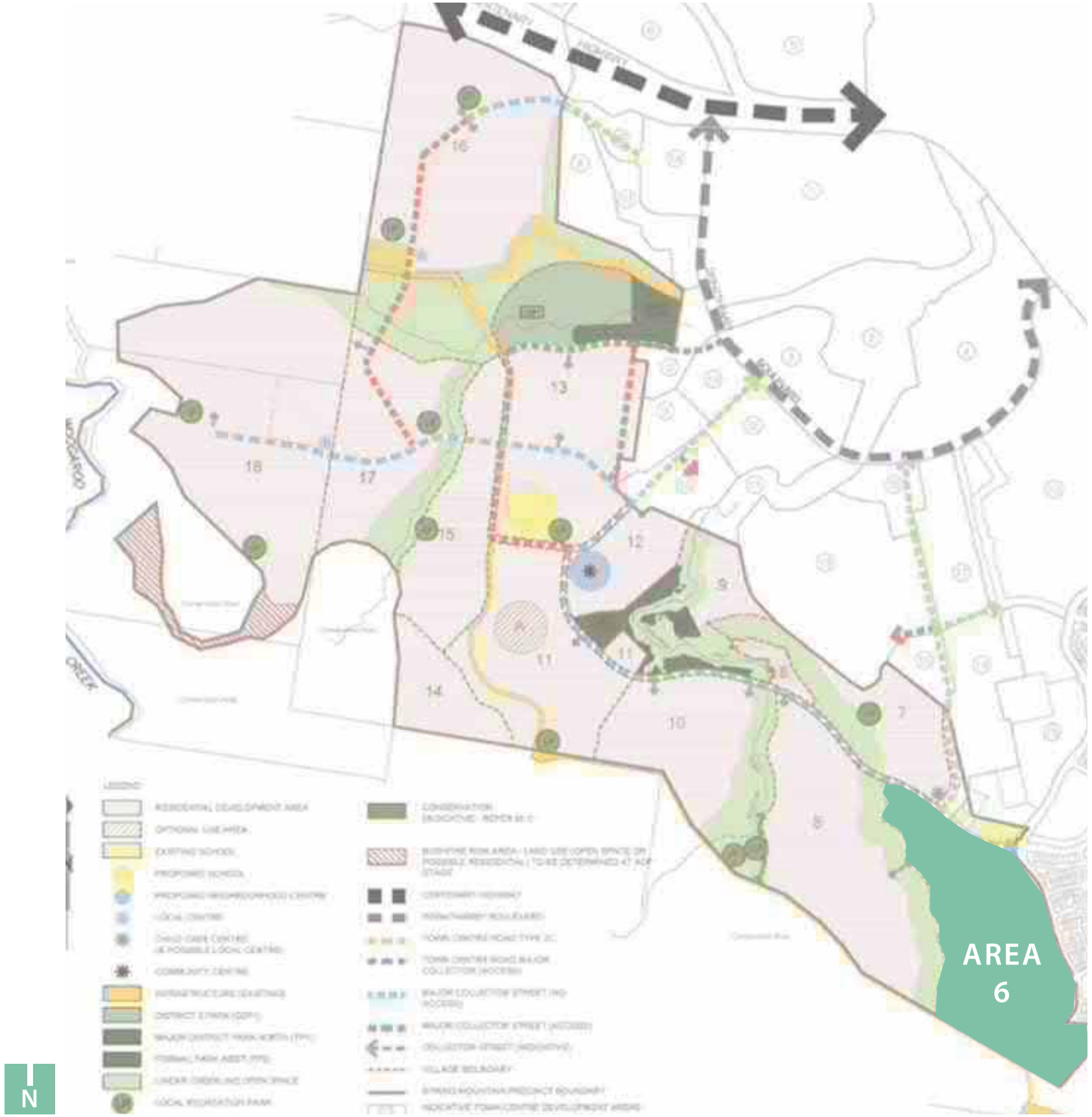



# LENDLEASE COMMUNITIES
## SPRING MOUNTAIN
## SITE BASED MANAGEMENT PLAN - VILLAGE 6

saunders havill group

# 01 CONTENTS





# 02 INTRODUCTION

## Introduction

This phase specific Site Based Management Plan (SBMP) has been prepared for Village 6 (V6) of Springfield Rise at Spring Mountain Estate and incorporates the management intent, objectives and specifications detailed within the overarching environmental management plans prepared for the development.

The aim of this SMBP-V6 is to set out and guide the implementation of effective measures to ameliorate any impacts, and to ensure and manage the long term sustainability of the project and its natural environment, specifically for Matters of National Environmental Significance (MNES) listed species known to occur within the Spring Mountain project site namely:

- Phascolarctos cinereus (Koala)
- Pteropus poliocephalus (Grey-headed Flying-fox)
- Plectranthus habrophyllus

The document has been developed in accordance with the Spring Mountain SMBP, prepared by **Yurrah**, as an updated and re-issued phase specific management plan.

The purpose of this SBMP-V6 is to provide a single, consolidated management document which incorporates requirements of numerous ecological management plans prepared for Spring Mountain. From these documents, this SBMP-V6 extracts management objectives, implementation requirements, performance indicators and monitoring and auditing actions relevant to the specific the development of V6 for both construction and operational phases.

### Environmental Pre-Start Checklist

This Site Based Management Plan has been prepared to create an on-site working document with easy to find references to management measures without the comprehensive details of the assessment and approval. Core to contractors working under this SBMP is completion of the Spring Mountain Pre-Start Environmental Checklist. Completion and sign off of this checklist, inclusive of attachments should will warrant compliance with this SBMP and broader approval parameters.

Details on this V6 SBMP can be found within the following documents:

- Site Based Management Plan for Spring Mountain Community, prepared by **Yurrah** (July 2015)
- Threatened Flora Management Plan for Spring Mountain, prepared by **Yurrah** (July 2015)
- Fauna Management Plan for Spring Mountain, prepared by **Saunders Havill Group** (July 2015)
- Code of practice for Welfare of Animals effected by Land Clearing and Other Habitat Impacts, and Wildlife/ Spotter Catchers (Draft) prepared by **Wildlife Warriors and Voiceless** (2009)
- Offsets Management Plan prepared for Spring Mountain, prepared by **Saunders Havill Group** (July 2015)
- Bushfire Management Plan for Spring Mountain, prepared by **Cardno** (2016)

This SBMP-V6 should also be read in conjunction with all V6 approvals and conditions including approved civil, landscape, vegetation management and rehabilitation plans and specifications.

This SBMP-V6 has also been prepared to meet compliance and auditing requirements of the Spring Mountain Commonwealth **Department of the Environment** (DoE) approval under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC) (Ref: 2013/7057), specifically Conditions 3-6.

This SBMP-V6 outlines construction measures specific to V6 to manage of impacts to native flora and fauna.

<u>Construction</u>

- Vegetation Management (Clearing & Protection)
- Protection of MNES Fauna (Koala and Grey-headed Flying Fox) and Native Wildlife
- Maintenance of Safe Wildlife Movement Opportunities
- Fauna Habitat Rehabilitation
- Threatened Flora Management
- Pest Management
- Fire Management
- Education and Awareness

# 03 SITE DESCRIPTION

## Site Description

V6 is located at the eastern end of Spring Mountain Estate adjacent to the existing Springfield Lakes stages (Tea Trees Estate) and south of the continuation of Grande Avenue. The existing school and proposed sports fields of the Town Centre within V7 are located to the immediate north. The village is bound by Springfield Conservation Land to the south, a tributary of Mountain Creek to the west V6 has a development area of approximately 34ha.

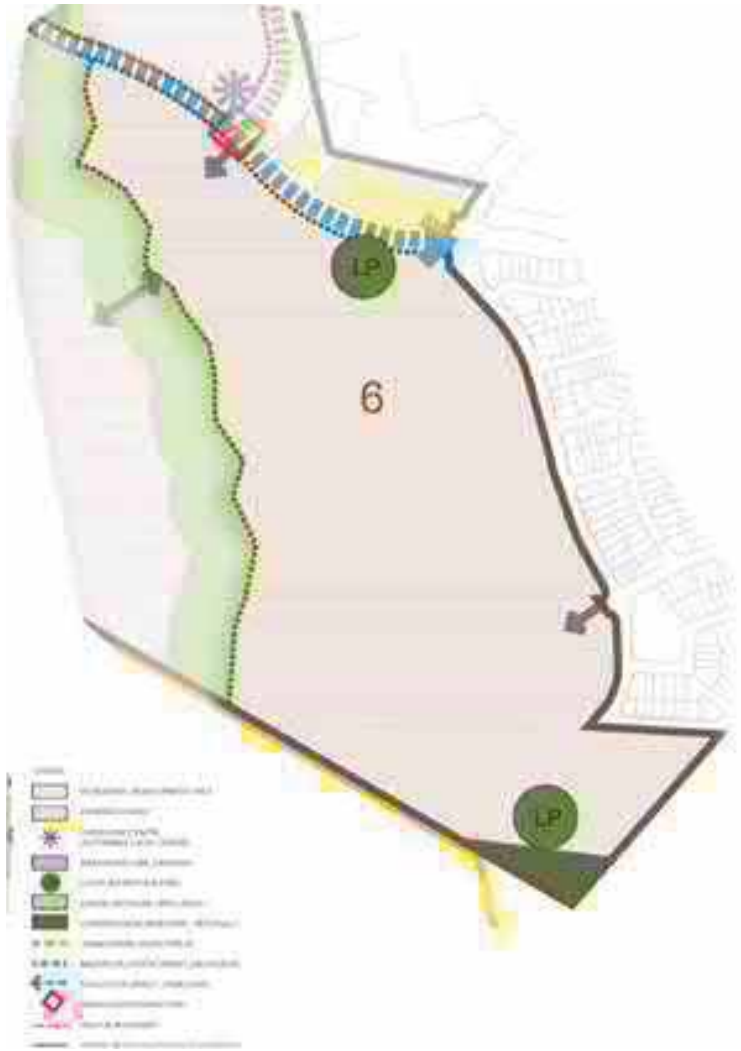
A drainage corridor runs north-south through the eastern catchment of the village and is proposed to be filled as a result of the development due to its disconnection from other linear open spaces to the north-west resulting from the development of the School. It is proposed to be filled and piped with discharge to the north of Grande Avenue extension and internal overland flow will be facilitated via road alignments within the village. V6 accommodates two local recreation parks, with the southern park to be adjacent to the proposed Conservation Land Dedication Area along the southern boundary.

<u>Conservation Land</u>

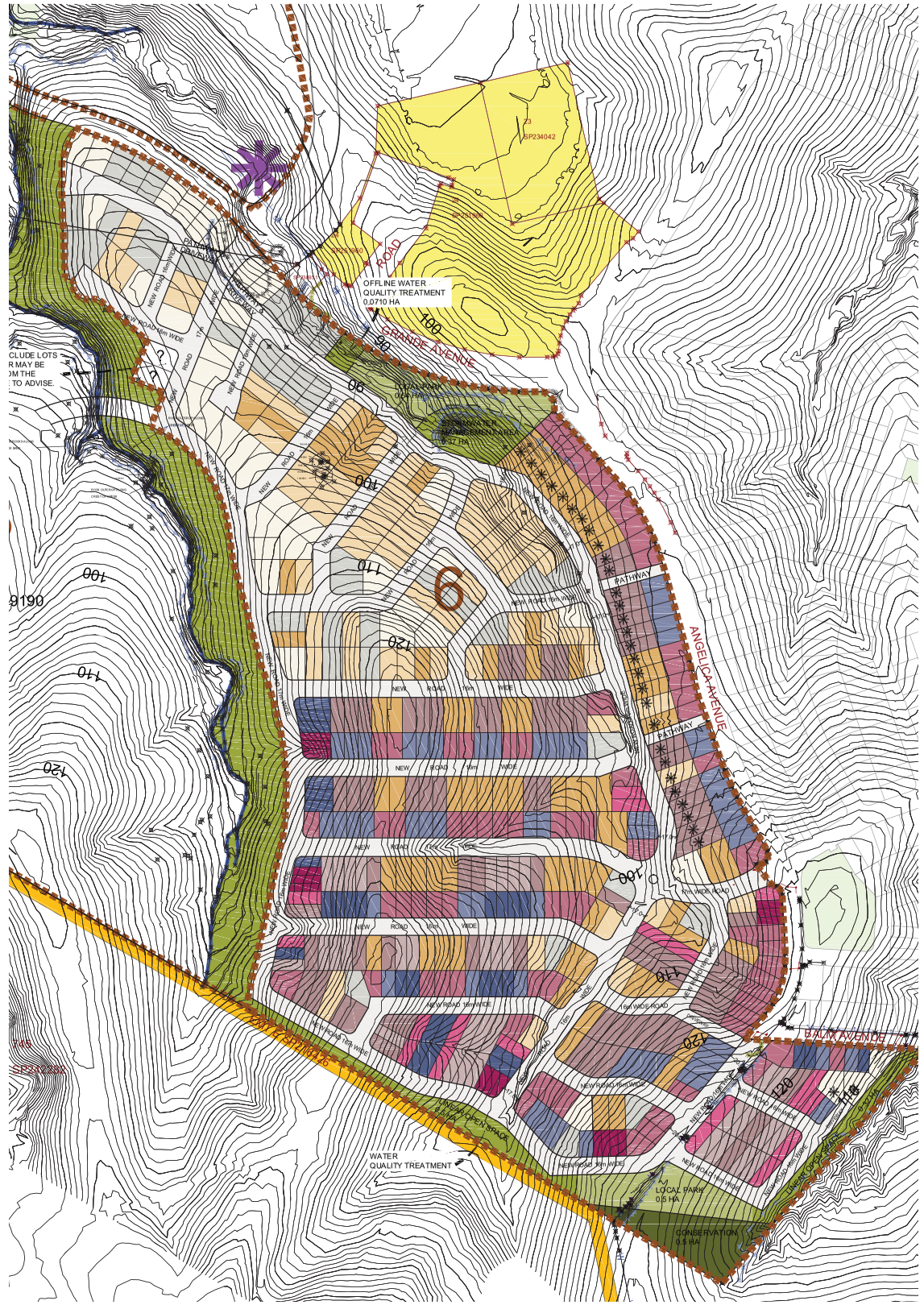
A minimum area of 0.5ha of Conservation Land is to be provided at the southern boundary to augment the existing Conservation Land provided as part of the Spring Mountain Offset in accordance with EPBC approval conditions. Edge effects will be minimised by the location of a local recreation park adjacent to this Conservation Land dedication.

<u>Linear Opens Space / Retained Habitat</u>

The western boundary of the village defines proposed linear open space, with a minimum width of 80m in accordance with the Springfield Structure Plan. This linear conservation follows a tributary of Mountain Creek. Interface management for existing habitat for Koala and Grey-headed Flying Fox will be implemented along this waterway.




*Extract: V6 development site from the Spring Mountain Precinct Plan*




*Extract: Preliminary Site Layout*

*Photo: Koala (listed as Vulnerable under EPBC Act (Cth) and NCA (Qld))*

*Photo: Grey-headed Flying-fox (listed as Vulnerable under EPBC Act (Cth))*

*Photo: Plectranthus habrophyllus (listed as Endangered under EPBC Act (Cth))*

# 04 ECOLOGICAL VALUES - SUMMARY

## Ecological Values

Numerous ecological surveys were undertaken over the site as part broader concept planning for the Spring Mountain project. In addition, pre-clearance flora and fauna surveys for V6 were undertaken by **Saunders Havill Group** and **Queensland Faura Consultant** respectively. The following comments summarise the ecological values of the V6 site:

- The majority of V6 is mapped as containing vegetation comprised of Least Concern regional ecosystems 12.9- 10.19a and 12.9-10.17a.
- Dominate flora species include *Corymbia henryi* (Large Leaf Spotted Gum) and *Eucalyptus fibrosa* (Broad Leaf Ironbark).
- The shrub and ground layers are dominated by native species with clumped weed infestations of *Lantana camara* (Lantanta) and introduced grasses and weeds along the cleared access tracks.
- A number of access tracks traverse the site including along the eastern boundary adjacent to the existing Tea Tree Estate and from Grande Avenue to the existing water tower to the south.
- A small area of exposed rock surface was observed along the portion of the ridge.
- A tributary of Mountain Creek traverses the western boundary of V6. This area has been identified as containing potential habitat for Koala and Grey-headed Flying fox and is to be retained within open space and rehabilitated as part of the development.
- A drainage corridor runs north-south through the eastern catchment of V6. Ecological survey identified that this gully line is fragmented from areas of ecological value and caters for overland flow. It is proposed to be infilled as part of the development.
- No State or Commonwealth threatened flora or fauna species were identified within V6 as part of historical and pre-clear surveys.

Regional Ecosystem Descriptions

| | |
|---|---|
| Least Concern RE 12.9-10.19a | *Corymbia henryi +/- Eucalyptus fibrosa subsp. Fibrosa, Corymbia citriodora subsp. Variegate, Eucalyptus siderophloia, Eucalyptus crebra open forest. Occurs in coastal areas on Cainozoic and Mesozoic sediments.* |
| Least Concern RE 12.12.17a | *Lophostemon confertus or Lophostemon suaveolens dominated open forest usually with emergent Eucalyptus and/or Corymbia species. Occurs in gullies and southern slopes on Cainozoic and Mesozoic sediments.* |
| Least Concern RE 12.9-10.2 | *Corymbia citriodora subsp. Variegate open forest or woodland usually with Eucalyptus crebra. Other species such as Eucalyptus tereticornis, Eucalyptus moluccana, Eucalyptus acmenoides and Eucalyptus siderophloia may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of Lophostemon confertus (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments.* |
| Of Concern RE 12.9-10.7 | *Eucalyptus crebra +/- Eucalyptus tereticornis, Corymbia tessellaris, Angophora leiocarpa, Eucalyptus melanophloia woodland. Occurs on Cainozoic and Mesozoic sediments.* |

*Photo: Dominated by Corymbia henryi and Eucalyptus fibrosa.*

*Photo: Exposed rocky terrain observed along the ridge line.*

*Extract: Regional Ecosystem Mapping*

# 05 ENVIRONMENTAL MANAGEMENT

## Management – General

This SMBP–V6 sequences through details on a number of site specific outcomes for fauna, vegetation management and operational controls associated with the development of V6. Logically, the document works through construction processes and has been prepared as a sub-plan to the SBMP for Spring Mountain prepared by **Yurrah**.

### Environmental Training

This SBMP-V6 is to be issued to all site contractors (and sub-contractors) and kept within site construction offices. Elements of compliance with the document will form part of the responsibility of the Principle Site Contractor. Training on the management measures outcomes in this SBMP-V6 will occur as part of the broader site environmental management and workplace health and safety procedures. This will include the following steps:

1. Copy of the SBMP-V6 made available to all site contractors (and sub-contractors)
2. Outline of the SBMP-V6 and its requirement relative to the site and / or particular scope of a contract forming part of the site induction requires contractors to read, acknowledge and sign the document prior to commencement of site works.
3. Requirements of the SBMP-V6 to be incorporated into workplace checklists, work method statements and toolbox talks.
4. Weekly review and report on compliance with the SBMP by the Principle Contractor.


*Spring Mountain Risk Management Process*

### Adaptive Management

Adaptive management refers to a way of managing natural resources where management actions are regularly revised and, if necessary, modified based on monitored changes in environmental condition and/or changes in base knowledge which underpins the original management approach. This SMBP-V6 has been based on, as far as practical, the current state of knowledge of the species ecology and best practice habitat management approaches. When new facts emerge from future research, they should be immediately integrated into the plan so it remains consistent with the current state of knowledge (and best practice).

### Statutory Requirements

Activities associated with this SBMP will comply with the relevant provisions of legislation and regulations and policies of the following:

- [Environment Protection and Biodiversity Conservation Act 1999] (Cth) with regard to species listed under the provisions of this Act;
- [Nature Conservation Act 1992] (Qld) with regard to species listed under the provisions of this Act;
- [Land Protection (Pest and Stock Route Management) Act 2002] (Qld) with regard to weeds and pests; and
- The requirements of the Commonwealth, State and /or Local Government decision notices including any relevant "conditions of approval".

### Roles and Responsibilities

| | | |
|---|---|---|
| Proponent | **Lend Lease Communities Pty Ltd** | **Lend Lease Communities Pty Ltd**<br>Contact: Ian Murray |
| Contractor | Appointed party or company that performs the construction works on site and included all employees of the Contractor and sub-contractors. | **Shadforth Civil**<br>Contact: Tony Hopper |
| Site Supervisor | Appointed party contracted by the Proponent to oversee daily site operations and site management. | **Arcadias**<br>Contact: Christo Louw |
| Environmental Representative | Appointed party contracted by the Proponent to oversee environmental compliance. | **Saunders Havill Group**<br>Contact: Murray Saunders |
| Fauna/Spotter Catcher | Appointed Contractor employed to implement fauna welfare responsibilities with vegetation clearing operations. The Fauna Spotter Catcher is a person who holds a rehabilitation permit with an extended authority issued by **EHP** specifying the gilder may take, keep or use an animal whose habitat is about to be destroyed by a human activity. | **Queensland Fauna Consulting**<br>Contact: Bryan Robinson |
| Koala Spotter | Appointed Contractor employed to implement Koala welfare responsibilities associated with vegetation clearing operations. The Koala Spotter is a person who holds a tertiary qualification in Biology or Zoology, or who is demonstrably experienced in the identification and location of Koalas in their natural habitat and has an authorisation from **EHP** to conduct such activities. For example, demonstrably experienced may include a Koala keeper employed by a licensed wildlife exhibitor (i.e. zoo) may be capable of demonstrating competence in locating Koalas. | **Queensland Fauna Consulting**<br>Contact: Bryan Robinson |
| Council | **Ipswich City Council (ICC)** | **Ipswich City Council (ICC)**<br>Contact: Tim Foote |

# 06 PRE-CLEARANCE - VEGETATION MANAGEMENT

## P1– Vegetation Management (General)

Vegetation clearing must be undertaken in accordance with approved plans to ensure protection of areas of ecological significance and agreed retained linear open space corridors. Habitat trees where marked for retention must not be damaged as a result of tree clearing and or are to be removed at the specification and control of the appointed Fauna Spotter.

**Table 1** describes the relevant management requirements to address this issue.

<u>Objective</u>

1. To identify clearing in the plans and specification, trees to be retained and trees to be cleared. Areas of retention should be clearly marked and fenced.
2. To ensure that all contractors understand the requirements of protection and retention and install protective devices to ensure no additional clearing occurs.
3. To ensure that the work program is such as to minimise the time between when clearing occurs and the cleared ground is stabilised.
4. To ensure that cleared material is mulches or wood-chipped as appropriate for recycling
5. To protect linear open space from construction damage and run-off.

<u>Management Strategy</u>

- Clearing to be undertaken in accordance with measures outlined in the EPBC Management Plans.
- Install stormwater management devices as per V6- Stormwater Management Plan.

<u>Performance Indicators</u>

- Integrity of protective devices.
- Existing vegetation and trees retained in good health, with no scars from earthworks machinery and no erosion and sediment deposited within linear open space/retention areas.

Clearing activities should be undertaken in accordance with the with all management plan requirements and associated approval conditions. It is acknowledged this clearing line is offset 10m from the ultimate clearing line. Additional lineal clearing will be completed as part of phase 2 works.

*Photo: Control clearing of vegetation*

*Photo: Erosion control to cleared batter*

*Photo: Tree protection and erosion fence*

<u>Table 1: P1: Vegetation Management (Clearing and Protection)</u>

| Issue | Vegetation Management – Clearing and Protection | Responsible Person | Timing |
|---|---|---|---|
| Implementation Requirements | Ensure protective devices are installed and maintained in functional condition. | Contractor | During Clearing & Construction |
| | Monitor and report on the success, protection and retention, and integrity of protective devices such as fences and sediment fences through | | |
| Monitoring | Weekly inspection and log. | Contractor | During Clearing & Construction |
| Reporting | Monthly (until operation). | Contractor | During Clearing & Construction |
| Corrective Action | Repair, replace or reinstate protective devices. | Contractor | During Clearing & Construction |
| | Appropriate treat any damage to trees or vegetation marked for retention as required. | Contractor | During Clearing & Construction |

# 06 PRE-CLEARANCE - VEGETATION MANAGEMENT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# 06 PRE-CLEARANCE - VEGETATION MANAGEMENT

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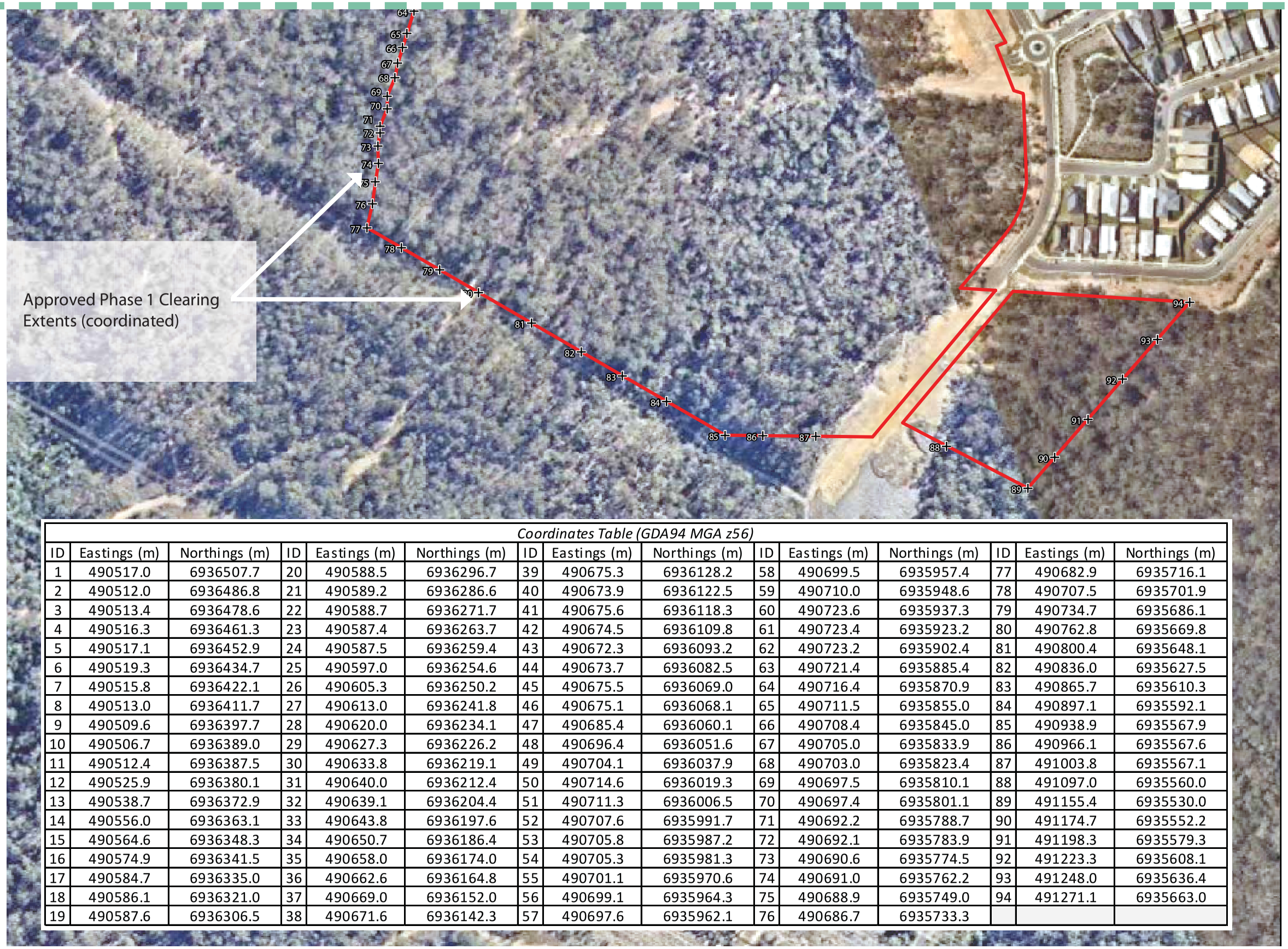



*Coordinates Table (GDA94 MGA z56)*

| ID | Eastings (m) | Northings (m) | ID | Eastings (m) | Northings (m) | ID | Eastings (m) | Northings (m) | ID | Eastings (m) | Northings (m) | ID | Eastings (m) | Northings (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 490517.0 | 6936507.7 | 20 | 490588.5 | 6936296.7 | 39 | 490675.3 | 6936128.2 | 58 | 490699.5 | 6935957.4 | 77 | 490682.9 | 6935716.1 |
| 2 | 490512.0 | 6936486.8 | 21 | 490589.2 | 6936286.6 | 40 | 490673.9 | 6936122.5 | 59 | 490710.0 | 6935948.6 | 78 | 490707.5 | 6935701.9 |
| 3 | 490513.4 | 6936478.6 | 22 | 490588.7 | 6936271.7 | 41 | 490675.6 | 6936118.3 | 60 | 490723.6 | 6935937.3 | 79 | 490734.7 | 6935686.1 |
| 4 | 490516.3 | 6936461.3 | 23 | 490587.4 | 6936263.7 | 42 | 490674.5 | 6936109.8 | 61 | 490723.4 | 6935923.2 | 80 | 490762.8 | 6935669.8 |
| 5 | 490517.1 | 6936452.9 | 24 | 490587.5 | 6936259.4 | 43 | 490672.3 | 6936093.2 | 62 | 490723.2 | 6935902.4 | 81 | 490800.4 | 6935648.1 |
| 6 | 490519.3 | 6936434.7 | 25 | 490597.0 | 6936254.6 | 44 | 490673.7 | 6936082.5 | 63 | 490721.4 | 6935885.4 | 82 | 490836.0 | 6935627.5 |
| 7 | 490515.8 | 6936422.1 | 26 | 490605.3 | 6936250.2 | 45 | 490675.5 | 6936069.0 | 64 | 490716.4 | 6935870.9 | 83 | 490865.7 | 6935610.3 |
| 8 | 490513.0 | 6936411.7 | 27 | 490613.0 | 6936241.8 | 46 | 490675.1 | 6936068.1 | 65 | 490711.5 | 6935855.0 | 84 | 490897.1 | 6935592.1 |
| 9 | 490509.6 | 6936397.7 | 28 | 490620.0 | 6936234.1 | 47 | 490685.4 | 6936060.1 | 66 | 490708.4 | 6935845.0 | 85 | 490938.9 | 6935567.9 |
| 10 | 490506.7 | 6936389.0 | 29 | 490627.3 | 6936226.2 | 48 | 490696.4 | 6936051.6 | 67 | 490705.0 | 6935833.9 | 86 | 490966.1 | 6935567.6 |
| 11 | 490512.4 | 6936387.5 | 30 | 490633.8 | 6936219.1 | 49 | 490704.1 | 6936037.9 | 68 | 490703.0 | 6935823.4 | 87 | 491003.8 | 6935567.1 |
| 12 | 490525.9 | 6936380.1 | 31 | 490640.0 | 6936212.4 | 50 | 490714.6 | 6936019.3 | 69 | 490697.5 | 6935810.1 | 88 | 491097.0 | 6935560.0 |
| 13 | 490538.7 | 6936372.9 | 32 | 490639.1 | 6936204.4 | 51 | 490711.3 | 6936006.5 | 70 | 490697.4 | 6935801.1 | 89 | 491155.4 | 6935530.0 |
| 14 | 490556.0 | 6936363.1 | 33 | 490643.8 | 6936197.6 | 52 | 490707.6 | 6935991.7 | 71 | 490692.2 | 6935788.7 | 90 | 491174.7 | 6935552.2 |
| 15 | 490564.6 | 6936348.3 | 34 | 490650.7 | 6936186.4 | 53 | 490705.8 | 6935987.2 | 72 | 490692.1 | 6935783.9 | 91 | 491198.3 | 6935579.3 |
| 16 | 490574.9 | 6936341.5 | 35 | 490658.0 | 6936174.0 | 54 | 490705.3 | 6935981.3 | 73 | 490690.6 | 6935774.5 | 92 | 491223.3 | 6935608.1 |
| 17 | 490584.7 | 6936335.0 | 36 | 490662.6 | 6936164.8 | 55 | 490701.1 | 6935970.6 | 74 | 490691.0 | 6935762.2 | 93 | 491248.0 | 6935636.4 |
| 18 | 490586.1 | 6936321.0 | 37 | 490669.0 | 6936152.0 | 56 | 490699.1 | 6935964.3 | 75 | 490688.9 | 6935749.0 | 94 | 491271.1 | 6935663.0 |
| 19 | 490587.6 | 6936306.5 | 38 | 490671.6 | 6936142.3 | 57 | 490697.6 | 6935962.1 | 76 | 490686.7 | 6935733.3 | | | |

# 07 PRE-CLEARANCE - FAUNA MANAGEMENT

## P2 – Protection of MNES Fauna (Koala and Grey-headed Flying Fox) and Native Wildlife (Vegetation Clearing)

Clearing of native vegetation has the potential to result in direct injury or death to fauna. Clearing of vegetation for the purposes of preparing development areas also has the potential to result in incidental damage to adjacent habitats to be retained.

Development protocols to respond to injured wildlife must be prepared prior to vegetation clearing operations. It is expected that some of these protocols are likely to be applicable to responses required for all injured fauna (including Koala) and must be included within the Animal Welfare Plan (AWP) to be prepared by the appointed fauna spotter catcher.

**Table 2** describes the relevant management requirements to address the protection of terrestrial fauna, specifically Koala, during vegetation clearing.

Objective

1. To minimise and mitigate adverse direct and indirect effects of vegetation clearing on terrestrial including Koala and Grey-headed Flying-fox, during clearing and construction.
2. Prevent mortality or injury to terrestrial wildlife, specifically Koala.

Management Strategy

- Prevent damage and/or disturbance to native vegetation and associated habitats outside clearing areas.
- Clearing and construction operations are employed to maximise animal welfare and reduce fauna mortality.
- Informal all personnel of site environmental responsibility.
- Reuse hollows and large rocks for habitat in retained habitat areas/linear open space.
- Safe fauna movement opportunities are provided within linear open space to prevent fauna moving through construction areas.
- Direct clearing activities from open area to less open areas allowing fauna to natural seek shelter in conservation land and linear open space/retained habitat
- Provision of permanent and temporary fencing in accordance with the V6- Vegetation Management Clearing Plan
- Undertake works in accordance with V6 –Direction of Clearing Plan and install fencing in accordance with V6- VMCP.

Performance Indicators

- Prevent fauna mortality and disturbance to terrestrial fauna.
- No injury or death of Koala.
- No damage to linear open space/retained habitat.
- No disturbance to native vegetation outside permitted clearing footprints.

Fauna Management

**Lend Lease Communities Pty Ltd** commits to the use of leading practice methods and processes for the role of Wildlife Spotter Catchers in the engagement of any contractors for native vegetation clearing works. The standards and requirements outlined in this Specification Note are acknowledged as above minimum requirements in most Local Government areas and are applicable despite lessor requirements listed within individual project approval packages.

As a minimum specification Wildlife Spotter Catchers will retain the following Queensland State Government Permits:

1. Animal Ethics
2. Scientific Purposes Permit
3. Scientific User Registration
4. Damage Mitigation Permit
5. Rehabilitation Permit

Wherever practical all clearing works will be coordinated in general accordance with applicable site based components of the **DRAFT Code of Practice** for the welfare of animals affected by land-clearing and other habitat impacts prepared by the **Australia Zoo Wildlife Warriors and Voiceless** (and or any contemporary Industry based final version of this Draft Code). This includes mandatory controls on the timing and sequencing of clearing works integrated with a regimented series of fauna management protocols implemented by registered Fauna Spotter / Catchers. The following procedural stages listed in the Draft Code are to be applied to clearing works on all **Lendlease** projects:

Action 1 – Engagement Wildlife Spotter Catcher

Action requires that the developer (and or the developer's representative through the principal contractor) engage a Wildlife Spotter Catcher with full registrations and licences provided in accordance with the Queensland Government's National Parks and Wildlife Services.

A Registered Wildlife Spotter Catcher engaged shall have the minimum permits listed in this specification.

Action 2 – Wildlife Spotter Catcher to Prepare a Wildlife Protection and Management Plan (WPMP)

The WPMP should be submitted to the **Queensland Department of Environment and Heritage Protection** (EHP) or relevant authority and or stakeholder. The WPMP should include the following information:

- Description of the project with reference to impacts on wildlife or wildlife habitat;
- Pre development plan of the site showing habitat areas, features, corridors, riparian habitats and adjacent areas;
- Results of any fauna surveys including pre-clearance surveys; and
- A wildlife and habitat impact assessment based on the proposed development works.

Action 3 – Prepare a Wildlife and Habitat Impact Mitigation Plan

Following completion and endorsement of the WPMP the Wildlife Spotter Catcher should prepare a more specific Wildlife and Habitat Impact Mitigation Plan, which will include details on:

- Measures required to be completed to minimise wildlife and habitat impacts during operational works;
- Wildlife capture and removal plan;
- Contingency plan for wildlife requiring euthanasia, other veterinary procedures or captive care;
- Wildlife storage and housing plan;
- Wildlife release and disposal plan; and
- Post works measures to minimise impacts on wildlife.

**Lendlease Communities Pty Ltd** support the use of innovative leading practice methods minimising and mitigating impacts on all native fauna during clearing operations.

Action 4 – Wildlife Spotter Catcher Role at Pre-Start Meeting

Prior to the commencement of any construction works, a pre-start meeting is to be held between the project manager, site fore-person, plant operators and applicable Local and State Government representatives. At the pre-start meeting, the Wildlife Spotter Catcher is to outline the clearing process and the requirements of the WPMP.

Action 5 – During Construction

The Wildlife Spotter Catcher is to be on-site during all phases of construction which involve potential impacts on wildlife or habitat (unless otherwise specified by the appointed Wildlife Spotter Catcher. This will enable to the Wildlife Spotter Catcher to make any necessary adjustments to the approved Clearing Management Plans and WPMP to cater for any specific issues encountered during the clearing works.

Action 6 – Post Works Reporting

During the course of all site works, including the pre-clearance surveys, the Wildlife Spotter Catcher is to keep an accurate record of all animals encountered, captured, incidents and disposals for each stage of the project. The records should form part of the Wildlife Management Report to be issued under licence requirements to the State Government. The Wildlife Management Report should consist of the following 3 sections, where they are applicable to the project:

1. ***Wildlife Habitat Management Plan*** – Aspects of the planning, design, construction and ongoing operation of the project in which risks to wildlife have been identified. This plan should also include recommendations and outline the type, frequency and timeframes for monitoring

2. ***Wildlife Capture and Disposal Plan*** – Should contain the following details for each captured animals:
   a. Species
   b. Identification name or number
   c. Sex (M, F or unknown)
   d. Approximate Age or Age Class (neonate, juvenile, sub-adult, adult)
   e. Time and date of capture
   f. Method of capture
   g. Exact point of capture (GPS coordinates)
   h. State of health
   i. Incidents associated with capture likely to affect health
   j. Veterinary intervention or treatments
   k. Time held in captivity
   l. Disposal method (euthanasia, translocation, re-release)
   m. Date and time of disposal
   n. Detailed of disposal (GPS points of release)
   o. For released animals, location relative to point of capture

3. ***Animal Injury and Euthanasia Report*** – similar details for the Wildlife Capture and Disposal Plan should be included in this report.

# 07 PRE-CLEARANCE - FAUNA MANAGEMENT

Koala Management & Welfare

While clearing activities aim to protect and minimise impacts to all terrestrial fauna, specific management measure for Koala are required as part of the EPBC approval and have been specified within the Fauna Management Plan, prepared by **Saunders Havill Group** which should be read in conjunction with the plan.

Key outcomes within the FMP for Koala include:

- Koalas on site are protected
- Koala habitats are protected, maintained and their integrity enhanced.
- The abilities for Koalas to move into, within and out of the sit e is maintained.
- All persons involved in construction and operation of the development are aware of the site values, their potential to impact on Koalas and their habitats, and their responsibilities in regard to procedures and strategies within approved management plans.

