 25
3.3.2 Commonwealth Defined Habitat 26
3.4 IMPACT ASSESSMENT 26

4 MITIGATION 27
4.1 MINIMISING VEGETATION AND HABITAT LOSS 27
4.1.1 Pre-clearing Surveys 28
4.2 VEGETATION CONSERVATION AND MANAGEMENT 28
4.3 MINE REHABILITATION 29
4.4 MANAGEMENT AND MONITORING PLANS 29
4.4.1 Existing Management and Monitoring Plans 29
4.4.2 Additional Plan for the Project 30

5 COLLARED DELMA 32
5.1 SURVEY METHODOLOGY 32
5.1.1 Commonwealth Survey Requirements 32

5.1.2 Queensland Survey Requirements 38
5.2 DESKTOP AND FIELD SURVEY RESULTS 40
5.3 HABITAT ASSESSMENT 40
5.3.1 Overview 40
5.3.2 Habitat Modelling 42
5.3.3 Commonwealth Defined Habitat 43
5.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT 49
5.5 SIGNIFICANT IMPACT ASSESSMENT 50
5.5.1 Important Population Assessment 50
5.5.2 Significant Impact Criteria 50

6 YAKKA SKINK 53
6.1 SURVEY METHODOLOGY 53
6.1.1 Commonwealth Survey Requirements 53
6.1.2 Queensland Survey Requirements 61
6.2 DESKTOP AND FIELD SURVEY RESULTS 64
6.3 HABITAT ASSESSMENT 64
6.3.1 Overview 64
6.3.2 Habitat Modelling 66
6.3.3 Commonwealth Defined Habitat 68
6.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT 74
6.5 SIGNIFICANT IMPACT ASSESSMENT 74
6.5.1 Important Population Assessment 75
6.5.2 Significant Impact Criteria 75

7 SQUATTER PIGEON (SOUTHERN SUBSPECIES) 78
7.1 SURVEY METHODOLOGY 78
7.1.1 Commonwealth Survey Requirements 78
7.1.2 Queensland Survey Requirements 83
7.2 DESKTOP AND FIELD SURVEY RESULTS 83
7.3 HABITAT ASSESSMENT 84
7.3.1 Overview 84
7.3.2 Habitat Modelling 85
7.3.3 Commonwealth Defined Habitat 88
7.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT 90
7.5 SIGNIFICANT IMPACT ASSESSMENT 90
7.5.1 Important Population Assessment 90
7.5.2 Significant Impact Criteria 92

8 RED GOSHAWK 95
8.1 SURVEY METHODOLOGY 95
8.1.1 Commonwealth Survey Requirements 95
8.1.2 Queensland Survey Requirements 98
8.2 DESKTOP AND FIELD SURVEY RESULTS 98

8.3 HABITAT ASSESSMENT 99
8.3.1 Overview 99
8.3.2 Habitat Modelling 100
8.3.3 Commonwealth Defined Habitat 102
8.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT 105
8.5 SIGNIFICANT IMPACT ASSESSMENT 105
8.5.1 Important Population Assessment 105
8.5.2 Significant Impact Criteria 106

9 AUSTRALIAN PAINTED SNIPE 108
9.1 SURVEY METHODOLOGY 108
9.1.1 Commonwealth Survey Requirements 108
9.1.2 Queensland Survey Requirements 110
9.2 DESKTOP AND FIELD SURVEY RESULTS 110
9.3 HABITAT ASSESSMENT 111
9.3.1 Overview 111
9.3.2 Habitat Modelling 112
9.3.3 Commonwealth Defined Habitat 113
9.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT 114
9.5 SIGNIFICANT IMPACT ASSESSMENT 114
9.5.1 Population Assessment 115
9.5.2 Significant Impact Criteria 115

10 NORTHERN QUOLL 118
10.1 SURVEY METHODOLOGY 118
10.1.1 Commonwealth Survey Requirements 118
10.1.2 Queensland Survey Requirements 128
10.2 DESKTOP AND FIELD SURVEY RESULTS 128
10.3 HABITAT ASSESSMENT 129
10.3.1 Overview 129
10.3.2 Habitat Modelling 130
10.3.3 Commonwealth Defined Habitat 133
10.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT 135
10.5 SIGNIFICANT IMPACT ASSESSMENT 136
10.5.1 Population Assessment 136
10.5.2 Significant Impact Criteria 138

11 KOALA 141
11.1 SURVEY METHODOLOGY 141
11.1.1 Commonwealth Survey Requirements 141
11.1.2 Queensland Survey Requirements 152
11.2 DESKTOP AND FIELD SURVEY RESULTS 153
11.3 HABITAT ASSESSMENT 154
11.3.1 Overview 154

11.3.2 Habitat Modelling 155
11.3.3 Commonwealth Defined Habitat 157
11.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT 161
11.5 SIGNIFICANT IMPACT ASSESSMENT 161
11.5.1 Important Population Assessment 161
11.5.2 Significant Impact Criteria 162

12 GREY-HEADED FLYING-FOX 165
12.1 SURVEY METHODOLOGY 165
12.1.1 Commonwealth Survey Requirements 165
12.1.2 Queensland Survey Requirements 168
12.2 DESKTOP AND FIELD SURVEY RESULTS 168
12.3 HABITAT ASSESSMENT 168
12.3.1 Overview 168
12.3.2 Habitat Modelling 170
12.3.3 Commonwealth Defined Habitat 172
12.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT 175
12.5 SIGNIFICANT IMPACT ASSESSMENT 175
12.5.1 Important Population Assessment 176
12.5.2 Significant Impact Criteria 176

13 LARGE-EARED PIED BAT 179
13.1 SURVEY METHODOLOGY 179
13.1.1 Commonwealth Survey Requirements 179
13.1.2 Queensland Survey Requirements 182
13.2 DESKTOP AND FIELD SURVEY RESULTS 183
13.3 HABITAT ASSESSMENT 183
13.3.1 Overview 183
13.3.2 Habitat Modelling 185
13.3.3 Commonwealth Defined Habitat 187
13.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT 187
13.5 SIGNIFICANT IMPACT ASSESSMENT 188
13.5.1 Important Population Assessment 188
13.5.2 Significant Impact Criteria 189

14 SOUTH-EASTERN LONG-EARED BAT 191
14.1 SURVEY METHODOLOGY 191
14.1.1 Commonwealth Survey Requirements 191
14.1.2 Queensland Survey Requirements 193
14.2 DESKTOP AND FIELD SURVEY RESULTS 194
14.3 HABITAT ASSESSMENT 194
14.3.1 Overview 194
14.3.2 Habitat Modelling 196
14.3.3 Commonwealth Defined Habitat 197

14.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT 199
14.5 SIGNIFICANT IMPACT ASSESSMENT 200
14.5.1 Important Population Assessment 200
14.5.2 Significant Impact Criteria 201

15 REFERENCES 203

16 GLOSSARY 205

LIST OF TABLES

Table 1 2011 Reconnaissance Northern Quoll Survey Effort
Table 2 2012 Flora Survey Effort
Table 3 2012 Fauna Survey Effort
Table 4 2013 Targeted Koala Survey Effort
Table 5 2014 Terrestrial Ecology Survey Effort
Table 6 Total Northern Quoll Survey Effort
Table 7 Total Survey Effort
Table 8 Criteria to Assess Potential for Species to Occur
Table 9 Collared Delma - General Habitat Requirements
Table 10 Habitat Modelling for the Collared Delma
Table 11 Yakka Skink – General Habitat Requirements
Table 12 Habitat Modelling for the Yakka Skink
Table 13 Squatter Pigeon (southern subspecies) – General Habitat Requirements
Table 14 Habitat Modelling for the Squatter Pigeon (southern subspecies)
Table 15 Red Goshawk – General Habitat Requirements
Table 16 Habitat Modelling for the Red Goshawk
Table 17 Australian Painted Snipe – General Habitat Requirements
Table 18 Habitat Modelling for the Australian Painted Snipe
Table 19 Northern Quoll – General Habitat Requirements
Table 20 Habitat Modelling for the Northern Quoll
Table 21 Koala – General Habitat Requirements
Table 22 Habitat Modelling for the Koala
Table 23 Primary and Secondary Food Trees of the Koala within the project site
Table 24 Koala Habitat Assessment Tool
Table 25 Grey-headed Flying-fox – General Habitat Requirements
Table 26 Habitat Modelling for the Grey-headed Flying-fox
Table 27 Large-eared Pied Bat – General Habitat Requirements
Table 28 Habitat Modelling for the Large-eared Pied Bat
Table 29 South-eastern Long-eared Bat – General Habitat Requirements
Table 30 Habitat Modelling for the South-eastern Long-eared Bat

LIST OF FIGURES

Figure 1	Location Plan
Figure 2	Regional Project Setting
Figure 3	Habitat Types
Figure 4	Surrounding Landscape
Figure 5	Flora Survey Sites
Figure 6	Fauna Survey Sites
Figure 7	Groundtruthed Vegetation
Figure 8	QLD Government's V9 RE Mapping within the Project Site
Figure 9	QLD Government's V9 RE Mapping
Figure 10	Collared Delma Potential Habitat
Figure 11	Yakka Skink Potential Habitat
Figure 12	Threatened Fauna Species Records
Figure 13	Squatter Pigeon Habitat
Figure 14	Red Goshawk Potential Habitat
Figure 15	Australian Painted Snipe Potential Habitat
Figure 16	Northern Quoll Potential Habitat
Figure 17	Koala Potential Habitat
Figure 18	Grey-headed Flying-fox Potential Habitat
Figure 19	Large-eared Pied Bat Potential Habitat
Figure 20	South-eastern Long-eared Bat Potential Habitat

BOUNDARY HILL SOUTH PROJECT
THREATENED SPECIES PROFILE REPORT

for
Anglo Coal (Callide Management) Pty Ltd

1 INTRODUCTION

This document has been prepared by Hansen Bailey, on behalf of Anglo Coal (Callide) Pty Ltd and Anglo Coal (Callide) No. 2 Pty Ltd, in response to a second round of submissions made by the Commonwealth Department of the Environment (DotE) and the Queensland Department of the Environment and Heritage Protection (EHP) on the Boundary Hill South Project (the project).

This report provides information on threatened species that are listed under both the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Queensland's *Nature Conservation Act 1992* (NC Act) that were recorded or were assessed as having a high or moderate likelihood of occurring within the project site. The report specifically addresses concerns raised by DotE in relation to the timing of surveys for threatened fauna species and the categorisation of high quality fauna habitat. It addresses these issues by reconciling survey timeframes with published guidelines for each species and reconciling assigned fauna habitat quality with published guidance on habitat quality including '*habitat critical to the survival of a species*'. It compiles species specific information from Appendix P – *Terrestrial Ecology* of the Environmental Impact Statement (EIS) Addendum by Cumberland Ecology and presents new information in response to issues raised by DotE and EHP in the second round of submissions for the following species:

- Collared Delma (*Delma torquata*);
- Yakka Skink (*Egernia rugosa*);
- Squatter Pigeon (southern subspecies) (*Geophaps scripta scripta*);
- Red Goshawk (*Erythrotriorchis radiatus*);
- Australian Painted Snipe (*Rostratula australis*);
- Northern Quoll (*Dasyurus hallucatus*);
- Koala (*Phascolarctos cinereus*);
- Grey-headed Flying-fox (*Pteropus poliocephalus*);
- Large-eared Pied Bat (*Chalinolobus dwyeri*); and
- South-eastern Long-eared Bat (*Nyctophilus corbeni*).

This document should be read in conjunction with the Round 2 Response to Submissions (Round 2 RTS) and Round 2 EIS Addendum documents.

1.1 DOCUMENT STRUCTURE

This Threatened Species Profile Report is structured as follows:

- Section 1 – Introduction (this section): provides an introduction to the document and describes the structure of the document;
- Section 2 – Background: provides an overview of the project and describes the surrounding area and the project site;
- Section 3 – Assessment Methodology: provides an overview of the terrestrial ecology desktop and field survey methodologies, the likelihood of occurrence assessment methodology, the habitat assessments methodology and the impact assessment methodology;
- Section 4 – Mitigation: provides the detailed mitigation measures for the project; and
- Sections 5 to 14: provide the detailed assessments for the Matters of National Environmental Significance (MNES) that were recorded or have a high or moderate likelihood of occurring within the project site. For each species, the assessment includes:
    - A detailed description of the survey methodology and how it aligns with the Commonwealth and State survey requirements;
    - The results of the desktop and field surveys;
    - The detailed habitat assessment including habitat modelling and an assessment against the Commonwealth habitat terminology;
    - The detailed likelihood of occurrence assessment; and
    - The detailed impact assessment.

2 BACKGROUND

2.1 PROJECT DESCRIPTION

2.1.1 Existing Operations

The Boundary Hill Mining Area is an operating open cut coal mining area, which is part of the larger Callide Mine. Boundary Hill Mining Area is located approximately 15 km from the township of Biloela and 85 km south-west of Gladstone in Central Queensland (Figure 1 and Figure 2). The mine generates thermal coal for the local and export markets.

Open cut mining at the Boundary Hill mining area is conducted using a dragline, and truck and shovel pre-strip. Run-of-Mine (ROM) coal is crushed at on-site coal handling facilities. Product coal does not require washing prior to sale, therefore rejects/tailings are not produced by the mine. Product coal is transported by conveyor to the Train Load Out Facility for train loading. Product coal is transported by rail to Gladstone to local customers and the RG Tanna Coal Terminal for export. The Boundary Hill mining area operations are expected to reduce from 2015 until economic reserves are depleted in approximately 2016.

2.1.2 The Project

The Boundary Hill South Project involves the development of a new open cut pit to the south of the existing Boundary Hill mining area. The project site is within Mining Lease Application (MLA) 80186, which adjoins the southern and eastern boundaries of the Boundary Hill mining area mining leases (Figure 2).

The project will provide access to an estimated 52 million tonnes (Mt) of additional coal resources and will have the same ROM production rate as the Boundary Hill mining area (up to 2.9 Million tonnes per annum (Mtpa)). The project will essentially extend the life of the Boundary Hill mining area by approximately 20 years.

Coal will be mined within the project site using the same open cut mining methods employed at the Boundary Hill mining area, utilising the current Boundary Hill mining area workforce and equipment fleet. ROM coal extracted from the project site will be hauled by trucks via new and existing haul roads to the existing Boundary Hill mining area coal handling facilities for processing and train loading. As Boundary Hill South will operate at the same production rate as the Boundary Hill mining area, no upgrades to the Boundary Hill mining area coal handling facilities are necessary as part of the project.

New infrastructure for the project will include:

- ROM coal stockpile;
- Haul roads and access roads;
- Drainage infrastructure, sediment control structures and water transfer pipelines; and
- Portable crib and 'go-line' facilities.

2.2 DESCRIPTION OF SURROUNDING AREA

The project site is located in the Banana Shire Council Local Government Area. Land use in this region is predominantly grazing however, dry land cropping, mining, a power station and native forests are also significant land uses. Rural activities (including grazing and cropping) extend approximately 20 km to the north-west, west, south-west, and south of the project site (Figure 3 and Figure 4).

The remainder of Callide Mine (three open cut pits namely The Hut, Trap Gully and Dunn Creek) are approximately 12 km to the south-east of the project site boundary. The Callide Power Station, which is fed by coal from Callide Mine, is approximately 15 km in a direct line to the south-east of the project site boundary (Figure 2).

Immediately to the east of the project site is the Callide Timber Reserve, which contains a ridgeline running north to south and which rises more than 300 m above the project site. The Callide Timber Reserve is part of the larger Callide Range. The Callide Timber Reserve is separated from the project site by a major power line easement (approximately 120 m wide) that adjoins the eastern boundary of the project site (Figure 4). This corridor is regularly cleared of woody vegetation by the easement holder to ensure continual access to the power line and associated infrastructure. Vegetation surveys have shown a high density of weeds within the power line easement.

The Callide Timber Reserve is densely vegetated and forms a large patch of continuous vegetation nearly 20 km in length and varying from approximately 4 km to 7 km in width. The vegetation within the reserve generally comprises mature woodlands dominated by *Eucalyptus* species and *Corymbia* species. The Callide Timber Reserve contains caves, rocky outcrops and boulders. The Callide Mine open cut pit, The Hut, is wholly within the Callide Timber Reserve (Figure 4). The other open cut pits, Trap Gully and Dunn Creek, overlap the south-western edge of the Callide Timber Reserve (Figure 4). Haul roads between the various pits at Callide Mine also bisect the Callide Timber Reserve as well as the Dawson Highway and easements. The Callide Timber Reserve is also subject to selective clearing activities for timber.

2.3 DESCRIPTION OF THE PROJECT SITE

The project site is approximately 620 ha and is located on grazing lands approximately 5 km from the top of the ridgeline in the Callide Timber Reserve. The project site is separated from the Callide Timber Reserve by a cleared power line easement up to 120 m wide. The dominant land use within the project site is currently grazing, although it has been subject to cropping activities in the past. The project site has been grazed or partially cropped for over a 110 year history.

The project site consists of paddocks that are currently used for cattle grazing (Figure 3). Several introduced flora and fauna species, including three Declared Weed species and five Class 2 Declared Animals, listed under the Queensland *Land Protection (Pest and Stock Route Management) Act 2002* (LP Act), have been recorded within the project site. Feral animals recorded in the project site include dogs, cats, foxes, pigs, rabbits, house mice and cane toads. The remaining pockets of vegetation in the north and west of the project site are regenerating eucalypt woodland.

Within the regenerative woodland areas in the north and west of the project site, there are ephemeral drainage lines and stormwater washouts which run from east to west and provide a network of channels through the vegetated areas. Two farm dams occur along a northern drainage line and contain water. The dams are sparsely fringed with eucalypt woodland. There is also a small farm dam along the drainage line in the south-west of the project site that occurs in remnant Ironbark woodland. This dam only contains water during the wet season and dries out during the dry season. There is also a seasonal wetland in the centre of the project site that contains water in the wet season, but it completely dries out in the dry season (Figure 3).

The project site is generally characterised by a hot to warm subhumid climate. Rainfall occurs predominantly during summer and the averaged median rainfall is 489 mm per year based on approximately 115 years of meteorological data.

3 ASSESSMENT METHODOLOGY

3.1 SURVEY METHODOLOGIES

This section describes the study area for the surveys (Section 3.1.1), outlines the desktop assessment undertaken prior to the field surveys (Section 3.1.2), describes the field surveys that were undertaken for the project (Sections 3.1.3 to 3.1.9) and compares the survey effort to the requirements of the Terms of Reference (TOR) for the project (Section 3.1.10). Additionally, the detailed comparison of each species survey effort with the requirements of the Commonwealth and State survey guidelines are discussed in detail in Sections 5 to 14.

3.1.1 Study Area

The study area for the project is defined as MLA 80186. A number of the field surveys were conducted both within and beyond the project site approximately 2 km to the east, in the Callide Timber Reserve. Field work outside the MLA boundary was conducted to align with an early version of the project site boundary, which has since been modified and reduced to minimise any potential project impacts.

3.1.2 Desktop Assessment

Prior to and after the fieldwork, database searches were conducted, and government mapping was consulted. Database searches and mapping review included the following:

- EPBC Act Protected Matters Search Tool, accessed March, September and October 2012, and September 2014 covering a 25 to 100 km radius from the centre of the study area.
- Queensland Wildlife Online database, accessed March, September and October 2012, and September 2014 covering a 25 km radius from the centre of the study area.
- Queensland Herbarium HERBRECS specimen database, accessed in 2012 and September 2014 covering a 100 km radius from the centre of the study area.
- Queensland Museum species database, accessed August 2012 and September 2014 covering a 100 km radius from the centre of the study area.
- Australian Museum species database, accessed 11 June 2015 covering all of Queensland.
- Queensland Herbarium *Vegetation Management Act 1999* (VM Act) Regional Ecosystem (RE) and Remnant Map (Versions 6.1, 8.0 and 9.0).
- Queensland Herbarium Biodiversity status of pre-clearing and remnant REs (Version 9.0).

- Queensland Government map datasets including:
    - Map of referrable wetlands;
    - Vegetation management wetlands map;
    - Vegetation management watercourse map;
    - Biodiversity Planning Assessment – Brigalow Belt Bioregion;
    - Category A and B environmentally sensitive areas as defined under the Environmental Protection Regulation 2008 (EP Regulation); and
    - Essential habitat map.

The information collected during the database analysis guided the development of an appropriate field assessment program that targeted species and communities of conservation significance that were likely to occur within the study area. The databases were also consulted after the surveys to determine the distance of the closest threatened species records to the project site. The most recent aerial photograph available at the time (flown October 2013) was utilised for the assessment. This was used to identify features for ground-truthing during the field survey, to identify appropriate survey locations, and for determining and characterising potential terrestrial flora and fauna habitats. Non-public ecology documents that were developed for the proponent were also reviewed.

The search area radius from the study area for many of the database investigations was 100 km in accordance with the TOR for the project. Such a wide search area stretches to the coastal areas and includes habitats and species that are not found in the study area. For this reason, many of the threatened species records that were exclusively found at distances greater than 25 km from the study area were not considered likely to occur within the project site.

3.1.3 Field Survey Overview

Seven rounds of flora and fauna field surveys conducted by AECOM and Cumberland Ecology have been conducted within the project site, including:

- Reconnaissance Northern Quoll surveys – 6 to 9 December 2011;
- Flora surveys – 26 to 29 March 2012 and 3 to 6 September 2012;
- Fauna surveys – 17 to 21 April 2012 and 6 to 10 September 2012;
- Targeted Koala surveys – 2 to 6 September 2013; and
- Terrestrial ecology surveys (including targeted Northern Quoll surveys) – 7 to 16 August 2014.

The methodologies for the flora and fauna surveys are described in detail in Section 3.1.4 to Section 3.1.8. A summary of the total survey effort is provided in Section 3.1.9. The flora and fauna survey sites are shown in Figure 5 and Figure 6, respectively.

3.1.4 Reconnaissance Northern Quoll Surveys – 2011

A reconnaissance survey for the Northern Quoll was undertaken by AECOM from 6 to 9 December 2011 using passive infrared cameras, hair tubes and searches for scats, dens and other signs of Northern Quolls, as recommended in the Commonwealth's 2011 *Survey Guidelines for Australia's Threatened Mammals* (Commonwealth's Threatened Mammals Survey Guidelines).

The average daily maximum and minimum temperatures recorded at the Bureau of Meteorology (BoM) Thangool Airport Weather Station (BoM Station Number 039089) during the survey were 38.6°C and 17.3°C, respectively. No rain was recorded the month preceding the survey however, 27.4 mm of rain was recorded at the BoM Thangool Airport Weather Station during the surveys.

The reconnaissance survey for the Northern Quoll was undertaken within the project site and extended into the Callide Timber Reserve (Figure 6).

Table 1 summarises the total survey effort undertaken during the reconnaissance survey for the Northern Quoll.

Table 1
2011 Reconnaissance Northern Quoll Survey Effort

Method	Survey Method	Total Survey Effort
Infra-red cameras	One camera at each of two sites for four nights.	Total eight trap days and eight trap nights.
Hair tubes	20 hair tubes for four days and four nights.	Total 80 trap days and 80 trap nights.
Habitat surveys	2 two people, for a total of 20 person hours systematically grid searching 100 m transects.	Total 20 person hours.

The survey methods undertaken during the surveys are discussed in detail below.

Infra-red Cameras

Automatic Scout Guard 550 fauna cameras with passive infrared motion sensors were established in suitable Northern Quoll habitat areas to detect the presence of the Northern Quoll (Figure 6). Cameras were set to take three consecutive photos when triggered by movement and wait for 10 seconds before taking another set of photos. The cameras were strapped to trees approximately 1 m above the ground and aimed at baits on the ground. Bait consisted of chicken frames or chicken legs. The cameras emitted no lights or sound and therefore were unlikely to influence animal behaviour. Infrared illumination (invisible to most mammals) was used for night-time photography to reduce disturbance of animals. One camera was placed at each of the two sites for four days and recorded 24 hours a day. The total camera survey effort was eight camera trap days and eight camera trap nights.

Hair Tubes

Hair tubes were established outside of the project site to the north-east, in the Callide Timber Reserve, where the Northern Quoll was most likely to be recorded due to the potential for high habitat suitability (i.e. caves, rocky outcrops, boulders and vegetation) (Figure 6). Twenty hair tubes were placed approximately 100 m apart and baited with oats, sardines and peanut butter. The bait was checked every second night and replaced if needed. Tubes were secured to the ground with pegs to avoid animals removing them. The hair tubes remained in the field for four nights between 6 and 9 December 2011. The total hair tube survey effort was 80 hair tube days and nights. Hair samples were collected and sent to a hair analysis expert, Marama Hopkins (Biolink) for identification (Appendix B of Appendix P4 in the original EIS).

Habitat Surveys

Searches for Northern Quoll signs (scats, dens, latrines, bones, etc.) were undertaken while conducting habitat surveys and were based on the Commonwealth's Threatened Mammals Survey Guidelines. Approximately 20 person hours in total were spent by two personnel systematically grid searching 100 m transects. A total of 45 sites were surveyed (Figure 6). Various scats were collected and sent to scat analysis expert Marama Hopkins (Biolink) for identification.

Northern Quolls were also targeted during the August 2014 surveys and a summary of the total Northern Quoll survey effort from both 2011 and 2014 is provided in Table 6 (Section 3.1.8).

3.1.5 Flora Surveys – 2012

Flora surveys were undertaken by AECOM from 26 to 29 March 2012 and 3 to 6 September 2012 and included vegetation mapping, targeted threatened flora searches and recording all flora species encountered. Flora field surveys were both undertaken in the wet season (March) and the dry season (September) of 2012, allowing for the differing flowering and seeding times of various flora.

The average temperature during the wet season flora surveys conducted in March 2012 recorded at the Boundary Hill mining area meteorological station was 20°C. The Boundary Hill mining area meteorological station recorded approximately 2 mm of rain during March 2012. Approximately 17 mm of rain fell in the last two weeks of February at the BoM Thangool Airport Weather Station, prior to the survey. Below average rainfall was experienced in 2012 as recorded at the BoM Thangool Airport Weather Station.

The average temperature during the dry season flora surveys conducted in September 2012 recorded at the Boundary Hill mining area meteorological station was 26°C. No rain was recorded during September 2012 however, 10.2 mm of rain fell in the last week of August two weeks prior to the survey.

This flora survey included the project site and extended 2 km from the project boundary to the east into the Callide Timber Reserve (Figure 5).

Table 2 summarises the total survey effort undertaken during the 2012 flora surveys.

Table 2
2012 Flora Survey Effort

Method	Survey Method
Vegetation mapping	Ten secondary sites within each identified RE were surveyed (total 40 secondary sites). A total of six tertiary sites were surveyed. A total of 262 quaternary sites were surveyed.
Threatened flora searches	Flora searches were undertaken while travelling between sites where threatened species habitat was encountered using the random meander survey technique.
Species records	All vascular flora species were recorded during the secondary, tertiary and quaternary site surveys and opportunistic records were made whilst travelling between these sites.

The survey methods undertaken during the surveys are discussed in detail below.

Vegetation Mapping

The vegetation was ground-truthed to determine the extent and quality of the REs within and surrounding the project site. Vegetation mapping was generally in accordance with the 2005 *Methodology for Survey and Mapping of Regional Ecosystems and Communities in Queensland, Version 3.1* (2005 Queensland Survey and RE Mapping Guideline). Data was collected from:

- Secondary sites – detailed full floristic surveys within 50 m x 10 m transects, documenting a list of all species and their abundance using density counts, percentage crown cover and percentage ground cover;
- Tertiary sites – documenting the dominant species and their abundance using crown cover measurements along a either a 50 m or 100 m transect, and were used to determine the height, cover and compositional elements and status of regrowth vegetation; and
- Quaternary sites - documenting the dominant species of the tree, shrub and grass layers, land zone information, and the presence of weeds or threatened species, at a particular point.

Ten secondary sites were surveyed within each of the identified REs. Six tertiary sites were surveyed within areas that had evidence of significant past clearing. A total of 262 quaternary sites were surveyed within and surrounding the project site. The locations of these survey sites are shown in Figure 5. Data was collected at a 1:10,000 scale (average

of at least 25 observations per km^2) as recommended in the 2005 Queensland Survey and RE Mapping Guidelines.

Threatened Flora Searches

Targeted flora searches were conducted for threatened species recorded in the database searches (Section 3.1.2). Flora searches were undertaken while travelling between sites where threatened species habitat was encountered using the random meander survey technique. The threatened flora searches focused on the Callide Timber Reserve (outside the project site) as this area was identified as containing the best potential habitat for threatened flora.

Voucher specimens of located threatened flora species were submitted to the Queensland Herbarium for confirmation.

Species Records

All vascular flora species encountered during the surveys were recorded. This included species recorded during the secondary, tertiary and quaternary site surveys and opportunistic records made whilst travelling between these sites.

Specimens of plants with fertile material that could not be identified during the survey were submitted to the Queensland Herbarium for identification.

Where encountered, weeds declared under the LP Act were recorded.

3.1.6 Fauna Surveys – 2012

Two rounds of fauna surveys were undertaken in 2012 by AECOM from 17 to 21 April 2012 and from 6 to 10 September 2012. The fauna survey methods included detailed fauna survey sites, secondary fauna sites, diurnal active searches, spotlighting and active nocturnal searching, incidental observations and habitat assessment sites (Figure 6). Site selection was based on RE mapping (used as an indicator of habitat type) and aerial photography.

Table 3 summarises the total survey effort undertaken for both 2012 fauna surveys.

Table 3
2012 Fauna Survey Effort

Target Taxa	Method	Survey Method	Total Survey Effort
Small mammals	Elliott ‘A’ traps	20 traps at each of the 5 detailed sites, left for 4 nights.	Total 400 trap nights.
Medium mammals and reptiles	Elliott ‘B’ traps	5 traps at each of the 5 detailed sites, left for 4 nights.	Total 100 trap nights.

Target Taxa	Method	Survey Method	Total Survey Effort
Medium mammals	Wire cage trap	5 traps at each of the 5 detailed sites, left for 4 nights.	Total 100 trap nights.
Reptiles, amphibians and small mammals	Pitfall traps	6 x 20 L buckets at each of the 5 detailed sites. Traps were left at 4 of the detailed sites for 4 days and 4 nights and traps were left at 1 detailed site for 4 days and 3 nights.	Total 120 trap days and 114 trap nights.
Reptiles and amphibians	Funnels	2 funnels with 30 m drift fence at each of the 5 detailed sites, left for 3 days and 4 nights.	Total 30 trap days and 40 trap nights.
Mammals	Hair tubes	10 hair tubes at each of the 5 detailed sites left for 3 days and 4 nights.	Total 150 trap days and 200 trap nights.
Microbats	Acoustic bat detector	1 bat detector at each of 5 detailed sites and 1 secondary site, left for 4 nights.	Total 24 nights.
Birds, reptiles and amphibians	Diurnal active search	Reptiles/amphibians: 2 people, 30 mins each at each of the 5 detailed sites for 4 days and 2 people, each 30 mins at each of the 2 secondary sites for 1 day.	Total search effort 22 person hours.
		Birds: 1 person, 20 mins for 4 mornings at each of the 5 detailed sites and 1 person, 20 mins for 1 morning at each of the 2 secondary sites.	Total search effort 7.3 person hours.
Nocturnal birds, mammals, reptiles, and amphibians	Spotlighting and nocturnal active searches	2 people, each 30-45 minutes for 5 nights at each detailed site and 2 people, each 30 min for 2 nights at 1 secondary site.	Total search effort 8 person hours.
Mammals and medium to large reptiles	Cameras	4 cameras at each of the 5 detailed sites left for 3 days and 4 nights and 2 cameras at each of the 2 secondary sites, left for 4 days and 4 nights.	Total 96 camera nights.

The average maximum temperature during the April 2012 surveys recorded at the Boundary Hill mining area meteorological station was approximately 30°C with the temperature ranging between 12°C and 32°C. Approximately 4 mm of rain fell on 17 April 2012 and no rain fell in the two weeks preceding the survey. The average maximum temperature recorded during the September 2012 survey was 27°C with the temperate ranging between 4°C and 30°C. No rain was recorded during the September 2012 survey, however 31.6 mm of rain fell in the two weeks preceding the survey (21.4 mm on 24 August 2012, 0.2 mm on 25 August 2012 and 10 mm on 26 August 2012).

The 2012 fauna survey included the project site and extended 2 km east from the project boundary into the Callide Timber Reserve.

Methods used at each of the survey sites are described below.

Detailed Survey Sites

Five detailed fauna survey sites were established at locations that were representative of the vegetation within the project site and where the probability of finding threatened species was estimated to be the highest. Each detailed fauna survey site included Elliott and cage

trapping, pitfall and funnel trapping, hair tubes, infra-red cameras and acoustic bat recorders. These are discussed in detail below.

Small mammals were targeted with small Elliott 'A' aluminium box traps. At each detailed site 20 traps were set out in a square, with five traps along each side. Each trap was separated by 20 m. A large Elliott 'B' trap targeting medium sized mammals and reptiles was placed at each corner of the square, 20 m from the adjoining Elliott 'A' traps, and Elliott 'B' trap was place in the centre of the square. A wire cage trap (targeting medium sized mammals) was also placed in the centre of each side of the square (20 m from adjoining traps), and in the middle of the square. Elliott and cage traps were baited with a combination of peanut butter, rolled oats and sardines each afternoon. Litter was placed inside traps as shelter for any trapped animals, and the wire cage traps were covered with hessian. Traps were opened in the late afternoon and checked early each morning before being closed for the day.

Pitfall traps and funnel traps were used to target reptiles, amphibians and small mammals. Pitfall traps comprised six 20 L buckets evenly spaced along a 30 m fence consisting of 30 cm high drift fence. A funnel trap was placed at each end of the drift fence. A shallow layer of earth and litter was placed in the base of each bucket, along with a section of PVC tube to provide shelter for captured animals, a damp cloth to provide moisture and a small float to ensure captured animals did not drown if heavy rainfall occurred.

Ten hair tubes (targeting mammals) were placed at each detailed site, five on tree trunks and five on the ground. Hair tubes were baited with peanut butter and rolled oats.

Four movement triggered infrared cameras (targeting mammals and larger reptiles) were placed at each detailed site. Cameras were mounted to a tree, and focussed on a bait station. Bait stations consisted of buried chicken necks and a tea-egg filled with a ball of rolled oats and peanut butter, very shallowly buried.

Microbats were surveyed using acoustic bat detectors; either Wildlife Acoustics' SM2 or SM2BAT+ SongMeters. One bat detector was deployed at each detailed survey site and placed in a likely flyway or close to water features such as ephemeral drainage lines, farm dams or remnant pools. Acoustic bat recordings were analysed by Greg Ford of Balance Environmental.

Secondary Survey Sites

During the late dry season in 2012 two secondary survey sites were also established (Figure 6). Two movement triggered infrared cameras and one SongMeter2 acoustic bat recorder were placed at Secondary Site 1 and two movement triggered infrared cameras were placed at Secondary Site 2.

Diurnal Active Searches

Diurnal active searches were conducted in the early morning (within four hours of dawn) to target birds and in the late afternoon/early evening to target reptiles and amphibians. Diurnal bird surveys were undertaken in a 2 ha area as recommended by the Atlas of Australian Birds. Records were based both on direct observation and species-specific vocalisations. Diurnal searches for reptiles and amphibians were undertaken in the late afternoon, when conditions were warm and reptiles and amphibians were likely to be active. Searches targeted likely reptile basking and refuge sites, including rock surfaces/outcrops, fallen logs and timber, decorticating and fallen bark and litter. Amphibian searches targeted moist habitats such as ephemeral drainage lines, farm dams and remnant pools, or any areas where frogs were heard calling.

Diurnal bird, reptile and amphibian surveys were undertaken at each of the five detailed sites and each secondary site.

Spotlighting and Active Nocturnal Searches

Spotlighting and active nocturnal searches were conducted in the evening to target nocturnal birds, mammals, reptiles and amphibians. Spotlighting involved one observer using a hand held 100W spotlight, the other observer using a high intensity LED head torch. Species recorded were identified based on direct observations or vocalisations heard during spotlighting. Information recorded included species, number of individuals present and where possible sex and breeding condition. Nocturnal bird and mammal searches targeted arboreal habitat while nocturnal reptile searches targeted tree trunks and decorticating bark. Nocturnal amphibian searches targeted riparian areas and remnant pools where frogs were calling and likely to attract frog-eating snakes.

Spotlighting and active nocturnal searches were conducted at each of the five detailed sites as well as Secondary Site 1.

Incidental Observations

In addition to formal surveys, incidental observations were also made while undertaking other activities (e.g. checking traps, driving), noting species and number of individuals.

Fauna Habitat Assessments

Detailed habitat assessments were completed at 11 sites (the five detailed survey sites and six additional sites) (Figure 6). Habitat assessments comprised a mixture of both qualitative and quantitative data including the following:

- Landscape description and landform;
- Aspect, elevation, slope and relief class;
- Geology, soil colour and texture;

- Vegetation community/RE, dominant species for each strata and general vegetation description;
- Canopy height;
- Projected cover, percent cover and dominant species for each strata and a variety of ground cover components, including; litter, rocky substrates, cryptogamic crust and bare ground;
- Tree size classes and bark types;
- Percent of trees supporting climbing vines, dieback and mistletoe;
- Abundance of coarse woody debris and fallen logs;
- Abundance, size class and decay stage of dead trees;
- Abundance of tree hollows of different size classes;
- Weed species abundance and distribution;
- Abundance of termite mounds;
- Fire history;
- Disturbance type and extent;
- Erosion type and extent;
- Connectivity;
- Land use; and
- Animal signs (nests, shelters, diggings, scats, tracks, burrows, tree scratches and feeding scars, any other sign).

Where animal signs were observed, the likely corresponding species identity was recorded, and in the case of scats or hairs, samples taken for identification. All scats and hair samples collected during the field survey were sent to Barbara Triggs of Dead Finish for analysis.

3.1.7 Koala Surveys – 2013

Habitat assessment and targeted searches for Koalas (or evidence of them) were carried out by AECOM between 2 to 6 September 2013 in accordance with the methods outlined in the Commonwealth's *Interim Koala Referral Advice for Proponents* (SEWPaC, 2012) (Commonwealth's Interim Koala Referral Advice). This included habitat assessments, line transects, spot assessment technique (SAT), spotlighting and call playback (Figure 6).

The average temperature during the Koala surveys recorded at the Boundary Hill mining area meteorological station was 17.9°C. No rain was recorded during September 2013, with some rain (51.8 mm) occurring in the month preceding the survey.

Table 4 summarises the total survey effort undertaken during the 2013 targeted Koala survey.

Table 4
2013 Targeted Koala Survey Effort

Method	Survey Method	Total Survey Effort
Detailed habitat assessments	2 people traversed 80 km of transects of 5 days.	Total approximately 50 person hours.
Line transect surveys	2 people traversed 80 km of transects of 5 days.	Total approximately 50 person hours.
Koala SAT surveys	2 person mins/tree for 30 trees at each of the 5 SAT sites during the Koala survey.	Total approximately 5 person hours.
Spotlighting and nocturnal active searches	2 people, each 1 hour at 47 sites during Koala survey.	Total 94 person hours.
Koala call playback	2 people, 5 mins listening/3 mins call play back/2 mins listening/5 mins spotlighting conducted twice at each of 47 sites during Koala survey.	Total 47 person hours.

The survey methods undertaken during the surveys are discussed in detail below.

Habitat Assessment

Vegetation surveys and RE verification conducted in March and September 2012 provided the baseline data to determine the location of vegetation communities dominated by primary Koala food trees and associated favourable landforms. In particular, riparian areas with remnant and regrowth vegetation associated with RE 11.3.25: *Eucalyptus tereticornis* or *Eucalyptus camaldulensis* woodland fringing drainage lines (RE 11.3.25: Eucalypt woodland fringing drainage lines) were noted as potential Koala habitat.

The methodology for habitat assessment involved the collection of the following data as prescribed in the Commonwealth's Interim Koala Referral Advice at 21 sites (Figure 6):

- Canopy tree species composition;
- Percentage of canopy cover of each of the above;
- Percentage of the ground which is vegetation, leaf litter cover, bare ground, or surface water;
- Distance to surface water; and
- Evidence of dogs in the area.

Line Transect Surveys

Line transect survey methods followed those described in *Evaluation of line transect sampling for estimating koala abundance in the Pine Rivers Shire, south east Queensland* (Dique *et al*., 2003). The vegetated areas within the project site were divided into north-south transects separated by 50 m. The transect lines were surveyed by two ecologists with a total of approximately 80 km traversed evenly across the entire project site. Every tree

intersected by a transect line was searched for Koalas and sign of Koala use (i.e. markings on trees, sign of feeding in canopy and obvious scats surrounding the base of the tree).

Koala Spot Assessment Technique Surveys

The SAT was applied using the methodology prescribed in *The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas Phascolarctos cinereus* (Phillips and Callaghan, 2011) which involves systematic searches of up to 30 trees surrounding the observed Koala and/or sign. Where no Koalas or Koala signs were observed, SAT surveys were performed in areas where primary food trees were present. Five SAT surveys were conducted within the project site in areas that were assessed as containing suitable food trees along ephemeral drainage lines (Figure 6).

Spotlight and Call Playback Surveys

Spotlight transect sites targeted the best potential Koala habitat within the project site where vegetation associated with RE 11.3.25: Eucalypt woodland fringing drainage lines was present. Spotlighting was carried out at 41 transect sites in accordance with the methods outlined in the 2012 Queensland *Terrestrial Vertebrate Fauna Survey Guidelines* (Queensland Fauna Survey Guidelines). The survey timeframe did not allow for replicate surveys on subsequent nights therefore, the survey effort at each site was extended past the recommended times in the Queensland Fauna Survey Guidelines. Spotlighting was conducted by two ecologists for one person hour at each site.

Call playback was carried out prior to spotlighting at each spotlighting transect site and was conducted in accordance with the prescribed call playback methods outlined in the Queensland Fauna Survey Guidelines. This involved a five minute listening period prior to call playback, followed by three minutes of call playback, a two minute listening period and five minutes of spotlighting and observation. Call playback was repeated twice for each site.

3.1.8 Terrestrial Ecology Surveys – August 2014

The terrestrial ecology surveys comprised flora/vegetation community surveys, additional targeted Northern Quoll surveys and fauna habitat assessment surveys. The surveys were conducted by Cumberland Ecology from 7 to 16 August 2014.

During the August 2014 terrestrial ecology field survey, the weather was mild with five days of rainfall (0.2 mm on 4 August 2014, 0.2 mm on 6 August 2014, 0.4 mm on 13 August 2014, 10 mm on 15 August 2014 and 41.8 mm on 16 August 2014) recorded at the Boundary Hill mining area meteorological station. The average maximum temperature was 23.6°C and the temperature ranged from 4°C to 26°C. No rainfall occurred in the weeks preceding the survey. The weather conditions recorded during the surveys were considered appropriate for conducting fauna surveys.

Table 5 summarises the total survey effort undertaken during the 2014 terrestrial ecology survey.

Table 5
2014 Terrestrial Ecology Survey Effort

Method	Survey Method	Total Survey Effort
Flora/vegetation community surveys	A total of 30 sites identified by RE mapping guidelines as quaternary were surveyed. Vegetation assessments were conducted throughout the project site.	30 quaternary sites as well as vegetation assessments undertaken across the project site.
Elliott 'B' traps	20 traps at each of the 10 sites, left for 3 nights.	Total of 600 trap nights.
Wire cage trap	4 traps at each of the 10 sites, left for 3 nights.	Total of 120 trap nights.
Cameras	1 camera at each of the 2 targeted Northern Quoll trap sites, left for 3 nights. 1 camera at each of the 2 baiting stations, left for 9 nights.	Total of 24 camera nights.
Detailed habitat assessments	2 people, each for 36 hours at 80 sites.	Total of 72 person hours.

The survey methods undertaken during the surveys are discussed in detail below.

Flora/Vegetation Community Surveys

The flora and vegetation community surveys consisted of quaternary flora surveys and detailed vegetation community ground-truthing and were conducted between 7 and 13 August 2014.

Thirty quaternary flora surveys were conducted generally in accordance with the 2012 Queensland *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland Version 3.2* (2012 Queensland Survey and RE Mapping Guideline) within the project site (Figure 5).

The following data was collected at each quaternary survey site:

- Location (using handheld GPS unit);
- Dominant canopy and sub-canopy species;
- Notes about soil, aspect and slope; and
- Photographs.

Ground-truthing of vegetation communities within the project site was undertaken with reference to the RE mapping conducted in 2012 (Section 3.1.5) and the Queensland Herbarium's publically available vegetation management mapping (Version 8.0). Additionally, high resolution aerial photography (flown October 2013) was utilised to refine the delineation of REs within the project site. The ground-truthed vegetation within the project site is shown on Figure 7.

Ground-truthing of potential Threatened Ecological Communities (TECs) listed under the EPBC Act and REs listed as Of Concern or Endangered under the NC Act was conducted by undertaking random meander transects (Figure 5) and included the identification of sensitive or important vegetation types, such as riparian vegetation.

The vegetation assessments conducted during the random meander transects were generally in accordance with the 2012 Queensland Survey and RE Mapping Guideline. The following vegetation information was specifically recorded:

- Structure (growth form, height and cover) of each layer; and
- Bioregion, dominant vegetation species by strata, geology and landform and other information required to determine the land zone.

REs were identified according to the Queensland Government's RE type descriptions in accordance with the Queensland Herbarium's Regional Ecosystem Description Database (REDD). Identification of REs was achieved by comparison between the floristic composition of the vegetation recorded in the field, and the formal descriptions of REs contained in the REDD.

The location and extent of REs was mapped using field data and extrapolated using aerial imagery analysis. The resultant information was synthesised using GIS MapInfo (Version 12.0) to create a spatial database and utilised to produce ground-truthed RE mapping of the project site.

Targeted Northern Quoll Survey

In accordance with the requirements of the 2011 *EPBC Act Referral Guidelines for the Endangered Northern Quoll, Dasyurus hallucatus* (Commonwealth's Northern Quoll Referral Guidelines) a targeted trapping survey was undertaken within the project site. The targeted Northern Quoll surveys were conducted over nine nights and 10 days between 7 August and 16 August 2014.

The Commonwealth's Northern Quoll Referral Guidelines state that the trapping effort required should be determined by the formula $y=50x^{0.5}$, where y is the number of trap nights and x is the area of potential Northern Quoll habitat in ha. Prior to the targeted Northern Quoll survey, it was determined that there could be up to approximately 300 ha of potential Northern Quoll habitat within the project site. The amount of Northern Quoll habitat within the project site was updated to approximately 395 ha during the 2014 field survey and therefore the number of trap nights required to meet the Commonwealth's Northern Quoll Referral Guidelines requirements was 994 trap nights.

The total survey effort for the Northern Quoll during both the 2011 Northern Quoll reconnaissance survey and the targeted 2014 Northern Quoll survey is summarised in

Table 6 and includes 1,200 trap nights, 128 camera nights and 100 person hours of active searching and habitat assessment. This survey effort exceeded the Commonwealth's Northern Quoll Referral Guideline requirements.

Table 6
Total Northern Quoll Survey Effort

Method	Survey Method	Total Survey Effort
Elliott 'B' traps	5 traps at each of the 5 detailed sites, left for 4 nights during 2012 fauna surveys (100 trap nights). 20 traps at each of the 10 sites, left for 3 nights during 2014 targeted Northern Quoll survey (600 trap nights).	Total 700 trap nights.
Wire cage trap	5 traps at each of the 5 detailed sites, left for 4 nights during 2012 fauna survey (100 trap nights). 4 traps at each of the 10 sites, left for 3 nights during 2014 targeted Northern Quoll survey (120 trap nights).	Total 220 trap nights.
Hair tubes	20 hair tubes for four days and four nights during 2011 reconnaissance Northern Quoll survey (80 trap days and 80 trap nights). 10 hair tubes at each of the 5 detailed sites left for 3 days and 4 nights during 2012 fauna survey (150 trap days and 200 trap nights).	Total 230 trap days and 280 trap nights.
Spotlighting and nocturnal active search	2 people, each 30-45 minutes for 5 nights at each detailed site and 2 people, each 30 minutes for 2 nights at 1 secondary site during 2012 survey.	Total 8 person hours.
Detailed habitat assessment, latrine and track active searching	2 people, for a total of 20 person hours spent by two personnel in 2011 systematically grid searching 100 m transects. 2 people, each for 36 hours during 2014 targeted Northern Quoll survey (totalling 72 person hours).	Total 92 person hours.
Cameras	1 camera at each of two sites left for four nights during 2011 reconnaissance Northern Quoll survey (8 trap days and 8 trap nights). 4 cameras at each of the 5 detailed sites left for 3 days and 4 nights and 2 cameras at each of the 2 secondary sites, left for 4 days and 4 nights during 2012 fauna survey (96 camera nights). 1 camera at each of the 2 targeted Northern Quoll trap sites, left for 3 nights. 1 camera at each of the 2 baiting stations, left for 9 nights during 2014 targeted Northern Quoll survey (24 camera nights).	Total 128 camera nights.

The methodology undertaken for the 2014 Northern Quoll survey is described in detail below.

The traps were set at 10 survey locations (Figure 6) including the north-east and south-west of the project site along the drainage lines and among the regenerating eucalypt woodland within the project site.

Trapping was conducted using Elliott and cage traps, as recommended in the Commonwealth's Northern Quoll Referral Guidelines. Twenty large Elliott 'B' traps, and four cage traps were set at each survey location and left for three nights. They were baited with bait balls of sardines, rolled oats and peanut butter, or with chicken wings, necks and giblets. The Elliott traps were arranged in a 50 x 50 m square shape with baited cage traps in the four corners. A baited motion detector cameras were placed in the centre of the Elliott trap square at two of the trap sites. Two additional fixed motion infra-red cameras were set up at baiting stations within the project site and left for nine nights.

Diurnal searches for latrines and tracks of the Northern Quoll were conducted during the fauna habitat assessments. Northern Quolls produce a distinctive twisted cylindrical scat deposited often on rock piles or boulders, usually on the highest point available, such as ridge tops or hill crests. Scats may also be deposited in other areas such as under boulders, in rock overhangs, road culverts and sheds. Particular focus was given to assessing the suitability of habitat in the project site for the Northern Quoll and mapping the areas that contained potential habitat to support resident or foraging Northern Quolls.

Fauna Habitat Assessment

Fauna habitat assessments were conducted at 80 locations within and surrounding the project site over 10 days between 7 August and 16 August 2014 (Figure 6).

Detailed habitat assessments were undertaken for all Commonwealth and State listed species that were previously recorded within the project site or determined to have a high likelihood of occurring based generally on species' distributions, habitat preferences and any nearby records. The purpose of the habitat assessments was to determine if the project site meets the various Commonwealth definitions of habitat for the threatened species and formed the basis of the threatened fauna habitat mapping.

The project site was assessed for ground, shrub/understorey and canopy cover, number and size of hollows present, habitat features such as bush rock and fallen trees, and signs of fauna usage such as scats and scratches. Fauna habitat assessments (Figure 6) included consideration of important indicators of habitat condition and complexity including the occurrence of microhabitats such as tree hollows, rocks, fallen logs, grasses, bark and other coarse woody debris, mats of leaf litter, rocky outcrops and ephemeral drainage lines and seasonal wetland areas. An assessment of the structural complexity of vegetation, the age structure of the vegetation and the nature and extent of human disturbance throughout the project site was also undertaken and considered. Indirect indicators of fauna use of the project site such as droppings, diggings, footprints, scratches, nests, burrows, paths and runways were also recorded. Any vertebrate fauna species observed, detected on the basis of calls, tracks, scats, scratch markings or otherwise, during the targeted Northern Quoll surveys and habitat assessments were also recorded.

3.1.9 Summary of Survey Effort

Table 7 provides a summary of the total survey effort undertaken for the project.

Table 7
Total Survey Effort

Target Taxa	Method	Survey Replication	Total Survey Effort
Small mammals	Box traps – Elliott 'A'	20 traps at each of 5 detailed sites, left for 4 nights during 2012 fauna survey.	Total 400 trap nights.
Medium mammals and reptiles	Box trap – Elliott 'B'	5 traps at each of the 5 detailed sites, left for 4 nights during 2012 fauna surveys (100 trap nights). 20 traps at each of the 10 sites, left for 3 nights during targeted Northern Quoll survey (600 trap nights).	Total 700 trap nights.
Medium mammals	Wire cage trap	5 traps at each of the 5 detailed sites, left for 4 nights during 2012 fauna survey (100 trap nights). 4 traps at each of the 10 sites, left for 3 nights during targeted Northern Quoll survey (120 trap nights).	Total 220 trap nights.
Reptiles, amphibians and small mammals	Pitfall traps	6 x 20L buckets at each of the 5 detailed sites. 4 sites were left for 4 days and 4 nights and 1 site was left for 4 days and 3 nights during 2012 fauna survey.	Total 120 trap days and 114 trap nights.
Reptiles and amphibians	Funnels	2 funnels with 30 m drift fence at each of 5 detailed sites, left for 3 days and 4 nights during 2012 fauna survey.	Total 30 trap days and 40 trap nights.
Mammals	Hair tubes	20 hair tubes for four days and four nights during reconnaissance Northern Quoll survey (80 trap days and 80 trap nights). 10 hair tubes at each of the 5 detailed sites left for 3 days and 4 nights during 2012 fauna survey (150 trap days and 200 trap nights).	Total 230 trap days and 280 trap nights.
Microbats	Acoustic bat detector	1 bat detector at each of 5 detailed sites and 1 secondary site, left for 4 nights during 2012 fauna survey.	Total 24 nights.
Birds, reptiles and amphibians	Diurnal active searches	2 people searching 100 m transects at 45 sites during reconnaissance Northern Quoll survey (20 person hours). Birds only: 1 person, 20 mins for 4 mornings at each of 5 sites and 1 person, 20 mins for 1 morning at each of 2 sites during 2012 fauna survey (7.3 person hours). 2 people, each 30 mins for 4 days at each of the 5 detailed sites and 2 people, each 30 mins for 1 day at each of the 2 secondary sites during 2012 fauna survey (22 person hours).	Total 49.3 person hours.

Target Taxa	Method	Survey Replication	Total Survey Effort
Nocturnal birds, mammals, reptiles and amphibians	Spotlighting and nocturnal active searches	2 people, each 30-45 minutes for 5 nights at each detailed site and 2 people, each 30 min for 2 nights at 1 secondary site during 2012 fauna survey (8 person hours). 2 people, each 1 hour at 47 sites during Koala survey (94 person hours).	Total 102 person hours.
Mammals, medium to large reptiles	Cameras	1 camera at each of two sites left for four nights during reconnaissance Northern Quoll survey (8 trap days and 8 trap nights). 4 cameras at each of the 5 detailed sites left for 3 days and 4 nights and 2 cameras at each of the 2 secondary sites, left for 4 days and 4 nights during 2012 fauna survey (96 camera nights). 1 camera at each of the 2 targeted Northern Quoll trap sites, left for 3 nights. 1 camera at each of the 2 baiting stations, left for 9 nights during targeted Northern Quoll survey (24 camera nights).	Total 128 camera nights.
All fauna species	Detailed habitat assessments	2 people searching 100 m transects at 45 sites during reconnaissance Northern Quoll survey (20 person hours). Detailed habitat assessments at 11 sites during 2012 fauna survey. 2 people traversed 80 km of transects of 5 days during Koala survey (approximately 50 person hours). 2 people, each for 36 hours during 2014 ecology surveys at 80 sites (72 person hours).	Total over 142 person hours.
Koala	Koala call playback	2 people, 5 mins listening/3 mins call play back/2 mins listening/5 mins spotlighting conducted twice at each of 47 sites during Koala survey (47 person hours).	Total 47 person hours.
Koala	Koala SAT surveys	2 person mins/tree for 30 trees at each of the 5 SAT sites during the Koala survey (approximately 5 person hours).	Total approximately 5 person hours.

3.1.10 Terms of Reference Requirements

In accordance with the project's EIS TOR, comprehensive vertebrate animal surveys of the project site were undertaken at a sampling intensity that supports the scale of vegetation mapping (i.e. 1:10,000 or better) and terrestrial wildlife surveys were conducted in a manner that was sensitive to effects of seasonality and the different activity patterns and habitat use by species under different seasonal conditions. Also in accordance with the TOR, the surveys took into consideration the relevant Commonwealth and State survey guidelines, unless adequate justification for alternative survey methodology was provided. A detailed reconciliation of the survey methodologies and the requirements of the Commonwealth and State survey guidelines for each threatened species are provided in Sections 5 to 14.

Overall, the survey methodologies undertaken for the project are compliant with the TOR requirements.

3.2 LIKELIHOOD OF OCCURRENCE ASSESSMENT

The database searches (Section 3.1.2) identified threatened species that may potentially occur within a 25 to 100 km radius of the project site. The likelihood of each threatened species occurring within the project site was then determined based on the results of the desktop searches (i.e. the proximity of records to the project site), field surveys (i.e. potential for presence based on available habitat and records), the species' known ranges and the species' habitat preferences.

The likelihood of species occurring within the project site was classified using the criteria presented in Table 8.

Table 8
Criteria to Assess Potential for Species to Occur within the Study Area

Likelihood to Occur	Definition
Present	The species was recorded within the project site during the field surveys.
High	The species was not recorded within the project site during the field surveys but is known to occur within the surrounding area and habitat of suitable quality exists within the project site.
Moderate	The species was not recorded within the project site during the field surveys, although it is known to occur in the wider region. Habitat was identified for the species within the project site during field surveys; however it is marginal, fragmented and/or small in size, or degraded.
Low	The species was not recorded within the project site during the field surveys. The species has not been recorded to occur in the wider region and due to a lack of, or extremely poor quality habitat within the project site, the species is not expected to occur within the project site.

Potential project impacts were conservatively assessed, in accordance with the 2013 Commonwealth *Matters of National Environmental Significance – Significant Impact Guidelines 1.1* (the Commonwealth's Significant Impact Guidelines), for any EPBC Act listed species that was recorded within the project site or assessed as having a high or moderate likelihood to occur in the project site. Habitat modelling was also conducted for these species. The habitat modelling and impact assessments for individual species are described in detail in Sections 5 to 14.

3.3 HABITAT ASSESSMENT

Habitat assessment is typically undertaken based on the results of the ground-truthed vegetation and habitat surveys. However, EHP requested the Queensland Herbarium to assess the details of the ground-truthed vegetation mapping undertaken in August 2014.

Subsequently, the Queensland Herbarium confirmed that it had a six month backlog of assessments. EHP provided the proponent with the following three options for the project approval process:

- Option 1: Put the project on hold for six months until the Queensland Herbarium could review the requested information;
- Option 2: Use the V9 RE mapping (released by the Queensland Herbarium on 8 May 2015) for the impact assessment and project approval; or
- Option 3: Use the V9 RE mapping in the interim and revise the impact assessment (and any associated approvals) once the Queensland Herbarium has reviewed the requested information.

The proponent advised EHP they would progress with Option 2 on 9 June 2015 and use the V9 RE mapping, even though it does not align with the ground-truthed information recorded by experienced and qualified botanists during multiple season surveys. The proponent has accepted the V9 RE mapping in order to progress and finalise the approval in a reasonable timeframe. The habitat assessments provided in this report therefore align with the remnant vegetation provided in the V9 RE mapping, rather than the ground-truthed remnant vegetation.

3.3.1 Habitat Modelling

Habitat modelling and mapping was undertaken for the following fauna species listed as threatened under both the EPBC Act and the NC Act that were recorded within the project site or have been assessed as having a high or moderate likelihood of occurrence in the project site:

- Collared Delma;
- Yakka Skink;
- Squatter Pigeon (southern subspecies);
- Red Goshawk;
- Australian Painted Snipe;
- Northern Quoll;
- Koala;
- Grey-headed Flying-fox;
- Large-eared Pied Bat; and
- South-eastern Long-eared Bat.

The detailed habitat mapping assessment is provided in Appendix P – *Terrestrial Ecology* of the EIS Addendum. Habitat modelling was based on the latest vegetation mapping conducted by the Queensland Herbarium (V9) and is shown on Figure 8 and Figure 9.

No threatened flora species listed under the EPBC Act were recorded within the project site or were assessed as having either a high or moderate likelihood to occur within the project site. Other threatened fauna species were recorded or predicted to occur from within the database searches. However, these species were assessed as having a low likelihood to occur and therefore habitat mapping was not considered necessary for these species. The detailed likelihood of occurrence assessments for each species recorded from the database searches but assessed as having a low likelihood to occur within the project site, is provided in Appendix H of the Appendix P – *Terrestrial Ecology* of the EIS Addendum.

