

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

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Date: 4 May 2018



environmental management



Significant Biodiversity Assessment Report

Implementation Guidelines 14 & 17 Response

Mountain Ridge Road, South Maclean

Mountain Ridge Pty Ltd

15 March 2018

7344



Document Control

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Reports and/or Plans by Others

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



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Acronyms

ASRIS	Australian Soil Resource Information System
BA	<i>Biosecurity Act 2014 (Qld)</i>
DAF	Department of Agriculture, Fisheries and Forestry (Qld)
DILGP	Department of Infrastructure, Local Government and Planning (Qld)
DSITA	Department of Science, Information Technology, Innovation and the Arts (Qld) (former)
DEE	Department of the Environment and Energy (Cth)
EDQ	Economic Development Queensland (formerly ULDA)
EHP	Department of Environment and Heritage Protection (Qld)
EOA	<i>Environmental Offsets Act 2014 (Qld)</i>
EOP	<i>Environmental Offset Policy 2014 (Qld)</i>
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
EVNT	Presumed extinct, endangered, vulnerable and near threatened species protected under NCWR
ICC	Ipswich City Council
IMP	Infrastructure Master Plan
Koala SPRP	<i>South East Queensland Koala Conservation State Planning Regulatory Provisions</i>
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
NCA	<i>Nature Conservation Act 1999 (Qld)</i>
NCWR	<i>Nature Conservation (Wildlife) Regulation 2006</i>
NRM	Department of Natural Resources and Mines (Qld)
PA	<i>Planning Act 2017</i>
PDA	Priority Development Area (formerly UDA)
PMAV	Property Map of Assessable Vegetation
RE	Regional Ecosystem
SARA	State Assessment Referral Agency
SAT	Spot Assessment Technique Survey
SBV	Significant Biodiversity Value
SEQRP	South East Queensland Regional Plan 2009-2031
SPP	State Planning Policy
SS	Site Strategies
TEC	Threatened Ecological Community
ULDA	Urban Land Development Authority (now known as EDQ)
UDA	Urban Development Area (now known as PDA)
VMA	<i>Vegetation Management Act 1999</i>
WWBW	Waterway Barrier Works



I. Introduction

The *Environmental Management Division* of **Saunders Havill Group** (SHG) was engaged **Mountain Ridge Pty Ltd** to prepare a Significant Biodiversity Assessment Report (SBAR) in response to **Economic Development Queensland's** (EDQ) *PDA Implementation Guideline No. 14 (Environmental values and sustainable resources - IG14)* and *PDA Implementation Guideline No.17 (Remnant Vegetation and Koala Habitat Obligations in Greater Flagstone and Yarrabilba PDAs – IG17)* for a proposed master planned community located at Mountain Ridge Road, South Maclean.

The site is located within the *Greater Flagstone Priority Development Area* (GFPDA) and as such is administered by **EDQ**. Although being entirely included within the **Logan City Council** (LCC) local government area, **EDQ** have jurisdiction for the implementation and enforcement of development applications in relation to the project as a key regulator of development within *Priority Development Areas* (PDA) for the **Department of Infrastructure, Local Government and Planning** (DILGP). Despite this legislative position on assessment, the majority of infrastructure assets, inclusive of open space and proposed conservation areas, will ultimately transition to the ownership of **LCC**.

This SBAR provides a review of the site's ecological values in accordance with Commonwealth and State Government legislation and is intended to support the submission of a Development Approval for this project to **LCC** as delegates for **EDQ**.

I.I. Key Site Details

Address	Mountain Ridge Road, South Maclean
RPD	Lot 6 on RP193185 and Lot 9 on SP203507
Local Government Area	Logan City Council
Area	53.91 hectares
Planning Scheme/Local Plan	Logan Planning Scheme 2015
Zoning	Priority Development Area
Environmental Overlays	Biodiversity Areas (Vegetation Management Areas (Primary and Secondary Vegetation Management Areas), Biodiversity Corridor, Locally Significant Vegetation Type (Locally Significant Remnant Vegetation), Matters of State and Local Significance (Matters of State and Local Significance and MLES)
VMA	Category B – Endangered, Of Concern and Least Concern Regional Ecosystems Category X – Non-Remnant Essential Habitat – Wallum Froglet Watercourse
NCA	High Risk Area
Priority Development Area	Flagstone
Koala SPRP	Outside Koala SPRP
Koala SPP	Medium Value Bushland Habitat, Low Value Bushland Habitat & Low Value Rehabilitation



State Planning Provisions	Biodiversity – MSES – Regulated Vegetation, MSES – Regulated Vegetation Intersecting a Watercourse, MSES - Wildlife Habitat
Fisheries Act	High Value Waterway for Water Barrier Works
Proposed Land Use	Residential
Existing Land Use	Rural

I.2. Report Structure

This SBAR adopts the following structure:



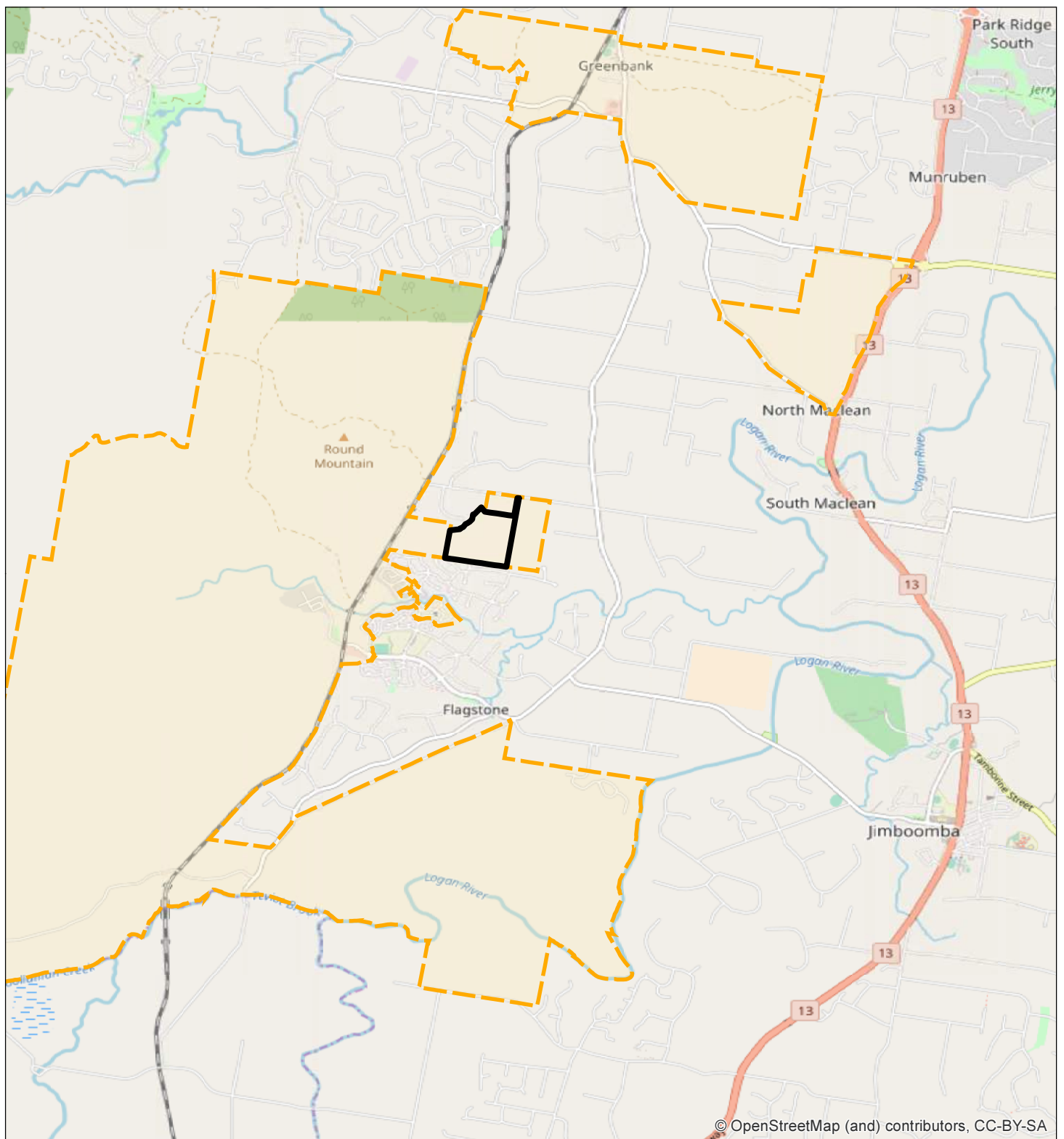


I.3. Context and Background

The proposed residential development area covers approximately 54 hectares, is located approximately 12.5 kilometres south of Springfield Lakes town centre and has been subject to excessive historical disturbance (refer **Plan 1** Historical Aerial Imagery). The surrounding landscape contains a mixture of cleared agricultural land and vacant bushland, however, adjoining allotments are within the PDA and earmarked for development refer **Plan 2** for Fragmentation Analysis). The northern boundary adjoins Mountain Ridge Road and current vegetated rural properties, the western and eastern boundaries are met with bushland and agricultural lands, whilst the southern boundary backs onto residential development. Refer to **Figure 1** for site context and **Figure 2** for site aerial.

The existing land use is rural with the majority of the site being fully cleared (former turf) farm. Existing urban housing occurs along the entire southern boundary. The fifty-four (54) hectare site contains large areas of cleared land with Flagstone Creek (the waterway) running west to east transecting the site's access from Mountain Ridge Road to the development area. The site is mainly clear of vegetation, except for a portion of the site that runs along the waterway. The waterway supports the highest connectivity value on the site and the banks are mapped as containing Remnant Vegetation. The waterway and banks are to be retained under future applications as per the PDA Development Scheme. The site has been subject to rigorous onsite assessment to address various approval requirements including targeted surveys carried out specifically for assessment against Guideline 14 and 17. The results of these assessments are summarised and presented in this report.

The property has been identified for future development and is located within the Greater Flagstone PDA. The Mountain Ridge Road PDA project site will be developed in accordance with the proposed Development Plan (refer **Appendix A**).