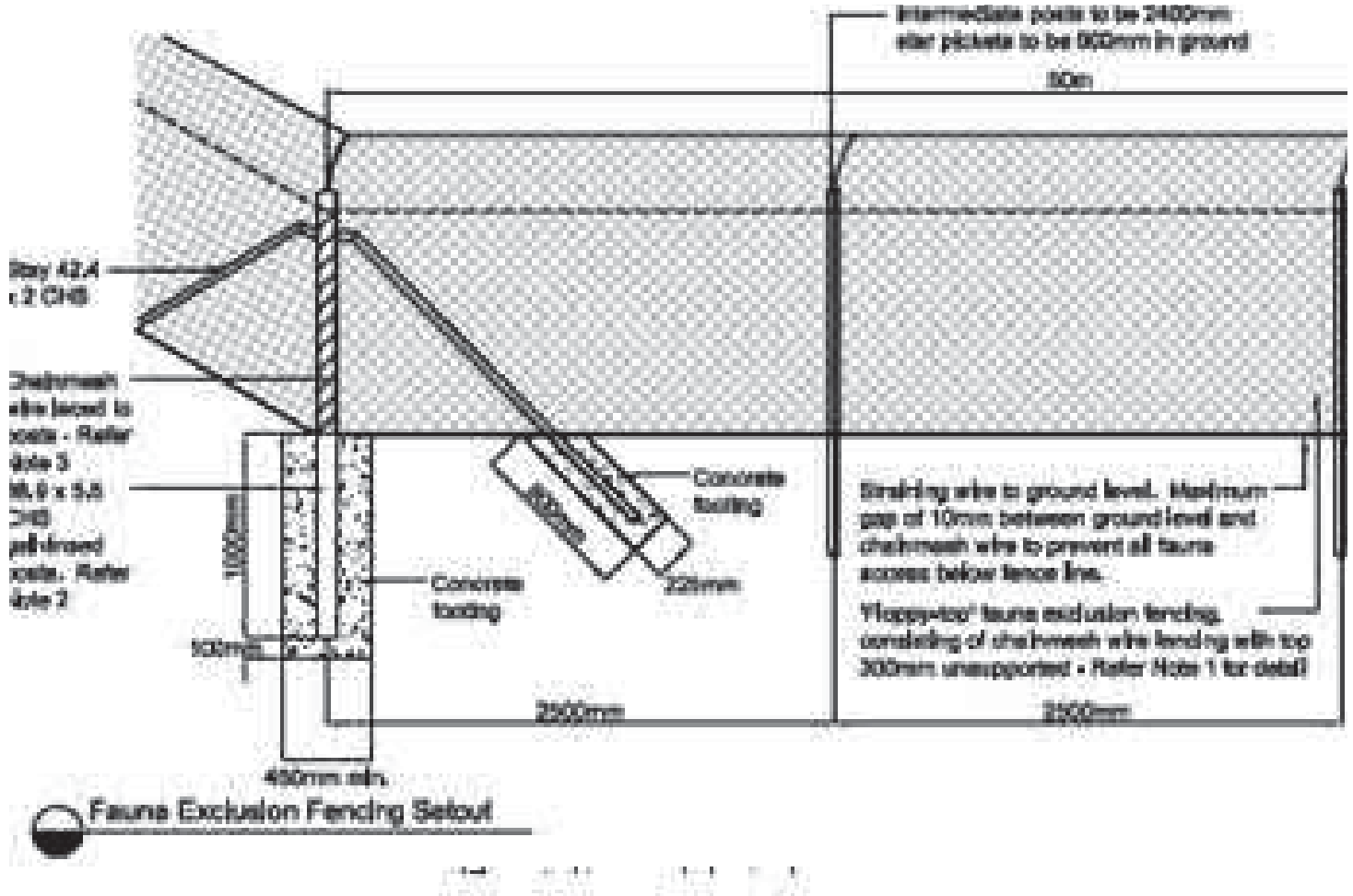

*Koala Signage*

*Significant Tree Protection Fencing*

*Fauna Spotter During Tree Clearing*

*Fauna Spotters Retrieving Fauna*

*Fauna Exclusion Fencing*




*Construction fencing detail*

*Fauna Signage*

*Fauna Exclusion Fencing*

# 07 PRE-CLEARANCE - FAUNA MANAGEMENT

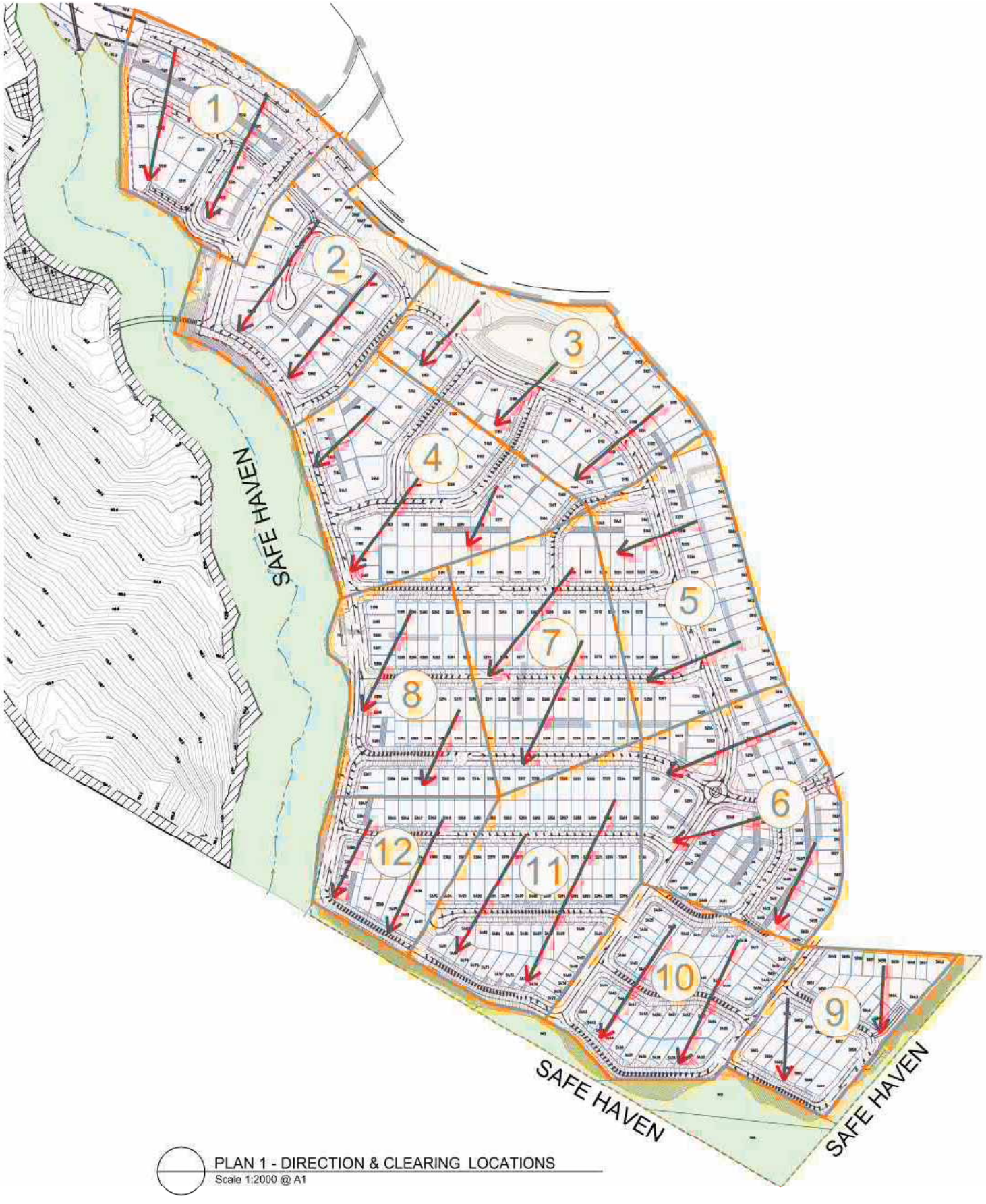
Table 2: P2 – Protection of MNES Fauna and Native Wildlife (Vegetation Clearing)

| Issue | P2 - Protection of MNES Fauna and Native Wildlife | Responsible Person | Timing |
|---|---|---|---|
| Implementation Requirements | No vegetation removal shall occur until relevant approvals have been obtained All permit conditions will be followed | Proponent | Prior to Clearing |
| | To prevent damage and / or disturbance to native vegetation and associated habitats outside clearing areas:<br>a. Clearing boundaries will be delineated on all drawings and in the field to define the authorised clearing extent.<br>b. Installation of vegetation clearance markers (e.g. high visibility poly-web fencing) prior to the commencement of vegetation clearance to identify and protect remnant vegetation for retention.<br>c. Along the interface between clearing precincts and open space / Environmental Corridors, trees are to be felled towards the clearing precinct to avoid damage to these areas.<br>d. Clearing vegetation is to be stockpiled so as not to impede damage to drainage channels. | Contractor | Prior to Clearing & During Clearing |
| | No clearing of vegetation is to commence without the presence of an **EHP** approved Fauna Spotter Catcher, or where clearing includes non-juvenile Koala habitat trees, a Koala Spotter.<br>a. An appointed Site Superintendent will be responsible for ensuring that all trees scheduled for removal will be checked on the day of their removal for the presence of fauna by an **EHP** approved Fauna Spotter Catcher / Koala Spotter as vegetation characteristics dictate.<br>b. The **EHP** approved Fauna Spotter will check and clear vegetation prior to its felling and, if required, will relocate native wildlife (other than Koala) into appropriate habitat areas within the site which are to be retained. In the case of a Koala being present, translocation of the individual/s must occur in accordance with requirements for Koala.<br>c. Hollow-bearing (habitat) trees are to be identified in the field and by plan prior to commencement of clearing operations. If fauna is present, the tree will either be left standing overnight to allow for the animal to leave via their own volition, or will be encouraged from the tree by staking or other methods deemed suitable by the fauna spotter. Where no signs of fauna are identified, machinery operators will be instructed to fell trees in a manner directed by the fauna spotter to minimise potential risk to fauna. | Fauna Spotter Catcher | Prior to Clearing |
| | All construction personnel shall attend environmental training as part of the site induction process prior to entering the work site. As part of this training, all personnel will be instructed on their obligations in regard to vegetation clearing protocols and to protect native fauna. Areas identified for vegetation clearance are to be clearly defined and detailed in site inductions. | Contractor | Prior to Clearing |
| | Conduct vegetation clearing in sequential stages. Vegetation clearing is to conform with the following:<br>a. The direction of clearing should be away from threatening processes or hostile environments, and towards the clearing precinct to avoid damage to adjacent retained habitat links, ensuring that:<br>i. Fauna are not required to cross roads or move through developed areas or disturbed areas. Such as residential areas or areas that require movement of greater than 100m over cleared ground to reach suitable habitat;<br>ii. Fauna area not left occupying an "island" of habitat between hostile environments, such as a road and a cleared area, unless there are no other more suitable habitat areas in which to direct fauna, and<br>iii. Fauna can safely leave the site of clearing and relocate to adjacent habitat.<br>b. Cleared vegetation is to be stockpiled so as not to impede fauna movement.<br>c. Where vegetation to be cleared includes non-juvenile Koala habitat trees, implement sequential clearing as per the requirements for Koala. | Contractor | During Clearing |
| | Companion animals (e.g. dogs) are to be banned from all construction areas. | Contractor | At all times |
| | Vehicle access within retained habitat/linear open space will be limited and appropriately signed. | Contractor | Prior to Clearing & During Clearing |
| | Conduct vegetation clearing in accordance with Section 4 of the Spring Mountain FMP (prepared by **Saunders Havill Group** dated July 2015) which outlines specific implementation requirements for Koala including clearing in sequential stages for sites. For a site more than 6ha vegetation clearing is to conform with the following:<br>a. Is carried out in a way the ensures Koalas on the area being cleared have enough time to move out of the clearing with without human intervention and involves<br>i. Ensuring not more than 3ha or 3% of the sites area (whichever is greater) in any one stage<br>ii. Ensuring that between each stage and the next there is at least one period of 12 hours at starts at 6pm on a day and ends at 6am on the following day, during which no trees are cleared on the site<br>b. Is implanted in a way that ensures, while clearing is being carried out, appropriate habitat links are maintained within the clearing site and between the site and its adjacent areas allowing Koalas living on the site to move out of the site | Contractor / Fauna Spotter Catcher/ Koala Spotter | During Clearing |

Table 2: P2 – Protection of MNES Fauna and Native Wildlife (Vegetation Clearing)

| | | | |
|---|---|---|---|
| | c. Ensures that no tree in which a Koala is present, or a tree with a crown overlapping a tree in which a Koala is present, is cleared until the tree is vacated by the Koala.<br>d. Ensures that vegetation clearing is directed away from threatening processes, or hostile environments, and towards any retained vegetation or habitat links, ensuring that:<br>i. Koalas are not pressured, through loss of habitat, to cross roads or move through developed or disturbed areas, such as residential areas or areas that require movement of greater than 100m over cleared ground to reach suitable habitat;<br>ii. Koalas are not left occupying an "island" of habitat between hostile environments, such as road and cleared areas, unless there are no other more suitable habitat areas in which direct Koalas; and<br>iii. Koalas can safely leave the site of clearing and relocate to adjacent habitat.<br>e. The Koala spotter is responsible for ensuring, throughout the duration of clearing operations, that no tree in which a Koala is present, or a tree identified as being a risk to Koalas if felled, should not be felled, damaged or interfered with until the Koala has moved from the felling site of its own volitation.<br>f. Where a Koala is present in a tree scheduled for removal, the tree will be marked with distinctive flagging tape (and other advisory means as required) and machinery operators will be briefed on the location of such trees and it will be clearly confirmed with operators that the subject tree(s) are to remain undisturbed until the Koala has moved of its own volition (where the strategy is to allow the Koala to move of its own accord, overnight). On the following day, such trees are to be checked again prior to their removal and, if necessary, the procedure is to be repeated until the Koala has moved<br>g. A Koala spotter is not to be involved in the clearing of vegetation while they are responsible for identify Koalas on site. | | |
| | A requirement that a permit to interfere with wildlife from **EHP** will be mandatory for the wildlife handing activities as will the appropriate Animal Ethics Permit from **DAF**. Construction personnel shall not attempt to handle any wildlife.<br>a. Fauna / Koala handling and relocation activities must only be undertaken by those identified on a current site-specific Damage Mitigation Permit (Removal and Relocation of Wildlife) from **EHP**.<br>b. Koala Spotter/Fauna Spotter Catchers are required to relocate injured wildlife to the nearest designated veterinary clinic of wildlife hospital. Full contacts will be provided within the AWP.<br>c. A register of fauna incidents / interactions is to be maintained daily during clearing operations. | Fauna Spotter Catcher/Koala Spotter | During Clearing & Construction |
| | The timing of vegetation clearance should be selected in order to minimise impacts (direct and indirect) to affected fauna habitats during optimum breeding period. | Contractor | During Clearing |
| | Avoid clearing of vegetation between the hours of 6pm and 6am. | Contractor | During Clearing |
| Monitoring | For each day of native vegetation clearing operations, a daily audit log is to be completed by the Contractor either prior to, or on completion of daily operations. Audit of key requirements, e.g. clearing contained within designated limits, integrity of clearing boundary devices, no damage to vegetation outside clearing boundary, Fauna Spotter Catcher present. | Contractor | During Clearing |
| Reporting | Animal Welfare Plan is prepared prior to clearing operations by the appointed Fauna Spotter Catcher. | Proponent / Fauna Spotter | Prior to Clearing |
| | Weekly report by the Fauna Spotter Catcher/ Koala Spotter to the Contractor on the clearing of any native vegetation and any animals encountered, injured or relocated is to be submitted. | Contractor | During Clearing |
| | Monthly report by the Contractor the Site Superintendent on native vegetation operations, including compliance, non-compliance incidents (fauna injury and responses) and corrective actions, outcomes of Fauna Spotter Catcher activities. | Contractor | During Clearing & Construction |
| | Bi-annual report by the Site Superintendent to the Proponent. Report to consider incident patterns, if any, and provide recommended solutions and a description of the corrective actions taken. | Contractor | During Clearing & Construction |
| | Annual site audit by the Environmental Representative and report to the Proponent | Environmental Representative | During Clearing & Construction |
| Corrective Action | In the event that monitoring identifies practices inconsistent with the strategies developed for this FMP, the Contractor shall take the necessary corrective steps and note them in the monthly report to be reviewed by the Site Superintendent. | Contractor | During Clearing & Construction |
| | In the event that monitoring identifies practices inconsistent with the strategies developed for this SBMP, the Contractor shall take the necessary corrective steps and note them in the monthly report to be reviewed by the Site Superintendent | Contractor | During Clearing & Construction |

# 07 PRE-CLEARANCE - FAUNA MANAGEMENT




PLAN 1 - DIRECTION & CLEARING LOCATIONS
Scale 1:2000 @ A1

# 08 FAUNA MANAGEMENT - CONSTRUCTION

P3 – Maintenance of Safe Wildlife Movement Opportunities (Site Preparation Operations)

The following suite of best practice measures will be employed throughout the site to minimise fauna habitat fragmentation, facilitated fauna movement and reduce related injury and mortality. Management requirements are considered in the context of:

- Site preparation operations (i.e. during vegetation clearing and earthworks phases); and
- Design treatments and strategies for the built phase of the development

Table 3 describes the relevant management requirements in regard to site preparation operations. The following should be read in conjunction with the requirements for Koala design treatments and strategies for the built phase of the development **(refer Section 07 – P8 & P9)**.

Retention and rehabilitation of the Mountain Creek Corridor to the west, in addition to the 293ha of offset land for Conservation to the south, will occur as a result of the Spring Mountain development to maintain fauna movement and connectivity within and between the development site. Approximately 0.5ha of this land will be dedicated and rehabilitated as part of the V6.

Objective

1. To avoid the impact of habitat fragmentation by roads and maintain safe movement opportunities for native wildlife (including Koala and Grey-headed Flying-fox) between linear open space.
2. To maintain fauna movement opportunities within retained habitat areas and minimise fauna movement opportunities through site preparations.

Management Strategy

- Develop a track plan for retained habitat areas/linear open space which allows fauna movement to be maintained
- Restrict access to retained habitat areas/linear open space for environmental management only.
- Reduce road speeds
- Increase driver awareness and education

Performance Indicators

- Minimal fauna mortality.

Temporary Fencing

Prior to the commencement of vegetation clearing a temporary fauna exclusion fence will be erected around the area of clearing and works and be maintained until the completion of major civil works. The purpose of the fence is to minimise any native fauna (including koala) from entering into the clearing and or post clearing construction zone during a time when potential risks of impact are at their highest.

The fencing proposed is a "floppy-top" temporary fauna exclusion fencing as per the details and photos shown on this drawing sheet. This fencing type is preferred as it continues to allow any fauna within the impact zone to exit, however prevents new or re-entry once the fence is erected. The fencing type can also be erected along random alignments and relocated to new areas as the clearing areas expand in future clearing and development events. This fencing type has been successfully used as a temporary barrier on other koala related projects within the vicinity of major roads and housing areas.

*Fauna exclusion fencing*

Table 3: P3 – Maintenance of Safe Fauna Movement Opportunities – Site Preparation Operations

| Issue | P2 – Maintenance of Safe Fauna Movement Opportunities – Site Preparation Operations (Roads and Vehicle Interactions) | Responsible Person | Timing |
|---|---|---|---|
| Implementation Requirements | A site access plan is to be developed for the Environmental Corridors. | Proponent | Prior to Clearing |
| | Site protocols are to be established which restrict authorised area access to the approved track network identified with the plan. | Contractor | Prior to Clearing |
| | All construction personnel shall attend environmental training as part of the site induction process prior to entering the work site. As part of this training, all personnel will be instructed on their obligations in regard to vehicle movement restrictions and construction speed limits. | Contractor | Prior to Clearing |
| | Erect temporary exclusion fencing around the area of clearing and works and be maintained until the completion of major civil works. | Contractor | Prior to Clearing |
| | Vehicle movements outside designated operational areas (other than for land management purposes) will be prohibited. | Contractor | During Clearing & Construction |
| | Road speeds throughout construction areas and through retained habitat areas will be restricted to 50km/hr. | Contractor | During Clearing & Construction |
| | Strategic use of awareness signage is to be implemented along the interface between operational areas and Environmental Corridors and access restriction signage at all track entry points to Environmental Corridors during construction works. | Contractor | During Clearing & Construction |
| | Proposed construction access roads will be subject to design treatments to ensure safe fauna crossing opportunities. Construction of an elevated portion (or portions) in the form of bridging structures (culverts) in associated with guide fencing will be incorporated to ensure the provision of safe crossing opportunities. | Contractor | During Clearing & Construction |
| Monitoring | Weekly inspection and log. | Contractor | During Clearing |
| Reporting | Monthly report by the Contractor to the Site Superintendent in regard to development / maintenance of structures implemented to facilitate fauna movement, review of fauna / vehicle incident patters, if any, and provide recommended solutions, an a description of corrective actions taken. | Contractor | During Clearing & Construction |
| | Bi-annual audit report by the Site Superintendent to the Proponent. Report to include compliance with site access restrictions, integrity of structure implemented to facilitate fauna movement, review of fauna/ vehicle incident patterns, if any, and provide recommended solutions, and a description of corrective actions taken. | Contractor | During Clearing |
| | Annual site audit by Environmental Representative and report to the Proponent. | Environmental Representative | During Clearing & Construction |
| Corrective Action | In the event that monitoring identifies practices inconsistent with the strategies developed for this SBMP, the contractor shall take the necessary corrective steps and note them in the monthly report to be reviewed by the Site Superintendent. | Contractor | During Clearing & Construction |

# 09 THREATENED FLORA MANAGEMENT

## P5 – Threatened Flora Management

*Plectranthus habrophyllus*, a herb listed as Endangered under the EPBC Act, has been recorded at several locations across the Spring Mountain project site. Core populations have been identified within Core Conservation areas by **Yurrah** (refer **Plan 2**). The majority of these locations are associated with waterways within linear open space and the habitat is to be protected.

Pre-clearance Survey

In accordance with the EPBC approved Threatened Flora Management Plan, prepared by **Yurrah**, pre-clearance surveys for each development precinct must occur by a suitable qualified person prior to the commencement of clearing. An additional individuals must be recorded and translocated where necessary.

Translocation

Where plants are located within the development footprint or near the edge of the footprint, and are at risk of impact, these plants will be translocated to establish a new population in suitable habitat within the proposed Linear Open Space. The habitat for both translocated individuals and in situ individuals will be protected within a Core Conservation Area.

As an added habitat protection measures, Buffer Areas, with an offset width of 20m, will be established around Core Conservation Areas. No Go Zones must be marked out by the 20m buffer around know populations within Core Conservation areas. No work apart from conservation management activities is to be permitted within Core Conservation Areas.

Clearing and Construction

*Plectranthus habrophyllus* is to be protected from impacts of construction. Stormwater Management Plans, Bushfire Management Plans and Weed Management are to address threatened flora management.

**Table 5** describes the relevant management requirements to address this issue.

Objective

1. To encourage the locally resident populations of threatened flora species to increase at a natural rate to a desired level on site.

Management Strategy

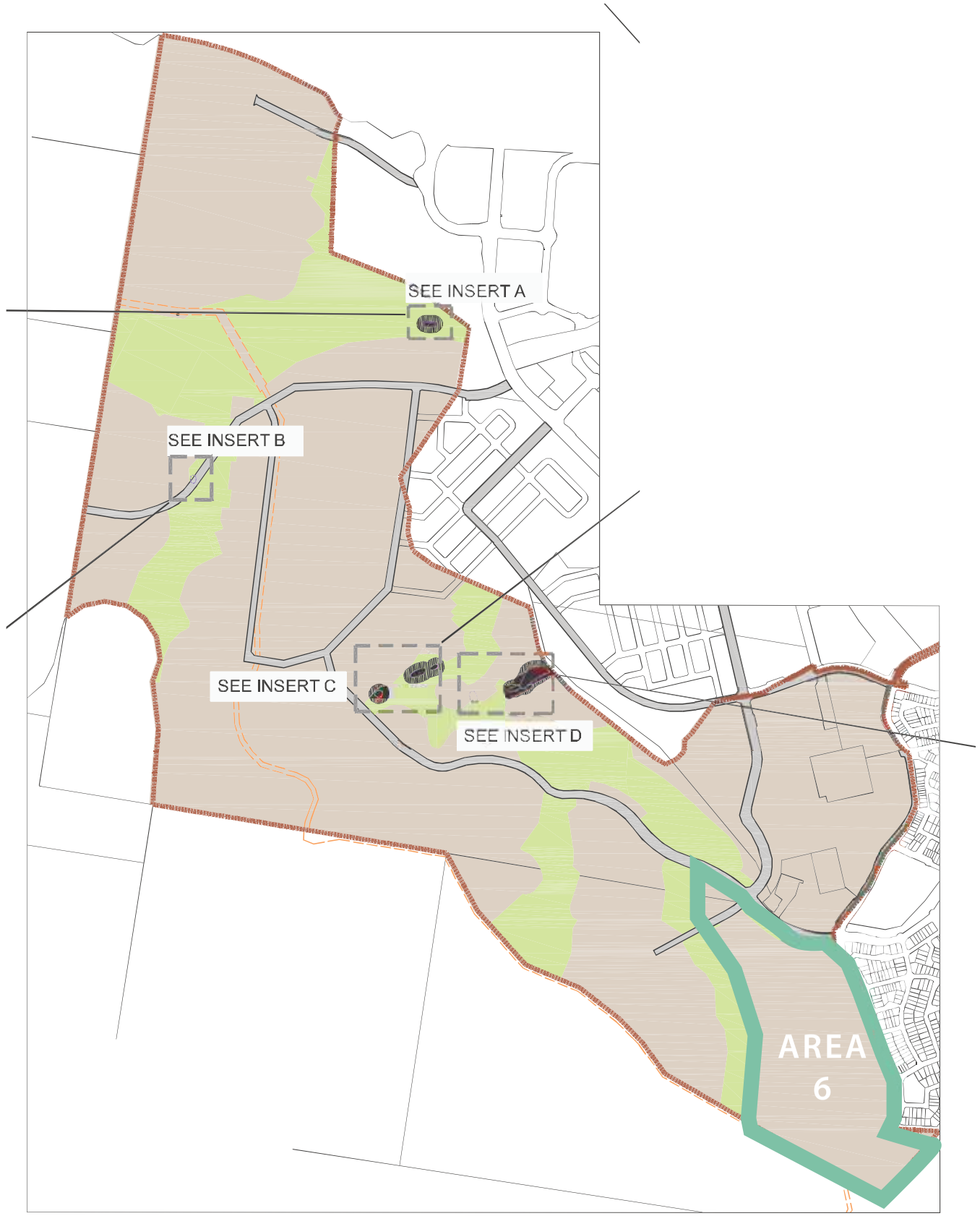
- Threatened flora habitat to be protected through the approved Threatened Flora Management Plan
- Recognise and protect all linear open space through management of interface between linear open space and development for bushfire, weeds and access issues.
- Establish Core Conservation Areas and Buffer Areas at threatened flora locations to target management activities.
- Design a network for fire-trails to defined spatial blocks to prevent damage caused by uncontrolled fire and allow access for maintenance.
- Awareness and education of threatened flora presence.
- Ensure all responsible persons are aware of the significance of this issue and are fully aware of any likely impacts of scheduled works.

Performance Indicators

- 0% weed cover in Core Conservation Areas and Buffers
- No evidence of damage from stormwater run-off construction
- Recruitment of threatened flora seedlings in Core Conservation Area
- No damage from uncontrolled access
- Condition of protective fencing remains undamaged.

Pre-clearance surveys for V6 were undertaken by **Saunders Havill Group** in December 2015. No *Plectranthus habrophyllus* individuals were located within the project area.

*Photo: Plectranthus habrophyllus (listed as Endangered under the EPBC Act (Cth))*



# 09 THREATENED FLORA MANAGEMENT

Table 5: P5 – Threatened Flora Management

| Issue | P4 Threatened Flora Management | Responsible Person | Timing |
|---|---|---|---|
| Implementation Requirements | Core Conservation Areas located within 20m of land proposed for uses other than conservation, identified as areas for additional interface management including:<br>1. A detailed survey of threatened plant locations by a registered surveyor.<br>2. Where interfacing with residential, a fence with a minimum 50% transparency to be erected along interface boundary. Signage to be erected identifying area as 'Significant Ecological Area' and 'Dumping of Rubbish Prohibited' and where further information can be obtained.<br>3. Where interfacing with road verge or park landscaping, design and plant selection considers and avoids any potential impact upon the threatened flora species. Landscape plant species selected will be non-invasive, existing trees to be retained where possible to maintain microclimate, and clear edge formed that discourages access. Mulch to be preferably sourced from the site and is to be weed free. | Proponent | Design /Prior to Clearing & |
| | Undertake pre- clearing surveys.<br>1. Once the line of clearing (including construction of parks, pedestrian tracks and fire trails) is marked out by a registered surveyor, an additional survey for threatened species is to be undertaken within the clearing area, and Linear Open Space within 10m of the clearing line.<br>2. Additional individuals, or groups of individuals located to be recorded with a GPS, given a unique ID number, and flagged with marking tape. Where necessary individuals will be translocated in accordance with protocols in the Threatened Flora Management Plan.<br>3. The boundary of the Core Conservation Areas will be adjusted as necessary (if not within construction footprint), to include any additional individuals located during of the pre-clearing survey. | Proponent | Prior to Clearing |
| | Establish No Go Zones.<br>1. Core Conservation Areas less than 20m from of the clearing and construction footprint will be identified on construction drawings and through signage on site as 'No Go Zones'. Their associated Buffer Areas will be identified as 'Proceed with Caution Zones'.<br>2. Work within the Buffer Area will require supervision by the Project Ecologist.<br>3. No work apart from conservation management activities is to be permitted within the Core Conservation Areas. | Contractor | Prior to Clearing |
| | Erect exclusion fencing and signage.<br>1. Where Linear Open Space has not been fenced as part of general vegetation protection, temporary fencing must be installed around the Core Conservation Area, where practical, and necessary (i.e. steep terrain may form natural barrier). The temporary fence shall be a minimum of star pickets with 3 strand wire and high visibility mesh attached to the top wire (with minimum gap of 500mm along the bottom) and erected prior to clearing.<br>2. The required alignment and extent of the fencing is to be undertaken in consultation by the project ecologist and inspected before the start of clearing.<br>3. Signage is to be attached to fencing clearly identifying the site as a significant ecological area and a 'No Go Zone', and no entry permitted unless approval given by Proponent. Mapping will be produced identifying location of threatened flora and alignment of protective fencing during detailed design for each Phase of the Spring Mountain | Contractor | Prior to Clearing |
| Implementation Requirements | Core Conservation Areas located within 20m of land proposed for uses other than conservation, identified as areas for additional interface management including:<br>1. A detailed survey of threatened plant locations by a registered surveyor.<br>2. Where interfacing with residential, a fence with a minimum 50% transparency to be erected along interface boundary. Signage to be erected identifying area as 'Significant Ecological Area' and 'Dumping of Rubbish Prohibited' and where further information can be obtained.<br>3. Where interfacing with road verge or park landscaping, design and plant selection considers and avoids any potential impact upon the threatened flora species. Landscape plant species selected will be non-invasive, existing trees to be retained where possible to maintain microclimate, and clear edge formed that discourages access. Mulch to be preferably sourced from the site and is to be weed free. | Proponent | Design /Prior to Clearing & |
| | Undertake pre- clearing surveys.<br>1. Once the line of clearing (including construction of parks, pedestrian tracks and fire trails) is marked out by a registered surveyor, an additional survey for threatened species is to be undertaken within the clearing area, and Linear Open Space within 10m of the clearing line.<br>2. Additional individuals, or groups of individuals located to be recorded with a GPS, given a unique ID number, and flagged with | Proponent | Prior to Clearing |

Table 5: P5 – Threatened Flora Management

| | | | |
|---|---|---|---|
| | marking tape. Where necessary individuals will be translocated in accordance with protocols in the Threatened Flora Management Plan.<br>3. The boundary of the Core Conservation Areas will be adjusted as necessary (if not within construction footprint), to include any additional individuals located during of the pre-clearing survey. | | |
| | Establish No Go Zones.<br>1. Core Conservation Areas less than 20m from of the clearing and construction footprint will be identified on construction drawings and through signage on site as 'No Go Zones'. Their associated Buffer Areas will be identified as 'Proceed with Caution Zones'.<br>2. Work within the Buffer Area will require supervision by the Project Ecologist.<br>3. No work apart from conservation management activities is to be permitted within the Core Conservation Areas. | Contractor | Prior to Clearing |
| | Erect exclusion fencing and signage.<br>1. Where Linear Open Space has not been fenced as part of general vegetation protection, temporary fencing must be installed around the Core Conservation Area, where practical, and necessary (i.e. steep terrain may form natural barrier). The temporary fence shall be a minimum of star pickets with 3 strand wire and high visibility mesh attached to the top wire (with minimum gap of 500mm along the bottom) and erected prior to clearing.<br>2. The required alignment and extent of the fencing is to be undertaken in consultation by the project ecologist and inspected before the start of clearing.<br>3. Signage is to be attached to fencing clearly identifying the site as a significant ecological area and a 'No Go Zone', and no entry permitted unless approval given by Proponent. Mapping will be produced identifying location of threatened flora and alignment of protective fencing during detailed design for each Phase of the Spring Mountain | Contractor | Prior to Clearing |

Springfield RISE
At Spring Mountain

# Springfield Rise - Environmental Pre-Start Checklist

| | | | | | |
|---|---|---|---|---|---|
| **Project Area:** Village 13 | | **Date:** | | | |
| **Contractor:** Shadforths | | **Construction Stage/ Activity:** Early works bulk earthworks | | | |
| **Date work is to start:** | | | | | |
| **Date work is to cease:** | | **Compliance** | | | |
| # | **Control Measure** | **Yes** | **No** | **N/A** | **Comments** |
| 1 | Are clearing extents marked out and fenced? (N.B. Fencing is required as per ICC permits unless instructed otherwise by Council, Fauna Spotter or Environmental Coordinator) | ✓ | | | Completed by Wolter Consulting on 8th February 2016. |
| 2 | Has the fencing of clearing extents demarcation been inspected by the Environmental Coordinator? | ✓ | | | Completed by SHG on 8th February 2016. |
| 3 | Has sign off been provided by the Environmental Coordinator for demarcation areas? | ✓ | | | Completed by SHG on 8th February 2016. Attachment 1. |
| 4 | Has certification for pre-clearance flora been provided? (N.B. Exemptions/permits for protected plants under the NCA must be obtained by EHP where works occur in a High Risk Area). Please provide date and reference. | ✓ | | | See Attachment 2.<br>EHP Reference: AR082999<br>22 January 2016 |
| 5 | Have pre-clearance checks surveys for *Plectanthus habrophyllus* been completed over the clearing area? | ✓ | | | Completed by SHG on 8th July 2016. See Attachment 3. |
| 6 | Are there 'no-go' zones identified within the clearing area? | | ✓ | | |
| 7 | If yes, have 'no-go' zones been demarcated, fenced, signed and inspected by the Environmental Coordinator and Contractor? | | | ✓ | |
| 8 | Has the appointed Fauna Spotter completed pre-clearance surveys and reports? | ✓ | | | Completed by QFC on 29th September 2016. See Attachment 4. |
| 9 | Has the appointed Fauna Spotter identified any sensitive areas for consideration in clearing methods? Please provide a summary. | | ✓ | | See Attachment 4. |
| 10 | Have all contractors, subcontractors and associated personnel been instructed on environmental procedures and controls? | ✓ | | | See Attachment 5. |

| | | | | | |
|---|---|---|---|---|---|
| 11 | Has a Council pre-start been completed? | ✓ | | | Completed 2nd March 2016 |

NOTE: if the answer to any question (1-5, 7-11) above is NO then the clearing activity will not proceed.

| Name | Company | Position | Signature | Date |
|---|---|---|---|---|
| Darren Blinco | We Just Could It Vegetation Mgt. | Clearing Contractor | | 12/10/16 |
| Tony Hooper | Shadforths | Site Contractor | | 11/10/16 |
| John Kibble Graeme Knox | Lendlease | Client Representative | | 12/10/16 |
| Christo Louw | Arcadis | Project Engineer | | 11/10/16 |
| Murray Saunders | Saunders Havill Group | Environmental Representative | | 12/10/16 |
| Bryan Robinson | Queensland Fauna Consultants | Fauna Spotter | | |

CONTRACTOR COORDINATOR:

Name: Tony Hooper Position: Project Manager

Date: 10/11/16 Signature:

ENIRONMENTAL COORDINATOR:

Name: Murray Saunders Position: Director

Date: 11/10/2016 Signature:

FAUNA SPOTTER COORDINATOR:

Name: BRYAN ROBINSON Position: DIRECTOR

Date: 11/10/16 Signature:

# ATTACHMENT I –

# Demarcation Flagging Inspection Notification

saunders havill group

Saunders Havill Group Pty Ltd ABN 24 144 972 949
address 9 Thompson St Bowen Hills Q 4006
phone (07) 3251 9444 email mail@saundershavill.com
web www.saundershavill.com fax (07) 3251 9455

surveying town planning urban design environmental management landscape architecture

**Date:** 9 March 2016
**Site:** Spring Mountain Precinct
**Client:** Lend Lease
**EPBC Ref:** 2013/7057
**SHG Ref:** 7243
**SHG Contact:** Murray Saunders (07 3251 9444)

**Attention: Ian Murray**
Regional Development Manager, Communities
Level 4, Kings Gate,
King Street
Bowen Hills QLD 4006

**Springfield Rise: Village 6 –Inspection of flagging for demarcation of clearing extents (Phase 1- early works bulk earthworks, 7002 Grande Avenue, Springfield (Lot 33 on SP269190)**

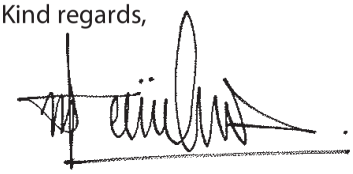
Dear Ian,

The *Environmental Management Division* of **Saunders Havill Group** was engaged by **Lendlease Communities** to carry out an inspection of flagging for demarcation fencing for the Phase 1- Early Works Bulk Earthworks clearing extent associated with Springfield Rise - Village 6.

Flagging of the Village 6-Phase 1 clearing extent was undertaken by the appointed surveys, **Wolter Consulting,** on the 8th of February 2016. An Ecologist from **Saunders Havill Group** accompanied the survey team during flagging to confirm the clearing extent is in accordance with relevant Commonwealth and Council permit requirements.

The GPS track log of the inspection extent shown in the plan provided as **Attachment 1**. It is noted that flagging did not occur along the eastern boundary adjoining Grande Avenue as the clearing area extends to the existing road reserve. A post-inspection notification is provided as **Attachment 2** to be kept for your records.

Kind regards,



Murray Saunders
**Director – Saunders Havill Group**

# Attachment I –

# Demarcation Fencing Inspection Track Log

# Attachment 2 –

## Demarcation Flagging Inspection Notification

| | |
|---|---|
| **Area Inspected:** | Springfield Rise - Village 6 : Phase 1 (Early Works Bulk Earthworks) |
| **Location:** | 7002 Grande Avenue, Springfield (Lot 33 on SP269190) |
| **GPS Coordinates:** | |
| **Date of Inspection:** | 8 February 2016 |
| **Appointed Surveyor:** | Wolter Consulting |
| **Environmental Representative:** | Saunders Havill Group – Andrew Craig |
| **Environmental features:** | V6 extent adjoins Mountain Creek to the east. Drainage gully traverses V6 extent parallel to the eastern property boundary. |

Photos of flagging prior to demarcation fencing:

# ATTACHMENT 2 –

# NCA Flora Survey Report and Exemption Notification

## Keira Grundy

**Subject:** FW: 7522: FW: AR082999 Exempt Clearing Email Lot 33 on SP269190

**From:** PALM [mailto:palm@ehp.qld.gov.au]
**Sent:** Friday, 22 January 2016 3:27 PM
**To:** Keira Grundy <keiragrundy@saundershavill.com>
**Subject:** RE: AR082999 Exempt Clearing Email Lot 33 on SP269190

Dear Mr Ian Murray

Applicant: Lend Lease Communities (Springfield) Pty Ltd
Exempt clearing notification (protected plants)
Where clearing is to be conducted –
Street Address: Sinnathamby Boulevard, Springfield
Lot/Plan: Lot 22 on SP234042 and Lot 33 on SP269190
EHP Reference: AR082999

Thank you for your email. Please retain this email as acknowledgement of receipt of a protected plant exemption notification submitted under section 261ZA of the Nature Conservation (Wildlife Management) Regulation 2006. Clearing of a protected plant under this section must be conducted within two years after the flora survey report was submitted to the Department of Environment and Heritage Protection.