3.3.2 Commonwealth Defined Habitat

The Commonwealth's Significant Impact Guidelines define '*habitat critical to the survival of a species*' as '*areas that are necessary:*

- *For activities such as foraging, breeding, roosting or dispersal;*
- *For the long-term maintenance of the species (including the maintenance of species essential to the survival of the species, such as pollinators);*
- *To maintain genetic diversity and long term evolutionary development; or*
- *For the reintroduction of populations or recovery of the species.*

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species as habitat critical for that species; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.'

Other Commonwealth guidelines, e.g. the 2011 *Draft Referral Guidelines for the Nationally Listed Brigalow Belt Reptiles* (Commonwealth's Brigalow Belt Reptiles Referral Guideline), provide additional habitat definitions such as '*essential microhabitat'*, '*suitable habitat'*, '*important habitat'* and '*known important habitat'*. These additional habitat terms are defined and discussed within the relevant species profiles provided in Sections 5 to 14.

3.4 IMPACT ASSESSMENT

Impact assessments were conducted for all threatened fauna species listed under both the EPBC Act and NC Act that were recorded within the project site or considered to have a moderate or high likelihood of occurrence within the project site. The impact assessments were conducted in accordance with the Commonwealth's Significant Impact Guidelines. The impact assessments for individual species are described in detail in Sections 5 to 14.

4 MITIGATION

This section outlines a range of impact mitigation measures that will be implemented for the project, including measures to avoid, mitigate and compensate for impacts, particularly the removal of habitat. These include minimising vegetation clearance, undertaking pre-clearance surveys and mine rehabilitation and developing/updating and implementing a suite of management and monitoring plans that will ensure biodiversity values present in the project site are appropriately managed in the long term, and that threats to biodiversity such as feral animals and weeds are managed. Furthermore, an ecological monitoring program will be established to monitor the ongoing status and health of flora and fauna communities that will be retained within the project site in order to assess the success of the mitigation and compensation measures.

4.1 MINIMISING VEGETATION AND HABITAT LOSS

During the detailed design stage of the project, the following types of fauna habitat will be identified and avoided, where practicable, within the constraints of the project footprint:

- Hollow bearing trees;
- Ephemeral drainage lines and riparian zones; and
- Large remnant trees.

In order to minimise clearing impacts and unnecessary disturbance to native remnant vegetation, the following procedures will be implemented:

- The limits of clearing will be delineated during the construction process and marked clearly on plans and on the ground;
- Native remnant vegetation beyond the identified clearing areas will not be disturbed;
- Ancillary facilities such as stockpile sites, site compounds and construction zones will not be located within areas of remnant vegetation beyond the limits of clearing;
- Vegetation clearing will be undertaken sequentially and in accordance with the proponent's Permit to Disturb process. This will restrict the area of vegetation to be cleared to that required; and
- Worker briefings will be undertaken on the care and conservation of the project site's native vegetation and habitat.

4.1.1 Pre-clearing Surveys

Where clearing of fauna habitats will take place, pre-clearing protocols will be followed to avoid injuring native fauna and livestock, including:

- Preparation of an inventory of trees and hollows, to be removed, prior to clearing;
- Checking hollow-bearing trees for the presence of bird nests, reptiles and arboreal mammals, such as possums, gliders and bats, prior to felling;
- Animals found to be occupying trees and habitat will be safely removed before the clearing of trees and relocated into nearby woodlands;
- Nest boxes or salvaged tree hollows will be provided in nearby woodland to compensate for the hollows to be removed due to vegetation clearance; and
- Selected boulders and salvageable large logs will be placed in nearby areas of retained vegetation to allow their continued use as fauna habitat.

Prior to the pre-clearing surveys domestic stock will be removed from the clearing area.

A Spotter Catcher, in possession of relevant permits under the NC Act, will be on hand at all times to supervise clearing and to rescue any animals still remaining in the clearing area following the pre-clearance surveys. The Spotter Catcher will handle any animals injured during the process and will determine whether veterinary help is needed. If appropriate, animals will be taken to the nearest veterinary surgeon for treatment.

4.2 VEGETATION CONSERVATION AND MANAGEMENT

In order to maximise the conservation of biodiversity, and mitigate the impacts of the project, as much existing native remnant vegetation as possible will be retained in the project site, subject to the constraints of the project footprint and potentially ongoing agistment for grazing. The following measures will be implemented in the remaining habitats within the project site:

- Measures to manage weeds and feral animals, in accordance with the proponents' legal obligations, for example, as implemented through the Weed Management Plan; and
- Management of stock levels and livestock grazing pressure in the project site.

4.3 MINE REHABILITATION

All areas disturbed by mining activities will be progressively rehabilitated over the life of the project in accordance with the proponent's proposed Three-Year Rehabilitation Management Plan. Staged rehabilitation of all mine disturbed areas will occur with the key objectives of recreating and establishing a self-sustaining post-mining landscape with native vegetation that is able to support a diverse range of native flora and fauna populations; the creation of sustainable and economically viable grazing land; or stable, rehabilitated landforms (e.g. final voids).

Local provenance native plant species will be utilised in mine rehabilitation, where possible. For those parts of mine rehabilitation that are not being restored for grazing purposes but for permanent native vegetation purposes, seed will be collected from native vegetation in the project site, where reasonably practicable, to ensure genetic diversity is maintained. Where practical, topsoil will be translocated directly from proposed mining areas to conserve the native seed bank of local ecological communities. This will improve the quality and diversity of native growth in rehabilitation areas and maximise the establishment of a diversity of native species, particularly the understorey species.

All rehabilitated areas will be managed according to the proponent's proposed Three-Year Rehabilitation Management Plan, including outlining procedures for the recreation of the ecological functions of native vegetation communities, and for the provision of suitable habitat for native flora and fauna in rehabilitated areas.

Monitoring will be undertaken to track the progress of rehabilitation and identify any remedial works that may be required.

4.4 MANAGEMENT AND MONITORING PLANS

4.4.1 Existing Management and Monitoring Plans

The Callide Mine has a range of existing management plans to assist with managing and protecting environmental values and monitoring potential environmental impacts (including MNES) for the current Callide Mine operations. The project aims to build on existing management plans plus develop new plans where additional environmental monitoring and controls are required for Boundary Hill South.

The objectives of the existing management plans are outlined below. Proposed management plans for development to further improve environmental protection are also discussed. Prior to the development and operation of the project, existing management plans and strategies will be updated to include the Boundary Hill South mining area.

Erosion and Sediment Control Plan

The 2015 Erosion and Sediment Control Plan (ESCP) is consistent with the Guideline – Model Mining Conditions. It has been developed by an appropriately qualified person and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of stormwater. In addition, model conditions authorise the release of water (other than mine affected water) to waters, where the erosion and sediment control structures have been installed and operated in accordance with the ESCP. The ESCP is kept regularly updated so as to describe erosion and sediment control structures, and will be updated to include Boundary Hill South.

Biodiversity Action Plan

The 2006 Biodiversity Action Plan has been prepared for Callide Mine to provide a framework for assessing the biodiversity value of the land at Callide Mine. Once these values are understood, at a qualitative level, assessments are made on whether impacts to biodiversity values as a result of the coal mine operations will cause a risk to the business. The Callide Mine Biodiversity Action Plan is a trial plan, the first of its kind for Anglo American Metallurgical Coal in Australia.

Weed Management Plan

The 2013 Callide Mine Weed Management Plan provides a framework for the effective management of weed species introduction and control. The aim of this document is to increase awareness of weed management and practices on site to provide some general guidelines for the prevention and distribution of weeds that can be facilitated by mining related activities. Weeds currently targeted include: Mother of Millions (*Bryphyllum* spp.), Rubber Vine (*Cryptostegoas grandiflora*), Parthenium (*Parthenium hysterophorus*), Prickly Pear (*Optunia* spp.), Prickly Acacia (*Acacia nilotica*), Groundsel Bush (*Baccharis halimifolia*), Lantana (*Lantana camara*) and Cats Claw (*Macfadyena unguis-cati*).

This plan has been prepared to address Callide Mine's legislative obligations regarding the management of weeds on site. This current plan will be updated to include feral animals and be renamed the Feral Animal and Weed Management Plan. This plan will also be updated to include measures to minimise the spread of introduced plants and plant diseases.

4.4.2 Additional Plan for the Project

In addition to the existing management plans that are in operation for Callide Mine, a Species Management Program will be prepared and implemented, as described below.

Species Management Program

A Species Management Program will be developed and implemented for the project, as required, in accordance with the requirements of the *Nature Conservation (Wildlife Management) Regulation 2006*. The Species Management Program will outline actions to be taken to minimise impacts on animal breeding places and will be submitted to the EHP for

approval prior to the commencement of construction activities. The program will include prescriptions on the nature and duration of pre-clearance surveys as well as measures to be employed during any clearing activities (e.g. relocation of habitat features such as hollows and logs).

5 COLLARED DELMA

The Collared Delma is a small reptile (approximately 19 cm and 2 g) that is generally uniformly brown, with belly shields that are darker at the margins and a dark brown banded head and neck with creamy yellow interspaces (DotE, 2015). The Collared Delma is listed as Vulnerable under both the EPBC Act and NC Act.

This section provides the detailed assessment of the Collared Delma and is structured as follows:

- Section 5.1 – Survey Methodology: A detailed description of the survey methodology and how it aligns with the Commonwealth and State survey requirements;
- Section 5.2 – Desktop and Field Survey Results: The results of the desktop and field surveys;
- Section 5.3 – Habitat Assessment: The detailed habitat assessment including habitat modelling and an assessment against the Commonwealth habitat terminology;
- Section 5.4 – Likelihood of Occurrence Assessment: The detailed likelihood of occurrence assessment; and
- Section 5.5 – Significant Impact Assessment: The detailed significant impact assessment in accordance with the Commonwealth's Significant Impact Guidelines.

5.1 SURVEY METHODOLOGY

Surveys undertaken within the project site for the Collared Delma were generally undertaken in accordance with Commonwealth and Queensland survey requirements, as outlined below.

5.1.1 Commonwealth Survey Requirements

There are three Commonwealth survey guidelines that outline survey methods for the Collared Delma, namely:

- The Commonwealth's *Species Profile and Threats Database* (SPRAT) for the Collared Delma;
- The Commonwealth's 2011 *Survey Guidelines for Australia's Threatened Reptiles* (the Commonwealth's Threatened Reptile Guideline); and
- The Commonwealth's Brigalow Belt Reptiles Referral Guideline.

The various survey guideline requirements and the actual survey effort for the Collared Delma are described in the following sections. The survey guideline requirements are provided below in *underlined italics* and the response is provided in normal text.

Species Profile and Threats Database

As of 19 June 2015, the SPRAT database for the Collared Delma included the following survey requirements.

Habitat Assessment. A habitat assessment is recommended to be undertaken as a preliminary step to designing and undertaking a targeted survey, including:

Determine the proximity of nearest records to the study area.

The nearest record of the Collared Delma to the project site is from March 2006 in the Kroombit Tops National Park, approximately 43 km south-east from the project site. This record is from the Australian Museum database search.

Search relevant databases such as Zoology Data Search (Queensland Museum) and Wildlife Online (Queensland Department of Environment and Resource Management).

As stated in Section 3.1.2, the Queensland Museum database was searched in August 2012 and September 2014, and the Wildlife Online database was searched in March, September and October 2012 and September 2014, prior to designing and undertaking the surveys.

Obtain State vegetation mapping for the study area to determine the extent of suitable habitat including the presence of associated vegetation communities.

As stated in Section 3.1.2, the Queensland vegetation mapping for the project site (Versions 6.1, 8.0 and 9.0) was obtained to assist in determining the extent of any potential suitable habitat for the Collared Delma and determining any associated vegetation communities.

Determine the presence of suitable microhabitat features in the study area.

Suitable microhabitat features for the Collared Delma (e.g. the presence of rocks, logs, bark and other coarse woody debris, and mats of leaf litter) were identified at a high level (i.e. identifying possible woodland areas) prior to conducting the surveys. As stated in Section 3.1.6 diurnal active searches targeted suitable microhabitat features for reptiles including the Collared Delma. As stated in Section 3.1.8 detailed habitat assessments were undertaken for all threatened species recorded or with a high or moderate likelihood to occur within the project site, including the Collared Delma.

Targeted survey. Targeted surveys to confirm the presence/absence of the Collared Delma are done by actively searching suitable habitats.

As stated in Section 3.1.6 diurnal active searches targeted suitable microhabitat features for reptiles, including the Collared Delma. As discussed in Section 3.1.8 detailed habitat

assessments were undertaken for all threatened species recorded or with a high or moderate likelihood to occur within the project site, including the Collared Delma.

Optimal conditions for active searching. The species is more likely to be detected when conditions are warm, not too dry and maximum temperatures are greater than 25°C. Optimal survey times for active searching are early morning (within four hours of dawn) and during the evening on warm nights.

The project site was actively searched for reptiles in April and September 2012. During both surveys the conditions were nearly optimal for active searching for the Collared Delma.

As stated in Section 3.1.6, the average maximum temperature during the survey conducted from 17 to 21 April 2012 was approximately 30°C and it rained during the survey. The average maximum temperature during the survey from 6 to 10 September 2012 was 27°C. No rain was recorded during the September 2012 survey, however rain was recorded within two weeks prior to this survey. Approximately 4 mm of rain was recorded during the April 2012 survey. Therefore, during both surveys the conditions were warm, not too dry and the average maximum temperature was greater than 25°C.

During both surveys, active reptile searches were conducted in the late afternoon and the evening on warm nights.

Minimum survey effort. Sufficient time is required to thoroughly search the study area. The minimum survey effort required includes:

- *A minimum of three survey days; and*
- *At least one replicate survey employing all of the recommended techniques, if the species has not already been detected.*

The surveys undertaken at the project site meet the minimum survey effort requirements.

As per the SPRAT databases, the recommended survey technique for the Collared Delma is targeted surveys via active searches of suitable habitat. As stated in Section 3.1.6, active diurnal searches targeting suitable microhabitat features for reptiles, including the Collared Delma, were undertaken over four days during April 2012 and for one day in September 2012. Therefore, the survey was conducted over five days which exceeds the minimum survey requirement of three survey days.

The species was not recorded during the April 2012 survey, therefore a second active diurnal search was undertaken in September 2012.

Commonwealth's Threatened Reptiles Survey Guideline

The Commonwealth's Threatened Reptiles Survey Guideline includes the following survey requirements for the Collared Delma.

Pitfall trapping has proved to be less effective than turning rocks in locating the species.

As stated in Section 3.1.6, diurnal active searches targeted suitable microhabitat features for reptiles, including the Collared Delma, and pitfall trapping was also conducted. Therefore, both the more effective survey method and the less effective survey method were undertaken for the Collared Delma within the project site.

It is recommended that appropriate survey methods for this species be one-off hand searches (including raking through leaf litter) in appropriate habitats, together with pitfall trapping during late spring to summer. A series of pitfall trap lines comprising six 4–10 litre buckets and funnel traps spread along a 15 m fence would be an appropriate trap design.

As described in Sections 3.1.6 and 3.1.8, the survey methods meet these survey recommendations. All potential microhabitats for reptiles, including the Collared Delma, were targeted by active searches of appropriate habitat including: tree trunks, leaf litter, fallen timber, decorticating bark and under bush rock.

As described in Section 3.1.6, a combination of pitfall and funnel trapping was conducted at five sites within the project site (Figure 6). At each survey site, pitfall traps comprised six 20 L buckets evenly spaced along 30 m of 30 cm high drift fence. Pitfall traps were open for four days and four nights during the April 2012 surveys and were open for three days and four nights during the September 2012 survey, totalling 120 pitfall trap days and 120 pitfall trap nights. A funnel trap was placed at either end of the drift fence at each site (totalling two funnel traps per site). Funnel traps were left open for three days and four nights totalling 30 funnel trap days and 40 funnel trap nights. Therefore, the pitfall and funnel trapping methodology meets these survey recommendations.

The survey conducted in April 2012 and the September 2012 survey were conducted when conditions were optimal (as described in the SPRAT database) for Collared Delma searches (i.e. warm, not too dry and maximum temperatures of 25°C or greater). Given that these survey guidelines state that the Collared Delma has been recorded throughout the entire year, which suggests at least limited activity all year, the timing of the surveys was suitable.

Surveys suggest species is diurnal.

As described in Sections 3.1.6 and 3.1.8, diurnal searches for reptiles, including the Collared Delma, were conducted in the late afternoon/early evening.

Activity was greatest from October and February, however animals were able to be located under rocks throughout the year, and were usually active when disturbed beneath the rocks, suggesting at least limited activity throughout the year.

As discussed above and in response to the SPRAT database survey requirements, both 2012 surveys were conducted during the optimum conditions when the maximum temperatures were optimal for reptile searches (25°C or greater) and conditions were not too dry as it rained either preceding or during both of the 2012 field surveys. While activity for the Collared Delma is greatest between October and February, the species has been recorded by active searching under rocks throughout the entire year. Therefore, the survey timeframes were suitable for detecting the Collared Delma given that the searches were active, diurnal searches.

Commonwealth's Brigalow Belt Reptiles Referral Guideline

The Commonwealth's Brigalow Belt Reptiles Referral Guideline includes the following survey requirements for the Collared Delma.

A preliminary assessment should consider the following:
The proximity of the nearest records of each of the listed Brigalow Belt reptiles to the proposed action. Databases to search are: the Protected Matters Search Tool, Zoology Data Search (Queensland Museum), Wildlife Online (Qld DERM) and Australian Museum Records.

The nearest record of the Collared Delma to the project site is from March 2006 and is in the Kroombit Tops National Park, approximately 43 km south-east from the project site. As discussed in Section 3.1.2, database searches included the EPBC Act Protected Matters Search Tool, the Queensland Museum, Wildlife Online and the Australian Museum Records.

What vegetation types characterise the local region in which you propose to take an action?

- *Obtain state vegetation mapping centred on your proposed action to determine how much suitable land exists in the local area and what vegetation communities need to be targeted for the survey.*
- *How might one or more listed Brigalow Belt reptiles use the habitats in the region, i.e., for foraging, breeding or dispersal?*

As stated in Section 3.1.2, the Queensland vegetation mapping for the project site (Versions 6.1, 8.0 and 9.0) was obtained prior to the surveys to assist in determining the extent of any potential suitable habitat, including vegetation communities, for the Collared Delma. RE 11.10.1: Lemon-scented Gum (*Corymbia citriodora*) open forest on coarse-grained sedimentary rocks (RE 11.10.1: Lemon-scented Gum open forest) was assessed as being potentially suitable for the Collared Delma as it has been previously recorded in this

RE and was surveyed during the surveys. There are no areas within the project site that are necessary for the foraging, breeding or dispersal of the Collared Delma (Section 5.3.3).

A habitat assessment of each vegetation type in your study area needs to be carried out to determine its suitability as reptile habitat. The suitability may vary with natural variation and microhabitat features (e.g. distribution and number of shelter sites) within a state-mapped vegetation type (e.g. QLD REs). It is recommended that you characterise the quality of the habitat, locate suitable microhabitat features and design a survey effort to optimize the sampling of these features across the landscape.

Within the project site, RE 11.10.1: Lemon-scented Gum open forest was identified as potentially suitable for the Collared Delma. However, the detailed habitat assessment (Section 5.3) confirmed that within the project site, RE 11.10.1: Lemon-scented Gum open forest is low quality Collared Delma habitat and does not meet any of the Commonwealth's habitat definitions.

Potential microhabitats for reptiles, including the Collared Delma, were targeted by active diurnal and nocturnal searches and spotlighting.

Targeted Surveys. If suitable habitat for any one of the Brigalow Belt reptiles is likely to be affected by your proposed action, targeted surveys should be undertaken to determine if it could be important habitat. As a general rule surveys should only be undertaken from late September through to late March when weather conditions are warm, not too dry and maximum temperatures are greater than 25°C on most survey days. Optimal survey time varies between species, but generally are early morning (within 4 hours of sunrise) and late afternoon to early evening for diurnal species.

'*Suitable habitat'* as defined by the Commonwealth's Brigalow Belt Reptiles Referral Guideline occurs in RE 11.10.1: Lemon-scented Gum open forest within the project site (Section 5.3.3). As stated in Section 3.1.6, potential microhabitats for reptiles, including the Collared Delma were targeted within the project site, including RE 11.10.1: Lemon-scented Gum open forest, by actively searching tree trunks, leaf litter, fallen timber, decorticating bark and under bush rock. Surveys were undertaken in April and September 2012 when the conditions were not too dry as it has rained leading up to or during the surveys and the average maximum temperature was greater than 25°C. Active diurnal searches were conducted in the early evening.

One off-diurnal searches, comprising: Searching microhabitats, such as carefully turning woody debris, rocks and artificial debris, raking the soil surface or leaf litter beneath trees and looking beneath peeling bark for reptiles or their sloughs.

As described in Section 3.1.6, potential microhabitats for reptiles, including the Collared Delma, were searched during active diurnal surveys which were conducted in April 2012 and September 2012 (Figure 6).

Optimal survey time is during the coolest parts of the day.

As described in Section 3.1.6, active searches were conducted in the late afternoon and in the evenings.

Survey over a minimum of 1.5 person hours per ha for habitats of average complexity per targeted species.

The detailed habitat assessment for the Collared Delma (Section 5.3.3) states that the project site contains approximately 72.2 ha of habitat. The minimum survey effort required for this species is therefore approximately 108 person hours. As stated in Section 3.1.9, habitat assessments were conducted within the project site for 72 person hours in August 2014, while active searches (comprising diurnal and spotlighting/nocturnal active searches within the project site) in April and September 2012 comprised 30 hours. In addition, there was a general reptile trapping program within the project site which included 120 pitfall trap days and 114 pitfall trap nights, 700 Elliott 'B' trap nights and 30 funnel trap days and 40 funnel trap nights.

Survey over a minimum of 3 days.

As stated in Section 3.1.3 the April and September 2012 surveys were each conducted over five days and four nights, the August 2014 survey was conducted over 13 days and 12 nights. Therefore, the surveys were conducted over 23 days and 20 nights, well in excess of the minimum three day survey requirement.

Tile grids should be trialled as a supplementary technique. Grids of 50 tiles placed at 5 m intervals in suitable habitat. Minimum two grids should be used for sites less than two 2 ha in size, one grid per 2 ha for sites up to 40 ha, and 20 grids for sites greater than 40 ha.

Tile grid surveys were not trialled as a supplementary technique for the Collared Delma as the survey methods utilised (active searches and pitfall traps) were deemed appropriate to locate the species if it was present within the project site.

5.1.2 Queensland Survey Requirements

The Queensland Fauna Survey Guidelines outlines the minimum survey requirements, standards and appropriate practice for the survey of terrestrial vertebrate fauna in Queensland. These survey guidelines had not been released to the public during the time of the detailed fauna surveys conducted in April 2012 and September 2012. However, the

surveys undertaken for the project are generally in compliance with these guidelines. The general survey methods outlined in this guideline that are applicable to the Collared Delma are discussed in the following sections.

The 2006 *Draft Queensland Brigalow Belt Reptile Recovery Plan 2008 – 2012* (Queensland Brigalow Belt Reptile Recovery Plan) includes the Collared Delma however, there are no survey guidelines in this plan and therefore the Queensland Brigalow Belt Reptile Recovery Plan is not discussed further in this section.

Queensland Fauna Survey Guidelines

Optimal time of year for vertebrate fauna surveys within the Brigalow belt Bioregion are spring to early summer (Sept – mid Nov) and autumn (March – mid May).

The 2012 fauna surveys were conducted in April and September and therefore meet the requirements of this guideline.

Pitfall Trapping – Four buckets at 7.5 m intervals on T-design; 45 m fence for four nights.

As described in Section 3.1.6, pitfall trapping was conducted at five sites within the project site (Figure 6). At each survey site, pitfall traps comprised six 20 L buckets evenly spaced along 30 m of a 30 cm high drift fence. Pitfall traps were open for four days and four nights at four sites and four days and three nights at one site.

Funnel Trapping – Six funnels, 3 m in on distal ends of T-design; 45 m fence on four nights.

As described in Section 3.1.6, funnel trapping was conducted at five sites within the project site (Figure 6). At each survey site, a funnel trap was placed at either end of the 30 m drift fence (totalling two funnel traps per site and a total of 10 funnels). Funnel traps were left open for three days and four nights totalling 30 funnel trap days and 40 funnel trap nights.

Diurnal active search – Two X 30 person minute searches within two different 50 x 50 m quadrants of the survey site.

As stated in Section 3.1.6, diurnal active surveys consisted of two personnel searching for 30 minutes at each of the five detailed survey sites and the two secondary sites for a total of 22 person hours of active diurnal searching.

Nocturnal active search – Two X 30 person minute searches within the 100 x 100 m survey site.

As stated in Section 3.1.6, nocturnal active searches consisted of two personnel searching suitable habitats for 30 to 45 minutes at each of the five detailed sites and one secondary site.

Camera trapping – One camera per site for a minimum of four nights.

As described in Section 3.1.9, infra-red surveys were located at 13 sites across the project site and recorded for a total of 128 camera trap nights. Two cameras were left for three nights but the other 28 cameras were left for four or more nights.

Scat and sign search – Scat and sign search can coincide with systematic diurnal active searches, within 50 x 50 m quadrats of the survey site. Otherwise incidental.

Searches for signs of the Collared Delma were undertaken during the detailed diurnal active searches for reptiles and habitat searches, as described in Sections 3.1.6 and 3.1.8, respectively. However, scats were not specifically searched for as the Collared Delma does not produce visible, obvious scats, such as the Yakka Skink which has communal latrine sites.

Incidental – Incidental detection of any species.

As stated in Sections 3.1.6 and 3.1.8, any incidental detection of fauna species were recorded during the flora and fauna surveys.

5.2 DESKTOP AND FIELD SURVEY RESULTS

The Collared Delma was not recorded from the project site during any of the field surveys undertaken for the project. However, the Collared Delma, or its habitat, was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool. The closest Collared Delma records to the project site are from the Queensland Museum database and include the Kroombit Tops National Park (approximately 43 km south-east of the project site boundary) and within Boyne Valley (approximately 81 km south-east of the project site boundary).

5.3 HABITAT ASSESSMENT

5.3.1 Overview

The Collared Delma is endemic to Queensland and is restricted to central and south-east Queensland. Due to specific habitat requirements, the species' distribution is highly fragmented and restricted to only a few locations. Typically, the Collared Delma occurs in small isolated populations throughout its distribution (DotE, 2015).

The Collared Delma normally inhabits eucalypt-dominated woodlands, open-forests and adjacent exposed rocky areas in the following Queensland RE Land Zones (DotE, 2015):

- Land Zone 3 – Alluvium (river and creek flats);

- Land Zone 9 – Undulating country on fine-grained sedimentary rocks; and
- Land Zone 10 – Sandstone ranges.

The Collared Delma has been recorded from the following REs (DotE, 2015):

- RE 11.3.2: *Eucalyptus populnea* woodland on alluvial plains (RE 11.3.2: Poplar Box woodland);
- RE 11.9.10: Eucalyptus populnea open forest with a secondary tree layer of *Acacia harpophylla* and sometimes *Casuarina cristata* on fine-grained sedimentary rocks (RE 11.9.10: Poplar Box/Brigalow open forest);
- RE 11.10.1: Lemon-scented Gum open forest; and
- RE 11.10.4: *Eucalyptus decorticans*, *Lysicarpus angustifolius* +/- *Eucalyptus* spp., *Corymbia* spp., *Acacia* spp. woodland on coarse-grained sedimentary rocks (RE 11.10.4: Gum-topped Ironbark, Budgeroo/Brown Hazelwood +/- *Eucalyptus* species, *Corymbia* species, *Acacia* species woodland).

The presence of rocks, logs, bark and other coarse woody debris, and mats of leaf litter (typically 30 to 100 mm thick) appears to be an essential characteristic of the Collared Delma microhabitat and is always present where the species occurs (DotE, 2015).

Canopy tree species present in suitable habitat for this species generally comprise: Silver-leaved Ironbark (*Eucalyptus melanophloia*), Moreton Bay Ash (*Eucalyptus tessellaris*), Gum Top Box (*Eucalyptus moluccana*) and Tallowood (*Eucalyptus microcorys*) (DotE, 2015).

The general habitat requirements of the Collared Delma are summarised in Table 9.

Table 9
Collared Delma - General Habitat Requirements

Requirements/Preferences	Collared Delma Requirements/Preferences (DotE, 2015)
General habitat requirements/preferences	This species is found in eucalypt-dominated woodlands, open-forests and adjacent exposed rocky areas. It has been previously recorded in RE 11.3.2: Poplar Box woodland, RE 11.9.10: Poplar Box/Brigalow open forest, RE 11.10.1: Lemon-scented Gum open forest and RE 11.10.4: Gum-topped Ironbark, Budgeroo/Brown Hazelwood +/- *Eucalyptus* species, *Corymbia* species, *Acacia* species woodland. Rocks, logs, bark and other coarse woody debris, and mats of leaf litter (typically 30 to 100 mm thick) appears to be an essential characteristic of the Collared Delma microhabitat and is always present where the species occurs.
Foraging requirements/preferences	The Collared Delma feeds on insects and spiders, with small cockroaches the most common prey item. Some individuals have been captured in subterranean termite colonies.

Requirements/Preferences	Collared Delma Requirements/Preferences (DotE, 2015)
Microhabitat requirements/preferences	The presence of rocks, logs, bark and other coarse woody debris, and mats of leaf litter (typically 30 to 100 mm thick) appears to be an essential characteristic of the Collared Delma microhabitat and is always present where the species occurs. Canopy tree species present in suitable habitat for this species generally comprise: Silver-leaved Ironbark, Moreton Bay Ash, Gum Top Box and Tallowood (DotE, 2015).
Breeding requirements/preferences	The species is known to produce two eggs in December that hatch in February to March.

5.3.2 Habitat Modelling

Habitat modelling was conducted by Cumberland Ecology for the Collared Delma and presented in Appendix P – *Terrestrial Ecology* of the EIS Addendum. The habitat modelling focussed on the presence of suitable land zones and woodland types, the nature and extent of vegetation disturbance that has occurred, and the impacts of cattle and feral animals, as summarised in Table 10.

Table 10
Habitat Modelling for the Collared Delma

Habitat Analysis Criteria	Collared Delma
Pre-existing models for threatened species habitat	The Commonwealth's Brigalow Belt Reptiles Referral Guideline provides high level modelled distribution for the Collared Delma within Queensland/northern New South Wales. The model classifies areas where the Collared Delma '*may'* occur and where the Collared Delma is '*known/likely'* to occur. The project site is within an area modelled as '*may'* occur. There are no pre-existing habitat models at a local scale and near the project site, for the Collared Delma.
Threatened species records in the project site and surrounds	No records occur within the project site or within the locality. This species or its habitat was predicted to occur in the EPBC Act Protected Matters Search Tool.
Presence of suitable vegetation	The Collared Delma has been recorded from RE 11.10.1: Lemon-scented Gum woodland (DotE, 2015) which occurs within the project site. The following canopy tree species are also present in the project site and are potentially suitable habitat for the Collared Delma: Moreton Bay Ash and Gum Top Box.
Presence of suitable topography	No specific general topography requirements are needed for this species. However, essential to the microhabitat is the presence of rocks, logs, bark and other coarse woody debris, and mats of leaf litter (DotE, 2015). Rocks, logs, bark and other coarse woody debris, and mats of leaf litter are present in limited areas within the north-eastern and south-western woodland habitats within the project site.
Presence of permanent water sources	No specific requirement for permanent water are known (DotE, 2015).

Habitat Analysis Criteria	Collared Delma
Presence of preferred foods	The species is insectivorous and as such all remnant woodland habitats are important for the species. Patches of remnant woodland are present across the project site. This species has been previously recorded from termite mounds (DotE, 2015). Termite mounds have been recorded in the project site and have been included as habitat mapping for this species.
Presence of tree hollows	The species is not associated with tree hollows.
Documented foraging distances around permanent water	Very little is known about the home ranges and movement patterns of the Collared Delma and there is no known requirement or association with permanent water (DotE, 2015).
Documented sensitivity to habitat clearance and/or fragmentation	Habitat clearance and fragmentation is likely to severely impact this species as it lacks the mobility to recolonise areas by moving across cleared farmlands. The majority of the project site has been previously cleared for grazing and is highly fragmented.
Occurrence of harmful feral species that are a known threat to the species	Predation by feral cats and foxes (DotE, 2015). Both of these feral species were recorded in the project site
Documented sensitivity to cattle grazing pressure	The species is highly sensitive to grazing pressure (DotE, 2015). Overgrazing is known to compact soil, making it difficult for the species to find suitable shelter. A large part of the project site is currently being used for cattle grazing and grazing has occurred on project site for over 110 years.

Based on the criteria above, approximately 547 ha of land within the project site is unsuitable for the Collared Delma. The Terrestrial Ecology Report, prepared by Cumberland Ecology, and provided in the Round 1 Response to Submissions, assessed the remaining 72 ha of the project site as being low quality habitat for the Collared Delma (Figure 10). Cumberland Ecology assessed the habitat as being low quality due to the presence of numerous key threats and a high degree of habitat fragmentation. However, in response to DotE's second round of submissions on the Boundary Hill South EIS, Hansen Bailey and Cumberland Ecology have assessed the project site against the Commonwealth's definitions of habitat (Section 5.3.3). This reassessment has indicated that none of the project site meets the Commonwealth's definition of Collared Delma habitat.

5.3.3 Commonwealth Defined Habitat

Habitat for the Collared Delma is defined by the Commonwealth as:

- '*Suitable habitat'* in the Commonwealth's Brigalow Belt Reptiles Referral Guideline;
- '*Important habitat'* in both the Commonwealth's Brigalow Belt Reptiles Referral Guideline and the Commonwealth's Significant Impact Guidelines; and
- '*Habitat critical to the survival of a species'* in the Commonwealth's Significant Impact Guidelines.

These defined habitat terms are discussed in the following sections.

Suitable Habitat

Suitable habitat for Brigalow Belt reptiles is defined as '*a wide variety of remnant and non-remnant vegetation: predominantly eucalypt or acacia dominated forests to woodlands and grassland communities. These species are typically found sheltering in microhabitats where moisture is retained at or just below the soil surface. Microhabitats include, but are not limited to:*

- *Loose, friable topsoils;*
- *Cracks in alluvial clay soils;*
- *Live or decaying plant material, such as tussock bases, rotting logs or tree bases; and*
- *Debris situated at the soil surface, such as coarse woody debris, leaf litter, rocks or artificial debris.*'

Specifically, '*suitable habitat'* for the Collared Delma is defined in the Commonwealth's Brigalow Belt Reptiles Referral Guideline as including '*open-forests, woodlands and adjacent exposed rocky areas Queensland RE Land Zones 3, 9 and 10*'. Land Zones 3, 9 and 10 have all been mapped by the Queensland Government on the RE map (V9) as occurring within the project site in the form of REs 11.3.25: Eucalypt woodland fringing drainage lines, 11.9.9: *Eucalyptus crebra* woodland on fine-grained sedimentary rocks (RE 11.9.9: Ironbark woodland), 11.9.13: *Eucalyptus moluccana* or *Eucalyptus microcarpa* open forest on fine grained sedimentary rocks (RE 11.9.13: Grey Box open woodland) and 11.10.1: Lemon-scented Gum woodland. However, suitable habitat for the Collared Delma is confined to RE 11.10.1: Lemon-scented Gum woodland within the project site as it is the only RE with occasional boulders and rocky outcroppings in the woodland. This has been modelled as habitat (Figure 9 and Figure 10).

In accordance with the SPRAT database for the Collared Delma, RE 11.3.25: Eucalypt woodland fringing drainage lines, RE 11.9.9: Ironbark woodland and RE 11.9.13: Grey Box open woodland are not considered to be '*suitable habitat'* for the Collared Delma within the project site, as these REs in the project site lack the essential microhabitat features required. In particular, REs 11.3.25: Eucalypt woodland fringing drainage lines, 11.9.9: Ironbark woodland and 11.9.13: Grey Box open woodland lack shelter features, such as rocks, logs, bark and other coarse woody debris, and mats of leaf litter. These REs have been modelled as unsuitable habitat (Figure 9 and Figure 10).

Important Habitat

The Commonwealth's Brigalow Belt Reptiles Referral Guideline has identified areas of '*known important habitat*' and '*important habitat'* for the Collared Delma.

'*Known important habitat'* for the Collared Delma includes:

- Suitable habitat within the Commonwealth's defined '*Known/Likely-to-Occur'* distribution of the species and the Toowoomba Range; and
- Suitable habitat between grazed or cropped areas, along road reserves, and travelling stock routes, especially the Donnybrook Stock Route region.

The project site does not contain any '*known important habitat'* for the Collared Delma as:

- The project site is not within the Commonwealth's defined '*Known/Likely-to-Occur'* distribution area. The project site is also not in the Toowoomba Range; and
- Suitable habitat for the Collared Delma within the north-east of the project site is surrounded by a grazed area to the south, an operating open cut mine to the north and west and a power line easement to the east. The suitable habitat in the south-west of the project site is surrounded by unsuitable vegetation to the east and small areas of suitable habitat to the west and south. The suitable habitat for the Collared Delma within the project site is not situated along a road reserve or a travelling stock route and is not in the Donnybrook Stock Route region.

'*Important habitat'* for any of the listed Brigalow Belt reptile species also includes '*suitable habitat*' if it is:

- Habitat where the species has been identified during a survey;
- Near the limit of the species' known range;
- Large patches of contiguous, suitable habitat and viable landscape corridors (necessary for the purposes of breeding, dispersal or maintaining the genetic diversity of the species over successive generations); or
- A habitat type where the species is identified during a survey, but which was previously thought not to support the species.

The '*suitable habitat'* within the project site does not meet the definition of '*important habitat'* as:

- No individuals have been recorded within or surrounding the project site therefore there is no habitat on site where the species was identified.
- The project site is not near the limit of the species' known range.

- There are two patches of suitable habitat (67 ha) within the north-east of the project site and two small patches of suitable habitat (4.4 ha) within the south-west of the project site. The patch in the north-east of the project site is surrounded by the power line easement to the east, the existing open cut mine to the north and west and grazing land to the south. The patch in the south-west of the project site is surrounded by the existing open cut mine to the north, unsuitable vegetation to the east and small areas of suitable habitat to the west and south. The northern patch of suitable habitat is isolated and there are no viable landscape corridors to this patch which are necessary for breeding, dispersal or maintaining genetic diversity (Figure 9 and Figure 10). While the patch in the south-west of the project site is surrounded by small areas of suitable habitat to the west and south, overall the full extent of this patch of suitable habitat (which extends outside the project site) is surrounded by cleared agricultural land. This patch is isolated in the landscape and no viable landscape corridors connect this patch to other areas of suitable habitat which are necessary for breeding, dispersal or maintaining genetic diversity (Figure 9 and Figure 10).
- No individuals have been recorded within or surrounding the project site. Therefore, the species has not been identified during surveys for the project on habitat which was previously thought not to support the species.

Therefore the project site does not contain any 'known important habitat' or any 'important habitat'. This is consistent with the modelled habitat within the project site which has been assessed as being low quality habitat and unsuitable habitat (Section 5.3.2).

Habitat Critical to the Survival of a Species

'*Habitat critical to the survival of a species'* is defined in the Commonwealth's Significant Impact Guidelines as '*areas that are necessary:*

- *For activities such as foraging, breeding, roosting or dispersal;*
- *For the long-term maintenance of the species (including the maintenance of species essential to the survival of the species, such as pollinators);*
- *To maintain genetic diversity and long term evolutionary development; or*
- *For the reintroduction of populations or recovery of the species.*

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species as habitat critical for that species; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.'

The Queensland Brigalow Belt Reptile Recovery Plan states '*with the current limited information available on the individual* [Brigalow Belt species, including the Collared Delma] *it is not possible to map habitat critical to the species' survival. However, it is an action of this plan to identify, map and appropriately manage the key habitat areas with significant*

populations of the species'. Given that expert scientists cannot identify '*habitat critical to the survival of a species*' for the Collared Delma due to a lack of species specific information, this report has not attempted to delineate or map this habitat. However, using the limited Collared Delma information available to date and the low quality habitat within the project site, it is unlikely that the project site contains any '*habitat critical to the survival of a species'* as:

- There are no areas that are necessary for foraging, breeding, roosting or dispersal within the project site.
    - Foraging: The Collared Delma feeds on insects and spiders, with small cockroaches the most common prey type. Insects and spiders are common in a variety of landscapes and most are not limited by the need for any particular landscape characteristics. There is very little information about where the Collared Delma forages however, as the Collared Delma is always recorded in association with essential microhabitat (rocks, logs, bark and other coarse woody debris, and mats of leaf litter) it is reasonable to assume that the Collared Delma forages within its essential microhabitat. The project site contains two patches of suitable habitat within the north-east (67 ha) and two small patches in the south-west (4.4 ha) of the project site which provide some limited microhabitat features such a dead logs and a rocky, relatively intact understorey. While Collared Delma prey is likely to be found in the patches of suitable habitat within the project site, it is unlikely that these areas are necessary for Collared Delma foraging as it is unlikely that the Collared Delma is present in the project site. The Collared Delma is unlikely to be present in the project site as:
        - The nearest record of the Collared Delma is from March 2006 and is approximately 43 km south-east from the project site in a national park;
        - The Collared Delma has not been recorded within the project site despite targeted reptile surveys (Sections 3.1.6 and 3.1.8) during nearly optimal survey timeframes;
        - The project site contains only two patches of isolated habitat with limited microhabitat features and which have been continually grazed or cropped for 110 years. As stated in Section 5.3, grazing is a key threat to the Collared Delma; and
        - The patches of habitat within the project site do not connect with any viable landscape corridors which are necessary for dispersal.

    Therefore, it is considered unlikely that the project site contains any areas that are necessary for Collared Delma foraging.

- Breeding: The Collared Delma lays eggs which, once laid, are left to develop and hatch without any parental care. The eggs require a moist, protected location to ensure successful embryo development. The limited observations made about the species suggests that they have high site fidelity and often stay at one or two shelter sites. They are not thought to be burrowing legless lizards and so the most likely place for them to lay eggs is in sites with leaf litter under and around rocks, covered only slightly, as is the case with many grass skinks. The project site contains two patches of Collared Delma habitat which contain limited microhabitat features such a dead logs and a rocky, relatively intact understorey. However, the patch in the project site surrounded by the existing open cut mine and grazing land and are isolated from other patches of suitable Collared Delma habitat. There are no viable landscape corridors to these patches which are necessary for breeding and dispersal (Commonwealth's Brigalow Belt Reptiles Referral Guideline). It is unlikely that the project site contains any areas that are necessary for Collared Delma breeding given that:
  - The nearest record of the Collared Delma is from March 2006 and is approximately 43 km south-east from the project site in a national park;
  - The Collared Delma has not been recorded within the project site despite targeted reptile surveys (Sections 3.1.6 and 3.1.8) during nearly optimal survey timeframes;
  - The project site only contains only two patches of isolated habitat with limited microhabitat features and which have been continually grazed or cropped for 110 years. As stated in Section 5.3, grazing is a key threat to the Collared Delma; and
  - The patches of habitat within the project site do not connect with any viable landscape corridors which are necessary for breeding.
- Roosting: The Collared Delma is not known to produce or use roosts.
- Dispersal: The north-east and south-west of the project site contains two patches of suitable habitat with limited microhabitat features. The patches are isolated and there are no viable landscape corridors to these patches which are necessary for breeding, dispersal or maintaining genetic diversity (Commonwealth's Brigalow Belt Reptiles Referral Guideline) (Figure 9 and Figure 10). Given that the Collared Delma has not been recorded within the project site despite targeted reptile surveys (Sections 3.1.6 and 3.1.8), the project site only contains low quality Collared Delma habitat and the project site does not have any viable landscape corridors which are necessary for dispersal, it is unlikely that the project site contains any areas that are necessary for Collared Delma dispersal.

- Given that no individuals of the Collared Delma have been recorded within the project site, that the project site only contains limited essential microhabitat for the Collared Delma and that it has been continually used for grazing and cropping for more than the last 110 years, it is unlikely that the project site is an area necessary for the long-term maintenance of the species.
- Given that no individuals of the Collared Delma have been recorded within the project site, that the project site only contains two isolated patches of suitable habitat and there are no viable landscape corridors to these patches which are necessary for breeding and dispersal, it is unlikely that the project site is an area necessary to maintain genetic diversity and long term evolutionary development of the Collared Delma.
- Given that the project site only contains limited essential microhabitat for the Collared Delma and that it has been used for grazing and cropping for more than the last 110 years, it is unlikely that the project site is an area necessary for the reintroduction of populations or recovery of the species.
- The Commonwealth has deemed that a Recovery Plan for the Collared Delma is not required (DotE, 2015) and one has not been developed by the Commonwealth. However, the Queensland Brigalow Belt Reptile Recovery Plan states that '*critical habitat to the survival of a species*' cannot be mapped. There is also no Collared Delma habitat listed on the Register of Critical Habitat.

Therefore, using the limited available scientific knowledge about the Collared Delma and the low quality of the habitat within the project site, it is unlikely that the project site contains any '*habitat critical to the survival of a species'*.

5.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT

Limited suitable habitat (RE 11.10.1: Lemon-scented Gum woodland) exists within the project site where rocky, relatively intact understorey is present. It is likely that high quality habitat is present in the nearby Callide Timber Reserve, however the Callide Timber Reserve is separated from the project site by the 120 m wide cleared power line easement. This cleared power line easement is likely to act as a barrier to the movement of the Collared Delma. The nearest record of the Collared Delma to the project site is approximately 43 km south-east from the project site, in the Kroombit Tops National Park. Nevertheless, the Collared Delma has been conservatively assessed as having a high likelihood of occurrence within the project site, in accordance with the criteria specified in Table 8, due to the presence of potential habitat (albeit limited in nature) and as it is known to occur in the wider area.

5.5 SIGNIFICANT IMPACT ASSESSMENT

An assessment of significance has been conducted for this species following the Commonwealth's Significant Impact Guidelines for Vulnerable species. Section 5.5.1 assesses whether the project site contains an 'important population' of the Collared Delma, while Section 5.5.2 presents the assessment of significance that has been conducted for this species.

5.5.1 Important Population Assessment

According to the Commonwealth's Significant Impact Guidelines, an '*important population*' of any Vulnerable species 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:*

- *Key source populations either for breeding or dispersal;*
- *Populations that are necessary for maintaining genetic diversity; and/or*
- *Populations that are near the limit of the species range.'*

However, the Commonwealth's Brigalow Belt Reptiles Referral Guideline states that given that listed Brigalow Belt reptiles (including the Collared Delma) are difficult to detect and population information is limited, the Commonwealth regards '*important habitat'* as a surrogate for '*important populations'* in the assessment of whether an action is likely to have a significant impact on the species.

As discussed in Section 5.3.3, there is no '*important habitat'* for the Collared Delma within the project site. Therefore, there are also no '*important populations'* of the Collared Delma within the project site.

5.5.2 Significant Impact Criteria

An assessment of significance for the Collared Delma has been conducted in accordance with the Commonwealth's Significant Impact Guidelines for Vulnerable species. The significant impact criteria are provided in *underlined italics* and the response is provided in normal text.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population of a species*

Not applicable as there is no '*important population'* of Collared Delma within the project site (Section 5.5.1).

- *reduce the area of occupancy of an important population*

Not applicable as there is no '*important population'* of Collared Delma within the project site (Section 5.5.1).

- *fragment an existing important population into two or more populations*

Not applicable as there is no '*important population'* of Collared Delma within the project site (Section 5.5.1).

- *adversely affect habitat critical to the survival of a species*

Not applicable as there is no '*habitat critical to the survival of a species'* for Collared Delma within the project site (Section 5.3.3).

- *disrupt the breeding cycle of an important population*

Not applicable as there is no '*important population'* of Collared Delma within the project site (Section 5.5.1).

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

As discussed in Section 5.3.3, there are two patches of limited suitable habitat, of low quality, within the project site. There is no '*known important habitat'*, 'important habitat' or '*habitat critical to the survival of a species'* within the project site. Given the poor quality and isolated nature of Collared Delma habitat found within the project site, it is unlikely that the project will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

It is considered unlikely that the project will result in an invasive species becoming established in habitat for the Collared Delma within the project site. Feral animals already occur in the project site and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project. In addition, the Callide Mine Weed Management Plan includes a wash down procedure to help

control the spread of pest plants both on and off-site. This management plan will be updated to include the project.

- *introduce disease that may cause the species to decline, or*

It is considered unlikely that the project will introduce a disease that may cause the Collared Delma to decline as disease is not a known threat.

- *Interfere substantially with the recovery of the species.*

The project will not substantially interfere with the recovery of the Collared Delma. As stated in Section 5.5.1, there is no '*important population'* of Collared Delma in the project site. By definition, this means that there are no key source populations either for breeding or dispersal within the project site and no populations that are necessary for maintaining genetic diversity. These are key requirements for the recovery of the species. There are also only two isolated patches of habitat within the project site and these do not have any viable landscape corridors. The viable landscape corridors are necessary for breeding and dispersal. Given that there are no 'important populations' and no '*known important habitat'*, '*important habitat'* or '*habitat critical to the survival of a species'* within the project site and no viable landscape corridors to the project site, it is unlikely that the project site contains habitat that is critical for the recovery of the Collared Delma. Therefore, it is unlikely that the project will interfere substantially with the recovery of the Collared Delma.

Conclusion

Based on the outcomes from the above assessment criteria, it is considered that the project will not have a residual significant impact to the Collared Delma.

6 YAKKA SKINK

The Yakka Skink is one of the largest skinks in sub-humid to semi-arid eastern Queensland and grows up to 40 cm in length. It has a broad dark brown to black stripe from its nape to its tail which is bordered on either side by a narrow, pale fawn back/side stripe. Its flank scales vary from dark brown to pale brown to reddish-brown and form a faintly variegated orange to brown pattern. The Yakka Skink's throat is cream to yellow with blackish flecks or spots and its chest and abdomen are yellow to orange (DotE, 2015). The Yakka Skink is listed as Vulnerable under both the EPBC Act and NC Act.

This section provides the detailed assessment of the Yakka Skink and is structured as follows:

- Section 6.1 – Survey Methodology: A detailed description of the survey methodology and how it aligns with the Commonwealth and State survey requirements;
- Section 6.2 – Desktop and Field Survey Results: The results of the desktop and field surveys;
- Section 6.3 – Habitat Assessment: The detailed habitat assessment including habitat modelling and an assessment against the Commonwealth habitat terminology;
- Section 6.4 – Likelihood of Occurrence Assessment: The detailed likelihood of occurrence assessment; and
- Section 6.5 – Significant Impact Assessment: The detailed significant impact assessment in accordance with the Commonwealth's Significant Impact Guidelines.

6.1 SURVEY METHODOLOGY

Surveys undertaken within the project site for the Yakka Skink were generally undertaken in accordance with the Commonwealth and Queensland survey requirements, as outlined below.

6.1.1 Commonwealth Survey Requirements

There are three Commonwealth survey guidelines that outline survey methods for the Yakka Skink, namely:

- SPRAT database for the Yakka Skink;
- Commonwealth's Threatened Reptile Guideline; and
- Commonwealth's Brigalow Belt Reptiles Referral Guideline.

The survey guideline requirements and the actual survey effort for the Yakka Skink are described in the following sections. The survey guideline requirements are provided below in *underlined italics* and the response is provided in normal text.

Species Profile and Threats Database

As of 23 June 2015, the SPRAT database for the Yakka Skink included the following survey requirements.

Habitat Assessment. A habitat assessment is recommended to be undertaken as a preliminary step to designing and undertaking a targeted survey, including:

Determine the proximity of nearest records to the study area.

The nearest record of the Yakka Skink is from the Callide Timber Reserve, approximately 1.5 km from the project site. The record is from prior to 2005.

Search relevant databases such as Zoology Data Search (Queensland Museum) and Wildlife Online (Queensland Department of Environment and Resource Management).

As stated in Section 3.1.2, the Queensland Museum database was searched in August 2012 and September 2014 and the Wildlife Online databases was searched in March, September and October 2012, and September 2014, prior to designing and undertaking the surveys.

Obtain State vegetation mapping for the study area to determine the extent of suitable habitat including the presence of associated vegetation communities.

As stated in Section 3.1.2, the Queensland vegetation mapping for the project site (Versions 6.1, 8.0 and 9.0) were obtained to assist in determining the extent of any potential suitable habitat for the Yakka Skink and determining any associated vegetation communities.

Determine the presence of suitable microhabitat features in the study area.

Suitable microhabitat features for the Yakka Skink includes cavities under and between partly buried rocks, hollow logs or tree stumps, root cavities, abandoned animal burrows, and deep burrow systems sometimes under dense ground vegetation. In cleared habitat, suitable microhabitat features include raked log piles, deep gullies, tunnel erosion/sinkholes and rabbit warrens, and the species has been found under sheds and loading ramps. The Yakka Skink is not generally found in trees or rocky habitats. Suitable microhabitat features were identified at a high level (i.e. identifying possible areas with hollow logs and dense ground vegetation) prior to conducting the surveys.

As stated in Section 3.1.6 diurnal active searches targeted suitable microhabitat features for reptiles, including the Yakka Skink, and as discussed in Section 3.1.8 detailed habitat assessments were undertaken for all threatened species recorded or with a high or moderate likelihood to occur within the project site, including the Yakka Skink.

Targeted survey. Targeted surveys to confirm the presence/absence of the Yakka Skink are done by actively searching suitable open-forest, woodland and scrub habitats for potential colony sites and deploying well-shaded Elliott-style traps close to burrow entrances.

As stated in Section 3.1.6, diurnal active searches targeted suitable microhabitat features for reptiles, including the Yakka Skink, and as discussed in Section 3.1.8 detailed habitat assessments were undertaken for all threatened species recorded or with a high or moderate likelihood to occur within the project site, including the Yakka Skink.

No Yakka Skinks or Yakka Skink burrow entrances were recorded within the project site, therefore no Elliott traps were deployed close to any Yakka Skink burrow entrances.

Searching for burrow systems and communal defecation sites is the most reliable method of detection. Yakka Skink are especially wary and will quickly retreat into their burrows or take shelter if they detect movement or a disturbance in their surrounding environment. The Yakka Skink can be confirmed by Elliott trapping around the burrows (cat food is a reliable bait), by distant observation with binoculars or by shining a torch down burrows at night.

As stated in Section 3.1.6 diurnal active searches targeted suitable microhabitat features for reptiles, including the Yakka Skink, however no burrow systems or communal defecation sites were recorded. Therefore, Elliott trapping was not conducted around burrows, distance observation with binoculars was not undertaken and torches were not used to look down burrows at night.

Optimal conditions for searching burrows. The species is more likely to be detected when conditions are warm, not too dry and maximum temperatures are greater than 25°C. Optimal survey times for active searching are early morning (two hours either side of dawn) and during the evening on warm nights.

The project site was surveyed in April 2012 and September 2012. During both surveys, the conditions were nearly optimal for active searching for the Yakka Skink.

As stated in Section 3.1.6, the average maximum temperature during the survey conducted from 17 to 21 April 2012 was approximately 30°C and it rained during the survey. Approximately 4 mm of rain was recorded during the April 2012 survey. The average maximum temperature during the survey from 6 to 10 September 2012 was 27°C. No rain was recorded during the September 2012 survey, however rain was recorded within two

weeks prior to the September survey. Therefore, during both surveys the conditions were warm, not too dry and the average maximum temperature was greater than 25°C.

During both surveys, active reptile searches were conducted in the late afternoon and the evening on warm nights.

Minimum survey effort. Sufficient time is required to thoroughly search the area by day and to spotlight by night. The minimum survey effort required includes:

- *a minimum of three survey days and nights*
- *at least one replicate survey employing all of the recommended techniques, if the species has not already been detected.*

The surveys undertaken at the project site meet the minimum survey effort requirements.

As stated in Section 3.1.6, active diurnal searches targeting suitable microhabitat features for reptiles, including the Yakka Skink, were undertaken over four days in April 2012 and for 1 day in September 2012. As stated in Section 3.1.6, spotlighting and active nocturnal searches were undertaken over five nights in April 2012 and two nights in September 2012. Therefore, the total survey effort was for five days and seven nights which exceeds the minimum survey requirement of three survey days and nights.

The species was not recorded during the April 2012 survey, therefore a second active diurnal search and a second spotlighting and active nocturnal search was undertaken in September 2012.

Commonwealth's Threatened Reptile Guideline

The Commonwealth's Threatened Reptile Guideline includes the following survey requirements for the Yakka Skink.

Searching for burrow systems and communal defecation sites is the most reliable method of detection.

As stated in Section 3.1.6, diurnal searches for reptiles were undertaken in the late afternoon across seven survey sites and all potential microhabitats for reptiles were targeted. No Yakka Skink burrow systems or communal defecation sites were recorded during these surveys.

Confirmed by Elliott trapping around the burrows, by distant observation with binoculars or by shining a torch down the burrows at night.

As stated in Section 3.1.6 diurnal active searches targeted suitable microhabitat features for reptiles, including the Yakka Skink, however no burrow systems or communal defecation sites were recorded. Therefore, Elliott trapping was not conducted around burrows, distance observation with binoculars was not undertaken and torches were not used to look down burrows at night.

Nothing is reported on a seasonal activity pattern, but Queensland Museum specimens have been collected in November (two), December (one), February (three) and March (two), perhaps suggesting a peak in activity in late spring and summer, like other large Egernia species.

Surveys were conducted in September (spring) and April (autumn). However, nothing has been reported on a seasonal activity pattern for the Yakka Skink, therefore given that the weather during the surveys were nearly optimal for the Yakka Skink (as discussed in the Yakka Skink SPRAT survey requirements) the survey timeframes were suitable for detecting the Yakka Skink.

Commonwealth's Brigalow Belt Reptiles Referral Guideline

The Commonwealth's Brigalow Belt Reptiles Referral Guideline includes the following survey requirements for the Yakka Skink.

A preliminary assessment should consider the following:

- *The proximity of the nearest records of each of the listed Brigalow Belt reptiles to the proposed action. Databases to search are: the Protected Matters Search Tool, Zoology Data Search (Queensland Museum), Wildlife Online (Qld DERM) and Australian Museum Records.*

The nearest record of the Yakka Skink is from the Callide Timber Reserve, approximately 1.5 km from the project site. The record is from prior to 2005. As discussed in Section 3.1.2, database searches included the EPBC Act Protected Matters Search Tool, the Queensland Museum, Wildlife Online and the Australian Museum Records.

- *What vegetation types characterise the local region in which you propose to take an action?*
    - *Obtain state vegetation mapping centred on your proposed action to determine how much suitable land exists in the local area and what vegetation communities need to be targeted for the survey.*
    - *How might one or more listed Brigalow Belt reptiles use the habitats in the region, i.e., for foraging, breeding or dispersal?*

As stated in Section 3.1.2, the Queensland vegetation mapping for the project site (Versions 6.1 and 8.0) was obtained prior to the surveys to assist in determining the extent of any potential suitable habitat for the Yakka Skink and determining any associated vegetation communities. RE 11.9.9: Ironbark woodland was assessed as being potentially suitable for the Yakka Skink and was targeted during the surveys. The Yakka Skink could potentially use the microhabitat present in the project site for foraging and breeding.

- *A habitat assessment of each vegetation type in your study area needs to be carried out to determine its suitability as reptile habitat. The suitability may vary with natural variation and microhabitat features (e.g. distribution and number of shelter sites) within a state-mapped vegetation type (e.g. QLD REs). It is recommended that you characterise the quality of the habitat, locate suitable microhabitat features and design a survey effort to optimize the sampling of these features across the landscape.*

Within the project site, RE 11.9.9: Ironbark woodland was identified as potentially suitable habitat for the Yakka Skink. However, the detailed habitat assessment (Section 6.3) confirmed that this RE only provides low quality habitat for the Yakka Skink due to historic clearing causing fragmented and isolated patches of habitat.

As stated in Section 3.1.6, potential microhabitats for reptiles, including the Yakka Skink, were targeted by active diurnal and nocturnal searches and spotlighting.

Targeted Surveys. If suitable habitat for any one of the Brigalow Belt reptiles is likely to be affected by your proposed action, targeted surveys should be undertaken to determine if it could be important habitat. As a general rule surveys should only be undertaken from late September through to late March when weather conditions are warm, not too dry and maximum temperatures are greater than 25 °C on most survey days. Optimal survey time varies between species, but generally are early morning (within 4 hours of sunrise) and late afternoon to early evening for diurnal species.

As described in Sections 3.1.6 and 3.1.8, the survey methods meet these survey recommendations. All potential microhabitats for reptiles, including the Yakka skink, were targeted by active searches of appropriate habitat including: tree trunks, leaf litter, fallen timber, decorticating bark and under bush rock.