Legend

-  Project Site DCDB
-  Greater Flagstone PDA

Figure 1
Site Context

File ref. 7344 E Figure 1 Site Context A
Date 12/10/2017
Project Mountain Ridge Road, South Maclean

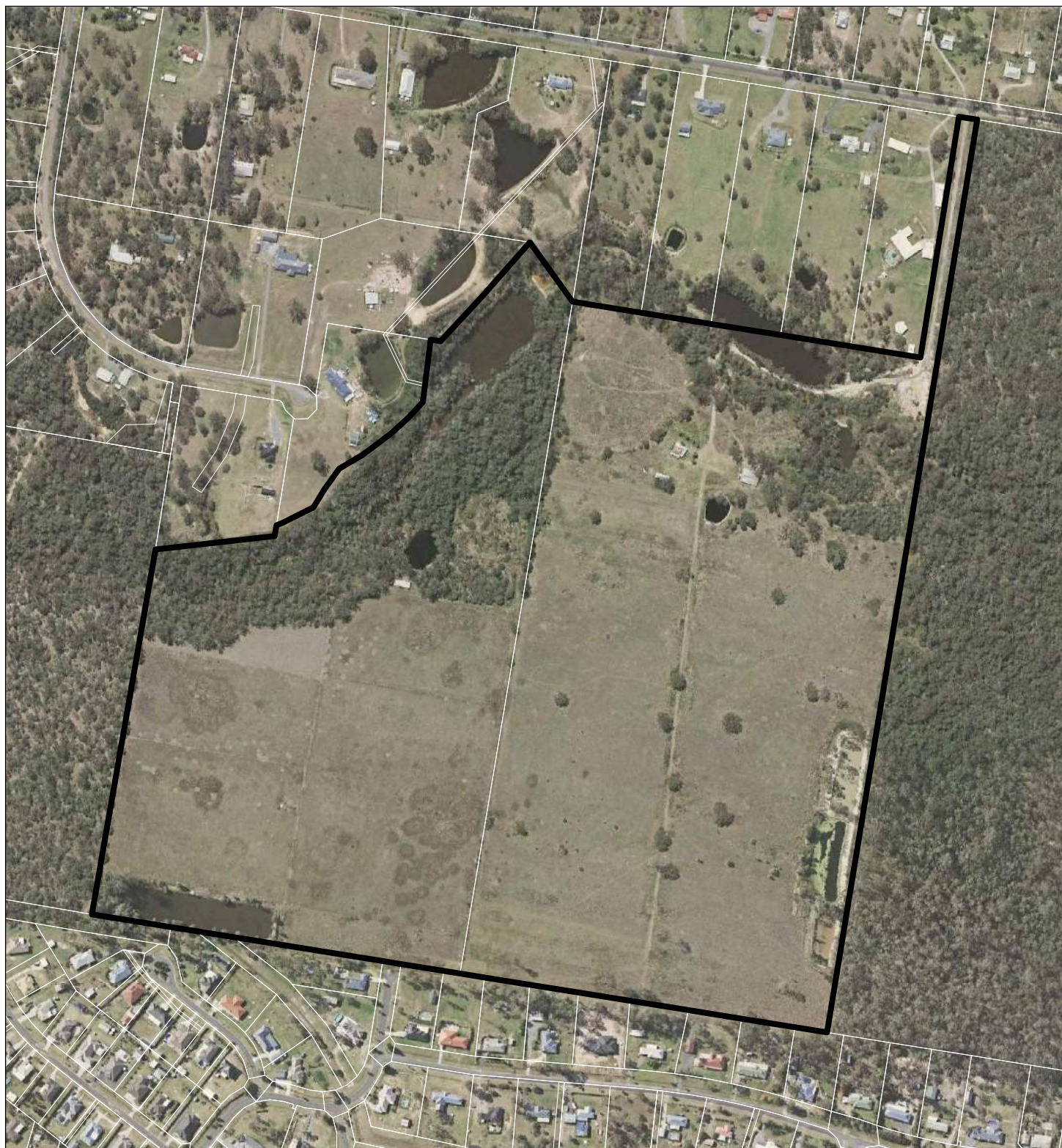
0 500 1,000 2,000 3,000 m
Scale (A4): 1:80,000 [GDA 1994 MGA Z56]



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Legend

-  Site DCDB
-  Qld DCDB

Figure 2

Site Aerial

File ref. 7344 E Figure 2 Site Aerial A
Date 12/10/2017
Project Mountain Ridge Road, South Maclean

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Scale (A4): 1:6,000 [GDA 1994 MGA Z56]

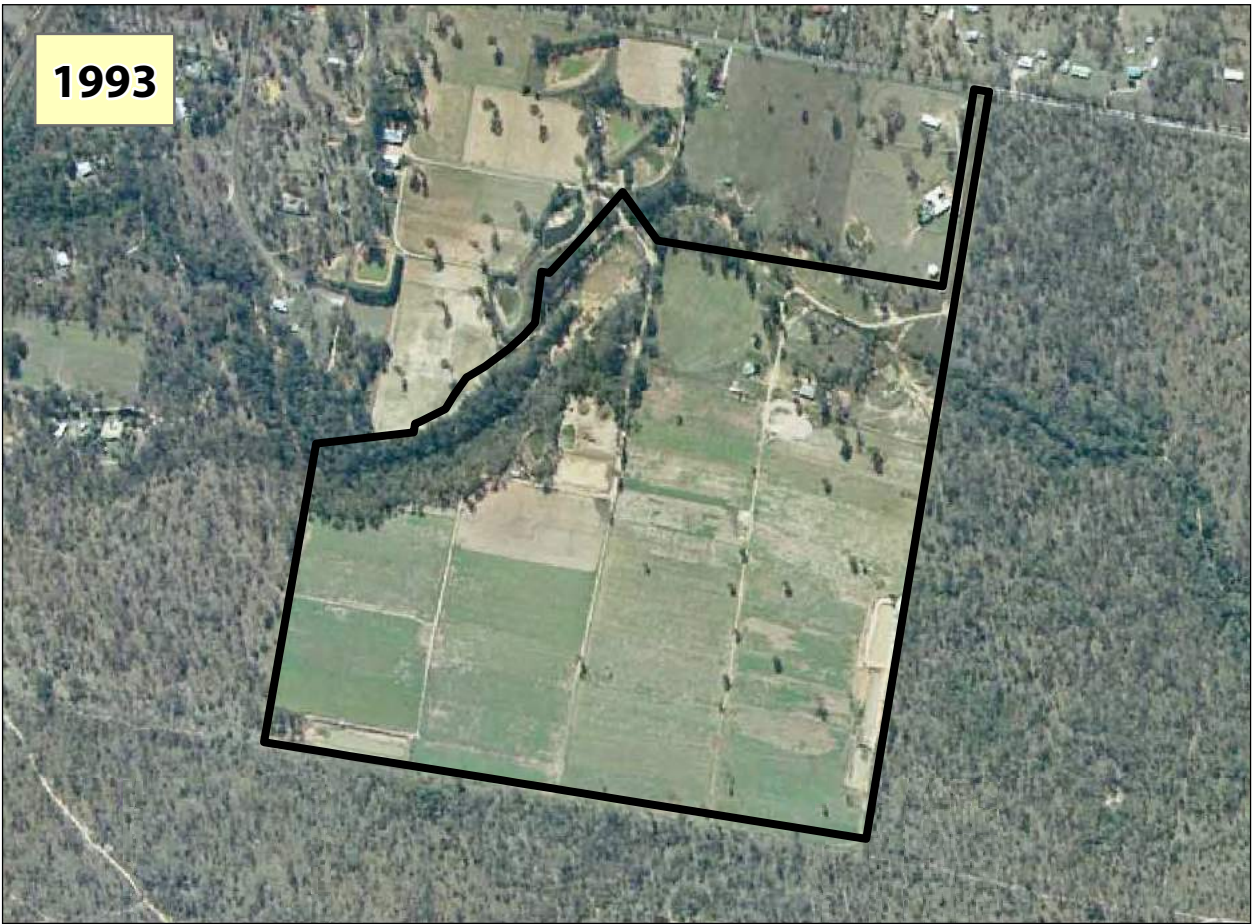
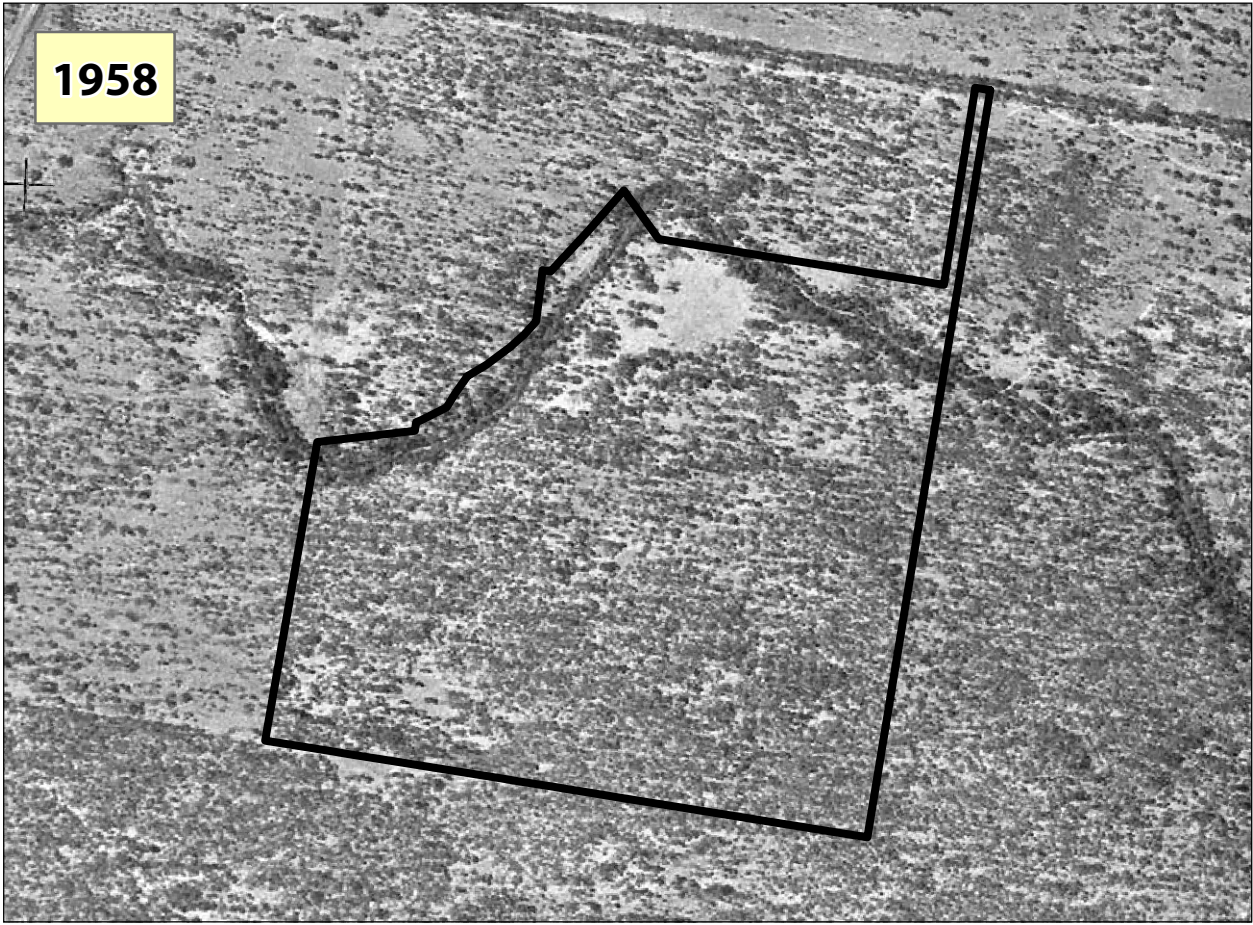


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I. Historical Aerial Photography



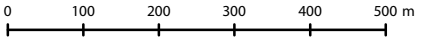
NOTES
This plan was prepared as a desktop assessment tool.
The information on this plan is not suitable for any other purpose.
Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.