It is strongly recommended for audit purposes that you keep this email together with the relevant flora survey trigger map, flora survey report and any other documentation relating to the clearing in question.

Please visit www.ehp.qld.gov.au for information about available online services.

Kind regards
Katrina

Queensland Government

**Katrina Theilemann**
Administration Officer
**Customer Service Team I Regulatory Capability and Customer Service**
Department of Environment and Heritage Protection
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environmental management

saunders havill group

# Spring Mountain
# Villages 6, 8, 13 & Haul Road
# Protected Plants Flora Survey Report

Lendlease
15th December 2015
7522

# Document Control

| | |
|---|---|
| **Title** | Spring Mountain – Villages 6, 8, 13 & Haul Road –Protected Plants Flora Survey Report |
| **Job Number** | **7522** |
| **Client** | Lendlease |

## Document Issue

| Issue | Date | Prepared By | Checked By |
|---|---|---|---|
| Draft | 15.12.2015 | David Havill | Keira Grundy |
| Final | | | |

## Disclaimer

This report has been prepared for **Lendlease. Saunders Havill Group** cannot accept responsibility for any use of or reliance upon the contents of this report by any third party.

## Reports and/or Plans by Others

Reports and/or plans by others may be included within this report to support the document.

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# Plans



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# I. Introduction

The *Environmental Management Division* of the **Saunders Havill Group** was engaged by **Lendlease** to prepare this Protected Plants Flora Survey Report to enable clearing within areas mapped as 'High Risk' under the *Nature Conservation Act 1992* (NCA). Clearing works are associated with early works stages at Spring Mountain, specifically Villages 6, 8 and 13 and a primary road connection known as the Haul Road. The Spring Mountain development site is located Sinnathamby Boulevard, Springfield Central (Lot 22 on SP234042 and Lot 33 on SP269190) and is within the jurisdiction of **Ipswich City Council** (ICC).

The **Queensland Government** has adopted a risk-based approach to the regulation of protected plants under the NCA. The regulatory framework captures activities that pose a high risk to plant biodiversity. Regulatory, educational and compliance effort are consequently focused on high risk activities. Under the framework, when a non-exempt clearing activity is proposed within a 'High Risk' area, the proponent of that activity is required to complete a flora survey prior to commencement of clearing.

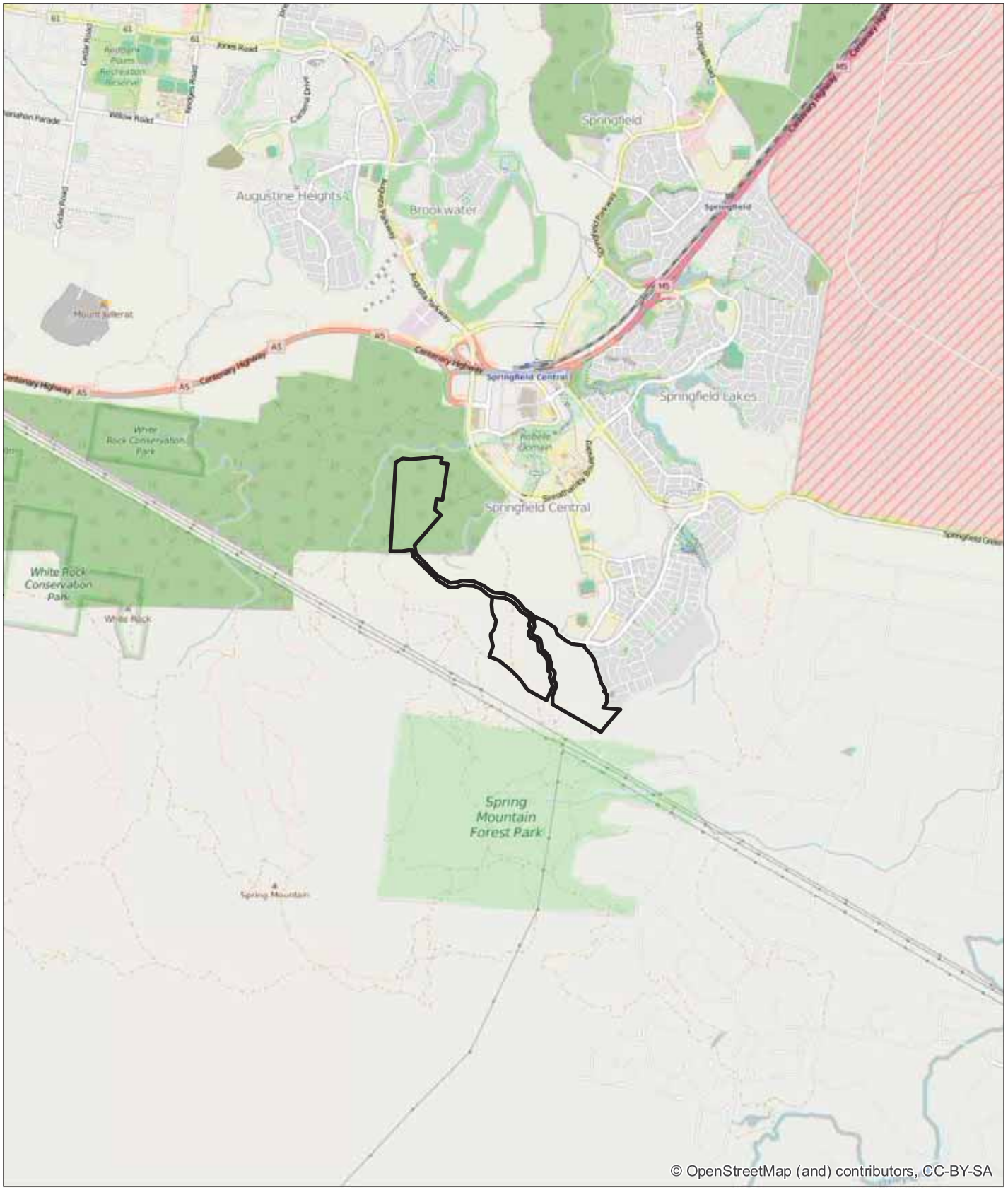
The main objective of the flora survey is to locate any Endangered, Vulnerable or Near Threatened (EVNT) plants that may be present within the clearing impact area. This is especially important for determining the degree of assessment required for a particular clearing activity. For example, if the survey establishes that EVNT plant species are not present within the clearing impact area, the proposed clearing will be exempt and, following notification to the department, a clearing permit will not be required. Alternatively, if EVNT plant species are identified, and clearing is considered to impact on the EVNT plant (i.e. clearing comes within 100m of the EVNT plant) then an application for a Protected Plant Clearing Permit is required.

Contextually, the Spring Mountain project site is located to the west of Springfield Central, approximately 13km southeast of Ipswich City and approximately 26 km southwest of Brisbane City. The site is bordered by commercial development and educational facilities associated with Springfield Central to the northeast, residential development to the southeast and large vegetated rural properties adjoining White Rock-Spring Mountain Conservation Estate and more broadly the Flinders-Karawatha Bioregional Corridor. The site is bound by Centenary Highway to the north and Sinnathamby Boulevard to the east. The surrounding suburbs of Redbank Plains, Springfield Lakes and Swanbank are highly urbanised and contain a mixture of residential housing, commercial properties and industrial land uses. Refer to **Figures 1 and 2** for site context and aerial. Clearing works proposed within Village 6, 8, 13 and the Haul Road form part of early works for the commencement of the Spring Mountain project which forms part of the Greater Springfield urban development area (refer **Plan 1**). It is noted that the Spring Mountain project (refer **Plan 2**) has been approved by the Commonwealth **Department of the Environment** (DoE) (EPBC 2013/7057).

The flora surveys outlined in this report were conducted where proposed clearing is mapped within 'High Risk' areas under Protected Plants Flora Survey Trigger Mapping (refer **Figure 3**) as per the *Flora Survey Guidelines – Protected Plants Nature Conservation Act 1992*.

## 1.1. Key Site Details

| | |
|---|---|
| **Address** | Sinnathamby Boulevard |
| **RPD** | Lot 22 on SP234042, Lot 33 on SP269190 |
| **Local Government Area** | Ipswich City Council |
| **Planning Scheme** | Springfield Structure Plan, which forms part of the Ipswich City Council Planning Scheme 2003 |
| **Area Classification/Zone** | Community Residential |
| **Existing Land Use** | Vacant |
| **Proposed Land Use** | Residential / Road |




**Legend**

Project impact area

***Figure 1*** *Site Context*

***File ref.*** 7522 E 01 Site Context A
***Date*** *5/01/2016*
***Project*** *Springfield Villages 6 & 8*

0 250 500 1,000 1,500 *m*

*Scale (A4): 1:50,000 [ GDA 1994 MGA Z56 ]*

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*Layer Sources QLD GIS Layers (QLD Gov. Information Service 2014), Aerial (Nearmap 2014)*

**Legend**

Project impact area

***Figure 2*** *Site Aerial*

***File ref.*** 7522 E 02 Site Aerial A
***Date*** *5/01/2016*
***Project*** *Springfield Villages 6 & 8*

0 100 200 400 600 *m*

*Scale (A4): 1:15,837 [ GDA 1994 MGA Z56 ]*

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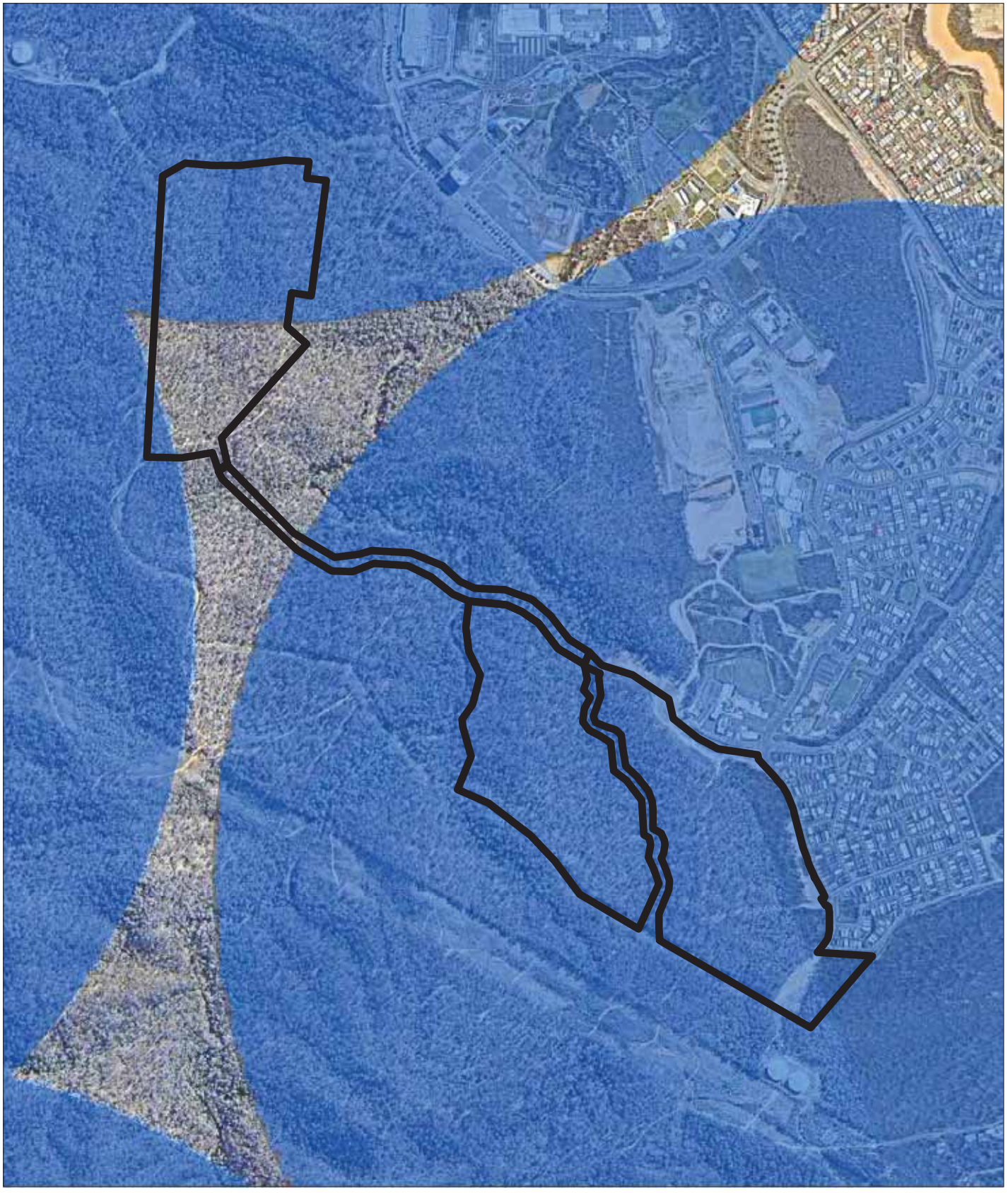
*Layer Sources QLD GIS Layers (QLD Gov. Information Service 2014), Aerial (Nearmap 2014)*



**Legend**

Project impact area

High Risk

***Figure 3*** *NCA Flora Survey Trigger Map*

***File ref.*** 7522 E 03 NCA A
***Date*** 5/01/2016
***Project*** Springfield Villages 6 & 8

0 100 200 400 600 *m*

N

*Scale (A4): 1:15,837 [ GDA 1994 MGA Z56 ]*

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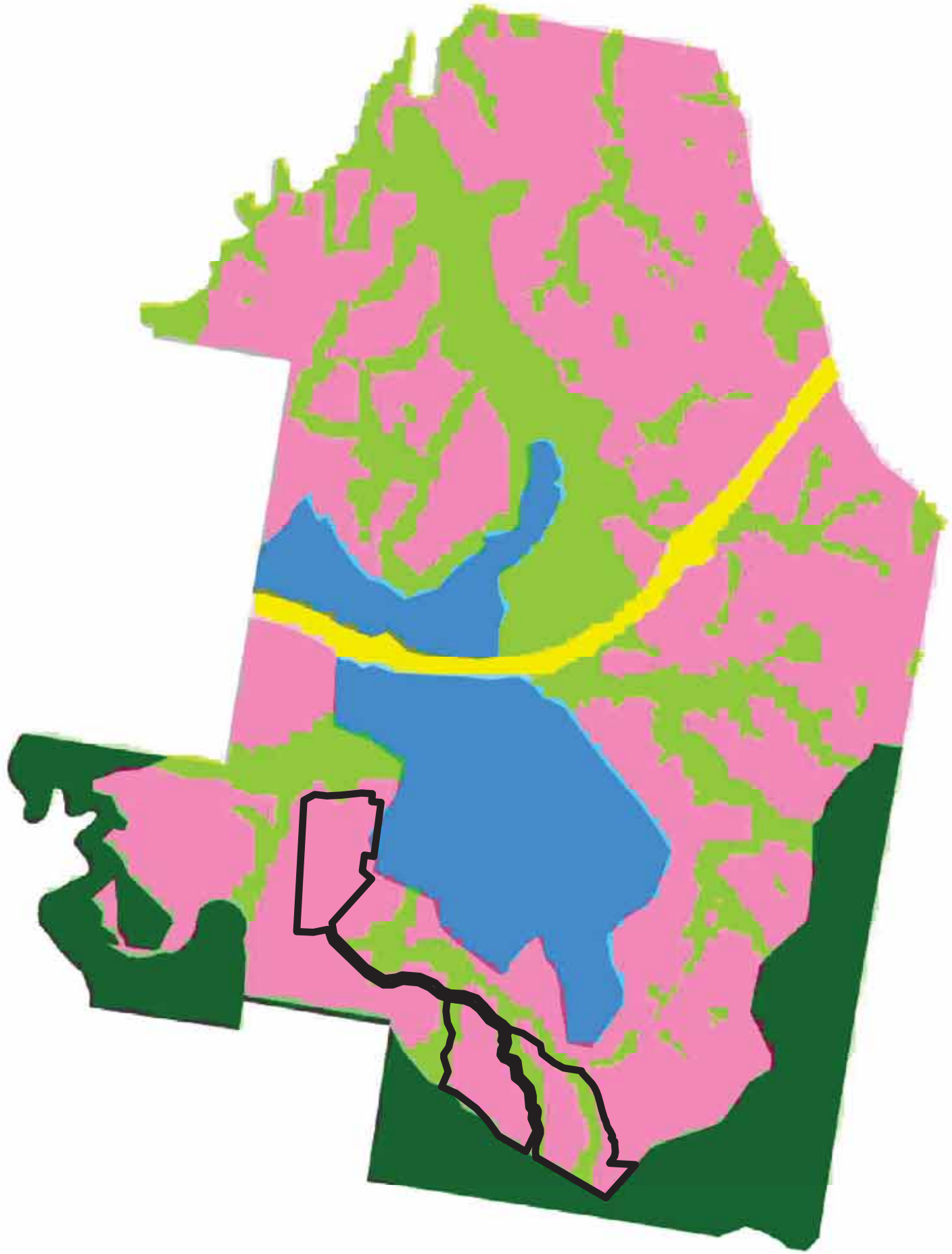
*Layer Sources QLD GIS Layers (QLD Gov. Information Service 2014), Aerial (Nearmap 2014)*

0 500 1,000 2,000 m

**Legend**

- Project impact area
- Community residential
- Town centre
- Regional transport corridor
- Open space
- Conservation



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ISSUES:

| Issue | Date | Description | Drawn | Checked |
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| A | 5/01/2016 | Prelim Draft | AL | MS |

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# *Spring Mountain- Villages 6 , 8 &13 & Haul Road*

Greater Springfield Structure Plan

**Date** 5/01/2016
**Scale** 1:32,500 @ A3
***Data Information:***
***Universal Transverse Mercator***
***GDA 1994 MGA Zone 56***
**Client** Lend Lease
**Project** NCA
**Address/ RPD** Springfield
**Source** DCBD (DNRM, 2013), Aerial (QLD Globe, 2013) Layout (Land Partners 2014)

# Plan 1

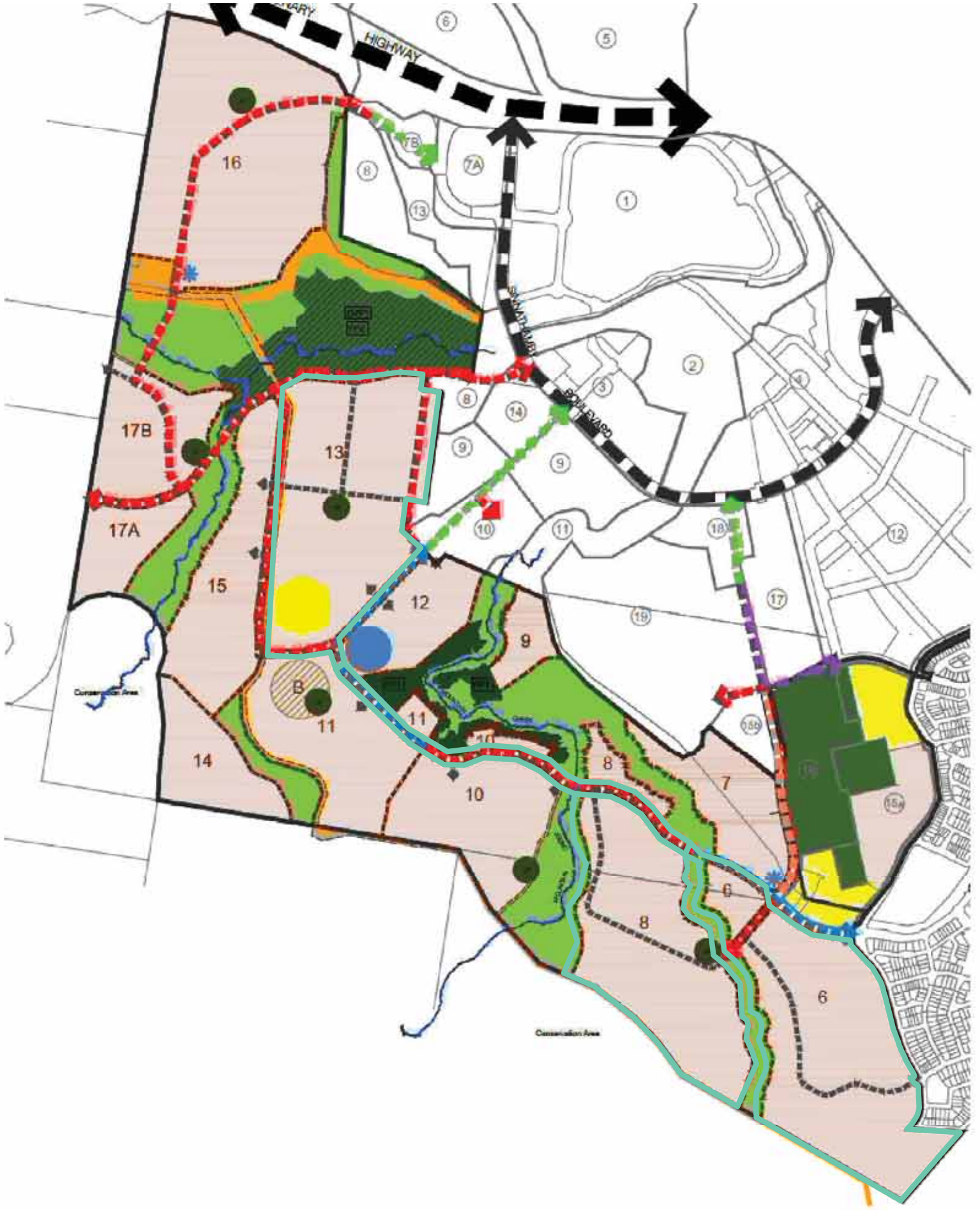
**SHG File**
7522 E 02 Structure Plan A

0 100 200 400 600 800 1,000 m

## Legend

- Project impact area
- RESIDENTIAL DEVELOPMENT AREA
- OPTIONAL USE AREA B
- EXISTING SCHOOL
- PROPOSED SCHOOL
- PROPOSED NEIGHBOURHOOD CENTRE
- ACTIVITY CENTRE
- INFRASTRUCTURE (EXISTING)
- DISTRICT 2 PARK (D2P1)
- MAJOR DISTRICT PARK NORTH (FP1)
- FORMAL PARK WEST (FP2)
- LINEAR CREEKLINE OPEN SPACE
- LOCAL RECREATION PARK
- CENTENARY HIGHWAY
- SINNATHAMBY BOULEVARD
- TOWN CENTER ROAD TYPE 2A MODIFIED
- MAJOR COLLECTOR DUAL LANE STREET (NO ACCESS) (Area shown is where road has been defined)
- MAJOR COLLECTOR STREET (ACCESS) (Area shown is where road has been defined)
- COLLECTOR STREET
- VILLAGE BOUNDARY
- SPRING MOUNTAIN PRECINCT BOUNDARY 352 ha
- (13) INDICATIVE TOWN CENTRE DEVELOPMENT AREAS (SUBJECT TO TOWN CENTRE CONCEPT PLAN)

NOTE:
LOCATIONS AND AREAS OF VARIOUS LAND USE ELEMENTS AS SHOWN ARE CONCEPTUAL ONLY AND SUBJECT TO DETAILED DESIGN

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|---|---|---|---|---|
| A | 5/01/2016 | Prelim Draft | AL | MS |

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# *Spring Mountain - Villages 6, 8 13 & Haul Road*

Spring Mountain Development Proposal

Date | 5/01/2016
Scale | 1:15,000 @ A3
*Data Information:*
*Universal Transverse Mercator*
*GDA 1994 MGA Zone 56*
Client | Lend Lease
Project | NCA
Address/ RPD | Springfield
Source | Development Layout (LandPartners 2015)

# *Plan 2*

**SHG File**
7522 E 01 Draft Layout A

# 2. Desktop Assessment

## 2.1. Nature Conservation Act

The NCA classifies and protects significant areas (Protected Areas) and protects threatened plant and animal species. The *Nature Conservation (Wildlife) Regulation 1994* (NCWR) lists plant and animal species presumed extinct, endangered, vulnerable, near threatened, least concern, international or prohibited.

The **Queensland Government** has adopted a regulatory framework that captures activities that pose a high risk to plant biodiversity. Under the framework, when a non-exempt clearing activity is proposed within a 'High Risk' area, the proponent of that activity is required to complete a flora survey prior to commencement of clearing. The Protected Plants Flora Survey Trigger Map shows 'High Risk' areas for protected plants and is used to help determine flora survey and clearing permit requirements for a particular location.

A search of Projected Plants Flora Survey Trigger Mapping indicated proposed clearing areas within the subject site are overlayed as 'High Risk' and so are subject to flora survey requirements (refer **Figure 3**)..

Prior to flora surveys, the schedules of the NCWR were considered in this report using a Wildlife Online Database Search with a 10 kilometre radius from the site. Six (6) flora species listed under the NCWR were identified as having the potential to occur on site and are presented in **Table 1**. Refer to **Appendix A** for full search results.

**Table 1: Wildlife Online Search Results - Flora**

| Scientific Name | Common Name | Status |
|---|---|---|
| *Marsdenia coronata* | Slender Milk Vine | Vulnerable |
| *Plectranthus habrophyllus* | - | Endangered |
| *Eucalyptus curtisii* | Plunkett Mallee | Near Threatened |
| *Melaleuca irbyana* | Swamp Tea Tree | Endangered |
| *Notelaea ipsviciensis* | - | Endangered |
| *Notelaea lloydii* | Lloyd's Native Olive | Vulnerable |

## 2.2. Additional legislative instruments

In order to maximise the scope of the flora survey, a search of protected matters listed as potentially present within 10 km of the sites under the Federal *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was conducted using the Protected Matters Search Tool. Potential flora EVNT species listed under the EPBC Act are presented in **Table 2**. Refer to **Appendix B** for full search results.

**Table 2: EPBC Act Protected Matters Search Results - Flora**

| Scientific Name | Common Name | Status |
|---|---|---|
| *Arthraxon hispidus* | Hairy Joint Grass | Vulnerable |
| *Bosistoa transversa* | Three-leaved Bosistoa | Vulnerable |
| *Cupaniopsis tomentella* | Boonah Tuckeroo | Vulnerable |
| *Notelaea ipsviciensis* | Cooneana Olive | Critically Endangered |
| *Notelaea lloydii* | Lloyd's Olive | Vulnerable |
| *Phaius australis* | Lesser Swamp-orchid | Endangered |
| *Phebalium distans* | My Berryman Phebalium | Critically Endangered |
| *Planchonella eerwah* | Shiny-leaved Condoo | Endangered |
| *Plectranthus habrophyllus* | - | Endangered |
| *Sophora fraseri* | - | Vulnerable |
| *Thesium australe* | Austral Toadflax | Vulnerable |

Regional Ecosystem mapping under the *Vegetation Management Act, 1999* (VMA) was utilised to inform flora survey targets and techniques. The broader area where the survey sites occur is mapped under the VMA as Least Concern 12.9-10.19a, 12.9-10.17a, 12.9-10.2, and 12.9-10.7 as described below and highlighted in **Plan 3**.

**Least Concern RE 12.9-10.19a**

| | |
|---|---|
| **Description** | *Corymbia henryi +/- Eucalyptus fibrosa subsp. Fibrosa, Corymbia citriodora subsp. Variegate, Eucalyptus siderophloia, Eucalyptus crebra open forest. Occurs in coastal areas on Cainozoic and Mesozoic sediments.* |

**Least Concern RE 12.12.17a**

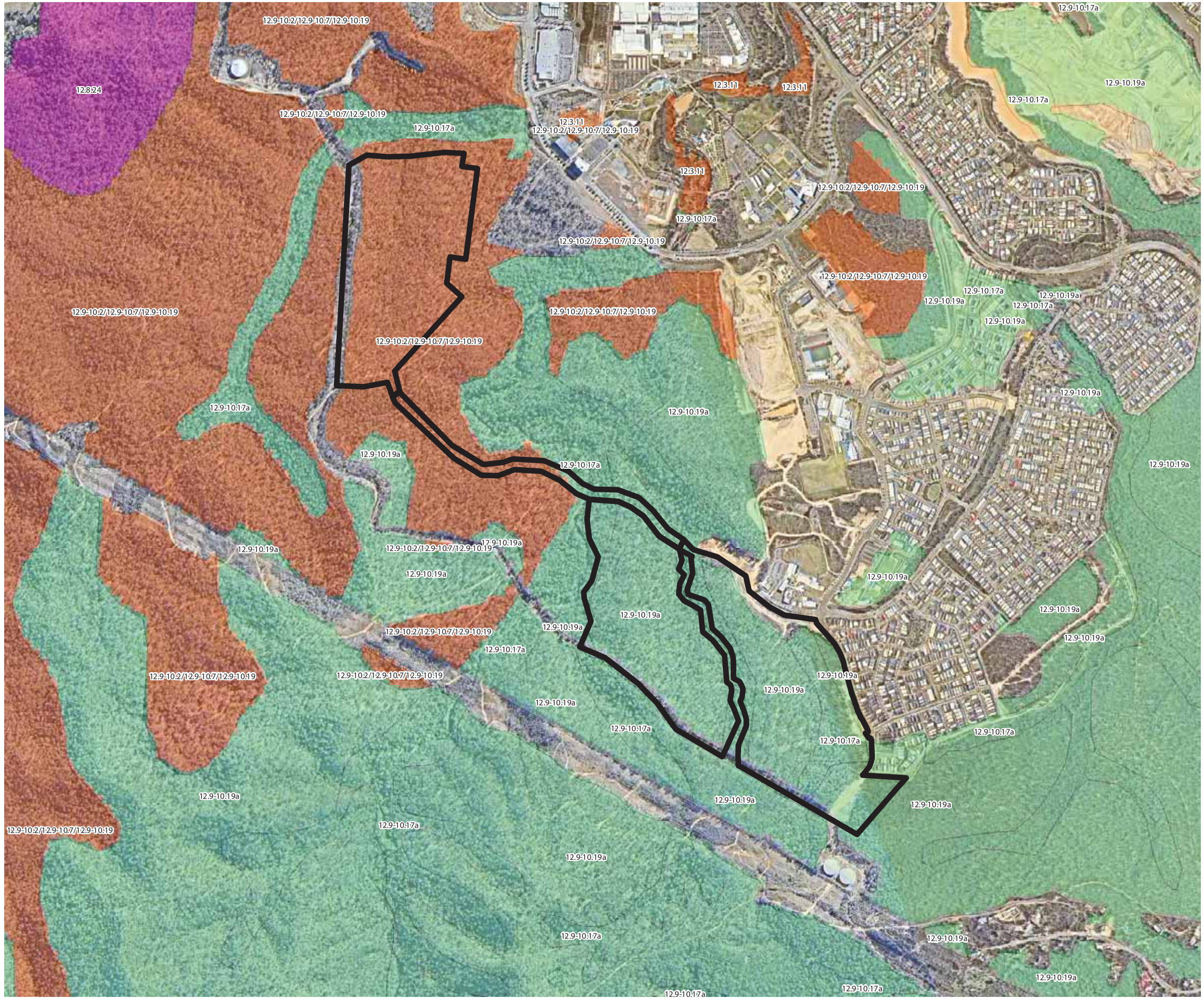
| | |
|---|---|
| **Description** | *Lophostemon confertus or Lophostemon suaveolens dominated open forest usually with emergent Eucalyptus and/or Corymbia species. Occurs in gullies and southern slopes on Cainozoic and Mesozoic sediments.* |

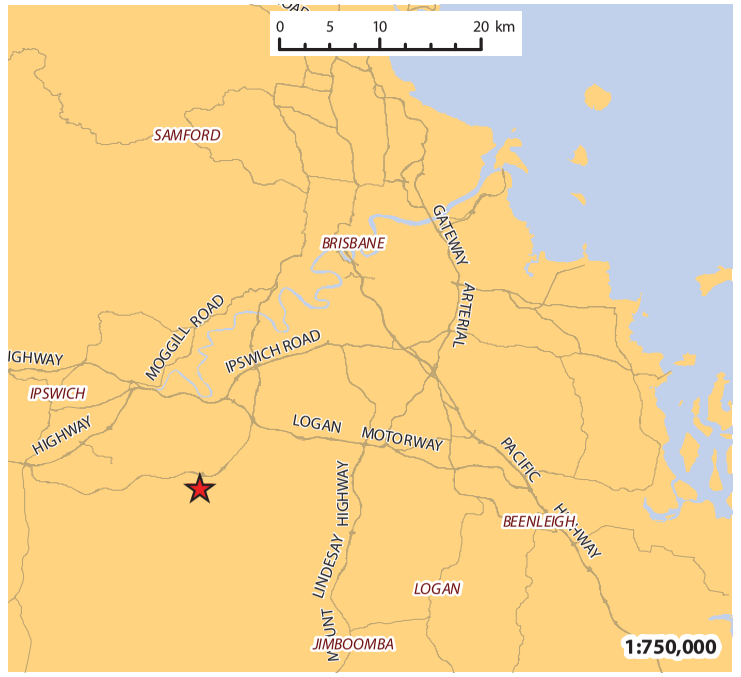
**Least Concern RE 12.9-10.2**

| | |
|---|---|
| **Description** | *Corymbia citriodora subsp. Variegate open forest or woodland usually with Eucalyptus crebra. Other species such as Eucalyptus tereticornis, Eucalyptus moluccana, Eucalyptus acmenoides and Eucalyptus siderophloia may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of Lophostemon confertus (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments.* |

**Of Concern RE 12.9-10.7**

| | |
|---|---|
| **Description** | *Eucalyptus crebra +/- Eucalyptus tereticornis, Corymbia tessellaris, Angophora leiocarpa, Eucalyptus melanophloia woodland. Occurs on Cainozoic and Mesozoic sediments.* |




## Legend

- Project impact area

Regional Ecosystem v8

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

0 200 400 600 800 1,000 m

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| Issue | Date | Description | Drawn | Checked |
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| A | 5/01/2016 | Prelim Draft | AL | MS |

# Spring Mountain- Villages 6, 8 & 13 & Haul Road

Regional Ecosystems v8

Date | 5/01/2016
Scale | 1:14,962 @ A3
*Data Information:*
*Universal Transverse Mercator*
*GDA 1994 MGA Zone 56*
Client | Lend Lease
Project | NCA
Address/ RPD | Springfield
Source | DCBD (DNRM, 2013), Aerial (QLD Globe, 2013)

**Plan 3**

**SHG File**
7522 E 03 REs A

# 3. Flora Survey Methodology

## 3.1. Clearing Impact Areas

The proposed clearing sites (i.e. Villages 6, 8, 13 and the Haul Road) are mostly mapped as 'High Risk' areas under Protected Plants Flora Survey Trigger (refer **Figure 3**). The Clearing Impact Areas, which are identified the areas to be cleared inclusive of a 100m buffer, are shown in **Plan 4**.

## 3.2. Survey extent

**Table 3** and **Plan 4** summarise the Clearing Impact Areas and Transect extents. General observations for EVNT flora species were conducted at all times while on-site, including while traversing roads and vegetated area both inside and outside designated Clearing Impact Areas. The 100m buffer areas was assessed where access was possible.

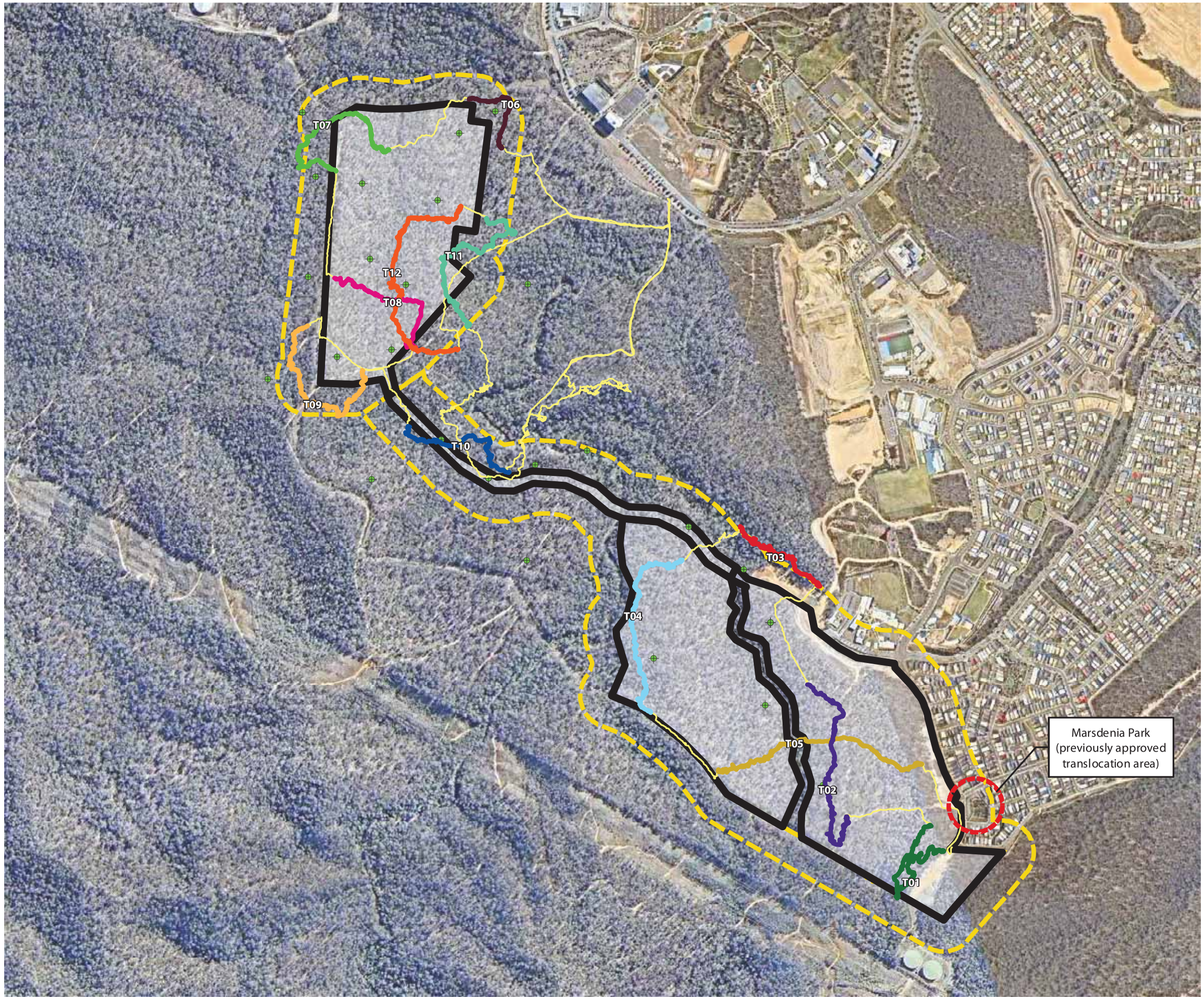
**Table 3: Transect Coordinates**

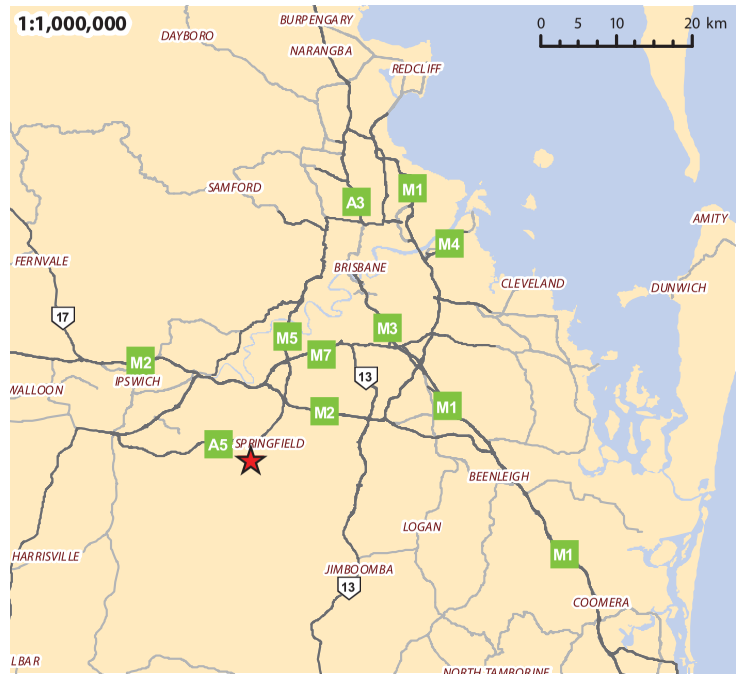
| Transect | Start | Finish |
|---|---|---|
| 1 | -27.703174° / 152.909798° | -27.702452° / 152.909382° |
| 2 | -27.702202° / 152.906698° | -27.698432° / 152.905453° |
| 3 | -27.695617° / 152.905829° | -27.693931° / 152.903303° |
| 4 | -27.694879° / 152.901439° | -27.699177° / 152.900416° |
| 5 | -27.700895° / 152.902626° | -27.700693° / 152.909101° |
| 6 | -27.683117° / 152.895659° | -27.681752° / 152.894641° |
| 7 | -27.683179° / 152.892057° | -27.683791° / 152.890378° |
| 8 | -27.686838° / 152.890317° | -27.688842° / 152.892838° |
| 9 | -27.689488° / 152.891223° | -27.688196° / 152.889467° |
| 10 | -27.691064° / 152.892680° | -27.692380° / 152.895896° |
| 11 | -27.688213° / 152.894579° | -27.685155° / 152.895197° |
| 12 | -27.684803° / 152.894378° | -27.688865° / 152.894291° |

## 3.3. Flora Survey Methodology

The clearing sites were surveyed using the preferred timed meander survey technique as per *Flora Survey Guidelines – Protected Plants Nature Conservation Act 1992* by three (3) suitably qualified professionals including (1) Senior Ecologists and two (2) Ecologists (refer to **Appendix C** for curricula vitae). Surveys were carried out as follows:

1) The Clearing Impact Areas were traversed on foot by project Ecologists (refer to **Plan 4**).
2) The start and finish time of each meander was recorded.
3) The track log of project Ecologist's transects was recorded using a handheld GPS unit accurate to < 1m.
4) The identity of all plant species encountered during each meander was recorded.
5) The site and surrounds were photographed.