As described in Section 3.1.6, a combination of pitfall and funnel trapping was conducted at five sites within the project site (Figure 6). At each survey site, pitfall traps comprised six 20 L buckets evenly spaced along 30 m of 30 cm high drift fence. Pitfall traps were open for four days and four nights during the April 2012 surveys and were open for three days and four nights during the September 2012 survey, totalling 120 pitfall trap days and 120 pitfall trap nights. A funnel trap was placed at either end of the drift fence at each site (totalling two funnel traps per site). Funnel traps were left open for three days and four nights totalling

30 funnel trap days and 40 funnel trap nights. Therefore, the pitfall and funnel trapping methodology meets these survey recommendations.

The survey conducted in April 2012 and the September 2012 survey were conducted when conditions were optimal (as described in the SPRAT database) for Yakka Skink searches (i.e. warm, not too dry and maximum temperatures of 25 °C or greater). Given that these survey guidelines state that the Yakka Skink has been recorded throughout the entire year, which suggests at least limited activity all year, the timing of the surveys was suitable.

One off-diurnal searches, comprising: Searching microhabitats, such as carefully turning woody debris, rocks and artificial debris, raking the soil surface or leaf litter beneath trees and looking beneath peeling bark for reptiles or their sloughs.

As described in Section 3.1.6, potential microhabitats for reptiles, including the Yakka Skink, were searched during diurnal surveys which were conducted in April and September 2012 (Figure 6).

Optimal survey time is during the coolest parts of the day

As described in Section 3.1.6, active reptile searches were conducted in the late afternoon and in the evenings.

Survey over a minimum of 1.5 person hours per ha for habitats of average complexity per targeted species.

The detailed habitat assessment for this species indicates that the project site contains approximately 122 ha of habitat for the Yakka Skink. The minimum survey effort required for this species is therefore approximately 183 person hours. As stated in Section 3.1.9, habitat assessments were conducted within the project site over 72 person hours in August 2014, while active searches (comprising diurnal and spotlighting/nocturnal active searches within the project site) in April and September 2012 comprised 30 hours. In addition, there was also the general reptile trapping program within the project site (given that no Yakka Skink burrows or communal latrine sites were recorded) which included 700 Elliott ‘B’ trap nights, 220 wire cage trap nights, 120 pitfall trap days and 114 pitfall trap nights as well as 30 funnel trap days and 40 funnel trap nights.

Survey over a minimum of 3 days.

As stated in Section 3.1.3, the April and September 2012 surveys were each conducted over five days and four nights, and the August 2014 survey was conducted over 13 days and 12 nights. Therefore, the surveys were conducted over 23 days and 20 nights, well in excess of the minimum three day survey requirement.

Potential yakka skink colony sites can be watched using a telescope or binoculars at 30 m distance.

No potential Yakka Skink colony sites were recorded during the surveys, therefore none were watched with a telescope or binoculars.

Transects (number and size of area sampled) should be strategically designed/positioned in large habitat patches (>10 ha) to adequately sample representative microhabitats in each habitat type.

Transect surveys for reptiles were not undertaken given the extensive habitat assessment, active searching and trapping effort for reptiles that was undertaken within the project site.

Spotlighting should target water-inundated gilgais, wetlands, riparian habitats and the surrounding environment (e.g. roads) and large logs between dusk and early morning hours. More effective on warm, humid evenings. Survey over a minimum of 1.5 person hours per ha for habitats of average complexity per targeted species. Survey over a minimum of 3 nights.

Spotlighting for reptiles, including the Yakka Skink, targeted tree trunks and decorticating bark, as well as riparian areas and remnant pools and the seasonal wetland within the centre of the project site. There are no gilgais within the project site. Spotlighting was undertaken in the late afternoon/early evening on days when the average maximum temperature was above 25°C. The detailed habitat assessment for this species indicated that the project site contains approximately 122 ha of habitat for the Yakka Skink. The minimum spotlight survey effort required for this species is therefore approximately 183 person hours. The total Yakka Skink survey effort within the project site involved 72 person hours of habitat assessments in August 2014, 30 hours of active searches (comprising diurnal and spotlighting/nocturnal active searches within the project site) in April and September 2012 and general reptile trapping program within the project site including 700 Elliott 'B' trap nights, 220 wire cage trap nights, 120 pitfall trap days and 114 pitfall trap nights as well as 30 funnel trap days and 40 funnel trap nights.

Elliot and cage trapping should be undertaken and target colony sites through diurnal surveys of suitable habitat. One large Elliott-style trap (15.5 cm x 15 cm x 46 cm) and one cage trap should be placed as close as possible to burrow entrances. The traps should be checked every morning and early evening (after the optimal foraging periods) over four days.

No Yakka Skink colony sites were recorded during the surveys, therefore no Elliott or wire cage traps were used to target Yakka Skink colonies. However, there were Elliott and wire cage traps (700 Elliott 'B' trap nights and 220 wire cage trap nights) used in the general reptile survey which were conducted over eight nights, well in excess of the minimum four day requirement.

Surveys should be undertaken from late September through to late March.

Surveys were conducted in September and April 2012. The September survey meets the requirements of this guideline to survey from September to March. There is no reported seasonal activity pattern for the Yakka Skink, therefore given that the weather during the surveys were nearly optimal for the Yakka Skink (as discussed in the Yakka Skink SPRAT survey requirements) the survey timeframes were considered suitable for detecting the Yakka Skink.

6.1.2 Queensland Survey Requirements

The Queensland Fauna Survey Guidelines outline the minimum survey requirements, standards and appropriate practice for the survey of terrestrial vertebrate fauna in Queensland. These survey guidelines had not been released to the public during the time of the detailed fauna surveys conducted in April 2012 and September 2012. While these guidelines should not be applied retrospectively to surveys that have already been completed, they are discussed here for completeness. The surveys undertaken for the project are generally in compliance with the (not applicable) Queensland Fauna Survey Guidelines.

In addition, the 2014 *Targeted Species Survey Guidelines – Yakka Skink Egernia rugosa* (Queensland's Yakka Skink Survey Guidelines) also outlines surveys guidelines applicable to this species. The surveys methods outlined in these guidelines that are applicable to the Yakka Skink, are discussed in the following sections.

The Queensland Brigalow Belt Reptile Recovery Plan includes the Yakka Skink however, there are no survey guidelines in this plan and therefore the Queensland Brigalow Belt Reptile Recovery Plan is not discussed further in this section.

Queensland Fauna Survey Guidelines
Optimal time of year for vertebrate fauna surveys within the Brigalow belt Bioregion are Spring to early Summer (Sept – mid Nov) and Autumn (March – mid May).

The 2012 fauna surveys were conducted in April and September and therefore meet the requirements of this guideline.

Pitfall Trapping – Four buckets at 7.5 m intervals on T-design; 45 m fence for four nights

As described in Section 3.1.6, pitfall trapping was conducted at five detailed survey sites within the project site (Figure 6). At each survey site, pitfall traps comprised six 20 L buckets evenly spaced along 30 m of a 30 cm high drift fence. Pitfall traps were open for four days and four nights at four sites and four days and three nights at one site.

Funnel Trapping – Six funnels, 3 m in on distal ends of T-design; 45 m fence on four nights

As described in Section 3.1.6, funnel trapping was conducted at five detailed survey sites within the project site (Figure 6). At each survey site, a funnel trap was placed at either end of the 30 m drift fence (totalling two funnel traps per site and a total of 10 funnels). Funnel traps were left open for three days and four nights.

Diurnal active search – Two X 30 person minute searches within two different 50 x 50 m quadrants of the survey site

As stated in Section 3.1.6, diurnal active surveys consisted of two personnel searching for 30 minutes at each of the five detailed survey sites and the two secondary sites for a total of 22 person hours of active diurnal searching.

Nocturnal active search – Two X 30 person minute searches within the 100 x 100 m survey site

As stated in Section 3.1.6, nocturnal active searches consisted of two personnel searching suitable habitats for between 30 to 45 minutes at each of the five detailed survey sites and one secondary site.

Camera trapping – One camera per site for a minimum of four nights

As described in Section 3.1.9, infra-red surveys were located at 13 sites across the project site and recorded for a total of 128 camera trap nights. Two cameras were left for three nights but the other 28 cameras were left for four or more nights.

Scat and sign search – Scat and sign search can coincide with systematic diurnal active searches, within 50 x 50 m quadrats of the survey site. Otherwise incidental.

Searches for signs and scats of the Yakka Skink were undertaken during the detailed diurnal active searches for reptiles as described in Section 3.1.6 and during the habitat searches as described in Section 3.1.8.

Incidental – Incidental detection of any species

Any incidental detection of fauna species were recorded during the flora and fauna surveys.

Queensland's Yakka Skink Survey Guidelines

While evidence of E. rugosa colonies can be detected at any time of year, detectability increases during the warmer, drier months of the year when activity levels at the burrow complex increase. The increase in activity begins with increased temperatures around mid-September to early October (Brigalow Belt and Mulga Lands). Dense ground cover may

obscure evidence of colonies, so where possible, surveys should be carried out during periods of reduced ground cover (i.e. spring and early summer). Heavy rainfall will also obscure evidence of the presence of E. rugosa colonies, washing away freshly excavated dirt and worn areas around burrows and degrading the integrity of scats in the communal latrine. Therefore it is recommended surveys for signs should be conducted at least two weeks after heavy rainfall. Conversely, the first sunny days following good rain are ideal times to conduct distant observation surveys of suitable microhabitat features and trapping of unconfirmed burrows, as E. rugosa, like many other reptiles, are often highly active in this period.

Surveys were undertaken in April and September 2012 when the average maximum temperature was greater than 25°C. April and September are generally the drier months in the year. There was no rainfall in the two weeks prior to the April 2012 survey and only 4 mm fell during the April 2012 survey. Approximately 30 mm of rain fell in the two weeks prior to the September 2012 survey however no rain fell during the September 2012 survey.

Surveys should be comprised of the following survey methods:

- *Diurnal search – Searches targeting microhabitat features to find burrow entrances, latrine sites and basking areas. Effort – Single search over one survey period. 20 minutes search per ha. Search 20% of suitable habitat when 50 ha or more (e.g. 10 ha per 50 ha); OR 40% when less than 50 ha present (e.g. 2 ha per 5 ha of suitable habitat).*

As stated in Section 3.1.6, active diurnal searches targeting suitable microhabitat features for reptiles, including the Yakka Skink, were undertaken for 22 person hours within the project site.

- *Distant observation – Using binoculars or spotting scope particularly as the morning temperatures increase and during the late afternoon, prior to dusk, when activity levels are highest. Effort – 3 search days for 20 minutes per day over 1 survey period. 20 mins scanning suitable microhabitat, conducted 3 times on separate days. Scans should be conducted where abundant microhabitat features occur.*

As stated in Section 3.1.6, active diurnal searches targeting suitable microhabitat features for reptiles, including the Yakka Skink, were undertaken for 22 person hours over five days within the project site. Active diurnal searches for reptiles were conducted in the late afternoon/early evening.

- *Camera traps – Multiple cameras should be set up to cover the most utilised burrow entrances, the latrine sites and any suspected basking positions. Effort – 4 nights over 1 survey period. 12 camera trap nights per colony.*

No Yakka Skink burrow entrances, communal latrine sites or suspected basking positions were recorded during the surveys. However, 30 cameras were used throughout the project site and recorded for a total of 128 camera nights.

- *Funnel, Elliot and cage trapping – Very shaded traps deployed near burrow entrances and latrine. Checked every few hours. Effort – 4 nights over 1 survey period. 60 trap nights per colony.*

As no Yakka Skink colonies, burrows or communal latrine sites were recorded within the project site, a reptile trapping program was conducted which included 700 Elliott 'B' trap nights, 220 wire cage trap nights, and 30 funnel trap days and 40 funnel trap nights. Surveys were carried out in over four nights (Section 3.1.6).

Detectability increases during the warmer, drier months beginning around mid-September to early October.

Surveys were undertaken in April and September 2012 when the average maximum temperature was greater than 25°C and the conditions were relatively dry (Section 3.1.6).

Surveys should be conducted two weeks after rainfall during periods of reduced ground cover (i.e. spring and early summer).

There was no rainfall in the two weeks prior to the April 2012 survey and only 4 mm fell during the April 2012 survey. Approximately 30 mm of rain fell in the two weeks prior to the September 2012 survey however no rain fell during the September 2012 survey.

6.2 DESKTOP AND FIELD SURVEY RESULTS

The Yakka Skink was not recorded from the project site during any of the field surveys undertaken for the project. This species or its habitat was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool and there is a Yakka Skink record in the Queensland Museum database from Banana (approximately 43 km south-west from the project site boundary). The Yakka Skink has also been previously recorded approximately 1.5 km north-east of the project site in the Callide Timber Reserve prior to 2005.

6.3 HABITAT ASSESSMENT

6.3.1 Overview

The core habitat of the Yakka Skink is within the Mulga Lands or Brigalow Belt Bioregions. The known distribution of the Yakka Skink extends from the coast to the hinterland of sub-humid to semi-arid eastern Queensland. This vast area covers portions of the Brigalow Belt

(North and South), Mulga Lands, South-east Queensland, Einasleigh Uplands, Wet Tropics and Cape York Peninsula Biogeographical Regions. Locations range from the Queensland/New South Wales border to Mungkan Kandju National Park on Cape York Peninsula, and from Bundaberg and the region west of Gympie to Mariala National Park west of Charleville (DotE, 2015).

This species occurs in a wide variety of vegetation types within the following Queensland RE Land Zones (DotE, 2015):

- LZ 3 – Alluvium (river and creek flats);
- LZ 4 – Clay plains not associated with current alluvium;
- LZ 5 – Old loamy and sandy plains;
- LZ 7 – Ironstone jump-ups;
- LZ 9 – Undulating country on fine-grained sedimentary rocks; and
- LZ 10 – Sandstone ranges.

The Yakka Skink is known to occur in open dry sclerophyll forest, woodland and scrub. Common woodland and open forest types where this species is found include (DotE, 2015):

- Brigalow (*Acacia harpophylla*);
- Mulga (*Acacia aneura*);
- Bendee (*Acacia catenulata*);
- Lancewood (*Acacia shirleyi*);
- Belah (*Casuarina cristata*);
- Poplar Box (*Eucalyptus populnea*);
- Ironbark (*Eucalyptus* spp.); and
- White Cypress Pine (*Callitris glaucophylla*).

The Yakka Skink is commonly found in cavities under and between partly buried rocks, logs or tree stumps, root cavities and abandoned animal burrows. The species often takes refuge in large hollow logs and has been known to excavate deep burrow systems, sometimes under dense ground vegetation. In cleared habitat, this species can persist where there are shelter sites such as log piles, deep gullies, tunnel erosion/sinkholes and rabbit warrens. The species has also been found sheltering under sheds and loading ramps. This species is not generally found in trees or rocky habitats (DotE, 2015).

The Yakka Skink lives in small, localised populations that are thought likely to be susceptible to local extinctions, and the species is considered to be negatively impacted by grazing from livestock (DotE, 2015).

The general habitat requirements of the Yakka Skink are detailed in Table 11.

Table 11
Yakka Skink – General Habitat Requirements

Requirements/Preferences	Yakka Skink Requirements/Preferences (DotE, 2015)
General habitat requirements/preferences	The species is typically found in open dry sclerophyll forest or woodland.
Foraging requirements/preferences	The species is omnivorous, consuming soft plant materials and fruits and a wide variety of invertebrates that wander near the entrance of their burrow.
Microhabitat requirements/preferences	The species seeks refuge in dense ground vegetation, in hollow logs, cavities in soil-bound root systems and beneath rocks.
Breeding requirements/preferences	The species exhibits high site fidelity and produces live young, with around six per litter.

6.3.2 Habitat Modelling

As described in Section 3.3, habitat modelling was conducted by Cumberland Ecology for the Yakka Skink. The modelling focussed on the presence of suitable land zones and woodland types, the nature and extent of vegetation disturbance that has occurred, and the impacts of cattle and feral animals, as summarised in Table 12.

Table 12
Habitat Modelling for the Yakka Skink

Habitat Analysis Criteria	Yakka Skink
Pre-existing models for threatened species habitat	The Commonwealth Brigalow Belt Reptiles Referral Guideline provides high level modelled distribution for the Yakka Skink within Queensland/northern New South Wales. The model classifies areas where the Yakka Skink '*may'* occur and where the Yakka Skink is '*known/likely'* to occur. The project site is within an area modelled as '*may'* occur. There are no pre-existing habitat models at a local scale and near the project site, for the Yakka Skink.
Threatened species records in the project site and surrounds	No records occur within the project site. One record (prior to 2005) is approximately 1.5 km to the north-east of the project site. The other closest record is from the Queensland Museum and is approximately 43 km south-west of the project site near Banana. This species or its habitat was also predicted to occur in the EPBC Act Protected Matters Search Tool.
Presence of suitable vegetation	Common woodland and open forest types where the Yakka Skink is commonly found include: Brigalow, Mulga, Bendee, Lancewood, Belah, Poplar Box, Ironbark and White Cypress Pine (DotE, 2015). RE 11.9.9: Ironbark woodland occurs in the western, northern and eastern portions of the project site and contains some suitable vegetation for the Yakka Skink.

Habitat Analysis Criteria	Yakka Skink
Presence of suitable topography	Yakka Skink occurs on a wide variety of land zones including (DotE, 2015): • LZ 3 – Alluvium (river and creek flats); • LZ 4 – Clay plains not associated with current alluvium; • LZ 5 – Old loamy and sandy plains; • LZ 7 – Ironstone jump-ups; • LZ 9 – Undulating country on fine-grained sedimentary rocks; and • LZ 10 – Sandstone ranges. Within the project site land zones 3, 9 and 10 are present according to the Queensland RE mapping (V9).
Presence of permanent water sources	No specific requirement for permanent water is known (DotE, 2015).
Presence of preferred foods	The Yakka Skink is omnivorous, consuming soft plant materials, fruits and a wide variety of invertebrates (DotE, 2015). These preferred foods are present in all remnant woodland habitats and there are patches of remnant woodland are present across the project site.
Presence of tree hollows	The Yakka Skink does not associate primarily with tree hollows. However, it is commonly found in cavities under and between partly buried rocks, logs or tree stumps, root cavities and abandoned animal burrows. The Yakka Skink often takes refuge in large hollow logs and has been known to excavate deep burrow systems, sometimes under dense ground vegetation. In cleared habitat, the Yakka Skink can persist where there are shelter sites such as raked log piles, deep gullies, tunnel erosion/sinkholes and rabbit warrens. The Yakka Skink has also been found sheltering under sheds and loading ramps. The Yakka Skink is not generally found in trees or rocky habitats (DotE, 2015).
Documented foraging distances around permanent water	No specific requirement for permanent water is known.
Documented sensitivity to habitat clearance and/or fragmentation	The main threat to the Yakka Skink is habitat reduction and degradation, including where land has been modified through agricultural and urban development. Other threats to the Yakka Skink include inappropriate roadside management and ripping of rabbit warrens (DotE, 2015). The project site has been substantially cleared as it has been continually subject to agricultural pressure (grazing and cropping) for over 110 years.
Occurrence of harmful feral species that are a known threat to the species	One of the threats to the Yakka Skink is predation by feral foxes and feral cats (DotE, 2015). Feral foxes and feral cats have both been recorded within the project site.

Habitat Analysis Criteria	Yakka Skink
Documented sensitivity to cattle grazing pressure	The species is not influenced by grazing pressure directly, however clearing of habitat for agriculture is a key threat to the Yakka Skink (DotE, 2015). The project site has been substantially cleared as it has been continually subject to agricultural pressure (grazing and cropping) for over 110 years.

Based on the criteria above, approximately 497 ha of land within the project site is unsuitable for the Yakka Skink. The Terrestrial Ecology Report, prepared by Cumberland Ecology, and provided in the Round 1 Response to Submissions, assessed the remaining 122 ha of the project site as being low quality habitat for the Yakka Skink (Figure 11). Cumberland Ecology assessed the habitat as being low quality due to the modification of the land due to agricultural development (i.e. grazing and cropping within the project site for over 110 years). However, in response to DotE's second round of submissions on the Boundary Hill South EIS, Hansen Bailey and Cumberland Ecology have assessed the project site against the Commonwealth's definitions of habitat (Section 6.3.3). This reassessment has indicated that none of the project site meets the Commonwealth's definition of Yakka Skink habitat.

6.3.3 Commonwealth Defined Habitat

Habitat for the Yakka Skink is defined by the Commonwealth as:

- '*Suitable habitat'* in the Commonwealth's Brigalow Belt Reptiles Referral Guideline;
- '*Important habitat'* in both the Commonwealth's Brigalow Belt Reptiles Referral Guideline and the Commonwealth's Significant Impact Guidelines; and
- '*Habitat critical to the survival of a species'* in the Commonwealth's Significant Impact Guidelines.

These defined habitat terms are discussed in the following sections.

Suitable Habitat

Suitable habitat for Brigalow Belt reptiles is defined in the Commonwealth's Brigalow Belt Reptiles Referral Guideline as '*a wide variety of remnant and non-remnant vegetation: predominantly eucalypt or acacia dominated forests to woodlands and grassland communities. These species are typically found sheltering in microhabitats where moisture is retained at or just below the soil surface. Microhabitats include, but are not limited to:*

- *Loose, friable topsoils;*
- *Cracks in alluvial clay soils;*
- *Live or decaying plant material, such as tussock bases, rotting logs or tree bases; and*

- *Debris situated at the soil surface, such as coarse woody debris, leaf litter, rocks or artificial debris.*'

Specifically, '*suitable habitat'* for the Yakka Skink is defined in the Commonwealth's Brigalow Belt Reptiles Referral Guideline as including '*open-forests to low woodlands and scrub in Queensland RE Land Zones 3, 4, 5, 7, 8, 9, 10 and 12 (land zone 8 not considered core habitat, land zone 12 in Wet Tropics bioregion only). [The guideline states that colonies] have been found in large hollow logs, cavities or burrows under large fallen trees, tree stumps, logs, stick-raked piles, large rocks and rock piles, dense ground-covering vegetation, and deeply eroded gullies, tunnels and sinkholes'*.

Land zones 3, 9 and 10 have been mapped by the Queensland Government on the vegetation map (V9) as occurring within the project site in the form of RE 11.3.25: Eucalyptus woodland fringing drainage lines, RE 11.9.9: Ironbark woodland, RE 11.9.13: Grey Box open woodland and RE 11.10.1: Lemon-scented Gum woodland. However, suitable habitat for the Yakka Skink is confined to RE 11.9.9: Ironbark woodland within the project site as it has occasional rocky outcrops, boulders, fallen timber and log piles. This has been modelled as habitat (Figure 9 and Figure 11).

RE 11.3.25: Eucalyptus woodland fringing drainage lines, RE 11.9.13: Grey Box open woodland and RE 11.10.1: Lemon-scented Gum woodland are not considered to be '*suitable habitat'* for the Yakka Skink within the project site, as these REs in the project site lack the microhabitat features required by the Yakka Skink. In particular, RE 11.3.25: Eucalyptus woodland fringing drainage lines, RE 11.9.13: Grey Box open woodland and RE 11.10.1: Lemon-scented Gum woodland within the project site lack shelter features, such as large rocks/rock piles and large fallen timber. The absence of shelter sites would suggest that this species is unlikely to occur within these habitats as the Yakka Skink has a preference for tight spaces amongst almost immovable objects (e.g. fractured rocky outcrops, windrows of timbre, rabbit warrens etc.). These REs have therefore been modelled as unsuitable habitat (Figure 9 and Figure 11).

Important Habitat

The Commonwealth's Brigalow Belt Reptiles Referral Guideline has identified areas of '*known important habitat'* and '*important habitat'* for the Yakka Skink. '*Known important habitat'* for the Yakka Skink includes:

- Any contiguous patch of suitable habitat, particularly remnant vegetation, where a colony is known or identified; and
- Any microhabitat where colonies are likely to be found.

The project site does not contain any '*known important habitat'* for the Yakka Skink as:

- No colonies have been identified within the project site despite targeted surveys. The nearest Yakka Skink record is from the Callide Timber Reserve approximately 1.5 km to the north-east of the project site. This record location is separated from the project site by both Link Road and the power line easement. The Link Road is a gravel double lane haul road between the Boundary Hill mining area and the southern pits within the Callide Mine. As described in Section 2.2, the Callide Timber Reserve is separated from the project site by a major power line corridor (approximately 120 m wide) that adjoins the eastern boundary of the project site. This corridor is regularly cleared of vegetation to ensure continual access to the power line and associated infrastructure. Link Road and the power line easement prevent the patch of habitat within the Callide Timber Reserve where the Yakka Skink was recorded, from being contiguous with any of the vegetation within the project site.
- The project site contains limited microhabitat suitable for the Yakka Skink. RE 11.9.9: Ironbark woodland has been mapped as containing low quality habitat for this species as these wooded areas contain occasional rocky outcrops, boulders, fallen timber and log piles which provide some habitat for this species. Although these areas may contain some limited suitable microhabitat features, these areas lack the majority of preferred forest/woodland types; and are disturbed due to cattle grazing and historic clearing, and because of this are not 'known important habitat' for the Yakka Skink.

'*Important habitat*' for any of the listed Brigalow Belt reptile species also includes '*suitable habitat'* if it is:

- Habitat where the species has been identified during a survey;
- Near the limit of the species' known range;
- Large patches of contiguous, suitable habitat and viable landscape corridors (necessary for the purposes of breeding, dispersal or maintaining the genetic diversity of the species over successive generations); or
- A habitat type where the species is identified during a survey, but which was previously thought not to support the species.

The '*suitable habitat'* within the project site does not meet the definition of 'important habitat' as:

- No individuals have been recorded within the project site.
- The project site is not near the limit of the species' known range.
- There are two small patches of suitable habitat (0.7 ha) within the north-east of the project site and two patches of suitable habitat (121.5 ha) within the south-west of the project site. The patches in the north-east of the project site are surrounded by the

power line easement to the east, the existing open cut mine to the north and west and grazing land to the south. The patches in the south-west of the project site are surrounded by the existing open cut mine to the north, cleared grazing land to the east, and limited vegetation (RE 10.10.1: Lemon-scented Gum woodland) adjoins the west and south. There are no viable landscape corridors (necessary for breeding, dispersal or maintaining genetic diversity) (Commonwealth's Brigalow Belt Reptiles Referral Guideline) (Figure 9 and Figure 11) connecting the low quality habitat patches within the project site to other Yakka Skink habitat. Therefore the patches of low quality habitat are not large patches of contiguous, suitable habitat and viable landscape corridors.

- No individuals have been recorded within the project site. The Yakka Skink record from the Callide Timber Reserve is likely to be from RE 11.10.1: Lemon-scented Gum woodland, which has been identified previously as supporting the Yakka Skink (i.e. Land Zone 10 with ironbark woodland). Therefore, the species has not been identified on habitat which was previously thought not to support the species.

Therefore the project site does not contain any 'known important habitat' or any '*important habitat'* for the Yakka Skink. This is consistent with the modelled habitat within the project site which has been assessed as low quality habitat and unsuitable habitat (Section 6.3.2).

Habitat Critical to the Survival of a Species

'*Habitat critical to the survival of a species'* is defined in the Commonwealth's Significant Impact Guidelines as '*areas that are necessary:*

- *For activities such as foraging, breeding, roosting or dispersal;*
- *For the long-term maintenance of the species (including the maintenance of species essential to the survival of the species, such as pollinators);*
- *To maintain genetic diversity and long term evolutionary development; or*
- *For the reintroduction of populations or recovery of the species.*

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species as habitat critical for that species; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.'

The Queensland Brigalow Belt Reptile Recovery Plan states '*with the current limited information available on the individual* [Brigalow Belt species, including the Yakka Skink] *it is not possible to map habitat critical to the species' survival. However, it is an action of this plan to identify, map and appropriately manage the key habitat areas with significant populations of the species'*.

Given that expert scientists cannot identify '*habitat critical to the survival of a species'* for the Yakka Skink due to a lack of species specific information, this report has not attempted to

delineate or map this habitat. However, using the limited Yakka Skink information available to date and the low quality of the habitat within the project site, it is considered unlikely that the project site contains any '*habitat critical to the survival of a species'* as:

- There are no areas that are necessary for foraging, breeding, roosting or dispersal within the project site.
    - Foraging: The Yakka Skink feeds by consuming soft plant materials, fruits and a wide variety of invertebrates. Soft plants, fruits and invertebrates are common in a variety of landscapes and most are not limited by the need for any particular landscape characteristics. The Yakka Skink has high site fidelity and forages on food that is near the entrances to their burrows. No Yakka Skink colonies were recorded within the project site. The project site contains four patches of suitable habitat, two in the north-east (0.7 ha) and two south-west (121.5 ha) of the project site which contain some limited microhabitat features such as occasional rocky outcrops, boulders, fallen timber and log piles. While the Yakka Skink's food is likely to be found in the patches of suitable habitat within the project site, it is unlikely that these areas are necessary for Yakka Skink foraging as it is unlikely that the Yakka Skink is present in the project site. The Yakka Skink is unlikely to be present in the project site as:
        - The nearest record of the Yakka Skink is approximately 1.5 km from the project site in the Callide Timber Reserve. However, the Yakka Skink colony within the Callide Timber Reserve is separated from the project site by both a dual land haul road and a large power line easement. Given the high site fidelity of the Yakka Skink and the lack of any corridor connecting the project site to the Callide Timber Reserve (which is necessary for dispersal), it is considered unlikely that the Yakka Skink recorded in the Callide Timber Reserve has dispersed into the project site;
        - The Yakka Skink has not been recorded within the project site after 72 person hours of habitat assessments, 30 hours of active searches (comprising diurnal and spotlighting/nocturnal active searches within the project site), 700 Elliott 'B' trap nights, 220 wire cage trap nights, 120 pitfall trap days and 114 pitfall trap nights as well as 30 funnel trap days and 40 funnel trap nights; and
        - The project site contains only four patches of isolated and fragmented habitat with limited microhabitat features due to continual grazing or cropping for 110 years.

    Therefore, it is unlikely that the project site contains any areas that are necessary for Yakka Skink foraging.

- Breeding: The Yakka Skink produces litters of around six live young. The young are raised in the colony. The Yakka Skink has high site fidelity and are limited in their capacity to disperse from a colony site. The project site contains four patches of Yakka Skink habitat which contain limited microhabitat features such as occasional rocky outcrops, boulders, fallen timber and log piles. However, these are isolated, fragmented patches with no viable landscape corridors to the Callide Timber Reserve which are necessary for breeding or dispersal (Commonwealth's Brigalow Belt Reptiles Referral Guideline). It is unlikely that the project site contains any areas that are necessary for Yakka Skink breeding given that:
  - The nearest record of the Yakka Skink is approximately 1.5 km from the project site in the Callide Timber Reserve. However, the Yakka Skink colony within the Callide Timber Reserve is separated from the project site by both a dual land haul road and a large power line easement. Given the high site fidelity of the Yakka Skink and the lack of any corridor connecting the project site to the Callide Timber Reserve (which is necessary for dispersal), it is unlikely that the Yakka Skink recorded in the Callide Timber Reserve has dispersed into the project site;
  - The Yakka Skink has not been recorded within the project site after 72 person hours of habitat assessments, 30 hours of active searches (comprising diurnal and spotlighting/nocturnal active searches within the project site), 700 Elliott 'B' trap nights, 220 wire cage trap nights, 120 pitfall trap days and 114 pitfall trap nights as well as 30 funnel trap days and 40 funnel trap nights; and
  - The project site only contains only four patches of isolated and fragmented habitat with limited microhabitat features due to continual grazing or cropping for 110 years.
- Roosting: The Yakka Skink is not known to produce or use roosts.
- Dispersal: There are two small patches of suitable habitat (0.7 ha) within the north-east of the project site and two patches of suitable habitat (121.5 ha) within the south-west of the project site. The four patches are isolated and fragmented and there are no viable landscape corridors (necessary for breeding, dispersal or maintaining genetic diversity) connecting to high quality habitat (Commonwealth's Brigalow Belt Reptiles Referral Guideline) (Figure 9 and Figure 11). Given that the Yakka Skink has not been recorded within the project site after surveying generally in accordance with the survey requirements (Section 6.1), the suitable Yakka Skink habitat within the project site is low quality habitat and there are no viable landscape corridors (which are necessary for dispersal) to the suitable habitat within the project site, it is unlikely that the project site contains any areas that are necessary for Yakka Skink dispersal.

- Given that no Yakka Skinks have been recorded within the project site, that the project site only contains limited microhabitat for the Yakka Skink and that the project site has been continually used for grazing and cropping for more than the last 110 years resulting in fragmented and isolated low quality habitat patches, it is unlikely that the project site is an area necessary for the long-term maintenance of the species.
- Given that no Yakka Skinks have been recorded within the project site, the project site only contains four isolated patches of suitable habitat and there are no viable landscape corridors to these patches which are necessary for breeding and dispersal, it is unlikely that the project site is an area necessary to maintain genetic diversity and long term evolutionary development of the Yakka Skink.
- Given that the project site only contains limited microhabitat for the Yakka Skink and that it has been used for grazing and cropping for more than the last 110 years which has isolated and fragmented the low quality habitat, it is unlikely that the project site is an area necessary for the reintroduction of populations or recovery of the species.
- The Commonwealth has deemed that a Recovery Plan for the Yakka Skink is not required (DotE, 2015) and one has not been developed by the Commonwealth. However, the Queensland Brigalow Belt Reptile Recovery Plan states that 'critical *habitat to the survival of a species*' cannot be mapped. There is also no Yakka Skink habitat listed on the Register of Critical Habitat.

Therefore, using the limited available scientific knowledge about the Yakka Skink and the low quality of the habitat within the project site, it is unlikely that the project site contains any 'habitat critical to the survival of a species'.

6.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT

This species has been recorded from the Callide Timber Reserve (prior to 2005) approximately 1.5 km from the project site. Limited suitable habitat (RE 11.9.9: Ironbark woodland) exists within the project site where occasional rocky outcrops, boulders, fallen timber and log piles are present. It is likely that high quality habitat is present in the nearby Callide Timber Reserve however this area is separated from the project site by the 120 m wide cleared power line easement. This cleared power line easement is likely to act as a barrier to the movement of the Yakka Skink. Nevertheless, this species has been conservatively assessed as having a moderate likelihood of occurrence within the project site, in accordance with the criteria specified in Table 8, due to the presence of potential habitat (albeit limited in nature) and as it is known to occur in the surrounding area.

6.5 SIGNIFICANT IMPACT ASSESSMENT

An assessment of significance has been conducted for this species following the Commonwealth's Significant Impact Guidelines for Vulnerable species. Section 6.5.1 assesses whether the project site contains an '*important population'* of the Yakka Skink,

while Section 6.5.2 presents the assessment of significance that has been conducted for this species.

6.5.1 Important Population Assessment

According to the Commonwealth's Significant Impact Guidelines, an 'important population' of any Vulnerable species 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:*

- *key source populations either for breeding or dispersal*
- *populations that are necessary for maintaining genetic diversity, and/or*
- *populations that are near the limit of the species range.'*

However, the Commonwealth's Brigalow Belt Reptiles Referral Guideline states that given that listed Brigalow Belt reptiles (including the Yakka Skink) are difficult to detect and population information is limited, the Commonwealth regards '*important habitat'* as a surrogate for '*important populations'* in the assessment of whether an action is likely to have a significant impact on the species.

As discussed in Section 6.3.3, there is no '*important habitat'* for the Yakka Skink within the project site. Therefore, there are also no '*important populations'* of the Yakka Skink within the project site.

6.5.2 Significant Impact Criteria

An assessment of significance for the Yakka Skink has been conducted in accordance with the Commonwealth's Significant Impact Guidelines for Vulnerable species. The significant impact criteria are provided in *underlined italics* and the response is provided in normal text.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population of a species*

Not applicable as there is no '*important population'* of Yakka Skink within the project site (Section 6.5.1).

- *reduce the area of occupancy of an important population*

Not applicable as there is no '*important population'* of Yakka Skink within the project site (Section 6.5.1).

- *fragment an existing important population into two or more populations*

Not applicable as there is no '*important population'* of Yakka Skink within the project site (Section 6.5.1).

- *adversely affect habitat critical to the survival of a species*

Not applicable as there is no '*habitat critical to the survival of a species'* for the Yakka Skink within the project site (Section 6.3.3).

- *disrupt the breeding cycle of an important population*

Not applicable as there is no '*important population'* of Yakka Skink within the project site (Section 6.5.1).

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

As discussed in Section 6.3.3, there are four patches of limited suitable habitat (low quality habitat) within the project site. There is no '*known important habitat'*, '*important habitat'* or '*habitat critical to the survival of a species'* within the project site. Given the poor quality and isolated nature of potential Yakka Skink habitat found within the project site, it is therefore unlikely that the project will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

It is considered unlikely that the project will result in an invasive species becoming established in habitat for the Yakka Skink within the project site. Feral animals already occur within the project site and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project. In addition, the Callide Mine Weed Management Plan includes a wash down procedure to help control the spread of pest plants both on and off-site. This management plan will be updated to include the project.

- *introduce disease that may cause the species to decline, or*

It is considered unlikely that the project will introduce a disease that may cause the Yakka Skink to decline as disease is not a known threat.

- *interfere substantially with the recovery of the species.*

The project will not substantially interfere with the recovery of the Yakka Skink. As stated in Section 6.5.1, there is no '*important population'* of Yakka Skink in the project site. By definition, this means that there are no key source populations either for breeding or dispersal within the project site and no populations that are necessary for maintaining genetic diversity. These are considered as key requirements for the recovery of the species. There are also only four isolated patches of suitable, but low quality, habitat within the project site and these do not have any viable landscape corridors. The viable landscape corridors are necessary for breeding and dispersal. Given that there are no 'important populations' and no '*known important habitat*', '*important habitat'* or '*habitat critical to the survival of a species'* within the project site and no viable landscape corridors to the project site, it is unlikely that the project site contains habitat that is critical for the recovery of the Yakka Skink. Therefore, it is unlikely that the project will interfere substantially with the recovery of the Yakka Skink.

Conclusion

Based on the outcomes from the above assessment criteria, it is considered that the project will not have a residual significant impact to the Yakka Skink.

7 SQUATTER PIGEON (SOUTHERN SUBSPECIES)

The Squatter Pigeon (southern subspecies) is a medium-sized, ground-dwelling pigeon that measures approximately 30 cm in length and weighs about 190 to 250 g. The adults are predominantly grey-brown, but have black and white stripes on the face and throat, blue-grey skin around the eyes, dark-brown (and some patches of iridescent green or violet) on the upper surfaces of the wings, blue-grey on the lower breast and belly, white on the lower region, flanks of the belly and extending onto the under surfaces of the wings, and a blackish-brown band along the trailing edge of the tail. The species have black bills, dark-brown irises, and dull-purple legs and feet (DotE, 2015). The Squatter Pigeon (southern subspecies) is listed as Vulnerable under both the EPBC Act and the NC Act. Note that DotE is currently in the process of deciding whether the Squatter Pigeon (southern subspecies) should be delisted from the EPBC Act.

This section provides the detailed assessment of the Squatter Pigeon (southern subspecies) and is structured as follows:

- Section 7.1 – Survey Methodology: A detailed description of the survey methodology and how it aligns with the Commonwealth and State survey requirements;
- Section 7.2 – Desktop and Field Survey Results: The results of the desktop and field surveys;
- Section 7.3 – Habitat Assessment: The detailed habitat assessment including habitat modelling and an assessment against the Commonwealth habitat terminology;
- Section 7.4 – Likelihood of Occurrence Assessment: The detailed likelihood of occurrence assessment; and
- Section 7.5 – Significant Impact Assessment: The detailed significant impact assessment in accordance with the Commonwealth's Significant Impact Guidelines.

7.1 SURVEY METHODOLOGY

Surveys undertaken within the project site for the Squatter Pigeon (southern subspecies) were generally undertaken in accordance with the Commonwealth and Queensland survey requirements, as outlined below.

7.1.1 Commonwealth Survey Requirements

There are two Commonwealth survey guidelines that outline survey methods for the Squatter Pigeon (southern subspecies), namely:

- SPRAT database for the Squatter Pigeon (southern subspecies); and

- The Commonwealth's *2010 Survey Guidelines for Australia's Threatened Birds* (Commonwealth's Threatened Birds Survey Guideline).

The survey guideline requirements and the actual survey effort for the Squatter Pigeon are described in the following sections. The survey guideline requirements are provided below in *underlined italics* and the response is provided in normal text.

Species Profile and Threats Database

As of 23 June 2015, the SPRAT database for the Squatter Pigeon (southern subspecies) included the following survey requirements.

Desktop assessment. Surveys for the Squatter Pigeon (southern subspecies) should commence with a desktop assessment of the geographical area in which potential foraging, breeding or dispersal habitat for the subspecies. The desktop assessment of this study area provides the information necessary to locate and design on-ground habitat assessments, opportunistic surveys and targeted surveys for the subspecies.

A desktop assessment should provide general information about the known distribution of Squatter Pigeons, where potential habitat and habitat connectivity occurs, and where important populations or habitat critical to the survival of the subspecies may occur in relation to the study area. This preliminary assessment should include searches of Squatter Pigeon (southern subspecies) records in state and non-government databases review of the scientific literature, and a review of current vegetation mapping and aerial photographs of the study area.

As stated in Section 3.1.2, desktop assessments were conducted prior to conducting any field work and included state databases and reviews of ecology reports and management plans prepared for the proponent. As stated in Section 3.1.2, current vegetation mapping and aerial photographs of the project site were also reviewed.

Habitat assessment. Habitat assessments must be conducted by suitably qualified botanists or ecologists with demonstrated skill and experience in Squatter Pigeon (southern subspecies) habitat assessments.

If any vegetation types, which are indicative of the subspecies' foraging, breeding or dispersal habitat, are identified in the desktop assessment, an on-ground habitat assessment will need to be conducted. The distribution of each vegetation type and the quality of potential habitat areas for squatter pigeon foraging, breeding or dispersal should be assessed, as much as practicable, in each vegetation type. With regards to larger study areas, a reconnaissance of each vegetation type and subsequent stratification of the sampling effort will need to be conducted. It is recommended that opportunistic surveys for the subspecies be conducted during habitat assessments, particularly along dusty roads and

other patches of bare ground adjacent to areas of native vegetation identified as suitable for the subspecies' foraging, breeding or dispersal.

Squatter Pigeon (southern subspecies) habitat is generally defined as open-forests to sparse, open-woodlands and scrub that are:

- Dominated by *Eucalyptus*, *Corymbia*, *Acacia* or *Callitris* species:
- Remnant, regrowth or partly modified vegetation communities; and
- Within 3 km of water bodies or watercourses.

This vegetation was identified in the desktop search as being potentially present within the project site and therefore, as stated in Sections 3.1.6 and 3.1.8, fauna habitat assessments were conducted at 91 sites. The habitat assessments included the distribution and type of vegetation and the quality of potential habitat for Squatter Pigeon (southern subspecies) foraging, breeding and dispersal. Incidental species or indirect species indicators (i.e. droppings, scratches, nests, etc.) observed during the fauna assessments were also recorded. These assessments were conducted by suitably qualified ecologists.

As stated in Section 3.1.6, targeted diurnal active searches for birds was also undertaken for over seven person hours within the project site.

Targeted surveys. Targeted surveys for the Squatter Pigeon (southern subspecies) are required to detect the subspecies in suitable habitats and to identify how the subspecies may be using those areas of habitat. Surveys must be conducted by suitably qualified zoologists or ecologists with demonstrated skill and experience in conducting Squatter Pigeon (southern subspecies) surveys, and must be undertaken in a manner which maximises the chance of detecting the species.

As stated in Sections 3.1.6 and 3.1.8, fauna habitat assessments were conducted at 91 sites and targeted diurnal active searches for birds was also undertaken for over seven person hours within the project site. These assessments were conducted by suitably qualified ecologists. The Squatter Pigeon (southern subspecies) was recorded at two locations in the north-east of the project site (Figure 12).

Optimal conditions: The optimal period of the year to detect the Squatter Pigeon (southern subspecies) is during the mid to late dry season from May to the end of October when the subspecies is most actively foraging for grass seed. The optimal period to observe juvenile squatter pigeons, which will indicate the presence of breeding habitat in the area, is in June.

Fauna surveys were conducted in September 2012 and August 2014 and therefore meet the requirements of this guideline.

As a general rule, targeted surveys should not be undertaken during weather conditions which are likely to impair visual detection of the subspecies, such as high windy conditions or during the night. Squatter pigeons are most commonly detected between sunrise and 9 am and between 3:30 pm and sunset. The optimal times of day to detect squatter pigeons are in the first half hour after sunrise and the last half hour before sunset when the birds are most active.

As stated in Sections 3.1.6 and 3.1.8, fauna habitat assessments were conducted at 91 sites. Targeted diurnal active searches for birds was also undertaken in the morning (within four hours of dawn) for over seven person hours within the project site. The Squatter Pigeon (southern subspecies) was recorded at two locations in the north-east of the project site (Figure 12).

Targeted survey methods: Squatter pigeons are difficult to detect in their natural habitat, but are commonly seen foraging for seed on bare, dusty ground adjacent to natural habitats. The subspecies often occurs around dirt tracks and frequents water bodies or water courses from dawn to the middle of the morning and from the middle of the afternoon to dusk. Close inspection of dirt tracks and waterholes by surveyors tends to increase the chance of detection.

As stated in Sections 3.1.6 and 3.1.8, fauna habitat assessments were conducted at 91 sites. Targeted diurnal active searches for birds was also undertaken in the morning (within four hours of dawn) for over seven person hours within the project site. These searches included dirt tracks and waterholes. The Squatter Pigeon (southern subspecies) was recorded at two locations in the north-east of the project site (Figure 12) in lighter sandy soils in the vicinity of a waterbody.

Commencing targeted surveys with slow driving surveys along roads and dusty areas is the most efficient way of detecting the subspecies. Driving in a vehicle at a constant speed (approximately 20 km per hour) along these roads is likely to be 'flush' squatter pigeons from their positions on the ground, which should allow the detection of the subspecies.

Two driving surveys should be conducted in the following manner:

- *along the same route, in the same manner, on consecutive days;*
- *adjacent to areas of natural habitat throughout the study area;*
- *along unsealed roads, tracks and other dusty areas, such as stockyards; and*
- *along sealed roads around the perimeter of the study area.*

The route to be taken should be designed to:

- *survey all unsealed roads in the study area during the periods, sunrise to 9 am and from 3:30 pm to sunset (i.e. commence the morning route at sunrise and then allow enough time in the afternoon to complete the afternoon survey by sunset); and*
- *conduct return surveys along each road (i.e. survey a road then come back along the same road before proceeding to another).*

Targeted slow driving surveys for the Squatter Pigeon (southern subspecies) were not considered necessary as the Squatter Pigeon (southern subspecies) was recorded within the project site (Figure 12). Any birds recorded whilst driving along roads and tracks were noted. Section 3.1.6 outlines the survey methodology that was used during bird surveys within the project site.

It is recommended that waterbody surveys are conducted on the two consecutive days following the driving surveys. Waterbody surveys should target all natural and artificial waterbodies and watercourses which are suitable for use by the Squatter Pigeon (southern subspecies), and be conducted during the periods, sunrise to 9 am and from 3:30 pm to sunset.

Waterbodies and surrounding areas were surveyed for the Squatter Pigeon (southern subspecies) and the Squatter Pigeon (southern subspecies) was recorded in the vicinity of a waterbody (Figure 12).

It is also recommended that transect surveys be conducted in areas of native open-forest or woodland identified during habitat assessments, driving surveys and waterbody surveys as potential breeding habitat. These surveys can be conducted simultaneously with habitat assessments and during periods intervening optimal driving and waterbody surveys.

As stated in Sections 3.1.6 and 3.1.8, fauna habitat assessments were conducted at 91 sites and targeted diurnal active searches for birds was also undertaken in the morning (within four hours of dawn) for over seven person hours within the project site. These searches included areas of native open-forest and woodland. The Squatter Pigeon (southern subspecies) was recorded at two locations in the north-east of the project site in non-remnant vegetation and in the vicinity of a waterbody (Figure 12).

Survey Guidelines for Australia's Threatened Birds

Area searches or transect surveys in suitable habitat (in areas less than 50 ha undertaken for 15 person hours over three days). Flushing surveys also likely to be useful (in areas less than 50 ha undertaken for 10 person hours over three days).

There is approximately 395 ha of habitat for the Squatter Pigeon (southern subspecies) in the project site. Therefore, according to the guidelines, approximately 119 person hours of area searches or transects surveys are required to be conducted within the project site over approximately 24 days to confirm the presence or absence of the Squatter Pigeon (southern subspecies). As stated in Section 3.1.9, a total of over 29 person hours were spent conducting active diurnal searches (including over seven person hours of specific bird searches) over five days. Incidental searches were also conducted during the habitat assessments which were conducted for 72 person hours over 10 days. The Squatter Pigeon (southern subspecies) was recorded during these surveys (Figure 12), therefore further flushing surveys were not considered necessary.

7.1.2 Queensland Survey Requirements

The Queensland Fauna Survey Guidelines outline the minimum survey requirements, standards and appropriate practice for the survey of terrestrial vertebrate fauna in Queensland. These survey guidelines had not been released to the public during the time of the detailed fauna surveys conducted in April 2012 and September 2012. However, the surveys undertaken for the project are generally in accordance with these guidelines. The general survey methods outlined in this guideline that are applicable to the Squatter Pigeon (southern subspecies) are discussed in the following sections.

Queensland Fauna Survey Guidelines

Optimal time of year for vertebrate fauna surveys within the Brigalow belt Bioregion are Spring to early Summer (Sept – mid Nov) and Autumn (March – mid May)

The 2012 fauna surveys were conducted in September and April and therefore meet the requirements of this guideline.

Diurnal bird survey – Six X 5-10 minute area searches within 100 x 100 m survey site

As described in Section 3.1.6, diurnal bird surveys were undertaken for 20 minutes within a 2 ha search area at six survey sites during the 2012 surveys.

Incidental – Incidental detection of any species

Any incidental detection of fauna species were recorded during the flora and fauna surveys.

7.2 DESKTOP AND FIELD SURVEY RESULTS

The Squatter Pigeon (southern subspecies) was recorded from two locations in the north-east of the project site (Figure 12). All records were in areas with lighter sandy soils and in the vicinity of the two large farm dams located along ephemeral drainage lines that provide a

source of permanent water. Individuals of this species were encountered foraging along the edges of unsealed roads fringed by tall grass on the edge of regenerating woodlands.

This Squatter Pigeon (southern subspecies) or its habitat was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool and there is a record within 25 km of the project site in the Queensland Wildlife Online database, as well as within 100 km of the project site in the Australian Museum database in Rockhampton (approximately 100 km north of the project site boundary).

7.3 HABITAT ASSESSMENT

7.3.1 Overview

The Squatter Pigeon (southern subspecies) occurs in tropical, open, dry sclerophyll woodlands and savannahs of north-eastern Australia. This species is most often observed in the grassy understorey of eucalypt woodlands, close to permanent water bodies. This species has also been recorded in sown grasslands with scattered remnant trees, disturbed habitats (i.e. around stockyards, along roads and railways, and around settlements), in scrub and *Acacia* growth. The Squatter Pigeon (southern subspecies) feeds on the seeds of grasses, legumes and other herbs and forbs, and sometimes eats fallen seeds from acacias (DotE, 2015).

The Squatter Pigeon (southern subspecies) can occur in semi-cleared woodland habitats and can co-exist with livestock and other disturbances to a degree. However, the Squatter Pigeon (southern subspecies) nests on the ground; sometimes among or sheltered by vegetation, including short dry grass, grass tussocks or bushes and such nesting makes the species vulnerable to feral animals and to the impacts of cattle and sheep grazing. For this reason, clearance and modification of vegetation for farming impacts the native ground flora on which this species relies and also increases the distribution and abundance of feral predator, particularly Red Foxes and Cats. As such, heavily cleared landscapes are likely to be less suited for the Squatter Pigeon (southern subspecies) than lightly cleared or uncleared vegetation (DotE, 2015).

Breeding habitat occurs on stony rises occurring on sandy or gravely soils, rather than areas where there are heavier soils (DotE, 2015).

The Squatter Pigeon (southern subspecies) was once common and widespread nationally and spread from southern New South Wales to the Burdekin River in northern Queensland. It is now widespread in northern and eastern Queensland, with very few recent records from New South Wales. It now occurs on the inland slopes of the Great Dividing Range and its distribution extends from the Burdekin-Lynd divide in central Queensland, west to Charleville and Longreach, east to the coastline between Proserpine and Port Curtis (near Gladstone), and south to scattered sites throughout south-eastern Queensland. Across its range it is

thought to occur as a continuous, inter-breeding population, with no single population identified as being important for its long-term survival or recovery (DotE, 2015).

The general habitat requirements of the Squatter Pigeon (southern subspecies) are detailed in Table 13.

Table 13
Squatter Pigeon (southern subspecies) – General Habitat Requirements

Requirements/Preferences	Squatter Pigeon (southern subspecies) Requirements/Preferences (DotE, 2015)
General habitat requirements/preferences	The species prefers open-forests to sparse, open-woodlands and scrub that are dominated by *Eucalyptus*, *Corymbia*, *Acacia* or *Callitris* species, are within 3 km of water, and are remnant, regrowth or partly modified vegetation.
Foraging requirements/preferences	Preferred foraging habitat is any remnant or regrowth open-forest to sparse, open-woodland or scrub dominated by *Eucalyptus, Corymbia, Acacia* or *Callitris* species, on sandy or gravelly soils, within 3 km of a suitable permanent or seasonal waterbody. In Queensland, Squatter Pigeon (southern subspecies) foraging and breeding habitat is known to occur on well-draining, sandy or loamy soils on low, gently sloping, flat to undulating plains and foothills (i.e. Queensland RE Land Zone 5), and lateritic (duplex) soils on low 'jump-ups' and escarpments (i.e. Queensland RE Land Zone 7).
Microhabitat requirements/preferences	The species roosts in areas of well drained soils, in shallow depressions in the ground and prefers to forage and dust-bathe on bare ground under an open canopy of trees. Typically, the ground covering vegetation layer in foraging and breeding habitat is considerably patchy consisting of native, perennial tussock grasses or a mix of perennial tussock grasses and low shrubs or forbs. This patchy, ground layer of vegetation rarely exceeds 33% of the ground area. The remaining ground surface consisting of bare patches of gravelly or dusty soil and areas lightly covered in leaf litter and coarse, woody debris (e.g. fallen trees, logs and smaller debris). The patchiness of the ground layer vegetation in foraging and breeding habitats tends to be variable over a given area.
Breeding requirements/preferences	Breeding habitat occurs on stony rises occurring on sandy or gravelly soils, within 1 km of a suitable, permanent waterbody. In Queensland, Squatter Pigeon (southern subspecies) foraging and breeding habitat is known to occur on well-draining, sandy or loamy soils on low, gently sloping, flat to undulating plains and foothills (i.e. Queensland RE Land Zone 5), and lateritic (duplex) soils on low 'jump-ups' and escarpments (i.e. Queensland RE Land Zone 7).

7.3.2 Habitat Modelling

As described in Section 3.3, habitat modelling was conducted by Cumberland Ecology for the Squatter Pigeon (southern subspecies). The modelling focussed on the presence of suitable foraging and nesting habitat and proximity to permanent water, as summarised in Table 14.

Table 14
Habitat Modelling for the Squatter Pigeon (southern subspecies)

Habitat Analysis Criteria	Squatter Pigeon (southern subspecies)
Pre-existing models for threatened species habitat	The SPRAT database for the Squatter Pigeon (southern subspecies) provides an indicative distribution map within Queensland/northern New South Wales. There are no pre-existing habitat models at a local scale and near the project site for the Squatter Pigeon (southern subspecies).
Threatened species records in the project site and surrounds	Four records of the species have been recorded within and surrounding the project site; one record from AECOM in 2012 (to the north of the two northern farm farms); and three records from Cumberland Ecology in 2014 (one record to the east of the two northern farm dams and two records to the north of the project site). All records are in the north of the project site or surrounding area, within 1 km of the farm dams within the project site (Figure 12).
Presence of suitable vegetation	Natural foraging habitat includes any remnant or regrowth open-forest to sparse, open-woodland or scrub dominated by *Eucalyptus*, *Corymbia*, *Acacia*, or *Callitris* species, on sandy or gravelly soils (DotE, 2015). *Eucalyptus* and sandy soils are present in the majority of the project site.
Presence of suitable topography and soils	Soil landscapes are good indicators of where natural, foraging and breeding habitats for the Squatter Pigeon (southern subspecies) occur. In Queensland, Squatter Pigeon (southern subspecies) foraging and breeding habitat is known to occur on well-draining, sandy or loamy soils on low, gently sloping, flat to undulating plains and foothills (i.e. Queensland RE Land Zone 5), and lateritic (duplex) soils on low 'jump-ups' and escarpments (i.e. Queensland RE Land Zone 7) (DotE, 2015). While the project site contains sandy soil, it does not contain Land Zone 5 or Land Zone 7.
Presence of permanent water sources	The species requires permanent water resources as it requires access to drinking water daily. Foraging areas are generally within 3 km of permanent water, and breeding areas are generally within 1 km of permanent water (DotE, 2015). There are two permanent water sources (farm dams) in the north of the project site.
Presence of preferred foods	The Squatter Pigeon (southern subspecies) feeds on a wide range of seeds from grasses, legumes and herbs that it obtains from the ground. To a lesser extent it also feeds on seeds of trees and shrubs, as well as insects (DotE, 2015). Such food resources are available within all of the REs and non-remnant vegetation within the project site.
Presence of tree hollows	The species does not utilise tree hollows.

Habitat Analysis Criteria	Squatter Pigeon (southern subspecies)
Documented foraging distances around permanent water	The species forages up to 3 km from permanent water sources. There are two permanent water sources (farm dams) in the north of the project site.
Documented sensitivity to habitat clearance and/or fragmentation	One of the main threats to the Squatter Pigeon (southern subspecies) is the loss and fragmentation of habitat due to clearing for agricultural activities (DotE, 2015). The project site has been used for agricultural activities (i.e. cropping and grazing) for over 110 years and is currently being used for cattle grazing. Consequently, the habitat within the project site is highly fragmented.
Occurrence of harmful feral species that are a known threat to the species	The two of the main threats to the Squatter Pigeon (southern subspecies) are predation by numerous avian and terrestrial predators and the degradation of habitat by invasive weeds, such as Buffel Grass. Particularly, the Squatter Pigeon (southern subspecies) is known to be susceptible to predation by European red foxes and feral cats, which are implicated in the decline of the species (DotE, 2015). European red foxes and feral cats are prevalent across the project site and are likely to occur in all habitats. Buffel Grass was commonly recorded within the project site.
Documented sensitivity to cattle grazing pressure	One of the main threats to the Squatter Pigeon (southern subspecies) is the degradation of habitat by overgrazing by domesticated herbivores, especially the sheep and cow. As it feeds and shelters within grassy ground cover, the Squatter Pigeon (southern subspecies) is susceptible to grazing and trampling of its habitat by domestic herbivores, particularly cattle (DotE, 2015). The project site has been used for agricultural activities (i.e. cropping and grazing) for over 110 years and is currently being used for cattle grazing.

Based on the criteria above, approximately 224 ha of land within the project site is unsuitable for the Squatter Pigeon (southern subspecies). The Terrestrial Ecology Report, prepared by Cumberland Ecology, and provided in the Round 1 Response to Submissions, assessed the remaining 395 ha of the project site as being broad foraging habitat for the Squatter Pigeon (southern subspecies) (Figure 13). Cumberland Ecology assessed the habitat as being broad foraging habitat as Land Zones 5 and 7 (Commonwealth defined breeding and foraging habitat) are not present in the project site. However, in response to DotE's second round of submissions on the Boundary Hill South EIS, Hansen Bailey and Cumberland Ecology have assessed the project site against the Commonwealth's definitions of habitat (Section 7.3.3). This reassessment has indicated that none of the project site meets the Commonwealth's definition of Squatter Pigeon (southern subspecies) habitat.

7.3.3 Commonwealth Defined Habitat

Habitat for the Squatter Pigeon (southern subspecies) is defined by the Commonwealth as:

- '*Habitat critical to the survival of a species'* in the Commonwealth's Significant Impact Guidelines.

This defined habitat term is discussed in the following section.

Habitat Critical to the Survival of a Species
'*Habitat critical to the survival of a species'* is defined in the Commonwealth's Significant Impact Guidelines as '*areas that are necessary:*

- *For activities such as foraging, breeding, roosting or dispersal;*
- *For the long-term maintenance of the species (including the maintenance of species essential to the survival of the species, such as pollinators);*
- *To maintain genetic diversity and long term evolutionary development; or*
- *For the reintroduction of populations or recovery of the species.*

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species as habitat critical for that species; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.'