<ITA>Layer Sources: QLD GIS Layers (QLD Gov. Information Service 2017),

* This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

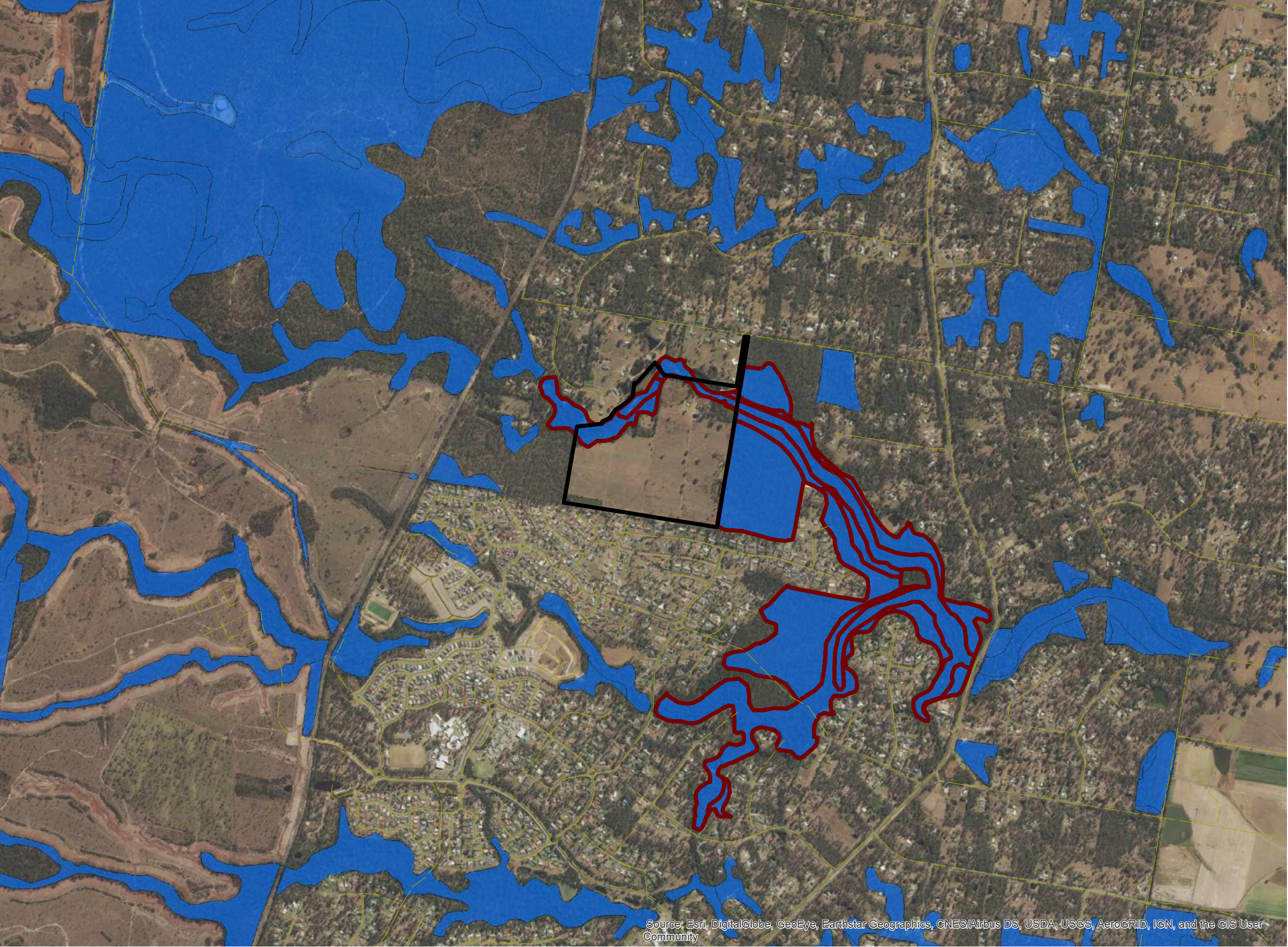
LEGEND
 Project site boundary

PLAN ISSUE:				
Issue	Date	Description	Drawn	Checked
A	13/10/2017	Prelim Draft	MC	AH



Universal Transverse Mercator GDA 1994 MGA Zone 56 1:10,000 @ A3

2. FRAGMENTATION ANALYSIS




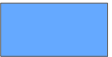



NOTES
This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.

Layer Sources: QLD GIS Layers (QLD Gov. Information Service 2016), Aerial (Nearmap 2016)

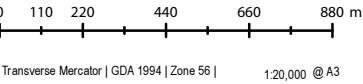
* This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

LEGEND

-  Project site DCDB
-  Qld DCDB
-  Remnant vegetation connectivity (91.68 ha)
-  Mapped remnant vegetation
-  Roads and tracks

PLAN ISSUE:

Issue	Date	Description	Drawn	Checked
A	13/10/2017	Prelim Draft	MC	AH





Plan 1



2. Ecological Assessment Methodology and Process

The following steps were undertaken in the preparation of this assessment:

1. Desktop Analysis
2. Legislation and Policy Review
3. Field Survey
4. Analysis and Recommendation

2.1. Desktop Analysis

Prior to the commencement of field surveys, a desktop analysis was conducted to identify relevant information for the site. The following information was reviewed:

- Commonwealth's EPBC Protected Matters Search Tool
- Australian Soils Resource Information System Mapping
- Atlas of Living Australia Searches
- Australian Koala Foundation Koala Map
- Koala Tracker Mapping
- Queensland Government Wildlife Online Database for the study area and surrounds
- Queensland Government Regulated Vegetation Management Mapping and Pre-Clear Mapping
- Queensland Government Koala Habitat Values Mapping
- Queensland Government Protected Plants Survey Mapping
- Queensland Government Wetland Protection Areas Mapping
- Queensland Government Environmental Overlay Mapping i.e. SARA, SPP
- Development Scheme Documents and Maps

A review of aerial photography history was undertaken to assist with the broad delineation of vegetation communities and determine historical disturbance patterns to local vegetation communities.

2.2. Field Survey

The proposed residential development area was subject to rigorous field assessments by **SHG** to identify existing ecological values at the site. Site Assessment methods were as follows:

- General Searches & Species Identification – The site was walked to ensure all vegetation communities and species were recorded and identified. Particular attention was paid to any threatened species or communities that were listed as possibly occurring on or within the vicinity of the application site and specific micro assemblages which may support these matters.
- Quadrant and Sampling Units – Data collection sheets recording details of canopy, shrub and ground layer vegetation, structure, composition and weeds were completed at designated intervals and changes in vegetation communities.



- Waterway Assessment – a basic waterway assessment to identify riparian vegetation and aquatic values was undertaken for mapped waterways.
- Remnant Vegetation Assessment – Each Regional Ecosystem community has been accurately surveyed, including producing detailed floristic lists, and checks for any threatened species, or habitat that may support these species.
- Observational Survey – A detailed observational survey of the vertebrate fauna present on or that may utilise the study area, including faunal lists and significance status of species under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) that includes the Japan – Australia Migratory Bird Agreement and the Bonn Convention; and Queensland's *Nature Conservation Act 1992* (NCA).
- Opportunistic Searches – Searches for fauna species throughout all habitat types, including detailed searches along the waterway areas. This included checking in and under hollow logs, leaf litter and general searches targeting Koala (*Phascolarctos cinereus*)
- Bird Surveys – Diurnal and crepuscular systematic surveys for bird activity. Surveys were conducted over a number of days. Specific survey sites considered habitat species composition and were monitored for a minimum of half an hour.
- Specific surveys for Grey-headed Flying-fox (*Pteropus poliocephalus*) –resource habitat and opportunistic surveys for this species were conducted as per relevant guidelines.
- Identification – Identification of habitat values within the area relevant to terrestrial vertebrate fauna, including hollow-bearing trees, nest sites, rocky outcrops, watercourses, leaf litter, denning or roosting structures and ecological corridors; and
- Description – A description of the major fauna habitats present

The study area has undergone a comprehensive assessment of the terrestrial vertebrate fauna and faunal values of the subject land for inclusion within this Significant Biodiversity Assessment Report.



3. Legislation, Policy and Planning Instruments

3.1. Environment Protection and Biodiversity Conservation Act 1999

The Australian Government's key piece of environmental legislation is the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The EPBC Act aims to protect and manage matters of environmental significance which include nationally and internationally important flora, fauna, ecological communities and heritage places.

A Protected Matters Search for the allotments was undertaken through the *Environment Protection and Biodiversity Conservation Act* Online Protected Matters Search Tool. The search provides a list of wetlands of international significance, threatened ecological communities and threatened species which have the potential to be temporarily or permanently located within the general vicinity of the development site. **Table 1** lists a summary of the search results within a 5 km radius of the site. The complete results of this search are included in **Appendix B**.

Table 1: EPBC Act 1999 Protected Matters Search Results

Listed Threatened Ecological Communities		
Name		Status
Lowland Rainforest of Subtropical Australia		Critically Endangered
Swamp Tea-tree (<i>Melaleuca irbyana</i>) Forest of South-east Queensland		Critically Endangered
White Box-Yellow Box-Blakely's red Gum Grassy Woodland and Derived Native Grassland		Critically Endangered
Listed Threatened Species		
Scientific Name	Common Name	Status
Birds		
<i>Anthochaera phrygia</i>	Regent Honeyeater	Critically Endangered
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Endangered
<i>Calidris ferruginea</i>	Curlew Sandpiper	Critically Endangered
<i>Dasyornis brachypterus</i>	Eastern Bristlebird	Endangered
<i>Erythroriorchis radiatus</i>	Red Goshawk	Vulnerable
<i>Geophaps scripta scripta</i>	Squatter Pigeon (southern)	Vulnerable
<i>Grantiella picta</i>	Painted Honeyeater	Vulnerable
<i>Lathamus discolor</i>	Swift Parrot	Critically Endangered
<i>Numenius madagascariensis</i>	Eastern Curlew	Critically Endangered



Scientific Name	Common Name	Status
<i>Poephila cincta cincta</i>	Southern Black-throated Finch	Endangered
<i>Rostratula australis</i>	Australian Painted Snipe	Endangered
<i>Turnix melanogaster</i>	Black-breasted Button-quail	Vulnerable
Fish		
<i>Maccullochella mariensis</i>	Mary River Cod	Endangered
Insects		
<i>Argynnis hyperbius inconstans</i>	Australian Fritillary	Critically Endangered
Mammals		
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat, Large Pied Bat	Vulnerable
<i>Dasyurus maculatus maculatus</i> (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population)	Endangered
<i>Petauroides volans</i>	Greater Glider	Vulnerable
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	Vulnerable
<i>Phascolarctos cinereus</i> (combined populations of Qld, NSW and the ACT)	Koala (combined populations of QLD, NSW and the ACT)	Vulnerable
<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo	Vulnerable
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable
Other		
<i>Cycas ophiolitica</i>	-	Endangered
Plants		
<i>Bosistoa transversa</i>	Three-leaved Bosistoa	Vulnerable
<i>Dichanthium setosum</i>	Bluegrass	Vulnerable
<i>Macadamia integrifolia</i>	Macadamia Nut	Vulnerable
<i>Macadamia tetraphylla</i>	Rough-shelled Bush Nut	Vulnerable
<i>Notelaea ipsviciensis</i>	Cooneana Olive	Critically Endangered
<i>Notelaea lloydii</i>	Lloyd's Olive	Vulnerable
<i>Phaius australis</i>	Lesser Swamp-orchid	Endangered
<i>Samadera bidwillii</i>	Quassia	Vulnerable
<i>Thesium australe</i>	Austral Toadflax, Toadflax	Vulnerable