## Legend

- Impact area
- 100m impact area buffer
- GPS tracklog
- Observational surveys

**Meander transect centreline**

- T01
- T02
- T03
- T04
- T05
- T06
- T07
- T08
- T09
- T10
- T11
- T12

0 50 100 200 300 400 500 m

N

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| A | 5/01/2016 | Prelim Draft | TC | MS |

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# Spring Moutain - Villages 6, 8 & 13 & Haul Road

## Flora Meandering Survey Transects

Date | 5/01/2016
Scale | 1:12,500 @ A3
Coordinate System | GDA 1994 MGA Zone 56
Projection | Transverse Mercator
Client | Lend Lease
Project | Springfield
Address/RPD | Springfield Villages 6 to 8
Sources | QLD GIS Layers (QLD Gov. Info Services 2015), Aerial (Nearmap, 2015)

# Plan 4

**SHG File**
7522 E 01 Flora Meandering Survey B

# 4. Flora Survey Results

The Clearing Impact Areas were assessed on 8 and 9 July 2015. **No EVNT species were encountered in any of the proposed clearing areas** however a population of translocated *Marsdenia coronate* (Slender Milk Vine) was recorded within the 100m buffer. Given the extent of survey it can be stated with a high level of confidence that no EVNT species will be cleared by the proposed development.

A total of one hundred and thirty seven (137) species were identified throughout the survey period. This included fourteen (14) herbs, thirteen (13) vines, three (3) orchids and epiphyte species, forty six (46) ground layer species, twenty five (25) shrubs, twenty (20) sub-canopy species and sixteen (16) canopy species. The transect length varied however a total of 11.813 kilometres were searched for threatened species by three ecologists using the meander methods. Each transect was located in areas which represented each mapped vegetation community verified through extensive site surveys.

It is noted however that *Marsdenia coronate* (Slender Milk Vine) has been recorded within the buffer area adjacent to Transect 1 (refer **Plan 1**). These specimens form part of a previously approved translocation program and are located within a Council Park known as Marsdenia Park, within the existing residential development to the east. The proposed works will not impact on these specimens which are separated from the project area by an existing bitumen road.

**Table 4** summarises the details of each of the timed meander transects. Meander transect descriptions with photographs are presented in the following pages. A general description for each transect area is provided in this section and respective species lists in **Appendix D**.

**Table 4: Meander survey summary**

| Site | Date | Start Time | Finish Time | Duration | Distance | Flora Species |
|---|---|---|---|---|---|---|
| 1 | 1.12.2015 | 11.05am | 12.45pm | 100 minutes | 1.161km | 55 |
| 2 | 1.12.2015 | 12.25pm | 13.45 | 80 minutes | 1.117km | 39 |
| 3 | 1.12.2015 | 13.46 | 15.08 | 92 minutes | 888m | 52 |
| 4 | 1.12.2015 | 14.55 | 16.18 | 83 minutes | 1.149km | 46 |
| 5 | 1.12.2015 | 16.00 | 17.15 | 75 minutes | 1.189km | 42 |
| 6 | 2.12.2015 | 9.31am | 10.40am | 69 minutes | 480m | 79 |
| 7 | 2.12.2015 | 10.23am | 11.47am | 85 minutes | 982m | 45 |
| 8 | 2.12.2015 | 11.25am | 12.27pm | 62 minutes | 756m | 47 |
| 9 | 2.12.2015 | 12.31 | 13.55 | 86 minutes | 1.019km | 58 |
| 10 | 2.12.2015 | 13.42 | 14.42 | 60 minutes | 696m | 44 |
| 11 | 14.12.2015 | 13.36 | 15.08 | 92 minutes | 1.019m | 51 |
| 12 | 14.12.2015 | 14.55 | 16.27 | 92 minutes | 1.357km | 64 |

## 4.1. Meander Transect 1

Transect 1 is located within mapped remnant vegetation dominated by Least Concern Regional Ecosystem community 12.9-10.19a. This community is described as *Corymbia henryi +/- Eucalyptus fibrosa subsp. Fibrosa, Corymbia citriodora subsp. Variegate, Eucalyptus siderophloia, Eucalyptus crebra open forest. Occurs in coastal areas on Cainozoic and Mesozoic sediments*. Transect searches extended along 1.1.61 kilometres. Canopy species recorded are consistent with current regional ecosystem mapping. *Corymbia henryi* (Large Leaf Spotted Gum) and *Eucalyptus fibrosa* (Broad Leaf Ironbark) were the dominant species recorded.

The Transect 1 Area is located towards the edge of the existing residential development, on North West facing slopes. The canopy and sub-canopy tree layers are largely intact with disturbances confined to some minimal historic tree removal including evidence of logging practices. The shrub and ground layer are dominated by native species with the majority of introduced species confined to the occasion small clump of *Lantana camara* (Lantana) and patches of introduced grasses and weeds along the edge of the vegetated patch and within the cleared easement track which runs to an existing water tower directly south of the transect. The shrub layer is very sparse with the ground layer patchy in areas amongst areas of exposed earth and leaf litter.

Only a small area of exposed rock surface was observed along a portion of the ridge line adjacent to the cleared track throughout the transect area. This area was thoroughly searched specifically for both *Marsdenia coronate* (Slender Milk Vine) and *Plectranthus habrophyllus* (Plectranthus) both of which have habitat niches suited to this terrain. The remaining area retained an open understorey and ground layer.

***Photo: Transect 1 dominated by Corymbia henryi and Eucalyptus fibrosa.***

***Photo: Exposed rocky terrain observed along the ridge line.***

Fifty five (55) flora species were recorded throughout the transect area, all of which are listed as common under state and federal legislation. Flora diversity consisted of two (2) herbs, four (4) vines, twenty six (26) ground layer, twelve (12) shrub, seven sub-canopy and four (4) canopy species.

## 4.2. Meander Transect 2

Transect 2 is located within mapped remnant vegetation dominated by Least Concern Regional Ecosystem community 12.9-10.19a. This community is described as *Corymbia henryi +/- Eucalyptus fibrosa subsp. Fibrosa, Corymbia citriodora subsp. Variegate, Eucalyptus siderophloia, Eucalyptus crebra open forest. Occurs in coastal areas on Cainozoic and Mesozoic sediments*. Transect searches extended along 1.117 kilometres.

Species recorded within the canopy are dominated by *Eucalyptus fibrosa* (Broad Leaf Ironbark). This dominant species is scattered amongst *Corymbia henryi* (Large Leaf Spotted Gum) and the occasional *Corymbia intermedia* (Pink Bloodwood) and *Eucalyptus acmenoides* (White Mahogany). This transect is consistent with the current remnant regional ecosystem mapping. A patchy shrub layer was recorded throughout the transect area however overall is considered relatively sparse. The ground layer also varied from relatively sparse amongst the areas with exposed rock along the ridge lines with greater densities recorded on slopes and towards the lower portion of the transect.

Disturbances within this transect are restricted to some introduced species within the ground layer which are mainly concentrated along the edges of vehicle access tracks. Some evidence of logging and fire is also noted throughout the survey.

Some exposed rocky outcrops, limited to along the ridgeline, were recorded by field survey. The remaining area is typical of Landzone 9-10, containing fine to coarse grained sedimentary rocks.

***Photo: Transect 2 dominated by Eucalyptus fibrosa and Corymbia henryi***

***Photo: Minimal exposed rock outcrops.***

Thirty nine (39) flora species were recorded throughout the transect area, all of which are listed as common under state and federal legislation. This diversity included one (1) herb, four (4) vines, twelve (12) ground layer, ten (10) shrub, five (5) sub-canopy and seven (7) canopy species.

## 4.3. Meander Transect 3

Transect 3 is located within mapped remnant vegetation dominated by least concern regional ecosystem 12.9-10.17. This community is described as *Lophostemon confertus or Lophostemon suaveolens dominated open forest usually with emergent Eucalyptus and/or Corymbia species. Occurs in gullies and southern slopes on Cainozoic and Mesozoic sediments.* The transect survey included investigations along 888m.

This transect is located within vegetation that is typical of lower gully lines with increase densities of *Lophostemon suaveolens* (Swamp Box). There is a greater density of weed species recorded throughout this transect which occurred along the edges of the cleared adjacent development area directly south as well as throughout the mapped waterway. It is noted that thick patches of Lant*ana camara* (Lantana) was recorded along the edges of this mapped waterway. The ground layer was relatively dense with leaf litter and bare earth confined to isolated small patches.

***Photo: Eucalyptus and Corymbia species dominated the hill side with Lophostemon suaveolens dominated the lower embankment area.***

***Photo: Steep south west facing slope***

Although canopy species recorded are consistent with current regional ecosystem mapping, the age structure appeared to be reduced with the number of large trees remaining previously removed through historical logging practices. The height of this vegetation community however remains at remnant status.

Fifty two (52) flora species were recorded throughout the transect area, all of which are listed as common under state and federal legislation. This diversity consisted of five (5) herb, three (3) vines, nineteen (19) ground layer, eleven (11) shrub, six (6) sub-canopy and eight (8) canopy species.

## 4.4. Meander Transect 4

Transect 4 is located within mapped remnant vegetation dominated by Least Concern Regional Ecosystem community 12.9-10.19a. This community is described as *Corymbia henryi +/- Eucalyptus fibrosa subsp. Fibrosa, Corymbia citriodora subsp. Variegate, Eucalyptus siderophloia, Eucalyptus crebra open forest. Occurs in coastal areas on Cainozoic and Mesozoic sediments*. The transect included investigations along 1.149 kilometres.

Although elements of Least Concern Regional Ecosystem 12.9-10.19 were recorded throughout this transect, some species representing Least Concern Regional Ecosystem 12.9-10.2 and Of Concern Regional Ecosystem 12.9-10.7 were also observed however were too small to separate through mapping amendments. The shrub layer is dominated by Acacia species including *Acacia leiocalyx* (Early Flowering Black Wattle), *Acacia disparrima* (Hickory Wattle) and *Acacia concurrens* (Black Wattle). This appeared to be a result of fire activity which was evident towards the canopy of some of the established canopy trees. The ground layer is recorded as being dense and is dominated by *Themeda triandra* (Kangaroo Grass) and *Imperata cylindrica* (Blady Grass).

The majority of this transect is located on a western facing slope with weeds confined to the lower portion of the hill and is dominated by *Lantana camara* (Lantana). The site also retained evidence of fire and some past logging activities.

***Photo: Fire evidence throughout the transect area typical with Acacia regrowth within the shrub layer.***

***Photo: Species recorded typical of the current regional ecosystem mapping.***

The vegetation community retains a canopy height and structure which retains its remnant status. Also observed were a number of well-established specimens which appeared to be less favourable for past logging practices.

Forty six (46) flora species were recorded throughout the transect area, all of which are listed as common under state and federal legislation. This diversity included two (2) herb, four (4) vines, nineteen (19) ground layer, eight (8) shrub, seven (7) sub-canopy and six (6) canopy species.

## 4.5. Meander Transect 5

Transect 5 is located within two (2) regional ecosystem communities both of which are categorised as Least Concern regional ecosystems. The areas outside of the mapped waterway is described as RE12.9-10.19a whereas the vegetation associated with the drainage line is described as RE12.9-10.17a. The transect survey included investigations along 1.189 kilometres.

The majority of Transect 5 is located within mapped remnant vegetation dominated by Least Concern Regional Ecosystem community 12.9-10.19a. This community is described as *Corymbia henryi +/- Eucalyptus fibrosa subsp. Fibrosa, Corymbia citriodora subsp. Variegate, Eucalyptus siderophloia, Eucalyptus crebra open forest. Occurs in coastal areas on Cainozoic and Mesozoic sediments.* Transect 5 is also traverses across a mapped drainage line and is located within mapped remnant vegetation dominated by least concern regional ecosystem 12.9-10.17. This community is described as *Lophostemon confertus or Lophostemon suaveolens dominated open forest usually with emergent Eucalyptus and/or Corymbia species. Occurs in gullies and southern slopes on Cainozoic and Mesozoic sediments.*

The changes between the two regional ecosystem communities appeared evident with the increase in density of *Lophostemon suaveolens* (Swamp Box) associated with the drainage line or lower lying areas. The Landzone between these two communities is mapped the same, however it is noted that a very small portion of this drainage feature contains some deposited material and contains characteristics of Landzone 3. This portion of the Least Concern RE12.9-10.17 area is too small to map within the regional ecosystem framework. Apart from the occasional small patch of *Juncus sp*, there were limited changes in flora species recorded.

***Photo: Majority of transect located within RE12.9-10.19a.***

***Photo: Transect intersected mapped drainage feature mapped as RE12.9-10.17.***

The majority of this transect contained very little shrub layer coverage with the density of the ground layer relatively high. Patches of bare earth and leaf litter were confined to some isolated small patches.

Forty three (43) species were recorded throughout the transect area, all of which are listed as common under state and federal legislation. This diversity included two (2) herb, four (4) vines, twelve (12) ground layer, twelve (12) shrub, seven (7) sub-canopy and five (5) canopy species.

## 4.6. Meander Transect 6

Transect 6 is located within mapped remnant vegetation dominated by a composite regional ecosystem community including 65% Least Concern RE12.9-10.2, 20% Of Concern RE12.9-10.7 and 15% Least Concern RE12.9-10.19. The transect survey included investigations along 480 metres.

- Least Concern Regional Ecosystem community 12.9-10.19a is described as *Corymbia henryi +/- Eucalyptus fibrosa subsp. Fibrosa, Corymbia citriodora subsp. Variegate, Eucalyptus siderophloia, Eucalyptus crebra open forest. Occurs in coastal areas on Cainozoic and Mesozoic sediments*.

- Least Concern Regional Ecosystem 12.9-10.2 is described as *Corymbia citriodora subsp. Variegate open forest or woodland usually with Eucalyptus crebra. Other species such as Eucalyptus tereticornis, Eucalyptus moluccana, Eucalyptus acmenoides and Eucalyptus siderophloia may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of Lophostemon confertus (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments.*

- Of Concern Regional Ecosystem 12.9-10.7 is described as *Eucalyptus crebra +/- Eucalyptus tereticornis, Corymbia tessellaris, Angophora leiocarpa, Eucalyptus melanophloia woodland. Occurs on Cainozoic and Mesozoic sediments.*

***Photo: Transect located within a composite Regional Ecosystem community.***

***Photo: Greater density of weed invasion towards the lower slopes of the transect area.***

The majority of Transect 6 Is located on a north facing slope and on the southern side of a mapped waterway. Disturbances were confined to selective canopy thinning through logging practices, cleared vehicle tracks as well as weed infestations. The whole of transect area contained evidence of fire with patches of *Imperata cylindrica* (Blady Grass) dominating the ground layer as well as a shrub layer dominated by *Acacia* species.

The diversity of species recorded within this transect is a result of the mapped composite regional ecosystem community. Patches of vegetation were dominated by species representing each of the regional ecosystem communities however the understorey, including the shrub and ground layer remained relatively consistent throughout the entire transect area. Small changes in species were recorded within areas containing exposed rocky outcrops and within the low lying areas associated with overland flow paths.

Seventy nine (79) flora species were recorded throughout the transect area, all of which are listed as common under state and federal legislation. This diversity included five (5) herb, six (6) vines, three (3) orchids/epiphytes, thirty two (32) ground layer, twelve (12) shrub, thirteen (13) sub-canopy and eight (8) canopy species.

## 4.7. Meander Transect 7

Transect 7 is located within mapped remnant vegetation dominated by a composite regional ecosystem community including 65% Least Concern RE12.9-10.2, 20% Of Concern RE12.9-10.7 and 15% Least Concern RE12.9-10.19. The transect survey included investigations along 982 metres.

- Least Concern Regional Ecosystem community 12.9-10.19a is described as *Corymbia henryi +/- Eucalyptus fibrosa subsp. Fibrosa, Corymbia citriodora subsp. Variegate, Eucalyptus siderophloia, Eucalyptus crebra open forest. Occurs in coastal areas on Cainozoic and Mesozoic sediments*.

- Least Concern Regional Ecosystem 12.9-10.2 is described as *Corymbia citriodora subsp. Variegate open forest or woodland usually with Eucalyptus crebra. Other species such as Eucalyptus tereticornis, Eucalyptus moluccana, Eucalyptus acmenoides and Eucalyptus siderophloia may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of Lophostemon confertus (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments.*

- Of Concern Regional Ecosystem 12.9-10.7 is described as *Eucalyptus crebra +/- Eucalyptus tereticornis, Corymbia tessellaris, Angophora leiocarpa, Eucalyptus melanophloia woodland. Occurs on Cainozoic and Mesozoic sediments.*

The dominant regional ecosystem observed throughout the transect area is recorded as the Least Concern RE12.9-10.2 however elements of RE12.9-10.19 and Of Concern RE12.9-10.7 were observed within small patches within and adjacent to this transect. Small habitat variations were recorded within areas containing exposed rock however these patches were confined to isolated areas towards the ridgeline. Limited diversity was recorded within the shrub layer limited to three native species amongst patches of *Lantana camara* (Lantana).

Greater disturbances were recorded within the canopy layer within this portion of the site resulting in greater weed invasion and higher density of ground layer species dominated by *Imperata cylindrica* (Blady Grass).

***Photo: Transect located within a mapped composite regional ecosystem community.***

***Photo: Transect located within a mapped composite regional ecosystem community.***

Forty five (45) flora species were recorded throughout the transect area, all of which are listed as common under state and federal legislation. This diversity included five (5) herb, five (5) vines, eighteen (18) ground layer, four (4) shrub, six (6) sub-canopy and seven (7) canopy species.

## 4.8. Meander Transect 8

Transect 8 is located within mapped remnant vegetation dominated by a composite regional ecosystem community including 65% Least Concern RE12.9-10.2, 20% Of Concern RE12.9-10.7 and 15% Least Concern RE12.9-10.19. The transect survey included investigations along 786 metres.

- Least Concern Regional Ecosystem community 12.9-10.19a is described as *Corymbia henryi +/- Eucalyptus fibrosa subsp. Fibrosa, Corymbia citriodora subsp. Variegate, Eucalyptus siderophloia, Eucalyptus crebra open forest. Occurs in coastal areas on Cainozoic and Mesozoic sediments*.

- Least Concern Regional Ecosystem 12.9-10.2 is described as *Corymbia citriodora subsp. Variegate open forest or woodland usually with Eucalyptus crebra. Other species such as Eucalyptus tereticornis, Eucalyptus moluccana, Eucalyptus acmenoides and Eucalyptus siderophloia may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of Lophostemon confertus (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments.*

- Of Concern Regional Ecosystem 12.9-10.7 is described as *Eucalyptus crebra +/- Eucalyptus tereticornis, Corymbia tessellaris, Angophora leiocarpa, Eucalyptus melanophloia woodland. Occurs on Cainozoic and Mesozoic sediments.*

***Photo: Some exposed rocky outcrops thoroughly searched for threatened plants***

Transect 8 contained some exposed rock outcrop areas however the majority of the investigation area contained a thick dense a grass layer with a scattered or sparse shrub layer amongst a woodland community. Although some introduced species were observed within the ground layer, these specimens were generally associated with old vehicle access tracks most likely as a result of logging activities.

Species recorded within the canopy are dominated by *Corymbia citriodora* (Spotted Gum), and *Eucalyptus siderophloia* (Grey Ironbark). This dominant species is recorded amongst scattered *Corymbia henryi* (Large Leaf Spotted Gum) and the occasional *Eucalyptus seeana* (Narrow Leaf Red Gum) and *Angophora leiocarpa* (Smooth Bark Apple). This transect is consistent with the current remnant regional ecosystem mapping. A patchy shrub layer was recorded throughout the transect area however overall was relatively sparse. The ground layer also varied from relatively sparse amongst the areas with exposed rock along the ridge lines with greater densities recorded on slopes and towards the lower portion of the transect.

***Photo: Very few introduced species recorded throughout the transect***

Forty seven (47) flora species were recorded throughout the transect area, all of which are listed as common under state and federal legislation. This diversity included five (5) herb, five (5) vines, twenty (20) ground layer, three (3) shrub, six (6) sub-canopy and eight (8) canopy species.

## 4.9. Meander Transect 9

Transect 9 is located within mapped remnant vegetation dominated by a composite regional ecosystem community including 65% Least Concern RE12.9-10.2, 20% Of Concern RE12.9-10.7 and 15% Least Concern RE12.9-10.19. The transect survey included investigations along 1.019 kilometres.

- Least Concern Regional Ecosystem community 12.9-10.19a is described as *Corymbia henryi +/- Eucalyptus fibrosa subsp. Fibrosa, Corymbia citriodora subsp. Variegate, Eucalyptus siderophloia, Eucalyptus crebra open forest. Occurs in coastal areas on Cainozoic and Mesozoic sediments*.

- Least Concern Regional Ecosystem 12.9-10.2 is described as *Corymbia citriodora subsp. Variegate open forest or woodland usually with Eucalyptus crebra. Other species such as Eucalyptus tereticornis, Eucalyptus moluccana, Eucalyptus acmenoides and Eucalyptus siderophloia may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of Lophostemon confertus (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments.*

- Of Concern Regional Ecosystem 12.9-10.7 is described as *Eucalyptus crebra +/- Eucalyptus tereticornis, Corymbia tessellaris, Angophora leiocarpa, Eucalyptus melanophloia woodland. Occurs on Cainozoic and Mesozoic sediments.*

***Photo: Transect dominated by Corymbia citriodora***

The dominant regional ecosystem community recorded within the transect area is Least Concern RE12.9-10.2 with *Corymbia citriodora* (Spotted Gum) being the dominant species recorded within the canopy layer. Other canopy species included *Angophora leiocarpa* (Smooth Bark Apple), *Corymbia intermedia* (Pink Bloodwood), *Corymbia trachyphloia* (Brown Bloodwood), *Eucalyptus acmenoides* (White Mahagany), *Eucalyptus seeana* (Narrow Leaf Red Gum) and *Eucalyptus siderophloia* (Grey Ironbark). Disturbances within this transect were restricted to some introduced species within the ground layer which were mainly concentrated along the vehicle access tracks. Some evidence of logging and fire were also recorded throughout the survey.

Fifty eight (58) flora species were recorded throughout the transect area, all of which are listed as common under state and federal legislation. This diversity included six (6) herb, six (6) vines, twenty two (22) ground layer, nine (9) shrub, eight (8) sub-canopy and seven (7) canopy species.

## 4.10. Meander Transect 10

Transect 10 is located within mapped remnant vegetation dominated by a composite regional ecosystem community including 65% Least Concern RE12.9-10.2, 20% Of Concern RE12.9-10.7 and 15% Least Concern RE12.9-10.19. The transect survey included investigations along 696 metres.

- Least Concern Regional Ecosystem community 12.9-10.19a is described as *Corymbia henryi +/- Eucalyptus fibrosa subsp. Fibrosa, Corymbia citriodora subsp. Variegate, Eucalyptus siderophloia, Eucalyptus crebra open forest. Occurs in coastal areas on Cainozoic and Mesozoic sediments*.

- Least Concern Regional Ecosystem 12.9-10.2 is described as *Corymbia citriodora subsp. Variegate open forest or woodland usually with Eucalyptus crebra. Other species such as Eucalyptus tereticornis, Eucalyptus moluccana, Eucalyptus acmenoides and Eucalyptus siderophloia may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of Lophostemon confertus (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments.*

- Of Concern Regional Ecosystem 12.9-10.7 is described as *Eucalyptus crebra +/- Eucalyptus tereticornis, Corymbia tessellaris, Angophora leiocarpa, Eucalyptus melanophloia woodland. Occurs on Cainozoic and Mesozoic sediments.*

***Photo: Evidence of fire with greater densities of Acacia regrowth.***

Canopy species recorded throughout transect 10 are include scattered occurrences of *Angophora leiocarpa* (Smooth Bark Apple), *Corymbia intermedia* (Pink Bloodwood), *Corymbia trachyphloia* (Brown Bloodwood), *Eucalyptus microcorys* (Tallowwood), *Eucalyptus seeana* (Narrow Leaf Red Gum), and *Eucalyptus siderophloia* (Grey Ironbark).

Disturbances within this transect were restricted to some introduced species within the ground layer which were mainly concentrated along the vehicle access tracks. Some evidence of logging and fire were also recorded throughout the survey. Species recorded within the shrub layer were dominated by Acacia species including *Acacia leiocalyx* (Early Flowering Black Wattle), *Acacia concurrens* (Black Wattle) and *Acacia disparrima* (Hickory Wattle).

The ground layer was relatively dense with the occasional rocky outcrop and small patches of leaf litter and bare earth.

Forty four (44) flora species were recorded throughout the transect area, all of which are listed as common under state and federal legislation. This diversity included three (3) herb, four (4) vines, seventeen (17) ground layer, eight (8) shrub, six (6) sub-canopy and six (6) canopy species.

## 4.II. Meander Transect II

Transect 11 is located within mapped remnant vegetation dominated by a composite regional ecosystem community including 65% Least Concern RE12.9-10.2, 20% Of Concern RE12.9-10.7 and 15% Least Concern RE12.9-10.19. The transect survey length included investigations along 1.019 kilometres.

- Least Concern Regional Ecosystem community 12.9-10.19a is described as *Corymbia henryi +/- Eucalyptus fibrosa subsp. Fibrosa, Corymbia citriodora subsp. Variegate, Eucalyptus siderophloia, Eucalyptus crebra open forest. Occurs in coastal areas on Cainozoic and Mesozoic sediments*.

- Least Concern Regional Ecosystem 12.9-10.2 is described as *Corymbia citriodora subsp. Variegate open forest or woodland usually with Eucalyptus crebra. Other species such as Eucalyptus tereticornis, Eucalyptus moluccana, Eucalyptus acmenoides and Eucalyptus siderophloia may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of Lophostemon confertus (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments.*

- Of Concern Regional Ecosystem 12.9-10.7 is described as *Eucalyptus crebra +/- Eucalyptus tereticornis, Corymbia tessellaris, Angophora leiocarpa, Eucalyptus melanophloia woodland. Occurs on Cainozoic and Mesozoic sediments.*

***Photo: Site dominated by Corymbia citriodora***

***Photo: Minimal exposed rock.***

The canopy layer is dominated by *Corymbia citriodora* (Spotted Gum), with occasional occurrences of *Angophora leiocarpa* (Smooth Bark Apple), *Corymbia henryi* (Large Leaf Spotted Gum), *Corymbia intermedia* (Pink Bloodwood), *Eucalyptus acmenoides* (White Mahogany), *Eucalyptus seeana* (Narrow Leaf Red Gum), *Eucalyptus siderophloia* (Grey Ironbark) and *Eucalyptus tereticornis* (Forest Red Gum).

Disturbances within this transect were restricted to some introduced species within the ground layer which were mainly concentrated along the vehicle access tracks. Some evidence of logging and fire were also recorded throughout the survey.

Fifty one (51) flora species were recorded throughout the transect area, all of which are listed as common under state and federal legislation. This diversity included five (5) herb, six (6) vines, sixteen (16) ground layer, nine (9) shrub, seven (7) sub-canopy and eight (8) canopy species.

## 4.12. Meander Transect 12

Transect 12 is located within mapped remnant vegetation dominated by a composite regional ecosystem community including 65% Least Concern RE12.9-10.2, 20% Of Concern RE12.9-10.7 and 15% Least Concern RE12.9-10.19. The transect survey length included investigations along 1.357 kilometres.

- Least Concern Regional Ecosystem community 12.9-10.19a is described as *Corymbia henryi +/- Eucalyptus fibrosa subsp. Fibrosa, Corymbia citriodora subsp. Variegate, Eucalyptus siderophloia, Eucalyptus crebra open forest. Occurs in coastal areas on Cainozoic and Mesozoic sediments*.

- Least Concern Regional Ecosystem 12.9-10.2 is described as *Corymbia citriodora subsp. Variegate open forest or woodland usually with Eucalyptus crebra. Other species such as Eucalyptus tereticornis, Eucalyptus moluccana, Eucalyptus acmenoides and Eucalyptus siderophloia may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of Lophostemon confertus (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments.*

- Of Concern Regional Ecosystem 12.9-10.7 is described as *Eucalyptus crebra +/- Eucalyptus tereticornis, Corymbia tessellaris, Angophora leiocarpa, Eucalyptus melanophloia woodland. Occurs on Cainozoic and Mesozoic sediments.*

***Photo: Site vegetation consistent with current regional ecosystem mapping.***

***Photo: Sparse understorey typical of the regional ecosystem communities searches.***

Disturbances within this transect were restricted to some introduced species within the ground layer which were mainly concentrated along the vehicle access tracks. Some evidence of logging and fire were also recorded throughout the survey.

Sixty four (64) flora species were recorded throughout the transect area, all of which are listed as common under state and federal legislation. This diversity included five (5) herb, six (6) vines, twenty seven (27) ground layer, seven (7) shrub, eleven (11) sub-canopy and eight (8) canopy species.

## 4.13. Summary

Field surveys were carried out within the clearing impact area and buffer of early works precincts (Village 6, 8, 13 and the Haul Road) of the Spring Mountain project site which is mapped as 'High Risk' by Protected Plants Flora Survey Trigger Mapping. The surveys utilised the preferred random meander technique as outlined in the *Flora Survey Guidelines – Protected Plants Nature Conservation Act 1992* to identify the presence of EVNT species. Coverage included the clearing extents as well as a 100 m buffer with each Clearing Impact Area almost entirely traversed during the timed meander transects. Twelve (12) meander transects as well as continual observations were completed throughout the investigation area.

The following points provide a summary of the investigation area:

- The vegetation communities observed have been extensively searched and analysed against current regional ecosystem mapping with overall consistence's in the location of reach regional ecosystem community. Some minor variations were observed however in the majority of areas these variations are too small to provide for changes to this mapping.
- The majority of the clearing site's canopy is relatively in-tact representing an open forest to woodland community. Although evidence of forestry practices were recorded in all transects and throughout observational survey points, the site remains as remnant due to the vegetation community's height and density.
- The sub-canopy layer is relatively sparse throughout the majority of the site and is typical of the mapped vegetation communities represented on site.
- The shrub layer is relatively sparse and in some areas is almost completely absent, which is typical of the mapped regional ecosystem communities. However evidence of fire and some vegetation clearing was recorded throughout the majority of all transects.
- Weed invasion in most areas was largely confined to areas that have been cleared including vehicle access tracks and easements as well as greater densities recorded within overland flow paths and mapped waterways and drainage lines.
- Exposed rocky habitat was recorded in isolated patches along ridge lines as well as along major creek lines. Although these areas have been extensively searched, no threatened species were recorded at the time of the assessment within the investigation area.
- *Marsdenia coronate* (Slender Milk Vine) has been recorded within the buffer area adjacent to Transect 1. These specimens form part of a previously approved translocation program and are located within a Council Park known as Marsdenia Park, within the existing residential development to the east. The proposed works will not impact on these specimens which are separated from the project area by a 20m wide existing bitumen road.

Surveys **did not identify any EVNT species within the proposed clearing areas** however a population of translocated *Marsdenia coronate* (Slender Milk Vine) was located within the 100m buffer. While this protected species is located with the 'Clearing Impact Area' as defined by the *Flora Survey Guidelines*, as no impacts to EVNT species will occur as a result of the proposed clearing, an *'Exempt Clearing Notification'* form should be lodged with the *Department of Environment and Heritage Protection* prior to any clearing taking place.

# 5. Appendices

**Appendix A**

Wildlife Online Search Results

**Appendix B**

Protected Matters Search Results

**Appendix C**

Curricula Vitae

**Appendix D**

Species Lists

# Appendix A

## Wildlife Online Search Results

Queensland Government

# Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: Rare and threatened species
Records: All
Date: All
Latitude: -27.6906
Longitude: 152.8996
Distance: 10
Email: davidhavill@saundershavill.com
Date submitted: Monday 30 Nov 2015 15:16:35
Date extracted: Monday 30 Nov 2015 15:20:08

The number of records retrieved = 19

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---|---|---|---|---|---|---|---|---|
| animals | amphibians | Limnodynastidae | *Adelotus brevis* | tusked frog | | V | | 10 |
| animals | birds | Cacatuidae | *Calyptorhynchus lathami lathami* | glossy black-cockatoo (eastern) | | V | | 10 |
| animals | birds | Falconidae | *Falco hypoleucos* | grey falcon | | V | | 1 |
| animals | birds | Maluridae | *Stipiturus malachurus* | southern emu-wren | | V | | 1 |
| animals | birds | Psittacidae | *Lathamus discolor* | swift parrot | | E | E | 3 |
| animals | birds | Rostratulidae | *Rostratula australis* | Australian painted snipe | | V | E | 8 |
| animals | birds | Strigidae | *Ninox strenua* | powerful owl | | V | | 13 |
| animals | birds | Turnicidae | *Turnix melanogaster* | black-breasted button-quail | | V | V | 1 |
| animals | mammals | Dasyuridae | *Dasyurus maculatus maculatus* | spotted-tailed quoll (southern subspecies) | | V | E | 3 |
| animals | mammals | Macropodidae | *Petrogale penicillata* | brush-tailed rock-wallaby | | V | V | 8 |
| animals | mammals | Phascolarctidae | *Phascolarctos cinereus* | koala | | V | V | 541 |
| animals | mammals | Vombatidae | *Vombatus ursinus* | common wombat | | NT | | 1 |
| animals | reptiles | Elapidae | *Acanthophis antarcticus* | common death adder | | V | | 1 |
| plants | higher dicots | Apocynaceae | *Marsdenia coronata* | slender milkvine | | V | | 19/19 |
| plants | higher dicots | Lamiaceae | *Plectranthus habrophyllus* | | | E | E | 11/11 |
| plants | higher dicots | Myrtaceae | *Eucalyptus curtisii* | Plunkett mallee | | NT | | 13/13 |
| plants | higher dicots | Myrtaceae | *Melaleuca irbyana* | | | E | | 1/1 |
| plants | higher dicots | Oleaceae | *Notelaea ipsviciensis* | | | E | CE | 12/12 |
| plants | higher dicots | Oleaceae | *Notelaea lloydii* | Lloyd's native olive | | V | V | 6/6 |

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 B

## Protected Matters Search Results

# EPBC Act Protected Matters Report

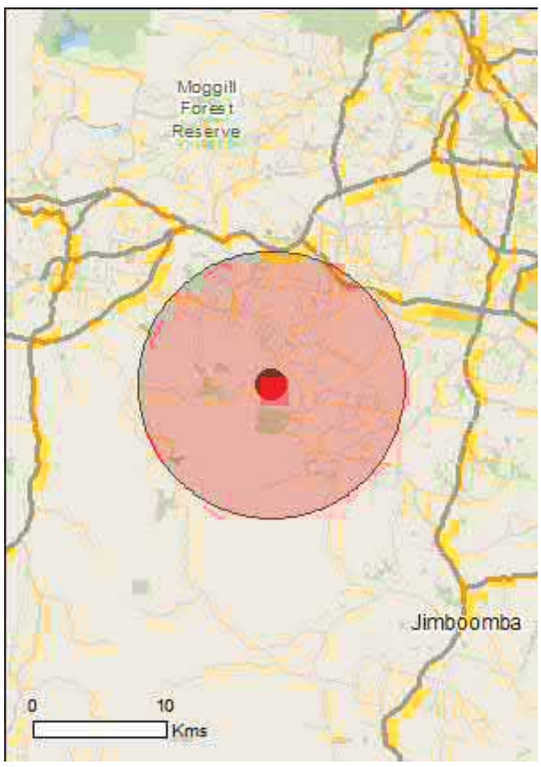
This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

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.