It is unlikely that the project site contains any '*habitat critical to the survival of a species'* as:

- There are no areas that are necessary for foraging, breeding, roosting or dispersal within the project site.
    - Foraging: The Squatter Pigeon (southern subspecies) feeds on a wide range of seeds from grasses, legumes and herbs that it obtains from the ground and to a lesser extent it also feeds on seeds of trees and shrubs, as well as insects. The broad range of the Squatter Pigeon's (southern subspecies) dietary requirements translates into very broad foraging requirements. Preferred foraging habitat is any remnant or regrowth open-forest to sparse, open-woodland or scrub dominated by *Eucalyptus, Corymbia, Acacia* or *Callitris* species, on sandy or gravelly soils, within 3 km of a suitable permanent or seasonal waterbody. In Queensland, Squatter Pigeon (southern subspecies) foraging habitat is known to occur on well-draining, sandy or loamy soils on low, gently sloping, flat to undulating plains and foothills (i.e. Queensland RE Land Zone 5), and lateritic (duplex) soils on low 'jump-ups' and escarpments (i.e. Queensland RE Land Zone 7). The project site contains broad foraging habitat requirements of the Squatter Pigeon

(southern subspecies) such as remnant and regrowth open forest dominated by *Eucalyptus* spp. and *Acacia* spp. that occur within 3 km of the permanent water present within the project site (i.e. the two northern farm dams). However, the project site does not contain Land Zones 5 or 7, which have been classified by DotE as containing the natural foraging habitat for this species. It is therefore considered unlikely that the project site contains any areas that are necessary for Squatter Pigeon (southern subspecies) foraging.

- Breeding: The Squatter Pigeon (southern subspecies) breeding habitat occurs on stony rises occurring on sandy or gravelly soils, within 1 km of a suitable, permanent waterbody. In Queensland, Squatter Pigeon (southern subspecies) breeding habitat is known to occur on well-draining, sandy or loamy soils on low, gently sloping, flat to undulating plains and foothills (i.e. Queensland RE Land Zone 5), and lateritic (duplex) soils on low 'jump-ups' and escarpments (i.e. Queensland RE Land Zone 7). The species peak breeding period is not fixed, but is likely to coincide with the dry season (April to October), when their primary source of food, grass seed, is most abundant. The project site was surveyed in April and September 2012 and August 2014, within the peak breeding season for this species. No nests or juvenile Squatter Pigeons (southern subspecies) were recorded during any of the surveys. As described above, the project site does not contain Land Zones 5 or 7, which have been classified by the DotE as containing the natural breeding habitat for this species. It is therefore considered unlikely that the project site contains any areas that are necessary for Squatter Pigeon (southern subspecies) breeding due to a lack of nests or juveniles recorded during surveys that were conducted during the species' peak breeding season and as the project site does not contain any natural breeding habitat (i.e. Land Zones 5 and 7).
- Roosting: The Squatter Pigeon (southern subspecies) is not known to produce or use roosts.
- Dispersal: The SPRAT database defines Squatter Pigeon (southern subspecies) dispersal habitat as any forest or woodland occurring between patches of foraging or breeding habitat and suitable waterbodies. These patches are not suitable for breeding or foraging but facilitate local movement of the subspecies. The SPRAT database states that the Squatter Pigeon (southern subspecies) is only likely to occur in vegetation on non-alluvial clays (equivalent to Queensland RE Land Zone 4) where the ground covering vegetation layer has been thinned through current land-use practices (e.g. light cattle grazing). The broad foraging habitat within the project site does not connect any patches of natural foraging or breeding habitat (i.e. Land Zones 5 or 7) (Figure 9). The broad foraging habitat within the project site also does not contain non-alluvial clays (equivalent to Queensland RE Land Zone 4). Therefore, the project site does not contain any dispersal habitat for the Squatter Pigeon (southern subspecies).

- Given that the project site does not contain any natural breeding or foraging habitat and that it has been continually used for grazing and cropping for more than 110 years, it is unlikely that the project site is an area necessary for the long-term maintenance of the species.
- Given that the project site does not contain any natural breeding or foraging habitat and there is no dispersal habitat, it is unlikely that the project site is an area necessary to maintain genetic diversity and long term evolutionary development of the Squatter Pigeon (southern subspecies).
- Given that the project site does not contain any natural breeding or foraging habitat and that it has been used for grazing and cropping for more than 110 years, it is unlikely that the project site is an area necessary for the reintroduction of populations or recovery of the species.
- The Commonwealth has deemed that a Recovery Plan for the Squatter Pigeon (southern subspecies) is not required (DotE, 2015) and one has not been developed by the Commonwealth. There is also no Squatter Pigeon (southern subspecies) habitat listed on the Register of Critical Habitat.

Therefore, due to the low quality of habitat within the project site, it is unlikely that the project site contains any '*habitat critical to the survival of a species'*.

7.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT

The Squatter Pigeon (southern subspecies) has been recorded twice within the project site and twice immediately adjacent to the project site.

7.5 SIGNIFICANT IMPACT ASSESSMENT

An assessment of significance has been conducted for this species following the Commonwealth's Significant Impact Guidelines for Vulnerable Species. Section 7.5.1 assesses whether the project site contains an '*important population'* of the Squatter Pigeon (southern subspecies), while Section 7.5.2 presents the assessment of significance that has been conducted for this species.

7.5.1 Important Population Assessment

According to the Commonwealth's Significant Impact Guidelines, an '*important population'* of any Vulnerable species 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:*

- *key source populations either for breeding or dispersal*
- *populations that are necessary for maintaining genetic diversity, and/or*
- *populations that are near the limit of the species range.'*

In 2014, the SPRAT database stated that '*no populations have been identified as being especially important to the long-term survival or recovery of the Squatter Pigeon'*. While this statement has subsequently been removed from the SPRAT database, it is important to note that this species is known to commonly occur in the project site locality and is considered to be locally abundant.

The small number of birds that occur in the project site (possibly one to several pairs) do not represent a key source population for either breeding or dispersal. The small number of birds that occur in the project site also are not necessary for maintaining genetic diversity. Rather, they are a few individuals from the large northern population.

The project site is not located near the limit of the range of the Squatter Pigeon (southern subspecies). It occurs from central New South Wales to Cape York Peninsular and from the coast to as far west as Longreach.

Therefore, the project site does not contain an '*important population'* of the Squatter Pigeon (southern subspecies).

'*Important sub-populations'* of the species are defined within the SPRAT database as follows:

> *The southern boundary of the known distribution of the Squatter Pigeon (southern subspecies) is contracting northwards. Therefore, all of the relatively small, isolated and sparsely distributed sub-populations occurring south of the Carnarvon Ranges in Central Queensland are considered to be important sub-populations of the subspecies. This includes, but is not limited to:*
> 1. *Populations occurring in the Condamine River catchment and Darling Downs of southern Queensland;*
> 2. *The populations known to occur in the Warwick-Inglewood-Texas region of southern Queensland; and*
> 3. *Any populations potentially occurring in northern NSW.*

The project site is not within any of the three aforementioned areas and therefore does not contain an '*important sub-population'* of the Squatter Pigeon (southern subspecies).

The threatened species status of the Squatter Pigeon (southern subspecies) in Australia under the EPBC Act is currently under review by the DotE and this species may be delisted from the EPBC Act. DotE is considering the removal of this species from the EPBC Act as

evidence suggests that this species does not meet any of the EPBC Act criteria and regulations for listing a Vulnerable species under the EPBC Act. While the application to delist this species is still under review, this suggests that there are no '*important populations'* of this species as this species may not in fact meet the criteria to be listed as a threatened species under the EPBC Act.

7.5.2 Significant Impact Criteria

An assessment of significance for the Squatter Pigeon (southern subspecies) has been conducted in accordance with the Commonwealth's Significant Impact Guidelines. The significant impact criteria are provided in *underlined italics* and the response is provided in normal text.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population of a species*

Not applicable as there is no '*important population'* of Squatter Pigeon (southern subspecies) within the project site (Section 7.5.1).

- *reduce the area of occupancy of an important population*

Not applicable as there is no '*important population'* of Squatter Pigeon (southern subspecies) within the project site (Section 7.5.1).

- *fragment an existing important population into two or more populations*

Not applicable as there is no '*important population'* of Squatter Pigeon (southern subspecies) within the project site (Section 7.5.1).

- *adversely affect habitat critical to the survival of a species*

Not applicable as there is no '*habitat critical to the survival of a species'* of Squatter Pigeon (southern subspecies) within the project site (Section 7.3.3).

- *disrupt the breeding cycle of an important population*

Not applicable as there is no '*important population'* of Squatter Pigeon (southern subspecies) within the project site (Section 7.5.1).

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

As described in Section 7.3.2, there is broad habitat for the Squatter Pigeon (southern subspecies) within the project site. There is no '*habitat critical to the survival of a species'* within the project site and therefore, by definition, there is no natural breeding, foraging or dispersal habitat that is necessary for the species survival. Approximately 48.5 ha of foraging habitat for the Squatter Pigeon (southern subspecies) would be cleared as a result of the project. Given that this habitat is not '*critical to the survival of a species'*, the disturbance of this broad foraging habitat will not cause the species to decline. In addition, the threatened species status of the Squatter Pigeon (southern subspecies) under the EPBC Act is currently under review by DotE and this species may be delisted from the EPBC Act.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

It is considered unlikely that the project will result in an invasive species becoming established in habitat for the Squatter Pigeon (southern subspecies) within the project site. Feral animals already occur in the project site and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project. In addition, the Callide Mine Weed Management Plan includes a wash down procedure to help control the spread of pest plants both on and off-site. This management plan will be updated to include the project.

- *introduce disease that may cause the species to decline, or*

It is considered unlikely that the project will introduce a disease that may cause the Squatter Pigeon (southern subspecies) to decline as disease is not a known threat.

- *interfere substantially with the recovery of the species.*

The project will not interfere with the recovery of the Squatter Pigeon (southern subspecies). As stated in Section 7.5.1, there is no '*important population'* of Squatter Pigeon (southern subspecies) in the project site. By definition, this means that there are no key source populations either for breeding or dispersal within the project site and no populations that are necessary for maintaining genetic diversity. These are key requirements for the recovery of the species. There is also only broad foraging habitat without any breeding, foraging or dispersal habitat which are necessary for the recovery of the species. Given that there are no '*important populations'* and no '*habitat critical to the survival of a species'* within the project site and no dispersal habitat to the project site, it is unlikely that the project contains habitat that is critical for the recovery of the Squatter Pigeon (southern subspecies). Therefore, it is unlikely that the project will interfere substantially with the recovery of the Squatter Pigeon (southern subspecies).

Conclusion

Based on the outcomes using the above assessment criteria, it is considered that the project will not have a residual significant impact to the Squatter Pigeon (southern subspecies).

8 RED GOSHAWK

The Red Goshawk is a large rufous-brown hawk, growing to a length of 45–60 cm, with a wingspan of 100–135 cm. The females weigh approximately 1.1 kg and males weigh approximately 0.63 kg. The Red Goshawk is boldly mottled and streaked, with rufous scalloping on the back and upper wings, rufous underparts that are brightest and lack streaking on the thighs, and with massive yellowish legs and feet, and boldly barred underwings (DotE, 2015). The Red Goshawk is listed as Vulnerable under the EPBC Act and Endangered under the NC Act.

This section provides the detailed assessment of the Red Goshawk and is structured as follows:

- Section 8.1 – Survey Methodology: A detailed description of the survey methodology and how it aligns with the Commonwealth and State survey requirements;
- Section 8.2 – Desktop and Field Survey Results: The results of the desktop and field surveys;
- Section 8.3 – Habitat Assessment: The detailed habitat assessment including habitat modelling and an assessment against the Commonwealth habitat terminology;
- Section 8.4 – Likelihood of Occurrence Assessment: The detailed likelihood of occurrence assessment; and
- Section 8.5 – Significant Impact Assessment: The detailed significant impact assessment in accordance with the Commonwealth's Significant Impact Guidelines.

8.1 SURVEY METHODOLOGY

Surveys undertaken within the project site for the Red Goshawk were generally undertaken in accordance with the Commonwealth and Queensland survey requirements, as outlined below.

8.1.1 Commonwealth Survey Requirements

There are two Commonwealth survey guidelines that outline survey methods for the Red Goshawk, namely:

- SPRAT database for the Red Goshawk ; and
- Commonwealth's Threatened Birds Survey Guideline.

The survey guideline requirements and the actual survey effort for the Red Goshawk are described below. The survey guideline requirement is provided below in *underline italics* and the response is provided in normal text.

Species Profile and Threats Database

As of 23 June 2015, the SPRAT database for the Red Goshawk included the following survey requirements.

While the Red Goshawk is generally silent, its call is distinctive raucous shrieks and cackling. Calls are more likely to be heard at various times during the breeding season, especially early and late in the season. Females have been observed to be very vocal in the 25 days before laying eggs, occasionally calling for 30+ minutes. In the 30 days before laying, a chattering call may be heard during copulation, which can happen up to six times a day, and is more frequent in the mornings. Red Goshawks have been observed calling when the male delivers prey, which occurs somewhat more frequently early or late in the day. Quiet begging calls from chicks and louder more frequent begging calls from fledglings have also been heard.

The breeding season for Red Goshawks is long, with courtship starting as early as April and young not leaving their natal territories until as late as the end of December. Fauna surveys were conducted in April and September 2012 and August 2014 and were therefore undertaken during the Red Goshawk's breeding season. Any birds heard calling throughout the surveys were recorded.

The Red Goshawk spends much of its time below the canopy, but it has been observed regularly flying just above the canopy. Red Goshawks appear to do most of their flying in the afternoon from 12:00 hrs to 16:00 hrs. A variety of infrequent flight displays have also been observed some of which occurred above the canopy, and all would suggest breeding. In the 10 weeks before laying, infrequent unilateral soaring has been observed in the morning by males and less frequently in the afternoon by females. Some mutual soaring, occasionally with calling, in the 30 days before laying has been observed. Male agility displays, and mutual agile displays around the nest site, generally under the canopy, have also been recorded.

As described above, the breeding season for Red Goshawks is generally between April and December. Fauna surveys were conducted in April and September 2012 and August 2014 and were therefore undertaken during the Red Goshawk's breeding season. Any birds seen throughout the surveys were recorded.

The most successful nesting surveys were conducted through extensive ground searches along 5-30 km stretches of wooded river habitat.

As described in Section 3.1.6, active diurnal bird surveys were undertaken throughout the project site in April and September 2012. Ground and nest searches were conducted during the active diurnal bird surveys. Any nests seen during the surveys were recorded.

Surveys should be conducted during the breeding season, most commonly from August to November, although surveys in June and July as well as December might yield results.

Fauna surveys were conducted in September 2012 and August 2014 and were therefore undertaken during the Red Goshawk's breeding season.

Ground searches also may be more effective early or late in the day.

As described in Section 3.1.6, diurnal bird surveys were undertaken in the early morning (within four hours of dawn).

Driving slowly along tracks in suitable habitat has also been effective at locating individuals, and occasionally nests.

Any birds or nests recorded whilst driving along roads and tracks were noted.

In the rugged terrain of eastern Australia where the above techniques may be much more difficult, point counts at locations where observers can see over the canopy have sometimes been useful in spotting flying individuals and pairs. These surveys should be conducted during the breeding season, and during the afternoon on fine days with calm to moderate wind.

Not applicable as the project site is not located in rugged terrain.

Broadcast surveys were attempted by Debus (1993), but their effectiveness has not been determined as no Red Goshawks were located during this survey.

As described in Section 3.1.6, diurnal bird surveys were undertaken to target any potential bird species that might be present within the project site. Records were based both on direct observation and species-specific vocalisations.

Survey Guidelines for Australia's Threatened Birds

Search for their characteristic nests within patches of the tallest forest. In sub-coastal woodland, these areas can initially be identified from aerial photos and then searched during follow-up ground surveys. Further inland requires ground searches along river banks for nests within the tallest trees. Driving slowly through tropical woodland tracks and scanning groups of tall trees for nests can also be effective. In eastern Australia's ranges, searching for nests is more difficult but soaring birds can sometimes be located from vantage points such as mountain tops. Some success has been had surveying this species using call playbacks during the breeding season. Area searches should be conducted over 80 hours across 10 days.

As stated in Sections 3.1.6 and 3.1.8, fauna habitat assessments were conducted at 91 sites and comprised two people conducting area searches for a total of 36 hours each over 13 days during the 2014 ecology surveys (totalling 72 person hours) as well as targeted diurnal active searches for birds undertaken in 2012 for over seven person hours over five days within the project site.

8.1.2 Queensland Survey Requirements

The Queensland Fauna Survey Guidelines outlines the minimum survey requirements, standards and appropriate practice for the survey of terrestrial vertebrate fauna in Queensland. These survey guidelines had not been released to the public during the time of the detailed fauna surveys conducted in April 2012 and September 2012. However, the surveys undertaken for the project are generally in compliance with these guidelines. The general surveys methods outlined in this guideline that are applicable to the Red Goshawk, are discussed in the following sections.

A national recovery plan has been published for this species, the *National Recovery Plan for the Red Goshawk* *Erythrotriorchis radiatus* (DERM, 2012), however no survey guidelines are outlined in this plan.

Queensland Fauna Survey Guidelines
Optimal time of year for vertebrate fauna surveys within the Brigalow belt Bioregion are Spring to early Summer (Sept – mid Nov) and Autumn (March – mid May)

The 2012 fauna surveys were conducted in September and April and therefore meet the requirements of this guideline.

Diurnal bird survey – Six X 5-10 minute area searches within 100 x 100 m survey site

As described in Section 3.1.6, diurnal bird surveys were undertaken for 20 minutes within a 2 ha search area at six survey sites during the 2012 surveys.

Incidental – Incidental detection of any species

Any incidental detection of fauna species were recorded during the flora and fauna surveys.

8.2 DESKTOP AND FIELD SURVEY RESULTS

The Red Goshawk was not recorded from the project site during any of the field surveys undertaken for the project. The Red Goshawk has also not been recorded within 25 km of the project site in any of the desktop database searches, or within 100 km of the project site in the Australian Museum database. However the Red Goshawk, or its habitat, was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool.

8.3 HABITAT ASSESSMENT

8.3.1 Overview

The Red Goshawk is endemic to Australia and is very sparsely distributed across 15% of coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia, including riverine forests. Riverine forests are also utilised. Vegetation types utilised include eucalypt woodland, open forest, tall open forest, gallery rainforest, swamp sclerophyll forest, and rainforest margins. These habitats typically support high bird numbers and biodiversity, especially medium to large species which the goshawk requires for prey (DotE, 2015).

Red Goshawks prefer undisturbed forest or woodland with a mosaic of mixed vegetation, especially patches that include river, billabong or swamp wetland with large bird populations and permanent water. It is suspected that the distribution of the Red Goshawk is slightly fragmented, but there is no evidence that fragmentation in the Red Goshawk distribution is severe. Fragmentation may occur in the more heavily settled and cleared regions of the species' range, such as in the coastal lowlands of eastern Queensland. The degree of this fragmentation in the lowlands may be masked by the persistence of birds in the adjacent foothills and hinterland country which has not suffered the same degree of clearing (DotE, 2015).

The species preys predominantly on birds and over 95% of their diet is on birds. Mammals, reptiles and insects are rarely taken. The usual method of capture is hunting from concealed or, occasionally, exposed perches, usually changing perches every one to five minutes. They also soar and prospect above the forest for over 30 minutes at a time, occasionally using rapid contour hunting (DotE, 2015).

The breeding season for Red Goshawks is long with courtship starting as early as April and young not leaving their natal territories until as late as the end of December. Breeding occurs generally in the spring. The Red Goshawk breeds solitarily, in forested or wooded areas, within 1 km of permanent water, and in a large (over 20 m tall) tree. Breeding pairs use the same nesting territories year after year, renovating the nest used in the previous year or nesting nearby (DotE, 2015).

Home ranges in Queensland vary between 50 and 220 km^2 depending on available habitat nearby (DotE, 2015).

The general habitat requirements of the Red Goshawk are detailed in Table 15.

Table 15
Red Goshawk – General Habitat Requirements

Requirements/Preferences	Red Goshawk Requirements/Preferences (DotE, 2015)
General habitat requirements/preferences	The species prefer undisturbed forest or woodland with a mosaic of mixed vegetation, especially patches that include river, billabong or swamp wetland with large bird populations and permanent water.
Foraging requirements/preferences	The species preys predominantly on birds and over 95% of their diet is on birds. Red Goshawks generally avoid very dense or very open habitats, preferring to hunt along their ecotones.
Microhabitat requirements/preferences	The species nests in tall trees in open forest and woodland near permanent water bodies. Their nest is usually placed on a horizontal branch against a vertical branch.
Breeding requirements/preferences	Breeding generally occurs from August to November and nesting territories are reused by breeding pairs year after year. The Red Goshawk breeds solitarily, in forested or wooded areas, within 1 km of permanent water, and in a large (over 20 m tall) tree.

8.3.2 Habitat Modelling

As described in Section 3.3, habitat modelling was conducted by Cumberland Ecology for the Red Goshawk. The modelling for the Red Goshawk focussed on the presence of suitable forest and woodland vegetation and permanent water, as summarised in Table 16.

Table 16
Habitat Modelling for the Red Goshawk

Habitat Analysis Criteria	Red Goshawk
Pre-existing models for threatened species habitat	The Red Goshawk Recovery Plan provides a map showing the Red Goshawk distribution in Australia from 1984. The project site is within the known distribution for this species. In addition, the SPRAT database for the Red Goshawk provides an indicative distribution map within Queensland, northern New South Wales, Northern Territory and Western Australia. There are no pre-existing habitat models at the local scale and near the project site, for the Red Goshawk. However, the species published habitat requirements provide scope for modelling and mapping the species habitat: it prefers forest and woodland with a mosaic of vegetation types, large prey populations (birds) and permanent water; nesting is within 1 km of and often beside permanent water. Two permanent water sources in the form of the two northern farm dams have been recorded within the project site.
Threatened species records in the project site and surrounds	The Red Goshawk was not recorded from the project site during any of the field surveys undertaken for the project. The Red Goshawk has also not been recorded within 25 km of the project site in any of the desktop database searches, or within 100 km of the project site in the Australian Museum database. However, the Red Goshawk, or its habitat, was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool.

Habitat Analysis Criteria	Red Goshawk
Presence of suitable vegetation	All remnant REs within the project site are suitable for the species to forage within as they all comprise woodland habitats.
Presence of suitable topography	The species has no specific topographic requirements.
Presence of permanent water sources	Red Goshawks require permanent water (DotE, 2015). The Red Goshawk breeds within 1 km of permanent water. Natural permanent waters (i.e. permanent wetlands) are absent from the project site, as the wetland located in the central portion of project site is ephemeral in nature. The species forages on other birds, primarily Psittaciformes (parrots and lorikeets) which are found near water or in woodlands. Two permanent water sources in the form of the two northern farm dams have been recorded within the project site.
Presence of preferred foods	High densities of smaller birds, such as those that occur around riparian woodlands, are required to support the species (DotE, 2015). The only habitat of this nature within the project site are around the two large northern farm dams along the northern ephemeral drainage line within the project site.
Presence of tree hollows	The species does not directly use tree hollows, but parrots, which it preys upon, roost in hollows. The Red Goshawk is more likely to occur in older growth woodland with tree hollows than in young regrowth. The major concentrations of older trees with hollows within the project site are around the ephemeral drainage lines in the northern portion of the project site.
Documented foraging distances around permanent water	Historic records of pairs of Red Goshawks suggested home range may vary from 50–220 km² based on the available habitat surrounding the areas where the pairs were located (DotE, 2015).
Documented sensitivity to habitat clearance and/or fragmentation	This species is likely to be threatened by habitat clearance and fragmentation, which would remove nest sites and also reduce the availability of smaller birds that it preys upon (DotE, 2015). The project site has been used for grazing for over 110 years and is currently being used for cattle grazing. Consequently, the project site is highly fragmented.
Occurrence of harmful feral species that are a known threat to the species	The species is not known to be affected by feral species.
Documented sensitivity to cattle grazing pressure	The species is not affected directly by cattle grazing pressure, however degradation of foraging resources by cattle has been identified as a current threat to the species (DotE, 2015). The project site has been used for grazing for over 110 years and is currently being used for cattle grazing.

Based on the criteria above, approximately 224 ha of land within the project site is unsuitable for the Red Goshawk. The Terrestrial Ecology Report, prepared by Cumberland Ecology, and provided in the Round 1 Response to Submissions, assessed the remaining 395 ha of the project site as being low quality habitat for the Red Goshawk (Figure 14). Cumberland

Ecology assessed the habitat as being low quality due to the modification of the land due to agricultural development (i.e. grazing and cropping within the project site for over 110 years). However, in response to DotE's second round of submissions on the Boundary Hill South EIS, Hansen Bailey and Cumberland Ecology have assessed the project site against the Commonwealth's definitions of habitat (Section 8.3.3). This reassessment has indicated that none of the project site meets the Commonwealth's definition of Red Goshawk habitat.

8.3.3 Commonwealth Defined Habitat

Habitat for the Red Goshawk is defined by the Commonwealth as:

- '*Foraging habitat'* in the Commonwealth's 2012 Draft *National Recovery Plan for the Red Goshawk Erythrotriorchis radiatus* (Red Goshawk Recovery Plan);
- '*Nesting habitat'* in the Red Goshawk Recovery Plan; and
- '*Habitat critical to the survival of a species'* in both the Red Goshawk Recovery Plan and the Commonwealth's Significant Impact Guidelines.

These defined habitat terms are discussed below.

Foraging Habitat
In accordance with the Red Goshawk Recovery Plan the project site does not contain foraging habitat for the Red Goshawk.

The Red Goshawk Recovery Plan states *'Resident pairs of red goshawks prefer intact, extensive woodlands and forests with a mosaic of vegetation types that are open enough for fast manoeuvring flight (Marchant and Higgins 1993). These favoured areas contain permanent water, are relatively fertile and biologically rich with large populations of birds.'*

The dominate land use within the project site is agriculture and the project site has been continually grazed or cropped for over 110 years. The project site mainly comprises open, grassy paddocks that are currently used for cattle grazing (Figure 3) and contain native and introduced species. Due to the current land use within the project site, the project site does not contain intact, extensive woodlands that are preferred foraging habitat for the Red Goshawk.

The Red Goshawk Recovery Plan states *'Red goshawks generally avoid very densely vegetated or very open habitats, but will hunt along ecotones between such habitats and woodlands or forests…In northern Queensland, red goshawks are mainly associated with extensive, uncleared, mosaics of native vegetation, especially riparian vegetation, open forest and woodland (Czechura and Hobson 2000) that contain a mix of eucalypt, ironbark and bloodwood species.'*

The project site does not contain any very densely vegetated and is mainly comprised of open habitats. Riparian habitats are quite limited in extent and are confined to three small, ephemeral drainage lines in the north and west of the project site. The northern-most ephemeral drainage lines are wooded in the east of the project site and relatively large trees occur along them. These large trees were surveyed and no Red Goshawk nests or individuals were recorded.

The Red Goshawk Recovery Plan states *'Red goshawks are rarely seen away from large areas of intact native vegetation (Aumann and Baker-Gabb 1991, Czechura 2001), and there are no breeding records from areas where vegetation is extensively fragmented.'*

The vegetation within the project site is highly fragmented and is surrounded by the power line easement to the east, the existing open cut mine to the north and west and grazing land to the south.

Nesting Habitat

Nesting habitat is defined in the Red Goshawk Recovery Plan as '*a subset of foraging habitat, with a tall stand of trees invariably selected as the nest location (Aumann and Baker-Gabb 1991). All identified nest trees have been within 1 km of permanent water, often adjacent to rivers or clearings, and usually the tallest (mean height = 31 m) and most massive trees (Aumann and Baker-Gabb 1991, Czechura 2001).'*

The project site contains two farm dams which contain permanent water. As described above, the northern-most ephemeral drainage line is wooded and relatively large trees occur along this drainage line (Figure 3). These large trees are within 1 km of the farm dams. These large trees were surveyed extensively during the Red Goshawk breeding season and no Red Goshawk nests or individuals were recorded. It is considered unlikely that the project site contains suitable nesting habitat for this species due to the fragmented and limited availability of large trees near permanent water.

Habitat Critical to the Survival of a Species

'*Habitat critical to the survival of a species'* is defined in the Commonwealth's Significant Impact Guidelines as '*areas that are necessary:*

- *For activities such as foraging, breeding, roosting or dispersal;*
- *For the long-term maintenance of the species (including the maintenance of species essential to the survival of the species, such as pollinators);*
- *To maintain genetic diversity and long term evolutionary development; or*
- *For the reintroduction of populations or recovery of the species.*

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species as habitat critical for that species; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.'

More specifically, the Red Goshawk Recovery Plan states:

'*Habitat critical for the Red Goshawk's survival needs to contain all known sites for nesting, food resources, water, shelter, essential travel routes, dispersal, buffer areas, and sites needed for the future recovery as defined by the EPBC Act. Much of the remaining feeding and nesting habitat in eastern Queensland is on public reserves and state forests (Czechura 1996, Czechura and Hobson 2000), whereas in Cape York, the Top End and Kimberley the red goshawk's habitat is subject to a greater range of ownership and management practices, including public reserves, land under Indigenous ownership, and pastoral leases.'*

The habitat within the project site does not meet the definition of '*habitat critical* for the Red Goshawk's survival as:

- No Red Goshawk nests were recorded within the project site despite extensive surveys during the Red Goshawk's breeding season (Sections 3.1.6 and 3.1.8).
- Although the project site does contain food resources known to the Red Goshawk (i.e. small birds), no Red Goshawks were recorded during the project site surveys.
- The project site only has two small farm dams in the north of the project site which contain permanent water.
- The project site contains limited mature trees that may possibly provide shelter for this species.
- No known essential travel routes are located within the project site.
- The Red Goshawk Recovery Plan states that in the south-east of the Red Goshawk range, some adults migrate down from the ranges to the lowland winter territories and juveniles may disperse widely from core breeding areas. The home range of the Red Goshawk is approximately 6 – 10 km. Given that the species has not been recorded from within 25 km in any of the desktop searches and not recorded within the project site, it is unlikely that the project site is within the home range of any adult individuals. While the site may be used occasionally by dispersing juveniles, it is unlikely to constitute important dispersal habitat for the Red Goshawk.
- No nests or individual Red Goshawks were recorded during any of the surveys, therefore no buffer areas around known habitat are present within the project site.
- The project site does not comprise a site needed for the future recovery of this species, due to a lack of high quality habitat and known individuals.

The project site is not within a public reserve or state forest, where the majority of the remaining feeding and nesting habitat is located.

8.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT

This species has not been recorded from the project site and has not been recorded within 25 km of the project site in any of the desktop database searches, or within 100 km of the project site in the Australian Museum database. This species, or its habitat, was assessed as potentially occurring within the project site in the EPBC Act Protected Matters Search. The project site contains woodland habitat that can support potential prey, and this may be used on occasion by this species. Nevertheless, this species has been conservatively assessed as having a moderate likelihood of occurrence within the project site, in accordance with the criteria specified in Table 8, due to the presence of potential habitat (albeit limited in nature) and as it is known to occur in the wider region.

8.5 SIGNIFICANT IMPACT ASSESSMENT

An assessment of significance has been conducted for this species following the Commonwealth's Significant Impact Guidelines for Vulnerable species. Section 8.5.1 assesses whether the project site contains an important population of the Red Goshawk, while Section 8.5.2 presents the assessment of significance that has been conducted for this species.

8.5.1 Important Population Assessment

According to the Commonwealth's Significant Impact Guidelines, an '*important population'* of any Vulnerable species 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:*

- *key source populations either for breeding or dispersal;*
- *populations that are necessary for maintaining genetic diversity; and/or*
- *populations that are near the limit of the species range.'*

No '*important populations'* of the Red Goshawk have been identified in the Red Goshawk Recovery Plan. This species has a large home range (12,000 – 20,000 ha) and is sparsely dispersed across most of the top third of Australia, though it is uncommon across its distribution. The project site is too small (approximately 630 ha) to support a population, though, it may provide potential foraging habitat for a few individuals of the species.

Although potential foraging habitat for the Red Goshawk is present in the project site, no individuals were recorded during the surveys or recorded within 25 km of the project site in any of the desktop database searches, or within 100 km of the project site in the Australian Museum database site. The project site does not contain habitat that is '*critical to the survival of a species*'. While the limited vegetation within the project site may be used for

foraging by individuals of the species, the project site is unlikely to be a key source for breeding or dispersal, or for maintaining genetic diversity.

The project site is not near the limit of the species range.

Based upon all available data, it is unlikely that an important population of the Red Goshawk occurs within the project site.

8.5.2 Significant Impact Criteria

An assessment of significance for the Red Goshawk has been conducted in accordance with the Commonwealth's Significant Impact Guidelines. The significant impact criteria are provided in *underlined italics* and the response is provided in normal text.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population of a species*

Not applicable as there is no '*important population'* of Red Goshawk within the project site (Section 8.5.1).

- *reduce the area of occupancy of an important population*

Not applicable as there is no '*important population'* of Red Goshawk within the project site (Section 8.5.1).

- *fragment an existing important population into two or more populations*

Not applicable as there is no '*important population'* of Red Goshawk within the project site (Section 8.5.1).

- *adversely affect habitat critical to the survival of a species*

Not applicable as there is no '*habitat critical to the survival of a species'* of Red Goshawk within the project site (Section 8.3.3).

- *disrupt the breeding cycle of an important population*

Not applicable as there is no '*important population'* of Red Goshawk within the project site (Section 8.5.1).

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

As described in Section 8.3.2, there is one large patch of suitable low quality foraging habitat for the Red Goshawk within the project site. There is no '*habitat critical to the survival of a species*' within the project site.

Given the poor quality nature of Red Goshawk habitat found within the project site, it is therefore unlikely that the project will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

It is considered unlikely that the project will result in invasive species that are harmful to the Red Goshawk becoming established in any Red Goshawk habitat as there are no known invasive species that are harmful to the Red Goshawk.

- *introduce disease that may cause the species to decline, or*

It is considered unlikely that the project will introduce a disease that may cause the Red Goshawk to decline as there are no known diseases that are known to affect this species.

- *interfere substantially with the recovery of the species.*

The project will not interfere with the recovery of the Red Goshawk. As stated in Section 8.5.1, there is no 'important population' of Red Goshawk in the project site. By definition, this means that there are no key source populations either for breeding or dispersal within the project site and no populations that are necessary for maintaining genetic diversity. These are key requirements for the recovery of the species. There is also only one patch of low quality foraging habitat that is highly fragmented available within the project site. Given that there are no '*important populations'* and no '*habitat critical to the survival of a species'* within the project site, it is unlikely that the project contains habitat that is critical for the recovery of the Red Goshawk. Therefore, it is unlikely that the project will interfere substantially with the recovery of the Red Goshawk.

Conclusion

Based on the outcomes from the above assessment criteria, it is considered that the project will not have a residual significant impact to the Red Goshawk.

9 AUSTRALIAN PAINTED SNIPE

The Australian Painted Snipe is a stocky wading bird around 220–250 mm in length with a long pinkish bill. This species has a chestnut-coloured head, with white around the eye and a white crown stripe, and metallic green back and wings, barred with black and chestnut. There is a pale stripe extending from the shoulder into a V down its upper back. The adult male is similar to the female, but is smaller and duller with buff spots on the wings and without any chestnut colouring on the head, nape or throat (DotE, 2015). The Australian Painted Snipe is listed as Endangered, Migratory and Marine under the EPBC Act and Vulnerable under the NC Act.

This section provides the detailed assessment of the Australian Painted Snipe and is structured as follows:

- Section 9.1 – Survey Methodology: A detailed description of the survey methodology and how it aligns with the Commonwealth and State survey requirements;
- Section 9.2 – Desktop and Field Survey Results: The results of the desktop and field surveys;
- Section 9.3 – Habitat Assessment: The detailed habitat assessment including habitat modelling and an assessment against the Commonwealth habitat terminology;
- Section 9.4 – Likelihood of Occurrence Assessment: The detailed likelihood of occurrence assessment; and
- Section 9.5 – Significant Impact Assessment: The detailed significant impact assessment in accordance with the Commonwealth's Significant Impact Guidelines.

9.1 SURVEY METHODOLOGY

Surveys undertaken within the project site for the Australian Painted Snipe were generally undertaken in accordance with the Commonwealth and Queensland survey requirements, as outlined below.

9.1.1 Commonwealth Survey Requirements

There are two Commonwealth survey guidelines that outline survey methods for the Australian Painted Snipe, namely:

- SPRAT database for the Australian Painted Snipe; and
- Commonwealth's Threatened Birds Survey Guideline.

The survey guideline requirements and the actual survey effort for the Australian Painted Snipe are described below. The survey guideline requirement is provided below in *underlined italics* and the response is provided in normal text.

Species Profile and Threats Database

As of 23 June 2015, the SPRAT database for the Australian Painted Snipe included the following survey requirements.

Distinctiveness. The Australian Painted Snipe is a distinctive bird and unlikely to be confused with any other species. In flight, the Australian Painted Snipe can be differentiated from its close relative, Rostratula benghalensis, by its rounded wing shape.

Noted and considered during the surveys.

Detectability. The Australian Painted Snipe is difficult to detect. It is thought to be mainly crepuscular, but can be detected during the day. It is secretive but conspicuous on the rare occasions that it ventures out into the open. Intensive vigilance is required to detect flushed birds. This species may often be overlooked during wader and other waterbird census projects because of its cryptic behaviour and occurrence in rank vegetation.

As described in Section 3.1.6, active diurnal bird surveys were undertaken in the morning within four hours of dawn. Suitable habitats comprising ephemeral or permanent water were targeted during the surveys and vigilance was taken during the surveys to ensure that any individuals present would be detected.

Survey Guidelines for Australia's Threatened Birds

Area searches or transects through suitable wetlands; detection by sighting and flushing. Targeted stationary observations at dawn and dusk of suitable foraging locations within wetlands; detection by sighting. Also a brief spotlight search shortly after dusk may detect birds. To date, trials of broadcast (playback) have not been successful.

Targeted stationary observations should be conducted for 10 hours over five days. Land-based area searches or line transects should be conducted for 10 hours over three days for sites of less than 50 ha when wetland holds water but is not flooded.

As stated in Sections 3.1.6 and 3.1.8, fauna habitat assessments were conducted at 91 sites and comprised two people conducting area searches for a total of 36 hours each over 13 days during the 2014 ecology surveys (totalling 72 person hours) as well as targeted diurnal active searches for birds undertaken in 2012 for over seven person hours over five days within the project site.

As described in Section 3.1.6, spotlighting and nocturnal active searches were also conducted during the April and September 2012 surveys, which included recording any fauna species seen during the surveys. Spotlighting and nocturnal searches were undertaken by two people, each searching five detailed sites for 30-45 minutes for five nights and two people, each searching one secondary site for 30 minutes for two nights, totalling eight person hours. These surveys included the seasonal wetland in the centre of the project site.

9.1.2 Queensland Survey Requirements

The Queensland Fauna Survey Guidelines outlines the minimum survey requirements, standards and appropriate practice for the survey of terrestrial vertebrate fauna in Queensland. These survey guidelines had not been released to the public during the time of the detailed fauna surveys conducted in April 2012 and September 2012. However, the surveys undertaken for the project are generally in compliance with these guidelines. The general surveys methods outlined in this guideline that are applicable to the Australian Painted Snipe are discussed in the following sections.

Queensland Fauna Survey Guidelines
Optimal time of year for vertebrate fauna surveys within the Brigalow belt Bioregion are Spring to early Summer (Sept – mid Nov) and Autumn (March – mid May)

The 2012 fauna surveys were conducted in September and April and therefore meet the requirements of this guideline.

Diurnal bird survey – Six X 5-10 minute area searches within 100 x 100 m survey site

As described in Section 3.1.6, diurnal bird surveys were undertaken for 20 minutes within a 2 ha search area at six survey sites during the 2012 surveys. The survey undertaken therefore exceeds this survey requirement.

Incidental – Incidental detection of any species

Any incidental detection of fauna species were recorded during the flora and fauna surveys.

9.2 DESKTOP AND FIELD SURVEY RESULTS

The Australian Painted Snipe was not recorded from the project site during any of the field surveys undertaken for the project. The Australian Painted Snipe has also not been recorded within 25 km of the project site in any of the desktop database searches, or within 100 km of the project site in the Australian Museum database. However, the Australian Painted Snipe, or its habitat, was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool.

9.3 HABITAT ASSESSMENT

9.3.1 Overview

The Australian Painted Snipe is also listed as a migratory and marine species under the EPBC Act under the name Painted Snipe (*Rostratula benghalensis*). It has been recorded at wetlands in all states of Australia but 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 (DotE, 2015).

The Australian Painted Snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. The species also uses inundated or waterlogged grassland, saltmarsh, dams, rice crops, sewage farms, and bore drains. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of Lignum (*Muehlenbeckia* spp.) or Canegrass or sometimes Tea-trees (*Melaleuca* spp.). The Australian Painted Snipe sometimes utilises areas that are lined with trees, or that have some scattered fallen or washed-up timber (DotE, 2015).

The breeding habitat requirements of the Australian Painted Snipe are likely to be quite specific and include shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby. Nesting records are nearly all from islands in freshwater wetlands (DotE, 2015).

The species is mobile and will move during drought conditions. Dispersive movements have been attributed to local conditions: move to flooded areas; from drying to permanent wetlands; away from areas affected by drought (DotE, 2015).

The species feeds on vegetation, seeds, insects, worms and molluscs, crustaceans and other invertebrates (DotE, 2015).

The general habitat requirements of the Australian Painted Snipe are detailed in Table 17.

Table 17
Australian Painted Snipe – General Habitat Requirements

Requirements/Preferences	Australian Painted Snipe Requirements/Preferences (DotE, 2015)
General habitat requirements/preferences	The species is usually found in shallow inland wetlands, either freshwater or brackish, that are either permanently or temporarily filled.
Foraging requirements/preferences	The species eats vegetation, seeds, insects, worms, molluscs, crustaceans and other invertebrates. This species generally remains in dense cover when feeding, although may forage over nearby mudflats and other open areas such as ploughed land or grassland. The preferred foraging habitat is not well known.

Microhabitat requirements/preferences	Nesting primarily occurs on or near small islands in freshwater wetlands.
Breeding requirements/preferences	Breeding habitat requires shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby.

9.3.2 Habitat Modelling

As described in Section 3.3, habitat modelling was conducted by Cumberland Ecology for the Australian Painted Snipe. Habitat modelling for the Australian Painted Snipe focussed on the presence of wetland habitats, and the potential impacts of feral animals and cattle within such wetlands, as summarised in Table 18.

Table 18
Habitat Modelling for the Australian Painted Snipe

Habitat Analysis Criteria	Australian Painted Snipe
Pre-existing models for threatened species habitat	The SPRAT database for the Australian Painted Snipe provides an indicative distribution map within Australia. There are no pre-existing habitat models at the local scale and near the project site, for the Australian Painted Snipe. However, the species generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans.
Threatened species records in the project site and surrounds	The Australian Painted Snipe was not recorded from the project site during any of the field surveys undertaken for the project. The Australian Painted Snipe has also not been recorded within 25 km of the project site in any of the desktop database searches, or within 100 km of the project site in the Australian Museum database. However the Australian Painted Snipe, or its habitat, was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool.
Presence of suitable vegetation	No natural permanent wetlands occur in the project site. The two large farm dams in the north and the seasonal wetland mapped in the central portion of the project site have sedges and other wetland plants that could provide habitat for the Australian Painted Snipe.
Presence of suitable topography	The species is associated exclusively with wetlands which are typically found on flat or gently undulating country (DotE, 2015). Such topography occurs in the central portion of the project site where the seasonal wetland is located.
Presence of permanent water sources	The species is not exclusively associated with permanent water sources, and can move to forage and breed around seasonal wetlands (DotE, 2015). One seasonal wetland is present in the centre of the project site.
Presence of preferred foods	The species feeds on insects and some aquatic vegetation (DotE, 2015). Such resources occur around the northern farm dams and the seasonal wetland (when water is present).
Presence of tree hollows	The species does not require tree hollows.

Habitat Analysis Criteria	Australian Painted Snipe
Documented foraging distances around permanent water	This is a wetland specialist where foraging is likely to be confined to the wetlands.
Documented sensitivity to habitat clearance and/or fragmentation	Clearance and fragmentation of wetlands, particularly by draining, is thought to be a major reason for the decline of the species (DotE, 2015). The project site has been used for grazing for over 110 years and is currently being used for cattle grazing. Consequently, the project site is highly fragmented.
Occurrence of harmful feral species that are a known threat to the species	Known introduced predators of the species include European red foxes and feral cats (DotE, 2015). European red foxes and feral cats have both been recorded within the project site and are likely to forage across the project site.
Documented sensitivity to cattle grazing pressure	The species is impacted by grazing due to loss and degradation of wetland habitats, including grazing and trampling of food plants by cattle, and trampling of nests, which are constructed on the ground (DotE, 2015). The project site has been used for grazing for over 110 years and is currently being used for cattle grazing.

Based on the criteria above, approximately 615 ha of land within the project site is unsuitable for the Australian Painted Snipe. The Terrestrial Ecology Report, prepared by Cumberland Ecology, and provided in the Round 1 Response to Submissions, assessed the remaining 3.4 ha of the project site as being low quality habitat for the Australian Painted Snipe (Figure 15). Cumberland Ecology assessed the habitat as being low quality due to the modification of the land due to agricultural development (i.e. grazing and cropping within the project site for over 110 years. However, in response to DotE's second round of submissions on the Boundary Hill South EIS, Hansen Bailey and Cumberland Ecology have assessed the project site against the Commonwealth's definitions of habitat Section 9.3.3. This reassessment has indicated that none of the project site meets the Commonwealth's definition of Australian Painted Snipe habitat.

9.3.3 Commonwealth Defined Habitat

Habitat for the Australian Painted Snipe is defined by the Commonwealth as '*Habitat critical to the survival of a species'* in both the Commonwealth's Australian Painted Snipe Listing Advice (DotE, 2015) and the Commonwealth's Significant Impact Guidelines.

Habitat Critical to the Survival of a Species

'*Habitat critical to the survival of a species'* is defined in the Commonwealth's Significant Impact Guidelines as '*areas that are necessary:*

- *For activities such as foraging, breeding, roosting or dispersal;*
- *For the long-term maintenance of the species (including the maintenance of species essential to the survival of the species, such as pollinators);*
- *To maintain genetic diversity and long term evolutionary development; or*

- *For the reintroduction of populations or recovery of the species.*

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species as habitat critical for that species; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.'

More specifically, the Australian Painted Snipe Listing Advice states that '*wetland habitat suitable for breeding is critical to the species' survival'.* The SPRAT database states that nests are all, or nearly all, on or near islands in freshwater wetlands. There is only one seasonal wetland in the project site and it does not contain an island. This species is impacted by grazing due to loss and degradation of wetland habitats, including grazing and trampling of food plants by cattle, and trampling of nests, which are constructed on the ground. Cattle are present throughout the project site and commonly access the seasonal wetland for water. Due to the low quality of habitat present as well as the presence of cattle, it is considered unlikely that the project site contains '*wetland habitat suitable for breeding'.* Therefore it is unlikely that the project site contains '*habitat critical to the survival of a species*.'

9.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT

This species has not been recorded from the project site and has not been recorded within 25 km of the project site in any of the desktop database searches, or within 100 km of the project site in the Australian Museum database. This species, or its habitat, was assessed as potentially occurring within the project site in the EPBC Act Protected Matters Search. A seasonal wetland and three farm dams are present in the project site but these are considered to comprise low quality habitat for the species as they are subject to disturbance from cattle grazing. Nevertheless, this species has been conservatively assessed as having a moderate likelihood of occurrence within the project site, in accordance with the criteria specified in Table 8, due to the presence of potential habitat (albeit limited in nature) and as it is known to occur in the wider region.

9.5 SIGNIFICANT IMPACT ASSESSMENT

An assessment of significance has been conducted for this species following the Commonwealth's Significant Impact Guidelines for Endangered species. Section 9.5.1 assesses whether the project site contains a population of the Australian Painted Snipe, while Section 9.5.2 presents the assessment of significance that has been conducted for this species.

9.5.1 Population Assessment

According to the Commonwealth's Significant Impact Guidelines, a '*population'* of any Endangered species is *'an occurrence of the species in a particular area…occurrences include but are not limited to:*

- *a geographically distinct regional population, or collection of local populations; or*
- *a population, or collection of local populations, that occurs within a particular bioregion.'*

Although low quality habitat for the Australian Painted Snipe is present in the project site, this habitat is unlikely to support a '*population'* of this species due to the degraded nature of the habitat as a result of cattle grazing activities and a lack of breeding habitat. The project site also contains European red foxes and feral cats, which are known threats to this species.

Based upon all available data, it is unlikely that the project site supports a *'geographically distinct regional population, or collection of local populations*' or '*a population, or collection of local populations, that occurs within a particular bioregion'* as the Australian Painted Snipe is has not been recorded within the project site or within 25 km of the project site in any of the desktop database searches, or within 100 km of the project site in the Australian Museum database site, and the project site only contains limited low quality habitat. Therefore, it is unlikely that a population of the Australian Painted Snipe occurs within the project site.

9.5.2 Significant Impact Criteria

An assessment of significance for the Australian Painted Snipe has been conducted in accordance with the Commonwealth's Significant Impact Guidelines. The significant impact criteria are provided in *underlined italics* and the response is provided in normal text.

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

Not applicable as there is no '*population'* of the Australian Painted Snipe within the project site (Section 9.5.1).

- *reduce the area of occupancy of the species*

The project will not reduce the area of occupancy of the Australian Painted Snipe. One small area of seasonal wetland and two farm dams are present in the project site. These

areas do not provide breeding habitat and only provide limited low quality habitat for this species. The two farm dams will not be removed for the project. The seasonal wetland will be removed as a component of the project, however, this area provides low quality habitat for this species due to the degraded nature of habitat present within the wetland due to cattle.

- *fragment an existing population into two or more populations*

Not applicable as there is no '*population'* of the Australian Painted Snipe within the project site (Section 9.5.1).

- *adversely affect habitat critical to the survival of a species*

Not applicable as there is no '*habitat critical to the survival of a species'* of the Australian Painted Snipe within the project site (Section 9.3.3).

- *disrupt the breeding cycle of a population*

Not applicable as there is no '*population'* of the Australian Painted Snipe within the project site (Section 9.5.1).

- *modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

As described in Section 9.3.2, there is limited low quality habitat for the Australian Painted Snipe within the project site. There is no '*habitat critical to the survival of a species'* within the project site.

Given the poor quality and fragmented nature of Australian Painted Snipe habitat found within the project site, it is therefore unlikely that the project will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

It is considered unlikely that the project will result in an invasive species becoming established in the low quality habitat for the Australian Painted Snipe within the project site. Feral animals already occur in the project site and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project. In addition, the Callide Mine Weed Management Plan includes a wash

down procedure to help control the spread of pest plants both on and off-site. This management plan will be updated to include the project.

- *introduce disease that may cause the species to decline, or*

It is considered unlikely that the project will introduce a disease that may cause the Australian Painted Snipe to decline as disease is not a known threat.

- *interfere with the recovery of the species.*

The project will not interfere with the recovery of the Australian Painted Snipe. As stated in Section 9.5.1, there is no '*population'* of Australian Painted Snipe in the project site and there are also only isolated patches of low quality habitat within the project site. Given that there are no '*populations'* and '*no habitat critical to the survival of a species'* within the project site, it is unlikely that the project contains habitat that is critical for the recovery of the Australian Painted Snipe. Therefore, it is unlikely that the project will interfere with the recovery of the Australian Painted Snipe.

Conclusion

Based on the outcomes from the above assessment criteria, it is considered that the project will not have a residual significant impact to the Australian Painted Snipe.

10 NORTHERN QUOLL

The Northern Quoll is the smallest and the most arboreal and aggressive of the four Australian quoll species. It has a pointy snout and reddish brown fur, with a cream underside. It has white spots on its back and rump and a long, sparsely-furred, unspotted tail with a length ranging between 202 and 345 mm. Northern Quolls can weigh up to 1.2 kg, with the males being larger than the females (DotE, 2015). The Northern Quoll is listed as Endangered under the EPBC Act and is not listed under the NC Act.

This section provides the detailed assessment of the Northern Quoll and is structured as follows:

- Section 10.1 – Survey Methodology: A detailed description of the survey methodology and how it aligns with the Commonwealth and State survey requirements;
- Section 10.2 – Desktop and Field Survey Results: The results of the desktop and field surveys;
- Section 10.3 – Habitat Assessment: The detailed habitat assessment including habitat modelling and an assessment against the Commonwealth habitat terminology;
- Section 10.4 – Likelihood of Occurrence Assessment: The detailed likelihood of occurrence assessment; and
- Section 10.5 – Significant Impact Assessment: The detailed significant impact assessment in accordance with the Commonwealth's Significant Impact Guidelines.

10.1 SURVEY METHODOLOGY

Surveys undertaken within the project site for the Northern Quoll were generally undertaken in accordance with the Commonwealth and Queensland survey requirements, as outlined below.

10.1.1 Commonwealth Survey Requirements

There are three Commonwealth survey guidelines that outline survey methods for the Northern Quoll, namely:

- SPRAT database for the Northern Quoll;
- Commonwealth's Threatened Mammals Survey Guideline; and
- Commonwealth's Northern Quoll Referral Guidelines.

The survey guideline requirements and the actual survey effort for the Northern Quoll are described below. The survey guideline requirement is provided below in *underlined italics* and the response is provided in normal text.

A national recovery plan for this species, the *National Recovery Plan for the Northern Quoll Dasyurus hallucatus* (Northern Quoll Recovery Plan), has been published, however no survey guidelines are outlined in this plan.

Species Profile and Threats Database

As of 23 June 2015, the SPRAT database for the Northern Quoll included the following survey requirements:

Surveys should:

- *be conducted by a suitably qualified person with demonstrated skill in mammal surveys*
- *maximise the chance of detecting the species*
- *account for uncertainty and error (such as false presences and absences).*

Surveys for the Northern Quoll can have different objectives and therefore require different guidelines and experimental design. However for the purposes of referral and assessment under the EPBC Act it is recommended that surveys for Northern Quoll involve an initial reconnaissance survey which aims to identify the need for further investigations through a targeted survey. Where it is not possible to conduct surveys in this manner, failure to detect Northern Quoll should not be considered indicative of its absence.

Targeted Northern Quoll and general fauna surveys were conducted by a suitably qualified person with demonstrated skill in mammal surveys. All surveys were designed to maximise the chance of detecting the species and accounted for uncertainties and errors. As described in Section 3.1.4, an initial reconnaissance survey was undertaken before targeted Northern Quoll surveys were undertaken.

Reconnaissance Survey

A reconnaissance survey can be conducted at any time of the year but should be undertaken in the early planning stages of the project. The reconnaissance survey should assess the suitability of habitat for Northern Quolls, both for denning / shelter and dispersal and foraging purposes. Suitable habitat should be mapped during this survey and habitat areas calculated. Data collected should describe the habitat quality including information on vegetation, microhabitat, fire history, presence of introduced predators, grazing history and landscape condition. A reconnaissance survey may choose to consider the presence or potential presence of the Northern Quoll by using non-invasive techniques such as active searching for scats and latrine sites, motion sensitive cameras, hair tubes or spotlighting where appropriate.

As described in Section 3.1.4, a reconnaissance survey for the Northern Quoll was undertaken from 6 to 9 December 2011 using passive infrared cameras, hair tubes and

searches for scats, dens and other signs of Northern Quolls. The methods used during the reconnaissance survey are described in detail in Section 3.1.4.

Targeted Survey
A targeted survey is recommended for any proposal occurring within the modelled distribution of the species where the reconnaissance survey identifies the presence of Quolls and/or habitat critical to the survival of Northern Quoll.

The objective of the targeted survey should be to determine the relative abundance and distribution of Northern Quolls likely to be impacted by the proposed development. The survey protocol should be designed so that the total population of Northern Quolls in the impact area can be calculated. A targeted survey should be undertaken pre development and during the months of May, June, July or August (primarily to avoid any disturbance during the reproductive period) and involve a trapping program using preferably wire cage traps or large size Elliot traps.

As described in Section 3.1.8, a targeted Northern Quoll survey was conducted in August 2014. The targeted Northern Quoll survey was undertaken at the correct time of year (i.e. May to August) and included a trapping program, using large Elliot traps as described in Section 3.1.8.

As a minimum, a targeted survey should consider the following:

- *Carefully configure the trapping program to address project impact and non-impact zones so that results are adequate to inform monitoring programs and project siting options.*

The trapping program was configured to address project impact and non-impact zones during all survey periods (Figure 6).

- *Trapping should be concentrated in habitat critical to the survival with some consideration of non-rocky foraging and dispersal habitats.*

Trapping was undertaken across the project site and focussed on rocky areas as well as broader areas that may be used by the Northern Quoll for foraging or dispersal (Figure 6). No '*habitat critical to the survival of the Northern Quoll'* occurs within the project site (Section 10.3).

- *In Western Australia traps should be set for seven consecutive nights, unless two or more individuals are caught twice, in which case the traps should be closed after four nights of trapping.*

Not applicable as the project site is located in Queensland.

- *In the Northern Territory and Queensland, traps should be set for a minimum of three nights with the aim of sampling as many sites possible over the three nights*

As described in Section 3.1.8, the total survey effort for the Northern Quoll includes 1,200 trap nights (Table 6) and was conducted over nine nights. This survey effort exceeds the SPRAT database requirement that trapping should be conducted over a minimum of three nights.

- *Where large Elliott traps are the primary trapping technique, a minimum of four cage traps should be used per trap configuration.*

As described in Section 3.1.8, four cage traps were set at each survey location during the 2014 surveys.

- *To be considered effective, traps should be baited with oats, sardines and peanut butter. Chicken wings and diced bacon are optional.*

As described in Sections 3.1.6 and 3.1.8, traps were baited with bait balls of sardines, rolled oats and peanut butter, or with chicken wings, necks and giblets.

- *Traps should be rebaited at least every second day (baits should be fresh), cleared within 2–3 hours of sunrise and have adequate shade cover during the day. Consideration should be given to closing traps during the day to eliminate by-catch and potential heat stress issues.*

As described in Section 3.1.6, traps were opened in the late afternoon, and checked early each morning, before being closed for the day. Traps were freshly baited each afternoon.

- *In Western Australia, tissue samples (ear clippings) should be collected from all individuals captured and analysed with the aim of increasing genetic knowledge of the Northern Quoll in Western Australia (ethics clearance is required for this procedure). Tissue samples should be sent to the Western Australian Museum with the following details: Weight, sex, pes (left hindfoot measurement), tail diameter / circumference, crown reproductive condition, presence/absence of bite marks and parasites, locality (GPS coordinate in lat and long), collectors name and date.*

Not applicable as the project site is located in Queensland.

- *Targeted surveys may be supplemented by one of several non-invasive survey techniques such as latrine searches in habitat critical to the survival, use of motion sensitive cameras and / or hair tubes. These methods should however not be relied upon to demonstrate Northern Quolls are not present in an area.*

As described in Section 3.1.4, a reconnaissance survey for the Northern Quoll was undertaken from 6 to 9 December 2011 using passive infrared cameras, hair tubes and searches for scats, dens and other signs of Northern Quolls. The methods used during the reconnaissance survey are described in detail in Section 3.1.4. No 'ha*bitat critical to the survival of the Northern Quoll*' occurs within the project site (Section 10.3).

Targeted Survey Effort

- *Trapping effort for a targeted survey should be determined by the formula $y = 50x^{0.5}$, where y is the number of trap-nights and x is the area of potential Northern Quoll habitat in ha.*
- *Trapping effort is calculated as the number of traps by the number of nights of trapping (e.g. trap-nights).*
- *For linear habitat critical to the survival of the species (e.g. gorges, major drainage lines, breakaways less than 100 m wide), 1 trap per 100 linear metres is recommended.*

As described in Section 3.1.8, the area surveyed is not linear in shape, therefore trapping effort within the project site was based on the formula $y = 50x^{0.5}$, where y is the number of trap-nights and x is the area of potential Northern Quoll habitat (in ha). The 2014 survey effort exceeds the requirements of the Commonwealth's Northern Quoll Referral Guidelines.