Scientific Name	Common Name	Status
Reptiles		
<i>Delma torquata</i>	Collared Delma	Vulnerable
<i>Furina dunmalli</i>	Dunmall's Snake	Vulnerable
<i>Saiphos reticulatus</i>	Three-toed Snake-tooth Skink	Vulnerable
Migratory & Marine		
Scientific Name	Common Name	Status
<i>Actitis hypoleucos</i>	Common Sandpiper	Migratory Wetlands Species Listed Marine Species
<i>Anseranas semipalmata</i>	Magpie Goose	Listed Marine Species
<i>Apus pacificus</i>	Fork-tailed swift	Migratory Marine Bird Listed Marine Species
<i>Ardea alba</i>	Great Egret, White Egret	Listed Marine Species
<i>Ardea ibis</i>	Cattle Egret	Listed Marine Species
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Migratory Wetlands Species Listed Marine Species
<i>Calidris ferruginea</i>	Curlew Sandpiper	Migratory Wetlands Species Listed Marine Species
<i>Calidris melanotos</i>	Pectoral Sandpiper	Migratory Wetlands Species Listed Marine Species
<i>Cuculus optatus</i>	Oriental Cuckoo, Horsfield's Cuckoo	Migratory Terrestrial Species
<i>Cuculatus saturatus</i>	Oriental Cuckoo, Himalayan Cuckoo	Listed Marine Species
<i>Gallinago hardwickii</i>	Latham's Snipe, Japanese Snipe	Migratory Wetlands Species Listed Marine Species
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Listed Marine Species
<i>Hirundapus caudacutus</i>	White throated needletail	Migratory Terrestrial Species Listed Marine Species
<i>Lathamus discolor</i>	Swift Parrot	Listed Marine Species
<i>Merops ornatus</i>	Rainbow Bee-eater	Listed Marine Species
<i>Monarcha melanopsis</i>	Black faced monarch	Migratory Terrestrial Species Listed Marine Species
<i>Monarcha trivirgatus</i>	Spectacled monarch	Migratory Terrestrial Species Listed Marine Species
<i>Montacilla flava</i>	Yellow Wagtail	Migratory Terrestrial Species Listed Marine Species



Scientific Name	Common Name	Status
<i>Myiagra cyanoleuca</i>	Satin flycatcher	Migratory Terrestrial Species Listed Marine Species
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	Migratory Wetlands Species Listed Marine Species
<i>Pandion haliaetus</i>	Osprey	Migratory Wetlands Species Listed Marine Species
<i>Rhipidura rufifrons</i>	Rufous fantail	Migratory Terrestrial Species Listed Marine Species
<i>Rostratula benghalensis (sensu lato)</i>	Painted Snipe	Listed Marine Species
<i>Tringa nebularia</i>	Common Greenshank, Greenshank	Migratory Wetlands Species Listed Marine Species

3.2. Nature Conservation Act 1992

The *Nature Conservation Act 1992* classifies and protects significant areas (Protected Areas) and protects threatened plant and animal species. The *Nature Conservation (Wildlife) Regulation 2006* (NCWR) lists plant and animal species presumed extinct, endangered, vulnerable, near threatened, least concern, international or prohibited. The schedules of this regulation were considered in this report using a Wildlife Online Database Search with a 5 km radius from the site. Species listed under the NCWR with the potential to occur around the subject site are shown in **Table 2**. Refer to **Appendix C** for full search results.

Table 2: NCA Wildlife Online Search Results

Scientific Name	Common Name	Status
Mammals		
<i>Phascolarctos cinereus (southeast Queensland bioregion)</i>	Koala (southeast Queensland bioregion)	Vulnerable
<i>Petauroides volans volans</i>	Southern Greater Glider	Vulnerable
Birds		
<i>Calyptorhynchus lathami lathami</i>	Glossy Black-Cockatoo (eastern)	Vulnerable
Plants		
<i>Melaleuca irbyana</i>	-	Endangered

3.3. Protected Plants

Amendments to the protected plants regulatory framework under the NCA commenced on 31 March 2014, establishing new approval triggers and processes for clearing protected plants. A protected plant is defined as all presumed extinct, endangered, vulnerable and near threatened (EVNT) plant species listed by name in Schedules 1-5 of the NCWR and least concern wildlife, not listed by name but identified as a plant indigenous to Australia listed in Schedule 6.



Under the amended NCA, a protected plant that is in the wild must not be 'taken' (i.e. cleared) unless taking is under:

- A conservation plan applicable to the plant;
- A licence, permit or other authority under a regulation; or
- An exemption under a regulation.

A search of the Flora Survey Trigger Map shows the site is located within a High Risk Area for protected plants (**Figure 3**).

3.4. Vegetation Management Act 1999

The *Vegetation Management Act 1999* (VMA) is the key mechanism by which the Queensland Government protects the state's environmental resources pertaining to vegetation. Under the VMA, a series of maps delineate vegetation features across the landscape which are each assigned a conservation value directly related to the remaining extent of these features in the landscape. The VMA also protects 'essential habitat' vegetation where listed threatened species have been known to occur.

Regulated Vegetation Management Mapping shows vegetation categories used to determine clearing requirements. While areas shown on the map as Category X are not regulated under the VMA, those shown as Category A, B, C or R are subject to clearing requirements. The latter vegetation categories can only be cleared in accordance with an exemption, a self-assessable vegetation clearing code, an area management plan or a development approval. A supporting map defining Regional Ecosystems, wetlands, watercourses and essential habitat, is provided with the Regulated Vegetation Management Map.

A property search of the Regulated Vegetation Management Map identifies that the site contains Category X non-regulated vegetation and Category B Regulated Vegetation, which is protected under the VMA (**Figure 4**). The Vegetation Management Support Map in **Figure 5** indicates that the site is mapped with the following Regional Ecosystems:

- RE 12.3.3 (Endangered)
- RE 12.3.11/12.3.6 (Of Concern)
- RE 12.9-10.2 (Least Concern)
- RE 12.3.7 (Least Concern)

Table 3: Regional Ecosystem descriptions applicable to this mapping:

Regional Ecosystem	Status	Description
RE 12.3.3	Endangered	<i>Eucalyptus tereticornis</i> woodland. <i>Eucalyptus crebra</i> and <i>E. moluccana</i> are sometimes present and may be relatively abundant in places, especially on edges of plains and higher level alluvium. Other species that may be present as scattered individuals or clumps include <i>Angophora subvelutina</i> or <i>A. floribunda</i> , <i>Corymbia clarksoniana</i> , <i>C. intermedia</i> , <i>C. tessellaris</i> , <i>Lophostemon suaveolens</i> and <i>E. melanophloia</i> . Occurs on Quaternary alluvial plains, terraces and fans where rainfall is usually less than 1000mm/y. (BVG1M: 16c)



Regional Ecosystem	Status	Description
RE 12.3.11	Of Concern	<i>Eucalyptus tereticornis</i> +/- <i>E. siderophloia</i> and <i>Corymbia intermedia</i> open forest to woodland. <i>Corymbia tessellaris</i> , <i>Lophostemon suaveolens</i> and <i>Melaleuca quinquenervia</i> frequently occur and often form a low tree layer. Other species present in scattered patches or low densities include <i>Angophora leiocarpa</i> , <i>E. exserta</i> , <i>E. grandis</i> , <i>C. trachyphloia</i> , <i>C. citriodora</i> subsp. <i>variegata</i> , <i>E. latisinensis</i> , <i>E. tindaliae</i> , <i>E. racemosa</i> and <i>Melaleuca sieberi</i> . <i>E. seeana</i> may be present south of Landsborough and <i>Livistona decora</i> may occur in scattered patches or low densities in the Glenbar SF and Wongi SF areas. Occurs on Quaternary alluvial plains and drainage lines along coastal lowlands. Rainfall usually exceeds 1000mm/y. (BVG1M: 16c)
RE 12.3.6	Least Concern	<i>Melaleuca quinquenervia</i> +/- <i>Eucalyptus tereticornis</i> , <i>Lophostemon suaveolens</i> , <i>Corymbia intermedia</i> open forest to woodland with a grassy ground layer dominated by species such as <i>Imperata cylindrica</i> . <i>Eucalyptus tereticornis</i> may be present as an emergent layer. <i>Eucalyptus seeana</i> may also occur in this regional ecosystem to the south and east of Brisbane. Occurs on Quaternary floodplains and fringing drainage lines in coastal areas. (BVG1M: 22a)
RE 12.9-10.2	Least Concern	<i>Corymbia citriodora</i> subsp. <i>variegata</i> open forest or woodland usually with <i>Eucalyptus crebra</i> . Other species such as <i>Eucalyptus tereticornis</i> and <i>Corymbia intermedia</i> may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of <i>Lophostemon confertus</i> (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments. (BVG1M: 10b).
RE 12.3.7	Least Concern	Narrow fringing woodland of <i>Eucalyptus tereticornis</i> , <i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i> +/- <i>Melaleuca viminalis</i> . Other species associated with this RE include <i>Melaleuca bracteata</i> , <i>M. trichostachya</i> , <i>M. linariifolia</i> . North of Brisbane <i>Waterhousea floribunda</i> commonly occurs and may at times dominate this RE. <i>Melaleuca fluviatilis</i> occurs in this RE in the north of the bioregion. <i>Lomandra hystrix</i> often present in stream beds. Occurs on fringing levees and banks of rivers and drainage lines of alluvial plains throughout the region. (BVG1M: 16a)



3.5. Koala Habitat

With the introduction of the *Planning Act 2017*, former *State Regulatory Planning Provisions* (SRPPs), including the *South East Queensland Koala Conservation State Planning Regulatory Provisions*, have been removed and incorporated into the *Planning Regulation 2017* (Regulation). The legislation continues to target the Koala Coast and Pine Rivers areas, and areas outside the urban footprint where Koalas are known to be at risk, by regulating the clearing of mapped Koala habitat and stipulating how it must be cleared (e.g. staging, presence of a Koala spotter) for a material change of use, operational work or reconfiguring a lot to create one or more additional lots. Schedule 10 Part 10 Division 1 of the Regulation outlines what is and is not prohibited development in a Koala habitat area. Schedule 11 of the Regulation sets the benchmarks for assessment in Koala Assessable Development Areas.

The **Department of Local Government Infrastructure and Planning** (DILGP)'s *State Assessment Referral Agency* (SARA) *Development Assessment Mapping System* (DAMS) identifies the site is located outside the Koala Assessable Development Area (KADA) and Priority Koala Assessable Development Area (PKADA, refer **Figure 6**).

As the site is located within the Flagstone Priority Development Area, development is not subject to the *Planning Act 2017*. Further, the site is not located within a Koala Assessable Development Area. It is noted that the Koala Habitat Values Map under the *State Planning Policy* identifies the site as containing mostly Low Value Rehabilitation, with areas of Low Value Bushland Habitat and Medium Value Bushland Habitat in remaining areas (refer **Figure 7**). Koala Habitat Value mapping links directly to IG17 obligations for the Koala.

3.6. Coastal Protection and Management Act 1995

The *Coastal Protection and Management Act 1995* (Qld) seeks to protect the coastal resources of the coastal zone. The Act establishes a framework for the protection, conservation, rehabilitation and management of the coastal zone with regard to the core objectives of the national strategy for ecologically sustainable development in the use of the Coastal Zone. The Act also ensures decisions about land use and development safeguard life and property from the threat of coastal hazards.

Coastal Development is managed to protect coastal resources through the planning and development framework established under the *Planning Act 2017* (Qld) (PA). Specifically, coastal development requiring assessment under the PA is required to respond to State Code 8: Coastal Development and Tidal Works of the State Development Assessment Provisions (SDAP) specifically in relation to:

- Tidal Works; and
- Development in a Coastal Management District.

The site is not located within a Coastal Management District (refer **Appendix D** for Environmental Searches) and does not involve tidal works. Further, these provisions of the PA do not apply within a PDA.

3.7. Wetland Protection Areas

The Queensland Government is committed to the statutory protection of wetlands in catchments adjoining the Great Barrier Reef lagoon, with a focus on actions outlined in the *Reef Water Quality Protection Plan 2013*.