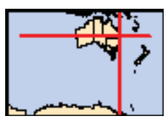
Report created: 30/11/15 16:16:24








Coordinates
Buffer: 10.0Km



# Summary

## Matters of National Environmental Significance

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

| | |
|---|---|
| World Heritage Properties: | None |
| National Heritage Places: | None |
| Wetlands of International Importance: | 1 |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | None |
| Listed Threatened Ecological Communities: | 2 |
| Listed Threatened Species: | 54 |
| Listed Migratory Species: | 34 |

## Other Matters Protected by the EPBC Act

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

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

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

| | |
|---|---|
| Commonwealth Land: | 1 |
| Commonwealth Heritage Places: | 1 |
| Listed Marine Species: | 36 |
| Whales and Other Cetaceans: | 1 |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | None |
| Commonwealth Reserves Marine: | None |

## Extra Information

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

| | |
|---|---|
| State and Territory Reserves: | 3 |
| Regional Forest Agreements: | None |
| Invasive Species: | 35 |
| Nationally Important Wetlands: | 1 |
| Key Ecological Features (Marine) | None |

# Details

## Matters of National Environmental Significance

### Wetlands of International Importance (Ramsar) [ Resource Information ]

| Name | Proximity |
|---|---|
| Moreton bay | 20 - 30km upstream |

### 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 |
|---|---|---|
| Lowland Rainforest of Subtropical Australia | Critically Endangered | Community may occur within area |
| White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered | Community likely to occur within area |

### Listed Threatened Species [ Resource Information ]

| Name | Status | Type of Presence |
|---|---|---|
| Birds | | |
| Anthochaera phrygia<br>Regent Honeyeater [82338] | Critically Endangered | Foraging, feeding or related behaviour may occur within area |
| Botaurus poiciloptilus<br>Australasian Bittern [1001] | Endangered | Species or species habitat likely to occur within area |
| Cyclopsitta diophthalma coxeni<br>Coxen's Fig-Parrot [59714] | Endangered | Species or species habitat may occur within area |
| Dasyornis brachypterus<br>Eastern Bristlebird [533] | Endangered | Species or species habitat likely to occur within area |
| Diomedea exulans antipodensis<br>Antipodean Albatross [82269] | Vulnerable | Species or species habitat may occur within area |
| Diomedea exulans exulans<br>Tristan Albatross [82337] | Endangered | Species or species habitat may occur within area |
| Diomedea exulans gibsoni<br>Gibson's Albatross [82271] | Vulnerable | Species or species habitat may occur within area |
| Diomedea exulans (sensu lato)<br>Wandering Albatross [1073] | Vulnerable | Species or species habitat may occur within area |
| Erythrotriorchis radiatus<br>Red Goshawk [942] | Vulnerable | Species or species habitat known to occur within area |
| Geophaps scripta scripta<br>Squatter Pigeon (southern) [64440] | Vulnerable | Species or species |

| Name | Status | Type of Presence |
|---|---|---|
| | | habitat may occur within area |
| Grantiella picta<br>Painted Honeyeater [470] | Vulnerable | Species or species habitat may occur within area |
| Lathamus discolor<br>Swift Parrot [744] | Endangered | Species or species habitat likely to occur within area |
| Macronectes giganteus<br>Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Pachyptila turtur subantarctica<br>Fairy Prion (southern) [64445] | Vulnerable | Species or species habitat likely to occur within area |
| Poephila cincta cincta<br>Black-throated Finch (southern) [64447] | Endangered | Species or species habitat may occur within area |
| Rostratula australis<br>Australian Painted Snipe [77037] | Endangered | Species or species habitat likely to occur within area |
| Thalassarche cauta cauta<br>Shy Albatross, Tasmanian Shy Albatross [82345] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche cauta salvini<br>Salvin's Albatross [82343] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche cauta steadi<br>White-capped Albatross [82344] | Vulnerable | Species or species habitat likely to occur within area |
| Thalassarche eremita<br>Chatham Albatross [64457] | Endangered | Species or species habitat may occur within area |
| Thalassarche melanophris<br>Black-browed Albatross [66472] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche melanophris impavida<br>Campbell Albatross [82449] | Vulnerable | Species or species habitat may occur within area |
| Turnix melanogaster<br>Black-breasted Button-quail [923] | Vulnerable | Species or species habitat likely to occur within area |
| **Fish** | | |
| Epinephelus daemelii<br>Black Rockcod, Black Cod, Saddled Rockcod [68449] | Vulnerable | Species or species habitat may occur within area |
| **Insects** | | |
| Phyllodes imperialis smithersi<br>Pink Underwing Moth [86084] | Endangered | Species or species habitat may occur within area |
| **Mammals** | | |
| Chalinolobus dwyeri<br>Large-eared Pied Bat, Large Pied Bat [183] | Vulnerable | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Dasyurus hallucatus | | |
| Northern Quoll [331] | Endangered | Species or species habitat may occur within area |
| Dasyurus maculatus maculatus (SE mainland population) | | |
| Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184] | Endangered | Species or species habitat known to occur within area |
| Petrogale penicillata | | |
| Brush-tailed Rock-wallaby [225] | Vulnerable | Species or species habitat known to occur within area |
| Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) | | |
| Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104] | Vulnerable | Species or species habitat known to occur within area |
| Potorous tridactylus tridactylus | | |
| Long-nosed Potoroo (SE mainland) [66645] | Vulnerable | Species or species habitat may occur within area |
| Pteropus poliocephalus | | |
| Grey-headed Flying-fox [186] | Vulnerable | Roosting known to occur within area |
| **Other** | | |
| Cycas ophiolitica | | |
| [55797] | Endangered | Species or species habitat likely to occur within area |
| **Plants** | | |
| Arthraxon hispidus | | |
| Hairy-joint Grass [9338] | Vulnerable | Species or species habitat may occur within area |
| Bosistoa transversa | | |
| Three-leaved Bosistoa, Yellow Satinheart [16091] | Vulnerable | Species or species habitat likely to occur within area |
| Cupaniopsis tomentella | | |
| Boonah Tuckeroo [3322] | Vulnerable | Species or species habitat likely to occur within area |
| Notelaea ipsviciensis | | |
| Cooneana Olive [81858] | Critically Endangered | Species or species habitat may occur within area |
| Notelaea lloydii | | |
| Lloyd's Olive [15002] | Vulnerable | Species or species habitat likely to occur within area |
| Phaius australis | | |
| Lesser Swamp-orchid [5872] | Endangered | Species or species habitat likely to occur within area |
| Phebalium distans | | |
| Mt Berryman Phebalium [81869] | Critically Endangered | Species or species habitat may occur within area |
| Planchonella eerwah | | |
| Shiny-leaved Condoo, Black Plum, Wild Apple [17340] | Endangered | Species or species habitat likely to occur within area |
| Plectranthus habrophyllus | | |
| [64589] | Endangered | Species or species habitat likely to occur within area |
| Sophora fraseri | | |
| [8836] | Vulnerable | Species or species habitat likely to occur within area |
| Thesium australe | | |
| Austral Toadflax, Toadflax [15202] | Vulnerable | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Reptiles | | |
| Caretta caretta<br>Loggerhead Turtle [1763] | Endangered | Species or species habitat known to occur within area |
| Chelonia mydas<br>Green Turtle [1765] | Vulnerable | Species or species habitat known to occur within area |
| Coeranoscincus reticulatus<br>Three-toed Snake-tooth Skink [59628] | Vulnerable | Species or species habitat may occur within area |
| Delma torquata<br>Collared Delma [1656] | Vulnerable | Species or species habitat likely to occur within area |
| Dermochelys coriacea<br>Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Species or species habitat known to occur within area |
| Eretmochelys imbricata<br>Hawksbill Turtle [1766] | Vulnerable | Species or species habitat known to occur within area |
| Furina dunmalli<br>Dunmall's Snake [59254] | Vulnerable | Species or species habitat may occur within area |
| Lepidochelys olivacea<br>Olive Ridley Turtle, Pacific Ridley Turtle [1767] | Endangered | Species or species habitat known to occur within area |
| Natator depressus<br>Flatback Turtle [59257] | Vulnerable | Species or species habitat known to occur within area |

## Listed Migratory Species [ Resource Information ]

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

| Name | Threatened | Type of Presence |
|---|---|---|
| Migratory Marine Birds | | |
| Apus pacificus<br>Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Diomedea antipodensis<br>Antipodean Albatross [64458] | Vulnerable* | Species or species habitat may occur within area |
| Diomedea dabbenena<br>Tristan Albatross [66471] | Endangered* | Species or species habitat may occur within area |
| Diomedea exulans (sensu lato)<br>Wandering Albatross [1073] | Vulnerable | Species or species habitat may occur within area |
| Diomedea gibsoni<br>Gibson's Albatross [64466] | Vulnerable* | Species or species habitat may occur within area |
| Macronectes giganteus<br>Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche cauta (sensu stricto)<br>Shy Albatross, Tasmanian Shy Albatross [64697] | Vulnerable* | Species or species habitat may occur within |

| Name | Threatened | Type of Presence |
|---|---|---|
| | | area |
| Thalassarche eremita<br>Chatham Albatross [64457] | Endangered | Species or species habitat may occur within area |
| Thalassarche impavida<br>Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable* | Species or species habitat may occur within area |
| Thalassarche melanophris<br>Black-browed Albatross [66472] | Vulnerable | Species or species habitat may occur within area |
| Thalassarche salvini<br>Salvin's Albatross [64463] | Vulnerable* | Species or species habitat may occur within area |
| Thalassarche steadi<br>White-capped Albatross [64462] | Vulnerable* | Species or species habitat likely to occur within area |
| **Migratory Marine Species** | | |
| Caretta caretta<br>Loggerhead Turtle [1763] | Endangered | Species or species habitat known to occur within area |
| Chelonia mydas<br>Green Turtle [1765] | Vulnerable | Species or species habitat known to occur within area |
| Dermochelys coriacea<br>Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Species or species habitat known to occur within area |
| Eretmochelys imbricata<br>Hawksbill Turtle [1766] | Vulnerable | Species or species habitat known to occur within area |
| Lepidochelys olivacea<br>Olive Ridley Turtle, Pacific Ridley Turtle [1767] | Endangered | Species or species habitat known to occur within area |
| Manta alfredi<br>Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994] | | Species or species habitat may occur within area |
| Manta birostris<br>Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995] | | Species or species habitat may occur within area |
| Natator depressus<br>Flatback Turtle [59257] | Vulnerable | Species or species habitat known to occur within area |
| Orcaella brevirostris<br>Irrawaddy Dolphin [45] | | Species or species habitat known to occur within area |
| **Migratory Terrestrial Species** | | |
| Cuculus optatus<br>Oriental Cuckoo, Horsfield's Cuckoo [86651] | | Species or species habitat may occur within area |
| Hirundapus caudacutus<br>White-throated Needletail [682] | | Species or species habitat known to occur within area |
| Merops ornatus<br>Rainbow Bee-eater [670] | | Species or species habitat may occur within area |
| Monarcha melanopsis<br>Black-faced Monarch [609] | | Species or species |

| Name | Threatened | Type of Presence |
|---|---|---|
| | | habitat known to occur within area |
| Monarcha trivirgatus | | |
| Spectacled Monarch [610] | | Species or species habitat known to occur within area |
| Motacilla flava | | |
| Yellow Wagtail [644] | | Species or species habitat may occur within area |
| Myiagra cyanoleuca | | |
| Satin Flycatcher [612] | | 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] | | Breeding known to occur within area |
| Ardea ibis | | |
| Cattle Egret [59542] | | Species or species habitat may occur within area |
| Gallinago hardwickii | | |
| Latham's Snipe, Japanese Snipe [863] | | Species or species habitat may occur within area |
| Pandion haliaetus | | |
| Osprey [952] | | Species or species habitat known to 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 - GREENBANK TRAINING AREA |

### Commonwealth Heritage Places [ Resource Information ]

| Name | State | Status |
|---|---|---|
| Natural | | |
| Greenbank Military Training Area (part) | QLD | Listed place |

### 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] | | Breeding known to occur within area |
| Ardea ibis | | |
| Cattle Egret [59542] | | Species or species habitat may occur within area |
| Cuculus saturatus | | |
| Oriental Cuckoo, Himalayan Cuckoo [710] | | Species or species |

| Name | Threatened | Type of Presence |
|---|---|---|
| | | habitat may occur within area |
| Diomedea antipodensis<br>Antipodean Albatross [64458] | Vulnerable* | Species or species habitat may occur within area |
| Diomedea dabbenena<br>Tristan Albatross [66471] | Endangered* | Species or species habitat may occur within area |
| Diomedea exulans (sensu lato)<br>Wandering Albatross [1073] | Vulnerable | Species or species habitat may occur within area |
| Diomedea gibsoni<br>Gibson's Albatross [64466] | Vulnerable* | Species or species habitat may occur within area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | | Species or species habitat may occur within area |
| Haliaeetus leucogaster<br>White-bellied Sea-Eagle [943] | | Species or species habitat known to occur within area |
| Hirundapus caudacutus<br>White-throated Needletail [682] | | Species or species habitat known to occur within area |
| Lathamus discolor<br>Swift Parrot [744] | Endangered | Species or species habitat likely to occur within area |
| Macronectes giganteus<br>Southern Giant Petrel [1060] | Endangered | Species or species habitat may occur within area |
| Macronectes halli<br>Northern Giant Petrel [1061] | Vulnerable | Species or species habitat may occur within area |
| Merops ornatus<br>Rainbow Bee-eater [670] | | Species or species habitat may occur within area |
| Monarcha melanopsis<br>Black-faced Monarch [609] | | Species or species habitat known to occur within area |
| Monarcha trivirgatus<br>Spectacled Monarch [610] | | Species or species habitat known to occur within area |
| Motacilla flava<br>Yellow Wagtail [644] | | Species or species habitat may occur within area |
| Myiagra cyanoleuca<br>Satin Flycatcher [612] | | Species or species habitat known to occur within area |
| Pachyptila turtur<br>Fairy Prion [1066] | | Species or species habitat likely to occur within area |
| Pandion haliaetus<br>Osprey [952] | | Species or species habitat known to occur within area |
| Rhipidura rufifrons<br>Rufous Fantail [592] | | Species or species habitat known to occur |

| Name | Threatened | Type of Presence within area |
|---|---|---|
| [Rostratula benghalensis (sensu lato)](#) Painted Snipe [889] | Endangered* | Species or species habitat likely to occur within area |
| [Thalassarche cauta (sensu stricto)](#) Shy Albatross, Tasmanian Shy Albatross [64697] | Vulnerable* | Species or species habitat may occur within area |
| [Thalassarche eremita](#) Chatham Albatross [64457] | Endangered | Species or species habitat may occur within area |
| [Thalassarche impavida](#) Campbell Albatross, Campbell Black-browed Albatross [64459] | Vulnerable* | Species or species habitat may occur within area |
| [Thalassarche melanophris](#) Black-browed Albatross [66472] | Vulnerable | Species or species habitat may occur within area |
| [Thalassarche salvini](#) Salvin's Albatross [64463] | Vulnerable* | Species or species habitat may occur within area |
| [Thalassarche steadi](#) White-capped Albatross [64462] | Vulnerable* | Species or species habitat likely to occur within area |
| Reptiles | | |
| [Caretta caretta](#) Loggerhead Turtle [1763] | Endangered | Species or species habitat known to occur within area |
| [Chelonia mydas](#) Green Turtle [1765] | Vulnerable | Species or species habitat known to occur within area |
| [Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768] | Endangered | Species or species habitat known to occur within area |
| [Eretmochelys imbricata](#) Hawksbill Turtle [1766] | Vulnerable | Species or species habitat known to occur within area |
| [Lepidochelys olivacea](#) Olive Ridley Turtle, Pacific Ridley Turtle [1767] | Endangered | Species or species habitat known to occur within area |
| [Natator depressus](#) Flatback Turtle [59257] | Vulnerable | Species or species habitat known to occur within area |

## Whales and other Cetaceans

[ Resource Information ]

| Name | Status | Type of Presence |
|---|---|---|
| Mammals | | |
| [Orcaella brevirostris](#) Irrawaddy Dolphin [45] | | Species or species habitat known to occur within area |

## Extra Information

### State and Territory Reserves [ Resource Information ]

| Name | State |
|---|---|
| Mount Perry 1 | QLD |
| Stewartdale | QLD |
| White Rock | QLD |

### Invasive Species [ Resource Information ]

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

| Name | Status | Type of Presence |
|---|---|---|
| **Birds** | | |
| Acridotheres tristis<br>Common Myna, Indian Myna [387] | | Species or species habitat likely to occur within area |
| Anas platyrhynchos<br>Mallard [974] | | Species or species habitat likely to occur within area |
| Carduelis carduelis<br>European Goldfinch [403] | | Species or species habitat likely to occur within area |
| Columba livia<br>Rock Pigeon, Rock Dove, Domestic Pigeon [803] | | Species or species habitat likely to occur within area |
| Lonchura punctulata<br>Nutmeg Mannikin [399] | | Species or species habitat likely to occur within area |
| Passer domesticus<br>House Sparrow [405] | | Species or species habitat likely to occur within area |
| Streptopelia chinensis<br>Spotted Turtle-Dove [780] | | Species or species habitat likely to occur within area |
| Sturnus vulgaris<br>Common Starling [389] | | Species or species habitat likely to occur within area |
| **Frogs** | | |
| Rhinella marina<br>Cane Toad [83218] | | Species or species habitat likely to occur within area |
| **Mammals** | | |
| Bos taurus<br>Domestic Cattle [16] | | Species or species habitat likely to occur within area |
| Canis lupus familiaris<br>Domestic Dog [82654] | | Species or species habitat likely to occur within area |
| Equus caballus<br>Horse [5] | | Species or species habitat likely to occur within area |
| Felis catus<br>Cat, House Cat, Domestic Cat [19] | | Species or species habitat likely to occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Feral deer | | |
| Feral deer species in Australia [85733] | | Species or species habitat likely to occur within area |
| Lepus capensis | | |
| Brown Hare [127] | | Species or species habitat likely to occur within area |
| Mus musculus | | |
| House Mouse [120] | | Species or species habitat likely to occur within area |
| Oryctolagus cuniculus | | |
| Rabbit, European Rabbit [128] | | Species or species habitat likely to occur within area |
| Rattus norvegicus | | |
| Brown Rat, Norway Rat [83] | | Species or species habitat likely to occur within area |
| Rattus rattus | | |
| Black Rat, Ship Rat [84] | | Species or species habitat likely to occur within area |
| Sus scrofa | | |
| Pig [6] | | Species or species habitat likely to occur within area |
| Vulpes vulpes | | |
| Red Fox, Fox [18] | | Species or species habitat likely to occur within area |
| **Plants** | | |
| Anredera cordifolia | | |
| Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643] | | Species or species habitat likely to occur within area |
| Cabomba caroliniana | | |
| Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171] | | Species or species habitat likely to occur within area |
| Chrysanthemoides monilifera | | |
| Bitou Bush, Boneseed [18983] | | Species or species habitat may occur within area |
| Eichhornia crassipes | | |
| Water Hyacinth, Water Orchid, Nile Lily [13466] | | Species or species habitat likely to occur within area |
| Genista monspessulana | | |
| Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126] | | Species or species habitat likely to occur within area |
| 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 |
| Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii | | |
| Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497] | | Species or species habitat likely to occur |

| Name | Status | Type of Presence |
|---|---|---|
| | | within area |
| Salvinia molesta<br>Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665] | | Species or species habitat likely to occur within area |
| Senecio madagascariensis<br>Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624] | | Species or species habitat likely to occur within area |
| Solanum elaeagnifolium<br>Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323] | | Species or species habitat likely to occur within area |
| Reptiles | | |
| Hemidactylus frenatus<br>Asian House Gecko [1708] | | Species or species habitat likely to occur within area |

| Nationally Important Wetlands | [ Resource Information ] |
|---|---|
| Name | State |
| Greenbank Army Training Area C | QLD |

# Caveat

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

# Coordinates

-27.6906 152.89956

# Acknowledgements

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

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Parks and Wildlife Commission NT, Northern Territory Government
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Other groups and individuals

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

Please feel free to provide feedback via the Contact Us page.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# Appendix C

Curricula Vitae – Pen Port

## David Havill: Senior Ecologist

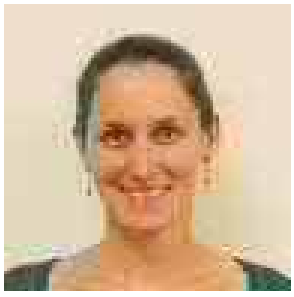
David Havill has significant practical experience in the areas of ecological site assessments (flora and fauna), weed management programs, large scale revegetation projects, wetland rehabilitation and waterway restoration. He has a strong understanding of the intricate workings of the Vegetation Management Act 1999 and the complex codes and policies which influence site vegetation constraints.

David's expertise relates to the on-site identification and spatial mapping of fauna and flora species including endangered, rare and vulnerable plants and animals. He has an accurate understanding of site survey processes and standards developed by the State and Commonwealth Governments. This provides the ability to challenge the various inaccuracies that occur within broad scale vegetation mapping developed by these Government agencies.

David works closely with our in house team of GIS, environmental planning, and landscape rehabilitation specialists to document findings of ecological survey and prepare targeted restoration and rehabilitation strategies. He has a strong understanding of construction techniques associated with development projects and has the ability to prepare practical flora and fauna management plans to assist in guiding the construction process within sensitive areas.

**Qualifications**
Bachelor of Applied Science (Natural Systems and Wildlife Management), University of Queensland (1998)

## Angela Little: Ecologist



Angela is a member of our Environmental Management team, with an academic background in the fields of marine and environmental science, and significant experience within the university and government research setting. Angela's environmental management experience is widespread, ranging from GIS support, ecological assessment in aquatic and terrestrial environments, compliance assessments for state departments, and reporting to meet regulatory requirements for resource sector, infrastructure and land development projects.

Angela has substantial technical expertise in water quality monitoring and baseline assessments, which includes equipment calibration, field sampling, and data management. Her recent completion of a qualification in Environment and Sustainability has enabled Angela to develop skills in community engagement.

**Qualifications**
Graduate Certificate in Environment, Griffith University (2013)
Bachelor of Science with Honours (Marine Science) Class I, James Cook University (2004)

## Maree Clancy: Ecologist

Maree has extensive ecological field and desktop research experience gained while working in the forestry industry and with the Australian Koala Foundation. In previous roles she assisted with quarterly and annual reporting of rehabilitation/revegetation works at residential development reserves, habitat translocation sites and the Bruce Highway upgrade project, and also with annual fauna surveying and reporting on various projects. She has a wealth of experience with preliminary desktop assessments of potential species at survey sites and the identification of flora and fauna species present during surveys.

At the Australian Koala Foundation, Maree was involved in the Koala habitat mapping project which included the use of GIS and determining habitat values for regional ecosystems and mosaics based on canopy species rankings and percentage composition.

Maree has additional skills in native seed propagation and growing of seedlings for large scale revegetation and farm forestry projects, ongoing monitoring of propagation methods and plant health status and adaptive approaches to improving methods.

**Qualifications**
Bachelor of Environmental Science, University of the Sunshine Coast (2014)

# Appendix D

## Species Lists

| Site Flora - Transect Meander Results | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Species*** | **Common Name** | **Transect 1** | **Transect 2** | **Transect 3** | **Transect 4** | **Transect 5** | **Transect 6** | **Transect 7** | **Transect 8** | **Transect 9** | **Transect 10** | **Transect 11** | **Transect 12** |
| ***HERB*** | | | | | | | | | | | | | |
| *Brunoniella australis* | Blue Trumpet | | | | | | | " | " | " | " | | |
| *Chrysocephalum apiculatum* | Yellow Buttons | " | | " | " | | " | " | " | " | " | " | " |
| *Commelina diffusa* | Wandering Jew | | | " | | " | " | | " | " | " | " | " |
| *Crassula sieberiana* | Australian Crassula | | | | | | " | | | | | | |
| *Einadia nutans* | Einadia | | | | | | " | | | | | | |
| *Glossocardia bidens* | Native Cobbler's Pegs | | | | | | | | | | | " | " |
| *Lobelia purpurascens* | White Root | " | | | | " | " | " | " | " | | " | " |
| *Oxalis corniculata* | Yellow Wood-sorrel | | | " | | | " | " | " | " | " | " | " |
| *Murdannia graminea* | Slug Herb | | | | | | | | " | " | | | |
| *Phyllanthus virgatus* | Phyllanthus | | " | | " | | | " | " | " | | " | " |
| *Plectranthus parviflorus* | Plectranthus | | | " | | | | | | " | | | |
| *Poranthera microphylla* | Poranthera | | | | | | " | | | | | | |
| *Hybanthus stellarioides* | Spade Flower | | | | | | | " | | | " | | |
| *Wahlenbergia gracilis* | Small-flowered Bluebell | | | " | | " | | " | " | " | " | " | " |
| ***Total Number of Herbs Recorded*** | | **2** | **1** | **5** | **2** | **2** | **5** | **5** | **5** | **6** | **3** | **5** | **5** |
| ***VINES*** | | | | | | | | | | | | | |
| *Asparagus africanus* | Climbing Asparagus Fern | | | | | | " | | | | | | |
| *Cassytha glabella* | Dodder Laurel | | | | | | | " | " | " | | " | " |
| *Eustrephus latifolius* | Wombat Berry | " | " | " | " | | | | " | " | | " | " |
| *Geitonoplesium cymosum* | Scrambling Lily | | | | | | | " | | | " | | |
| *Glycine microphylla* | Glycine | | | " | " | " | | " | " | | | " | |
| *Hardenbergia violacea* | Native Sarsaparilla | | " | | | | | | | " | | " | " |
| *Ipomoea cairica* | Mile-a-minute | | | | | | " | | | | | | |
| *Neonotonia wightii* | Glycine | " | | | " | | " | | | " | | | " |
| *Parsonsia straminea* | Monkey Rope Vine | | | | | " | | | | | | | |
| *Passiflora suberosa* | Corky Passion Vine | " | " | " | " | " | " | " | " | " | " | " | " |
| *Smilax australis* | Barbed Wire Vine | | | | | " | | | | | " | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Thunbergia alata* | Black-eyed Susan | | | | | | " | | | | | | |
| *Vigna vexillata* | Wild Cowpea | " | " | | | | " | " | " | " | " | " | " |
| ***Total Number of Vines Recorded*** | | **4** | **4** | **3** | **4** | **4** | **6** | **5** | **5** | **6** | **4** | **6** | **6** |
| ***ORCHIDS / EPIPHYTES*** | | | | | | | | | | | | | |
| *Dockrillia linguiformis* | Tongue Orchid | | | | | | " | | | | | | |
| *Platycerium bifurcatum* | Elkhorn | | | | | | " | | | | | | |
| *Platycerium suberbum* | Staghorn | | | | | | " | | | | | | |
| ***Total Number of Orchids / Epiphytes Recorded*** | | **0** | **0** | **0** | **0** | **0** | **3** | **0** | **0** | **0** | **0** | **0** | **0** |
| ***GROUND*** | | | | | | | | | | | | | |
| *Adiantum aethiopicum* | Maidenhair Fern | | | | | | " | | | | | | |
| *Ageratum houstonianum* | Blue Billygoat Weed | " | | | | | | | " | | " | | " |
| *Ambrosia artemisiifolia* | Annual Ragweed | " | | | | | " | | | | | | |
| *Andropogon virginicus* | Whicky Grass | | | | | | | | | | | | " |
| *Aristida sp.* | Many Head Wire Grass | " | | " | " | " | " | " | " | " | | " | " |
| *Asclepias curassavica* | Red-head Cotton Bush | | | | | | " | | | | | | |
| *Bidens pilosa* | Cobbler's Pegs | " | | | " | | " | | " | " | " | | |
| *Cassytha pubescens* | Dodder Laurel | | | | | | " | | | | | | |
| *Cayratia clematidea* | Slender Grape | | | | | | " | | | | | | |
| *Centella asiatica* | Pennywort | | | | | | " | | | | | | |
| *Cheilanthes distans* | Bristle Cloak Fern | " | " | " | " | " | " | " | " | " | " | | " |
| *Chloris gayana* | Rhodes Grass | " | | | " | | | " | | " | | | |
| *Chloris virgata* | Feathertop Rhodes Grass | " | | | | | | | | " | | | |
| *Conyza bonariensis* | Flaxleaf Fleabane | " | | | | | " | | " | | | | |
| *Cymbopogon refractus* | Barbed Wire Grass | " | | " | " | | | " | " | " | | " | " |
| *Cyperus polystachyos* | Bunchy Sedge | " | " | " | " | | " | " | " | | " | | |
| *Dianella caerulea* | Blueberry Lilly | " | " | " | " | " | " | " | " | " | " | " | " |
| *Dianella longifolia* | Blueberry Lilly | " | " | " | " | " | " | " | | " | " | " | " |
| *Drynaria rigidula* | Basket Fern | | | | | | " | | | | | | |
| *Entolasia stricta* | Wiry Panic | " | " | " | " | " | " | " | " | " | " | " | " |
| *Gahnia aspera* | Saw Sedge | " | | " | " | " | " | " | " | | " | " | " |
| *Goodenia rotundifolia* | Goodenia | " | | " | " | " | | | | " | " | " | " |
| *Heliotropium amplexicaule* | Blue Heliotrope | | | | | | " | | " | | | | " |
| *Heteropogon contortus* | Black Spear Grass | | " | " | " | | " | " | | | " | " | " |
| *Eremophila debilis* | Winter Apple | | | " | " | | | | | | | | |
| *Imperata cylindrica* | Blady Grass | " | " | " | " | | | " | " | " | " | " | " |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Juncus usitatus* | Common Rush | | | | | | " | | | | | | " |
| *Lantana montevidensis* | Creeping Lantana | | | " | | | " | | " | " | " | " | " |
| *Lepidosperma laterale* | Variable Sword Sedge | " | | " | | " | | " | " | " | | | " |
| *Lomandra longifolia* | Mat Rush | | | " | | | " | " | | " | " | " | " |
| *Lomandra multiflora* | Many-flowering Mat Rush | " | | | " | " | " | " | " | " | | | " |
| *Megathyrsus maximus* | Guinea Grass | | " | | | | " | | | | " | | " |
| *Melinis repens* | Red Natal Grass | | | " | " | | " | | " | " | " | " | " |
| *Panicum sp.* | Panicum | " | " | " | " | | | " | | " | " | " | " |
| *Paspalum conjugatum* | Sourgrass | " | | | | | " | " | " | | | " | " |
| *Poa labillardieri* | Tussock Grass | " | " | | | " | " | " | " | " | | | " |
| *Pomax umbellata* | Pomax | " | " | | " | | | | | " | | | |
| *Pteridium esculentum* | Bracken | | | | | | | | | | | " | " |
| *Senecio madagascariensis* | Fireweed | " | | | | " | " | | | | | | |
| *Sida cordifolia* | Flannel Weed | | | " | | | | | | " | | | |
| *Solanum nigrum* | Blackberry Nightshade | " | | | | | " | | | | | | |
| *Solanum seaforthianum* | Brazilian Nightshade | " | | | | | " | | | | | | |
| *Sporobolus pyramidalis* | Giant Rat's Tail Grass | | | | | | " | | | " | | | " |
| *Themeda triandra* | Kangaroo Grass | " | " | " | " | " | " | " | " | " | " | " | " |
| *Urochloa mutica* | Para Grass | | | | | | " | | | | | | |
| *Xyris complanata* | Hat Pins | | | | | | | | " | | | | " |
| ***Total Number of Ground Layer Species Recorded*** | | **26** | **12** | **19** | **19** | **12** | **32** | **18** | **20** | **22** | **17** | **16** | **27** |
| ***SHRUB*** | | | | | | | | | | | | | |
| *Acacia complanata* | Flat Stem Wattle | | | | " | | | | | " | | | |
| *Acacia fimbriata* | Fringed Wattle | " | " | " | " | " | " | " | | " | " | " | " |
| *Baccharis halimifolia* | Groundsel Bush | | | | | | " | | | | | | |
| *Breynia oblongifolia* | Coffee Bush | | | | | | " | " | | | " | " | " |
| *Bursaria spinosa* | Black Thorn | | " | " | | " | | | | | | " | |
| *Daviesia villifera* | Daviesia | " | " | | | " | | | | | | | |
| *Dodonaea lanceolata* | Hop Bush | " | " | " | " | " | | | " | " | " | | |
| *Dodonaea triangularis* | Small-leaved Hop | " | | | | | | | | | | | |
| *Gomphocarpus physocarpus* | Balloon Cotton Bush | " | | | | | " | | | | " | | |
| *Grewia latifolia* | Dog's Balls | | " | | " | " | | | | | | | |
| *Jacksonia scoparia* | Dogwood | " | " | | | | " | " | " | " | | " | " |
| *Lantana camara* | Lantana | " | | " | " | " | " | " | | | " | " | " |
| *Leucaena leucocephala* | Leucaena | | | | | | " | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Leucopogon juniperinus* | Prickly Heath | " | " | " | " | " | | | " | " | " | " | " |
| *Ochna serrulata* | Ochna | | | " | | | | | | | | | |
| *Opuntia stricta* | Prickly Pear | " | | " | | " | | | | " | | | " |
| *Persoonia sericea* | Persoonia | " | " | " | | " | | | | " | " | " | " |
| *Pultenaea euchila* | Orange Pultenaea | " | " | " | " | " | | | | " | | " | |
| *Schinus terebinthifolius* | Broadleaved Pepper Tree | | | | | | " | | | | | | |
| *Senna pendula* | Easter Cassia | | | | | | " | | | | | | |
| *Solanum mauritianum* | Wild Tobacco Tree | | | | | | " | | | | | | |
| *Solanum torvum* | Devil's Fig | | | | | | " | | | | | | |
| *Tithonia diversifolia* | Japanese Sunflower | | | | | | " | | | | | | |
| *Trema tomentosa* | Poison Peach | | | " | | " | | | | | | | |
| *Xanthorrhoes johnsonii* | Forest Grass Tree | " | " | " | " | " | | | | " | " | " | |
| ***Total Number of Shrub Species Recorded*** | | **12** | **10** | **11** | **8** | **12** | **12** | **4** | **3** | **9** | **8** | **9** | **7** |
| ***SUB-CANOPY*** | | | | | | | | | | | | | |
| *Acacia concurrens* | Black Wattle | | " | " | " | | " | | " | " | " | " | " |
| *Acacia disparrima* | Hickory Wattle | | | | | | | | | | | | |
| *Acacia leiocalyx* | Early Flowering Black Wattle | " | | " | " | " | " | " | " | " | | " | " |
| *Acacia salicina* | Sally Wattle | " | " | " | | " | | | | | | | " |
| *Allocasuarina littoralis* | Black She-oak | " | " | " | " | " | | " | " | " | " | " | " |
| *Allocasuarina torulosa* | Forest Oak | | | | | | | " | | | | | " |
| *Alphitonia excelsa* | Soap Tree | " | " | " | " | " | " | " | " | " | " | " | " |
| *Celtis sinensis* | Chinese Elm | | | | | | " | | | | | | |
| *Cinnamomum camphora* | Camphor Laurel | | | | | | " | | | | | | |
| *Cupaniopsis anacardioides* | Tuckeroo | " | | | " | " | " | | | " | | | " |
| *Glochidion ferdinandi* | Cheese Tree | | | | | | | | | | | | " |
| *Jagera pseudorhus* | Foambark Tree | | | | | | " | | | | | " | |
| *Lophostemon confertus* | Brush Box | | | " | | " | | | | " | " | " | " |
| *Lophostemon suaveolens* | Swamp Box | | | | " | | " | " | " | " | " | | " |
| *Melaleuca quinquenervia* | Broad Leaf Paperbark | | | | | | " | | | | | | |
| *Melaleuca saligna* | Willow Bottlebrush | | | | | " | " | | | | | | |
| *Melia azedarach* | White Cedar | | | | | | " | | | | | | |
| *Petalostigma pubscens* | Quinine Bush | " | " | | " | | | " | " | " | " | " | " |
| *Schefflera actinophylla* | Umbrella Tree | " | | | | | " | | | | | | |
| *Tecoma stans* | Yellow Bells | | | | | | " | | | | | | |
| ***Total Number of Sub-canopy Species Recorded*** | | **7** | **5** | **6** | **7** | **7** | **13** | **6** | **6** | **8** | **6** | **7** | **11** |

| CANOPY | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Angophora leiocarpa* | Smooth Bark Apple | " | " | | " | | " | " | " | " | " | " | " |
| *Angophora woodsiana* | Rough Bark Apple | | | | | | " | | | | | | |
| *Corymbia citriodora* | Spotted Gum | | " | " | " | " | " | " | " | " | | " | " |
| *Corymbia henryi* | Large Leaf Spotted Gum | " | " | " | | " | " | " | " | | | " | |
| *Corymbia intermedia* | Pink Bloodwood | | | " | | " | " | " | " | " | " | " | " |
| *Corymbia tessellaris* | Moreton Bay Ash | | | | | | " | | | | | | " |
| *Corymbia trachyphloia* | Brown Bloodwood | " | " | | " | | | " | | " | " | | |
| *Eucalyptus acmenoides* | White Mahogany | | " | " | " | | | " | | " | | " | " |
| *Eucalyptus crebra* | Narrow Leaf Ironbark | | | | | | | | | | | | |
| *Eucalyptus fibrosa* | Broad Leaf Ironbark | " | " | " | | | | | | | | | |
| *Eucalyptus major* | Grey Gum | | | | | | " | | " | | | | |
| *Eucalyptus micorcorys* | Tallowood | | | | | | | | | | " | | |
| *Eucalyptus moluccana* | Gum Topped Box | | | " | | | | | | | | | |
| *Eucalyptus seeana* | Narrow Leaf Red Gum | | | " | " | " | | | " | " | " | " | " |
| *Eucalyptus siderophloia* | Grey Ironbark | | " | " | | " | " | " | " | " | " | " | " |
| *Eucalyptus tereticonris* | Forest Red Gum | | | | " | | | | " | | | " | " |
| ***Total Number of Canopy Species Recorded*** | | **4** | **7** | **8** | **6** | **5** | **8** | **7** | **8** | **7** | **6** | **8** | **8** |
| ***Total Species Recorded*** | | **55** | **39** | **52** | **46** | **42** | **79** | **45** | **47** | **58** | **44** | **51** | **64** |

# ATTACHMENT 3 –

# *Plectanthus habrophyllus* Pre-clearance Survey Notification

saunders havill group

Saunders Havill Group Pty Ltd ABN 24 144 972 949
address 9 Thompson St Bowen Hills Q 4006
phone (07) 3251 9444 email mail@saundershavill.com
web www.saundershavill.com fax (07) 3251 9455

surveying town planning urban design environmental management landscape architecture

**Date:** 9 July 2016
**Site:** Spring Mountain Precinct
**Client:** Lend Lease
**EPBC Ref:** 2013/7057
**SHG Ref:** 7243
**SHG Contact:** Murray Saunders (07 3251 9444)

**Attention: Ian Murray**
Regional Development Manager, Communities
Level 4, Kings Gate,
King Street
Bowen Hills QLD 4006

**Springfield Rise: Village 6 –*Plectanthus habrophyllus* pre-clearance survey, 7002 Grande Avenue, Springfield (Lot 33 on SP269190)**

Dear Ian,

This letter provides confirmation that the *Environmental Management Division* of **Saunders Havill Group** was engaged by **Lendlease Communities** to undertake a pre-clearance survey for *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) threatened flora species *Plectanthus habrophyllus* within the proposed clearing extent for Village 6 to meet Condition 6 of the EPBC Act approval (Ref: 2013/7057).

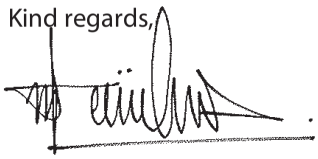
No *Plectanthus habrophyllus* specimens were recorded within the Village 6 clearing extent (refer to **Attachment 1** for a copy of the clearing extent). It is noted that no *Plectanthus habrophyllus* populations were previously recorded as part of the Spring Mountain EPBC survey by **Yurrah** (refer to **Attachment 2**).