Commonwealth's Threatened Mammals Survey Guidelines

On the basis of previous surveys, the survey techniques recommended to detect the presence of the northern quoll in areas up to 5 ha in size are cage trapping (description of technique and recommended effort provided in Section 3.3.10) and Elliott trapping surveys conducted according to the technique description and recommended effort provided in Section 3.3.9. Trapping is best conducted between May and August to minimise possible disturbance during the reproductive period. Cage trapping is the generally accepted technique for targeting this species. However, in remote locations or where it is difficult to deploy large numbers of cage traps, Elliott traps are a suitable alternative, particularly large Elliott traps. Note that at Pine Creek in the Top End of the Northern Territory some Elliott traps were rolled down vertical mineshafts as northern quolls were attempting to extract the bait. Trapping should be concentrated in rocky denning habitat, with some consideration of non-rocky foraging and dispersal habitats.

Section 3.3.10 outlines the recommended survey method and minimum survey effort for cage trapping medium sized ground-dwelling listed mammals:

- *10 cage traps (or Elliott B traps, see species profiles for details) placed at each sampling site*
- *traps placed on the ground approximately 50 metres apart in two parallel straight lines (transects) separated by 20–50 metres (a greater distance between traps is recommended in some species profiles)*

- *one sampling site per representative habitat, with a minimum of two sampling sites required per 5 ha (replication across habitat types in areas greater than 5 ha)*
- *set traps for four consecutive nights*
- *check traps early in the morning and close during the day*
- *bait traps with a species specific mixture (see species profiles)*
- *rebait and open traps in the late afternoon*
- *consider placing two traps at each trap station to saturate trapping effort if common species are likely to limit the detection of listed mammals*
- *provide a small amount of nesting material for shelter (for example, shade and warmth).*

This survey effort represents a total of 80 trap nights. For areas greater than 5 ha in area, replication between representative sampling sites will be required and distance between traps increased, but specifications will be dependent on the project and the nature of the subject site.

Section 3.3.9 recommends the following survey method for small-sized ground-dwelling mammals:

- *20 Elliott A, B or E traps (see species profiles for details) placed at each sampling site*
- *traps placed 10 metres apart in two parallel straight lines (transects) separated by 25 metres (a greater distance between traps is recommended in some species profiles)*
- *one sampling site per representative habitat, with a minimum of two sampling sites required per 5 ha (replication across habitat types in areas greater than 5 ha)*
- *set traps for four consecutive nights*
- *check traps early in the morning and close during the day*
- *bait traps with a species-specific mixture (see species profiles)*
- *rebait and open traps in the late afternoon*
- *consider placing two traps at each trap station to saturate trapping effort if common species are likely to limit the detection of listed mammals*
- *provide a small amount of nesting material for shelter (for example, shade and warmth).*

This survey effort represents a minimum of 160 trap nights per 5 ha subject site (80 trap-nights per ha survey site), which is comparable to the fauna survey guidelines reviewed (see appendix), which on average prescribe 83 trap nights per ha.

As described in Section 3.1.8, cage trapping and Elliot trapping surveys were conducted for this species. During the 2012 fauna survey, five cage traps at each of the five detailed sites were left for four nights (totalling 100 trap nights) and during the targeted Northern Quoll survey conducted in 2014, four cage traps at each of the 10 sites were left for three nights

(totalling 120 trap nights). Cage trapping was therefore conducted for a total of 220 trap nights. During the 2012 fauna survey, five Elliot 'B' traps at each of the five detailed sites were left for four nights (totalling 100 trap nights) and during the targeted Northern Quoll survey conducted in 2014, 20 traps at each of the 10 sites were left for three nights (totalling 600 trap nights). Elliot 'B' trapping was therefore conducted for a total of 700 trap nights.

As described in Sections 3.1.6 and 3.1.8, traps were baited with bait balls of sardines, rolled oats and peanut butter, or with chicken wings, necks and giblets. Traps were opened in the late afternoon, and checked early each morning, before being closed for the day. Traps were freshly baited each afternoon.

As described in Section 3.1.8, the targeted Northern Quoll survey was undertaken in August 2014 at the correct time of year (i.e. May to August). Trapping was undertaken across the project site and focussed on rocky areas as well as non-rocky foraging and dispersal habitats.

In Western Australia traps should be set for seven consecutive nights, unless two or more individuals are caught twice, in which case the traps should be closed after four nights of trapping. In the Northern Territory and Queensland traps should be set for a minimum of three nights. Where large Elliott traps are the primary trapping technique, a minimum of four cage traps should be used per trap configuration.

As described in Section 3.1.8, cage trapping and Elliot trapping surveys were conducted for this species. During the 2012 fauna survey, cage traps were left for four nights and during the targeted Northern Quoll survey conducted in 2014, cage traps were left for three nights. During the 2012 fauna survey, Elliot 'B' traps were left for four nights and during the targeted Northern Quoll survey conducted in 2014, Elliot 'B' traps were left for three nights. All surveys were therefore consistent with the survey guidelines as traps were set out for a minimum of three nights during all surveys.

Traps should be baited with oats, sardines and peanut butter. Chicken wings and diced bacon are optional. A purified solution of low fat red meat and water can be sprayed on to shrubs and the ground within a 150 centimetres radius of each trap and reapplied on a daily basis. Traps should be rebaited at least every second day (baits should be fresh).

As described in Sections 3.1.6 and 3.1.8, traps were baited with bait balls of sardines, rolled oats and peanut butter, or with chicken wings, necks and giblets. Traps were opened in the late afternoon, and checked early each morning, before being closed for the day. Traps were freshly baited each afternoon.

Since population numbers may be very low or at some locations it may be difficult logistically to deploy cage traps, additional or complementary techniques to locate northern quolls that are not commonly reported in the literature include:

- *daytime searches for potentially suitable habitat resources such as rock overhangs, crevices and boulders in areas of extensive outcropping rock in association with permanent water and no evidence of recent fires (description of the survey technique and recommended effort is provided in Section 3.1).*

  Section 3.1 states that the time taken to effectively search a subject site will vary considerably according to the size and nature of the area. Consequently, it is not possible to provide strict guidelines in this regard. A suggested survey effort for a 5 ha area is two hours for every 1 ha stratified survey site within the area, with searches for potential habitat resources carried out in conjunction with the survey for signs of fauna activity.

As discussed in Sections 3.1.6 and 3.1.8 and summarised in Table 6, daytime searches for potentially suitable habitat resources were undertaken during the reconnaissance surveys in 2011 as well as the fauna habitat assessments undertaken in 2014. During the 2011 surveys, survey effort comprised approximately 20 person hours spent by two personnel systematically grid searching 100 m transects, and during the 2014 surveys survey effort comprised two people, each searching for 36 hours during targeted Northern Quoll survey (totalling 72 person hours). The total amount of time spent conducting daytime searches for potentially suitable habitat resources was therefore 92 person hours.

- *daytime searches (description of technique and recommended effort provided in Section 3.3.1) for latrines (also used as a technique to locate the spotted-tailed quoll) with numbers of distinctive twisted cylindrical scats deposited often on rock piles or boulders, usually on the highest point available, such as ridge tops or hill crests (Scats may also be deposited in other situations such as under boulders, in rock overhangs, road culverts and sheds). This technique has been recommended in remote areas as a simple detection technique. However, such signs should be treated with caution where the spotted-tailed quoll occurs in sympatry and either confirmation of the internal grooming hairs deposited or direct detection survey techniques may be required. Additionally, care must be taken not to confuse scats with those of the cane toad, green tree frog Litoria caerulea, and water rat Hydromys chrysogaster. Scat searches are best in winter, when the scats remain in situ and are not deformed as a result of rain.*

  Section 3.3.1 recommends as a guide, for each 1 ha survey site used to representatively sample a subject site up to 5 ha in size, one 100 metre transect (or two if the observer's view is obstructed) should be used, with at least four survey sites required.

As described in Sections 3.1.6 and 3.1.8 and summarised in Table 6, daytime searches for latrines and scats were conducted during the reconnaissance Northern Quoll surveys as well as the targeted Northern Quoll surveys. During the 2011 surveys, survey effort comprised approximately 20 person hours spent by two personnel systematically grid searching 100 m

transects, and during the 2014 surveys survey effort comprised two people, each searching for 36 hours during targeted Northern Quoll survey (totalling 72 person hours). The total amount of time spent conducting daytime searches was therefore 92 person hours. Any potential Northern Quoll scats were sent for expert analysis. Targeted scat searches undertaken in August 2014 were undertaken in winter.

- *daytime searches or use of sand traps to identify the characteristic tracks of this species (refer to Section 3.3.2), where not in sympatry with the spotted-tailed quoll. Such sand traps are best done using a lure such as chicken bait and could include smoothing out sand on the floor of rock overhangs or smoothing sand around permanent water or the base of cliff faces*

As described in Sections 3.1.6 and 3.1.8 and summarised in Table 6, daytime searches were conducted during the reconnaissance Northern Quoll surveys as well as the targeted Northern Quoll surveys. Any fauna species seen during the surveys were recorded.

- *remote cameras: a technique that is becoming widely used for the spotted-tailed quoll and commonly replacing hair sampling devices (refer to Section 3.3.6) in potentially suitable habitat. This technique could be used throughout the year and would be enhanced by using chicken as bait. This technique would be similarly suited to the northern quoll, with the advantage over traditional traps that cameras can be left in situ for several weeks before the need for visitation to replace batteries and the memory card. Such extended sampling with low labour intensity is highly suited to a species that may be in very low abundance or in remote locations where conventional trapping is logistically difficult. This technique can be used throughout the year as no handling of individuals is required*

As described in Sections 3.1.6 and 3.1.8 and summarised in Table 6, infra-red camera surveys were undertaken during the 2011 reconnaissance surveys, 2012 generic fauna surveys and 2014 targeted Northern Quoll surveys. During the 2011 reconnaissance surveys, one camera was placed at each of the two sites and was left for four nights (totalling eight trap days and eight trap nights). During 2012 fauna survey, four cameras at each of the five detailed sites were left for three days and four nights, and two cameras at each of the two secondary sites were left for four days and four nights (totalling 96 camera nights). During the 2014 targeted Northern Quoll survey, one camera at each of the two targeted Northern Quoll trap sites was left for three nights and one camera at each of the two baiting stations was left for nine nights (totalling 24 camera nights). This amounted to a total of 128 camera nights.

- *hair tubes conducted according to the technique description and recommended effort provided in Section 3.3.7.*

Section 3.3.7 recommends using a stratified sampling design of a subject site up to 5 ha in size, at least three sites should include a hair sampling survey as follows:

- *20 hair sampling devices placed at each sampling site*
- *devices placed 20 metres apart in two parallel straight lines (transects) separated by 25 metres (this is dependent on species and those with a large home range will differ)*
- *one sampling site per representative habitat, with at least two sampling sites required per 5 ha (replication across habitat types in areas greater than 5 ha)*
- *set devices for 14 consecutive nights*
- *bait should target the species surveyed or (if surveying for a number of trophic types) alternate devices with a meat based bait (for example, cat food, singed chicken or tuna) and a standard bait (for example, a mixture of peanut butter, rolled oats and pistachio nut oil)*
- *re-bait the hair sampling devices if possible, unless targeting a 'shy' species.*

As described in Sections 3.1.4, 3.1.6 and 3.1.8 and summarised in Table 6, hair tube surveys were undertaken during the 2011 reconnaissance surveys and 2012 fauna surveys. During the 2011 reconnaissance surveys, 20 hair tubes were left for four days and four nights (totalling 80 trap days and 80 trap nights). The hair tubes were placed approximately 100 m apart and baited with oats, sardines and peanut butter. The bait was checked every second night and replaced if needed. During the 2012 fauna survey 10 hair tubes at each of the 5 detailed sites were left for three days and four nights during (totalling 150 trap days and 200 trap nights). This amounted to a total of 230 trap days and 280 trap nights. Five hair tubes were placed on tree trunks and five on the ground. Hair tubes were baited with peanut butter and rolled oats.

- *possibly spotlight surveys conducted according to the technique description and recommended effort provided in Section 3.3.3.*

  Section 3.3.3 recommends for a 5 ha subject site to:

  - *use a hand held spotlight (50 or 75 watt) and adhere to the method described above*
  - *survey at least two 200 metre transects per 5 ha site (or longer transects for larger sites)*
  - *maintain an interval of at least 100 metres between the two transects in order to maximise the area surveyed, which is usually 1 kilometre*
  - *the location of transects must be selected to sample appropriate habitats (see species profiles) occurring within the subject site. It is important to note, however, that transects will go through many habitats*
  - *move at a speed of 10 metres per minute, hence a 1000 metre transect will take 100 minutes (1 hour and 40 minutes) (this is a conservative estimate that is expected to vary according to the observer's experience and the vegetation*

density at the site). It is also beneficial to spend time standing still or searching trees with binoculars
- *spotlight surveys along transects should be repeated on two separate nights where possible*
- *avoid very windy or rainy nights as these conditions can reduce fauna activity and the observers' ability to detect fauna*
- *investigators must be adequately experienced with the technique, and be able to distinguish species using a combination of detection of eye shine and close-up examination using binoculars.*

As described in Section 3.1.6 and summarised in Table 6, spotlight surveys were undertaken during the 2012 surveys and comprised two people searching each for 30-45 minutes for five nights at each detailed site and two people searching each for 30 minutes for two nights at one secondary site during 2012 survey. This amounted to a total of eight person hours. The weather recorded during the spotlight surveys was not very windy or rainy (Section 3.1.6). Spotlight surveys were conducted by suitably qualified ecologists.

- *community liaison to provide additional records, particularly on private land.*

Any known records of the Northern Quoll within or surrounding the project site were taken into consideration during the surveys.

Commonwealth's Northern Quoll Referral Guidelines

Please refer to previous sections, as the survey guidelines recommended in the Commonwealth's Northern Quoll Referral Guidelines are the same as those listed on DotE's SPRAT database for the Northern Quoll.

10.1.2 Queensland Survey Requirements

The Northern Quoll is not listed as threatened under Queensland legislation (i.e. the NC Act), therefore no Queensland survey guidelines are available for this species.

10.2 DESKTOP AND FIELD SURVEY RESULTS

Although targeted in detailed surveys, the Northern Quoll has not been found in the project site during any of the field surveys undertaken for the project. However, the Northern Quoll, or its habitat, was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool and there are four records for the Northern Quoll in the Queensland Museum database from Yeppoon (approximately 95 km north from the project site boundary), Dawson Valley (approximately 79 km south-west from the project site boundary), Rockhampton (approximately 91 km north from the project site boundary) and Cania George (approximately 61 km south-east from the project site boundary).

In addition, on 17 May 2012, a Northern Quoll was captured at the Callide Power Station by staff (the animal was photographed and taken to a vet for identification, before being released) (J. Dunlop pers. comm. 28/04/12, in AECOM 2012). The Callide Power Station is approximately 15 km south-east from the project site boundary in a direct line and the vegetation surrounding the Callide Power Station connects to the Callide Timber Reserve. While it is unlikely that this recorded individual would travel to the project site even given its large home range (35 ha on average, and over 100 ha for mating males), this record suggests the potential presence of Northern Quolls in the Callide Timber Reserve.

An unidentified scat was also recorded less than 1 km east of the project site in a large block of dense woodland and forest habitat (the Callide Timber Reserve) (Figure 12). Visually, Northern Quoll scats are fairly distinctive and can usually be differentiated from fox or cat scats with a reasonable degree of confidence (Triggs (2012) in AECOM 2012), however this scat was degraded and not clearly defined. The scat was sent for analysis of hair structures by Barbara Triggs (Dead Finish Pty Ltd.) however, analysis could not positively confirm the scat, as grooming hairs were not present (AECOM, 2012).

10.3 HABITAT ASSESSMENT

10.3.1 Overview

Northern Quolls do not have highly specific habitat requirements and occupy a variety of habitats across its current range, including rocky areas, eucalypt forest and woodlands, rainforests, sandy lowlands and beaches, shrublands, grasslands and deserts. Recent surveys throughout Queensland have suggested Northern Quolls are more likely to be present in high relief areas that have shallower soils, greater cover of boulders, less fire impact and were closer to permanent water. Habitat usually includes some form of rocky area or structurally diverse woodland or forest for denning/shelter purposes with surrounding vegetated habitats used for foraging and dispersal. Den sites are important for their shelter and protection and can include rocky outcrops, tree hollows, hollow logs and termite mounds. This denning/shelter habitat is important for the purposes of breeding and refuge from fire and/or predation, and is therefore a key habitat requirement for the long term viability of the species (DotE, 2015).

Northern Quolls are opportunistic omnivores, consuming a wide range of prey including beetles, grasshoppers, spiders, scorpions and centipedes. They also eat fruit, nectar, and are known to feed on carrion and human refuse (DotE, 2015).

A key threat to the continued existence of the Northern Quoll is the Cane Toad (*Rhinella marina*), which poisons the Northern Quoll when ingested. Historically, the Northern Quoll occurred across a range of landscapes, however the Cane Toad is such a threat that Northern Quoll populations collapse soon after Cane Toads first invade an area. According to DotE's *National Recovery Plan for Northern Quolls* (Hill and Ward, 2010) (National

Recovery Plan for Northern Quolls), viable populations of the Northern Quoll are only found where Cane Toads are not present (e.g. offshore islands and parts of Western Australia), or where extensive undisturbed areas of rocky habitats provide opportunities for Northern Quolls to persist and obtain food and water free from the threat of Cane Toads. Northern Quolls have shown a highly significant pattern of loss from lowland areas, likely accentuated by the presence of Cane Toads, and persisting populations now occur mostly in the rugged parts of their former range (DotE, 2015). Other key threats to the Northern Quoll include direct predation by European Red Fox and Feral Cat and competition for food with Feral Cats. Northern Quolls are also known to be highly susceptible to threats from predation, fire and habitat loss (DotE, 2015).

The general habitat requirements of the Northern Quoll are detailed in Table 19.

Table 19
Northern Quoll – General Habitat Requirements

Requirements/Preferences	Northern Quoll Requirements/Preferences (DotE, 2015)
General habitat requirements/preferences	The broadly described habitats of the Northern Quoll include rocky areas, eucalypt forests and woodlands, sandy lowlands, grasslands, shrublands, and deserts. It is also known to occur in non-rocky lowland habitats, such as beachscrub in Central Queensland. Northern Quolls sometimes occur around human dwellings and campgrounds.
Foraging requirements/preferences	Northern Quolls are opportunistic omnivores and the species is known to feed on a wide range of prey including mammals, insects, fruit and human refuse.
Microhabitat requirements/preferences	Main habitat requirements for denning include rocky outcrops, tree hollows, hollow logs and termite mounds.
Breeding requirements/preferences	Breeding occurs in mid-dry season and breeding territory is likely inherited by female offspring. Rocky areas are generally necessary for denning purposes with surrounding vegetation used for foraging and dispersal. Rocky habitat are usually of high relief, often rugged and dissected. Eucalypt forest/woodland with large diameter trees, termite mounds or hollow logs are also used for denning purposes. Dens are typically made in rock crevices, tree holes or occasionally in termite mounds.

10.3.2 Habitat Modelling

As described in Section 3.3, habitat modelling was conducted by Cumberland Ecology for the Northern Quoll. The modelling focussed on the presence of blocks of undisturbed, complex habitat, and the threat from Cane Toads and feral predators (European Red Fox and Feral Cat). This has been summarised in Table 20.

Table 20
Habitat Modelling for the Northern Quoll

Habitat Analysis Criteria	Northern Quoll
Pre-existing models for threatened species habitat	The Northern Quoll Recovery Plan provides a high level map showing the capture records of Northern Quolls in Australia from 1999. Capture records are located generally near the project site however given the high level nature of the map, the exact locations cannot be confirmed. The Commonwealth's Northern Quoll Referral Guidelines map the modelled distribution of the Northern Quoll in Australia. In accordance with the Commonwealth's Northern Quoll Referral Guidelines, the Northern Quoll is known/likely to occur within the project site. In addition, the SPRAT for the Northern Quoll provides an indicative distribution map within Queensland, northern New South Wales, Northern Territory and Western Australia. The project site lies within the indicative SPRAT distribution map. There are no pre-existing habitat models at the local scale and near the project site for the Northern Quoll. The species can occur within a wide variety of forest and woodland habitats, however, in areas occupied by the Cane Toad, it is only likely to persist in rugged/rocky terrain. Cane Toads were found in the remnant pools in the ephemeral drainage lines within the project site and in the Callide Timber Reserve.
Threatened species records in the project site and surrounds	One record of the Northern Quoll has been made approximately 15 km in a direct line to the south-east of the project site at the Callide Power Station. There is vegetation surrounding the Callide Power Station which connects to the Callide Timber Reserve which is directly to the east of the project site. An unidentified scat was recorded less than 1 km to the east of the project site in the Callide Timber Reserve, but has not been conclusively confirmed to be a Northern Quoll scat.
Presence of suitable vegetation	Northern Quolls can inhabit a wide variety of habitats in the absence of Cane Toads. It is likely that all types of woodland that occur on the project site would have been suitable habitat prior to the introduction of Cane Toads. However, given the presence of Cane Toads, the Northern Quoll habitat within the project site is limited to areas of rugged/rocky terrain. Rugged/rocky terrain is limited to a small area in the north of the project site.

Habitat Analysis Criteria	Northern Quoll
Presence of suitable topography	Historically, the species occurred across a range of landscapes. However, since the spread of the Cane Toad, it has been found that Northern Quoll populations collapse soon after Cane Toads colonise an area. Due to Cane Toads, Northern Quolls have become confined to offshore islands, or, on the mainland, in extensive areas of rocky habitats where drinking water is available, theoretically free from the threat of Cane Toads (DotE, 2015). Cane Toads were found in the remnant pools in the ephemeral drainage lines within the project site. There is limited rugged/rocky terrain in the north of the project site.
Presence of permanent water sources	The species average home range is approximately 35 ha which would include some form of water source (permanent/ephemeral). Northern Quolls need to drink and require permanent water to survive, but such water should be free of Cane Toads (DotE, 2015). There are permanent water sources in the project site. There are two farm dams along a northern drainage line which contain water and a small farm dam along the drainage line in the south-west of the project site which only contains water during the wet season and dries out during the dry season. However, Cane Toads are found throughout the project site, particularly in areas of permanent or ephemeral water.
Presence of preferred foods	The Northern Quoll is an omnivore and the various foods it requires (e.g. invertebrates, small vertebrates, some plant materials) (DotE, 2015) are likely to be present in the woodlands of the project site.
Presence of tree hollows	The species is primarily ground dwelling but can use hollows for denning that are low to the ground. Fallen logs are more important for the species (DotE, 2015). Fallen logs are present in the woodland areas within the project site.
Documented foraging distances around permanent water	The Northern Quoll requires daily access to water (DotE, 2015). The Northern Quoll can cover large distances, particularly during the mating season. There is a record of a male moving 2.5 km in one day. There are two farm dams along a northern drainage line which contain water and a small farm dam along the drainage line in the south-west of the project site which only contains water during the wet season and dries out during the dry season. However, Cane Toads are found throughout the project site, particularly in areas of permanent or ephemeral water.

Habitat Analysis Criteria	Northern Quoll
Documented sensitivity to habitat clearance and/or fragmentation	According to the Northern Quoll Recovery Plan, this species is greatly impacted by land clearance and fragmentation and on the mainland is confined to large blocks of habitats in rocky landscapes that where Cane Toads are rare or absent. The project site has been substantially cleared for grazing and limited cropping over the past 110 years and is currently being used for cattle grazing. In addition, Cane Toads are established throughout the project site. The north of the project site contains limited rugged/rocky terrain and Cane Toads have been recorded in the farm dams in the northern drainage line within the project site.
Occurrence of harmful feral species that are a known threat to the species	Cane Toads are present in the farm dams and remnant pools along drainage lines within the project site. Known introduced predators of the species include Dingo, European red fox, feral cat and feral pig. Abundance of feral species was similar across the project site and they were all recorded within the project site.
Documented sensitivity to cattle grazing pressure	The species is impacted by grazing pressure as cattle adversely affect habitat for the species by compacting soils, trampling of shrubs, and secondary impacts due to clearing for grazing (DotE, 2015). The project site has been used for grazing for over 110 years and is currently being used for cattle grazing.

Based on the criteria above, approximately 224 ha of land in the project site is unsuitable for the Northern Quoll. The Terrestrial Ecology Report, prepared by Cumberland Ecology, and provided in the Round 1 Response to Submissions, assessed the remaining 395 ha of the project site as being low quality habitat for the Northern Quoll (Figure 16). Cumberland Ecology assessed the habitat as being low quality due to the presence of the Northern Quoll's key threats in the project site (i.e. Cane Toads, foxes and cats), and the modification of the land due to agricultural development (i.e. clearing and grazing and cropping within the project site for over 110 years). However, in response to DotE's second round of submissions on the Boundary Hill South EIS, Hansen Bailey and Cumberland Ecology have assessed the project site against the Commonwealth's definitions of habitat (Section 10.3.3). This reassessment has indicated that none of the project site meets the Commonwealth's definition of Northern Quoll habitat.

10.3.3 Commonwealth Defined Habitat

Habitat for the Northern Quoll is defined by the Commonwealth as:

- '*Habitat critical to the survival of a species'* in the Northern Quoll National Recovery Plan, the Commonwealth's Northern Quoll Referral Guidelines and the Commonwealth's Significant Impact Guidelines.

This defined habitat term is discussed below.

Habitat Critical to the Survival of a Species

'*Habitat critical to the survival of a species'* is generally defined in the Commonwealth's Significant Impact Guidelines as '*areas that are necessary:*

- *For activities such as foraging, breeding, roosting or dispersal;*
- *For the long-term maintenance of the species (including the maintenance of species essential to the survival of the species, such as pollinators);*
- *To maintain genetic diversity and long term evolutionary development; or*
- *For the reintroduction of populations or recovery of the species.*

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species as habitat critical for that species; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.'

More specifically, the Northern Quoll National Recovery Plan states that habitat critical to the survival of the Northern Quoll is where '*northern quolls are least exposed to threats or least likely to be in the future. Given the threats outlined below, two particular broad habitat types fall into this category: rocky areas and offshore islands'*.

'*Habitat critical to the survival of a species'* is also described in the Commonwealth's Northern Quoll Referral Guidelines and comprises:

- *'Rocky habitats such as ranges, escarpments, mesas, ranges, gorges, breakaways, boulder fields, major drainage lines or treed creek lines*
- *Structurally diverse woodland or forest areas containing large diameter trees, termite mounds or hollow logs*
- *Off shore islands where the northern quoll is known to exist'.*

These three broad habitat types, *viz.* rocky areas, structurally diverse woodland or forest and offshore islands, and their occurrence within the project site are described below.

Rocky Areas

Limited rocky areas occur within the project site and are restricted to the north of the project site. These areas have been subject to clearing and modification for cattle grazing, road and power line infrastructure. Feral cats and European red foxes, which are key threats to the Northern Quoll, are also established on the project site. In addition, Cane Toads are present and are found in farm dams and drainage lines on the project site, which occur in close proximity to these rocky areas. In accordance with the Northern Quoll National Recovery Plan, areas once populated by Northern Quolls typically collapse after an area is colonised by Cane Toads. This factor alone almost certainly precludes a viable occurrence of Northern Quolls within the project site.

The project site is in grazing land approximately 5 km from the top of the ridgeline in the Callide Timber Reserve. The project site does not contain escarpments, mesas, ranges, gorges, breakaways, or boulder fields. The project site does contain some minor drainage lines and Campbell (Gate) Creek, which are vegetated. Bedrock is only present in limited areas of the upper reaches of Campbell (Gate) Creek within the project site.

Structurally Diverse Woodland or Forest

Woodlands containing low quality habitat for the Northern Quoll are present throughout the project site (Figure 16). These woodlands are fragmented and a high proportion of these areas are now grassland. These areas contain few large diameter trees, and contain a very low density of termite mounds, hollow bearing trees and hollow logs and, as such, there are few denning opportunities for this species. In addition, these areas contain Cane Toads and feral predators (i.e. feral cats, red foxes and pigs) and the habitat has been degraded through over 110 years of clearing and grazing.

Offshore Islands

The project site is not located on an offshore island.

Due to a lack of suitable rocky habitat and structurally diverse woodland or forest that is suitable for the Northern Quoll, it has been assessed that the project site does not contain '*habitat critical to the survival of a species'* for the Northern Quoll.

10.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT

This species was not recorded within the project site during the field surveys, which included targeted Northern Quoll searches.

However, the project site is approximately 120 m from the western boundary of the Callide Timber Reserve, which contains potential habitat for the Northern Quoll. The Callide Timber Reserve (approximately 20 km long and 4 - 7 km wide) forms a large patch of continuous, dense vegetation comprising mature woodlands dominated by *Eucalyptus* species. It contains a ridgeline, and areas of caves, rocky outcrops and boulders, which are potential breeding habitat for the Northern Quoll. Notwithstanding these values, the Callide Timber Reserve contains Cane Toads and feral predators (feral cats, red foxes and pigs), as well as disturbance in the form of open cut pits, haul roads, highways and easements. Despite this disturbance, it is likely that Northern Quolls make use of the Callide Timber Reserve, given the record of a Northern Quoll from Callide Power Station (the vegetation surrounding the Callide Power Station connects to the Callide Timber Reserve). This record is more than 15 km in a direct line to the south-east of the project site boundary. Nevertheless, this record suggests the potential presence of Northern Quolls in the Callide Timber Reserve. In addition, an unidentified scat was also recorded less than 1 km to the east of the project site

in the Callide Timber Reserve, but has not been conclusively confirmed to be a Northern Quoll scat.

There is the potential that the Northern Quoll would make transient use of the project site, given:

- The proximity of the project site to the potential Northern Quoll habitat within the Callide Timber Reserve;
- The large home ranges that Northern Quolls can have (35 ha on average, and over 100 ha for mating males); and
- The availability of habitat within the project site, albeit low value habitat that does not meet the definition of 'critical to the survival of the species' as defined by the Commonwealth.

The Northern Quoll has therefore been assessed as having a high likelihood of occurrence within the project site. However, as noted above, the project site does not contain habitat 'critical to the survival of the species'.

10.5 SIGNIFICANT IMPACT ASSESSMENT

An assessment of significance has been conducted for this species following the Commonwealth's Significant Impact Guidelines for Endangered species. Section 10.5.1 assesses whether the project site contains a population of the Northern Quoll, while Section 10.5.2 presents the assessment of significance that has been conducted for this species.

10.5.1 Population Assessment

According to the Commonwealth's Significant Impact Guidelines, a '*population'* of any Endangered species is *'an occurrence of the species in a particular area…occurrences include but are not limited to:*

- *a geographically distinct regional population, or collection of local populations; or*
- *a population, or collection of local populations, that occurs within a particular bioregion.'*

In accordance with the Northern Quoll National Recovery Plan, important populations are:

'i) remnant populations of northern quolls that persist alongside threats. These include populations in Queensland that have persisted long after cane toad invasion.'

ii) populations that may be exposed to threats in the future but have the potential to persist (based on habitat, etc.). These populations should be defined as part of the recovery process and need to be monitored and protected.
iii) populations on offshore islands in the Northern Territory and Western Australia that are unlikely to be naturally colonised by cane toads or cats.'
'iv) Populations in the Pilbara region of Western Australia, as these are outside the predicted range of cane toads.'

The project site contains known threats to the Northern Quoll, such as the presence of the Cane Toad and feral predators (i.e. feral cats and red foxes) and habitat derogation through clearing and grazing. Although low quality habitat for Northern Quoll is present within the north of the project site in the form of limited rocky areas and woodland, no individuals were encountered during the fauna surveys, despite two rounds of targeted Northern Quoll surveys occurring in 2011 and 2014 (Sections 3.1.4 and 3.1.8). The project site lacks caves and contains a very low density of termite mounds or hollow bearing trees and, as such, there are few denning opportunities for this species. On this basis, a population of this species within the project site is unlikely to be present.

The project site is already exposed to threats to this species, as described above.

The project site is not located on an offshore island.

The project site is not located in the Pilbara region of Western Australia.

In addition, the Commonwealth's Northern Quoll Referral Guidelines state that:

'A population of northern quoll is presumed to occur in any area with recent evidence of a single northern quoll. Evidence of a northern quoll is considered recent if it is post 1980 and may include, but not limited to, a database record, scat, latrine site, hair sample, remote camera detection or a trapped or sighted animal by a qualified practitioner'.

There is no evidence of the Northern Quoll within the project site. The Callide Timber Reserve contains densely wooded habitat (Figure 12), however it is isolated from the project site by a 120 m wide large power line easement. Based on available data, the Northern Quoll is not known to occur within the project site itself, and has limited potential habitat within the project site (and such habitat has Cane Toads and feral animals present). Therefore, although individuals of Northern Quoll may occasionally be present within the project site, it cannot be considered to support a geographically distinct regional or collection of local population of the species or a population or collection of population that occurs in a particular bioregion.

It is concluded that no population of Northern Quoll occurs in the project site.

10.5.2 Significant Impact Criteria

An assessment of significance for the Northern Quoll has been conducted in accordance with the Commonwealth's Significant Impact Guidelines. The significant impact criteria are provided in *underlined italics* and the response is provided in normal text.

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

Not applicable as there is no '*population'* of Northern Quoll within the project site (Section 10.5.1).

- *reduce the area of occupancy of the species*

The project will only remove potential low quality habitat for this species that contains Cane Toads and feral predators to the Northern Quoll. The Northern Quoll has not been recorded from the project site and is considered unlikely to occur other than on occasion. Therefore, the project is unlikely to reduce the area of occupancy of the Northern Quoll.

- *fragment an existing population into two or more populations*

Not applicable as there is no '*population'* of Northern Quoll within the project site (Section 10.5.1).

- *adversely affect habitat critical to the survival of a species*

Not applicable as there is no '*habitat critical to the survival of a species'* for the Northern Quoll within the project site (Section 10.3.3).

- *disrupt the breeding cycle of a population*

Not applicable as there is no '*population'* of Northern Quoll within the project site (Section 10.5.1).

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

As described in Section 10.5.2, the project will only remove low quality habitat for the Northern Quoll within the project site, however, it does not meet the definition of '*habitat critical to the survival of a species*'. Given that the species has not been recorded on the project site, despite numerous fauna surveys and two targeted surveys for the species;

presence of the Cane Toad; presence of feral predators; and the limited habitat that is within the project site is of a poor quality (i.e. lacks caves; and contains limited rocky areas, termite mounds, hollow logs and hollow-bearing trees) it is therefore unlikely that the project will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

It is considered unlikely that the project will result in an invasive species becoming established in low quality habitat for the Northern Quoll within the project site. Feral animals already occur in the project site and these will be controlled as part of the project, including the Cane Toad which is a key threat to the Northern Quoll. It is unlikely that any other invasive plant or animal will become established as a result of the project. In addition, the Callide Mine Weed Management Plan includes a wash down procedure to help control the spread of pest plants both on and off-site. This management plan will be updated to include the project.

- *introduce disease that may cause the species to decline, or*

The increased degree of isolation of Northern Quoll populations increases the potential for disease to have a locally detrimental effect. Elsewhere in Australia, there is widespread, but largely anecdotal evidence of episodes of sudden population crashes of Northern Quolls (and other larger dasyurids), possibly being caused by disease.

It is considered unlikely that the project will introduce a disease that may cause the Northern Quoll to decline.

- *interfere substantially with the recovery of the species.*

The project will not interfere with the recovery of the Northern Quoll. As stated in Section 10.5.1, there is no '*important population'* of Northern Quoll in the project site. The project will only remove low quality habitat for the Northern Quoll within the project site. Given that there are no '*important populations'*, no '*habitat critical to the survival of a species'* within the project site, no Northern Quoll records on the project site, despite numerous fauna surveys and two targeted surveys for the species; presence of the Cane Toad; presence of feral predators; and the limited habitat that is within the project site is of a poor quality (i.e. lacks caves; and contains limited rocky areas, termite mounds, hollow logs and hollow-bearing trees), it is unlikely that the project contains habitat that is critical for the recovery of the Northern Quoll. Therefore, it is unlikely that the project will interfere substantially with the recovery of the Northern Quoll.

Conclusion

Based on the outcomes from the above assessment criteria, it is considered that the project will not have a residual significant impact to the Northern Quoll.

11 KOALA

The Koala is a mainly arboreal, medium-sized marsupial with a stocky body, large rounded ears, sharp claws and predominantly grey-coloured fur (DotE, 2015). The Koala is listed as Vulnerable under the EPBC Act and under the NC Act.

This section provides the detailed assessment of the Koala and is structured as follows:

- Section 11.1 – Survey Methodology: A detailed description of the survey methodology and how it aligns with the Commonwealth and State survey requirements;
- Section 11.2 – Desktop and Field Survey Results: The results of the desktop and field surveys;
- Section 11.3 – Habitat Assessment: The detailed habitat assessment including habitat modelling and an assessment against the Commonwealth habitat terminology;
- Section 11.4 – Likelihood of Occurrence Assessment: The detailed likelihood of occurrence assessment; and
- Section 11.5 – Significant Impact Assessment: The detailed significant impact assessment in accordance with the Commonwealth's Significant Impact Guidelines.

11.1 SURVEY METHODOLOGY

Surveys undertaken within the project site for the Koala were generally undertaken in accordance with the Commonwealth and Queensland survey requirements, as outlined below.

11.1.1 Commonwealth Survey Requirements

One Commonwealth guideline outlines survey methods for the Koala, namely the Commonwealth's *Referral Guidelines for the Vulnerable Koala* (Commonwealth's Koala Referral Guidelines).

There are no survey guidelines listed for this species on the SPRAT database for the Koala. This database refers to survey methods listed in the Commonwealth's Koala Referral Guidelines, which are described below.

There are no survey guidelines for the Koala in the Commonwealth's Threatened Mammals Survey Guideline, as the Koala was listed under the EPBC Act after these guidelines were published.

A recovery plan for this species for the New South Wales population, the *Recovery Plan for the Koala (Phascolarctos cinereus)* (Department of Environment and Climate Change, 2008), has been published, however no survey guidelines are outlined in this plan.

The Commonwealth's Koala Referral Guidelines requirements and the actual survey effort for the Koala are described below. The survey guideline requirement is provided below in *underline italics* and the response is provided in normal text.

Commonwealth's Koala Referral Guidelines

Desktop survey. A desktop survey is required to assess the quality of existing information and should indicate whether on-ground surveys for the koala are required to fill any information gaps. A desktop survey should include searches of koala presence records in State, Territory and non-government databases, a review of the scientific literature, a review of koala strategies or management plans relevant to the region and a review of current vegetation mapping and aerial photographs. Some useful starting points for gathering data on koala occurrence are:

- *The Atlas of Living Australia*
- *NSW BioNET*
- *QLD Wildlife Online*
- *ACTMAPi.*

Records of koala occurrence should be confirmed, and/or any initial knowledge gaps addressed, by consulting with relevant stakeholders. This is likely to include local government agencies and experts, State and Territory government agencies, local koala experts, koala conservation organisations, private landholders, local ecological consultants, veterinarians, wildlife carers, local field naturalists and local indigenous groups. At this stage, information should also be sought about the intensity of threats to the koala in the area.

This review of all available information and consultation with local stakeholders should help to inform you about the accuracy and adequacy of local knowledge about the koala. If there are knowledge gaps, or if key pieces of information are missing, to the extent that an assessment of impacts on the species cannot be confidently made, on-ground surveys should be carried out. The absence of records in online databases is not necessarily sufficient evidence that the koala is not present, particularly if habitat is present.

As stated in Section 3.1.2, the Queensland Museum database was searched in August 2012 and September 2014, and the Wildlife Online database was searched in March, September and October 2012 and September 2014, prior to designing and undertaking the surveys. The other following databases have also been searched: EPBC Act Protected Matters Search Tool, accessed March, September and October 2012, and September 2014, Queensland Herbarium HERBRECS specimen database, accessed in 2012 and September 2014, Australian Museum species database, accessed 11 June 2015 covering all of Queensland, Queensland Herbarium VM Act RE and Remnant Map (Versions 6.1, 8 and 9) and Queensland Government map datasets.

On-ground surveys. On-ground surveys may be undertaken to ground-truth desktop data, address knowledge gaps identified in the desktop survey process, or to gather data that cannot be obtained via desktop analysis (i.e. koala abundance or density data). Ground-truthing vegetation data is often an important first step for on-ground surveys. This may include an assessment of the species/communities present (and their abundance across the study area), categorisation of vegetation condition and structure and assessment of fine-scale variation within broadly mapped vegetation groups. Surveys must be conducted by a suitably qualified specialist (tertiary educated/trained in ecology or environmental science), with demonstrated skill and experience in conducting vegetation and/or koala surveys.

Koalas are difficult to detect and occur at low densities in many parts of their range. The most appropriate survey method and design depends on the type of data that is desired (i.e. presence/absence, abundance, habitat preference, density, tree species preference) and the size/complexity of the site. Gathering more complex data (i.e. density) or surveying larger, more complex sites will generally require more time and resources. The benefits of more thorough surveys are a higher level of confidence in the assessment and more information on which to plan and make decisions. The habitat assessment tool (Table 4) has been designed using criteria that can be adequately addressed with a basic survey methodology; desktop survey, high level vegetation/habitat groundtruthing and koala presence/absence data. However, for assessing significance where there is some uncertainty, gathering information for planning complex actions or for determining offset liability, more detailed investigation (potentially spatially and temporally replicated baseline surveys) will be required.

For actions with a large footprint, or landscape-scale impacts, baseline monitoring which evaluates koala abundance, movement and habitat preferences in the area proposed to be affected by the project will be necessary. This may involve a combination of direct and indirect survey methods in the study area, particularly if there is limited desktop data available. These surveys will be important for effective design and implementation of mitigation measures to minimise the action's impacts.

On-ground surveys were undertaken to ground-truth desktop data, address knowledge gaps identified in the desktop survey process, and to gather data that could not be obtained via desktop analysis (i.e. Koala abundance or density data). As described in Sections 3.1.5 and 3.1.8, detailed vegetation and habitat surveys have been undertaken throughout the entire project site, including classification of species and communities present and their distribution across the project site. Vegetation condition and structure were also recorded during the field surveys. Surveys were conducted by a suitably qualified specialist (tertiary educated/trained in ecology or environmental science), with demonstrated skill and experience in conducting vegetation and/or Koala surveys.

As detailed in Section 3.1.6, generic fauna surveys were conducted across the project site in April and September 2012 (Figure 6). Targeted Koala surveys were then undertaken in

September 2013 (Section 3.1.7) and detailed daytime field surveys were conducted in August 2014 during the habitat assessments to determine habitat suitability for this species (Section 3.1.8) (Figure 6). Fauna surveys utilised a range of methods to search for the Koala, which are described in detail in the following sections. In addition to the fauna surveys conducted within the project site, opportunistic fauna species seen during the flora surveys (Section 3.1.5) were also recorded.

Survey effort. These guidelines do not prescribe survey effort standards for koala surveys, due to the high level of variation in environmental variables across the koala's range. Survey effort must be determined on a case-by-case basis. However, the following key principles (where relevant) underpin the design and implementation of koala surveys:

i. Sampling is only considered appropriate for moderate or large study areas (i.e. several ha or more); census (surveying the entire site) is relevant for small sites and improves confidence in the data.
ii. Surveys for animals (direct observation) or signs (scats, scratches etc.), for the purposes of gathering presence/absence data, must be undertaken in a manner which maximises the chance of detecting the species.
iii. Failure to detect animals or sign in a single survey does not necessarily mean the koala is absent; spatial and temporal replication of the survey is required in order to infer true absence.
iv. The strengths and limitations of different methods must be acknowledged and considered when designing the survey.
v. The species' ecology varies across its range; it is not appropriate to extrapolate ecological findings to different communities or bioregions.
vi. Care must be taken not to violate the assumptions of the statistical or methodological analyses used when making comparisons between sites or strata (not relevant to census surveys).

Ground-truthing vegetation data is often an important first step for on-ground surveys. This may include an assessment of the species/communities present (and their abundance across the study area), categorisation of vegetation condition and structure and assessment of fine-scale variation within broadly mapped vegetation groups.

The project site is approximately 620 ha and therefore sampling (rather than census) is an appropriate survey methodology.

Prior to conducting the Koala surveys, detailed vegetation and habitat surveys were undertaken throughout the entire project site, including classification of vegetation species and ecological communities and their distribution across the project site. Vegetation condition and structure were also recorded during the field surveys. The initial 2012 fauna surveys included searches via direct observation or signs (scats, scratches etc.), for the purposes of gathering presence/absence data and were undertaken across the entire project

site to maximise the chance of detecting the species. An additional targeted Koala survey was undertaken within the project site to increase the chances of recording the Koala.

Koalas were not recorded during any of the three detailed fauna surveys nor during the habitat assessments or the flora surveys when incidental species were recorded. Given that multiple surveys for the Koala were undertaken within the project site and no Koalas or Koala signs (i.e. scats, scratchings) were recorded, it is unlikely that the Koala is present.

The strengths and limitations of different survey methods were acknowledged and considered when the surveys were designed. It was noted that the species ecology varies across its range and therefore it was not appropriate to extrapolate ecological findings to different communities or bioregions.

Care was taken not to violate the assumptions of the statistical or methodological analyses when making comparisons between sites or strata.

As described above and in Sections 3.1.5 and 3.1.8, ground-truthing the vegetation was conducted prior to the targeted Koala surveys. The majority of the project site does not support suitable feed tree species for the Koala; with Ironbarks or Lemon-scented Gum (*Corymbia citriodora*) dominating most wooded areas. However, scattered occurrences of Blue Gum (*Eucalyptus tereticornis*) were recorded along ephemeral drainage lines in the north of the project site and around water bodies on the project site, providing some suitable habitat for this species.

Direct Observation Methods
Direct observation methods (Table 2) may be appropriate where animals are being captured (i.e. for radio/satellite collaring or mark-resight methods), where abundance or density data is desired, or where koala density is likely to be high. Because of the species' cryptic nature, however, direct observation often yields little data, which leads to large error estimates for the results obtained. This can be addressed by significantly increasing the survey effort, but costs rise accordingly. Direct observation surveys should be undertaken between August and January. This is the period when koala activity is generally at a peak, and resident breeding females with back-young are most easily observed. Direct observation surveys conducted outside of this period must take into account the potential for lower koala activity (reduced detectability) and other relevant seasonal considerations. In the inland context, there may be seasonal variation in koalas' use of different habitat types. Presence/absence surveys in the inland context, conducted during dry periods, should be centred on riparian areas, upper/mid-slope areas and other dry-period refugia in order to maximise detectability.

The 2012 fauna surveys and 2013 targeted Koala surveys were conducted in September and the 2014 surveys were undertaken in August, and therefore meet the requirements of this guideline. Koala surveys were undertaken within all remnant vegetation within the

project site. The direct observation methods used during the surveys are described in detail in the sections below.

- *Strip transects*
  - *General Comments:*
    - *Daytime transects relevant when koala activity and density is high.*
    - *Useful census method for small to medium sites.*
    - *Use in a standardised design for absolute density (survey effort will affect confidence interval of estimate).*
    - *Can be used for distance sampling methodology.*
  - *Limitations:*
    - *Unlikely to provide sufficient data where koalas occur at moderate to low density.*
    - *May require significant resources.*
    - *May not be ideal for presence/absence when employed in a standardised manner, as this approach does not maximise detectability.*

As described in Section 3.1.7, diurnal line transect surveys targeting the Koala were conducted between 2 to 6 September 2013 (Figure 6). The project site was divided into transects separated by 50 m which were then surveyed by two ecologists with a total of approximately 80 km traversed evenly across the entire site. Every tree intersected by each line transect was searched for Koalas and sign of Koala use (i.e. markings on trees, sign of feeding in canopy and obvious scats surrounding the base of the tree).

- *Nocturnal Spotlighting*
  - *General Comments:*
    - *Eye shine may increase detectability over daytime surveys at lower density sites or when koala activity is lower.*
    - *Useful census method for small sites.*
    - *Use in a standardised design for absolute density (survey effort will affect confidence interval of estimate).*
    - *Can be used for distance sampling methodology.*
  - *Limitations:*
    - *Unlikely to provide sufficient data where koalas occur at moderate to low density.*
    - *May require significant resources.*

- *May not be ideal for presence/absence data only, as the method does not maximise detectability.*
- *Ethics approval required.*

As described in Section 3.1.7, spotlight surveys targeting the Koala were conducted between 2 to 6 September 2013, in addition to standard fauna spotlight surveys described in Section 3.1.6 that were conducted during the April 2012 surveys and September 2012 surveys (Figure 6).

During the targeted spotlight surveys conducted in September 2013, site selection was based on targeting appropriate habitat areas (determined by RE mapping). Appropriate habitat areas were primarily associated with RE 11.3.25: Eucalyptus woodland fringing drainage lines. Spotlighting was carried out at 47 sites in accordance with the methods outlined in the previous version of the Queensland Fauna Survey Guidelines (which were the only survey guidelines available at the time) with additional effort applied to each spotlighting event as survey timelines did not allow for replication at each of the sites. Spotlighting was conducted by two ecologists for one person hour at each site (47 sites), totalling 94 person hours.

- *Call Playback*
  - *General Comments:*
    - *Optimal during the breeding season (which can vary across the species' range).*
    - *Useful for gathering presence/absence data.*
    - *Suitable for standardised gathering of abundance/ density data if individuals responding can be differentiated.*
  - *Limitations:*
    - *May not be appropriate in areas with a particularly vulnerable local aggregation of koalas, as it can disrupt natural behaviour patterns (should be considered by the relevant ethics committee).*

As described in Section 3.1.7, call playback was carried out prior to spotlighting at the beginning of each spotlighting transect during the September 2013 surveys (Figure 6) and was conducted in accordance with the prescribed call playback methods outlined in the previous version of the Queensland Fauna Survey Guidelines (which were the only survey guidelines available at the time of the survey). September is within the known breeding season for this species. This involved a five minute listening period prior to call playback, followed by three minutes of call playback, a two minute listening period and five minutes of spotlighting and observation. This was repeated twice for each site as replication of subsequent nights was not possible due to survey timeframe constraints.

- *Remote Sensor Activated Cameras*
  - *General Comments:*
    - *Strategically place in locations where fresh sign (scratching/scats) has been detected.*
    - *Presence will have already been confirmed by preliminary sign survey. Cameras useful for identifying breeding (back young), movement (i.e. use of road crossings) and other specific types of study.*
  - *Limitations:*
    - *May not provide sufficient data where koalas occur at low density.*
    - *Camera locations need to be informed by preliminary sign surveys.*
    - *May require significant resources.*
    - *Preliminary sign surveys will confirm presence; cameras may not substantially value-add to survey data obtained.*

As described in Section 3.1.7, infra-red camera surveys were undertaken during the 2012 fauna surveys as well as the targeted Northern Quoll surveys conducted in 2011 and 2014 (Figure 6). No Koala signs (i.e. scratchings/scats) were identified during the surveys, therefore infra-red cameras were placed in areas which were assessed as containing suitable fauna habitat.

- *Mark-resight or Mark-recapture*
  - *General Comments:*
    - *Likely to be more effective in areas with a high density of koalas and during periods when koalas are most active.*
    - *Use in a standardised design for absolute abundance/density (survey effort will affect confidence interval of estimate).*
  - *Limitations:*
    - *Unlikely to provide sufficient data where koalas occur at moderate to low density.*
    - *May require significant resources.*
    - *May not be ideal for presence/absence data only, as the method does not maximise detectability.*
    - *Ethics approval required.*

No Koalas were recorded during any of the surveys, therefore this technique was not employed.

- *Detection Dogs*
  - *General Comments:*
    - *Emerging method for gathering presence/absence data.*
    - *May improve detectability, particularly where koalas occur at moderate to low densities.*
  - *Limitations:*
    - *Method not widely tested for koalas or published in peer-reviewed literature.*
    - *Difficult to standardise the movement and decision of the detection dog—unlikely to generate anything further than presence/absence data.*
    - *Few trained detection dogs are available.*

Targeted Koala surveys were undertaken in September 2013 as described in Section 3.1.7 and did not include the use of detection dogs. Detection dogs are not included in the survey methods in the Queensland Fauna Survey Guidelines, which were the only survey guidelines available at the time of the 2013 Koala survey.

- *Radio or satellite collars*
  - *General Comments:*
    - *Most appropriate for longer-term, baseline studies where home-range, habitat preference or medium to large scale movement data are required.*
  - *Limitations:*
    - *Resource intensive and time consuming.*
    - *Unlikely to provide a large sample size; confidence in inferences may be limited.*
    - *Ethics approval required.*

The surveys conducted within the project site were not developed as longer-term, baseline studies to collect data regarding the home-range, habitat preference or medium to large scale movement of the Koala. Therefore, radio or satellite collars were not considered an appropriate survey method.

Indirect survey methods (signs) Due to the difficulty in observing koalas and the variable density of koalas across the landscape, indirect methods are often the most effective for gathering presence/absence data. With robust survey design, they can also be effective in gathering relative abundance and relative density data. Scat surveys have been used to gather absolute abundance data, however, this approach requires a more complex methodology. Indirect survey method design must take into account the effects of various factors on sign detectability (i.e. heavy leaf litter known to reduce detectability of pellets) and

sign persistence (i.e. flooding and rainfall known to affect scat decay). Table 3 outlines some indirect observation methods which may be used for on-ground koala surveys. Other techniques not listed here may also be used, however their effectiveness should have been demonstrated, and ideally published in a peer-reviewed publication. Novel survey techniques may be developed following the finalisation of these guidelines.

- *Scratching*
  - *General Comments:*
    - *Scratchings are relatively identifiable and persist for a reasonable period.*
    - *Difficult to accurately age scratchings.*
  - *Limitations:*
    - *Useful for presence/absence data only;*
    - *Only detectable on smooth-barked trees.*
    - *Care must be taken not to obtain false presence data (due to misidentification of scratchings).*

As described in Section 3.1.7, trees intercepted during the transect surveys were searched for any signs of Koalas, including any Koala scratchings.

- *Scats— Spot Assessment Technique (SAT)*
  - *General Comments:*
    - *Tree-based sampling methodology that provides presence/absence data.*
    - *Method can be used to gather comparative data regarding habitat usage/preference.*
  - *Limitations:*
    - *'Focal trees' must be chosen using a transparent and evidence-based method.*
    - *The method must be standardised across sites and strata in order for a comparison to be valid.*
    - *Different detectability of scats between sample sites and strata must be considered.*

As described in Section 3.1.7, SAT surveys were conducted between 2 to 6 September 2013 (Figure 6). The SAT was applied using the methodology prescribed in Phillips and Callaghan (2011) which involves systematic searches of up to 30 trees surrounding the observed Koala and/or sign. SAT surveys were performed in areas considered to be critical habitat where primary food trees were present as no Koalas or signs of Koalas were recorded. This approach ensured that additional effort was applied to the areas of best available habitat across the site.

- *Scats— Regularised Grid Based Spot Assessment Technique (RGB-SAT)*
  - *General Comments:*
    - *Utilises grid intersect points to identify the centre of each SAT plot, rather than selection of a 'focal tree'.*
    - *Method can be used to gather comparative data regarding habitat usage/preference.*
  - *Limitations:*
    - *Different detectability of scats between sample sites or strata must be considered.*

As described in Section 3.1.7, Koala scats were searched for during the targeted Koala surveys undertaken in September 2013 as well as general fauna surveys undertaken in 2012 and 2014.

- *Scats— Koala Optimised Rapid Assessment Methodology (KRAM)*
  - *General Comments:*
    - *Pre-determined, standardised sampling methodology.*
    - *Does not require judgements to be made in regards to selection of 'focal trees'.*
    - *Method is relevant for presence/absence data and comparative density/habitat preference.*
  - *Limitations:*
    - *Different detectability of scats between sample sites or strata must be considered.*
    - *Authors suggest increasing survey effort for each point in a manner that is proportional to scat detectability*.

As described in Section 3.1.7, Koala scats were searched for during the targeted Koala surveys undertaken in September 2013 as well as general fauna surveys undertaken in 2012 and 2014.

- *Faecal standing crop assessment*
  - *General Comments:*
    - *Utilises a model incorporating scat counts and assumptions regarding scat production (or site-specific scat production data).*
    - *Can provide absolute abundance data.*
  - *Limitations:*
    - *Resource intensive.*

- *Requires site-specific data regarding scat production and age to remove assumptions/ surrogate figures.*
- *Requires robust vegetation and environmental variable data in order to extrapolate results.*

As described in Section 3.1.7, Koala scats were searched for during the targeted Koala surveys undertaken in September 2013 as well as general fauna surveys undertaken in 2012 and 2014.

11.1.2 Queensland Survey Requirements

The Queensland Fauna Survey Guidelines outline the minimum survey requirements, standards and appropriate practice for the survey of terrestrial vertebrate fauna in Queensland. These survey guidelines had not been released to the public during the time of the detailed fauna surveys conducted in April 2012 and September 2012. However, the surveys undertaken for the project are generally in compliance with these guidelines. The general surveys methods outlined in this guideline that are applicable to the Koala, are discussed in the following sections.

Queensland Fauna Survey Guidelines
Optimal time of year for vertebrate fauna surveys within the Brigalow belt Bioregion are Spring to early Summer (Sept – mid Nov) and Autumn (March – mid May)

The 2012 fauna surveys were conducted in September and April and the targeted Koala surveys were conducted in September 2013 therefore, the surveys meet the requirements of this guideline.

Call playback – Two sessions of call playback of relevant species at midpoint of survey site

As described in Section 3.1.7, call playback was carried out prior to spotlighting at the beginning of each spotlighting transect during the September 2013 surveys and was conducted in accordance with the prescribed call playback methods outlined in the previous version of the Queensland Fauna Survey Guidelines (which were the only survey guidelines available at the time of the survey). This involved a five minute listening period prior to call playback, followed by three minutes of call playback, a two minute listening period and five minutes of spotlighting and observation. This was repeated twice for each site as replication of subsequent nights was not possible due to survey timeframe constraints.

Spotlight – Two 30 person minute spotlight searches within 100 x 100 m survey site

As described in Sections 3.1.6 and 3.1.7, spotlight surveys targeting the Koala were conducted between 2 to 6 September 2013, in addition to standard fauna spotlight surveys that were conducted during the April 2012 surveys and September 2012 surveys. During the

2012 surveys, two people searched each of the five detailed site for a total of 30 - 45 minutes each for five nights and two people searched one secondary site for a total of 30 minutes each for two nights totalling eight person hours. During the targeted Koala surveys undertaken in September 2013, two people searched 47 sites for one hour each totalling 94 person hours. Therefore, the total time spent conducting spotlight surveys was 102 person hours.

Scat and sign search – Scat and sign search can coincide with systematic diurnal active searches, within 50 x 50 m quadrats of the survey site. Otherwise incidental.

As described in Section 3.1.7, scat and sign searches were undertaken during the targeted surveys for the Koala. In addition, any Koala scats or signs were also searched for during the fauna surveys conducted in 2012 (Section 3.1.6).

Incidental – Incidental detection of any species

Any incidental detection of fauna species were recorded during the all of flora and fauna surveys conducted within the project site.

11.2 DESKTOP AND FIELD SURVEY RESULTS

The Koala was not recorded from the project site during any of the field surveys undertaken for the project. There are nine Koala records within 25 km for the project site in the Queensland Wildlife Online database, with the closest record being 14 km to the centre of the project site. There are four records for the Koala in the Queensland Museum database, comprising three records from Monto (three records approximately 63 km, 81 km and 90 km south-east from the project site boundary) and one record from Rockhampton (approximately 90 km north from the project site boundary). The Koala, or its habitat, was also predicted to occur in the project site in the EPBC Act Protected Matters Search Tool.

An unidentified scat was collected within the project site. However, it was too damaged by insect predation for definitive identification. AECOM concluded that given the lack of any live Koalas or Koala signs, it was unlikely that it was a Koala scat (AECOM, 2014).

AECOM stated that previous surveys at Callide Mine (located approximately 7 km to the south-east of the project site) confirmed the presence of the Koala adjacent to the southern operations. However, this record is unsubstantiated.

11.3 HABITAT ASSESSMENT

11.3.1 Overview

Koalas occur in subhumid woodlands in southern and central Queensland, and in some eucalypt woodlands along watercourses in the semiarid environments of the western part of Queensland. The Koala is known to occur in the Brigalow Belt Bioregion, where the project site is located (DotE, 2015).

Koalas forage on the leaves of a wide range of *Eucalyptus* spp., however they have distinct preferences for some species over others that vary across their range. Commonly preferred feed trees in Queensland are members of the Red Gum group. While Koalas have been observed sitting in or eating up to 120 species of eucalypt, the diet of individual Koalas is usually limited to obtaining most of their nutrition from one or a few species present at a site. Dietary preferences for a particular tree species may also vary between regions or seasons. Therefore, the assessment of Koala habitat quality can be based on the identification and presence and density of locally preferred tree species (DotE, 2015).