The **Department of Infrastructure, Local Government and Planning** (DILGP) is an assessment manager or referral agency for a development application for material change of use, reconfiguring a lot or operational works involving high impact earthworks (as defined in the *Planning Regulation 2017*) in wetland protection areas (WPA). Under the



Planning Regulation 2017, high impact earthworks is defined as operational work that involves changing the form of land, or placing a structure on land, in a way that diverts water to or from a wetland. The SDAP [State Code 9: Great Barrier Reef Wetland Protection Areas](#) seeks to ensure that development is planned, designed, constructed and operated so as to not cause harm to the hydrology of wetlands in wetland protection areas that protect matters of national and state environmental significance.

While the property contains constructed dams and a waterway, the site is not mapped within a Wetland Protection Area (WPA) trigger area or as containing high conservation value wetlands by SARA mapping (refer **Appendix D** for Environmental Searches). Further, as the site is located within a PDA, the provisions of the PA do not directly apply.

3.8. Fisheries Act 1994 (Qld)

The *Fisheries Act 1994* deals with the use, conservation and improvement of Queensland's fisheries resources and fish habitats. The legislation deals with the impact from coastal development on marine fish habitat, including protected marine plants and declared fish habitat areas (FHA). Development proposals that modify, or have a temporary or permanent loss of fish habitat are assessed by the **Department of Agriculture and Fisheries** (DAF).

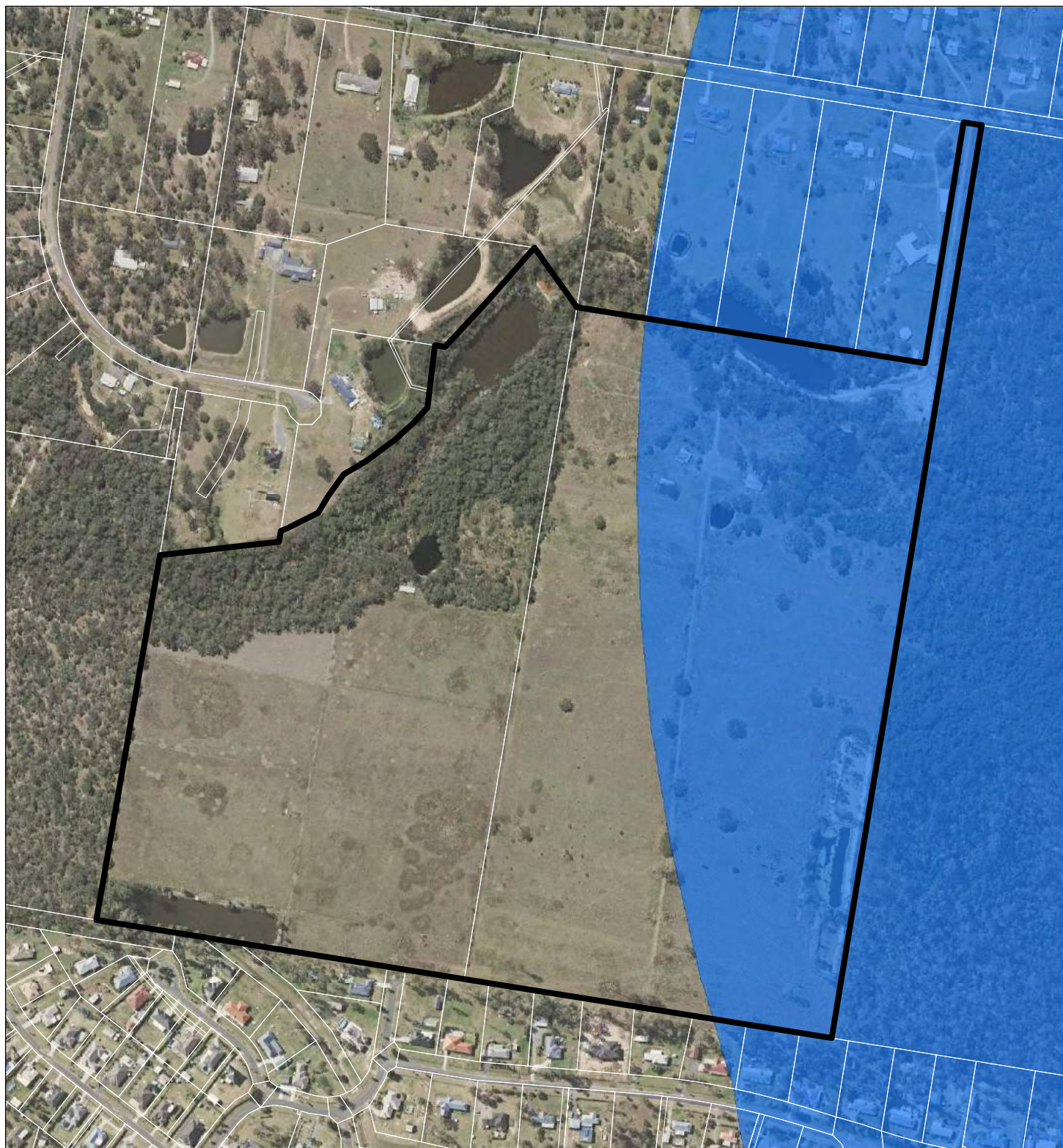
The proposed residential development does not occur within a FHA or within tidal waterways. The broader property does contain waterways for waterway barrier works mapped under the Fisheries Data Layer. A High (Red) risk waterway is mapped traversing the site from east to west through the northern portion of the property (**Figure 8**). If the proposed works impose barriers within mapped waterways assessment against [State Code 18: Waterway Barrier Works](#) of the SDAP will be required.

3.9. Australian Soil Resource Information System

The Australian Soil Resource Information System (ASRIS) collates and maintains the best available, nationally consistent soil and land resource information for Australia. It provides a scientific information infrastructure for assessing and monitoring the condition of Australia's soil and land resources and contains a set of spatial and temporal databases that maintain national soil and land information in a consistent and usable format. The ASRIS maps the site as containing Sodosols (refer **Figure 9** and Description, below).

Table 4: Chromosols

Description	Chromosols have a strong contrasting texture. They are not highly acidic or sodic. The parent material of Chromosols ranges from highly siliceous, siliceous to intermediate in composition. These soils are found only in imperfectly drained sites where rainfall is between 250mm and 900mm. These soils have moderate agricultural potential with moderate chemical fertility and water-holding capacity. They can be susceptible to soil acidification and soil structure decline.
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Legend




-  Site DCDB
-  Qld DCDB
-  High risk area - flora survey trigger

Figure 3

NCA - Protected Plants
Flora Survey Trigger

File ref. 7344 E Figure 3 NCA A
Date 12/10/2017
Project Mountain Ridge Road, South Maclean

0 50 100 200 m

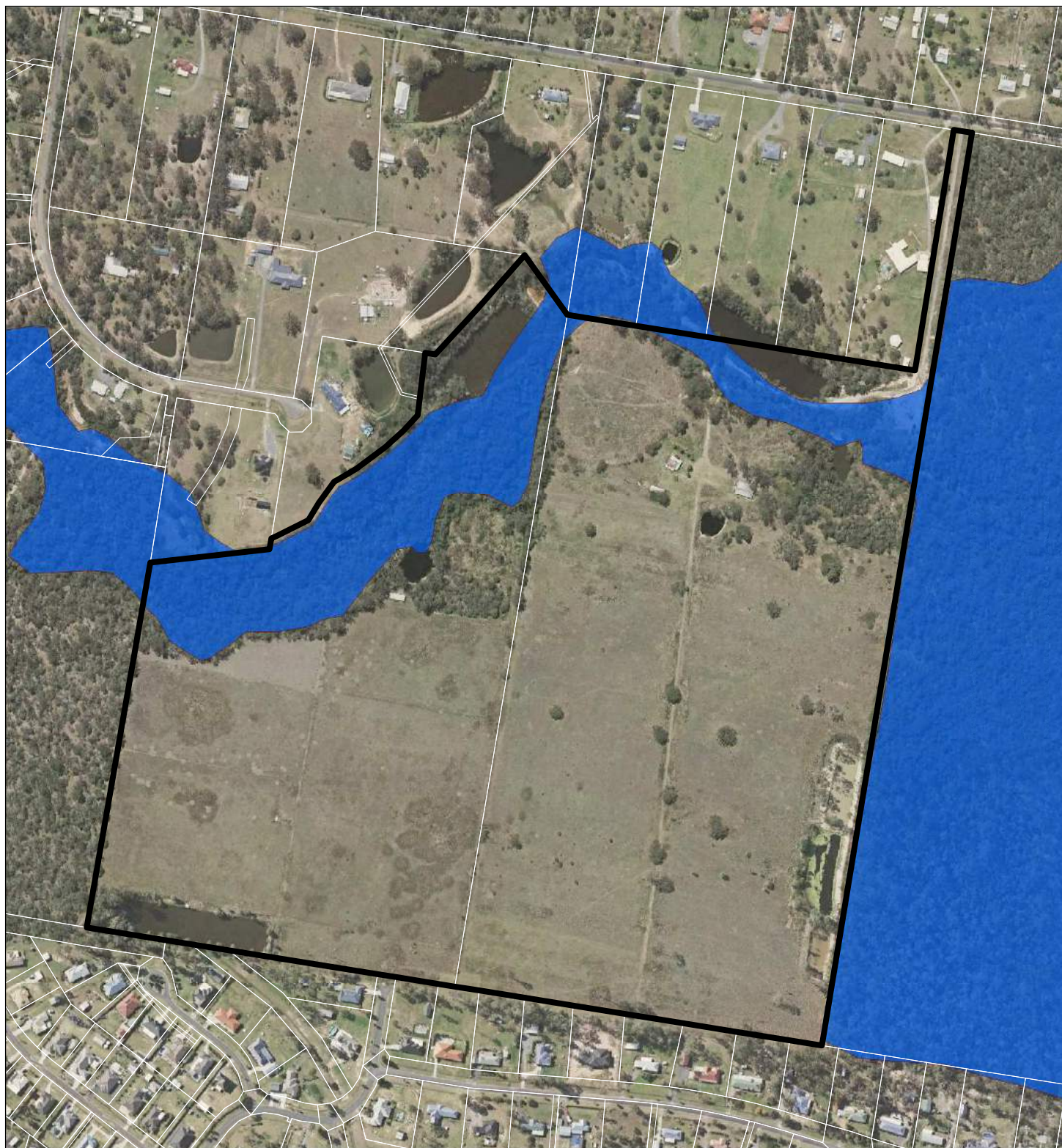
Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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Legend