The following provides relevant details of the survey:

**Applicant:** Lend Lease Communities (Springfield) Pty Ltd
**Site Details**: 7002 Grande Avenue, Springfield (Lot 33 on SP269190)
**Development Area**: Springfield Rise -Village 6

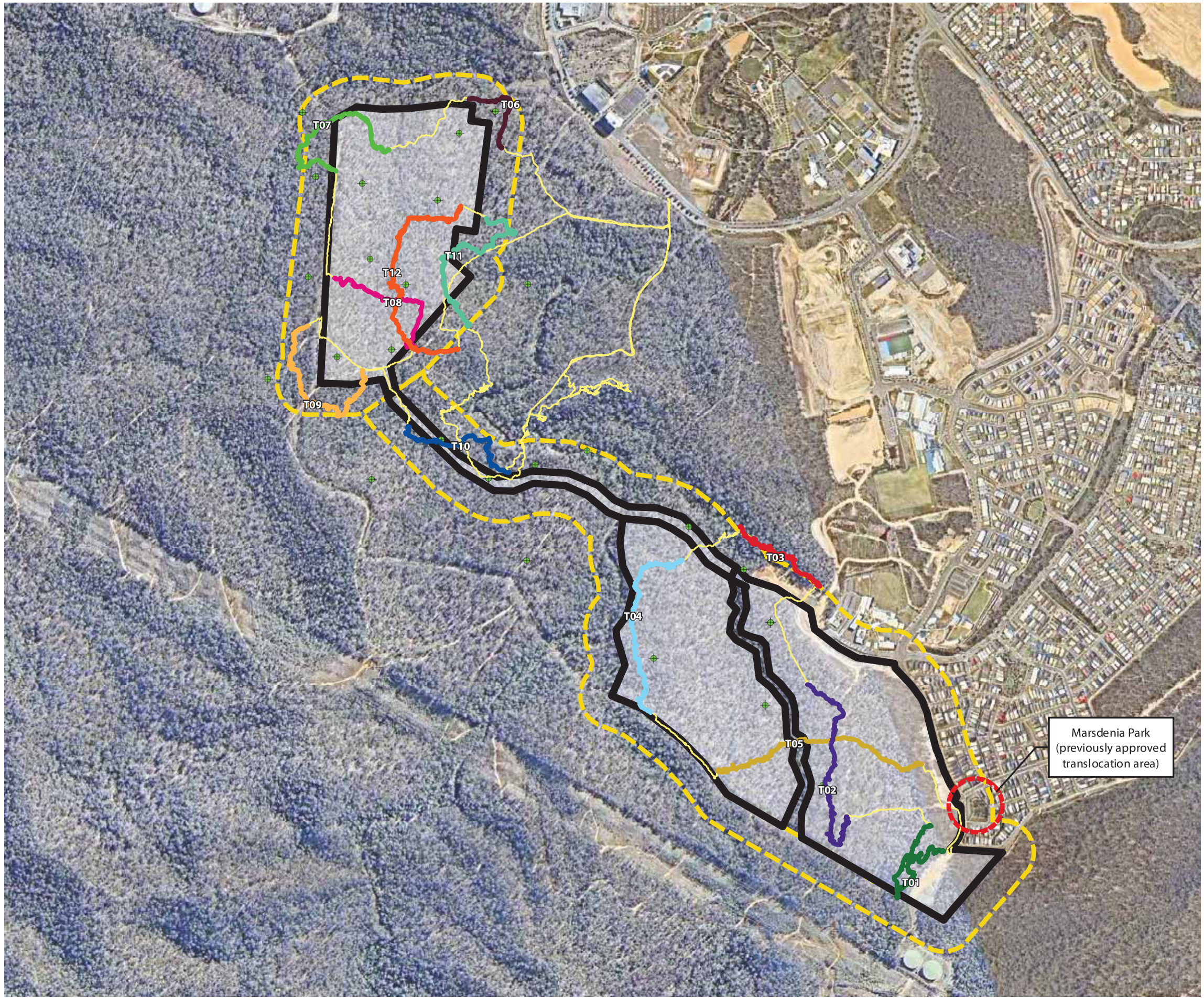
***Plectanthus habrophyllus* Pre-Clearance Survey Results:**
**Survey Completed by**: David Havill (Senior Ecologist) & Maree Clancy (Ecologist)
**Survey Completion Date:** 8 July 2016
**Was the survey undertaken in accordance with EPBC Act survey guidelines**? Yes
**Were any *Plectanthus habrophyllus* specimens identified within the clearing area?** No

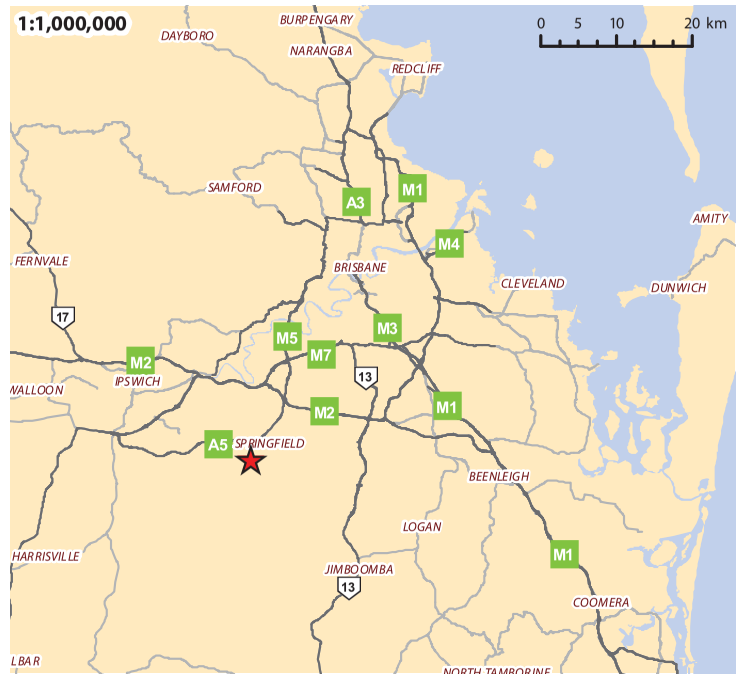
Kind regards,



Murray Saunders
**Director – Saunders Havill Group**

# Attachment I –
# *Plectranthus habrophyllus* Pre-clearance Survey Extent




## Legend

- Impact area
- 100m impact area buffer
- GPS tracklog
- Observational surveys

**Meander transect centreline**

- T01
- T02
- T03
- T04
- T05
- T06
- T07
- T08
- T09
- T10
- T11
- T12

0 50 100 200 300 400 500 m

N

saunders havill group



ISSUES:

| Issue | Date | Description | Drawn | Checked |
|---|---|---|---|---|
| A | 5/01/2016 | Prelim Draft | TC | MS |

APPROVED COMPANY ISO 9001 Quality Management Systems QMS

APPROVED COMPANY ISO 14001 Environmental Management Systems QMS

# *Springfield - Villages 6 & 8*

## Flora Meandering Survey Transects

Date | 5/01/2016
Scale | 1:12,500 @ A3
Coordinate System | GDA 1994 MGA Zone 56
Projection | Transverse Mercator
Client | Lend Lease
Project | Springfield
Address/RPD | Springfield Villages 6 to 8
Sources | QLD GIS Layers (QLD Gov. Info Services 2015), Aerial (Nearmap, 2015)

# *Plan 1*

**SHG File**
7522 E 01 Flora Meandering Survey B

# Attachment 2 –
# *Plectranthus habrophyllus* Surevy by Yurrah

# CONCEPT MANAGEMENT PLAN

| GPS Locations of *Plectranthus habrophyllus* populations UTM Zone 56 J | | |
|---|---|---|
| ID | Latitude | Longitude |
| Plec 1 | 489651 | 6937126 |
| Plec 2 | 489534 | 6937058 |
| Plec 3 | 490045 | 6937140 |
| Plec 4 | 488935 | 6937742 |
| Plec 5 | 489700 | 6938233 |
| Plec 6 | 489823 | 6937058 |

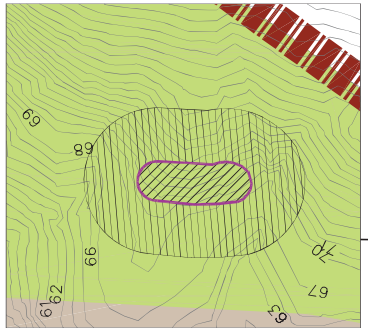
Approximate extent of Plectranthus habrophyllus ID - Plec 2. Approximately 5 mature individuals within approximately 200m². Development footprint, proposed residential, 5m to northwest.

Approximate extent of Plectranthus habrophyllus ID - Plec 1. Approximately 10 mature individuals within approximately 500m². Development footprint, proposed residential, 20m to northwest.

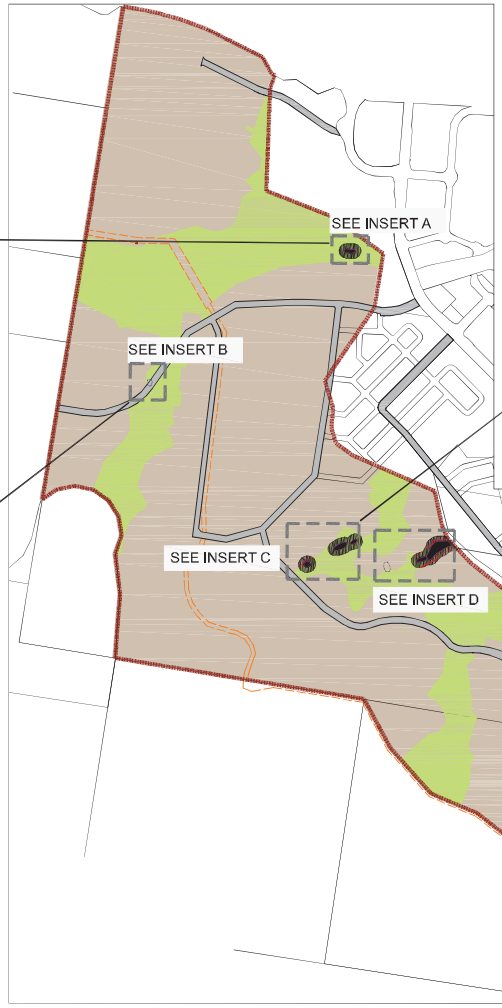
Receive area for Plec 4.

## INSERT A

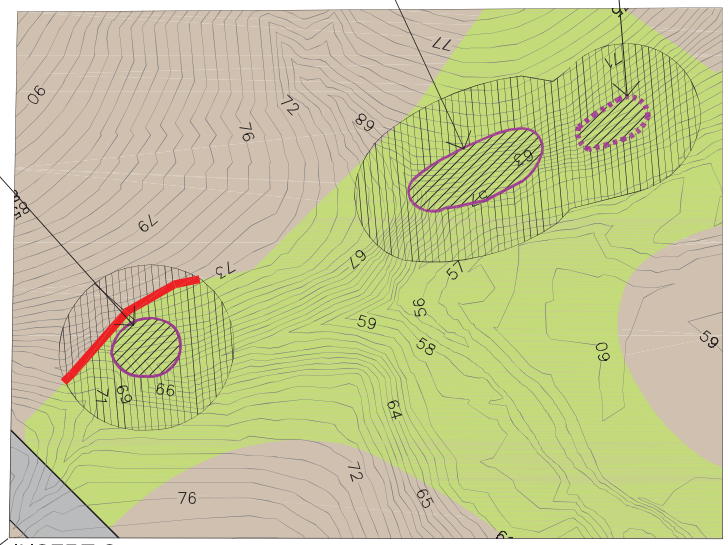
Scale 1:2000 @ A3



Approximate extent of *Plectranthus habrophyllus* sub-population (ID - Plec 5). Approximately 5 mature individuals within approximately 500m². 127m from development footprint to the south.




Scale - 1:20 000 @ A3

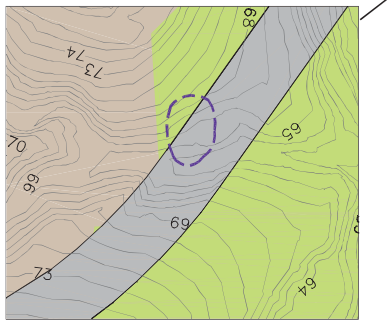


## INSERT C

Scale 1:2000 @ A3

## INSERT B

Scale 1:2000 @ A3

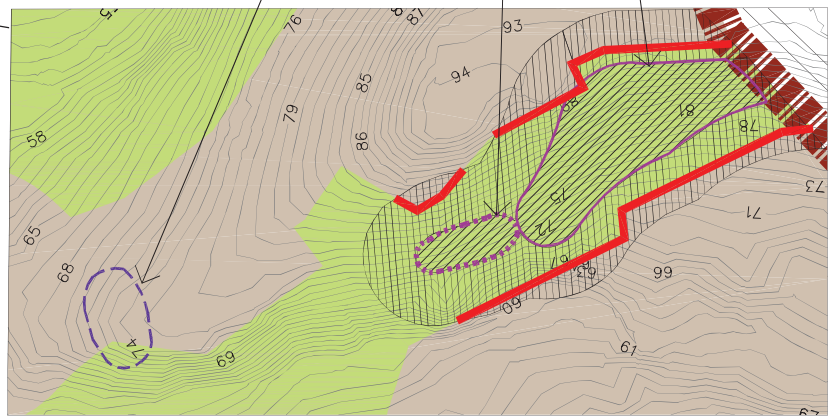


Approximate extent of *Plectranthus habrophyllus* ID - Plec 4. Approximately 5 mature individuals within approximately 400m². Population will require translocation into Linear Open Space. See Insert C. The road is located in this alignment to minimise earthworks within the linear open space and development areas. The southeast regional pipeline is located along the ridge to the west and controls the level of the road as it crosses this linear open space area.

Approximate extent of *Plectranthus habrophyllus* ID - Plec 6. Approximately 20 mature individuals within approximately 500m². Population will require translocation into Linear Open Space to the east.

Receive area for Plec 6.

Approximate extent of *Plectranthus habrophyllus* ID - Plec 3. Approximately 50 mature individuals within approximately 3000m². Adjacent to residential development.



## INSERT D

Scale 1:2000 @ A3

## LEGEND

E2 Precinct Boundary

Proposed Development Layout

Development footprint - use other than for conservation purposes

Linear Open Space - managed for conservation purposes

Management Plan Core Conservation Areas - *Plectranthus habrophyllus* population location

Where adjacent to an area identified for 'Interface Management' additional management actions required during clearing and construction. Refer Threatened Flora Management Plan Section 3.2.2. Refer Section 3.3 for ongoing habitat management.

In-situ population.

Receive area - translocated population.

Management Plan Buffer Area

Buffer Area overlapping development area. Considered detailed design required. Refer Threatened Flora Management Plan Section 3.2.1 for more information.

Buffer Area within Linear Open Space. Any Buffer Area adjacent an area identified for 'Interface Management' will require targeted management actions for protection of threatened flora during clearing and construction. Refer Threatened Flora Management Plan Section 3.2.2 for more information.

Management Plan Additional Management Actions

Approximate population extent of *P. habrophyllus* to be translocated. Refer Threatened Flora Management Plan Section 3.1 for actions.

Threatened flora Interface management required. Refer Threatened Flora Management Plan Section 3.3.1 for actions.

# ATTACHMENT 4 –

# Fauna Spotter Pre-clearance Reports

QFC
QUEENSLAND FAUNA CONSULTANCY
Pty Ltd

**September 2016**

# Fauna Spotter Catcher Wildlife and Habitat Impact Mitigation Plan

## Springfield Rise – Village 6
## Spring Mountain, Queensland
Report prepared for Shadforths Civil Contractors


Report prepared by

QLD Fauna Consultancy Pty Ltd

Phone: (07) 3376 9780

Fax: (07) 3376 9740

Email: fauna@qfc.com.au

| | |
|---|---|
| Date: | 28/09/16 |
| Title: | Fauna Spotter Catcher Wildlife and Habitat Impact Mitigation Plan<br>Springfield Rise – Village 6, Spring Mountain, Queensland |
| Author/s: | Bryan Robinson, Camille Palmer |
| Reviewed by: | Bryan Robinson |
| Status: | Final Report |
| Filed as: | QFC WHIMP Shadforths Springfield Rise Village 6 2016.doc |

# Contents

# 1. Introduction

## 1.1 Project Background

Queensland Fauna Consultancy Pty Ltd has been engaged by Shadforths Civil Contractors to prepare a Fauna Spotter Catcher Wildlife and Habitat Impact Mitigation Plan for Village 6 as part of the Springfield Rise Project, Spring Mountain, Queensland.

The objective of this report is to summarise the existing fauna values presented in the Fauna Spotter Catcher Pre-clearance Survey and Wildlife Protection and Management Plan (WPMP) and assign mitigatory strategies applicable to probable species likely to be encountered during the clearing of identified habitats throughout or within specific localities of the site. Fauna species both common and of elevated conservation value have been considered within the parameters of onsite investigations and, where provided to QFC, include review of current fauna and floristic reports that may influence the assemblages expected to utilise the microhabitats evident within the site.

This review encompasses species identified under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the Queensland *Nature Conservation Act 1992*. Further consideration is given, where applicable, to species of iconic, cultural and/or regional significance identified under commonwealth, state or local planning instruments aimed at the persistence of biodiversity values within the area.

## 1.2 Project Location and Site Description

Situated at the current cessation of Grande Avenue, Springfield Lakes and adjacent to the existing Tea Trees Estate, the project area entails an approximate area of 34 hectares. An area designated for conservation land, approximately 0.5 hectares, is to be implemented alongside the existing conservation land to the south. The site is mainly bordered by conservation land to the south and proposed linear park to the west, dividing Village 6 and Village 8.

Existing features exhibit primarily a woodland vegetative complex with drainage features present due to an undulating topography. Dominant trees species across a number of vegetation types include *Corymbia henryi, C. citriodora, Eucalyptus fibrosa, E. siderophloia, Lophostemon confertus,* and *Angophora leiocarpa.*


*Map 1:* Project area (Map supplied by Saunders Havill Group 2016)

### 1.3 Current Permits and Authorities

All activities conducted during the site investigations were implemented under the provisions of a number of permits issued to Queensland Fauna Consultancy Pty Ltd by the Department of Environment and Heritage Protection (DEHP) formerly the Department of Environment and Resource Management and the Department of Employment, Economic Development and Innovation (DEEDI). These permits and additional authorities are listed in *Table 1*.

***Table 1: Current Permits and authorities issued to QFC***

| Permit/Authorisation | Permit Number | Expiry Date |
|---|---|---|
| Damage Mitigation Permit | WIMP1298313 | 22nd November 2016 |
| Rehabilitation Permit | WIRP15052614 | 10th September 2017 |
| Scientific User Registration | Registration Number 589 | 27th February 2019 |
| Animal Ethics | CA 2016/01/939 | 27th February 2019 |
| General Fisheries Permit | 167690 | 19th December 2016 |

These permits and approvals enable QFC to conduct the investigation, observation and relocation of protected animals exposed to disturbance due to infrastructure expansion resulting in the destruction of natural and artificial habitats.

# 2. Mitigation Strategies

## *2.1* Fauna Spotter

It is advised that all identified fauna habitats onsite be inspected by a licensed Fauna Spotter prior to vegetation clearing, and all vegetation removal activities be supervised during the clearing process.

## *2.2* Clearing Methodologies

In accordance to the *Nature Conservation (Koala) Conservation Plan 2006 and Management Program 2006-2016* the following sequential clearing conditions are required to be adhered to:

- Clearing of trees is carried out in a way that ensures koalas living in or near the area being cleared (the clearing site) have enough time to move out of the clearing site without human intervention, including in particular, for a clearing site with an area of more than 6ha, by:
    - Carrying out the clearing in stages; and
    - Ensuring not more than the following is cleared in any one stage:
        - for a clearing site with an area of 6 ha or less—50 percent of the site's area;
        - for a clearing site with an area of more than 6ha—3ha or 3 percent of the site's area, whichever is the greater; and
    - Ensuring that between each stage there is at least one period of 12 hours that starts at 6 p.m. on a day and ends at 6 a.m. on the following day, during which no trees are cleared on the site;

In addition to these measures it is recommended that clearing activities be undertaken in a directional manner specified by the fauna spotter/catcher. This is done so as to reduce the likelihood of negative interactions between fauna and potential hazards e.g. roads and traffic, prevent isolation of fauna through habitat fragmentation, and to ensure that natural dispersal of wildlife away from clearing activities is not impeded.

Saunders Havill Group has proposed a plan detailing the direction and clearing locations within the Site Based Management Plan – Area 6 (Refer to Appendix A). This involves directional clearing towards the Mountain Creek Corridor to the west and south toward the Spring Mountain Offset zone, both of which have been earmarked as safe haven zones for fauna movement and connectivity (Saunders Havill Group 2016). This approach is supported by QFC as the most applicable response to managing highly mobile fauna.

## 2.3 Fauna Fencing

Temporary fencing has already been installed along Angelica and Grande Avenue and will aid in minimizing the movement of large fauna including highly mobile macropods into the existing Tea Trees Estate. The addition of further fauna fencing may be required if site conditions change and fauna considerations are presented by the fauna spotter catcher.

## *2.4* Felling Procedures

Trees identified as having potential fauna values (such as hollows, arboreal termitaria and exfoliating bark) will be clearly identified and subsequently marked for supervision during felling and inspected once felled. Efforts will be made to determine potentially occupant species by way of investigations for indicative signs (scats, scratchings and tracks) on the day(s) of clearing. Where no signs are found or potentially occupant species are undeterminable, machinery operators will be instructed to fell trees in a manner directed at minimising the potential risk of injury to fauna.

All identified microhabitats will be inspected via ground based observation and the direction of felling will be determined considering the safety of personnel, machinery and potentially occupant fauna. Felling procedures will see implementation of a soft felling technique specifically constructed by QFC to achieve minimal deceleration and impact upon felling. This will be achieved under direction of the Fauna Spotter present directly communicating with the plant operator(s).

## *2.5* Macropods

Red-necked Wallaby *Macropus rufogriseus* were observed on site during the pre-clearance fauna survey. Other signs including macropod scat and footprints were located throughout the proposed clearing area, as well as in areas adjacent to site.

The area of proposed clearing activities exhibits direct connectivity to other areas of notable habitat values along the western and southern boundaries. Therefore if clearing commences in a directional and incremental fashion any macropods potentially encountered on site may move on of their own volition. In this event it is recommended that clearing proceed as already recommended with continual reassessment by the onsite fauna spotters.

## *2.6* Aquatic Fauna

It is not envisaged that aquatic dewatering activities will be required within the proposed clearing area; however pooled water and drainage features will be inspected during terrestrial load reduction activities ahead of the clearing front. The following recommendations are made to mitigate impacts to potentially occupant fauna:

- Inspection of banks, peripheral vegetation and other immediate terrestrial microhabitats;
- Identification of potential fauna values including: logs, rocks, artificial structures, discarded rubbish and burrows;
- Targeted searched for frog egg deposition sites on debris, bank edges, water surface and vegetation.

## 2.7 General Terrestrial and Arboreal Fauna

Overall the site contains medium value refugial opportunities for arboreal and terrestrial fauna species. The species expected within the site are likely to primarily reflect common fauna assemblages for the region however provisions are proposed directly for common fauna and species of conservation significance.

It is advised that all identified fauna habitats onsite be inspected by a DEHP approved Fauna Spotter prior to vegetation clearing and all vegetation removal activities be supervised during the clearing process. Terrestrial load reduction activities will be conducted ahead of the clearing front where possible. Fauna captured will be relocated to adjacent habitat consistent with the life history requirements of the species requiring translocation.

## *2.8* EVNT Fauna

It is not envisaged that any species, listed under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999* or the *Nature Conservation Act 1992*, other than those listed in the WPMP, will require specific management during vegetation clearing activities.

However, specific management for those identified EVNT species will include targeted investigations immediately prior to vegetation removal activities on each day of clearing and subsequently whilst clearing takes place. Preliminary investigations will be supported by additional monitoring applied during clearing activities with a designated fauna spotter operating with each machine actively involved in vegetation or identified habitat disturbance. These should include the following:

*Koala:*
As favoured Koala food trees on site exceed a diameter of 100mm at 1.3 metres from the ground, requirements under the Koala Plan's 'Koala Habitat Area' provisions trigger the need for inspection and monitoring during vegetation clearing by a qualified Fauna Spotter.

Historically known to occur within the area the Koala will feature highly in daily search efforts with a dedicated and detailed methodology employed as follows:

- Pre clearing (preliminary) investigations to be conducted specifically for Koala detection by one experienced fauna spotter a minimum half hour prior to works each day. The investigation will embrace all designated clearing zones identified for that day inclusive of a 25 metre buffer around that zone;
- Once clearing commences a fauna spotter will accompany each machine providing continuous verification of habitat values and potential identification of undetected koalas ahead of operating plant. This will also account for potentially transient Koalas that may enter the site after preliminary investigations are complete.

Direct observational methodology will include the following components

- Use of binoculars to inspect the crown, forks and trunk of trees for individuals currently occupying the site;
- 'Drip zone' searches at the base of known food trees for the presence of scats to a radius equal to that of the crown of individual trees;
- Inspection of trunks for scratchings indicative of use by Koalas;
- Repeat observations made of single trees from numerous angles at repeated times throughout the clearing activities by the assigned fauna spotter.

In the event a Koala is detected, the Fauna Spotter will determine the appropriate course of action with exclusion zones implemented and alterations to the clearing plan discussed with the Site Supervisor. Once defined, these directions will be communicated to the plant operators and clearing will proceed in accordance with the recommendations made.

Changes to Koala management strategies highlighted in the *Nature Conservation (Koala) Conservation Plan 2006 and Management Program 2006-2016* have resulted in particular conditions placed on vegetation clearance involving the removal of Koala food trees. These provisions entail an increased responsibility by developers and land clearance operators alike to ensure the welfare of potentially present Koalas in areas identified as having significance for the persistence of this species.

Where significance under planning instruments is assigned provisions may include the restriction of all clearance that directly interferes with any tree a Koala is residing in or surrounding trees that, when felled, may impact on the crown of the host tree. Koalas are to leave via their own volition through a corridor designated by the Fauna Spotter to the closest remaining suitable habitat.

Throughout this time the Koala may not be interfered with by any means unless special dispensation has been sought through the appropriate government body or where the Koala is evidently in a state of compromised health. Only when Koalas have vacated a tree can clearance operations include the identified host tree and surrounding vegetation which composes the established exclusion zone. Recommendations made by the Fauna Spotter on site will embrace these provisions.

*Grey-headed Flying Fox:*

Although no Flying Fox camps or roosts were noted during the site survey, the transient nature of this species and the abundance of available feeding resources would see probability for the species to intermittently utilise the site.

The following recommendations are made for management of potentially occurring Grey-headed Flying Fox:

- Daily Inspection of trees assigned for removal be conducted to detect potential roosting Flying Foxes;
- Trees found to contain roosting Flying Foxes to be left standing and re assessed at the end of each days clearing. Being a transient species, the disturbance associated by the surrounding clearing is likely to see individuals fly off via its own volition come nightfall and not return the following morning, thus negating the need for direct disturbance.

*Powerful Owl:*

The site contains hollowing bearing trees with the potential to support nesting localities for the Powerful Owl. Diurnal roosting opportunities are afforded however these are considered only moderately favourable. Feeding resources would be available as highly targeted species such as glider and possum species are common throughout the region.

The following recommendations are made for management of potentially occurring Powerful Owl;

- Inspection daily of trees assigned for removal in areas of likely occurrence to detect potentially roosting birds;
- Identification of hollows exhibiting suitable dimensions for use as a nesting resource;
- Ground searches for casts and faecal accumulates indicative of the presence of Powerful Owl roosting and nesting sites;
- Implementation of a soft felling technique where trees are determined to have potential for occupancy.

*Spotted-tail Quoll:*

Although no dens or further evidence of Spotted-tail Quoll activity was detected during the survey, the species is known to occur historically in low densities in proximity to the site. Geomorphic structure and topography are considered favourable resulting in the following recommendations for further mitigation during the clearing activity:

- Inspection daily of identified geomorphic structure such as large boulders and rock accumulates, large hollow ground logs and log stock piles;
- Monitored dismantling of identified microhabitats by fauna spotters with machinery assistance.

*Greater Glider:*

The site contains hollow-bearing trees with the potential to support den localities for the Greater Glider. Suitable feeding resources are highly available given the availability of *Eucalyptus* leaves; on which the Greater Glider almost exclusively feeds on. The following recommendations are made for management of potentially occurring Greater Glider;

- Basal and drip zone searches for scats indicative of the presence of Greater Glider;
- Inspection daily of trees assigned for removal in areas of likely occurrence to detect Great Glider;
- Implementation of a soft felling technique where trees are determined to have potential for occupancy.

*Collared Delma:*

The presence of rocky habitat combined with *Eucalyptus* dominated woodlands presents known favorable habitat for the Collared Delma. The following recommendations are made for mitigation during clearing activity:

- Inspection daily of identified geomorphic structures including rocky outcrops, surface rock, leaf litter and bark exfoliates;
- Monitored dismantling of identified microhabitats by fauna spotters with machinery assistance.

# 3. Wildlife Capture & Removal Plan

Relocation of native fauna is a strategy that may be required during the course of developmental works to up-hold the project's required nature conservation, animal welfare and human safety objectives.

In all circumstance where native fauna are required to be relocated it must be done so, or under the direct supervision of, a suitably licensed fauna spotter/catcher. A summary of the fauna capture, handling and relocations strategies to be implemented by the fauna spotter/catcher for fauna groups deemed likely, or possible, to occur on site are presented in *Table 2*.

## *Table 2: Fauna capture, handling and relocation strategy table*

| Animal Group | Capture and handling | Relocation |
|---|---|---|
| **Lizards<br>Geckoes<br>Dragons<br>Monitors** | • Place one hand behind the head at the base of the quadrates and the other at the base of the tail behind the hind limbs;<br>• Be cautious when handling smaller skinks and legless lizards as they may discard their tail;<br>• Lizards and geckoes can be placed inside suitably sized calico bags<br>• In the case of large monitor lizards keep the animal's ventral surface directly away from the body with the tail between the upper arm and torso.<br>• Dragons and small monitors can be placed in suitably sized calico bags. Larger monitors to be placed in suitably sized crate | • Place the lizard head first into a suitable holding crate for later release.<br>○ Dragons & monitors– release up trees or into heavy vegetation;<br>○ Water dragons – in the vicinity of riparian areas;<br>○ Skinks, Geckoes, Legless lizards – around creek margins. |
| **Snakes** | • Due to their mobile nature, large snakes generally do not require to be handled or relocated, with the exception of slow moving species (i.e. pythons) or smaller species;<br>• Snakes should be identified and only moved if competent and safe to do so (see SOP006 Handling Venomous Snakes Procedure);<br>• Do not attempt to catch a snake if you're not competent;<br>• Injured snakes should be handled with suitable equipment. | • Release in suitable habitat e.g. along creek lines for python and tree snakes<br>• If feasible take them well away from clearance site to a suitable release location<br>• Release discreetly away from high density suburban areas |
| **Small Mammals** | • Place a gloved hand around the whole animal in the case of small mammals (melomys or rats),<br>• Do not handle rodents by the tail as this will cause damage to the tail sheath<br>• Place the animal in calico bag in a cool place for later relocation.<br>• Minimise holding time to avoid animal gnawing through bags and escaping | • Release animal into area suitable to its habitat requirements. Ensure plenty of cover is available. |

| Animal Group | Capture and handling | Relocation |
|---|---|---|
| **Glider Family** | • Place gloved hands around the animal at initial capture;<br>• Place the glider(s) into a calico bag or suitable animal crate ensuring family groups are kept together for all inclusive release;<br>• Place in a cool dry area during the day.<br>• When using calico bags ensure the bag is hung and well ventilated<br>• Where possible contain gliders within hollow by plugging openings with a towel or calico bag | • Release glider into habitat with natural hollows and canopy cover;<br>• When releasing a family group with more than one furred young (being carried on the back) either:<br>  ○ Divide young between parents as a mother is unlikely to carry more than one young,<br>  ○ Place young in elevated hollow with parents and allow them to move away in their own time.<br>• Place animal in bag at the base of the selected tree, opening the bag wide and allowing the animal to leave the bag when it is ready.<br>• Relocate hollow (with gliders inside) to suitable habitat and cover lightly with foliage so that the gliders can move away of their own accord and are protected from predators. |
| **Amphibians** | • Amphibians should be handled only when necessary and handling times should be kept to a minimum to help prevent:<br>  ○ Removal of the protective mucous layer covering the skin of amphibians;<br>  ○ To prevent handling stress induced by changes in their body temperature;<br>  ○ Risk of spreading pathogens and parasites.<br>• Amphibians from different sites need to be kept isolated from each other, and need to be kept in different containers or bags;<br>• Any dead or sick amphibians need to be quarantined from other amphibians.<br><br>Amphibians can be handled utilising one of the following methodologies:<br>• **Bare handed** – ensure hands are sterilized before handling and free from lotions, sunscreen etc<br>• **Gloves** – disposable gloves desirable or disinfect gloves between handling different animals;<br>• **Plastic bags** – Single use lightweight plastic bags can be used to pick up and handle frogs; again plastic bags should be disposed of before handling amphibians form a different site.<br>• All staff should be knowledgeable and familiar with the ***Interim Hygiene Protocol for Handling Amphibians – Technical Manual (DEHP)*** | • Always ensure that amphibians are kept moist until release. This can include storing in a designated container with moist soil or toweling or in a wet calico bag;<br>• Release into suitable adjacent vegetation that is typical of the species requirements;<br>• Suitable release locations include riparian vegetation, low-lying wetlands, alongside creek lines, hollow logs, dams and ponds;<br>• Amphibians from different sites need to released in separate locations;<br>• Disinfection procedures in relation to amphibians need to be followed. |

| Animal Group | Capture and handling | Relocation |
|---|---|---|
| **Macropods** | • Capture and restraint of macropods carries a high risk of injury and fatal hyperthermia/myopathy syndrome, and must not be performed by inexperienced personnel, or without appropriate equipment and sedation.<br>• Capture and restraint of healthy macropods (other than pouch young) must be performed using sedation or anaesthesia due to the high risk of developmental myopathy, and other capture and restraint-associated conditions. Sedative and anaesthetic drugs may only be used under direct supervision of a registered veterinarian, or by appropriately licensed persons (Hanger & Nottidge, 2009). | • Release animal into suitable to its habitat requirements. Ensure plenty of cover is available.<br>• Macropods are to be released within the range of normal movement from their place of origin. E.g. a Kangaroo can be released within 100 km of its origin, based on its capacity to travel long distances.<br>• Monitor animals to ensure adequate recovery if sedated. |
| **Microbats** | • Only vaccinated persons are to handle bats<br>• If possible plug the hollow opening with a bag or towel and ask the operator to cut the hollow from the tree;<br>• Always wear gloves when handling bats.<br>• If not contained within a hollow, place bats inside a calico bag and hang upright in a cool place | • Relocate hollow (with bats inside) to suitable habitat and cover lightly with foliage so that the bats can move away of their own accord and are protected from predators.<br>• Bats not contained within a hollow should be released as late as possible at the end of the day. |
| **Possums** | • Use thick elbow length gloves when handling possums;<br>• Try to grip the animal behind the head near the shoulder blades and around the tail so that you have control of the animal;<br>• Keep fingers away from the mouth of the animal;<br>• Keep the animal's body facing away at all times;<br>• Transfer into a thick calico bag and then into a kitty crate. Place in a safe and shady place until you can relocate the animal. | • Release the possum into habitat with adequate hollows and cover;<br>• Place animal in bag at the base of a select tree, opening the bag and allow the animal to leave the bag when it is ready;<br>• When releasing a Ringtail Possum mother with more than one furred young (being carried on her back) it is unlikely that she will carry both young if highly stressed;<br>  ○ Choose a smaller shrubby tree with vines or heavy foliage (so the adult can construct a drey easily)<br>  ○ Watch the adult ascend the tree, it is possible she will only carry one young and so any additional young may be pushed from her back<br>  ○ It may be necessary to take one or more of the young to a wildlife carer<br>  ○ If possible place mother and young in a suspended hollow, cover lightly with foliage and allow the animals to move on their own accord. This way the mother can ferry young one at a time to a more suitable location. |

| Animal Group | Capture and handling | Relocation |
|---|---|---|
| **Birds** | • Use gloves when handling larger birds<br>• Use a towel to cover the bird and simultaneously restrain the bird and transfer into calico bag<br>• With larger parrots and raptors, restrain head and legs and transfer into a kitty crate<br>• Wrap chicks loosely in a towel and transfer to kitty crate, keep in a warm location. | • Relocate adult birds in suitable habitat<br>• Chicks should be referred to wildlife carer |
| **Koalas** | Movement of Koalas is heavily legislated in South East Queensland. Koalas are not to be captured or relocated without the prior consent of Department Environment and Natural Resource Management (DERM). Koalas should be left to move away of their own volition and trees are not to be felled while a Koala remains in occupancy. See SOP003 Koala Management Procedure for further information. | |

# 4. Wildlife Contingency Plan

In the event sick, injured or orphaned protected animals are encountered during the course of the project they shall be administered to in accordance with the *Code of Practice Care of Sick, Injured or Orphaned Protected Animals in Queensland* under the *Nature Conservation Act 1992*.

The stages in which injuries or illness are described under the code are as follows:

**Critical:** Injuries or illnesses that are life-threatening; for example an animal that has been struck by a car and has serious head injuries.

**Serious:** Injuries or illnesses that might reasonably be expected to cause moderate pain (but are not immediately life-threatening), and the animal is not showing obvious signs of distress or pain, or significantly reduced mental activity; for example an animal with a closed fracture but no other apparent injuries and that is alert and responsive.

**Mild:** The injuries or illness of an animal appear to cause little discomfort, pain or function loss and are not life-threatening (even without immediate vet treatment); for example superficial cuts, superficial bruising or orphaned animals suffering from mild dehydration.

## 4.1 Basic Wildlife Care

If wildlife requiring care are encountered by the fauna spotter/catcher they will be attended to in the manner set out by the guidelines provided in *Table 4*. Supplementary advice will be sought from a wildlife carer and/or veterinarian where required. QFC have previously utilised experienced local carer groups and vets. These are listed in Table 3.

***Table 3: List of Local Vets & Wildlife Carer Groups***

| **Vets** | | | |
|---|---|---|---|
| **Name** | **Location** | **Contact Number** | **Comments** |
| RSPCA Wildlife Hospital | 139 Wacol Station Road, Wacol | 07 3426 9999 | 24 Hours/7days |
| **Carers** | | | |
| **Name** | **Location** | **Contact Number** | **Comments** |
| RSPCA Wildlife Hospital | 139 Wacol Station Road, Wacol | 07 3426 9999 | 24 Hours/7days |
| Ipswich Koala Protection Society | Ipswich | Ruth: 07 5464 6274 / 0419 760 127<br>Helen: 07 3282 5035 / 0417 604 761 | Specialize in koalas however rescue all wildlife |

## *Table 4: Basic Wildlife Care*

| Birds | Reptiles & Amphibians | Mammals |
|---|---|---|
| **Egg**<br><br>Viable eggs must be kept warm until transferred to a suitable wildlife carer. It is necessary that the orientation of the eggs be maintained as fixed embryos may be lost. Keep wrapped in a pouch and on a heat source (where available). An ideal temperature is between 25-27° (DEHP 2013); where possible attempt to identify the species so the carer can be informed as the management of eggs can vary in accordance with species and stage of development. | **Egg**<br><br>Viable eggs must be kept warm and stable until transferred to a wildlife carer. It is necessary that the orientation of the eggs be maintained as fixed embryos may be lost. Keep wrapped in pouch or towel and place into an animal crate in a safe location. | **Neonate**<br><br>Unfurred animals need to be kept warm until transferred to a carer. Place into a pouch and onto a heat pad. Ideal temperature is between 31-34°. 25-27° is appropriate in most other cases (DEHP 2013). Regularly check the animal to ensure it is not overheating by observing for obvious signs of distress (i.e. panting, very warm to the touch, red blotched skin). Adjust the temperature where required. Seek further advice from the carer if you are unsure. |
| **Chick**<br><br>Make sure the animal is correctly identified as different species often have very different requirements. Place chicks into a pouch/towel onto a heat source maintained around 31-34° (only if they have not fledged) and keep in an animal crate until transferred to a carer. | **Juvenile**<br><br>Place animals in a suitable lined crate and keep covered in a dark quiet place. Refer to the wildlife contact list in your QFC Folder for a carer who specialises in reptiles. | **Juvenile**<br><br>Place into a lined crate and keep covered in a dark and quiet location. |
| **Adult**<br><br>Keep adult birds in a lined animal crate or cage and covered in a quiet area. | **Adult**<br><br>Place animals in a suitable lined crate and keep covered in a dark quiet place. Refer to the wildlife contact list in your QFC Folder for a carer who specialises in reptiles. | **Adult**<br><br>Place into a lined crate and keep covered in a dark and quiet location. |
| **Feeding**<br><br>Providing food and water is generally not required during short periods (2-3 hrs) though this should be reconsidered if animals need to held longer. Consult the vet and/or carer for further advice on how to proceed. | **Feeding**<br><br>Newly hatched reptiles may require feeding if kept overnight. Consult with QFC for further advice. Snakes and turtles will not require feeding but water should be made available. | **Feeding**<br><br>Providing food and water is generally not required during short periods (2-3 hrs) though this should be reconsidered if animals need to be held longer. Consult the carer for further advice on how to proceed. |

## 4.2 First Aid

Animals suffering from serious injuries or illness encountered on the project should be passed on to veterinary care as soon as possible. In the interim a licensed fauna spotter/catcher can provide first aid for the animal and organise suitable transportation.

If a seriously sick or injured animal is encountered the fauna spotter/catcher should:

1. Keep the animal calm by placing into an animal crate and keeping it covered in a dark and quiet location. Isolate any nearby threats such as domestic animals or predators.
2. Quickly and thoroughly inspect the animal for trauma. If the injuries are not serious enough to require euthanasia administer the basic first aid as a minimum (but only if capable to do so)

Representative first aid that may be administered by a fauna spotter/catcher is provided in *Table 5*.

***Table 5:*** **Wildlife First Aid**

| Ailment | First Aid |
|---|---|
| Bleeding | Using material that is clean and sanitary, apply direct pressure to the affected area. Bandages can be used to hold material in place until vet treatment can be sought. Veterinarian treatment should be sought for further assistance as soon as possible. |
| Broken limbs | House the animal in a suitably sized animal crate with towels under the animal for comfort. Keep the crate covered and in a quiet location. Proceed to a veterinarian for further assistance as soon as possible. |
| Injured tails | House the animal in a suitably sized animal crate with towels under the animal for comfort. Keep the crate covered and in a quiet location. Proceed to a veterinarian for further assistance as soon as possible. |
| Concussions | House the animal in a suitably sized animal crate with towels under the animal for comfort. Keep the crate covered and in a quiet location. Proceed to a veterinarian for further assistance as soon as possible. |

### *4.3* Euthanasia

Section 12 of the code details how to determine when euthanasia is required and how to euthanise animals ethically. The following standards as listed under the code are to be followed when assessing whether euthanasia is required:

- The euthanasia of wildlife where required is to be provided for by all wildlife rehabilitators;
- Euthanasia without exception is to be carried out when:

    - Significant pain or suffering is to be alleviated where it is not able to be managed by a vet;
    - Further treatment is **not** practical or recovery is **not** expected in a way in which the animal can be successfully rehabilitated back to the wild;
    - Resources are not available to provide appropriate care or an acceptable quality of life throughout the likely rehabilitation period.