The Koala is not territorial and the home ranges of individuals extensively overlap. Individuals tend to use the same set of trees, but generally not at the same time. They spend a lot of time alone and devote limited time to social interactions. Koalas are generally sedentary and move between trees only a few times each day. There is little evidence for longer movements in most cases, though dispersing individuals, mostly young males, may occasionally cover maximum distances up to about 10 km in one day (DotE, 2015).

The general habitat requirements of the Koala are detailed in Table 21.

Table 21
Koala – General Habitat Requirements

Requirements/Preferences	Koala Requirements/Preferences (DotE, 2015)
General habitat requirements/preferences	The species occurs in subhumid woodlands in southern and central Queensland, and in some eucalypt woodlands along watercourses in the semiarid environments of the western part of Queensland.
Foraging requirements/preferences	The species only eats eucalypt leaves.
Microhabitat requirements/preferences	The species spends most of its time in trees, with a home range that varies according to quality of habitat, ranging from less than 2 ha to several hundred ha.
Breeding requirements/preferences	The species usually breeds between September and February.

11.3.2 Habitat Modelling

As described in Section 3.1.3, habitat modelling was conducted by Cumberland Ecology for the Koala. The modelling for the Koala focussed on the presence of preferred feed trees, as summarised in Table 22.

Table 22
Habitat Modelling for the Koala

Habitat Analysis Criteria	Koala
Pre-existing models for threatened species habitat	The Commonwealth's Koala Referral Guidelines was used to determine if the project site contains any critical habitat for the Koala. The SPRAT for the Koala provides an indicative distribution map within Queensland, New South Wales and Australian Capital Territory.
Threatened species records in the project site and surrounds	No database records occur within the project site or within the immediate surrounding area. AECOM stated that one Koala was recorded during studies at Callide Mine approximately 7 km to the south-east of the project site in 1998. However, this record is unsubstantiated. This species or its habitat were predicted to occur in the EPBC Act Protected Matters Search Tool and there are eight Koala records within 25 km for the project site in the Queensland Wildlife Online database, with the closest record being 14 km to the centre of the project site. There are four records for the Koala in the Queensland Museum database, three from Monto (three records approximately 63 km, 81 km and 90 km south-east from the project site boundary) and one record from Rockhampton (approximately 90 km north from the project site boundary).
Presence of suitable vegetation	The species uses Blue Gum and Gum-topped Box as primary feed species which are present in both remnant RE 11.3.25: Eucalyptus woodland fringing drainage lines and RE 11.9.9: Ironbark woodland, respectively, and also as scattered trees along ephemeral drainage lines across the project site. Secondary food trees for the Koala may be present in RE 11.8.4: *Eucalyptus melanophloia* open woodland on Cainozoic igneous rocks (RE 11.8.4: Silver-leaved Ironbark open woodland) and RE 11.9.13: Grey Box open woodland.
Presence of suitable topography	No specific topography requirements by the species.
Presence of permanent water sources	There is a strong association between Koala occurrences and water resources in central and northern Queensland (DotE, 2015). There are two permanent farm dams in the north of the project site.

Habitat Analysis Criteria	Koala
Presence of preferred foods	Primary feed species includes Blue Gum and Gum-topped Box, which are present in both remnant RE 11.3.25: Eucalyptus woodland fringing drainage lines and RE 11.9.9: Ironbark woodland, respectively, and also as scattered trees along ephemeral drainage lines across the project site. Secondary food trees for the Koala may be present in RE 11.8.4: Silver-leaved Ironbark open woodland and RE 11.9.13: Grey Box open woodland.
Presence of tree hollows	The species does not associate with tree hollows.
Documented foraging distances around permanent water	The home range of Koalas in central Queensland is estimated at 135 ha for males and 101 ha for females and the species can travel up to 10 km in a day, though it is typically less mobile than this (DotE, 2015).
Documented sensitivity to habitat clearance and/or fragmentation	Koalas have been significantly impacted by habitat clearing and fragmentation. They have low rates of reproduction and dispersal and are more vulnerable to a wide range of key threatening processes (including predation by feral predators) in areas where there has been significant habitat clearance (DotE, 2015). The project site has been used for grazing for over 110 years and is currently being used for cattle grazing.
Occurrence of harmful feral species that are a known threat to the species	Known introduced predators of the species include the dingo and European red fox. Published literature indicates the Koala would be most vulnerable in open semi-cleared habitats (DotE, 2015). Both the dingo and European red fox are present within the project site and the project site contains semi-cleared habitats.
Documented sensitivity to cattle grazing pressure	The species is not influenced by grazing pressure directly, however clearing of habitat for pasture lands is a key threat to the species (DotE, 2015). The project site has been used for grazing for over 110 years and is currently being used for cattle grazing.

Based on the criteria above, approximately 292 ha of land within the project site is unsuitable for the Koala. The Terrestrial Ecology Report, prepared by Cumberland Ecology, and provided in the Round 1 Response to Submissions, assessed the remaining 327 ha of the project site as being low quality habitat for the Koala (Figure 17). Cumberland Ecology assessed the habitat as being low quality due to the modification of the land due to agricultural development (i.e. clearing, grazing and cropping within the project site for over 110 years), and the presence of feral predators (i.e. foxes and dingos). However, in response to DotE's second round of submissions on the Boundary Hill South EIS, Hansen Bailey and Cumberland Ecology have assessed the project site against the Commonwealth's definitions of habitat (Section 11.3.3).

11.3.3 Commonwealth Defined Habitat

The Commonwealth's Koala Referral Guidelines defines '*habitat that is critical to the survival of the Koala*'. One component used to assess whether habitat can be classified as critical to this species is the presence of food trees.

The concept of Koala food trees and the Commonwealth's defined critical habitat are discussed in the following sections.

Koala Food Trees

The concept of Koala food trees is central to habitat mapping for this species. The Commonwealth's Koala Referral Guidelines defines Koala food trees as: '*Species of tree whose leaves are consumed by koalas. Koala food trees can generally be considered to be those of the following genus: Angophora, Corymbia, Eucalyptus, Lophostemon and Melaleuca. Note that food tree species may vary spatially and temporally and information specific to the local area is likely to be most accurate. Also note that 'primary' and 'secondary' food trees (as defined by some resources) are all considered to be 'food trees' for the purpose of assessment using these guidelines*.' The Commonwealth's Koala Referral Guidelines also refer to the following references to identify potential food trees:

- NSW Office of Environment and Heritage Koala habitat web page: www.environment.nsw.gov.au/animals/koalahabitat.htm;
- QLD EHP Koala habitat webpage: www.ehp.qld.gov.au/wildlife/koalas/koala-ecology.html; and
- The New South Wales Recovery Plan for the Koala: www.environment.nsw.gov.au/resources/threatenedspecies/08450krp.pdf.

These references have been consulted in identifying Koala food trees. In the project site, Blue Gum occurs in both remnant RE 11.3.25: Eucalyptus woodland fringing drainage lines and also as scattered trees along ephemeral drainage lines across the project site. Gum-topped Box has been recorded within remnant areas of RE 11.9.9: Ironbark woodland but is not the dominant species. Both of these species are known to be important feed trees for Koalas (see NSW Office of Environment and Heritage webpage) and therefore they are considered to be important habitat trees for Koalas in the project site. Secondary food trees for the Koala may be present in RE 11.8.4: Silver-leaved Ironbark open woodland and RE 11.9.13: Grey Box open woodland.

Based on published literature about Koala food preferences in central and northern Queensland (Ellis *et al.*, 2002), areas within the project site that are dominated by Narrow Leaved Ironbark (*Eucalyptus crebra*) and Lemon Scented Gum are likely to be less used and are considered to be lower quality habitat for Koalas in the project site.

For the purposes of habitat modelling, potential Koala food trees recorded within the project site (based on the references cited above) have been grouped into two categories: primary food trees (food trees most preferred by the Koala) and secondary food trees (less preferred trees by the Koala but still with the potential for these tree species to be used as a food resource). The primary and secondary food trees for the Koala within the project site are listed in Table 23.

Table 23
Primary and Secondary Food Trees of the Koala within the project site

Scientific Name	**Common Name**
Primary Food Trees	
Eucalyptus tereticornis	Blue Gum
Eucalyptus moluccana	Gum-topped Box
Secondary Food Trees	
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus populnea	Poplar Box

Habitat Critical to the Survival of a Species

According to the Commonwealth's Koala Referral Guidelines, '*habitat critical to the survival of the Koala*' is habitat that is considered to be important for the species long-term survival and recovery. An impact area that scores five or more using the habitat assessment tool for the Koala in the Commonwealth's Koala Referral Guidelines contains habitat critical to their survival. The habitat assessment tool is to be applied once to the entire impact area of the proposed action.

The habitat assessment tool is reproduced in Table 24 with a column showing the ranking of the project site against each attribute. Using the criteria in the DotE's Koala Habitat Assessment Tool presented below, the project site receives a score of five and is therefore considered to contain '*habitat critical to the survival of the Koala'*. However, given that the Commonwealth's Koala Referral Guidelines are broad and non-selective for the purpose of habitat modelling (i.e. do not reflect that different parts of the project site may provide different habitat value for the Koala), detailed habitat modelling was undertaken based on the field work. The survey guidelines presented in the Commonwealth's Koala Referral Guidelines also require that ground-truthing of vegetation and determining both abundance and condition/structure of vegetation and fine scale variation of vegetation within the broader vegetation mapping are required. This is contrary to the DotE's Koala Habitat Assessment Tool, which does not reflect that different parts of the project site may provide different habitat value for the Koala. The detailed analysis of the relative quality of Koala habitat within the project site indicates that the project site only contains areas of low quality and unsuitable habitat for the Koala.

Table 24
Koala Habitat Assessment Tool

Attribute	Score	Inland	Project Assessment
Koala occurrence	2 (high)	Evidence of one or more Koalas within the last 5 years.	No.
	1 (medium)	Evidence of one or more Koalas within 2 km of the edge of the impact area within the last 10 years.	No.
	0 (low)	None of the above.	Yes - AECOM stated that one Koala was recorded during studies at Callide Mine approximately 7 km to the south-east of the project site in 1998. However, this record is unsubstantiated. The next closest record is 14 km from the centre of the project site from the Queensland Wildlife Online database.
Vegetation composition	**2 (high)**	Has forest, woodland or shrubland with emerging trees with 2 or more known Koala food tree species in the canopy, **OR** 1 food tree species that alone accounts for >50% of the vegetation in the relevant strata.	Yes – there are two or more Koala food tree species within the Koala habitat within the project site.
	1 (medium)	Has forest, woodland or shrubland with emerging trees with only 1 species of known Koala food tree present.	No.
	0 (low)	None of the above.	No.
Habitat connectivity	**2 (high)**	Area is part of a contiguous landscape ≥1,000 ha.	Yes – it is highly likely that there is more than 1,000 ha of Koala habitat adjoining the project site, particularly to the east and north-east of the project site.
	1 (medium)	Area is part of a contiguous landscape <1,000 ha but ≥ 500 ha.	No.
	0 (low)	None of the above.	No.
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.	No.

Attribute	Score	Inland	Project Assessment
	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.	Yes – as Koala occurrence scored a 0 and vehicle threat from the existing mobile mining equipment at The Boundary Hill mining area is present.
	0 (low)	Evidence of frequent or regular Koala mortality from vehicle strike or dog attack in the project site at present, **OR** Areas which score 0 for Koala occurrence and have a significant dog or vehicle threat present.	No.
Recovery value	2 (high)	Habitat is likely to be important for achieving the interim recovery objectives for the relevant context.	No.
	1 (medium)	Uncertain whether the habitat is important for achieving the interim recovery objectives for the relevant context.	No.
	0 (low)	Habitat is unlikely to be important for achieving the interim recovery objectives for the relevant context.	Yes – the interim recovery values are: • Protect and conserve the quality and extent of habitat refuges for the persistence of the species during droughts and periods of extreme heat, especially in riparian environments and other areas with reliable soil moisture and fertility; and • Maintain the quality, extent and connectivity of large areas of Koala habitat surrounding habitat refuges. There are no habitat refuges (i.e. riparian environments or areas with reliable soil moisture and fertility) within the project site. There is also a significant amount of similar habitat in the surrounding area which contains, or connects to, Koala refuge habitats without the presence of any large barriers or natural obstructions. Therefore, the Koala habitat within the project site is unlikely to be important for achieving the interim recovery objective.
Total Score: 5			

Based on the above, there is approximately 292 ha of unsuitable habitat for the Koala in the project site that contain trees that are not considered likely to provide a food source for the Koala, or grasslands. Although these areas may be used periodically for dispersal purposes, due to the lack of food trees, they have been mapped as unsuitable habitat. There is approximately 327 ha of low quality habitat for the species within the project site containing trees that can be used for browsing by the Koala (RE 11.3.25: Eucalyptus woodland fringing drainage lines, RE 11.9.9: Ironbark woodland, RE 11.8.4: Silver-leaved Ironbark open woodland and RE 11.9.13: Grey Box open woodland). However, detailed habitat modelling for the project site undertaken based on field work conducted in accordance with EPBC Act Koala Referral Guidelines confirmed that the low quality habitat for the Koala within the project site is not 'habitat critical to the survival of the Koala'.

11.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT

While the species was not recorded within the project site during the field surveys, which included targeted Koala searches, AECOM (2012) stated that previous surveys at Callide Mine (located approximately 7 km to the south-east of the project site) confirmed the presence of the Koala adjacent to the Southern operations in 1998. However, this record is unsubstantiated as it has never been confirmed. Potential habitat in the form of woodlands (RE 11.3.25: Eucalyptus woodland fringing drainage lines, RE 11.9.9: Ironbark woodland, RE 11.8.4: Silver-leaved Ironbark open woodland and RE 11.9.13: Grey Box open woodland) occurs within the project site which contain suitable feed trees (e.g. Blue Gum and Gum Top Box) that can be used for browsing by the Koala. Nevertheless, the Koala has been conservatively assessed as having a high likelihood of occurrence within the project site , in accordance with the criteria specified in Table 8, due to the presence of potential habitat (albeit limited in nature) and as it is known to occur in the wider area.

11.5 SIGNIFICANT IMPACT ASSESSMENT

An assessment of significance has been conducted for this species following the Commonwealth's Significant Impact Guidelines for Vulnerable species. Section 11.5.1 assesses whether the project site contains an important population of the Koala, while Section 11.5.2 presents the assessment of significance that has been conducted for this species.

11.5.1 Important Population Assessment

According to the Commonwealth's Significant Impact Guidelines, an '*important population'* of any Vulnerable species 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:*

- *key source populations either for breeding or dispersal*

- *populations that are necessary for maintaining genetic diversity, and/or*
- *populations that are near the limit of the species range.'*

No populations of the Koala have been recorded within or immediately surrounding the project site.

Although habitat for Koala is present within the project site, no individuals were encountered during the surveys. The habitat within the project site contains a very low density of suitable feed trees for this species and, as such, is considered to be low quality habitat for the Koala. Given the quality of the habitat and the lack of any records within and immediately surrounding the project site, it is considered unlikely that the project site is a key source population for breeding or dispersal, or that the project site contains a population that is necessary for maintaining genetic diversity.

The project site is not near the limit of the species range.

As the species is not known to occur within the project site or the surrounding area, the project site only has low quality habitat and the project site is not near the limit of the species range, it is unlikely that any 'important populations' of this species occur within the project site.

11.5.2 Significant Impact Criteria

An assessment of significance for the Koala has been conducted in accordance with the Commonwealth's Significant Impact Guidelines. The significant impact criteria are provided in *underline italics* and the response is provided in normal text.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population of a species*

Not applicable as there is no '*important population'* of Koala within the project site (Section 11.5.1).

- *reduce the area of occupancy of an important population*

Not applicable as there is no '*important population'* of Koala within the project site (Section 11.5.1).

- *fragment an existing important population into two or more populations*

Not applicable as there is no '*important population'* of Koala within the project site (Section 11.5.1).

- *adversely affect habitat critical to the survival of a species*

According to the Commonwealth's Koala Referral Guidelines, the project site contains habitat that is critical to the survival of the Koala. However, as discussed in Section 11.3.2, given that the Commonwealth's Koala Referral Guidelines are broad and non-selective for the purpose of habitat modelling (i.e. do not reflect that different parts of the project site may provide different habitat value for the Koala), detailed habitat modelling was undertaken based on the field work. The survey guidelines presented in the Commonwealth's Koala Referral Guidelines also require ground-truthing of vegetation and determining both abundance and condition/structure of vegetation and fine scale variation of vegetation. The detailed analysis of the relative quality of Koala habitat within the project site indicates that the project site only contains areas of low quality and unsuitable habitat for the Koala and the habitat provided by the project site is therefore not considered to be critical for the survival of the Koala.

- *disrupt the breeding cycle of an important population*

Not applicable as there is no '*important population'* of Koala within the project site (Section 11.5.1).

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

As described in Section 11.3.3, there are four patches of low quality habitat for the Koala within the project site. There is no '*habitat critical to the survival of a species'* within the project site. The species has not been recorded within or immediately surrounding the project site. Given the poor quality and isolated nature of Koala habitat found within the project site, it is unlikely that the project will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

It is considered unlikely that the project will result in an invasive species becoming established in the low quality habitat for the Koala within the project site. Feral animals already occur in the project site and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project. In addition, the Callide Mine Weed Management Plan includes a wash down procedure to help control the spread of pest plants both on and off-site. This management plan will be updated to include the project.

- *introduce disease that may cause the species to decline, or*

There are two known diseases present in the Australian Koala population, namely: Chlamydia and the Koala Retrovirus (KoRV). Chlamydia is spread through individual contact between Koalas, while KoRV is spread genetically. It is unlikely that the project will increase the rate of contact between individual Koalas and it is therefore considered unlikely that the project will introduce a disease that may cause the Koala to decline.

- *interfere substantially with the recovery of the species.*

The project will not interfere with the recovery of the Koala. As stated in 11.5.1, there is no '*important population'* of Koala in the project site. By definition, this means that there are no key source populations either for breeding or dispersal within the project site and no populations that are necessary for maintaining genetic diversity. These are key requirements for the recovery of the species. Given that there are no '*important populations'* and no '*habitat critical to the survival of a species*' within the project site, it is unlikely that the project contains habitat that is critical for the recovery of the Koala. Therefore, it is unlikely that the project will interfere substantially with the recovery of the Koala.

Conclusion

Based on the outcomes from the above assessment criteria, it is considered that the project will not have a residual significant impact to the Koala.

12 GREY-HEADED FLYING-FOX

The Grey-headed Flying-Fox is one of the largest bats in the world with a weight of 600 – 1000 g and a head-body length of 230 – 289 mm. It is the only Australian flying-fox that has a collar of orange/brown fully encircling its neck. The head is covered by light grey fur and the belly fur is grey, often with flecks of white and ginger (DotE, 2015). The Grey-headed Flying-Fox is listed as Vulnerable under the EPBC Act and is not listed under the NC Act.

This section provides the detailed assessment of the Grey-headed Flying-Fox and is structured as follows:

- Section 12.1 – Survey Methodology: A detailed description of the survey methodology and how it aligns with the Commonwealth and State survey requirements;
- Section 12.2 – Desktop and Field Survey Results: The results of the desktop and field surveys;
- Section 12.3 – Habitat Assessment: The detailed habitat assessment including habitat modelling and an assessment against the Commonwealth habitat terminology;
- Section 12.4 – Likelihood of Occurrence Assessment: The detailed likelihood of occurrence assessment; and
- Section 12.5 – Significant Impact Assessment: The detailed significant impact assessment in accordance with the Commonwealth's Significant Impact Guidelines.

12.1 SURVEY METHODOLOGY

Surveys undertaken within the project site for the Grey-headed Flying-fox were generally undertaken in accordance with the Commonwealth and Queensland survey requirements, as outlined below.

12.1.1 Commonwealth Survey Requirements

There are two Commonwealth survey guidelines that outline survey methods for the Grey-headed Flying-fox, namely:

- SPRAT database for the Grey-headed Flying-Fox; and
- The Commonwealth's 2010 *Survey Guidelines for Australia's Threatened Bats* (Commonwealth's Threatened Bats Survey Guideline).

The survey requirements for the Grey-headed Flying-Fox are identical in the SPRAT database and the Commonwealth's Threatened Bats Survey Guideline. Therefore, the survey requirements have only been discussed once below.

The Australian Government has published the Draft *National Recovery Plan for the Grey-headed Flying-fox Pteropus poliocephalus* (Draft National Recovery Plan for the Grey-headed Flying Fox), however no survey guidelines for the Grey-headed Flying-fox are outlined in this plan.

The survey guideline requirements and the actual survey effort for the project are described below. The survey guideline requirement is provided below in *underlined italics* and the response is provided in normal text.

Survey Requirements from the Commonwealth's Threatened Bats Survey Guideline and the Species Profile and Threats Database

Seasonal considerations. Grey-headed Flying-fox presence will be dependent on food resources. The time and location of flowering and fruiting of diet plants varies among seasons and years. In particular, drought years can have a strong influence on eucalypt flowering times. Sites noted as important in one year or period may not be visited again in the following year. In short, the presence or absence of this species at a site during a particular time or year may not necessarily be indicative of the importance of that habitat area to the species.

As stated in Section 3.1, rain was recorded during the April 2012 and August 2014 surveys, and rain was recorded within two weeks prior to the September 2012 survey. The project site was not considered to be in a state of drought during any of the survey periods. Seasonal changes and the impact of these changes on Grey-headed Flying-fox food resources was taken into consideration during the surveys. Surveys undertaken within the project site focussed on recording Grey-headed Flying-fox individuals as well assessing potential habitat for this species present within the project site, regardless of whether any individuals were recorded within the project site.

Prior to the survey. A review of known flying fox camps should be conducted for the project area and the wider general area. The location of many camps is known, and the information is available through databases held by the NSW Office of Environment and Heritage, Queensland Department of Environment and Resource Management, the Victorian Department of Sustainability and Environment, the Australasian Bat Society and in the literature. There is a network of people with knowledge about camp location and seasonal movements. For example, often, local people, orchardists, apiarists, parks officers and forestry workers, wildlife groups, the flying fox carer network and traditional owners will know if camps exist or have existed in or near the project area, and, if so, whether they are likely to be occupied at the time of the survey.

Databases were searched for known Grey-headed Flying-fox camps within the project site and the wider surrounding area. No Grey-headed Flying-fox camps were identified within or within close proximity to the project site.

Daytime field surveys for camps. The primary method for determining the presence of unrecorded day roosts is to conduct field surveys. Flying-foxes are recognised easily from a distance while they roost or are in flight, and have distinctive audible calls that are heard most frequently in the early morning or under sunny conditions. Other signs include their distinctive odour and droppings. Both the ground and foliage should be examined for flying-fox scats. Some project areas may require access by boat. Note that this species rarely vocalises during rain and some periods of the day. Roosts can also be located by surveying for animals exiting at dusk. For very large and/or inaccessible project areas, it may be necessary to conduct an aerial survey for camps from a light aircraft (DEWHA 2010m).

Detailed daytime field surveys were conducted during the habitat assessments to determine habitat suitability for this species during the August 2014 surveys (Figure 6). These surveys considered factors such as the presence of any potential Grey-headed Flying-fox camps, unrecorded Grey-headed Flying-fox day roosts, suitable feed species, ephemeral drainage lines, farm dams and seasonal wetlands present within the project site. Spotlighting and nocturnal active searches as well as diurnal bird searches (conducted within four hours of dawn) were also conducted during the April and September 2012 surveys, which included recording any fauna species seen during the surveys (Figure 6).

Surveys of vegetation communities and food plants. Vegetation communities, within the core range of Grey-headed Flying-foxes, have been mapped and the significance of each community, as feeding habitat, has been ranked by Eby and Law. This ranking should be consulted to help identify vegetation communities in the project area. Vegetation maps, based on modelled data, may be less useful as they do not always accurately represent field conditions. Furthermore, field surveys should be conducted by a qualified botanist to confirm the vegetation communities in the project area and the presence of food plants.

The Grey-headed Flying-fox requires foraging resources and is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. It also feeds on commercial fruit crops and on introduced tree species in urban areas. The primary food source is blossom from eucalyptus and related genera, such as Lemon-scented Gum, but in some areas it also utilises a wide range of rainforest fruits. Primary food species include blossom and nectar from various *Eucalyptus* spp. and Lemon-scented Gum. These species are present in the woodlands within the project site and flower seasonally. There are also a variety of other vascular plants within the project site that could provide some blossoms, nectar or fruits for the Grey-headed Flying-fox. The vegetation within the project site does not occur within the core range of the Grey-headed Flying-fox in accordance with Eby and Law (2008) and have therefore the significance of each community, as feeding habitat, has not been ranked by Eby and Law (2008).

As discussed in Sections 3.1.5 and 3.1.8, detailed flora and vegetation surveys were undertaken by qualified botanists in March 2012 and 2012 and August 2014 (Figure 5). These surveys were undertaken throughout the entire project site, and included classification of flora species and vegetation communities and their distribution across the project site. Due to the unreliable nature of food resources for this species (i.e. flowering and fruiting of food plants varies among seasons and years), detailed habitat assessments, in addition to surveys, were used to assess the likelihood of this species to occur within the project site. Field surveys were conducted by a qualified botanist.

Night time surveys. Conduct walking transects (100 m apart) looking for feeding and flying bats. Smell can also provide a sign of their presence. Alternative methods may include night time audio recordings made at selected sites or where fruiting food plants occur within the project area (DEWHA 2010m).

As described in Section 3.1.6, spotlighting and nocturnal active searches were conducted during the April and September 2012 surveys, which included recording any fauna species seen during the surveys (Figure 6). As described in Section 3.1.6, acoustic bat detectors were also used during the surveys and were placed in areas that comprised suitable habitat for bat species.

12.1.2 Queensland Survey Requirements

The Grey-headed Flying-fox is not listed as threatened under Queensland legislation (i.e. the NC Act), therefore no Queensland survey guidelines are available for this species.

12.2 DESKTOP AND FIELD SURVEY RESULTS

The Grey-headed Flying-fox was not recorded within the project site during any of the field surveys undertaken for the project. However, the Grey-headed Flying-fox, or its habitat, was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool and there is a Grey-headed Flying-fox record in the Queensland Museum database from Many Peaks Range (approximately 89 km south-east from the project site boundary).

12.3 HABITAT ASSESSMENT

12.3.1 Overview

The Grey-headed Flying-fox is one of the largest bats in the world and is Australia's only endemic flying-fox and occurs in the coastal belt from Rockhampton in central Queensland to Melbourne in Victoria. However, only a small proportion of this range is used at any one time, as the species selectively forages where food is available. As a result, patterns of occurrence and relative abundance within its distribution vary widely between seasons and between years. At a local scale, the species is generally present intermittently and

irregularly. At a regional scale, broad trends in the distribution of plants with similar flowering and fruiting times support regular annual cycles of migration. Whilst Brisbane, Newcastle, Sydney and Melbourne are occupied continuously, elsewhere, during spring, Grey-headed Flying-foxes are uncommon south of Nowra and widespread in other areas of their range. The species is widespread throughout their range in summer, whilst in autumn it occupies coastal lowlands and is uncommon inland (DotE, 2015).

The Grey-headed Flying-fox requires foraging resources and is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. It also feeds on commercial fruit crops and on introduced tree species in urban areas. The primary food source is blossom from eucalyptus and related genera, such as Lemon-scented Gum, but in some areas it also utilises a wide range of rainforest fruits. None of the vegetation communities used by the Grey-headed Flying-fox produce continuous foraging resources throughout the year. As a result, the species has adopted complex migration traits in response to ephemeral and patchy food resources. Grey-headed Flying-foxes generally forage for up to 15 km from roosting sites, but can travel up to 50 km from roosting sites depending on available food resources (DotE, 2015).

The Grey-headed Flying-fox requires roosting sites and roosts in large camps where colonies of various sizes (up to several thousand may occur at one time) on exposed branches of trees. Roost sites are typically located near water, such as lakes, rivers or the coast. Roost vegetation includes rainforest patches, stands of Melaleuca, mangroves and riparian vegetation, but colonies also use highly modified vegetation in urban and suburban areas (DotE, 2015).

The general habitat requirements of the Grey-headed Flying-fox are detailed in Table 25.

Table 25
Grey-headed Flying-fox – General Habitat Requirements

Requirements/Preferences	Grey-headed Flying-fox Requirements/Preferences (DotE, 2015)
General habitat requirements/preferences	The species occurs in rainforest, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands, urban and production landscapes.
Foraging requirements/preferences	The species is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. It also feeds on commercial fruit crops and on introduced tree species in urban areas.
Microhabitat requirements/preferences	This species roosts in large, communal camps, typically located near water, such as lakes, rivers or the coast. Roost vegetation includes rainforest patches, stands of Melaleuca, mangroves and riparian vegetation, but colonies also use highly modified vegetation in urban and suburban areas.
Breeding requirements/preferences	Mating occurs in early autumn while the species is still in large camps.

12.3.2 Habitat Modelling

As described in Section 3.3, habitat modelling was conducted by Cumberland Ecology for the Grey-headed Flying-fox. The modelling for the Grey-headed Flying-fox focussed on the presence of primary food sources, permanent water for drinking and the proximity to other known roost sites, as summarised in Table 26.

Table 26
Habitat Modelling for the Grey-headed Flying-fox

Habitat Analysis Criteria	Grey-headed Flying-fox
Pre-existing models for threatened species habitat	The Draft National Recovery Plan for the Grey-headed Flying-fox provides a map showing the capture records as well as camp records of Grey-headed Flying-foxes in eastern Australia from 1984. No camps mapped in the Draft National Recovery Plan for the Grey-headed Flying-fox are located within the project site, with the majority of camps recorded along the eastern coastline. Camps are also shown on the DotE website and the August 2014 report on the location of Grey-headed Flying-fox camps indicates that no camps are located within the project site. In addition, the SPRAT for the Grey-headed Flying-fox provides an indicative distribution map within Queensland, New South Wales, Australian Capital Territory and Victoria.
Threatened species records in the project site and surrounds	The Grey-headed Flying-fox was not recorded from the project site during any of the field surveys undertaken for the project. The Grey-headed Flying-fox has also not been recorded within 25 km of the project site in any of the desktop database searches. However, the Grey-headed Flying-fox, or its habitat, was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool. The nearest record is from the Queensland Museum database in the Many Peaks Range (approximately 89 km south-east from the project site boundary).
Presence of suitable vegetation	All REs within the project site have suitable forage vegetation for the Grey-headed Flying-fox when in flower, however, this vegetation has not been mapped within the core range of feeding habitat for the Grey-headed Flying-fox as mapped by Eby and Law (2008).
Presence of suitable topography	The species has no specific topography requirements (DotE, 2015).
Presence of permanent water sources	The species commonly roosts near permanent water sources and requires water daily to drink (DotE, 2015). Two permanent farm dams have been recorded in the north of the project site.

Habitat Analysis Criteria	Grey-headed Flying-fox
Presence of preferred foods	In accordance with Eby and Law (2008), four Grey-headed Flying-fox food trees occur within the project site, namely: Lemon-scented Gum, Moreton Bay Ash, White Bloodwood (*Corymbia trachyphloia*) and Blue Gum. These species are present in the woodlands within the project site and flower seasonally. Lemon-scented Gum is known to flower in January, April, May, June, July, August, October and December; Moreton Bay Ash flowers in July, August, October, November, December and January; White Bloodwood flowers in late summer to autumn and Blue Gum flowers from June to November.
Presence of tree hollows	The species does not use tree hollows however, this species roosts in large, communal camps, typically located in rainforest patches, stands of Melaleuca, mangroves and riparian vegetation, but colonies also use highly modified vegetation in urban and suburban areas (DotE, 2015).
Documented foraging distances around permanent water	There are no documented foraging distances based on permanent water however, the species typically forages within approximately 15 km from roosting sites, but can travel up to 50 km from roosting sites depending on available food resources (DotE, 2015).
Documented sensitivity to habitat clearance and/or fragmentation	Habitat loss and fragmentation is a key existing threat for this species. Habitat clearing and modification has removed broad areas of feeding and sheltering resources for this species, which feeds on the fruits and blossoms of trees and shrubs (DotE, 2015). The project site has been used for grazing for over 110 years and is currently being used for cattle grazing.
Occurrence of harmful feral species that are a known threat to the species	The species is not known to be affected by feral species (DotE, 2015).
Documented sensitivity to cattle grazing pressure	The species is affected by habitat clearing and modification and the subsequent loss of habitat as a result of grazing (DotE, 2015). The project site has been used for grazing for over 110 years and is currently being used for cattle grazing.

Based on the criteria above, approximately 271 ha of land within the project site is unsuitable for the Grey-headed Flying-fox. The Terrestrial Ecology Report, prepared by Cumberland Ecology, and provided in the Round 1 Response to Submissions, assessed the remaining 347 ha of the project site as being low quality habitat for the Grey-headed Flying-fox (Figure 18). Cumberland Ecology assessed the habitat as being low quality due to the lack of Grey-headed Flying-fox camps within and surrounding the project site and the modification of the

land due to agricultural development (i.e. clearing for grazing and cropping). However, in response to DotE's second round of submissions on the Boundary Hill South EIS, Hansen Bailey and Cumberland Ecology have assessed the project site against the Commonwealth's definitions of habitat (Section 12.3.3). This reassessment has indicated that none of the project site meets the Commonwealth's definition of Grey-headed Flying-fox habitat.

12.3.3 Commonwealth Defined Habitat

Habitat for the Grey-headed Flying-fox is defined by the Commonwealth as:

- '*Habitat critical to the survival of a species'* in both the Draft National Recovery Plan for the Grey-headed Flying Fox and the Commonwealth's Significant Impact Guidelines.

This defined habitat term is discussed below.

Habitat Critical to the Survival of a Species
'*Habitat critical to the survival of a species'* is defined in the Commonwealth's Significant Impact Guidelines as '*areas that are necessary:*

- *For activities such as foraging, breeding, roosting or dispersal;*
- *For the long-term maintenance of the species (including the maintenance of species essential to the survival of the species, such as pollinators);*
- *To maintain genetic diversity and long term evolutionary development; or*
- *For the reintroduction of populations or recovery of the species.*

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species as habitat critical for that species; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.'

More specifically, the Draft National Recovery Plan for the Grey-headed Flying-fox lists habitat that is '*critical for the survival of a species'*. Habitat critical to the survival of the Grey-headed Flying-fox comprises both foraging and roosting habitat, which are discussed below.

In accordance with the Draft National Recovery Plan for the Grey-headed Flying-fox, foraging habitat that is '*critical to the survival of a species'* is provided below in *underlined italic* text response is provided in normal text:

1. *Productive during winter and spring, when food bottlenecks have been identified;*

As ranked by Eby and Law (2008), Grey-headed Flying-foxes prefer flowering trees primarily of the *Myrtaceae* and *Proteaceae*, although single species of *Arecaceae*, *Fabaceae* and *Pittosporacea* were also used. In accordance with Eby and Law (2008), four Grey-headed Flying-fox food trees occur within the project site, namely: Lemon-scented Gum, Moreton Bay Ash, White Bloodwood and Blue Gum. Lemon-scented Gum is known to flower in January, April, May, June, July, August, October and December; Moreton Bay Ash flowers in July, August, October, November, December and January; White Bloodwood flowers in late summer to autumn and Blue Gum flowers from June to November. Some of the suitable vegetation species in the project site flower throughout the year and can be productive during winter and spring, and therefore may provide food during bottlenecks. However, the project site has not been mapped by Eby and Law (2008) as occurring within the core range of the Grey-headed Flying-fox and it is therefore highly unlikely that this species would use the project site as a foraging resource during a food bottleneck event.

2. *Known to support populations of > 30 000 individuals within an area of 50 km radius (the maximum foraging distance of an adult);*

No Grey-headed Flying-foxes were recorded within the project site during any of the field surveys. Although suitable foraging trees for the Grey-headed Flying-fox were recorded within the project site, the project site does not support populations of >30,000 individuals or a continuously occupied camp. Two Grey-headed Flying-fox camps have been recorded within 50 km of the project site on the DotE National Flying-fox Monitoring Viewer, with one located approximately 20 km south of the project site and the other located approximately 46 km north-west of the project site. Both of these camps have been assessed as inactive by the DotE. The Draft National Recovery Plan for the Grey-headed Flying-fox provides a high level map showing camp records of Grey-headed Flying-foxes in eastern Australia from 1984. No camps mapped in the Draft National Recovery Plan for the Grey-headed Flying-fox are located within the project site, with the majority of camps recorded along the eastern coastline. A high level map of camps are also shown on the DotE website and the August 2014 report on the location of Grey-headed Flying-fox camps indicates that no camps are located within the project site. Therefore, the project site does not contain foraging habitat that is critical to the survival of the Grey-headed Flying-fox.

3. *Productive during the final weeks of gestation, and during the weeks of birth, lactation and conception (September to May);*

In accordance with Eby and Law (2008), four Grey-headed Flying-fox food trees occur within the project site, namely: Lemon-scented Gum, Moreton Bay Ash, White Bloodwood and Blue Gum. These species are present in the woodlands within the project site and flower seasonally, with the Lemon-scented Gum is known to flower in January, April, May, June, July, August, October and December; Moreton Bay Ash flowers in July, August, October, November, December and January; White Bloodwood flowers in late summer to autumn and Blue Gum flowers from June to November. The vegetation species therefore may potentially

provide food for the Grey-headed Flying-fox in the final weeks of gestation, and during the weeks of birth, lactation and conception (September to May). However, the project site has not been mapped by Eby and Law (2008) as occurring within the core range of the Grey-headed Flying-fox and it is therefore highly unlikely that this species would use the project site as a foraging resource during the final weeks of gestation, and during the weeks of birth, lactation and conception.

4. *Productive during the final stages of fruit development and ripening in commercial crops affected by Grey-headed Flying-foxes (months vary between regions);*

Land surrounding the project site is mostly used for agriculture. The majority of the crops grown in the area surrounding the project site consist of cotton, sorghum and wheat. These are not crops that are typically targeted by the Grey-headed Flying-fox for food, as the Grey-headed Flying-fox eats fruit and will feed on commercial fruit crops. Australia's cotton growing season starts in September and ends in March/April, sorghum generally grows between September and January and wheat growing season starts in July and is harvested between November and January. As noted previously, four Grey-headed Flying-fox food trees occur within the project site, namely: Lemon-scented Gum, Moreton Bay Ash, White Bloodwood and Blue Gum and these species ripen throughout the year. Regardless of the fact that the foraging vegetation within the project site flowers when the crops in the local area are ripening, the locally grown crops are not typical foraging food that are affected by the Grey-headed Flying-fox.

5. *Known to support a continuously occupied camp.*

The Draft National Recovery Plan for the Grey-headed Flying-fox provides a high level map showing camp records of Grey-headed Flying-foxes in eastern Australia from 1984. No camps mapped in the Draft National Recovery Plan for the Grey-headed Flying-fox are located within the project site, with the majority of camps recorded along the eastern coastline. A high level map of camps are also shown on the DotE website and the August 2014 report on the location of Grey-headed Flying-fox camps indicates that no camps are located within the project site. Therefore, the project site does not contain foraging habitat that is critical to the survival of the Grey-headed Flying-fox.

Therefore, the project site does not provide foraging habitat '*critical to the survival of a species*'.

The Draft National Recovery Plan for the Grey-headed Flying-fox states that roosting habitat that is '*critical to the survival of a species'*:

1. *Is used as a camp either continuously or seasonally in > 50% of years;*

2. *Must be used as a camp either continuously or seasonally in >50% of years, has been used as a camp at least once in 10 years (beginning in 1995) and is known to have contained > 10 000 individuals, unless such habitat has been used only as a temporary refuge, and the use has been of limited duration (i.e. in the order of days rather than weeks or months); and*
3. *Has been used as a camp at least once in 10 years (beginning in 1995) and is known to have contained > 2 500 individuals, including reproductive females during the final stages of pregnancy, during lactation, or during the period of conception (i.e. September to May).*

As discussed above, no camps mapped in the Draft National Recovery Plan for the Grey-headed Flying-fox are located within the project site, with the majority of camps recorded along the eastern coastline. A high level map of camps are also shown on the DotE website and the August 2014 report on the location of Grey-headed Flying-fox camps indicates that no camps are located within the project site. Therefore, the project site does not contain roosting habitat that is 'critical to the survival of a species'.

12.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT

This species has not been recorded from the project site and has not been recorded within 25 km of the project site in any of the desktop database searches. However, the Grey-headed Flying-fox, or its habitat, was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool and there is a Grey-headed Flying-fox record in the Queensland Museum database from Many Peaks Range (approximately 89 km south-east from the project site). Blue Gums within woodlands in the northern, eastern and western portions of the project site in close proximity to a water source are considered to comprise some habitat for the species, however it does not comprise foraging habitat that is '*critical to the survival of a species*' as defined in Section 12.3. No roosting habitat that is 'critical to the survival of a species' is present in the project site. Nevertheless, this species has been conservatively assessed as having a moderate likelihood of occurrence within the project site, in accordance with the criteria specified in Table 8, due to the presence of potential habitat (albeit limited in nature) and as it is known to occur in the wider region.

12.5 SIGNIFICANT IMPACT ASSESSMENT

An assessment of significance has been conducted for this species following the Commonwealth's Significant Impact Guidelines for Vulnerable species. Section 12.5.1 assesses whether the project site contains an important population of the Grey-headed Flying-fox, while Section 12.5.2 presents the assessment of significance that has been conducted for this species.

12.5.1 Important Population Assessment

According to the Commonwealth's Significant Impact Guidelines, an '*important population'* of any Vulnerable species 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:*

- *key source populations either for breeding or dispersal*
- *populations that are necessary for maintaining genetic diversity, and/or*
- *populations that are near the limit of the species range.'*

Although habitat for the Grey-headed Flying-fox is present in the project site, no individuals were recorded during the surveys or within 89 km of the project site from database searches. No colonies occur within the project site. The project site does not contain foraging or roosting habitat that is '*critical to the survival of a species'*. While the limited vegetation within the project site may be used seasonally for foraging, the project site is unlikely to be a key source for breeding or dispersal, or for maintaining genetic diversity.

The project site is not near the limit of the species range.

Based upon all available data, it is unlikely that the project site supports a key source populations for breeding or dispersal, or for maintaining genetic diversity as the Grey-headed Flying-fox is has not been recorded within the project site or within 89 km from the project site, no colonies occur within the project site, the project site only contains limited seasonal foraging habitat and the project site is not near the limit of the species range. Therefore, it is unlikely that an important population of the Grey-headed Flying-fox occurs within the project site.

12.5.2 Significant Impact Criteria

An assessment of significance for the Grey-headed Flying-fox has been conducted in accordance with the Commonwealth's Significant Impact Guidelines. The significant impact criteria are provided in *underlined italics* and the response is provided in normal text.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population of a species*

Not applicable as there is no '*important population'* of Grey-headed Flying-fox within the project site (Section 12.5.1).

- *reduce the area of occupancy of an important population*

Not applicable as there is no '*important population'* of Grey-headed Flying-fox within the project site (Section 12.5.1).

- *fragment an existing important population into two or more populations*

Not applicable as there is no '*important population'* of Grey-headed Flying-fox within the project site (Section 12.5.1).

- *adversely affect habitat critical to the survival of a species*

Not applicable as there is no foraging or roosting '*habitat critical to the survival of a species'* for the Grey-headed Flying-fox within the project site (Section 12.3.3).

- *disrupt the breeding cycle of an important population*

Not applicable as there is no '*important population'* of Grey-headed Flying-fox within the project site (Section 12.5.1).

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

As described in Section 12.3.2, there is one patch of limited suitable habitat for the Grey-headed Flying-fox within the project site. There is no roosting or foraging '*habitat critical to the survival of a species*' within the project site.

Given the poor quality of Grey-headed Flying-fox habitat found within the project site, it is therefore unlikely that the project will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

It is considered unlikely that the project will result in an invasive species becoming established in habitat for the Grey-headed Flying-fox within the project site. Feral animals already occur in the project site and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project. In addition, the Callide Mine Weed Management Plan includes a wash down procedure to help control the spread of pest plants both on and off-site. This management plan will be updated to include the project.

- *introduce disease that may cause the species to decline, or*

The Australian Bat Lyssavirus is known to affect Australian bat species and is transmitted between bats via bites and scratches. It is unlikely that the project will increase the rate of contact between individual bat species and it is therefore considered unlikely that the project will introduce a disease that may cause the Grey-headed Flying-fox to decline.

- *interfere substantially with the recovery of the species.*

The project will not interfere substantially with the recovery of the Grey-headed Flying-fox. As stated in Section 12.5.1, there is no '*important population'* of Grey-headed Flying-fox in the project site. By definition, this means that there are no key source populations either for breeding or dispersal within the project site and no populations that are necessary for maintaining genetic diversity. These are key requirements for the recovery of the species. The project site also only contains low quality habitat for this species. Given that there are no breeding or roosting '*habitat critical to the survival of a species'* within the project site, it is unlikely that the project contains habitat that is critical for the recovery of the Grey-headed Flying-fox. Therefore, it is unlikely that the project will interfere substantially with the recovery of the Grey-headed Flying-fox.

Conclusion

Based on the outcomes from the above assessment criteria, it is considered that the project will not have a residual significant impact to the Grey-headed Flying-fox.

13 LARGE-EARED PIED BAT

The Large-eared Pied Bat is a medium-sized insectivorous bat measuring approximately 100 mm in length and weighing 7 – 12 grams. It has shiny, black fur on the body with a white stripe on the ventral side of its torso where it adjoins the wings and tail. The ears are large, and lobes of skin adorn the lower lip and between the corner of the mouth and the bottom of the ear (DotE, 2015). The Large-eared Pied Bat is listed as Vulnerable under both the EPBC Act and NC Act.

This section provides the detailed assessment of the Large-eared Pied Bat and is structured as follows:

- Section 13.1 – Survey Methodology: A detailed description of the survey methodology and how it aligns with the Commonwealth and State survey requirements;
- Section 13.2 – Desktop and Field Survey Results: The results of the desktop and field surveys;
- Section 13.3 – Habitat Assessment: The detailed habitat assessment including habitat modelling and an assessment against the Commonwealth habitat terminology;
- Section 13.4 – Likelihood of Occurrence Assessment: The detailed likelihood of occurrence assessment; and
- Section 13.5 – Significant Impact Assessment: The detailed significant impact assessment in accordance with the Commonwealth's Significant Impact Guidelines.

13.1 SURVEY METHODOLOGY

Surveys undertaken within the project site for the Large-eared Pied Bat were generally undertaken in accordance with the Commonwealth and Queensland survey requirements, as outlined below.

13.1.1 Commonwealth Survey Requirements

There are two Commonwealth survey guidelines outline survey methods for the Large-eared Pied Bat, namely:

- SPRAT database for the Large-eared Pied Bat; and
- Commonwealth's Threatened Bats Survey Guideline.

The survey requirements for the Large-eared Pied Bat are identical in the SPRAT database and the Commonwealth's Threatened Bats Survey Guideline. Therefore, the survey requirements have only been discussed once below.

The Australian Government has published the *National Recovery Plan for the Large-eared Pied Bat Chalinolobus dwyeri* (DERM, 2011) (National Recovery Plan for the Large-eared Pied Bat), however no survey guidelines for the Large-eared Pied Bat are outlined in this plan.

The survey guideline requirements and the actual survey effort for the project are described below. The survey guideline requirement is provided below in *underlined italics* and the response is provided in normal text.

Survey Requirements from the Commonwealth's Threatened Bats Survey Guideline and the Species Profile and Threats Database

The use of electronic bat detectors is the best means of non-invasive survey, and the most efficient in terms of data collection and area coverage. Trapping with harp traps and mistnets, and roost searches in caves, mines, rock overhangs, culverts and crevices could be undertaken to confirm presence or roosting.

As described in Section 3.1.6, acoustic bat detectors were used during the surveys and were placed in areas that comprised suitable habitat for bat species (Figure 6). Detailed daytime field surveys were conducted during the habitat assessments to determine habitat suitability for this species during the August 2014 surveys. These surveys considered factors such as the presence of any potential Large-eared Pied Bat roosts, ephemeral drainage lines, farm dams and seasonal wetlands present within the project site.

Recommended acoustic detection devices include the Anabat ZCA system (recording to CF card), though other frequency-division and time expansion detectors connected to digital recorders could be used.

As described in Section 3.1.6, acoustic bat detectors were used during the surveys and were placed in areas that comprised suitable habitat for bat species.

Prior to the survey. Determine the potential for rocky outcrops, caves and mines to occur in the area by examining topographic and geological maps, and contacting state government mines and forestry departments, Queensland Parks and Wildlife Service, caving groups, bat researchers and local councils. Where appropriate, information on caves and mines may be obtained from local residents.

Aerial photography of the project site was closely examined prior to the field surveys and any areas that may potentially be used by the Large-eared Pied Bat (i.e. rocky outcrops as no caves or mines are present within the project site) were identified. These areas were targeted during the detailed daytime habitat assessments. There are no known local bat/caving groups near the project site.

Passive acoustic detection. A range of potential roost habitats can be examined by passive detection with unattended recorders placed in the vicinity of mines, caves and rocky outcrop, and also in foraging sites such as vegetation corridors and flyways, sandstone gorges, over watercourses, isolated waterholes and in representative vegetation types. Quality search-phase echolocation calls are diagnostic but these may not be recorded from bats emerging from underground roosts if bat detectors are placed at the entrance. Unattended detectors should be left overnight at multiple locations.

For a survey area of <50 ha the total survey effort should be 16 detector nights at a minimum of four nights.

As described in Section 3.1.6, microbats were surveyed for using acoustic bat detectors; either Wildlife Acoustics SM2 or SM2BAT+ SongMeters during the 2012 surveys (Figure 6). One bat detector was deployed at each of the six survey sites, for a period of four nights (totalling 24 detector nights), and placed in a likely flyways or close to water features such as ephemeral drainage lines, the seasonal wetland, farm dams or remnant pools. Acoustic bat recordings were analysed by Greg Ford (Balance Environmental).

Active acoustic detection. For larger project areas, walking or driving transects using hand-held detectors may be used in conjunction with unattended detectors. Transects should begin at dusk.

For a survey area of <50 ha the total survey effort should be 6 detector hours at a minimum of three nights.

Hand-held detectors were not used during the surveys. A total of 24 detector nights using stationary bat detectors were undertaken for the Large-eared Pied Bat, as described above.

Roost searches. Where no known roost sites have been identified in the planning stage, several hours may be required to conduct ground-based surveys for caves, mines, rock overhangs and crevices. For large survey areas in gorge country, ground-based searching could be expected to take several days. Daytime entry of subterranean structures such as culverts, mines and caves should be undertaken carefully to avoid risking the safety of personnel and disturbance to resting bats. Identification can be made from capture within roosts. Disturbance resulting from capture of bats should be compensated by the collection of unambiguous and verifiable evidence of occupancy – in the form of photographs of the distinctive pelage, and external measurements.

As described in Section 3.1.8, detailed habitat assessments were undertaken for all threatened species recorded within the project site or assessed as having a high or moderate likelihood to occur within the project site, including the Large-eared Pied Bat. Habitat assessments were undertaken at 11 sites and a total of 80 rapid habitat assessments were conducted throughout the project site to determine habitat suitability for

threatened fauna species (including the Large-eared Pied Bat) over 20 days (Figure 6). Habitat assessments were undertaken by two people, each for 36 hours during the 2014 ecology surveys totalling 72 person hours. These surveys considered factors such as the presence of suitable habitat (including potential roost sites), ephemeral drainage lines, farm dams and seasonal wetlands present within the project site. No roosts were recorded within the project site.

Trapping. Success with trapping is most efficient in the vicinity of potential roosts. Harp traps and mistnets are useful for detecting this species, and can be set overnight in forest flyways, near scarps and cliffs and in riparian zones. Captured individuals should be released only at night, or into roosts during the day if these are known, and bats should be held for the minimum amount of time after being removed from traps and nets. If bats are cleared from harp traps in the early morning, they should be kept at room temperature until the following night. Reference calls should be recorded from individuals released after trapping so that identification information is available for verification.

For a survey area of <50 ha the total survey effort should be 16 trap or net nights at a minimum of four nights.

No potential Large-eared Pied Bat roosts were recorded within the project site. Due to the absence of potential roosts within the project site, the primary methods used to detect the Large-eared Pied Bat comprised stationary bat detectors and detailed habitat assessments. These methods are described in detail in the above sections.

Seasonal Considerations. Surveys are best conducted from October through to March.

Fauna surveys and detailed habitat assessments were conducted in April, August and September. While surveys are best conducted in October to March, September and April are only marginally outside these timeframes and therefore are suitable for detecting the Large-eared Pied Bat.

13.1.2 Queensland Survey Requirements

The Queensland Fauna Survey Guidelines outlines the minimum survey requirements, standards and appropriate practice for the survey of terrestrial vertebrate fauna in Queensland. These survey guidelines had not been released to the public during the time of the detailed fauna surveys conducted in April 2012 and September 2012. However, the surveys undertaken for the project are generally in compliance with these guidelines. The general surveys methods outlined in this guideline that are applicable to the Large-eared Pied Bat, are discussed in the following sections.

Queensland Fauna Survey Guidelines

Optimal time of year for vertebrate fauna surveys within the Brigalow belt Bioregion are Spring to early Summer (Sept – mid Nov) and Autumn (March – mid May)

The 2012 fauna surveys were conducted in September and April and therefore meet the requirements of this guideline.

Echolocation call detection – One bat detector for three nights

As described in Section 13.1.1, one bat detector was deployed at six survey sites, for a period of four nights (totalling 24 detector nights), which meets this survey requirement.

Incidental – Incidental detection of any species

Any incidental detection of fauna species were recorded during the flora and fauna surveys.

13.2 DESKTOP AND FIELD SURVEY RESULTS

The Large-eared Pied Bat was not recorded within the project site during any of the field surveys undertaken for the project. The Large-eared Pied Bat has also not been recorded within 25 km for the project site in any of the desktop database searches, or within 100 km of the project site in the Australian Museum database. However, the Large-eared Pied Bat, or its habitat, was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool.

13.3 HABITAT ASSESSMENT

13.3.1 Overview

The Large-eared Pied Bat has a sporadic species distribution and records exist intermittently between Ulladulla in New South Wales to Rockhampton in Queensland. This species mostly occurs within New South Wales, in the sandstone escarpments of the Sydney basin and the north-west slopes. In Queensland, further records are known from sandstone escarpments in the Carnarvon Gorge, Expedition Ranges and Blackdown Tablelands. No maternity roost sites are known from Queensland. There is very little information about this species available for Central Queensland, and as such the majority of information used has been sourced from the New South Wales population of this species (DotE, 2015).

No records of the Large-eared Pied Bat have been mapped within the potential distribution of the species in the National Recovery Plan for the Large-eared Pied Bat (DotE, 2015).

The species occurs within a wide range of woodland vegetation types including a variety of eucalypt dominated woodlands. In New South Wales, this species has been recorded from

a large range of vegetation types including: dry and wet sclerophyll forest; Cyprus Pine (*Callitris glauca*) dominated forest; tall open eucalypt forest with a rainforest sub-canopy; sub-alpine woodland; and sandstone outcrop country. In south-east Queensland the species has primarily been recorded from higher altitude, moist, tall, open forest adjacent to rainforest. Records from south-east Queensland suggest that rainforest and moist eucalypt forest habitats on rhyolite, trachyte and basalt geological substrates at high elevation provide habitat for species. This species has also been found in well-timbered areas containing gullies. The majority of records are from canopied habitat, suggesting a sensitivity to clearing (DotE, 2015).

The species requires a combination of sandstone cliff/escarpment and disused mine shafts to provide roosting habitat that is adjacent to higher fertility sites, particularly box gum woodlands or river/rainforest corridors which are used for foraging. Almost all records have been found within several kilometres of cliff lines or rocky terrain. The species roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Hirundo ariel*). It also possibly roosts in the hollows of trees. The species uses maternity roosting caves, of which four are known from New South Wales and none are known from Queensland (DotE, 2015).

The species feeds on insects and has been observed flying along creek beds below the canopy in close proximity to roost sites, but little else is known about their foraging behaviours. Although dispersals from maternity roosts have been observed up to 100 km, no data exists for home ranges or daily movement patterns (DotE, 2015).

The general habitat requirements of the Large-eared Pied Bat are detailed in Table 27.

Table 27
Large-eared Pied Bat – General Habitat Requirements

Requirements/Preferences	Large-eared Pied Bat Requirements/Preferences (DotE, 2015)
General habitat requirements/preferences	'*Habitat of importance'* for the Large-eared Pied Bat includes sandstone cliffs and fertile woodland valley habitat within close proximity of each other. Records from south-east Queensland suggest that rainforest and moist eucalypt forest habitats on rhyolite, trachyte and basalt geological substrates at high elevation are of similar importance to the species.
Foraging requirements/preferences	This species feeds on insects. Foraging behaviour for the species is not well known but it is thought to forage below the canopy in close proximity to roost sites.
Microhabitat requirements/preferences	The species roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin, in higher altitudes, moist, tall, open forest adjacent to rainforest.
Breeding requirements/preferences	Mating is thought to occur in early winter and has been recorded in disused mine tunnels.

13.3.2 Habitat Modelling

As described in Section 3.3, habitat modelling was conducted by Cumberland Ecology for the Large-eared Pied Bat. The modelling for the Large-eared Pied Bat focussed on the presence of crevices for roosting, woodland for foraging and the occurrence of permanent water for drinking, as summarised in Table 28.

Table 28
Habitat Modelling for the Large-eared Pied Bat

Habitat Analysis Criteria	Large-eared Pied Bat
Pre-existing models for threatened species habitat	The Large-eared Pied Bat Recovery Plan provides a map showing the modelled and known distribution of Large-eared Pied Bats in Queensland and New South Wales. No records of the Large-eared Pied Bat have been mapped within the potential distribution of the species in the National Recovery Plan for the Large-eared Pied Bat. In addition, the SPRAT for the Large-eared Pied Bat provides an indicative distribution map within Queensland and New South Wales. There are no pre-existing habitat models at the local scale and near the project site, for the Large-eared Pied Bat. Habitat modelling based on surveys in the southern Sydney region suggest that the Large-eared Pied Bat is largely restricted to the interface of sandstone escarpment (for roost habitat) and relatively fertile valleys (for foraging habitat).
Threatened species records in the project site and surrounds	The Large-eared Pied Bat has not been recorded from the project site during any of the field surveys undertaken for the project. The Large-eared Pied Bat has also not been recorded within 25 km of the project site in any of the desktop database searches, or within 100 km of the project site in the Australian Museum database. However, the Large-eared Pied Bat, or its habitat, was predicted to occur in the project site from the EPBC Act Protected Matters Search Tool.
Presence of suitable vegetation	The species occurs within a wide range of woodland vegetation types including a variety of eucalypt dominated woodlands (DotE, 2015). All REs within the project site are consistent with the species requirements.
Presence of suitable topography	The Large-eared Pied Bat is a cave-roosting species that can roost in caves and crevices in cliffs, disused mine shafts and other rocky habitats. This species often forages between valleys (DotE, 2015). There are limited overhangs and crevices present in the project site, however there are no caves, cliffs or disused mine shafts.
Presence of permanent water sources	All microbats require drinking water to be freely available when they are active. Two permanent farm dams have been recorded in the north of the project site.

Habitat Analysis Criteria	Large-eared Pied Bat
Presence of preferred foods	The species is insectivorous and insects within woodland habitats are potentially important for the species (DotE, 2015). Patches of remnant woodland are present across the project site which contain insects.
Presence of tree hollows	Tree hollows may potentially provide roosting and breeding habitat for this species (DotE, 2015). Tree hollows are present in the remnant woodland within the north of the project site.
Documented foraging distances around permanent water	There is no documented foraging distance from permanent water however, foraging distances from roosting sites can be up to several kilometres (DotE, 2015). There are no known maternal roosting sites in Queensland.
Documented sensitivity to habitat clearance and/or fragmentation	Habitat clearance is a key threat to this species and includes removing foraging habitat and larger trees with hollows that can potentially be used for roosting. Fragmentation is also likely to be significant but there is little documentation to support this (DotE, 2015). The project site has been used for grazing for over 110 years and is currently being used for cattle grazing.
Occurrence of harmful feral species that are a known threat to the species	Predation by foxes and other predators is a known threat to this species (DotE, 2015). Feral foxes and cats are present within the project site.
Documented sensitivity to cattle grazing pressure	The species is highly sensitive to grazing pressure as the species forages below the canopy and grazing pressure tramples the understorey eliminating foraging habitat for the species (DotE, 2015). The project site has been used for grazing for over 110 years and is currently being used for cattle grazing.