Site DCDB



Qld DCDB

Regulated Vegetation



Category A area -
Vegetation Offset/Compliance
notices/VDecs



Category B area -
Remnant vegetation



Category C area -
High value regrowth
vegetation



Category R area -
Reef regrowth
watercourse vegetation



Category X area -
Vegetation not regulated
under the VMA



Water



Area not categorised

Figure 4

Regulated Vegetation Management Map

File ref. 7344 E Figure 4 RVMM A

Date 12/10/2017

Project Mountain Ridge Road, South Maclean

0 50 100 200 m

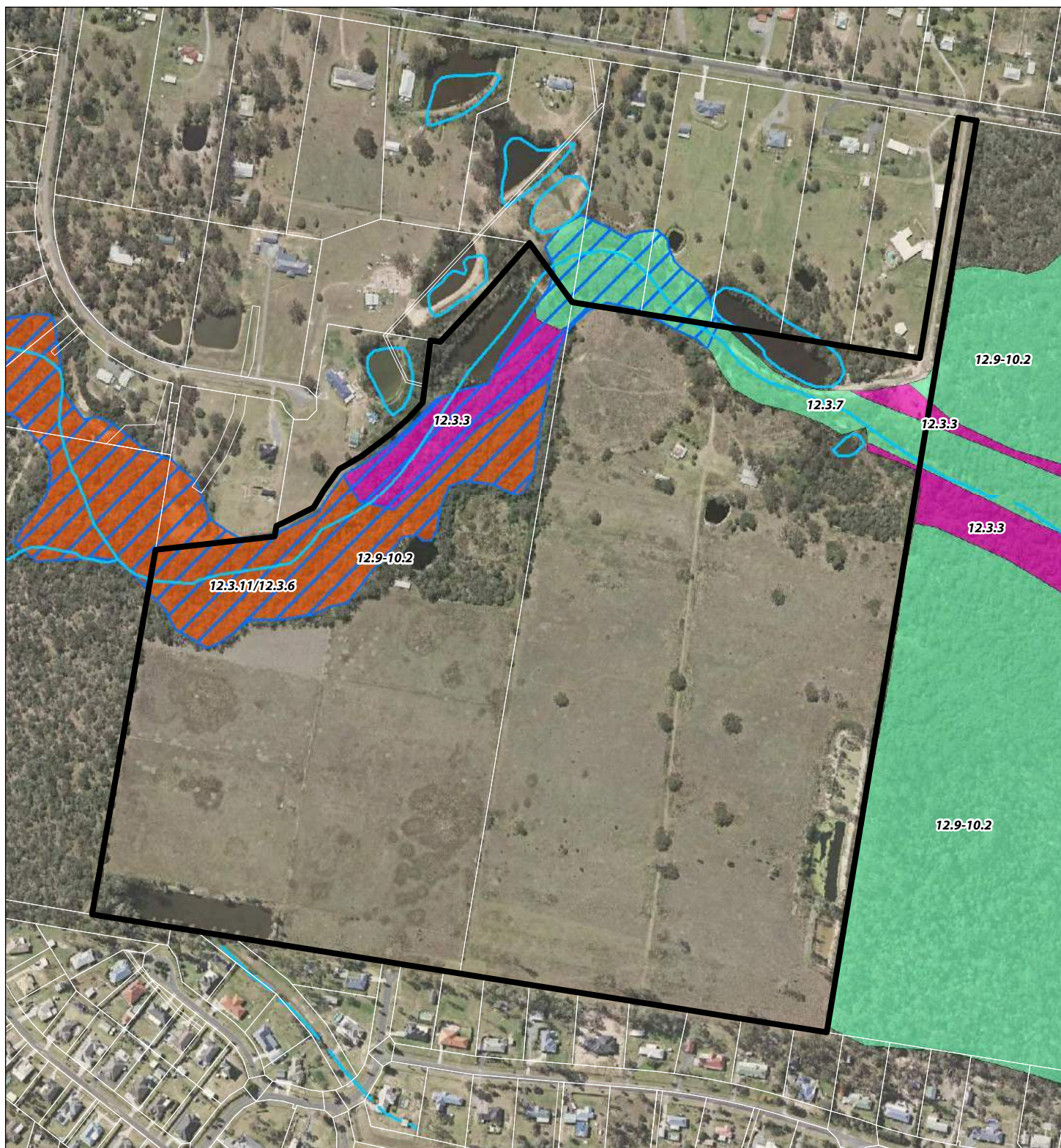
Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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Legend



Site DCDB



Qld DCDB



VM Watercourses





VM Essential Habitat



VM Wetland

Regional Ecosystems mapping

 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

Figure 5

Regulated Vegetation Supporting Map

File ref. 7344 E Figure 5 RVSM A

Date 12/10/2017

Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

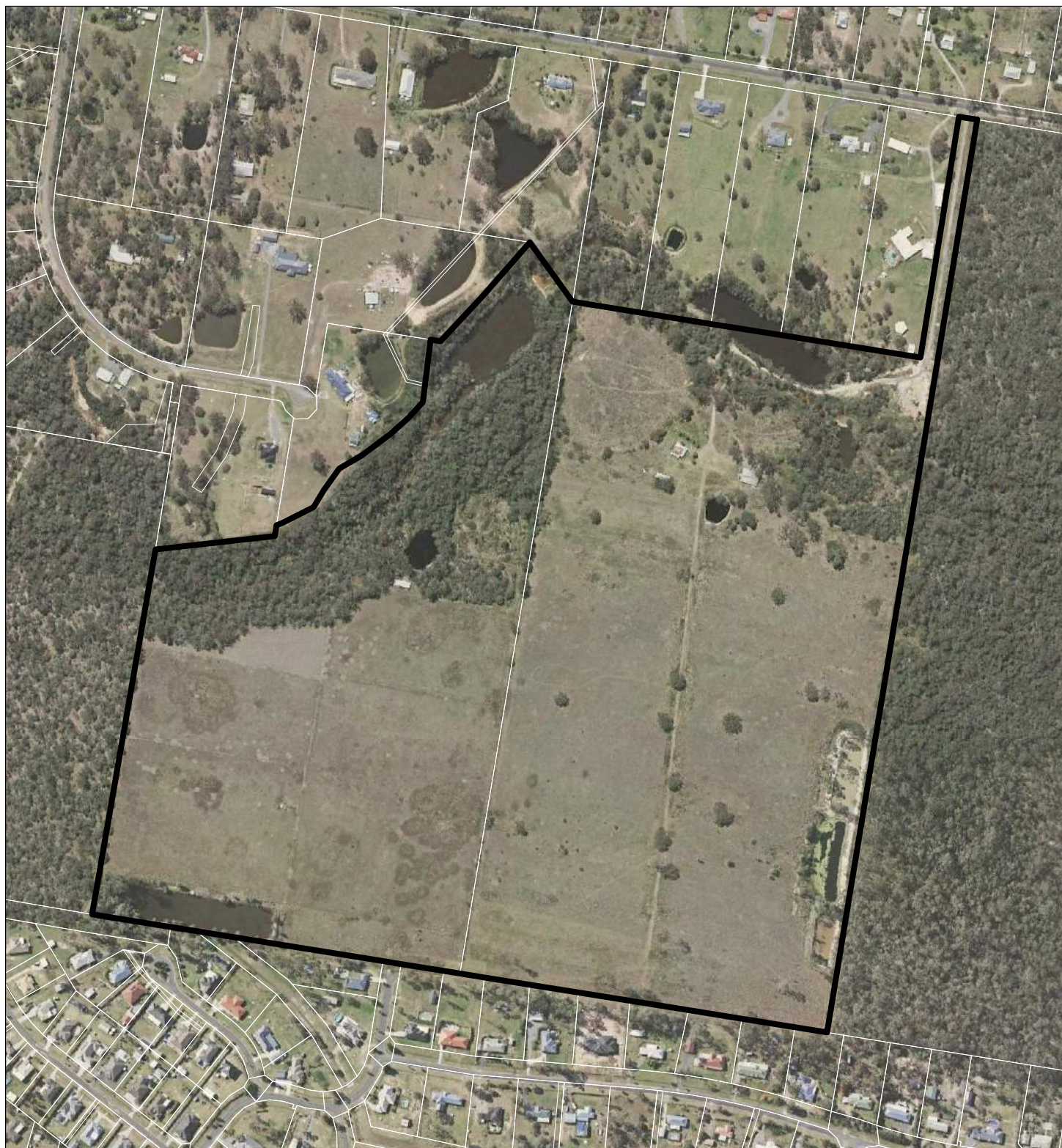
Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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Legend






-  Site DCDB
-  Qld DCDB
-  Koala assessable development area
-  Priority koala assessable development area
-  Koala broad hectare area

Figure 6

SEQ Koala SPRP

File ref. 7344 E Figure 6 SPRP Koala A
Date 12/10/2017
Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

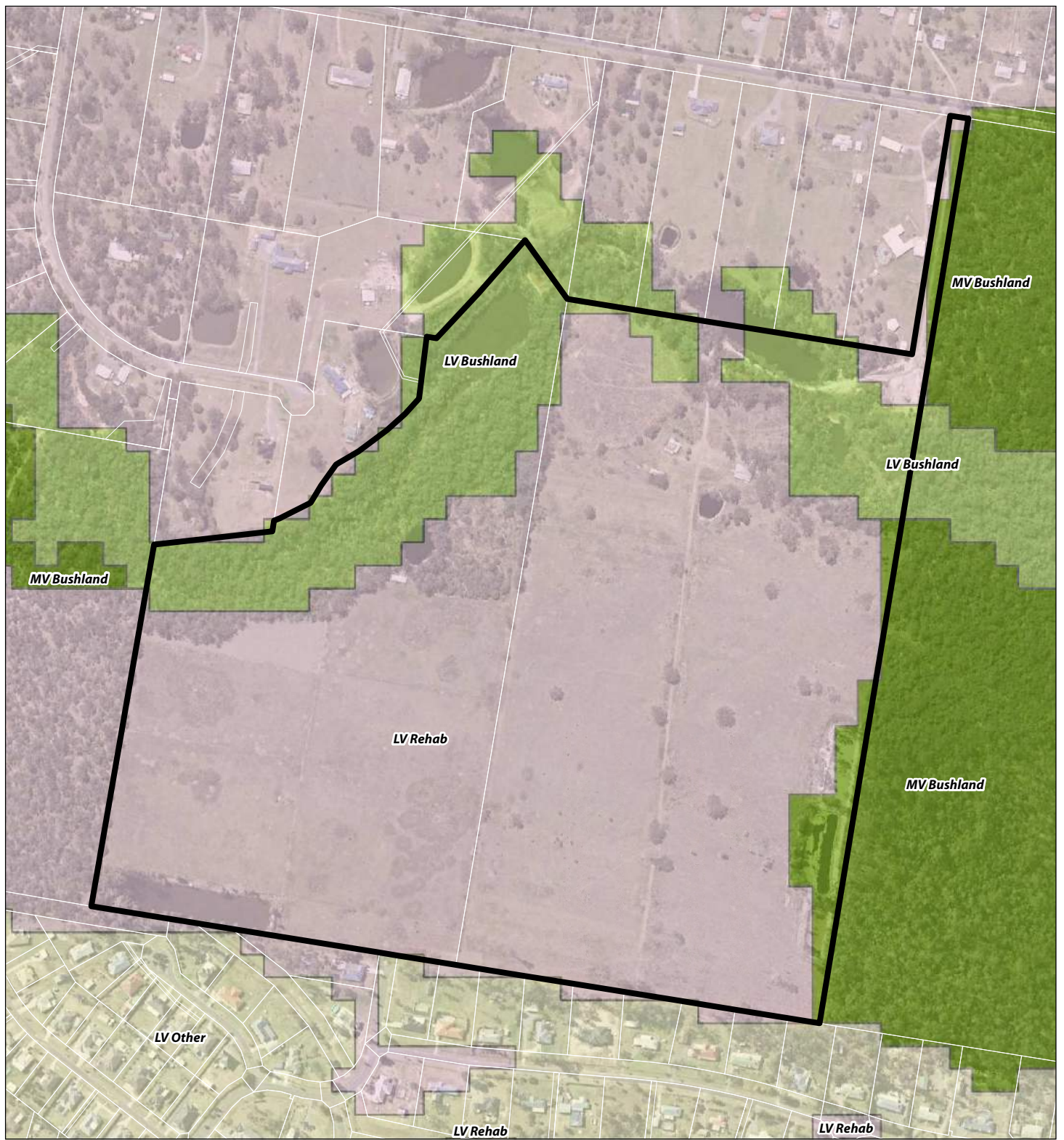
Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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Legend