- Animals that are suffering and have a poor prognosis for survival must be euthanised rather than left to die from the injury or illness. Failure to undertake appropriate action is a breach of the Animal *Care and Protection Act 2001*.
- Unless permission has been granted by the Department of Environment and Heritage Protection for the animal to enter the Queensland Species Management Plan (QSMP) or otherwise advised by the DEHP Wildlife Management Director, animals must be euthanised when:

    - An orphaned animal is not viable or likely to be rehabilitated;
    - No suitable release locations are available;
    - The ability for an animal to reproduce is lost due to an injury, disease or surgical procedure;
    - The ability to move freely or normally (i.e. run, climb, crawl, hop, fly or swim) is permanently impaired. Examples are: a missing or impaired limb, wing, foot or tail that would significantly impair the animal's ability to survive in the wild;
    - The ability to sense environment (i.e. see, smell, fell, taste or hear) is permanently impaired. For example: missing or injured organ such as an eye, ear or nose that would significantly impair the animal's ability to survive in the wild;
    - The ability to catch, find or handle food is permanently impaired;
    - Its advanced age renders it unlikely to survive in the wild.

## 5. Wildlife Storage & Housing Plan

For wildlife requiring storage, temporary housing and transportation to release sites and/or to a wildlife carer or veterinarian, guidelines set out in the Code of Practice and QFC's Animal Ethics Permit will be followed.

Dependent on the species of animal and condition of the animal, temporary storage and housing of animals will be as follows:

**Calico bags**: Calico bags will be used to temporarily house fauna such as snakes, lizards and small mammals (including microbats), Bags will range in size from 200mm x 200mm to 600mm x 1800mm. Bag selection will vary according to the size of animals to be placed in them. In the case of snakes a "hoop bag" may be used to facilitate capture. The hoop is approximately 500mm in diameter attached to a handle. The bag is placed around the hoop ensuring a greater area in which to pass the snake through into the bag.

**Plastic holding tubs/containers/animal crate**: Plastic holding tubs/containers/crates will be used to temporarily house fauna such as snakes, lizards, frogs, small mammals and birds (Plastic holding tubs/containers/crates will range in size from 150mm x 150mm x 120mm to 500mmx 400mm x

400mm. Plastic holding tubs/containers/crates selection will vary according to the size and number of animals to be placed in them.

In addition to this, material is used to line the tub/crate to ensure the animals won't lose its footing. This may include folded towels on the bottom of the crate or a fitted pad. These items are washed between each use to reduce the spread of disease/parasites.

Section 9 of the Code relates to how transportation of wildlife should be undertaken. The following will be adhered to when transporting wildlife to the vet and/or carer:

- Additional pain or distress of the animal is to be avoided;
- Wildlife should only be transported when necessary;
- Transport containers must be appropriate for the species (size, strength and behaviour of species being moved;
- Transport containers must be designed and maintained in a way as to:
    - Prevent injury;
    - Prevent escape;
    - Prevent rolling/tipping during transit;
    - Prevent damage to plumage (feathers);
    - Be hygienic;
    - Minimise stress and
    - Be suitably ventilated.

- Non-compatible species must not be transported in a manner which allows for visual or physical contact;
- Containers must be secured to prevent movement and provide protection from direct sunlight, wind and rain;

Venomous, dangerous or potentially disease transmitting animals must be clearly marked with warning labels (i.e. Caution –'venomous snake' or 'live bat') and be locked and secured.

## 6. Wildlife Release & Disposal Plan

Spring Mountain Forest Park lies to the south of Village 6 and contains similar habitat types suitable for species likely to be encountered when clearing.

With the exception of highly mobile species such as birds and macropods where natural relocation may occur, it will be necessary for the fauna spotter/catcher to translocate the majority of fauna found into suitable habitat within these areas. A map of the intended release site can be viewed in Appendix B

In regard to all fauna capture and disposal activities conducted on the project the following records will be made:

**a.** species;
**b.** identification name or number;
**c.** sex (M, F, or unknown);
**d.** approximate age or age class (neonate, juvenile, sub-adult, adult);
**e.** time and date of capture;
**f.** method of capture;
**g.** exact point of capture (GPS point);
**h.** state of health;
**i.** incidents associated with capture likely to affect the animal;
**j.** veterinary intervention or treatments;
**k.** time held in captivity;
**l.** disposal (euthanasia, re-release, translocation etc);
**m.** date and time of disposal;
**n.** details of disposal (if released, exact point of release GPS);
**o.** for released animals: distance in metres from point of capture to point of release.

## 7. Post Works Impact Minimisation

As the project area will be cleared of all vegetation, post works impact monitoring and/or impact minimisation is deemed not necessary. It is unlikely the vast majority of wildlife will return to the area as all habitat and foraging resources will be removed and habitat connectivity is also not present.

In the event that fauna is found on site post-works, it is recommended personnel contact QFC and a licensed and experienced wildlife consultant can be dispatched to remove and relocate the animal should it be necessary. QFC wildlife consultants are available 24/7 for fauna related call-outs in relation to this project.

It is recommended that if any fauna, such as Kangaroos and Wallabies, are noted in the wider area and appear distressed post-works that QFC be contacted to further assess the situation.

# 8. Assessment, Conclusion and Fauna Management Recommendations

A number of conclusions and recommendations are presented, with the specific intention of providing a comprehensive management structure to facilitate minimal impact to fauna during the clearing of vegetation and subsequent disturbance of habitats. The directives given by Fauna Spotter Catchers should embrace a “best practice” approach which includes implementation of proven specific management techniques for identified habitat types and compliance with legislation relevant to the activity.

Fauna management is presented here specific to EVNT fauna, general terrestrial and arboreal fauna and aquatic fauna. Although each is treated separately, overlap does occur within target techniques providing a comprehensive approach for target species of all conservation significance.

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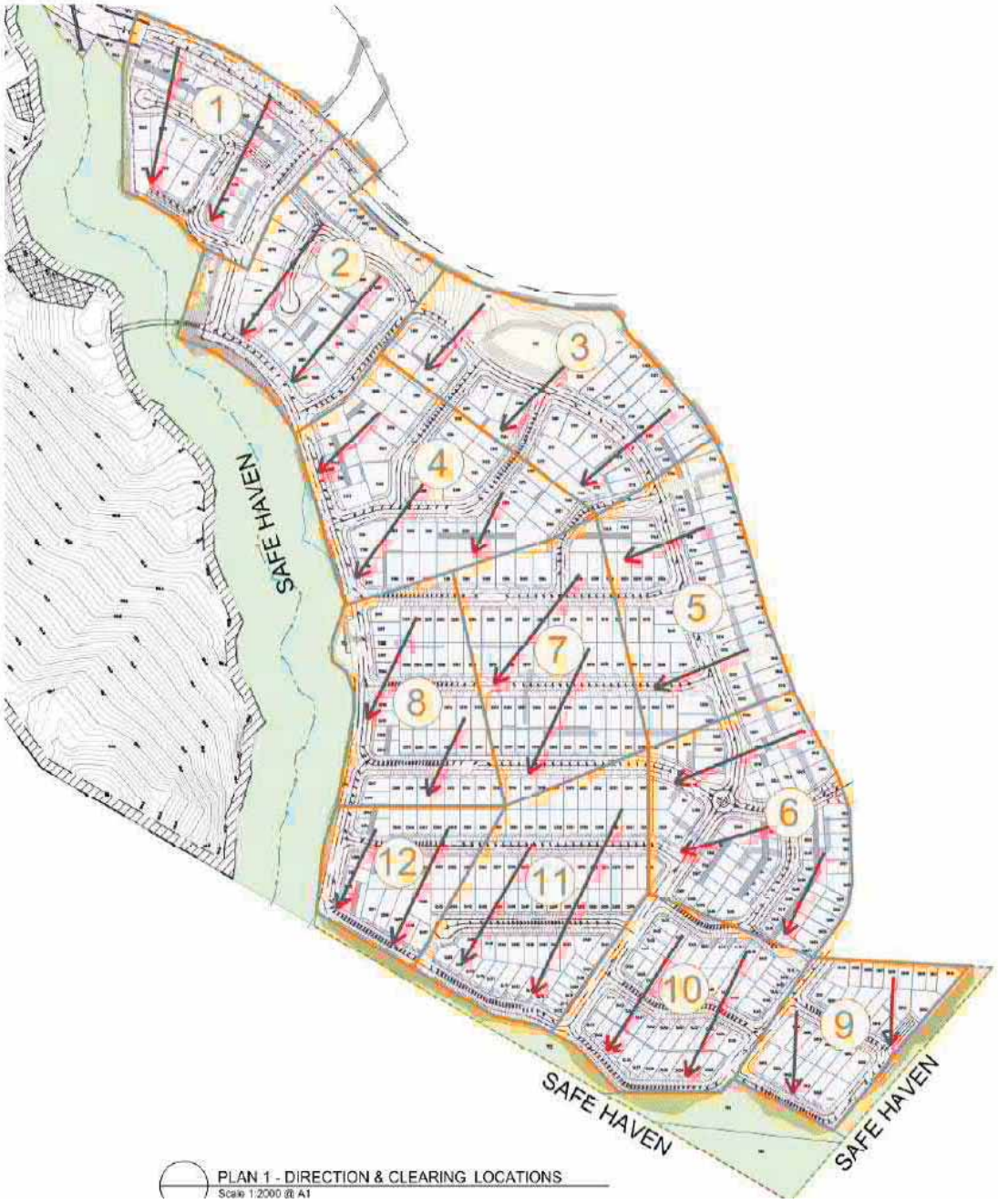
# 10. Appendix A: Intended stages of clearing



# 11. Appendix B: Intended Release Site for Wildlife

September 2016

# Fauna Spotter Catcher Pre-clearance Survey and Wildlife Protection & Management Plan

## Springfield Rise – Village 6
## Spring Mountain, Queensland

Report prepared for Shadforths Civil Contractors


Report prepared by

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| | |
|---|---|
| Date: | 23/09/16 |
| Title: | Fauna Spotter Catcher Pre-clearance and Habitat Values Survey<br>Springfield Rise – Village 6, Spring Mountain, Queensland |
| Author/s: | Bryan Robinson, Camille Palmer |
| Reviewed by: | Bryan Robinson |
| Field personnel: | Camille Palmer, Matthew Whitehouse |
| Status: | Final Report |
| Filed as: | QFC FHA Shadforths Springfield Rise Village 6 2016.doc |

# Contents

# 1. Introduction

## 1.1 Project Background

Queensland Fauna Consultancy Pty Ltd has been engaged by Shadforths Civil Contractors to conduct a Fauna Spotter Catcher Pre-clearance and Habitat Values Survey and present a subsequent report for Village 6 of the Springfield Rise development proposed at Spring Mountain, Queensland. The site location with indicative site extent is presented in Map 1.

The objective of this report is to summarise the existing fauna values present and assign mitigatory strategies applicable to probable species likely to be encountered during the clearing of identified habitats throughout or within specific localities of the site. Fauna species both common and of elevated conservation value have been considered within the parameters of onsite investigations and, where provided to QFC, include review of current fauna and floristic reports that may influence the assemblages expected to utilise the micro habitats evident within the site.

This review encompasses species identified under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the Queensland *Nature Conservation Act 1992*. Further consideration is given, where applicable, to species of iconic, cultural and/or regional significance identified under commonwealth, state or local planning instruments aimed at the persistence of biodiversity values within the area.

## 1.2 Project Location and Site Description

Situated at the current cessation of Grande Avenue, Springfield Lakes and adjacent to the existing Tea Trees Estate, the project area entails an approximate area of 34 hectares. An area designated for conservation land, approximately 0.5 hectares, is to be implemented alongside the existing conservation land to the south. The site is mainly bordered by conservation land to the south and proposed linear park to the west, dividing Village 6 and Village 8.

Existing features exhibit primarily a woodland vegetative complex with drainage features present due to an undulating topography. Dominant trees species across a number of vegetation types include *Corymbia henryi, C. citriodora, Eucalyptus fibrosa, E. siderophloia, Lophostemon confertus,* and *Angophora leiocarpa.*


***Map 1:*** **Project Location (Image supplied by Saunders Havill Group 2016)**

### 1.3 Current Permits and Authorities

All activities conducted during the site investigations were implemented under the provisions of a number of permits issued to Queensland Fauna Consultancy Pty Ltd by the Department of Environment and Heritage Protection (DEHP) formerly the Department of Environment and Resource Management and the Department of Employment, Economic Development and Innovation (DEEDI). These permits and additional authorities are listed in Table 1.

***Table 1:*** **Current Permits and authorities issued to QFC**

| Permit/Authorisation | Permit Number | Expiry Date |
|---|---|---|
| Damage Mitigation Permit | WIMP1298313 | 22nd November 2016 |
| Rehabilitation Permit | WIRP15052614 | 10th September 2017 |
| Scientific Purposes Permit | WISP16935816 | 14th February 2021 |
| Scientific User Registration | Registration Number 589 | 27th February 2019 |
| Animal Ethics | CA 2016/01/939 | 27th February 2019 |
| General Fisheries Permit | 167690 | 19th December 2016 |

These permits and approvals enable QFC to conduct the investigation, observation and relocation of protected animals exposed to disturbance due to infrastructure expansion resulting in the destruction of natural and artificial habitats.

## 2. Methodology

A site inspection was carried out on 22nd September 2016 by Qld Fauna Consultancy. A standard set of observational techniques aimed at maximising the detection of fauna and the probable habitats they may occupy were employed to ascertain and identify the current fauna values throughout the project area. Where species of elevated conservation significance where foreseen as potentially present targeted searches were instigated to further evaluate individual species habitat.

Due to the habitat variability expressed across the development site the composition of investigations may include a range of features that entail specific components indicative of the presence of particular species or faunal groups. This may include where evident, observation of activity or signs of both historical and current use.

These may include but are not limited to the following:

- Identification of terrestrial microhabitats such as ground hollows, rock, burrows, leaf litter, stands of heavy vegetation, fallen branches and bark exfoliations;
- Identification of arboreal micro habitats including basal, trunk and limb hollows, tree fissures, bark exfoliates and arboreal termitaria;
- Identification of constructed arboreal micro habitats including bird nests and Ringtail Possum dreys;
- Artificial habitats including but not limited to ornamental gardens, discarded rubbish, human dwellings and other infrastructure;
- Observation and investigation of aquatic habitats including dams, soaks, creeks, rivers and seasonally inundated vegetation communities. Artificial aquatic habitats may include constructed drains and culverts. Further components of interest include bank profiles and undercuts, submerged and/or exposed timber and rock, immediate aquatic and riparian vegetation, surfacing animals, nesting and/or feeding birds;
- Direct observation of active or exposed fauna within terrestrial, aquatic and arboreal habitats;
- Identification of scats, tracks and scratchings to determine fauna potentially present or to have historically utilised the site for either transient or longer term life history purposes.

### *2.1* Specific methodology for Koalas *Phascolarctos cinereus*

Due to specific requirements and the cryptic nature of the Koala the following techniques were employed to assist in ascertaining the current and historical presence/absence status of the species at the site:

- Use of binoculars to inspect the crown, forks and trunk of trees for individuals currently occupying the site;
- 'Drip zone' searches at the base of known food trees for the presence of scats to a radius equal to that of the crown of individual trees;
- Inspection of trunks for scratchings indicative of use by Koalas.

# 3. Findings

The findings endeavor to demarcate the existing habitat profiles and the features present into three distinct groups: terrestrial, arboreal and aquatic. All habitat features present onsite are noted, however it is probable additional features will be present with these being accounted for during the Fauna Spotter Catcher process to be applied to all vegetation clearing across the site.

## 3.1 Terrestrial Habitat Features

The terrestrial fauna values of the site consist of a variety of different components and microhabitat features. These features include low level understorey composed of a variety of different plant species, with areas exhibiting sparse to moderate vegetative cover (Figure 1 and Figure 2) and other areas displaying dense cover provided by weed growth, primarily Lantana *Lantana camara* (Figure 3).

Leaf litter (Figure 4) and bark exfoliations (Figure 5) are also a feature on site, being present in abundance and at variable depths, providing refugial opportunities, microhabitat connectivity and a contributory factor to the provision of a variety of thermal and moisture gradients that can be exploited by a number of different native terrestrial vertebrate and invertebrate species. The site is also exhibitive of a large amount of ground timber (Figure 6) as well as timber stockpiles (Figure 7) from previous felling efforts.

Terrestrial termite mounds (Figure 8) also feature heavily throughout the site, with old excavations observed in mounds sighted during the survey. Scattered surface rock and small areas of rocky outcrops (Figure 9) were observed across the site. Construction waste has been deposited (Figure 10 & 11) in the locality further adding to its potential habitat value for resident and transient fauna.

Embankments with exposed soil (Figure 12) also feature throughout the clearance area, providing suitable nesting opportunities for species such as Striated Pardalote *Pardalotus striatus* and Rainbow Bee-eater *Merops ornatus.* Nesting sites for pardalotes were observed in several areas during the survey, particularly within a mulch/soil bund left over from previous construction (Figure 13). Rainbow Bee-eater's were observed excavating burrows within the bund during the inspection also.

These features collectively contribute to the potential presence of a wide variety of native fauna species utilising the area for refugial, foraging and other resources.

Localities for identified (and verified) terrestrial habitat features are presented in Map 2. GPS coordinates for all indicative terrestrial habitat features are shown in Table 2.

A comprehensive list of fauna species recorded in the region can be viewed in Appendix C.

***Table 2:*** **Localities for identified terrestrial habitat features**

| Number | Habitat Feature | GPS Coordinates | |
|---|---|---|---|
| | | Easting | Northing |
| 1 | Hollow log | 491102 | 6935592 |
| 2 | Construction waste | 491113 | 6935572 |
| 3 | Stockpiled timber | 491082 | 6935651 |
| 4 | Stockpiled timber/artificial debris | 491103 | 6935797 |
| 5 | Stockpiled timber | 491061 | 6935720 |
| 6 | Terrestrial termitaria | 491079 | 6935920 |
| 7 | Mulch/soil bund with active Striated Pardalote and potential Rainbow Bee-eater nests | 490958 | 6935744 |
| 8 | Hollow log | 490837 | 6935700 |
| 9 | Woody debris | 490908 | 6935766 |
| 10 | Hollow log | 490754 | 6935906 |
| 11 | Hollow log | 490731 | 6936058 |
| 12 | Terrestrial termitaria | 490742 | 6936095 |
| 13 | Terrestrial termitaria | 490729 | 6936222 |
| 14 | Terrestrial termitaria | 490785 | 6936218 |
| 15 | Terrestrial termitaria | 490657 | 6936281 |
| 16 | Terrestrial termitaria | 490594 | 6936408 |
| 17 | Terrestrial termitaria | 490632 | 6936437 |
| 18 | Stockpiled timber | 491102 | 6935592 |

**Figure 1: Sparse understorey**

**Figure 2: Moderately vegetated understorey**

**Figure 3: Lantana thickets**

**Figure 4: Dense leaf litter**

**Figure 5: Bark exfoliations**

**Figure 6: Ground timber**

**Figure 7: Stockpiled timber**

**Figure 8: Terrestrial termitaria**

**Figure 9: Rocky outcrop**

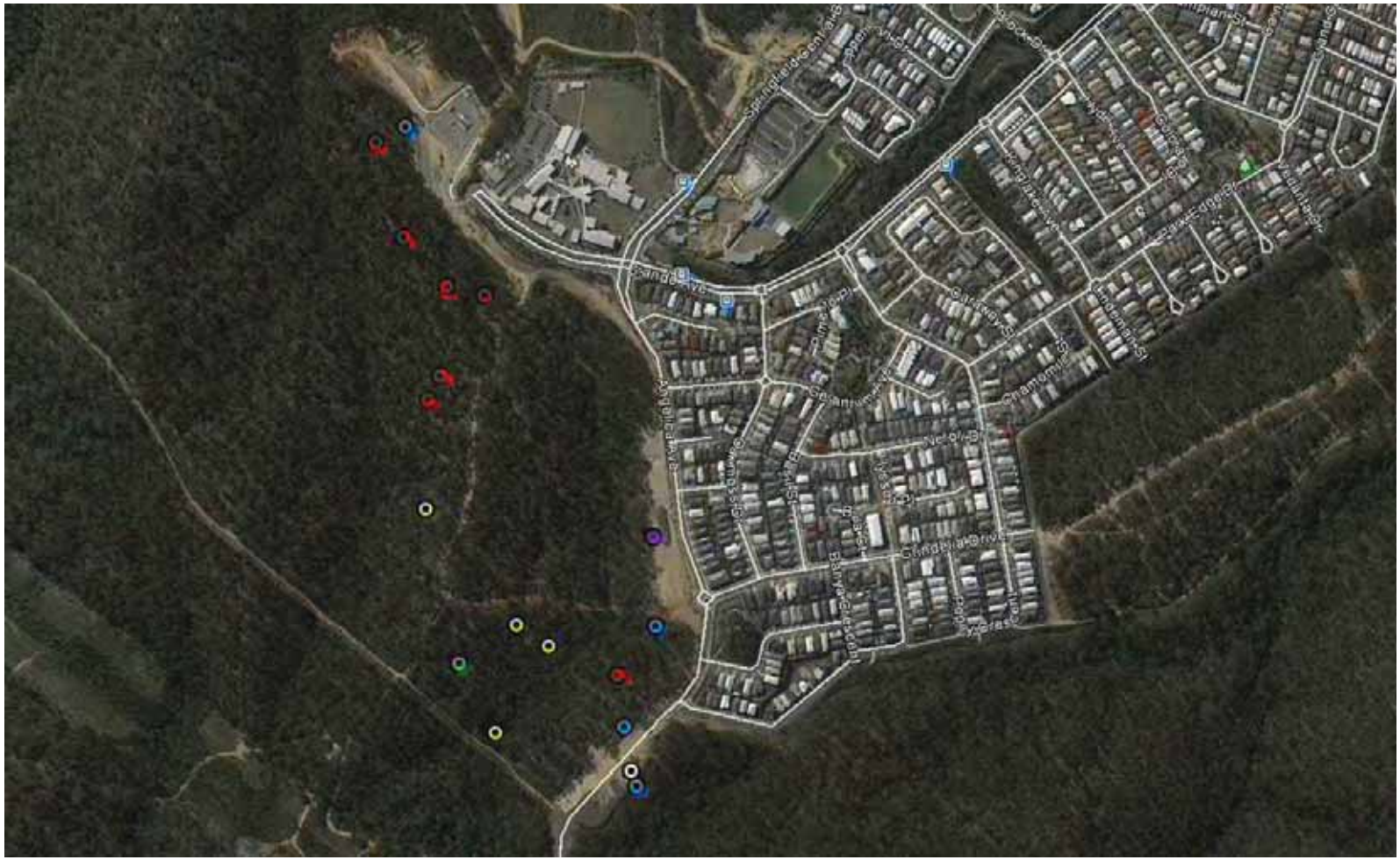
**Figure 10: Construction waste**

**Figure 11: Construction waste**

**Figure 12: Exposed embankments**

**Figure 13: Mulch/soil bund with active Pardalote nests and potential Rainbow Bee-eater nests**

## *Map 2:* Localities for identified terrestrial habitat features



**Key for habitat feature type:**

| Mulch/soil Bund | Terrestrial termitaria | Woody debris | Stockpiled Timber | Hollow Log | Construction Waste |
|---|---|---|---|---|---|

### 3.2 Arboreal Habitat Features

The majority of the clearance area consists predominately of Eucalypt woodland (Figure 14) consisting of trees of varying height, species and density suitable for feeding and nesting resources. A number of trees were in flower at the time of the assessment which may provide further opportunities to transient folivorous and nectivorous bird species. Resident arboreal mammal species such as Squirrel Glider *Petaurus norfolcensis* are likely to frequent the site more readily and utilise existing refugial localities when flowering events are occurring.

A small number of trees exhibited exfoliating bark, which may provide refugial opportunities for reptile species including skinks and geckos. Arboreal termite mounds are present across the site (Figure 15) with signs of recent excavations observed. Pale-headed Rosella's (*Platycercus adscitus*) were observed within one of the mounds (Figure 16). The Lace Monitor *Varanus varius* utilises arboreal termitaria for egg deposition and long term incubation. A number of suitable mounds were located with the potential for use by this species.

Stags and dead trees (Figure 17) also feature throughout the site providing habitat opportunities for a number of arboreal mammal and reptile species. Large hollow-bearing trees feature significantly in the clearance area (Figure 18) and are likely to provide nesting and refugial resources for species such as Gliders, Possums, Parrots and arboreal reptiles. Two European Bee Hives were identified within hollow-bearing trees and will require specific felling methodology to ensure safety to both fauna spotters and machine operators. Avian stick nests (Figure 19) were found during the survey however nest activity status was unable to be determined at the time and further inspections are recommended immediately prior to clearing commencement.

Localities for identified (and verified) arboreal habitat features are presented in Map 3. GPS coordinates for all indicative arboreal habitat features are shown in Table 3.

Primary and secondary Koala food trees located in the clearance area include *Corymbia henryi, Eucalyptus fibrosa, E. tereticornis, E. Crebra Lophostemon confertus, L. suaveolens,* and *Angophora leicarpa.* However no evidence was observed to indicate recent use of these trees by koalas. No koala scats were found during 'drip zone' searches and characteristic scratchings were not found during trunk investigations, although recent rain events may attributed to limited scat findings. A Koala habitat values map for the clearance area is presented in Appendix A.

***Table 3:*** **Localities for identified arboreal habitat features**

| Number | Habitat Feature | GPS Coordinates | |
|---|---|---|---|
| | | Easting | Northing |
| 1 | Stag with hollows | 490927 | 6935609 |
| 2 | Stag with hollows | 491015 | 6935601 |
| 3 | Hollow-bearing tree | 491160 | 6935562 |
| 4 | Bird Nest | 491181 | 6935603 |
| 5 | Stag with hollows | 491191 | 6935638 |
| 6 | Stag with hollows | 491216 | 6935623 |
| 7 | Bird Nest | 491076 | 6935713 |
| 8 | Hollow-bearing tree with arboreal termitaria (with excavation) | 490936 | 6935632 |
| 9 | Stag with hollows | 490936 | 6935655 |
| 10 | Bird Nest | 491062 | 6935856 |
| 11 | Arboreal termitaria (with excavation) | 491059 | 6935858 |
| 12 | Bird Nest | 491065 | 6935913 |
| 13 | Bird Nest | 491044 | 6935943 |
| 14 | Stag with hollows | 490993 | 6936164 |
| 15 | Arboreal termitaria (with excavation) | 490987 | 6936175 |
| 16 | Hollow-bearing tree | 490931 | 6936159 |
| 17 | Bird Nest | 490878 | 6936197 |
| 18 | Arboreal termitaria (with excavation) x 2 | 490922 | 6936137 |
| 19 | Hollow-bearing tree | 490936 | 6936123 |
| 20 | Arboreal termitaria (with excavation) containing Pale-headed Rosella's | 490991 | 6935967 |
| 21 | Arboreal termitaria (with excavation) | 490992 | 6935917 |
| 22 | Hollow-bearing tree | 490971 | 6935804 |
| 23 | Stag with hollows | 490882 | 6935643 |
| 24 | Arboreal termitaria (with excavation) | 490907 | 6935781 |
| 25 | Hollow-bearing tree | 490801 | 6935797 |

| | | | |
|---|---|---|---|
| 26 | Hollow-bearing tree | 490853 | 6935848 |
| 27 | Hollow-bearing tree | 490822 | 6936013 |
| 28 | Hollow-bearing tree | 490927 | 6936055 |
| 29 | Arboreal termitaria (with excavation) | 490929 | 6935923 |
| 30 | Hollow-bearing tree | 490759 | 6935800 |
| 31 | Hollow-bearing tree | 490773 | 6935852 |
| 32 | Hollow-bearing tree | 490732 | 6935856 |
| 33 | Hollow-bearing tree containing European Bee Hive | 490757 | 6935881 |
| 34 | Hollow-bearing tree | 490741 | 6936030 |
| 35 | Hollow-bearing tree | 490788 | 6936060 |
| 36 | Hollow-bearing tree | 490767 | 6936099 |
| 37 | Hollow-bearing tree containing European Bee Hive | 490745 | 6936198 |
| 38 | Hollow-bearing tree | 490744 | 6936209 |
| 39 | Hollow-bearing tree | 490665 | 6936244 |
| 40 | Hollow-bearing tree | 490650 | 6936239 |
| 41 | Hollow-bearing tree | 490611 | 6936291 |
| 42 | Hollow-bearing tree | 490621 | 6936293 |
| 43 | Bird Nest | 490697 | 6936313 |
| 44 | Hollow-bearing tree x 2 | 490527 | 6936464 |

**Figure 14: Woodland**

**Figure 15: Arboreal termitaria with excavation**

**Figure 16: Arboreal termitaria with Pale-headed Rosella**

**Figure 17: Stag with hollows**

**Figure 18: Hollow in tree**

**Figure 19: Bird nest**

## *Map 3:* Localities for identified arboreal habitat features

**Key for habitat feature type:**

| Hollow-bearing trees | Stag with hollows | Nests | Arboreal termitaria |
|---|---|---|---|

### 3.3 Aquatic Habitat Features

An existing ephemeral drainage feature from Mountain Creek (Figure 20) is present within the clearance site and may provide breeding opportunities for frogs during significant rainfall events creating intermittent ponded features. Some pooling of water was present in select areas at the time of the survey (Figure 21). A number of native species may exploit the various microhabitats present by such an environmental feature, particularly during times of rainfall, including Graceful Treefrog *Litoria gracilenta*, Keelback Snake *Tropidonophis mairii* and various mammals and birds as a water resource.

**Figure 20: Drainage feature**

**Figure 21: Pooling water**

## 3.4 Endangered, Vulnerable and Near Threatened (EVNT) Species

It is not envisaged that any EVNT fauna species will be detrimentally impacted by the proposed works. However, six species identified within the Online EPBC Protected Matters Report and the Queensland Government Wildlife Online Search Tool were considered likely or possible to occur within the site and will require further mitigation during clearing activities.

Although no evidence was found during the site inspection of very recent Koala use the species has previously been recorded in the area. Some areas within the site are identified as High Value Bushland features under Koala Habitat in South East Queensland mapping sourced from the DEHP online search tool (see Appendix A). It is advised that dedicated methodologies be employed by a qualified Fauna Spotter specific to the detection of these species prior to vegetation clearing activities.

***Table 2:*** **Significant species deemed likely or possible to occur within the clearance survey area**

| **Common Name**<br>**Scientific Name** | **Species Information** | **Likelihood of Occurrence within the Clearance Survey area** |
|---|---|---|
| **Mammals** | | |
| Koala<br>*Phascolarctos cinereus*<br><br>**EPBC:** Vulnerable<br>**NCA:** Vulnerable | Inhabits a range of open forest and woodland communities which may include any of the following noted food trees: *Eucalyptus*, *Corymbia*, *Melaleuca*, *Angophora* and *Lophostemon*. | ***Likely***<br>Known food trees for the transient Koala (*Phascolarctos cinereus)* occur on the clearance site and the species is well documented within the area. |
| Grey-headed Flying-fox<br>*Pteropus poliocephalus*<br><br>**EPBC:** Vulnerable<br>**NCA:** Least Concern | The Grey-headed Flying-Fox roosts in aggregations of various sizes on exposed branches, commonly of emergent trees. Roost sites are typically located near water, such as lakes, rivers or the coast. Habitat includes open forests, woodlands, urban parks and gardens. | ***Possible***<br>Suitable vegetation communities containing both feeding and roosting resources occur on and adjacent to the clearance site. |
| Spotted-tail Quoll (SE Mainland Population)<br>*Dasyurus maculates maculatus*<br><br>**EPBC:** Endangered<br>**NCA:** Vulnerable | Currently known from the Granit Belt and Border Ranges though small numbers may occur from Gympie to the QLD border (Curtis *et al*. 2012). Inhabits vine-forest, wet and dry sclerophyll forests and woodlands containing boulder piles, fallen logs and hollow trees utilised as shelter sites (Curtis *et al.* 2012). | ***Possible***<br>Preferred habitat type and habitat features present and the species is documented within the area. |
| Greater Glider<br>*Petauroides volans*<br><br>**EPBC:** Vulnerable<br>**NCA:** Least Concern | Largest of the gliders, the Great Glider is found along eastern Australia within a variety of eucalypt dominated forests and tall open woodlands (Lindenmayer 2002) | ***Likely***<br>Preferred habitat type and habitat features present and the species is documented within the area. |

| | | |
|---|---|---|
| **Birds** | | |
| Powerful Owl<br>*Ninox strenua*<br><br>**EPBC:** Not Listed<br>**NCA:** Vulnerable | Inhabits forests and woodlands of eastern and south-eastern Australia (Beruldsen 2003). Breeds once per year in May to July or August. Nests in hollow trunks or limbs of large trees, usually at considerable height (Beruldsen 2003). | ***Possible***<br>Preferred habitat types present and the species is documented within the area. |
| **Reptiles** | | |
| Collared Delma<br>*Delma torquata*<br><br>**EPBC:** Vulnerable<br>**NCA:** Vulnerable | Weathered loose rocks, flattish bedrock outcroppings, logs or mats of leaf litter, or in cracks and crevices among tussock grasses. Lays two eggs around December with hatching in February or March (Curtis et al. 2012) | ***Possible***<br>Preferred habitat type and habitat features present. |

## 4. Fauna Impacts

It is important to consider the existing and future residential developmental areas when investigation potential fauna impacts.

Impacts to fauna as a result of vegetation clearance will include the following:

- Loss of trees for foraging, roosting and nesting;
- Loss of hollow-bearing trees for nesting and refuge;
- Loss of habitat and foraging areas for terrestrial species;
- Loss of overall habitat;
- Potential loss of abundance of some local species.

Other impacts may include:

- Injury or death during felling of trees;
- Injury or death from machinery;
- Alteration of nesting, foraging and general activities due to disturbance.

## 5. Assessment and Conclusion

Overall the site contains medium value refugial opportunities for arboreal and terrestrial fauna species (see Section 3.1 and 3.2). The species expected within the site are likely to primarily reflect common fauna assemblages for the region; however provisions will be proposed directly for common fauna and species of conservation significance.

The connectivity to adjacent conservation land from Village 6 in conjunction with sequential clearing methodologies will aid in the movement of medium to large size fauna such as Koala and Kangaroos. Specific methodologies for these species will be detailed within the Wildlife and Habitat Impact Mitigation Plan (WHIMP).

A number of conclusions and recommendations will be presented in the WHIMP, with the specific intention of providing a comprehensive management structure to facilitate minimal impact to fauna during the clearing of vegetation and subsequent disturbance of habitats.

It is advised that all identified fauna habitats onsite be inspected by a DEHP approved Fauna Spotter prior to vegetation clearing and all vegetation removal activities be supervised during the clearing process (as per the SBMP V6 – 07: Pre-Clearance – Fauna Management). Terrestrial load reduction activities will be conducted ahead of the clearing front where possible. Fauna captured will be relocated to adjacent habitat consistent with the life history requirements of the species requiring translocation. The directives given by Fauna Spotter Catchers should embrace a “best practice” approach which includes implementation of proven specific management techniques for identified habitat types and compliance with legislation relevant to the activity.

Areas in which active Pardalote and potential Rainbow Bee-eater nests have been identified should be inspected prior to the date of the proposed commencement of clearing. It is recommended that any nests which contain chicks be left until fledged, and those that are in a construction phase should be dismantled to prevent further nesting activity. Any fertile eggs recovered will require incubation and subsequent rearing for latter release.

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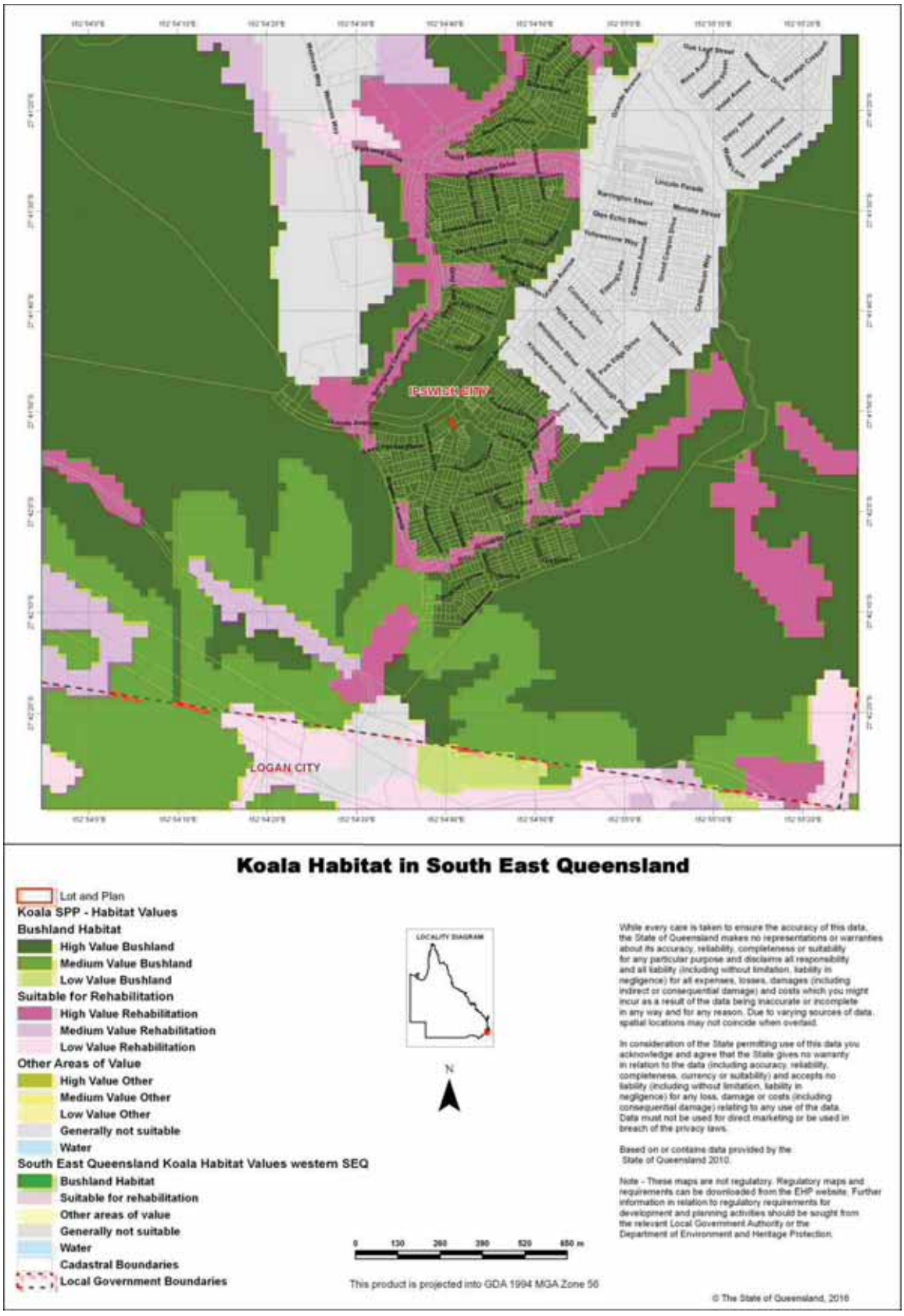
# 7. Appendix A: Koala habitat values



## 8. Appendix B: EPBC Act Protected Matters Report

**Australian Government**
**Department of the Environment**

# EPBC Act Protected Matters Report

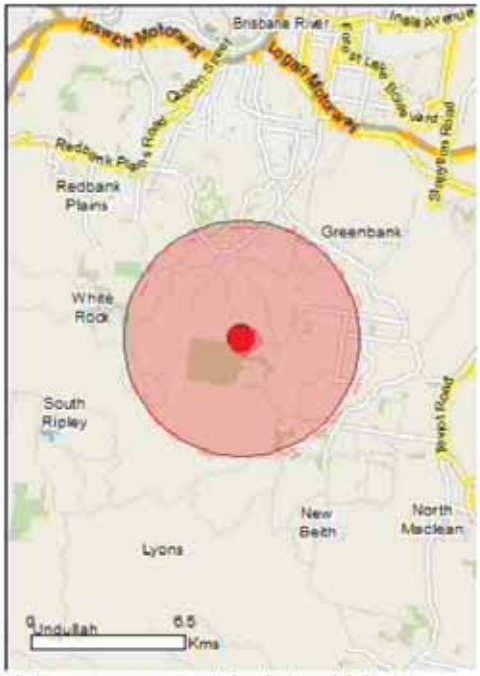
This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

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.