Based on the criteria above, approximately 271 ha of land within the project site is unsuitable for the Large-eared Pied Bat. The Terrestrial Ecology Report, prepared by Cumberland Ecology, and provided in the Round 1 Response to Submissions, assessed the remaining 347 ha of the project site as being low quality habitat for the Large-eared Pied Bat (Figure 19). Cumberland Ecology assessed the habitat as being low quality due to the fact that there is limited roosting habitat within the project site and the modification of the land due to agricultural development (i.e. clearing for grazing and cropping). However, in response to DotE's second round of submissions on the Boundary Hill South EIS, Hansen Bailey and Cumberland Ecology have assessed the project site against the Commonwealth's definitions of habitat (Section 13.3.3). This reassessment has indicated that none of the project site meets the Commonwealth's definition of Large-eared Pied Bat habitat.

13.3.3 Commonwealth Defined Habitat

Habitat for the Large-eared Pied Bat is defined by the Commonwealth as:

- '*Habitat critical to the survival of a species'* as defined in both the National Recovery Plan for the Large-eared Pied Bat and the Commonwealth's Significant Impact Guidelines.

This defined habitat term is discussed below.

Habitat Critical to the Survival of a Species
'*Habitat critical to the survival of a species'* is defined in the Commonwealth's Significant Impact Guidelines as '*areas that are necessary:*

- *For activities such as foraging, breeding, roosting or dispersal;*
- *For the long-term maintenance of the species (including the maintenance of species essential to the survival of the species, such as pollinators);*
- *To maintain genetic diversity and long term evolutionary development; or*
- *For the reintroduction of populations or recovery of the species.*

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species as habitat critical for that species; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.'

More specifically, the National Recovery Plan for the Large-eared Pied Bat states that '*habitat critical to the survival of a species*' comprises sandstone cliffs and fertile wooded valley habitat within close proximity of each other. Records from south-east Queensland suggest that rainforest and moist eucalypt forest habitats on other geological substrates (*viz*. rhyolite, trachyte and basalt) at high elevation are of similar importance for the species.

The project site does not contain fertile wooded valley habitat, large sandstone cliffs, rainforest or moist eucalypt forest habitats. Therefore, it is unlikely that the project site contains any '*habitat critical to the survival of a species'*.

13.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT

There are no Large-eared Pied Bat maternal roost sites recorded in Queensland, it was not recorded from the project site and was not recorded within 25 km for the project site in any of the desktop database searches, or within 100 km of the project site in the Australian Museum database. This species, or its habitat, was assessed as potentially occurring within the project site in the EPBC Act Protected Matters Search.

While habitat is present in the project site in the form of more intact woodland that contains potential foraging habitat for this species, including riparian and sclerophyll woodland in well-timbered areas immediately adjacent to ephemeral drainage lines, potential roosting sites (e.g. hollow trees) are limited. This species preferred habitat, sandstone cliffs with fertile woodland habitats nearby, are not present in the project site. Nevertheless, this species has been conservatively assessed as having a moderate likelihood of occurrence within the project site, in accordance with the criteria specified in Table 8, due to the presence of potential habitat (albeit limited in nature) and as it is known to occur in the wider region.

13.5 SIGNIFICANT IMPACT ASSESSMENT

An assessment of significance has been conducted for this species following the Commonwealth's Significant Impact Guidelines for Vulnerable species. Section 13.5.1 assesses whether the project site contains an important population of the Large-eared Pied Bat, while Section 13.5.2 presents the assessment of significance that has been conducted for this species.

13.5.1 Important Population Assessment

According to the Commonwealth's Significant Impact Guidelines, an '*important population'* of any Vulnerable species 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:*

- *key source populations either for breeding or dispersal*
- *populations that are necessary for maintaining genetic diversity, and/or*
- *populations that are near the limit of the species range.'*

No '*important populations'* of the Large-eared Pied Bat have been mapped in Queensland due to the limited amount of data available on the Queensland population of the species. However, as stated in the National Recovery Plan for the Large-eared Pied Bat, an '*important population'* of the Large-eared Pied Bat in Queensland could occur in areas dominated by sandstone escarpments. The project site is not dominated by sandstone escarpments and therefore an 'important population' of this species is unlikely to occur within the project site.

In addition, no records of the Large-eared Pied Bat been mapped within the potential distribution of the species in the National Recovery Plan for the Large-eared Pied Bat.

It is concluded that no important population of the species occurs in the project site.

13.5.2 Significant Impact Criteria

An assessment of significance for the Large-eared Pied Bat has been conducted in accordance with the Commonwealth's Significant Impact Guidelines. The significant impact criteria are provided in *underlined italics* and the response is provided in normal text.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population of a species*

Not applicable as there is no '*important population'* of Large-eared Pied Bat within the project site (Section 13.5.1).

- *reduce the area of occupancy of an important population*

Not applicable as there is no '*important population'* of Large-eared Pied Bat within the project site (Section 13.5.1).

- *fragment an existing important population into two or more populations*

Not applicable as there is no '*important population'* of Large-eared Pied Bat within the project site (Section 13.5.1).

- *adversely affect habitat critical to the survival of a species*

Not applicable as there is no '*habitat critical to the survival of a species'* for the Large-eared Pied Bat within the project site (Section 13.3.3).

- *disrupt the breeding cycle of an important population*

Not applicable as there is no '*important population'* of Large-eared Pied Bat within the project site (Section 13.5.1).

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

As described in Section 13.3.2, the project will only remove low quality habitat for the Large-eared Pied Bat within the project site, however, it does not meet the definition of '*habitat critical to the survival of a species'*. The project site is also located outside the potential distribution of the Large-eared Pied Bat as described in the National Recovery Plan for the Large-eared Pied Bat. Given that the species has not been recorded on the project site or in

the surrounding area, that the project site is outside the potential distribution of the Large-eared Pied Bat and the limited habitat that is within the project site is of a poor quality, it is therefore unlikely that the project will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

It is considered unlikely that the project will result in an invasive species becoming established in habitat for the Large-eared Pied Bat within the project site. Feral animals already occur in the project site and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project. In addition, the Callide Mine Weed Management Plan includes a wash down procedure to help control the spread of pest plants both on and off-site. This management plan will be updated to include the project.

- *introduce disease that may cause the species to decline, or*

The Australian Bat Lyssavirus is known to affect Australian bat species and is transmitted between bats via bites and scratches. It is unlikely that the project will increase the rate of contact between individual bat species and it is therefore considered unlikely that the project will introduce a disease that may cause the Large-eared Pied Bat to decline.

- *interfere substantially with the recovery of the species.*

The project will not interfere with the recovery of the Large-eared Pied Bat. As stated in Section 13.5.1, there is no '*important population'* of Large-eared Pied Bat in the project site. By definition, this means that there are no key source populations either for breeding or dispersal within the project site and no populations that are necessary for maintaining genetic diversity. These are key requirements for the recovery of the species. The project will only remove low quality habitat for the Large-eared Pied Bat within the project site. Given that there are no '*important populations'*, no '*habitat critical to the survival of a species'* within the project site, no records of the species within 25 km of the project site and the project site is outside the potential distribution of the Large-eared Pied Bat, it is unlikely that the project contains habitat that is critical for the recovery of the Large-eared Pied Bat. Therefore, it is unlikely that the project will interfere substantially with the recovery of the Large-eared Pied Bat.

Conclusion

Based on the outcomes from the above assessment criteria, it is considered unlikely that the project will have a residual significant impact to the Large-eared Pied Bat.

14 SOUTH-EASTERN LONG-EARED BAT

The South-eastern Long-eared Bat has a head and body length of around 50 – 75 mm and a tail length of 35 – 50 mm. The weight varies between genders with females (14 – 21 g) being heavier than males (11 – 15 g) (DotE, 2015). The South-eastern Long-eared Bat is listed as Vulnerable under both the EPBC Act and NC Act.

This section provides the detailed assessment of the South-eastern Long-eared Bat and is structured as follows:

- Section 14.1 – Survey Methodology: A detailed description of the survey methodology and how it aligns with the Commonwealth and State survey requirements;
- Section 14.2 – Desktop and Field Survey Results: The results of the desktop and field surveys;
- Section 14.3 – Habitat Assessment: The detailed habitat assessment including habitat modelling and an assessment against the Commonwealth habitat terminology;
- Section 14.4 – Likelihood of Occurrence Assessment: The detailed likelihood of occurrence assessment; and
- Section 14.5 – Significant Impact Assessment: The detailed significant impact assessment in accordance with the Commonwealth's Significant Impact Guidelines.

14.1 SURVEY METHODOLOGY

Surveys undertaken within the project site for the South-eastern Long-eared Bat were generally undertaken in accordance with the Commonwealth and Queensland survey requirements, as outlined below.

14.1.1 Commonwealth Survey Requirements

There is one Commonwealth survey guideline that outlines the survey methods for the South-eastern Long-eared Bat, namely, the Commonwealth's Threatened Bats Survey Guideline. No survey guidelines for this species are listed in the SPRAT database for the South-eastern Long-eared Bat.

The Australian Government has published the *Draft National Recovery Plan for the South-eastern Long-eared Bat* (Schulz and Lumsden, 2010), however this plan is not available online and could not be reviewed.

The survey guideline requirements and the actual survey effort for the project are described below. The survey guideline requirement is provided below in *underlined italics* and the response is provided in normal text.

Survey Guidelines for Australia's Threatened Bats

The eastern greater long-eared bat should be surveyed using capture techniques.

As described in Section 3.1.6, acoustic bat detectors were used during the surveys and were placed in areas that comprised suitable habitat for bat species (Figure 6). Detailed daytime field surveys were conducted during the habitat assessments to determine habitat suitability for this species during the August 2014 surveys (Figure 6). These surveys considered factors such as the presence of suitable microbat habitat such as ephemeral drainage lines, farm dams and seasonal wetlands as well as forest and woodland habitat with suitable hollow-bearing trees present within the project site.

Prior to the survey. In agricultural or other heavily modified landscapes, digital aerial photography of the study area can be examined to determine the size and pattern of vegetation remnants so that trapping effort can be planned.

The project site is located within agricultural land that has been heavily modified. Aerial photography of the project site was closely examined prior to the field surveys to determine the size and pattern of vegetation remnants. As described in Sections 3.1.5 and 3.1.8, detailed vegetation surveys were undertaken throughout the entire project site, including classification of species and communities present and their distribution across the project site (Figure 5). Areas of remnant vegetation that were determined as potentially containing microbat habitat were targeted during the bat surveys (Section 3.1.6).

Passive acoustic detection. Bat detectors can be used to identify areas used by long-eared bats, even if they cannot be identified to species level. Acoustic detection can then be followed up with an appropriate level of trapping.

As described above, acoustic bat detectors were used during the surveys and were placed in areas that comprised suitable habitat for bat species (Figure 6). Several bats were recorded from bat detectors during the surveys, including one bat species from the *Nyctophilus* genera and several bats from the *Vespertilionidae* family. Detailed daytime field surveys were conducted during the habitat assessments to determine habitat suitability for this species during the August 2014 surveys. These surveys considered factors such as the presence of suitable microbat habitat such as ephemeral drainage lines, farm dams and seasonal wetlands present within the project site.

Trapping. Mistnets and harp traps should be placed in woodland, mallee and forest, given that the species forages below the tree canopy, often to ground level. Equipment should be placed both in open fly-ways and within cluttered vegetation. If open water bodies (earth dams, fire dams, open top tanks and watercourses) occur in or near the project area, then significant effort should be given to mist-netting or harp trapping over the water. For project sites where there is no surface water, mistnets can be set over temporary water pools specifically constructed for the purpose of the survey.

For a survey area of <50 ha the total survey effort should be 20 trap nights and 20 mist-net nights at a minimum of five nights each.

The primary methods used to detect the South-eastern Long-eared Bat comprised stationary bat detectors, habitat assessments and spotlighting surveys (Figure 6). As described in Section 3.1.6, microbats were surveyed for using acoustic bat detectors; either Wildlife Acoustics SM2 or SM2BAT+ SongMeters during the 2012 surveys. One bat detector was deployed at six survey sites, for a period of four nights (totalling 24 detector nights), and placed in a likely flyway or close to water features such as ephemeral drainage lines, the seasonal wetland, farm dams or remnant pools. Acoustic bat recordings were analysed by Greg Ford (Balance Environmental).

Habitat assessments were undertaken at 11 sites and a total of 80 rapid habitat assessments were conducted throughout the project site to determine habitat suitability for threatened fauna species (including the South-eastern Long-eared Bat) over 20 days. Habitat assessments were undertaken by two people, each for 36 hours during the 2014 ecology surveys totalling 72 person hours. These surveys considered factors such as the presence of suitable habitat (including potential roost sites), ephemeral drainage lines, farm dams and seasonal wetlands present within the project site.

Spotlighting and nocturnal active searches were also conducted during the April and September 2012 surveys, which included recording any fauna species seen during the surveys. Spotlighting and nocturnal searches were undertaken by two people, each searching a detailed site for 30-45 minutes for five nights and two people, each searching one secondary site for 30 minutes for two nights, totalling eight person hours.

Seasonal considerations. Surveys are best conducted in warmer nights from October through to April.

The 2012 fauna survey was conducted in April and therefore meets the requirements of this guideline.

14.1.2 Queensland Survey Requirements

The Queensland Fauna Survey Guidelines outlines the minimum survey requirements, standards and appropriate practice for the survey of terrestrial vertebrate fauna in Queensland. These survey guidelines had not been released to the public during the time of the detailed fauna surveys conducted in April 2012 and September 2012. However, the surveys undertaken for the project are generally in compliance with these guidelines. The general surveys methods outlined in this guideline that are applicable to the South-eastern Long-eared Bat, are discussed in the following sections.

Queensland Fauna Survey Guidelines

Optimal time of year for vertebrate fauna surveys within the Brigalow belt Bioregion are Spring to early Summer (Sept – mid Nov) and Autumn (March – mid May)

The 2012 fauna surveys were conducted in September and April and therefore meet the requirements of this guideline.

Echolocation call detection – One bat detector for three nights

As described in Section 14.1.1, one bat detector was deployed at six survey sites, for a period of four nights (totalling 24 detector nights), which meets this survey requirement.

Incidental – Incidental detection of any species

Any incidental detection of fauna species were recorded during the flora and fauna surveys.

14.2 DESKTOP AND FIELD SURVEY RESULTS

The South-eastern Long-eared Bat was not recorded from the project site during any of the field surveys undertaken for the project. The South-eastern Long-eared Bat has also not been recorded within 25 km of the project site in any of the desktop database searches, or within 100 km of the project site in the Australian Museum database. However, the South-eastern Long-eared Bat, or its habitat, was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool.

14.3 HABITAT ASSESSMENT

14.3.1 Overview

The South-eastern Long-eared Bat is found in the Murray-Darling Basin of southern central Queensland, inland New South Wales, north-western Victoria and far-eastern South Australia (DotE, 2015). It is rarely recorded throughout most of its distribution, except for some parts of north-eastern New South Wales where it is more common (DotE, 2015).

The South-eastern Long-eared Bat occurs in a range of inland woodland vegetation types, including box, ironbark and cypress pine woodlands. The species also occurs in Buloke woodland, Brigalow woodland, Belah woodland, Smooth-barked Apple (*Angophora leiocarpa*) woodland; River Red Gum (*Eucalyptus camaldulensis*), forests lining watercourses and lakes, Black Box (*Eucalyptus largiflorens*) woodland, and dry sclerophyll forest. Throughout inland Queensland, the species habitat is dominated by various eucalypt and bloodwood species, as well as Mallee. This species is most abundant in vegetation with a distinct canopy and a dense, cluttered shrub layer. It has also been recorded from

rainforest with hoop pines in the Bunya Mountains, and in semi evergreen vine thickets on the banks of the Dawson River (DotE, 2015).

Little is known about the biology or social structure of South-eastern Long-eared Bat. It is considered, however, that they roost solitarily under exfoliated bark and in the crevices and hollows on trees. During maternity, females are believed to form roosting colonies in larger tree cavities. They probably forage within 1 km of their roosting site. The species commonly roosts in a location for only a day, before moving on to a new location the next night (DotE, 2015).

The South-eastern Long-eared Bat is an insectivorous and voracious feeder. Food can be taken in flight, where it commonly feeds on beetles, bugs, and moths by gleaning vegetation or ground foraging. This species has also been recorded feeding on grasshoppers and crickets. Foraging activities are concentrated around patches of trees in the landscape. Individuals appear to have defined foraging areas which they return to; they do not defend foraging areas and many individuals from different species may share the same area. A substantial food source for this species comes from the eucalypt trees in which it dwells (DotE, 2015).

The general habitat requirements of the South-eastern Long-eared Bat are detailed in Table 29.

Table 29
South-eastern Long-eared Bat – General Habitat Requirements

Requirements/Preferences	South-eastern Long-eared Bat Requirements/Preferences (DotE, 2015)
General habitat requirements/preferences	The species inhabits a variety of vegetation types, including box, ironbark and cypress pine woodlands. Throughout inland Queensland, the species habitat is dominated by various eucalypt and bloodwood species as well as Mallee. This species is most abundant in vegetation with a distinct canopy and a dense, cluttered shrub layer.
Foraging requirements/preferences	The South-eastern Long-eared Bat forages on insects. Foraging is aerial and is concentrated around patches of trees in the landscape. The species also forages on insects within the eucalyptus tree it dwells in.
Microhabitat requirements/preferences	The species commonly roosts in a location for only a day, before moving on to a new location the next night. It is known to roost in deadwood, or hollow trunks and branches.
Breeding requirements/preferences	Little is known about the species reproduction. Pregnant and lactating females have been trapped in November in central-western NSW and Queensland, indicating that they are likely similar to other sympatric long-eared bat species. These females are believed to roost in groups in larger tree hollows.

14.3.2 Habitat Modelling

As described in Section 3.3, habitat modelling was conducted by Cumberland Ecology for the South-eastern Long-eared Bat. The modelling for the South-eastern Long-eared Bat focussed on the presence of tree hollows for roosting, woodland for foraging and the occurrence of permanent water for drinking, as summarised in Table 30.

Table 30
Habitat Modelling for the South-eastern Long-eared Bat

Habitat Analysis Criteria	South-eastern Long-eared Bat
Pre-existing models for threatened species habitat	The SPRAT database for the South-eastern Long-eared Bat provides an indicative distribution map within Queensland, New South Wales, Australian Capital Territory, Victoria and Southern Australia. There are no pre-existing habitat models at the local scale and near the project site, for the South-eastern Long-eared Bat. The species inhabits a variety of vegetation types, including box, ironbark and cypress pine woodlands. Throughout inland Queensland, the species habitat is dominated by various eucalypt and bloodwood species as well as Mallee.
Threatened species records in the project site and surrounds	The South-eastern Long-eared Bat was not recorded from the project site during any of the field surveys undertaken for the project. The South-eastern Long-eared Bat has also not been recorded within 25 km of the project site from any of the desktop database searches, or within 100 km of the project site in the Australian Museum database. However, the South-eastern Long-eared Bat, or its habitat, was predicted to occur in the project site in the EPBC Act Protected Matters Search Tool.
Presence of suitable vegetation	The species occurs within a wide range of woodland vegetation types including a variety of eucalypt dominated woodlands (DotE, 2015). All REs within the project site are consistent with the species requirements.
Presence of suitable topography	No specific topography features are required by this species (DotE, 2015).
Presence of permanent water sources	All microbats require drinking water to be freely available when they are active (DotE, 2015). Two permanent farm dams have been recorded in the north of the project site.
Presence of preferred foods	The species is insectivorous and insects within woodland habitats are potentially important for the species (DotE, 2015). Patches of remnant woodland are present across the project site.
Presence of tree hollows	Tree hollows are important for the species for roosting and breeding habitat (DotE, 2015). Tree hollows are present in the remnant woodland within the north of the project site.

Habitat Analysis Criteria	South-eastern Long-eared Bat
Documented foraging distances around permanent water	No specific foraging distances around permanent water are known. Foraging distances from roosting sites can be up to 3 km (DotE, 2015).
Documented sensitivity to habitat clearance and/or fragmentation	Habitat clearance is a key threat to this species and includes removing foraging habitat and larger trees with hollows that are used for roosting. Fragmentation is also likely to be significant but there is little documentation to support this (DotE, 2015). The project site has been used for grazing for over 110 years and is currently being used for cattle grazing.
Occurrence of harmful feral species that are a known threat to the species	Predation by feral species is a known threat to this species (DotE, 2015). Several feral species have been recorded within the project site and include cattle, dingoes/dogs, cats, foxes, pigs, rabbits, house mice and cane toads.
Documented sensitivity to cattle grazing pressure	The species is highly sensitive to grazing pressure. The species forages within the shrubby understorey of remnant woodlands. Grazing pressure tramples the understorey eliminating foraging habitat for the species (DotE, 2015). The project site has been used for grazing for over 110 years and is currently being used for cattle grazing.

Based on the criteria above, approximately 271 ha of land within the project site is unsuitable for the South-eastern Long-eared Bat. The Terrestrial Ecology Report, prepared by Cumberland Ecology, and provided in the Round 1 Response to Submissions, assessed the remaining 347 ha of the project site as being low quality habitat for the South-eastern Long-eared Bat (Figure 20). Cumberland Ecology assessed the habitat as being low quality due to the modification of the land due to agricultural development (i.e. grazing and cropping within the project site for over 110 years), and the presence of key threatening feral species (e.g. cats, foxes, etc). However, in response to DotE's second round of submissions on the Boundary Hill South EIS, Hansen Bailey and Cumberland Ecology have assessed the project site against the Commonwealth's definitions of habitat (Section 14.3.3). This reassessment has indicated that none of the project site meets the Commonwealth's definition of South-eastern Long-eared Bat habitat.

14.3.3 Commonwealth Defined Habitat

Habitat for the South-eastern Long-eared Bat is defined by the Commonwealth as:

- '*Habitat critical to the survival of a species'* as defined in the Commonwealth's Significant Impact Guidelines.

This defined habitat term is discussed below.

Habitat Critical to the Survival of a Species

'*Habitat critical to the survival of a species'* is defined in the Commonwealth's Significant Impact Guidelines as '*areas that are necessary:*

- *For activities such as foraging, breeding, roosting or dispersal;*
- *For the long-term maintenance of the species (including the maintenance of species essential to the survival of the species, such as pollinators);*
- *To maintain genetic diversity and long term evolutionary development; or*
- *For the reintroduction of populations or recovery of the species.*

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species as habitat critical for that species; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.'

It is unlikely that the project site contains any '*habitat critical to the survival of a species'* as:

- There are no areas that are necessary for foraging, breeding, roosting or dispersal within the project site.
  - Foraging: The South-eastern Long-eared Bat has broad foraging requirements as this species forages on a range of insects. Foraging is aerial and is concentrated around patches of trees in the landscape. The species also forages on insects within the eucalyptus trees it dwells in.

    The project site contains broad foraging habitat requirements of the South-eastern Long-eared Bat such as remnant and regrowth open forest dominated by *Eucalyptus* species. These vegetation types are present throughout the surrounding landscape and it is therefore considered unlikely that the project site contains any areas that are necessary for South-eastern Long-eared Bat foraging.
  - Breeding: Little is known about the species reproduction. Pregnant and lactating females have been trapped in November in central-western NSW and Queensland, indicating that they are likely similar to other sympatric long-eared bat species. These females are believed to roost in groups in larger tree hollows.

    The project site was surveyed in April and September 2012 and August 2014. No South-eastern Long-eared Bats were recorded during any of the surveys. In addition, no South-eastern Long-eared Bat roosts have been recorded within the project site during any of the surveys. It is therefore unlikely that the project site would be used as breeding habitat for this species as no roosts are present within the project site.
  - Roosting: The species commonly roosts in a location for only a day, before moving on to a new location the next night. It is known to roost in deadwood, or hollow trunks and branches.

Tree hollows are present in the remnant woodland within the north of the project site. However, no South-eastern Long-eared Bat roosts have been recorded within the project site during any of the surveys.

- Dispersal: The SPRAT database states that South-eastern Long-eared Bats can move large distances 1.91 ± 1.86 km (range 25 m – 5.88 km) between consecutive roosts. No South-eastern Long-eared Bat roosts were recorded within the project site. It is therefore unlikely that the project site would be used as dispersal habitat for this species due to its requirement to form part of a roost and the absence of roosts present within the project site.

- Given that the project site does not contain any known breeding or foraging habitat due to a lack of individuals and roosts recorded during extensive fauna surveys and that it has been continually used for grazing and cropping for more than 110 years, it is unlikely that the project site is an area necessary for the long-term maintenance of the species.
- Given that the project site does not contain any known breeding or foraging habitat due to a lack of individuals and roosts recorded during extensive fauna surveys and there is no known dispersal habitat due to a lack of roosts, it is unlikely that the project site is an area necessary to maintain genetic diversity and long term evolutionary development of the South-eastern Long-eared Bat.
- Given that the project site does not contain any known breeding or foraging habitat due to a lack of individuals and roosts recorded during extensive fauna surveys and that it has been used for grazing and cropping for more than 110 years, it is unlikely that the project site is an area necessary for the reintroduction of populations or recovery of the species.
- The Commonwealth has deemed that a Recovery Plan for the South-eastern Long-eared Bat is required (DotE, 2015). There is also no South-eastern Long-eared Bat habitat listed on the Register of Critical Habitat.

Therefore, due to the low quality of habitat within the project site, it is unlikely that the project site contains any 'habitat critical to the survival of a species'.

14.4 LIKELIHOOD OF OCCURRENCE ASSESSMENT

This species has not been recorded from the project site and has not been recorded within 100 km of the project site in the database searches. This species, or its habitat, was assessed as potentially occurring within the project site in the EPBC Act Protected Matters Search. Habitat is present in the project site in the form of generally intact woodland that contains potential foraging habitat for this species, including riparian and sclerophyll woodland in well-timbered areas immediately adjacent to ephemeral drainage lines. Nevertheless, this species has been conservatively assessed as having a moderate likelihood of occurrence within the project site, in accordance with the criteria specified in

Table 8, due to the presence of potential habitat (albeit limited in nature) and as it is known to occur in the wider area.

14.5 SIGNIFICANT IMPACT ASSESSMENT

An assessment of significance has been conducted for this species following the Commonwealth's Significant Impact Guidelines for Vulnerbale species. Section 14.5.1 assesses whether the project site contains an important population of the South-eastern Long-eared Bat, while Section 14.5.2 presents the assessment of significance that has been conducted for this species.

14.5.1 Important Population Assessment

According to the Commonwealth's Significant Impact Guidelines, an '*important population'* of any Vulnerable species 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:*

- *key source populations either for breeding or dispersal*
- *populations that are necessary for maintaining genetic diversity, and/or*
- *populations that are near the limit of the species range.'*

No populations of the South-eastern Long-eared Bat have been recorded within the project site. There are also no records of this species within 25 km of the project site in any of the desktop database searches, or within 100 km of the project site in the Australian Museum database.

Although habitat for South-eastern Long-eared Bat is present within the project site, no individuals were encountered during the bat surveys. The habitat within the project site contains a very low density of hollow bearing trees and, as such, is considered to be low quality habitat for the South-eastern Long-eared Bat. Given the quality of the habitat and the lack of any records in the area surrounding the project site, it is considered unlikely that the project site is a key source population for breeding or dispersal, or that the project site contains a population that is necessary for maintaining genetic diversity.

The project site is not near the limit of the species range.

As the species is not known to occur within the project site or the surrounding area, the project site only has low quality habitat and the project site is not near the limit of the species range, it is unlikely that any '*important populations'* of this species occur within the project site.

14.5.2 Significant Impact Criteria

An assessment of significance for the South-eastern Long-eared Bat has been conducted in accordance with the Commonwealth's Significant Impact Guidelines. The significant impact criteria are provided in *underlined italics* and the response is provided in normal text.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population of a species*

Not applicable as there is no '*important population'* of South-eastern Long-eared Bat within the project site (Section 14.5.1).

- *reduce the area of occupancy of an important population*

Not applicable as there is no '*important population'* of South-eastern Long-eared Bat within the project site.

- *fragment an existing important population into two or more populations*

Not applicable as there is no '*important population'* of South-eastern Long-eared Bat within the project site (Section 14.5.1).

- *adversely affect habitat critical to the survival of a species*

Not applicable as there is no '*habitat critical to the survival of a species'* within the project site (Section 14.3.3).

- *disrupt the breeding cycle of an important population*

Not applicable as there is no '*important population'* of South-eastern Long-eared Bat within the project site (Section 14.5.1).

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

As described in Section 14.3.2, there is one patch of low quality habitat for the South-eastern Long-eared Bat within the project site. There is no '*habitat critical to the survival of a species'* within the project site. The species has not been recorded within or surrounding the project site. Given the poor quality of the South-eastern Long-eared Bat habitat within the project site and the lack of any recorded individuals from the surrounding area, it is unlikely

that the project will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

It is considered unlikely that the project will result in an invasive species becoming established in low quality habitat for the South-eastern Long-eared Bat within the project site. Feral animals already occur in the project site and these will be controlled as part of the project. It is unlikely that any other invasive plant or animal will become established as a result of the project. In addition, the Callide Mine Weed Management Plan includes a wash down procedure to help control the spread of pest plants both on and off-site. This management plan will be updated to include the project.

- *introduce disease that may cause the species to decline, or*

The Australian Bat Lyssavirus is known to affect Australian bat species and is transmitted between bats via bites and scratches. It is unlikely that the project will increase the rate of contact between individual bat species and it is therefore considered unlikely that the project will introduce a disease that may cause the South-eastern Long-eared Bat to decline.

- *interfere substantially with the recovery of the species.*

The project will not interfere with the recovery of the South-eastern Long-eared Bat. As stated in Section 14.5.1, there is no '*important population'* of South-eastern Long-eared Bat in the project site. By definition, this means that there are no key source populations either for breeding or dispersal within the project site and no populations that are necessary for maintaining genetic diversity. These are key requirements for the recovery of the species. There is also only one isolated patch of low quality habitat within the project site. Given that there are no '*important populations'* and no '*habitat critical to the survival of a species'* within the project site, it is unlikely that the project contains habitat that is critical for the recovery of the Large-eared Pied Bat. Therefore, it is unlikely that the project will interfere substantially with the recovery of the South-eastern Long-eared Bat.

Conclusion

Based on the outcomes from the above assessment criteria, it is considered that the project will not have a residual significant impact to the South-eastern Long-eared Bat.

15 REFERENCES

AECOM (2012) *Terrestrial Fauna Technical Report.*

AECOM (2014) *Koala Survey Report Boundary Hill South.*

Department of Environment and Climate Change (2008) *Recovery Plan for the Koala (Phascolarctos cinereus).*

Department of Environment and Climate Change (2009) *Draft National Recovery Plan for the Grey-headed Flying-fox Pteropus poliocephalus.*

DERM (2011) *National Recovery Plan for the Large-eared Pied Bat Chalinolobus dwyeri.*

DERM (2012) *National Recovery Plan for the Red Goshawk Erythrotriorchis radiatus.*

DEWHA (2010a) *Survey Guidelines for Australia's Threatened Birds.*

DEWHA (2010b) *Survey Guidelines for Australia's Threatened Bats.*

DEWHA (2013) *Matters of National Environmental Significance - Significant Impact Guidelines 1.1.*

Dique, D. S., de Villiers, D. L., and Preece, H. J. (2003) Evaluation of line transect sampling for estimating koala abundance in the Pine Rivers Shire, south east Queensland. *Wildlife Research* 30:127–133.

DotE (2015) *Species Profile and Threats Database.* Website: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=83395

DSDIP (2014) *Targeted Species Survey Guidelines – Yakka Skink Egernia rugosa.*

Eby, P. and Law, B. (2008) *Ranking the feeding habitats of Grey-headed flying-foxes for conservation management.* A report for the Department of Environment and Climate Change (NSW) and the Department of Environment, Water, Heritage and the Arts.

Ellis, W. A. H., Melzer, A., Carrick, F. N. and Hasegawa, M. (2002). 'Tree use, diet and home range of the koala (*Phascolarctos cinereus*) at Blair Athol, central Queensland.' *Wildlife Research* **29**: 303-311.

Environment Protection and Biodiversity Conservation Act 1999.

Environmental Protection Regulation 2008.

Eyre, T.J., Ferguson, D.J., Hourigan, C.L., Smith, G.C., Mathieson, M.T., Kelly, A.L., Venz, M.F. and Hogan, L.D. (2012) *Terrestrial Vertebrate Fauna Survey Guidelines.*

Hill B.M. and Ward S.J. (2010). *National Recovery Plan for the Northern Quoll Dasyurus hallucatus.* Department of Natural Resources, Environment, The Arts and Sport, Darwin.

Land Protection (Pest and Stock Route Management) Act 2002.

Nature Conservation Act 1992.

Neldner, V.J., Wilson, B.A., Thompson, E.J. and Dillewaard, H.A. (2005) *Methodology for Survey and Mapping of Regional Ecosystems and Communities in Queensland, Version 3.1.*

Phillips, S. and Callaghan, J. (2011) The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas *Phascolarctos cinereus*. *Australian Zoologist* 35(3): 774-780.

Queensland Herbarium (2012) *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland Version 3.2.*

Richardson, R. (2006). *Queensland Brigalow Belt Reptile Recovery Plan 2008 – 2012.* Report to the Department of the Environment, Water, Heritage and the Arts, Canberra. WWF-Australia, Brisbane

Schulz, M. and Lumsden, L. (2010) D*raft National Recovery Plan for the South-eastern Long-eared Bat.*

SEWPaC (2011a) *Survey Guidelines for Australia's Threatened Mammals.*

SEWPaC (2011b) *EPBC Act Referral Guidelines for the Endangered Northern Quoll, Dasyurus hallucatus.*

SEWPaC (2011c) *Draft Referral Guidelines for the Nationally Listed Brigalow Belt Reptiles.*

SEWPaC (2011d) *Survey Guidelines for Australia's Threatened Reptiles.*

SEWPaC (2012) *Interim Koala Referral Advice for Proponents.*

Vegetation Management Act 1999.

16 GLOSSARY

The following terms are commonly used throughout this Threatened Species Profile Report.

Term	Definition
AHD	Australian Height Datum
Biodiversity	The diversity of different species of plants, animals and micro-organisms
BoM	Bureau of Meteorology
Diurnal	Animals that are active during the day
DotE	Commonwealth Department of the Environment
Ecosystem	An interacting system of animals, plants, other organisms with non-living parts of the environment
EHP	Queensland Department of Environment and Heritage Protection
EIS	Environmental Impact Statement
Ephemeral	Relating to a watercourse with defined bed and banks, which flows only intermittently after rain
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EP Regulation	*Environmental Protection Regulation 2008*
GPS	Global Positioning System
Habitat	The native environment where a given animal or plant lives or grows, often described in terms of geography, climate and vegetation
KoRV	Koala Retrovirus
Locality	The area within a 25 km buffer from the centre of the project site
LP Act	Queensland *Land Protection (Pest and Stock Route Management) Act 2002*
Microbat	Microbats are mammals and belong to the family order called Microchiroptera meaning “little hand-wing”
Mitigation	The act of lessening in intensity, to prevent or make less severe
MLA	Mining Lease Application
MNES	‘Matters of National Environmental Significance’ that are listed by the EPBC Act
Mt	Million tonnes
Mtpa	Million tonnes per annum
NC Act	Queensland *Nature Conservation Act 1992*
Nocturnal	Animals that are active during the night
Open Cut Mining	Process used to remove minerals found over a large area, close to the surface. The mine is dug downward in benches or steps
Perennial	Relating to a watercourse with defined bed and banks, which flows all year

Term	Definition
the project	The Boundary Hill South Project
the proponent	Anglo Coal (Callide Management) Pty Ltd
RE	Regional Ecosystem
REDD	Regional Ecosystem Description Database
Rehabilitation	Reshaping of a disturbed area to a geotechnically and geochemically stable condition, followed by revegetation
Riparian	Pertaining to, or situated on, the bank of a body of water, such as a river
ROM	Run of Mine
Round 2 RTS	Round 2 Response to Submissions
SAT	Spot assessment technique
SPRAT	DotE's *Species Profile and Threats Database*
Study Area	The study area for the project is defined as MLA 80186 however, a number of the field surveys were conducted within and beyond the project site approximately 2 km to the east, in the Callide Timber Reserve.
Taxa	Categories in the biological classification system for all living organisms
TEC	'Threatened Ecological Community' as listed under the EPBC Act and/or NC Act
TOR	Terms of Reference
VM Act	Queensland *Vegetation Management Act 1999*