Site DCDB



Qld DCDB

Koala Habitat Values

Bushland Habitat



High Value Bushland



Medium Value Bushland



Low Value Bushland

Suitable for Rehabilitation



High Value Rehabilitation



Medium Value Rehabilitation



Low Value Rehabilitation

Other Areas of Value



High Value Other



Medium Value Other



Low Value Other



Non-habitat



Water

Figure 7

Koala SPP Habitat Values

File ref. 7344 E Figure 7 SPP Koala Habitat A

Date 12/10/2017

Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

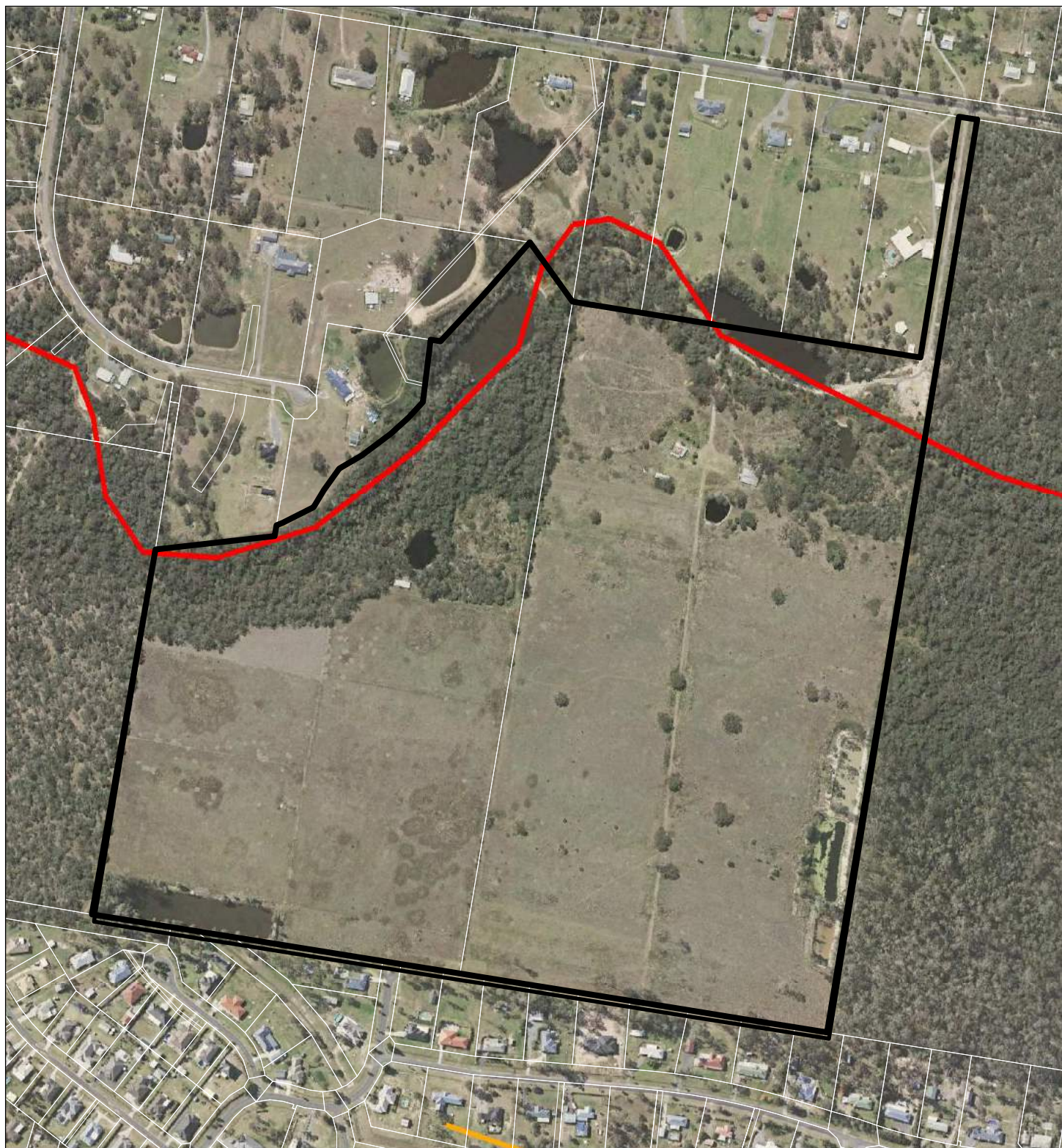
Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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Legend

-  Site DCDB
-  Qld DCDB

Waterways

Risk of Impact

-  1 - Low
-  2 - Moderate
-  3 - High
-  4 - Major
-  Tidal waterway


-  Fish habitat area

Figure 8

Fisheries Data Layer

File ref. 7344 E Figure 8 Fisheries A
Date 12/10/2017
Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

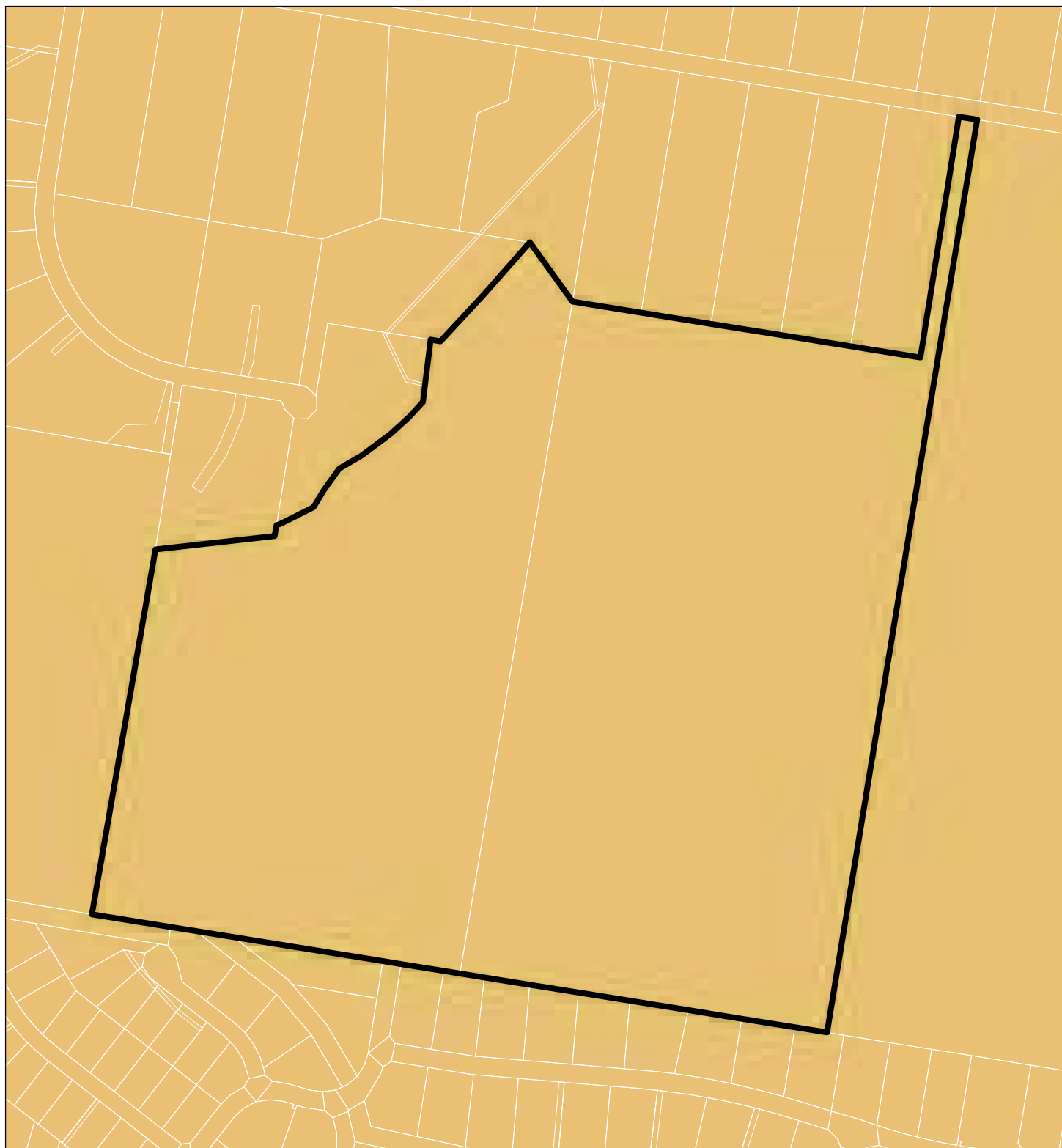
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Legend



Site DCDB



Qld DCDB

ASRIS level 5



Chromosols

Figure 9

ASRIS soils

File ref. 7344 E Figure 9 ASRIS Soils A

Date 13/10/2017

Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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3.10. State Planning Policy

On the 3rd of July 2017, the Queensland Government's single *State Planning Policy* (SPP) came into effect, replacing the superseded *State Planning Policy* from April 2016. There are 17 State interests outlined in the SPP that must be considered in every Planning Scheme across Queensland. These State interests align under five broad themes:

1. Liveable communities and housing
2. Economic growth
3. Environment and heritage
4. Safety and resilience to hazards
5. Infrastructure.

The integration of the SPP into local Planning Schemes ensures that the most important State planning interests are protected and managed in a relevant way across Queensland. The State Government works with Councils to ensure that State interests are adequately reflected in their Schemes, and the Planning Minister provides the final approval of these schemes.

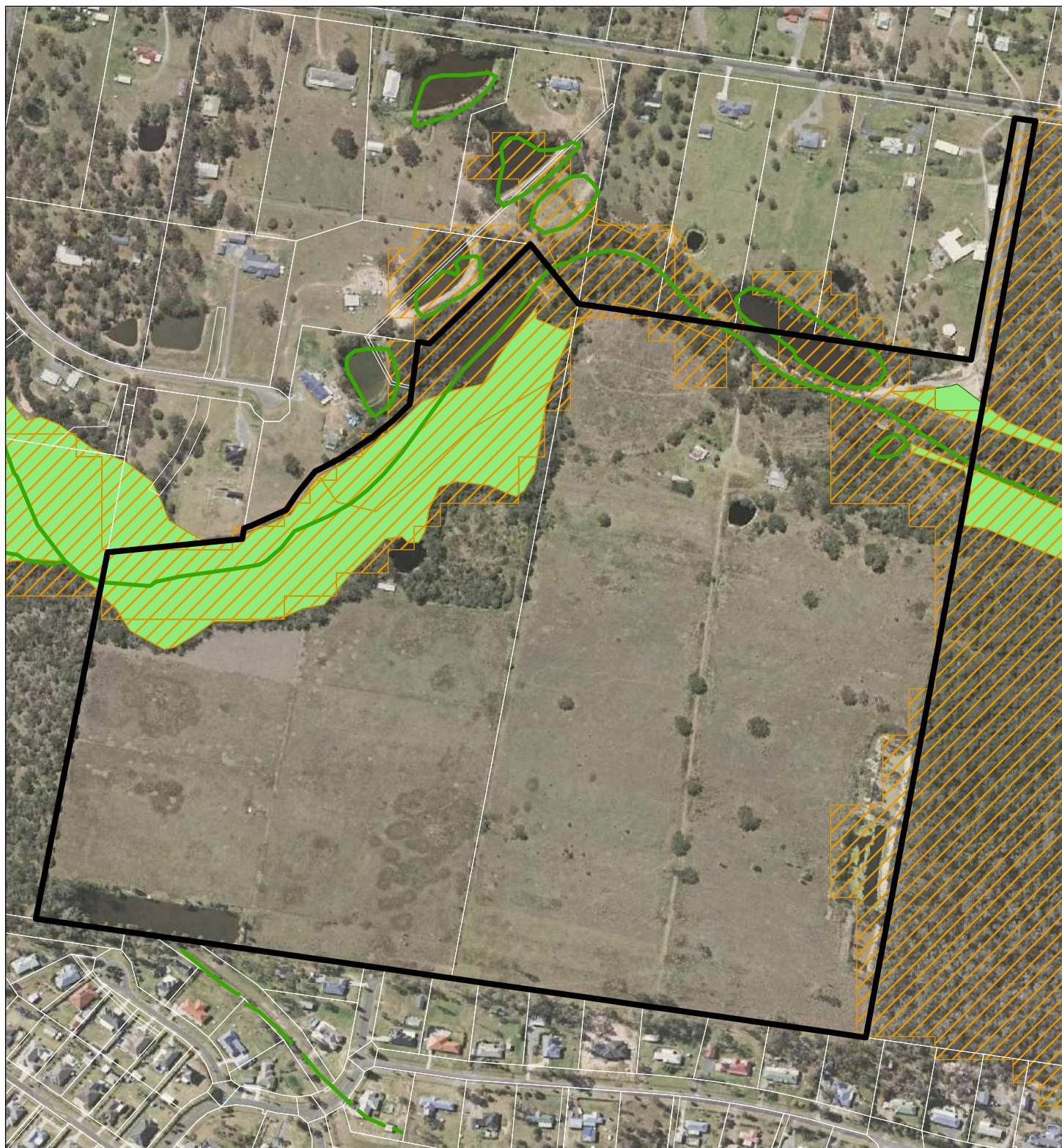
Due to Council diversity, the State Government does not mandate how State interests should be applied. Rather, as Councils prepare their local Planning Schemes, they need to show how the State interests will be reflected locally. Each of the 17 State interests in the SPP is supported by a guideline to help Councils put the policy into action.