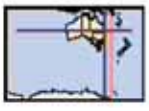
Report created: 23/09/16 11:33:32






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

Coordinates
Buffer: 5.0Km



# Summary

## Matters of National Environmental Significance

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

| | |
|---|---|
| World Heritage Properties: | None |
| National Heritage Places: | None |
| Wetlands of International Importance: | None |
| Great Barrier Reef Marine Park: | None |
| Commonwealth Marine Area: | None |
| Listed Threatened Ecological Communities: | 2 |
| Listed Threatened Species: | 32 |
| Listed Migratory Species: | 13 |

## Other Matters Protected by the EPBC Act

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

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

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

| | |
|---|---|
| Commonwealth Land: | 1 |
| Commonwealth Heritage Places: | 1 |
| Listed Marine Species: | 20 |
| Whales and Other Cetaceans: | None |
| Critical Habitats: | None |
| Commonwealth Reserves Terrestrial: | None |
| Commonwealth Reserves Marine: | None |

## Extra Information

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

| | |
|---|---|
| State and Territory Reserves: | 1 |
| Regional Forest Agreements: | None |
| Invasive Species: | 32 |
| Nationally Important Wetlands: | 1 |
| 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 |
|---|---|---|
| Lowland Rainforest of Subtropical Australia | Critically Endangered | Community may occur within area |
| White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered | Community may occur within area |

### Listed Threatened Species [ Resource Information ]

| Name | Status | Type of Presence |
|---|---|---|
| **Birds** | | |
| Anthochaera phrygia<br>Regent Honeyeater [82338] | Critically Endangered | Foraging, feeding or related behaviour may occur within area |
| Botaurus poiciloptilus<br>Australasian Bittern [1001] | Endangered | Species or species habitat likely to occur within area |
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area |
| Dasyornis brachypterus<br>Eastern Bristlebird [533] | Endangered | Species or species habitat likely to occur within area |
| Erythrotriorchis radiatus<br>Red Goshawk [942] | Vulnerable | Species or species habitat likely to occur within area |
| Geophaps scripta scripta<br>Squatter Pigeon (southern) [64440] | Vulnerable | Species or species habitat may occur within area |
| Grantiella picta<br>Painted Honeyeater [470] | Vulnerable | Species or species habitat may occur within area |
| Lathamus discolor<br>Swift Parrot [744] | Critically Endangered | Species or species habitat may occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area |
| Poephila cincta cincta<br>Southern Black-throated Finch [64447] | Endangered | Species or species habitat may occur within area |

| Name | Status | Type of Presence |
|---|---|---|
| Rostratula australis<br>Australian Painted Snipe [77037] | Endangered | Species or species habitat likely to occur within area |
| Turnix melanogaster<br>Black-breasted Button-quail [923] | Vulnerable | Species or species habitat likely to occur within area |
| **Mammals** | | |
| Chalinolobus dwyeri<br>Large-eared Pied Bat, Large Pied Bat [183] | Vulnerable | Species or species habitat likely to occur within area |
| Dasyurus hallucatus<br>Northern Quoll, Digul [331] | Endangered | Species or species habitat may occur within area |
| Dasyurus maculatus maculatus (SE mainland population)<br>Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184] | Endangered | Species or species habitat may occur within area |
| Petauroides volans<br>Greater Glider [254] | Vulnerable | Species or species habitat known to occur within area |
| Petrogale penicillata<br>Brush-tailed Rock-wallaby [225] | Vulnerable | Species or species habitat known to occur within area |
| Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)<br>Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104] | Vulnerable | Species or species habitat known to occur within area |
| Pteropus poliocephalus<br>Grey-headed Flying-fox [186] | Vulnerable | Foraging, feeding or related behaviour known to occur within area |

| Reptiles | | |
|---|---|---|
| Delma torquata | | |
| Collared Delma [1656] | Vulnerable | Species or species habitat may occur within area |
| Furina dunmalli | | |
| Dunmall's Snake [59254] | Vulnerable | Species or species habitat may occur within area |
| Saiphos reticulatus | | |
| Three-toed Snake-tooth Skink [88328] | Vulnerable | Species or species habitat may occur within area |

| Listed Migratory Species | | [ Resource Information ] |
|---|---|---|
| * Species is listed under a different scientific name on the EPBC Act - Threatened Species list. | | |
| Name | Threatened | Type of Presence |
| Migratory Marine Birds | | |
| Apus pacificus | | |
| Fork-tailed Swift [678] | | Species or species habitat likely to occur within area |
| Migratory Terrestrial Species | | |
| Cuculus optatus | | |
| Oriental Cuckoo, Horsfield's Cuckoo [86651] | | Species or species habitat may occur within area |
| Hirundapus caudacutus | | |
| White-throated Needletail [682] | | Species or species habitat known to occur within area |
| Monarcha melanopsis | | |
| Black-faced Monarch [609] | | Species or species habitat known to occur within area |
| Monarcha trivirgatus | | |
| Spectacled Monarch [610] | | Species or species habitat may occur within area |
| Motacilla flava | | |
| Yellow Wagtail [644] | | Species or species habitat may occur within area |
| Myiagra cyanoleuca | | |
| Satin Flycatcher [612] | | Species or species habitat known to occur within area |
| Rhipidura rufifrons | | |
| Rufous Fantail [592] | | Species or species habitat known to occur within area |

| Migratory Wetlands Species | | |
|---|---|---|
| Calidris ferruginea<br>Curlew Sandpiper [856] | Critically Endangered | Species or species habitat may occur within area |
| Gallinago hardwickii<br>Latham's Snipe, Japanese Snipe [863] | | Species or species habitat may occur within area |
| Numenius madagascariensis<br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area |
| Pandion haliaetus<br>Osprey [952] | | Species or species habitat may occur within area |
| Tringa nebularia<br>Common Greenshank, Greenshank [832] | | Species or species habitat likely to occur within area |

## 9. Appendix C: Wildlife Online extract

Queensland Government

### Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: Animals
Type: Native
Status: All
Records: All
Date: Since 1980
Latitude: -27.7039
Longitude: 152.9097
Distance: 5
Email: camillejpalmer@gmail.com
Date submitted: Friday 23 Sep 2016 11:34:29
Date extracted: Friday 23 Sep 2016 11:40:03

The number of records retrieved = 285

**Disclaimer**

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

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

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

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---|---|---|---|---|---|---|---|---|
| animals | amphibians | Hylidae | *Litoria fallax* | eastern sedgefrog | | C | | 15 |
| animals | amphibians | Hylidae | *Litoria nasuta* | striped rocketfrog | | C | | 3 |
| animals | amphibians | Hylidae | *Litoria latopalmata* | broad palmed rocketfrog | | C | | 7 |
| animals | amphibians | Hylidae | *Litoria gracilenta* | graceful treefrog | | C | | 6 |
| animals | amphibians | Hylidae | *Litoria wilcoxii* | eastern stony creek frog | | C | | 5 |
| animals | amphibians | Hylidae | *Litoria caerulea* | common green treefrog | | C | | 3 |
| animals | amphibians | Hylidae | *Litoria rubella* | ruddy treefrog | | C | | 5 |
| animals | amphibians | Hylidae | *Litoria peronii* | emerald spotted treefrog | | C | | 2 |
| animals | amphibians | Limnodynastidae | *Platyplectrum ornatum* | ornate burrowing frog | | C | | 16 |
| animals | amphibians | Limnodynastidae | *Limnodynastes peronii* | striped marshfrog | | C | | 1 |
| animals | amphibians | Limnodynastidae | *Limnodynastes terraereginae* | scarlet sided pobblebonk | | C | | 3 |
| animals | amphibians | Myobatrachidae | *Pseudophryne coriacea* | red backed broodfrog | | C | | 1 |
| animals | amphibians | Myobatrachidae | *Mixophyes fasciolatus* | great barred frog | | C | | 5 |
| animals | amphibians | Myobatrachidae | *Crinia parinsignifera* | beeping froglet | | C | | 3 |
| animals | amphibians | Myobatrachidae | *Pseudophryne raveni* | copper backed broodfrog | | C | | 7 |
| animals | birds | Acanthizidae | *Acanthiza chrysorrhoa* | yellow-rumped thornbill | | C | | 1 |
| animals | birds | Acanthizidae | *Chthonicola sagittata* | speckled warbler | | C | | 11 |
| animals | birds | Acanthizidae | *Smicrornis brevirostris* | weebill | | C | | 34 |
| animals | birds | Acanthizidae | *Acanthiza nana* | yellow thornbill | | C | | 8 |
| animals | birds | Acanthizidae | *Sericornis frontalis* | white-browed scrubwren | | C | | 29 |
| animals | birds | Acanthizidae | *Acanthiza lineata* | striated thornbill | | C | | 7 |
| animals | birds | Acanthizidae | *Acanthiza pusilla* | brown thornbill | | C | | 20 |
| animals | birds | Acanthizidae | *Gerygone olivacea* | white-throated gerygone | | C | | 35 |
| animals | birds | Acanthizidae | *Acanthiza reguloides* | buff-rumped thornbill | | C | | 18 |
| animals | birds | Acanthizidae | *Gerygone mouki* | brown gerygone | | C | | 3 |
| animals | birds | Accipitridae | *Accipiter novaehollandiae* | grey goshawk | | C | | 5 |
| animals | birds | Accipitridae | *Hieraaetus morphnoides* | little eagle | | C | | 2 |
| animals | birds | Accipitridae | *Accipiter cirrocephalus* | collared sparrowhawk | | C | | 1 |
| animals | birds | Accipitridae | *Aquila audax* | wedge-tailed eagle | | C | | 18 |
| animals | birds | Accipitridae | *Elanus axillaris* | black-shouldered kite | | C | | 7 |
| animals | birds | Accipitridae | *Accipiter fasciatus* | brown goshawk | | C | | 10 |
| animals | birds | Accipitridae | *Aviceda subcristata* | Pacific baza | | C | | 31 |
| animals | birds | Accipitridae | *Haliastur sphenurus* | whistling kite | | C | | 2 |
| animals | birds | Accipitridae | *Haliaeetus leucogaster* | white-bellied sea-eagle | | C | | 4 |
| animals | birds | Acrocephalidae | *Acrocephalus australis* | Australian reed-warbler | | SL | | 2 |
| animals | birds | Aegothelidae | *Aegotheles cristatus* | Australian owlet-nightjar | | C | | 11 |
| animals | birds | Alcedinidae | *Ceyx azureus* | azure kingfisher | | C | | 9 |
| animals | birds | Alcedinidae | *Ceyx pusilla* | little kingfisher | | C | | 1 |
| animals | birds | Anatidae | *Cygnus atratus* | black swan | | C | | 5 |
| animals | birds | Anatidae | *Aythya australis* | hardhead | | C | | 7 |
| animals | birds | Anatidae | *Anas superciliosa* | Pacific black duck | | C | | 58 |
| animals | birds | Anatidae | *Chenonetta jubata* | Australian wood duck | | C | | 60 |
| animals | birds | Anatidae | *Dendrocygna eytoni* | plumed whistling-duck | | C | | 1 |
| animals | birds | Anatidae | *Dendrocygna arcuata* | wandering whistling-duck | | C | | 2 |
| animals | birds | Anatidae | *Anas gracilis* | grey teal | | C | | 5 |
| animals | birds | Anhingidae | *Anhinga novaehollandiae* | Australasian darter | | C | | 7 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---|---|---|---|---|---|---|---|---|
| animals | birds | Anseranatidae | *Anseranas semipalmata* | magpie goose | | C | | 6 |
| animals | birds | Apodidae | *Hirundapus caudacutus* | white-throated needletail | | SL | | 6 |
| animals | birds | Apodidae | *Apus pacificus* | fork-tailed swift | | SL | | 1 |
| animals | birds | Ardeidae | *Ardea alba modesta* | eastern great egret | | SL | | 5 |
| animals | birds | Ardeidae | *Nycticorax caledonicus* | nankeen night-heron | | C | | 29 |
| animals | birds | Ardeidae | *Egretta novaehollandiae* | white-faced heron | | C | | 62 |
| animals | birds | Ardeidae | *Ardea ibis* | cattle egret | | SL | | 29 |
| animals | birds | Ardeidae | *Ardea pacifica* | white-necked heron | | C | | 8 |
| animals | birds | Ardeidae | *Ardea intermedia* | intermediate egret | | C | | 7 |
| animals | birds | Artamidae | *Strepera graculina* | pied currawong | | C | | 100 |
| animals | birds | Artamidae | *Artamus cyanopterus* | dusky woodswallow | | C | | 4 |
| animals | birds | Artamidae | *Cracticus torquatus* | grey butcherbird | | C | | 106 |
| animals | birds | Artamidae | *Artamus leucorynchus* | white-breasted woodswallow | | C | | 6 |
| animals | birds | Artamidae | *Cracticus nigrogularis* | pied butcherbird | | C | | 56 |
| animals | birds | Artamidae | *Cracticus tibicen* | Australian magpie | | C | | 121 |
| animals | birds | Artamidae | *Cracticus sp.* | | | | | 4 |
| animals | birds | Artamidae | *Artamus personatus* | masked woodswallow | | C | | 1 |
| animals | birds | Cacatuidae | *Calyptorhynchus lathami lathami* | glossy black-cockatoo (eastern) | | V | | 2 |
| animals | birds | Cacatuidae | *Calyptorhynchus funereus* | yellow-tailed black-cockatoo | | C | | 1 |
| animals | birds | Cacatuidae | *Calyptorhynchus banksii* | red-tailed black-cockatoo | | C | | 5 |
| animals | birds | Cacatuidae | *Eolophus roseicapillus* | galah | | C | | 61 |
| animals | birds | Cacatuidae | *Nymphicus hollandicus* | cockatiel | | C | | 1 |
| animals | birds | Cacatuidae | *Cacatua galerita* | sulphur-crested cockatoo | | C | | 81 |
| animals | birds | Campephagidae | *Coracina novaehollandiae* | black-faced cuckoo-shrike | | C | | 90 |
| animals | birds | Campephagidae | *Coracina tenuirostris* | cicadabird | | C | | 21 |
| animals | birds | Campephagidae | *Coracina papuensis* | white-bellied cuckoo-shrike | | C | | 7 |
| animals | birds | Campephagidae | *Lalage leucomela* | varied triller | | C | | 9 |
| animals | birds | Campephagidae | *Lalage tricolor* | white-winged triller | | C | | 1 |
| animals | birds | Campephagidae | *Coracina lineata* | barred cuckoo-shrike | | C | | 1 |
| animals | birds | Charadriidae | *Elseyornis melanops* | black-fronted dotterel | | C | | 2 |
| animals | birds | Charadriidae | *Vanellus miles novachollandiae* | masked lapwing (southern subspecies) | | C | | 33 |
| animals | birds | Charadriidae | *Vanellus miles* | masked lapwing | | C | | 10 |
| animals | birds | Charadriidae | *Vanellus tricolor* | banded lapwing | | C | | 2 |
| animals | birds | Ciconiidae | *Ephippiorhynchus asiaticus* | black-necked stork | | C | | 2 |
| animals | birds | Cisticolidae | *Cisticola exilis* | golden-headed cisticola | | C | | 14 |
| animals | birds | Climacteridae | *Climacteris affinis* | white-browed treecreeper | | C | | 1 |
| animals | birds | Climacteridae | *Cormobates leucophaea metastasis* | white-throated treecreeper (southern) | | C | | 36 |
| animals | birds | Climacteridae | *Cormobates leucophaea* | white-throated treecreeper | | C | | 5 |
| animals | birds | Climacteridae | *Climacteris picumnus* | brown treecreeper | | C | | 1 |
| animals | birds | Columbidae | *Lopholaimus antarcticus* | topknot pigeon | | C | | 6 |
| animals | birds | Columbidae | *Leucosarcia melanoleuca* | wonga pigeon | | C | | 2 |
| animals | birds | Columbidae | *Macropygia amboinensis* | brown cuckoo-dove | | C | | 21 |
| animals | birds | Columbidae | *Geopelia humeralis* | bar-shouldered dove | | C | | 57 |
| animals | birds | Columbidae | *Chalcophaps indica* | emerald dove | | C | | 4 |
| animals | birds | Columbidae | *Phaps chalcoptera* | common bronzewing | | C | | 19 |
| animals | birds | Columbidae | *Ocyphaps lophotes* | crested pigeon | | C | | 46 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---|---|---|---|---|---|---|---|---|
| animals | birds | Columbidae | *Geopelia striata* | peaceful dove | | C | | 21 |
| animals | birds | Coraciidae | *Eurystomus orientalis* | dollarbird | | C | | 48 |
| animals | birds | Corvidae | *Corvus orru* | Torresian crow | | C | | 165 |
| animals | birds | Cuculidae | *Chalcites lucidus* | shining bronze-cuckoo | | C | | 10 |
| animals | birds | Cuculidae | *Centropus phasianinus* | pheasant coucal | | C | | 53 |
| animals | birds | Cuculidae | *Eudynamys orientalis* | eastern koel | | C | | 37 |
| animals | birds | Cuculidae | *Cacomantis variolosus* | brush cuckoo | | C | | 24 |
| animals | birds | Cuculidae | *Scythrops novaehollandiae* | channel-billed cuckoo | | C | | 33 |
| animals | birds | Cuculidae | *Cacomantis flabelliformis* | fan-tailed cuckoo | | C | | 26 |
| animals | birds | Cuculidae | *Chalcites basalis* | Horsfield's bronze-cuckoo | | C | | 6 |
| animals | birds | Cuculidae | *Cuculus optatus* | oriental cuckoo | | SL | | 5 |
| animals | birds | Cuculidae | *Cacomantis pallidus* | pallid cuckoo | | C | | 2 |
| animals | birds | Dicruridae | *Dicrurus bracteatus* | spangled drongo | | C | | 78 |
| animals | birds | Estrildidae | *Neochmia temporalis* | red-browed finch | | C | | 44 |
| animals | birds | Estrildidae | *Lonchura castaneothorax* | chestnut-breasted mannikin | | C | | 4 |
| animals | birds | Estrildidae | *Taeniopygia bichenovii* | double-barred finch | | C | | 15 |
| animals | birds | Eurostopodidae | *Eurostopodus mystacalis* | white-throated nightjar | | C | | 10 |
| animals | birds | Falconidae | *Falco berigora* | brown falcon | | C | | 4 |
| animals | birds | Falconidae | *Falco cenchroides* | nankeen kestrel | | C | | 10 |
| animals | birds | Falconidae | *Falco peregrinus* | peregrine falcon | | C | | 10 |
| animals | birds | Falconidae | *Falco hypoleucos* | grey falcon | | V | | 1 |
| animals | birds | Halcyonidae | *Dacelo novaeguineae* | laughing kookaburra | | C | | 128 |
| animals | birds | Halcyonidae | *Todiramphus macleayii* | forest kingfisher | | C | | 53 |
| animals | birds | Halcyonidae | *Todiramphus sanctus* | sacred kingfisher | | C | | 19 |
| animals | birds | Hirundinidae | *Hirundo neoxena* | welcome swallow | | C | | 39 |
| animals | birds | Hirundinidae | *Petrochelidon ariel* | fairy martin | | C | | 6 |
| animals | birds | Hirundinidae | *Cheramoeca leucosterna* | white-backed swallow | | C | | 5 |
| animals | birds | Hirundinidae | *Petrochelidon nigricans* | tree martin | | C | | 10 |
| animals | birds | Jacanidae | *Irediparra gallinacea* | comb-crested jacana | | C | | 9 |
| animals | birds | Maluridae | *Malurus cyaneus* | superb fairy-wren | | C | | 27 |
| animals | birds | Maluridae | *Malurus lamberti* | variegated fairy-wren | | C | | 46 |
| animals | birds | Maluridae | *Malurus melanocephalus* | red-backed fairy-wren | | C | | 49 |
| animals | birds | Megaluridae | *Cincloramphus mathewsi* | rufous songlark | | C | | 1 |
| animals | birds | Megaluridae | *Megalurus timoriensis* | tawny grassbird | | C | | 5 |
| animals | birds | Megapodiidae | *Alectura lathami* | Australian brush-turkey | | C | | 15 |
| animals | birds | Meliphagidae | *Acanthorhynchus tenuirostris* | eastern spinebill | | C | | 22 |
| animals | birds | Meliphagidae | *Plectorhyncha lanceolata* | striped honeyeater | | C | | 11 |
| animals | birds | Meliphagidae | *Myzomela erythrocephala* | red-headed honeyeater | | C | | 1 |
| animals | birds | Meliphagidae | *Melithreptus albogularis* | white-throated honeyeater | | C | | 71 |
| animals | birds | Meliphagidae | *Ptilotula fusca* | fuscous honeyeater | | C | | 4 |
| animals | birds | Meliphagidae | *Meliphaga lewinii* | Lewin's honeyeater | | C | | 84 |
| animals | birds | Meliphagidae | *Caligavis chrysops* | yellow-faced honeyeater | | C | | 72 |
| animals | birds | Meliphagidae | *Entomyzon cyanotis* | blue-faced honeyeater | | C | | 55 |
| animals | birds | Meliphagidae | *Lichmera indistincta* | brown honeyeater | | C | | 27 |
| animals | birds | Meliphagidae | *Melithreptus lunatus* | white-naped honeyeater | | C | | 2 |
| animals | birds | Meliphagidae | *Philemon corniculatus* | noisy friarbird | | C | | 145 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---|---|---|---|---|---|---|---|---|
| animals | birds | Meliphagidae | *Manorina melanocephala* | noisy miner | | C | | 63 |
| animals | birds | Meliphagidae | *Myzomela sanguinolenta* | scarlet honeyeater | | C | | 87 |
| animals | birds | Meliphagidae | *Anthochaera chrysoptera* | little wattlebird | | C | | 5 |
| animals | birds | Meliphagidae | *Philemon citreogularis* | little friarbird | | C | | 31 |
| animals | birds | Meropidae | *Merops ornatus* | rainbow bee-eater | | SL | | 52 |
| animals | birds | Monarchidae | *Myiagra inquieta* | restless flycatcher | | C | | 5 |
| animals | birds | Monarchidae | *Carterornis leucotis* | white-eared monarch | | C | | 1 |
| animals | birds | Monarchidae | *Myiagra rubecula* | leaden flycatcher | | C | | 29 |
| animals | birds | Monarchidae | *Symposiachrus trivirgatus* | spectacled monarch | | SL | | 6 |
| animals | birds | Monarchidae | *Monarcha melanopsis* | black-faced monarch | | SL | | 15 |
| animals | birds | Monarchidae | *Grallina cyanoleuca* | magpie-lark | | C | | 71 |
| animals | birds | Monarchidae | *Myiagra cyanoleuca* | satin flycatcher | | SL | | 1 |
| animals | birds | Motacillidae | *Anthus novaeseelandiae* | Australasian pipit | | C | | 9 |
| animals | birds | Nectariniidae | *Dicaeum hirundinaceum* | mistletoebird | | C | | 31 |
| animals | birds | Neosittidae | *Daphoenositta chrysoptera* | varied sittella | | C | | 22 |
| animals | birds | Oriolidae | *Sphecotheres vieilloti* | Australasian figbird | | C | | 23 |
| animals | birds | Oriolidae | *Oriolus sagittatus* | olive-backed oriole | | C | | 38 |
| animals | birds | Pachycephalidae | *Pachycephala rufiventris* | rufous whistler | | C | | 69 |
| animals | birds | Pachycephalidae | *Pachycephala sp.* | | | | | 1 |
| animals | birds | Pachycephalidae | *Colluricincla harmonica* | grey shrike-thrush | | C | | 83 |
| animals | birds | Pachycephalidae | *Pachycephala pectoralis* | golden whistler | | C | | 15 |
| animals | birds | Pachycephalidae | *Colluricincla megarhyncha* | little shrike-thrush | | C | | 10 |
| animals | birds | Pardalotidae | *Pardalotus punctatus* | spotted pardalote | | C | | 55 |
| animals | birds | Pardalotidae | *Pardalotus striatus* | striated pardalote | | C | | 80 |
| animals | birds | Pelecanidae | *Pelecanus conspicillatus* | Australian pelican | | C | | 6 |
| animals | birds | Petroicidae | *Eopsaltria australis* | eastern yellow robin | | C | | 46 |
| animals | birds | Petroicidae | *Microeca fascinans* | jacky winter | | C | | 11 |
| animals | birds | Petroicidae | *Petroica rosea* | rose robin | | C | | 24 |
| animals | birds | Petroicidae | *Tregellasia capito* | pale-yellow robin | | C | | 1 |
| animals | birds | Phalacrocoracidae | *Microcarbo melanoleucos* | little pied cormorant | | C | | 29 |
| animals | birds | Phalacrocoracidae | *Phalacrocorax sulcirostris* | little black cormorant | | C | | 14 |
| animals | birds | Phasianidae | *Coturnix ypsilophora* | brown quail | | C | | 11 |
| animals | birds | Podargidae | *Podargus strigoides* | tawny frogmouth | | C | | 31 |
| animals | birds | Podicipedidae | *Tachybaptus novaehollandiae* | Australasian grebe | | C | | 18 |
| animals | birds | Pomatostomidae | *Pomatostomus temporalis* | grey-crowned babbler | | C | | 24 |
| animals | birds | Psittacidae | *Parvipsitta pusilla* | little lorikeet | | C | | 30 |
| animals | birds | Psittacidae | *Platycercus eximius* | eastern rosella | | C | | 8 |
| animals | birds | Psittacidae | *Alisterus scapularis* | Australian king-parrot | | C | | 33 |
| animals | birds | Psittacidae | *Platycercus adscitus* | pale-headed rosella | | C | | 82 |
| animals | birds | Psittacidae | *Trichoglossus chlorolepidotus* | scaly-breasted lorikeet | | C | | 58 |
| animals | birds | Psittacidae | *Platycercus adscitus palliceps* | pale-headed rosella (southern form) | | C | | 1 |
| animals | birds | Psittacidae | *Trichoglossus haematodus moluccanus* | rainbow lorikeet | | C | | 93 |
| animals | birds | Psophodidae | *Psophodes olivaceus* | eastern whipbird | | C | | 45 |
| animals | birds | Psophodidae | *Cinclosoma punctatum* | spotted quail-thrush | | C | | 9 |
| animals | birds | Rallidae | *Porphyrio melanotus* | purple swamphen | | C | | 18 |
| animals | birds | Rallidae | *Fulica atra* | Eurasian coot | | C | | 14 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---|---|---|---|---|---|---|---|---|
| animals | birds | Rallidae | *Gallinula tenebrosa* | dusky moorhen | | C | | 24 |
| animals | birds | Rhipiduridae | *Rhipidura rufifrons* | rufous fantail | | SL | | 23 |
| animals | birds | Rhipiduridae | *Rhipidura leucophrys* | willie wagtail | | C | | 43 |
| animals | birds | Rhipiduridae | *Rhipidura albiscapa* | grey fantail | | C | | 76 |
| animals | birds | Strigidae | *Ninox strenua* | powerful owl | | V | | 8 |
| animals | birds | Strigidae | *Ninox boobook* | southern boobook | | C | | 44 |
| animals | birds | Threskiornithidae | *Threskiornis spinicollis* | straw-necked ibis | | C | | 37 |
| animals | birds | Threskiornithidae | *Platalea flavipes* | yellow-billed spoonbill | | C | | 21 |
| animals | birds | Threskiornithidae | *Threskiornis molucca* | Australian white ibis | | C | | 23 |
| animals | birds | Threskiornithidae | *Platalea regia* | royal spoonbill | | C | | 21 |
| animals | birds | Timaliidae | *Zosterops lateralis* | silvereye | | C | | 57 |
| animals | birds | Turnicidae | *Turnix varius* | painted button-quail | | C | | 11 |
| animals | insects | Hesperiidae | *Neohesperilla xanthomera* | yellow grass-skipper | | | | 1 |
| animals | insects | Lycaenidae | *Acrodipsas brisbanensis brisbanensis* | bronze ant-blue | | | | 2 |
| animals | insects | Lycaenidae | *Ogyris zosine zosine* | northern purple azure (southern subspecies) | | | | 1 |
| animals | insects | Lycaenidae | *Ogyris oroetes oroetes* | silky azure | | | | 1 |
| animals | insects | Lycaenidae | *Candalides cyprotus pallescens* | copper pencilled-blue | | | | 1 |
| animals | insects | Nymphalidae | *Danaus petilia* | lesser wanderer | | | | 1 |
| animals | insects | Nymphalidae | *Polyura sempronius sempronius* | tailed emperor | | | | 1 |
| animals | insects | Nymphalidae | *Acraea andromacha andromacha* | glasswing | | | | 5 |
| animals | insects | Nymphalidae | *Vanessa kershawi* | Australian painted lady | | | | 2 |
| animals | insects | Nymphalidae | *Euploea core corinna* | common crow | | | | 2 |
| animals | insects | Nymphalidae | *Melanitis leda bankia* | common evening-brown | | | | 3 |
| animals | insects | Nymphalidae | *Tirumala hamata hamata* | blue tiger | | | | 2 |
| animals | insects | Nymphalidae | *Danaus plexippus plexippus* | monarch | | | | 5 |
| animals | insects | Papilionidae | *Graphium sarpedon choredon* | blue triangle | | | | 2 |
| animals | insects | Pieridae | *Eurema hecabe* | large grass-yellow | | | | 2 |
| animals | insects | Pieridae | *Delias nigrina* | black jezebel | | | | 1 |
| animals | mammals | Acrobatidae | *Acrobates pygmaeus* | feathertail glider | | C | | 1 |
| animals | mammals | Canidae | *Canis lupus dingo* | dingo | | | | 5 |
| animals | mammals | Dasyuridae | *Sminthopsis murina* | common dunnart | | C | | 1 |
| animals | mammals | Dasyuridae | *Antechinus stuartii* | brown antechinus | | C | | 1 |
| animals | mammals | Dasyuridae | *Antechinus flavipes flavipes* | yellow-footed antechinus (south-east Queensland) | | C | | 4 |
| animals | mammals | Dasyuridae | *Dasyurus maculatus maculatus* | spotted-tailed quoll (southern subspecies) | | V | E | 1 |
| animals | mammals | Emballonuridae | *Saccolaimus flaviventris* | yellow-bellied sheathtail bat | | C | | 2 |
| animals | mammals | Macropodidae | *Macropus rufogriseus* | red-necked wallaby | | C | | 15 |
| animals | mammals | Macropodidae | *Petrogale penicillata* | brush-tailed rock-wallaby | | V | V | 3 |
| animals | mammals | Macropodidae | *Macropus giganteus* | eastern grey kangaroo | | C | | 10 |
| animals | mammals | Macropodidae | *Macropus robustus* | common wallaroo | | C | | 1 |
| animals | mammals | Macropodidae | *Macropus dorsalis* | black-striped wallaby | | C | | 2 |
| animals | mammals | Macropodidae | *Wallabia bicolor* | swamp wallaby | | C | | 10/1 |
| animals | mammals | Macropodidae | *Macropus parryi* | whiptail wallaby | | C | | 52 |
| animals | mammals | Macropodidae | *Macropus sp.* | | | | | 1 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---|---|---|---|---|---|---|---|---|
| animals | mammals | Miniopteridae | *Miniopterus schreibersii oceanensis* | eastern bent-wing bat | | C | | 1 |
| animals | mammals | Molossidae | *Tadarida australis* | white-striped freetail bat | | C | | 11 |
| animals | mammals | Ornithorhynchidae | *Ornithorhynchus anatinus* | platypus | | SL | | 1 |
| animals | mammals | Peramelidae | *Isoodon macrourus* | northern brown bandicoot | | C | | 6 |
| animals | mammals | Petauridae | *Petaurus australis australis* | yellow-bellied glider (southern subspecies) | | C | | 2 |
| animals | mammals | Petauridae | *Petaurus breviceps* | sugar glider | | C | | 1 |
| animals | mammals | Petauridae | *Petaurus norfolcensis* | squirrel glider | | C | | 14 |
| animals | mammals | Phalangeridae | *Trichosurus caninus* | short-eared possum | | C | | 1 |
| animals | mammals | Phalangeridae | *Trichosurus vulpecula* | common brushtail possum | | C | | 67 |
| animals | mammals | Phalangeridae | *Trichosurus sp.* | | | | | 3 |
| animals | mammals | Phascolarctidae | *Phascolarctos cinereus* | koala | | V | V | 70 |
| animals | mammals | Pseudocheiridae | *Pseudocheirus peregrinus* | common ringtail possum | | C | | 6 |
| animals | mammals | Pseudocheiridae | *Petauroides volans* | greater glider | | C | V | 9 |
| animals | mammals | Pteropodidae | *Pteropus sp.* | | | | | 1 |
| animals | mammals | Pteropodidae | *Pteropus poliocephalus* | grey-headed flying-fox | | C | V | 11 |
| animals | mammals | Pteropodidae | *Pteropus scapulatus* | little red flying-fox | | C | | 7 |
| animals | mammals | Tachyglossidae | *Tachyglossus aculeatus* | short-beaked echidna | | SL | | 2 |
| animals | mammals | Vespertilionidae | *Scotorepens sp.* | | | | | 2 |
| animals | mammals | Vespertilionidae | *Scotorepens orion* | south-eastern broad-nosed bat | | C | | 3 |
| animals | mammals | Vespertilionidae | *Nyctophilus gouldi* | Gould's long-eared bat | | C | | 2 |
| animals | ray-finned fishes | Eleotridae | *Mogurnda adspersa* | southern purplespotted gudgeon | | | | 1 |
| animals | reptiles | Agamidae | *Pogona barbata* | bearded dragon | | C | | 6 |
| animals | reptiles | Agamidae | *Diporiphora australis* | tommy roundhead | | C | | 3 |
| animals | reptiles | Agamidae | *Intellagama lesueurii* | eastern water dragon | | C | | 53 |
| animals | reptiles | Boidae | *Morelia spilota* | carpet python | | C | | 12 |
| animals | reptiles | Chelidae | *Wollumbinia latisternum* | saw-shelled turtle | | C | | 1 |
| animals | reptiles | Chelidae | *Chelodina longicollis* | eastern snake-necked turtle | | C | | 1 |
| animals | reptiles | Colubridae | *Dendrelaphis punctulatus* | green tree snake | | C | | 25 |
| animals | reptiles | Colubridae | *Tropidonophis mairii* | freshwater snake | | C | | 4 |
| animals | reptiles | Colubridae | *Boiga irregularis* | brown tree snake | | C | | 1 |
| animals | reptiles | Diplodactylidae | *Oedura tryoni* | southern spotted velvet gecko | | C | | 5 |
| animals | reptiles | Elapidae | *Brachyurophis australis* | coral snake | | C | | 1 |
| animals | reptiles | Elapidae | *Cryptophis nigrescens* | eastern small-eyed snake | | C | | 9 |
| animals | reptiles | Elapidae | *Pseudechis porphyriacus* | red-bellied black snake | | C | | 2 |
| animals | reptiles | Elapidae | *Demansia sp.* | | | | | 1 |
| animals | reptiles | Elapidae | *Cacophis harriettae* | white-crowned snake | | C | | 1 |
| animals | reptiles | Elapidae | *Demansia psammophis* | yellow-faced whipsnake | | C | | 6 |
| animals | reptiles | Elapidae | *Pseudechis guttatus* | spotted black snake | | C | | 1 |
| animals | reptiles | Gekkonidae | *Gehyra dubia* | dubious dtella | | C | | 1 |
| animals | reptiles | Pygopodidae | *Lialis burtonis* | Burton's legless lizard | | C | | 4 |
| animals | reptiles | Scincidae | *Tiliqua scincoides* | eastern blue-tongued lizard | | C | | 1 |
| animals | reptiles | Scincidae | *Lygisaurus foliorum* | tree-base litter-skink | | C | | 5 |
| animals | reptiles | Scincidae | *Ctenotus taeniolatus* | copper-tailed skink | | C | | 1 |
| animals | reptiles | Scincidae | *Lampropholis amicula* | friendly sunskink | | C | | 1 |
| animals | reptiles | Scincidae | *Lampropholis delicata* | dark-flecked garden sunskink | | C | | 8 |

| Kingdom | Class | Family | Scientific Name | Common Name | I | Q | A | Records |
|---|---|---|---|---|---|---|---|---|
| animals | reptiles | Scincidae | *Morethia taeniopleura* | fire-tailed skink | | C | | 1 |
| animals | reptiles | Scincidae | *Calyptotis scutirostrum* | scute-snouted calyptotis | | C | | 5 |
| animals | reptiles | Scincidae | *Ophioscincus ophioscincus* | yolk-bellied snake-skink | | C | | 1 |
| animals | reptiles | Scincidae | *Carlia pectoralis sensu lato* | | | C | | 2 |
| animals | reptiles | Scincidae | *Cryptoblepharus pulcher pulcher* | elegant snake-eyed skink | | C | | 21 |
| animals | reptiles | Scincidae | *Carlia munda* | shaded-litter rainbow-skink | | C | | 1 |
| animals | reptiles | Scincidae | *Concinnia martini* | dark bar-sided skink | | C | | 1 |
| animals | reptiles | Scincidae | *Ctenotus spaldingi* | straight-browed ctenotus | | C | | 1 |
| animals | reptiles | Scincidae | *Carlia schmeltzii* | robust rainbow-skink | | C | | 2 |
| animals | reptiles | Scincidae | *Ctenotus arcanus* | arcane ctenotus | | C | | 1 |
| animals | reptiles | Scincidae | *Concinnia tenuis* | bar-sided skink | | C | | 1 |
| animals | reptiles | Scincidae | *Carlia vivax* | tussock rainbow-skink | | C | | 16 |
| animals | reptiles | Varanidae | *Varanus varius* | lace monitor | | C | | 6 |

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.

# ATTACHMENT 5 –

# Environmental Awareness Acknowledgement (Signed)

## ENVIRONMETAL AWARENESS

**CONTRACTOR ACKNOWLEDGEMENT**

I Tony Hooper, the Contractor (or the Contractor Representative), appointed by Lendlease Communities, acknowledge receipt and acceptance of the Lendlease Communities rules and policies in the **Springfield Rise Site Based Management Plan**. By signing below, I acknowledge that there are mechanisms in place to ensure all material provided within this SBMP will be read and understood by all site contractors and sub-contractors prior to commencing works on site.

Shadforths Civil
Company Name (Please print)

Signature (Contractor / Contractor Representative)

Tony Hooper
Name (Please print)

Project Manager
Title / Position

11/10/16
Date

# 10 FLORA & FAUNA CHECKLIST

## Pre-Clearance Checklist:

This Site Based Management Plan (V6) contains only a small portion of information included within existing assessment management plans for Spring Mountain. Subsequently, the volume of requirements remains complex and overlapping. To ensure compliance with approval requirements and provide a record trail for reporting to the Commonwealth Department of the Environment the following pre-clearance checklist is to be completed with each phase of works.

The checklist is to be completed by the principal contractor and requires sign off by the Environmental Coordinator and Fauna Spotter. To complete the checklist a number of items need to be issued from various parties to the principal contractor (eg confirmation of pre-clearance surveys).

The pre-clearance checklist is established in a format which enables direct annual reporting to the Department of the Environment and will include a number of attachments.

Springfield RISE

**Springfield Rise – Environmental Pre-Start Checklist**

| | | | | | |
|---|---|---|---|---|---|
| **Project Area:** Village 6 | | **Date:** | | | |
| **Contractor:** Shadforths | | **Construction Stage/ Activity:** Early works bulk earthworks | | | |
| **Date work is to start:** | | | | | |
| **Date work is to cease:** | | **Compliance** | | | |
| **#** | **Control Measure** | **Yes** | **No** | **N/A** | **Comments** |
| 1 | Are clearing extents marked out and fenced? (N.B. Fencing is required as per ICC permits unless instructed otherwise by Council, Fauna Spotter or Environmental Coordinator) | ✓ | | | Completed by Wolter Consulting on DATE |
| 2 | Has the fencing of clearing extents demarcation been inspected by the Environmental Coordinator? | ✓ | | | Completed by SHG on DATE |
| 3 | Has sign off been provided by the Environmental Coordinator for demarcation areas? | ✓ | | | See Attachment 1 |
| 4 | Has certification for pre-clearance flora been provided? (N.B. Exemptions/permits for protected plants under the NCA must be obtained by EHP where works occur in a High Risk Area). Please provide date and reference. | ✓ | | | See Attachment 2. **EHP Reference: AR082999 22 January 2016** |
| 5 | Have pre-clearance checks surveys for *Plectranthus habrophyllus* been completed over the clearing area? | ✓ | | | Completed by SHG on 8 July 2015. See Attachment 3. |
| 6 | Are there 'no-go' zones identified within the clearing area? | | ✓ | | |
| 7 | If yes, have 'no-go' zones been demarcated, fenced, signed and inspected by the Environmental Coordinator and Contractor? | | | ✓ | |
| 8 | Has the appointed Fauna Spotter completed pre-clearance surveys and reports? | | | | |
| 9 | Has the appointed Fauna Spotter identified any | | | | |