* * *

for
HANSEN BAILEY

Rebecca Miller
Senior Environmental Scientist

Peter Hansen
Director

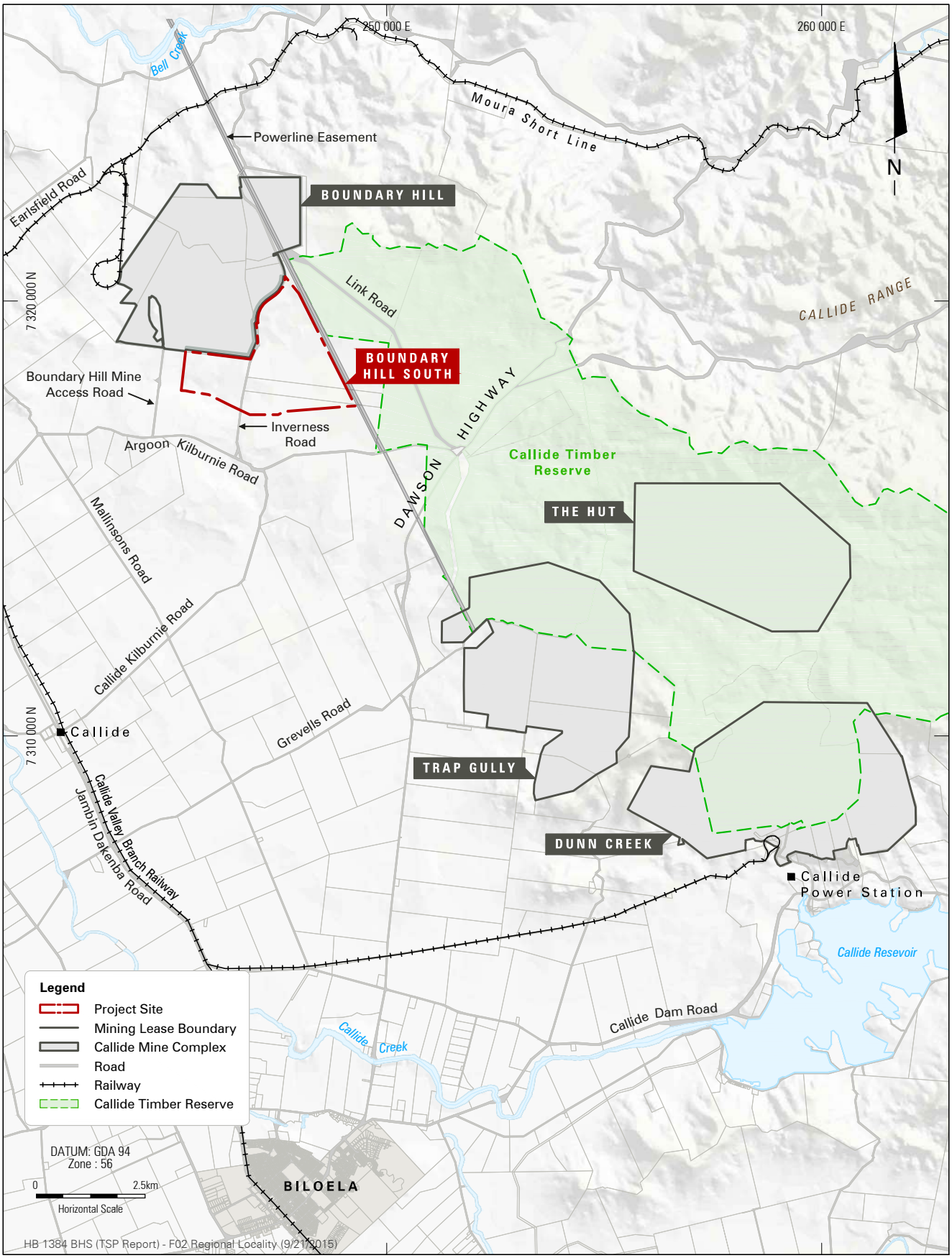
FIGURES

BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Location Plan

FIGURE 1

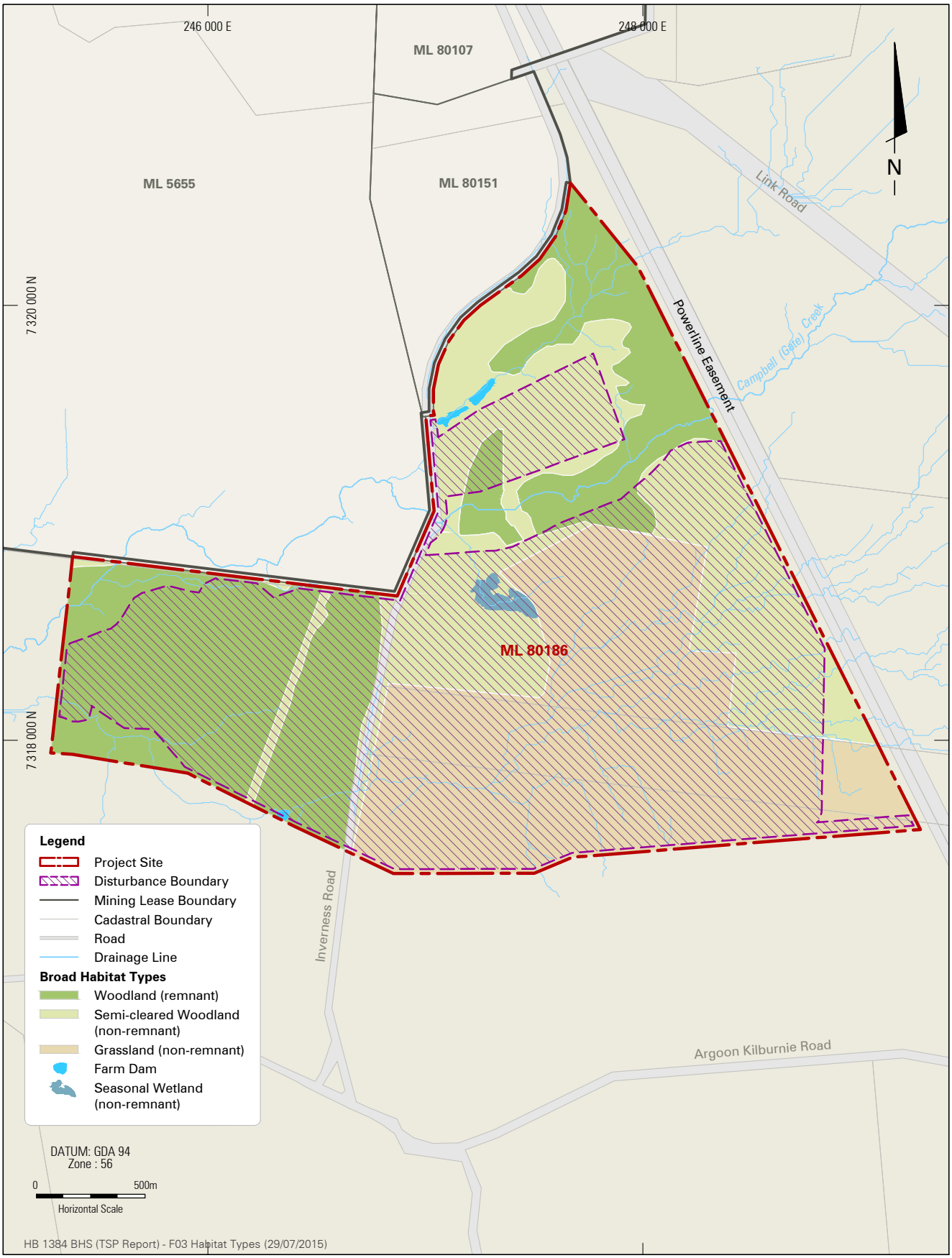


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Regional Project Setting

FIGURE 2

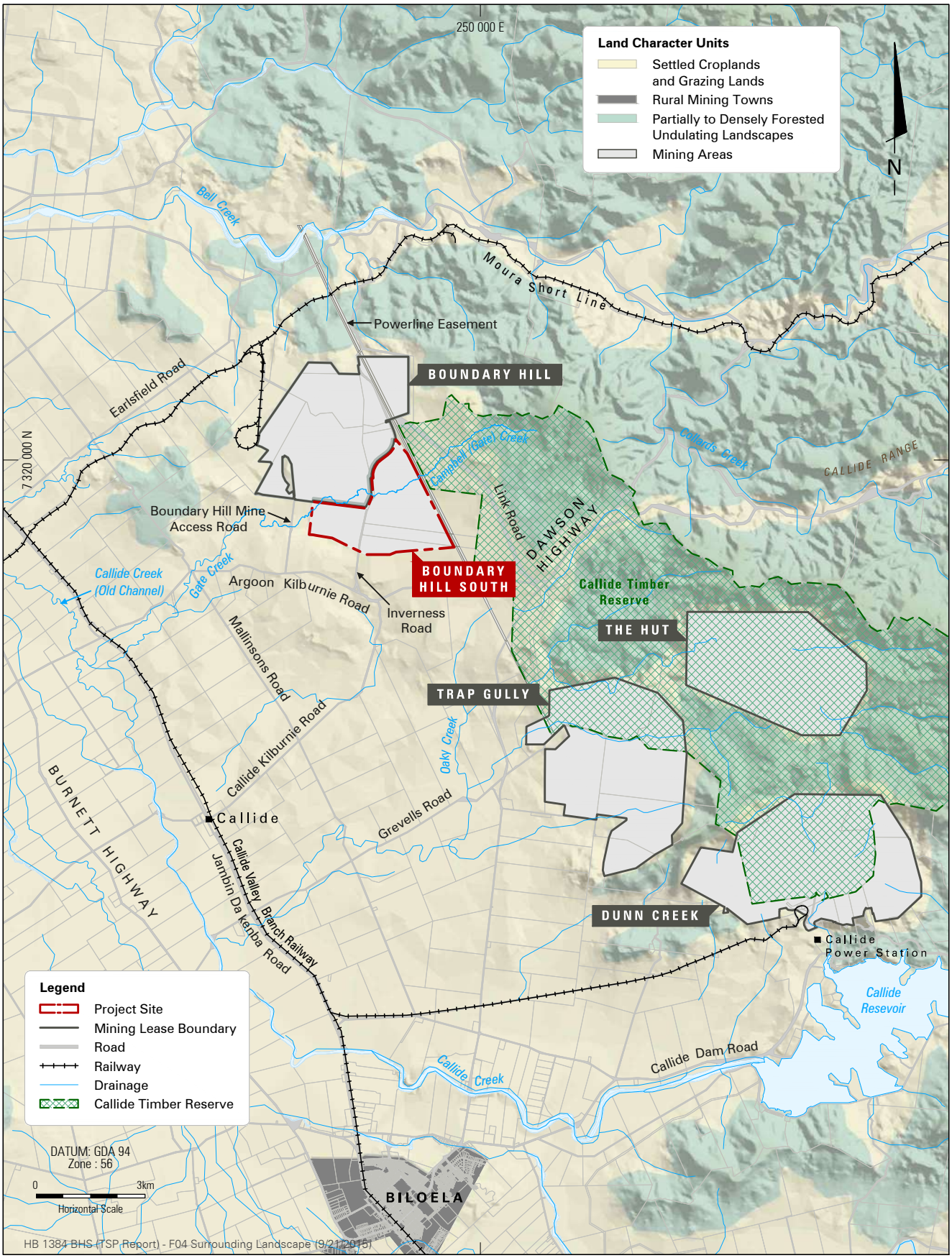


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Habitat Types

FIGURE 3

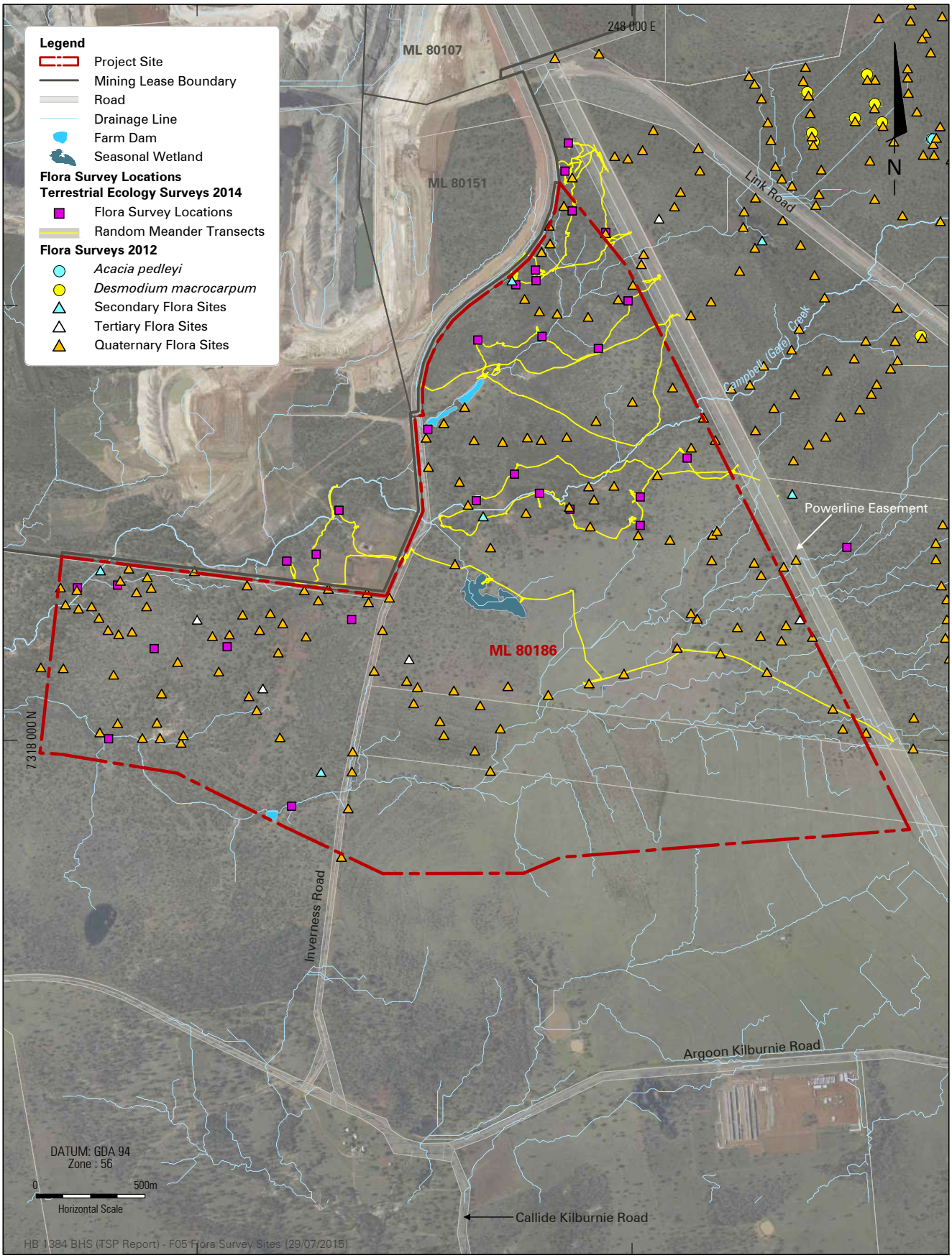


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Surrounding Landscape

FIGURE 4

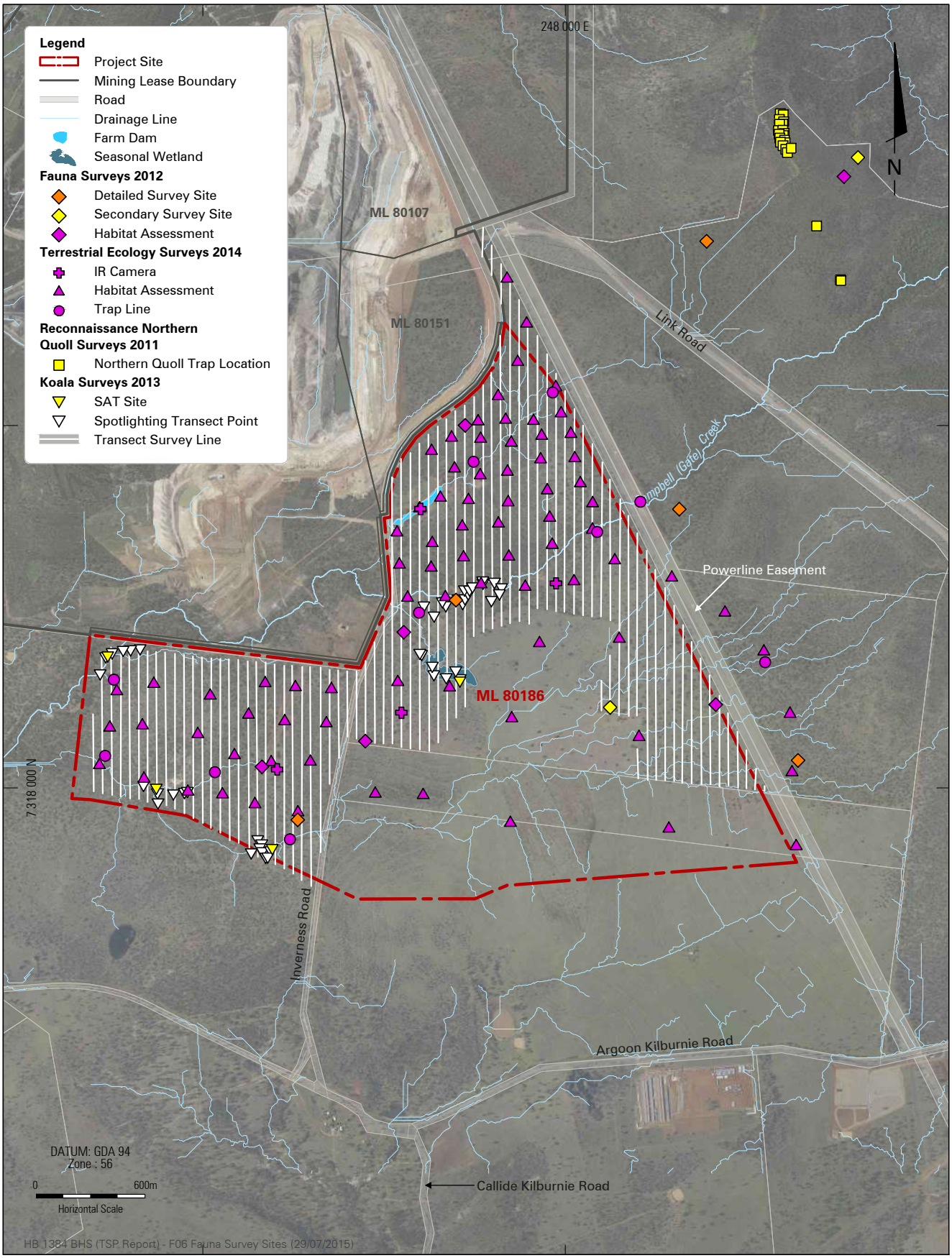


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Flora Survey Sites

FIGURE 5

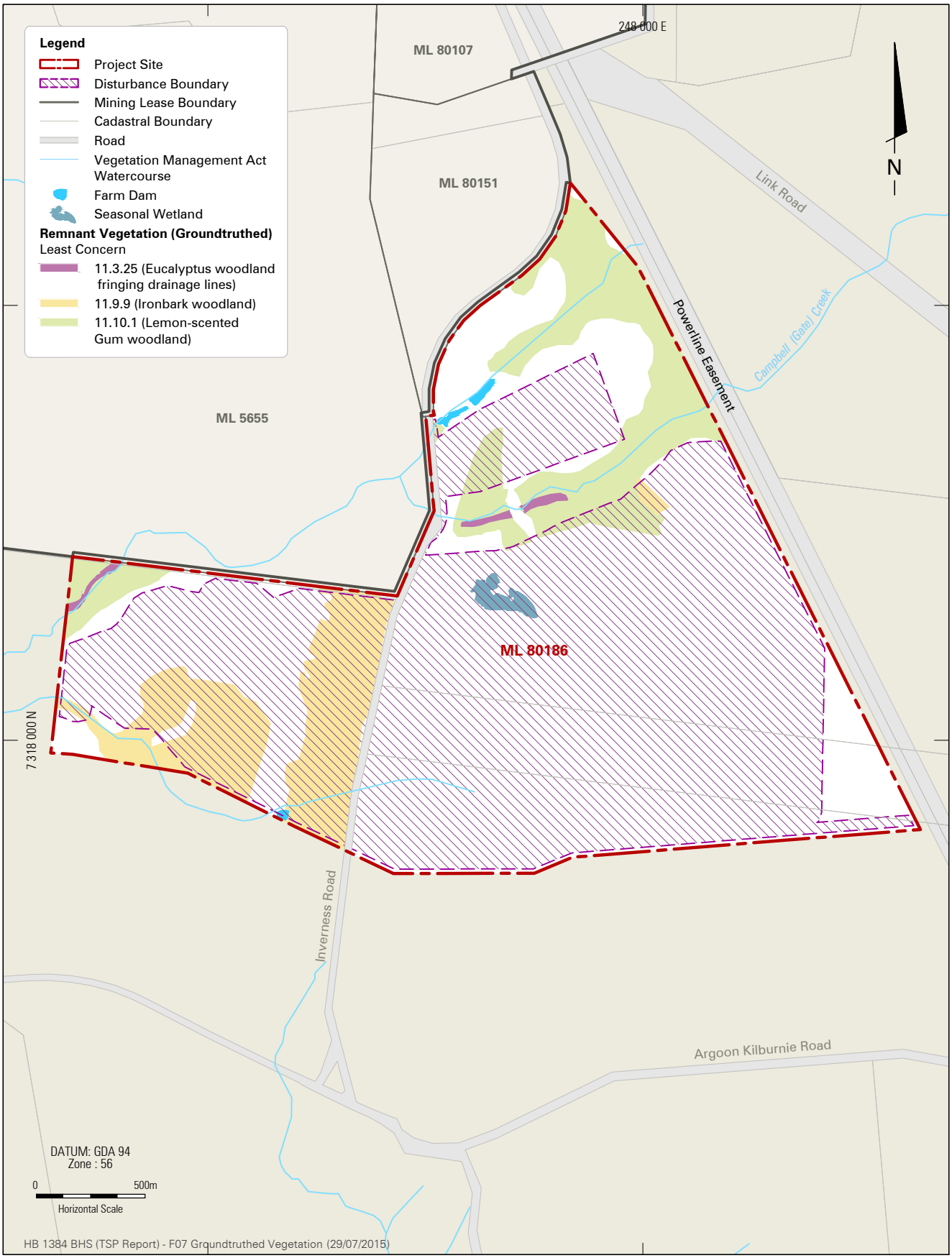


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Fauna Survey Sites

FIGURE 6

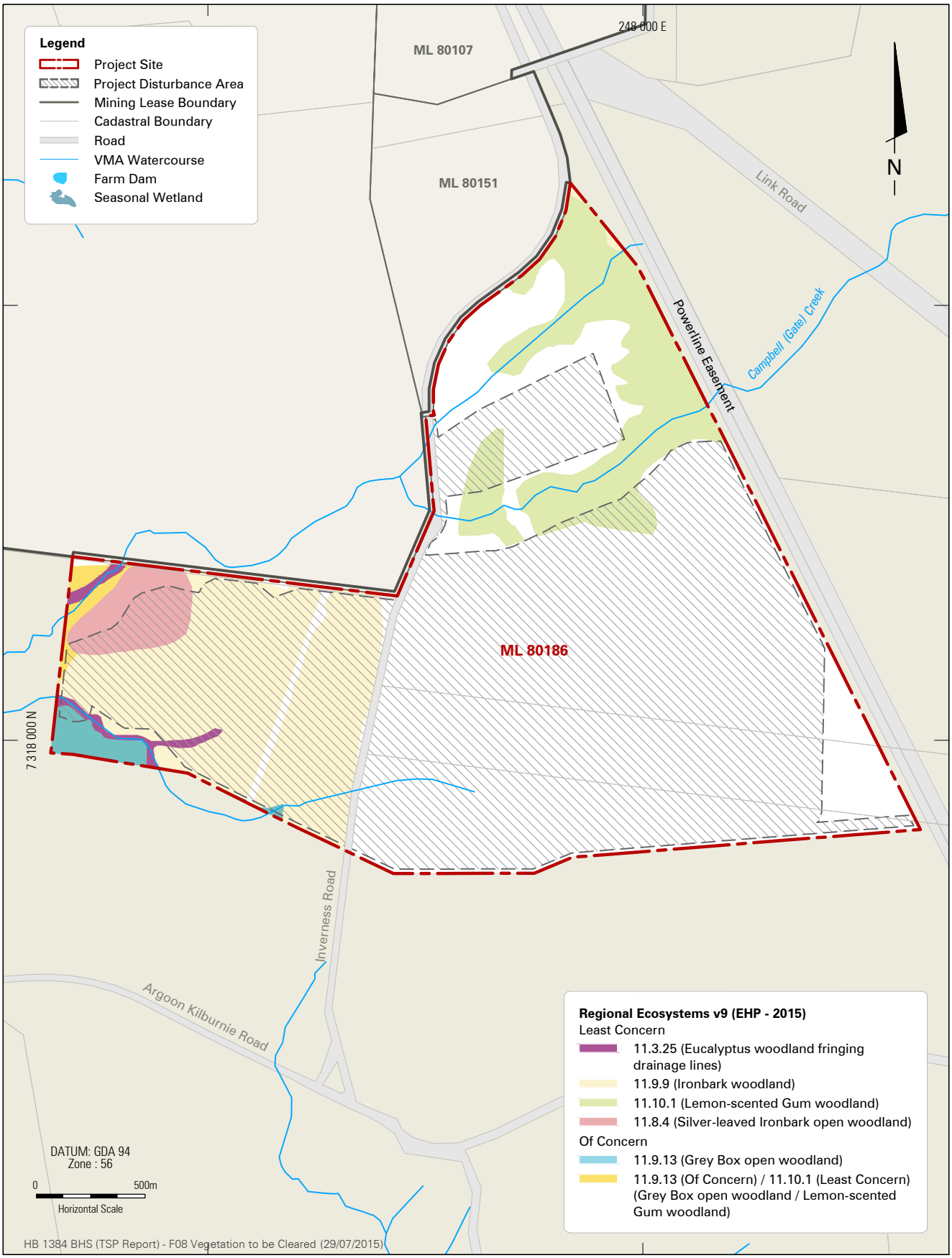


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Groundtruthed Vegetation

FIGURE 7

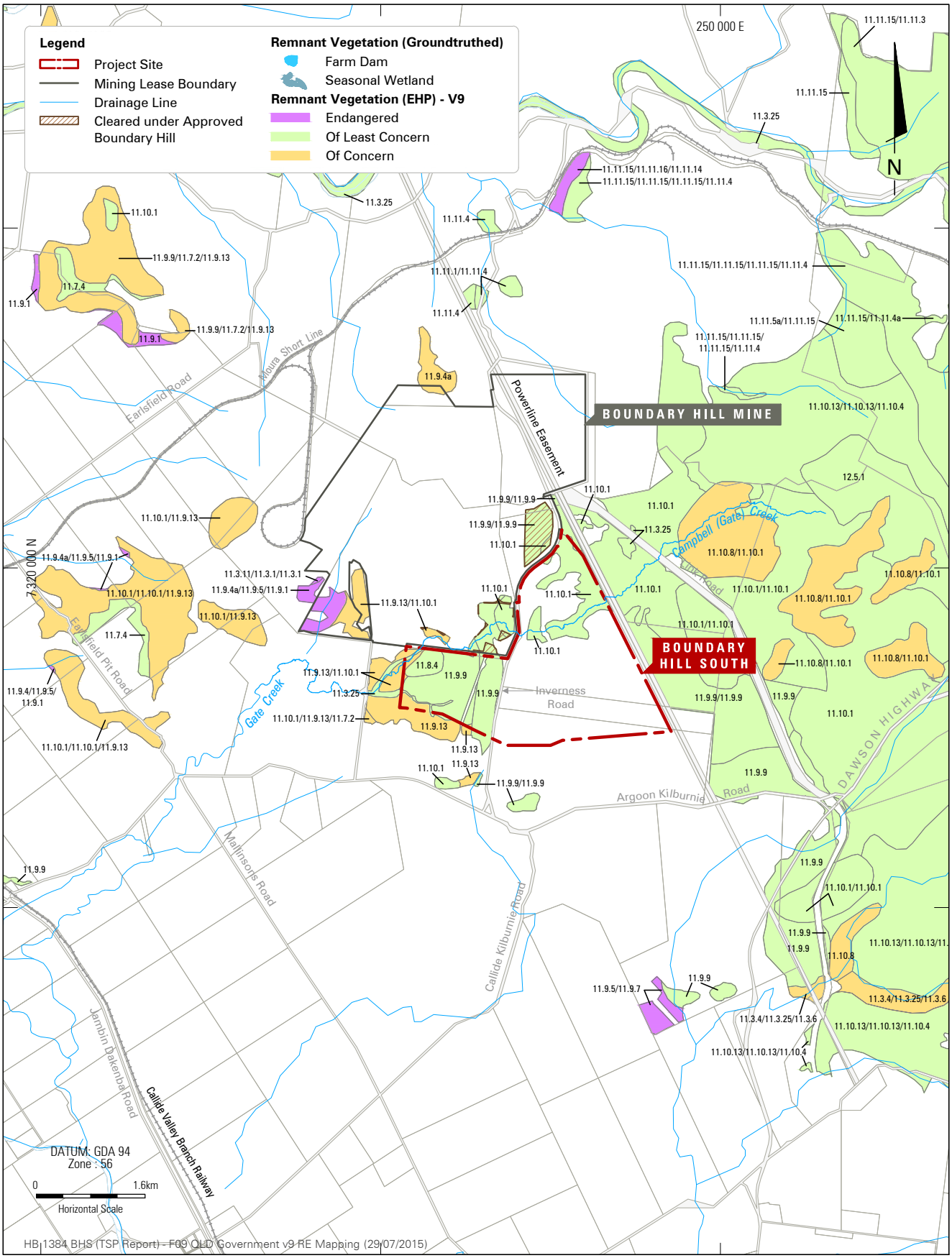


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

QLD Government's V9 RE Mapping within the Project Site

FIGURE 8

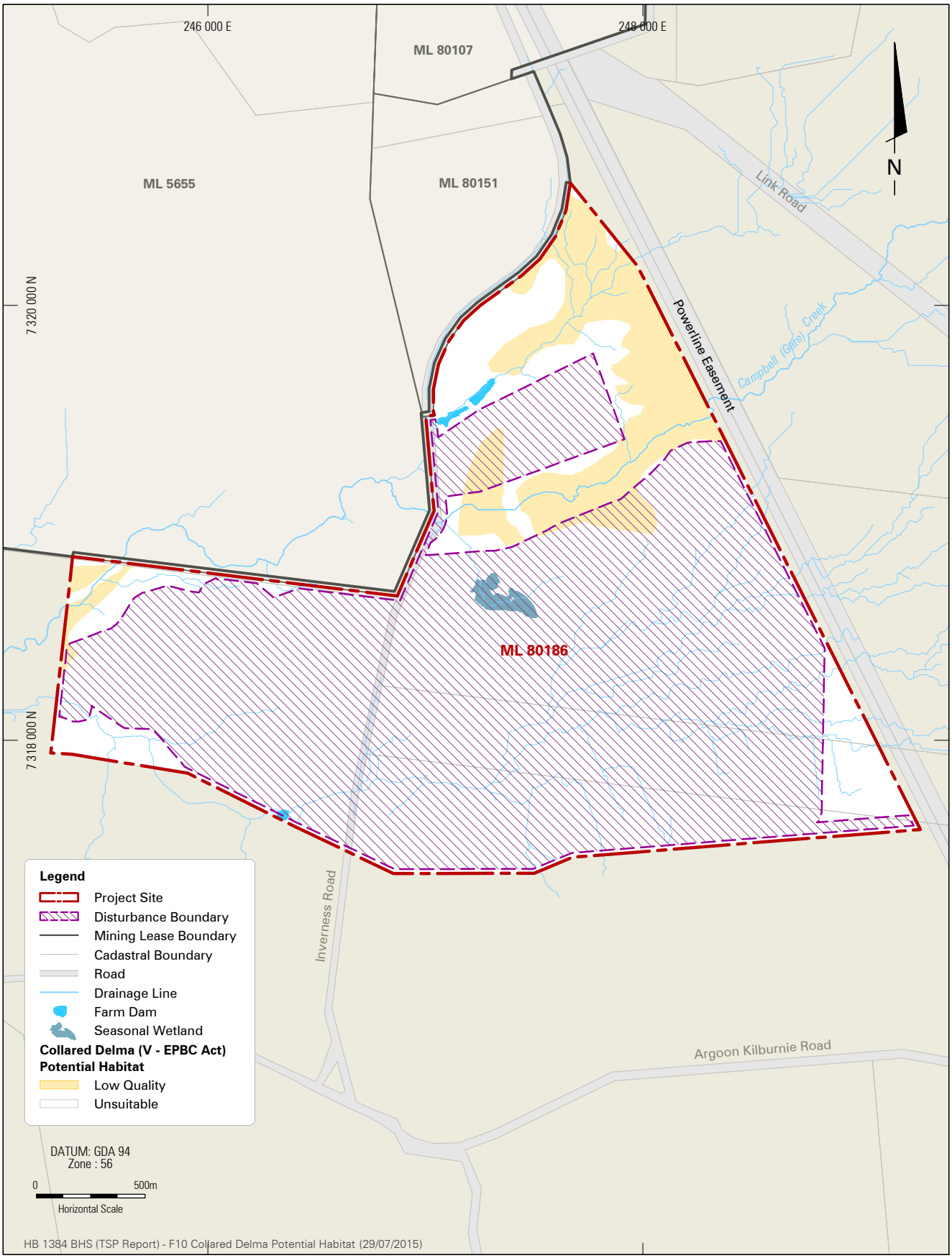


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

QLD Government's V9 RE Mapping

FIGURE 9

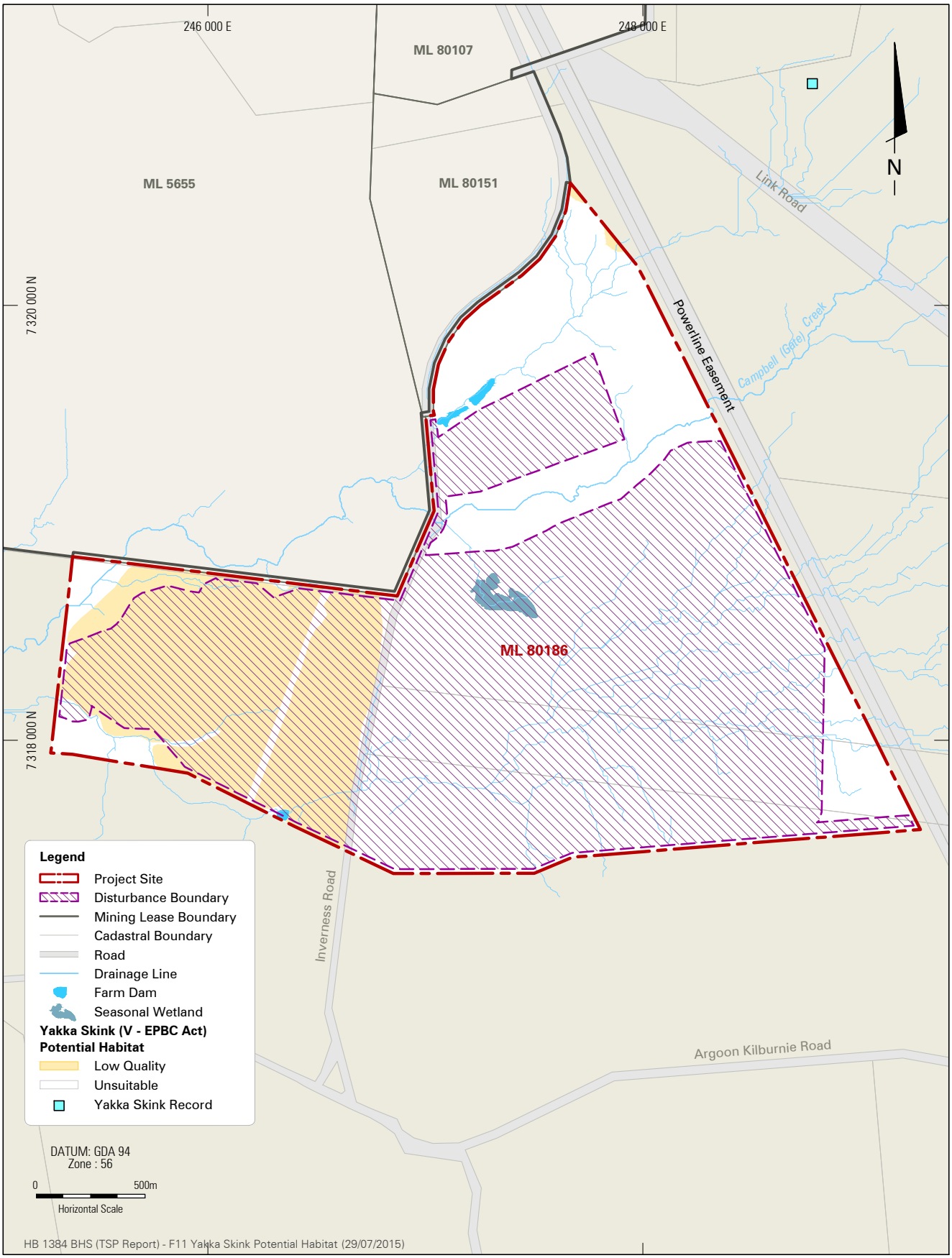


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Collared Delma Potential Habitat

FIGURE 10

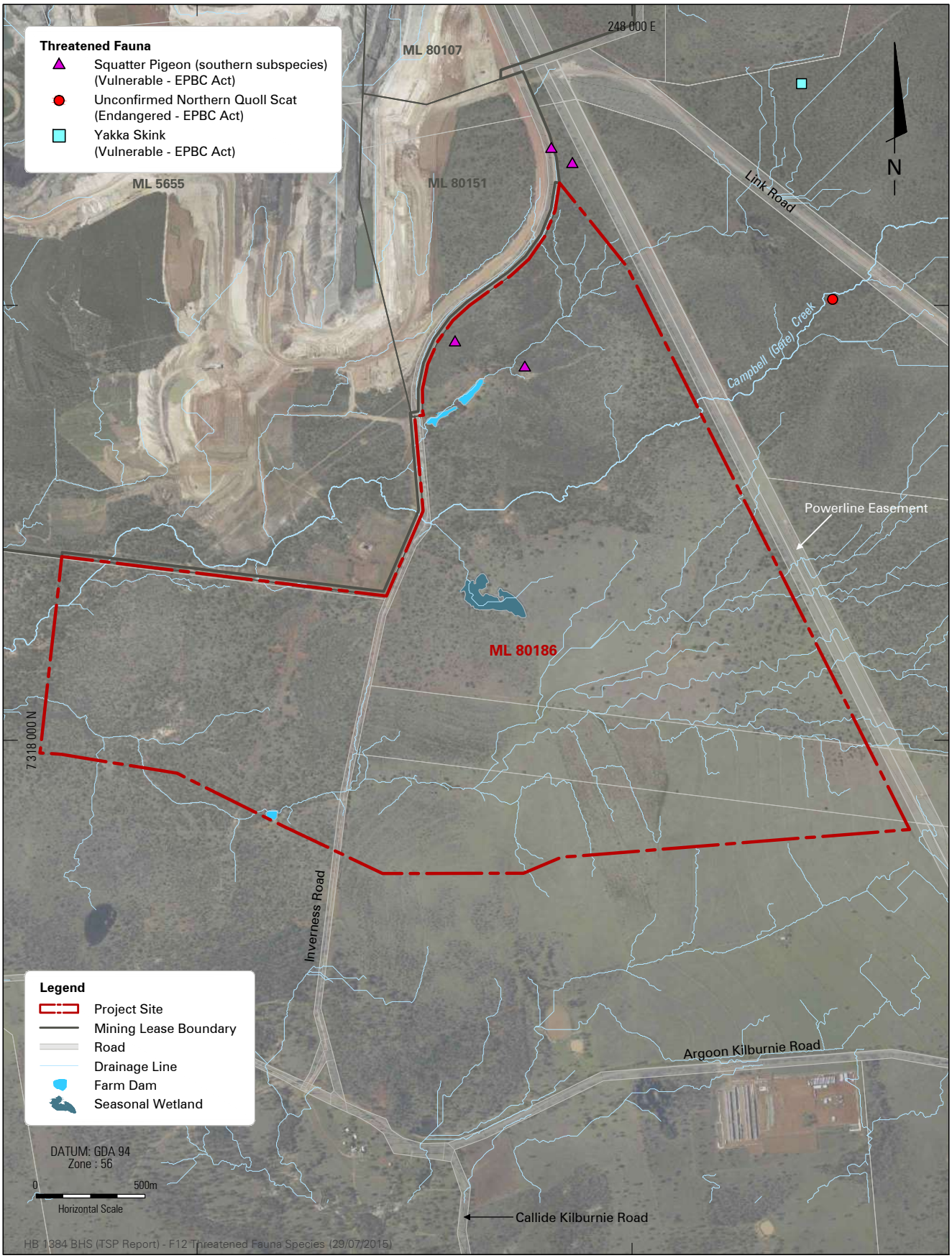


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Yakka Skink Potential Habitat

FIGURE 11

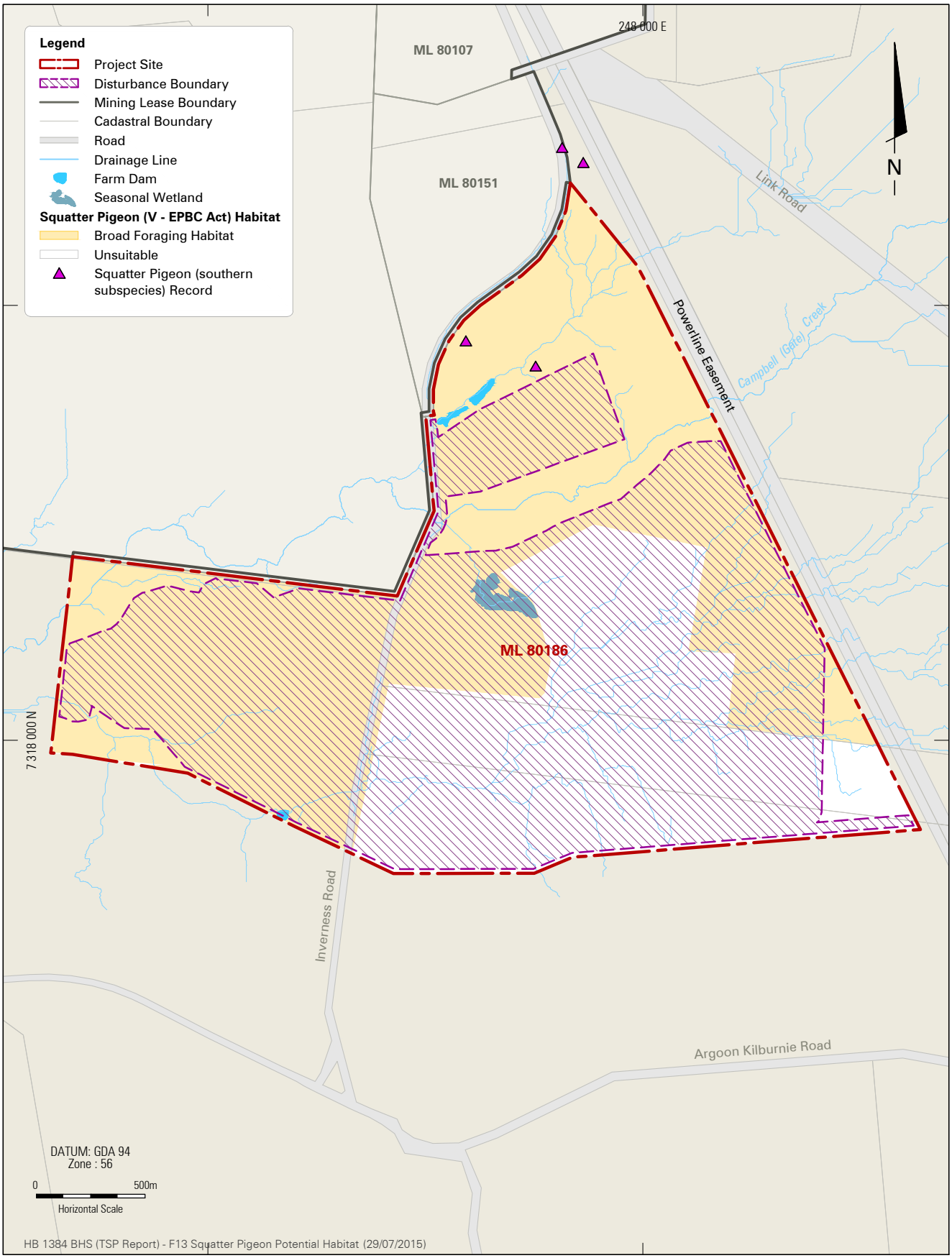


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Threatened Fauna Species Records

FIGURE 12

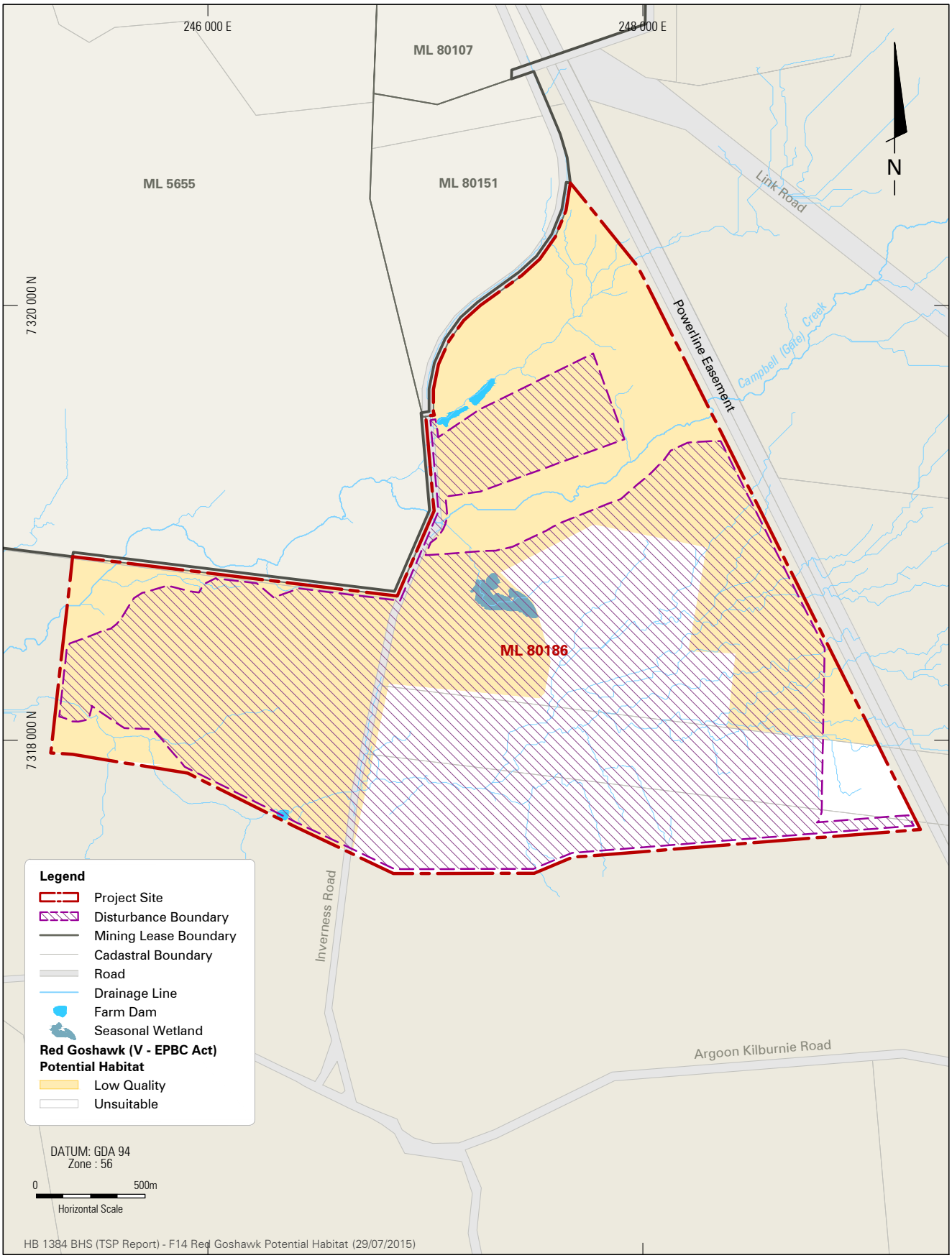


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Squatter Pigeon Potential Habitat

FIGURE 13

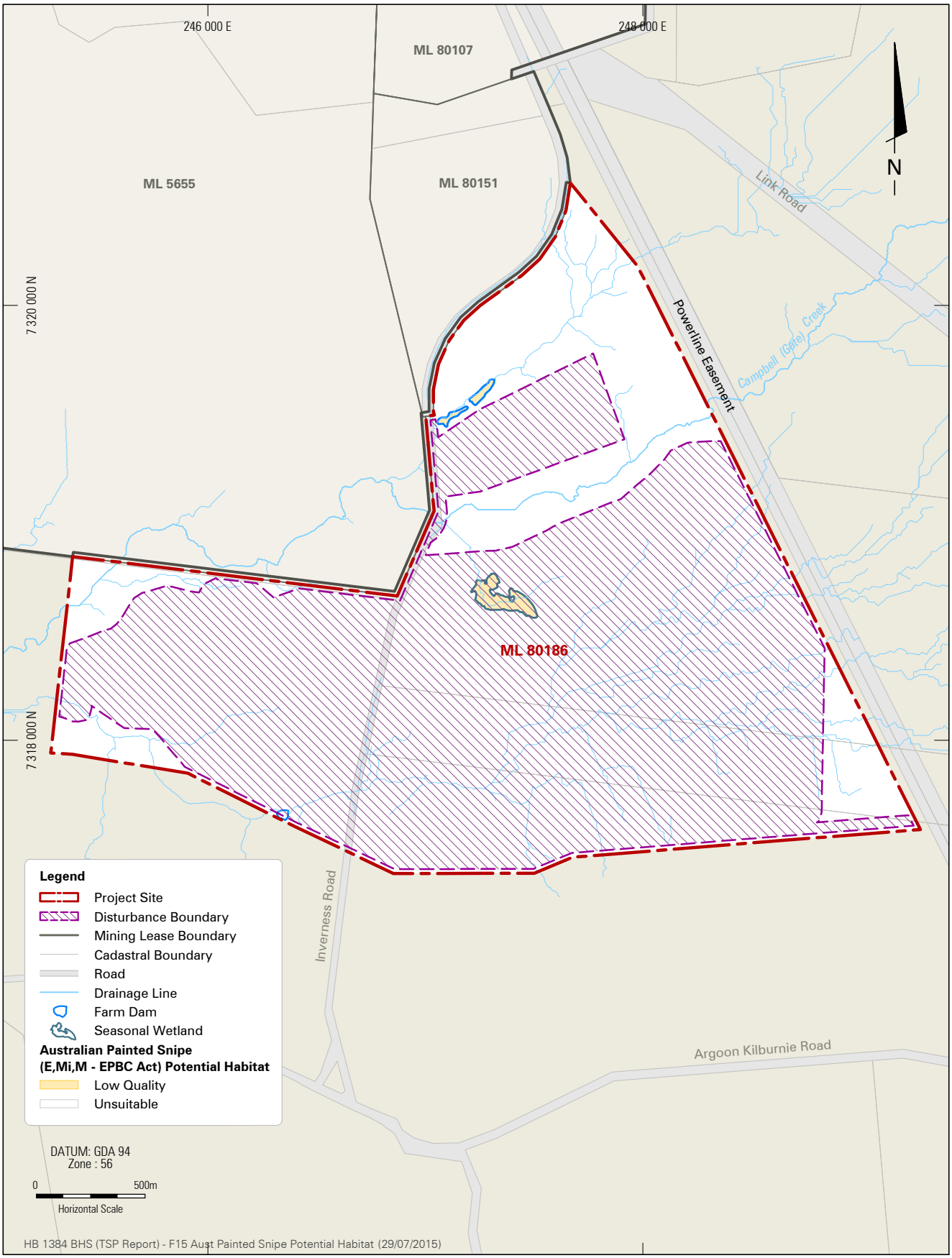


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Red Goshawk Potential Habitat

FIGURE 14

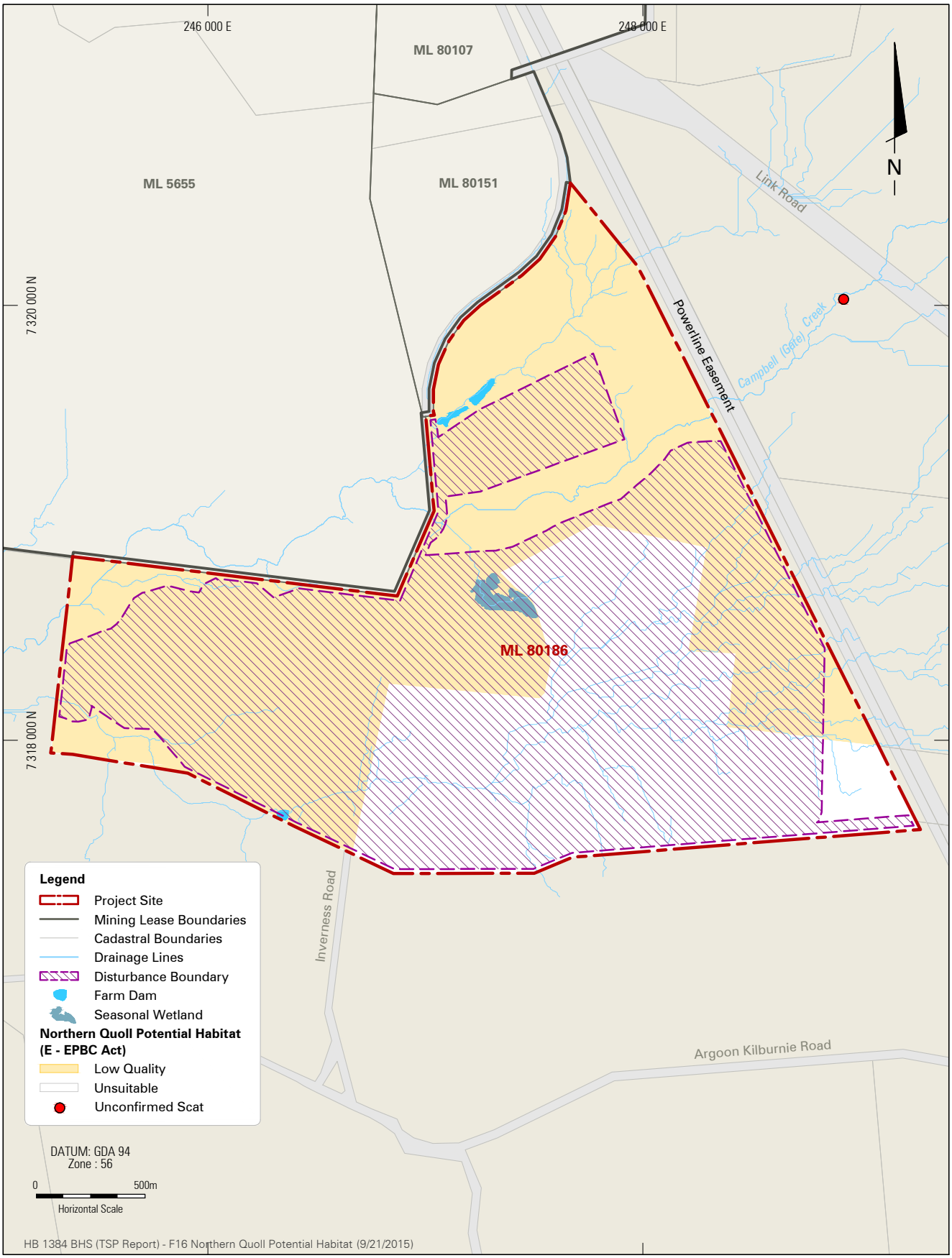


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Australian Painted Snipe Potential Habitat

FIGURE 15

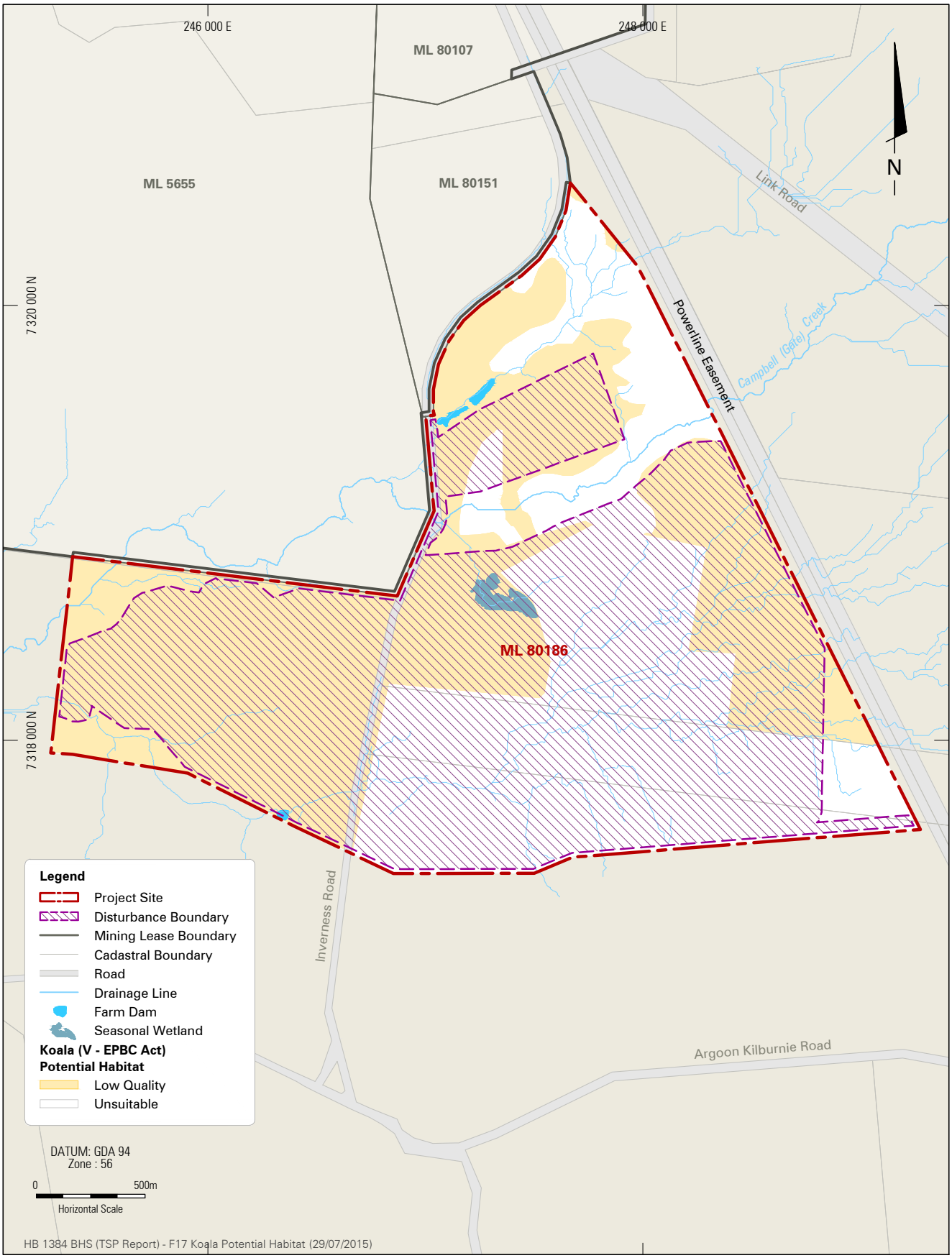


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Northern Quoll Potential Habitat

FIGURE 16

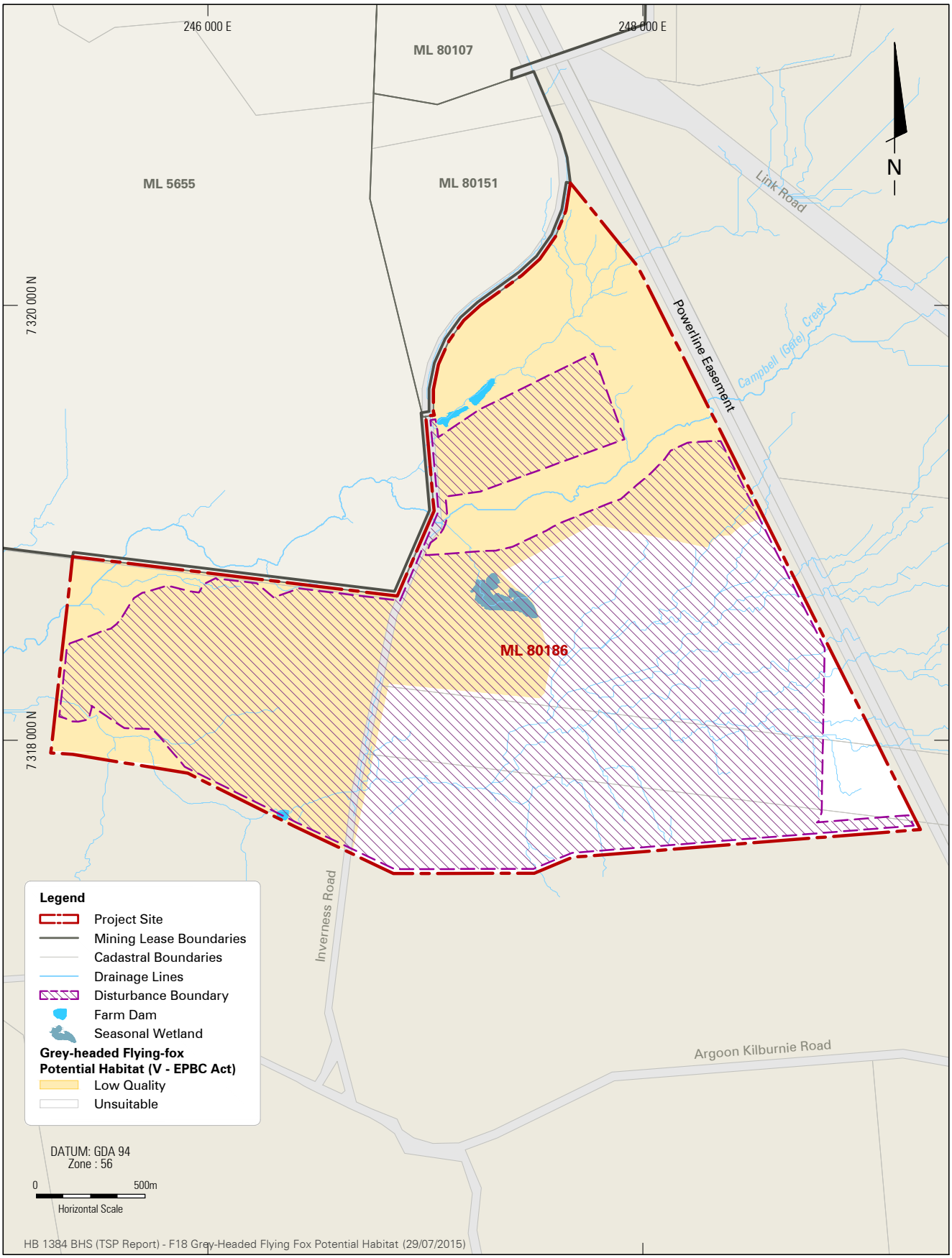


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Koala Potential Habitat

FIGURE 17

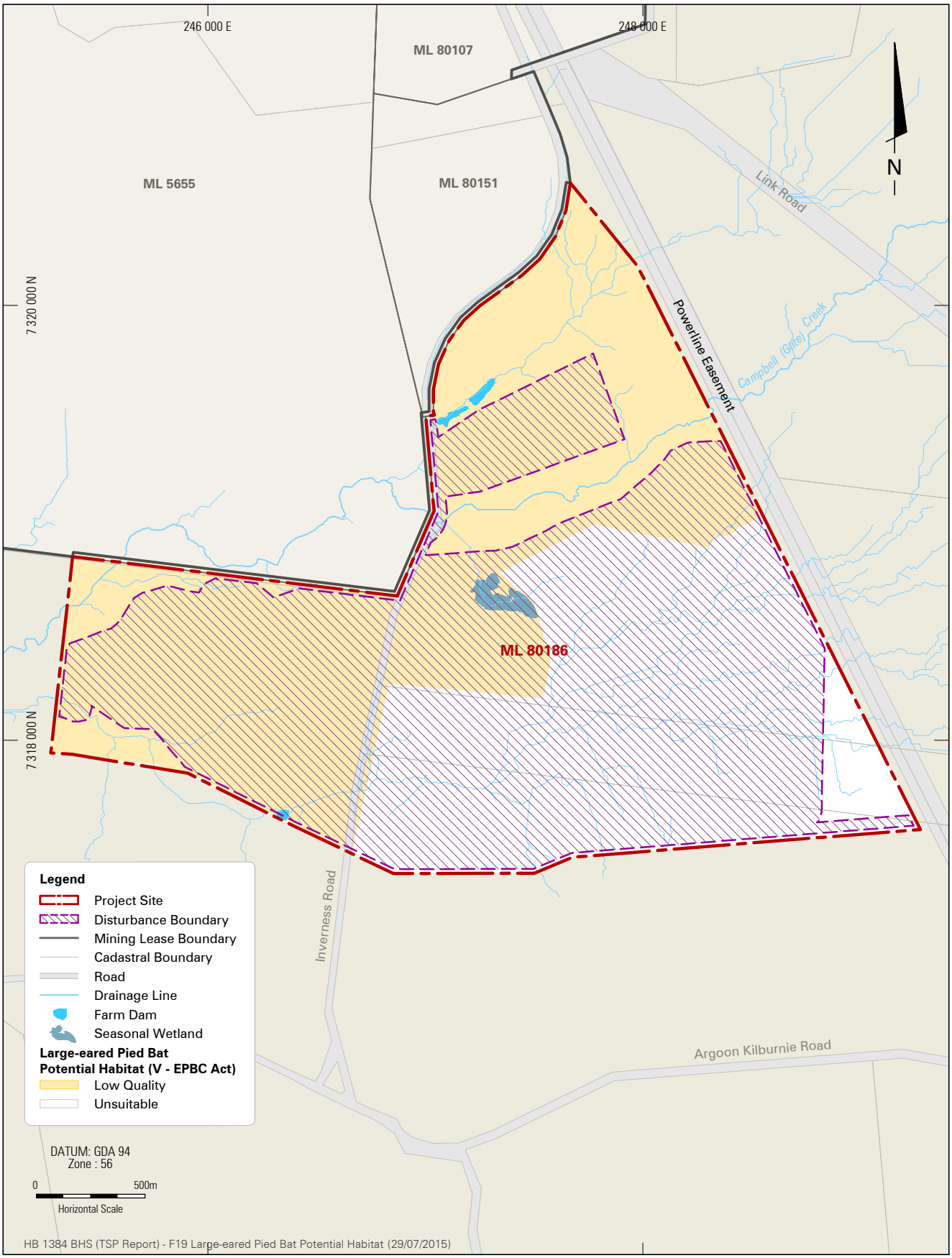


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Grey-headed Flying-fox Potential Habitat

FIGURE 18

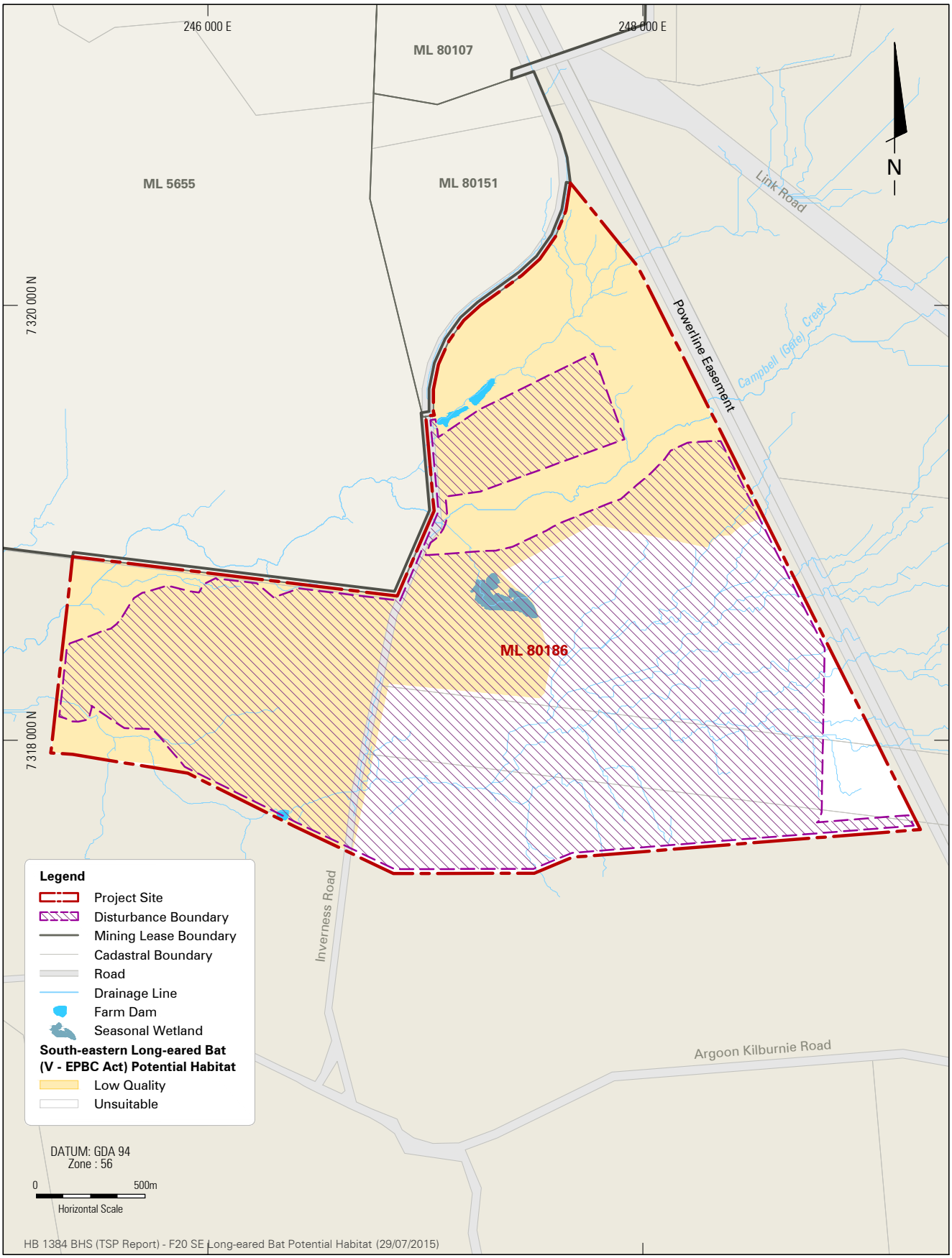


BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Large-eared Pied Bat Potential Habitat

FIGURE 19



BOUNDARY HILL SOUTH PROJECT

AngloAmerican | Hansen Bailey ENVIRONMENTAL CONSULTANTS

South-eastern Long-eared Bat Potential Habitat

FIGURE 20

APPENDIX D

Performance Criteria and Implementation Table

Potential risks/impacts	Performance Criteria	Impact avoidance and mitigation measures	Monitoring activity/ies	Triggers for corrective actions	Corrective actions
Staff, contractors and/or visitors access to adjacent habitat impacts habitat values, including illegal access and illegal shooting.	There is no unauthorised access to the project site.	Mining lease boundary is fenced prior to commencement of the action and maintained in good working order. Disturbance boundary is temporarily fenced / flagged with tape prior to undertaking clearing activities within that area. 'No unauthorised access' signage installed at all entry points.	All mining lease fencing is inspected six monthly for signs of damage and/or unauthorised access. All signs checked six monthly for damage. Disturbance boundary temporary fence / flagging tape checked pre and post clearing as per existing Permit to Disturb procedure. Incidental observations by staff working.	Observation and/or evidence of unauthorised access to areas of retained habitat. Damaged fencing. Damaged signage.	Protocols for preventing unauthorised access will be reviewed within one week of detection, and the appropriate corrective action will be implemented within one month. Damaged fencing will be repaired within one month. Damaged signage will be repaired within one month.
Clearing exceeds approved disturbance limits (i.e. maximum disturbance limits exceed 266 ha of Squatter Pigeon (southern) habitat; 257 ha of Koala habitat).	Clearing does not exceed the approved clearing limits for Koala and Squatter pigeon habitat.	As per existing Permit to Disturb procedure, proposed clearing areas within the approved disturbance boundary will be clearly delineated on maps and on-ground. Site Manager (or delegate) will oversee all clearing activities to ensure they remain within the approved clearing area within the disturbance boundary.	Site Manager (or delegate) will oversee all clearing activities and will record compliance of clearing within the disturbance boundary immediately after the clearing event, as per existing Permit to Disturb procedure. Site Manager (or delegate) will check the disturbance boundary for the area to be cleared prior to clearing commencing to ensure that the boundary is accurately and visibly marked.	Clearing occurs outside of the disturbance boundary. Marking of disturbance boundary is inaccurate and/or not clearly visible. Site Manager (or delegate) does not supervise all clearing activities. Site Manager (or delegate) does not check that the disturbance boundary is clearly and accurately marked prior	Any clearing of Squatter Pigeon (southern) or Koala habitat that exceeds the approved disturbance limits will be offset in accordance with the EPBC Act Environmental Offsets Policy. DoEE will be notified within one month of this trigger being detected and the additional offsets will be provided. If the disturbance boundary is not accurately and clearly marked as identified by Site Manager (or delegate) prior to clearing event, clearing will not commence until the issue has been rectified. If the Site Manager is not supervising clearing activities, clearing will be postponed until the Site Manager (or

Potential risks/impacts	Performance Criteria	Impact avoidance and mitigation measures	Monitoring activity/ies	Triggers for corrective actions	Corrective actions
				to commencement of clearing. At the end of the clearing event, Site Manager (or delegate) does not check cleared areas against the disturbance boundary to ensure no breaches.	delegate) is able to supervise the clearing event. If the Site Manager (or delegate) has not monitored the disturbance boundary prior to clearing for accurate and visible marking tape, and/or after a clearing event to ensure no areas outside of the boundary were cleared, then these actions will be undertaken immediately after trigger is detected. Stricter protocol will be put in place within one week to ensure that this will not recur.
Project related materials (i.e. work materials and/or litter) outside of the approved disturbance boundary.	There are no project waste materials adjacent to mining activities.	Project related waste materials will be managed in accordance with the existing Callide Mine Waste Management Plan and disposed of at Boundary Hill. As per existing Permit to Disturb procedure, the disturbance boundary will be clearly delineated on maps and on-ground and no project activities, including placement of materials, will occur outside of this area.	Site Manager (or delegate) will check the disturbance boundary for the area to be cleared prior to clearing commencing to ensure that the boundary is accurately and visibly marked.	Project related materials are placed outside of the disturbance boundary. Site Manager (or delegate) does not check that the disturbance boundary is clearly and accurately marked prior to commencement of clearing.	If the disturbance boundary is not accurately and clearly marked as identified by Site Manager (or delegate) prior to clearing event, clearing will not commence until the issue has been rectified.
Mortality or injury of MNES fauna (i.e. due to vehicle strike, clearing activities, mine operation).	No evidence of vehicle strikes. Speed limits, appropriate signage, and careful driving	Pre-clearance surveys undertaken 48 hours prior to clearing.	Site Manager (or delegate) to ensure fauna spotter catcher engaged and supervising all clearing activities.	Injured or dead MNES fauna.	Investigation of all injuries / deaths to determine suitable corrective action, dependent on the circumstances of the injury / death.

Potential risks/impacts	Performance Criteria	Impact avoidance and mitigation measures	Monitoring activity/ies	Triggers for corrective actions	Corrective actions
	policies are implemented.	Qualified fauna spotter catcher supervising all vegetation clearing. Speed limits of 80 km/hr on haul roads and roads/tracks within the project site.	Monitoring of driving policies, as per existing procedures.		
Dust deposition on adjacent habitat.	There is no dieback of adjacent MNES habitat attributable to dust deposition.	The Boundary Hill South Project EIS, determined no significant impacts predicted. Dust suppression spraying on active haul roads.	Visual inspection of adjacent habitat six monthly.	Dieback of adjacent vegetation outside of the approved disturbance boundary.	Increase dust suppression activities, e.g. watering of haul roads. Provision of additional offsets for any significant areas of dieback of MNES habitat that exceeds the approved disturbance limits.
Erosion and sedimentation impact on adjacent habitat.	Sediments derived from mining activities do not impact on adjacent MNES habitat.	Erosion and Sediment Control Plan, as per the Callide Mine Environmental Authority managed by DES.	Regular monitoring of sediment control structures, as per Erosion and Sediment Control Plan managed by DES.	Failure of a sediment control structure, and significant sedimentation of downstream MNES habitat.	Removal of sediment within downstream MNES habitat. Review of Erosion and Sediment Control Plan managed by DES.
Increased number and/or extent of invasive weed species in adjacent habitat.	There is no increase in the abundance and/or distribution of invasive weed species adjacent to mining activities.	Use chemical and/or mechanical controls to prevent seed set and dispersal of highly invasive species. Implement weed hygiene practices.	Monthly weed inspections.	New invasive weed species are detected during weed inspections.	Implement targeted controls to eradicate new infestations.
Increased fauna impacts from pest predators.	The abundance of pest predators is maintained or reduced.	Food waste is managed as per existing practices at Callide Mine. Pest animal control and periodic eradication programs in place.	Visual observations or evidence of pest animals, recorded during monthly weed inspections. Biannual eradication programs.	Evidence of pest animals.	Implement control programs to eradicate new infestations.

Potential risks/impacts	Performance Criteria	Impact avoidance and mitigation measures	Monitoring activity/ies	Triggers for corrective actions	Corrective actions
Domestic stock degrade habitat adjacent to mining activities.	Stocking rates within the project site are do not degrade species habitat condition.	Stock within the project site will be managed as per existing practices.	Stock within the project site will be managed as per existing practices.	Evidence of overstocking.	Existing stock management to continue, including reduction in stocking rates.
Fire in adjacent habitat resulting from mining activities.	Controlled burns within the project site are only undertaken with approval of the site supervisor. Fire breaks are maintained. Unplanned burns are controlled and extinguished as quickly as possible.	Uncontrolled fire will not be permitted in the mining lease. Firebreaks will be maintained.	Fire breaks will be monitored and maintained as per existing procedures.	Uncontrolled fire. Fire damage to habitat adjacent to mining activities.	Uncontrolled fires managed using existing procedure to control fire, fire breaks maintained to reduce risk of uncontrolled fire.

APPENDIX E

Risk Assessment

Appendix E: Risk assessment and management to achieve environmental performance criteria.

Risk (event or circumstance)	Risk controls (management activity/ies)	Residual risk (Severe, High, Medium, Low) and explanation	Management triggers and related monitoring programs	Risk treatments (contingency measures)
Increased access to habitat adjacent to mining activities results in timber harvesting/resource collection.	No timber or other harvesting will be permitted adjacent to mining activities. Disturbance boundaries will be clearly marked.	**Low.** Staff and contractor activity on the mining lease is highly controlled by the approval holder.	Fences are damaged and associated with vehicle tracks. Evidence of timber cutting/resource removal.	Fences will be repaired and additional barriers established adjacent to entry point to reduce the risk of future vehicle access.
Unauthorised clearing in excess of prescribed disturbance limits and/or beyond approved impact area.	No clearing will be permitted outside approved project area/disturbance limits. Disturbance boundaries will be clearly marked.	**Low.** Clearing on the mining lease is highly controlled by the approval holder.	Evidence of clearing outside of approved clearing areas.	Implementation of the existing Permit to Disturb process
Unplanned/uncontrolled fire in adjacent habitat as a result of mining activity.	Uncontrolled fire will not be permitted in the mining lease. Firebreaks will be maintained.	**Medium.** Potential of fire within the area, uncontrolled fires within the mining lease to be controlled quickly due to health and safety risk.	Fire damage to habitat adjacent to mining activities.	Uncontrolled fires managed using existing procedure to control fire, fire breaks maintained to reduce risk of uncontrolled fire.
Injury or death of fauna during clearing activities.	Fauna Spotter Catcher to be engaged during clearing activities.	**Low.** Low likelihood of injury or death based on previous experience at Callide Mine, experienced equipment operators, and the implementation of mitigation measures.	Reported injured or death of fauna.	Engagement of Fauna Spotter Catcher.
Vehicle strike.	Staff and contractors receive training to identify requirement to report fauna strikes.	**Low.** Very low likelihood of species presence adjacent to mining activities.	Reported fauna strikes.	Utilisation of existing mine equipment and workforce, and implementation of speed limits, appropriate signage, careful driving policies
New infestations of invasive weed species as a result of mining activities	Use chemical and/or mechanical controls to prevent seed set and dispersal. Weed hygiene	**Low.** The project area is highly controlled, accessed only for mining purposes with weed	New invasive weed species are detected during routine weed inspections.	Implement targeted controls to eradicate new infestations.

	practices will be implemented.	hygiene practices being implemented.		
Expansion of existing infestations of invasive weed species adjacent to the mining activity.	Use chemical and/or mechanical controls to prevent seed set and dispersal of highly invasive species. Implement weed hygiene practices.	**Low.** While eradication of invasive weeds is unlikely, chemical and/or mechanical control measures will be implemented to ensure invasive weed cover does not increase to mitigate this risk.	New invasive weed species are detected during routine weed inspections.	Implement targeted controls to eradicate new infestations.
Increased population of pest predators, including predation (e.g. foxes) and overgrazing (e.g. rabbits)	Food waste is managed as per existing practices at Callide Mine. Pest animal control and periodic eradication programs in place.	**Low.** Control measures in place to ensure increased populations of pests due to mining does not occur.	Evidence of pest animals.	Implementation of periodic eradication programs to target new infestations.
Increase in secondary impacts including dust deposition, noise, light, and vibration.	Managed as per the details in the Boundary Hill South Project EIS, determined no significant impacts predicted.	**Low.** No significant impacts predicted, control measures in place in accordance with the Environmental Authority.	Evidence of secondary impacts.	Implementation of existing management practices, including watering of haul roads.
Impacts from stock (e.g. overgrazing, trampling of nests, management of grasslands).	Stock within the project site will be managed as per existing practices.	**Low.** No changes to stock management proposed.	Evidence of overstocking.	Existing stock management to continue.
Illegal shooting.	Illegal activity.	**Low.** Access to the mining lease is highly controlled.	Fences are damaged and associated with vehicle tracks. Evidence of illegal shooting.	Implementation of existing access, fencing of the mining lease.
Project related materials (i.e. work materials and/or litter) outside of the disturbance boundary.	Non-mining waste to be managed as per existing Callide Mine Waste Management Procedure.	**Low.** No changes to waste management procedure.	Evidence of non-mining waste outside of approved disturbance boundary.	Implementation of existing Callide Mine Waste Management Procedure, which includes waste minimisation, waste tracking, and waste management for each separate waste stream.

Risk framework

		Consequence				
		Minor	**Moderate**	**High**	**Major**	**Critical**
Likelihood	**Highly Likely**	**Medium**	**High**	**High**	**Severe**	**Severe**
	Likely	**Low**	**Medium**	**High**	**High**	**Severe**
	Possible	**Low**	**Medium**	**Medium**	**High**	**Severe**
	Unlikely	**Low**	**Low**	**Medium**	**High**	**High**
	Rare	**Low**	**Low**	**Low**	**Medium**	**High**

Likelihood and consequence

Qualitative measure of likelihood (how likely is it that this event/circumstances will occur after management actions have been put in place/are being implemented)	
Highly likely	Is expected to occur in most circumstances
Likely	Will probably occur during the life of the project
Possible	Might occur during the life of the project
Unlikely	Could occur but considered unlikely or doubtful
Rare	May occur in exceptional circumstances
Qualitative measure of consequences (what will be the consequence/result if the issue does occur)	
Minor	Minor risk of failure to achieve the plan's objectives. Results in short term delays to achieving plan objectives, implementing low cost, well characterised corrective actions.
Moderate	Moderate risk of failure to achieve the plan's objectives. Results in short term delays to achieving plan objectives, implementing well characterised, high cost/effort corrective actions.
High	High risk of failure to achieve the plan's objectives. Results in medium-long term delays to achieving plan objectives, implementing uncertain, high cost/effort corrective actions.
Major	The plan's objectives are unlikely to be achieved, with significant legislative, technical, ecological and/or administrative barriers to attainment that have no evidenced mitigation strategies.
Critical	The plan's objectives are unable to be achieved, with no evidenced mitigation strategies.