Importantly, PDAs are parcels of land within Queensland identified for specific accelerated development with a focus on economic growth. State Government works with Local Councils to streamline the planning, approval and development processes for PDAs.

The subject site is mapped as containing *Matters of State Environmental Significance* (Regulated Vegetation, Regulated Vegetation intersecting a watercourse and Wildlife Habitat) (refer **Figure 10**), although this mapping does not trigger any specific requirements for development due to the location of the site within the Greater Flagstone PDA.

As per **Section 3.5**, It is noted that the Koala Habitat Values Map under the State Planning Policy identifies the site as containing some patches of Medium Value Bushland Habitat that is mapped as *MSES - Wildlife Habitat* (refer **Figures 7 & 10**).

SARA mapping shows the investigation area as within the Urban Footprint under *ShapingSEQ* (**Figure 11**).



Legend

- Site DCDB
- Qld DCDB
- Regulated Vegetation intersecting a watercourse
- Regulated Vegetation
- Wildlife habitat

Figure 10

Matters of State Environmental Significance

File ref. 7344 E Figure 10 MSES A
Date 12/10/2017
Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

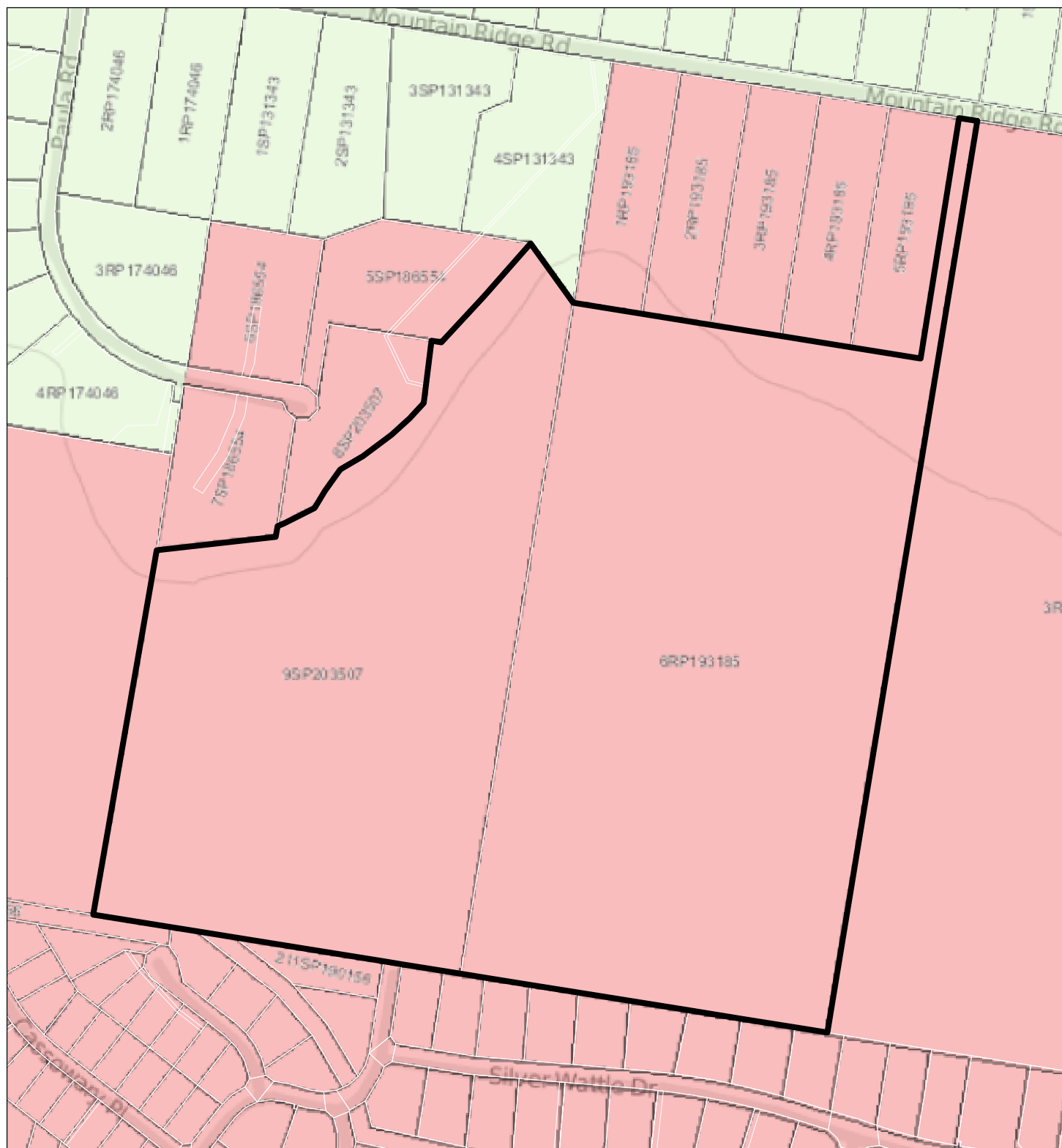
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Legend



Site DCDB



Qld DCDB

SEQ Regional Plan land use categories



Regional Landscape and Rural Production Area



Urban Footprint



Rural Living Area

Figure 11

Urban Footprint

File ref. 7344 E Figure 11 Urban Footprint A

Date 13/10/2017

Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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3.II. Economic Development Queensland

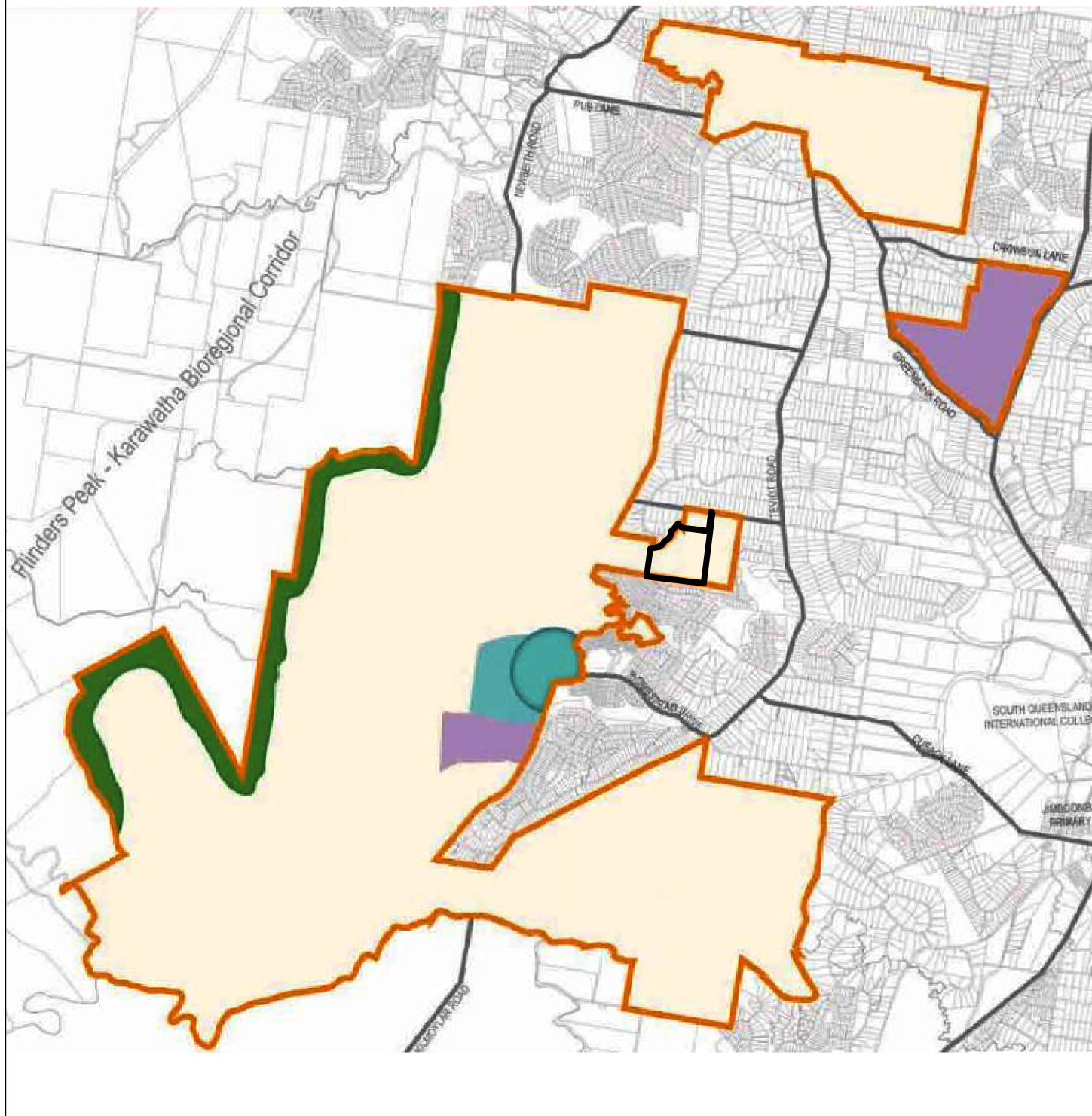
The development proposal occurs within the former Greater Flagstone Urban Development Area (UDA), declared under the *Urban Land Development Authority Act 2007* (ULDA Act). This legislation supersedes the requirements of Local Government planning provisions (in this case, the **Logan City Council Planning Scheme**) and selective other state legislation (e.g. *Planning Act 2017*, *Vegetation Management Act 1999*, and others).

More recently, the **ULDA** has been replaced by **Economic Development Queensland** (EDQ) and the UDA renamed as a Priority Development Area (PDA), with the meaning defined in the *Economic Development Act 2012* (EDQ Act).

The Greater Flagstone PDA Development Scheme was approved in October 2011, and regulates development within the PDA. The Scheme identifies that the site falls mostly within the Urban Living Zone (refer **Figure 12**). The Urban Living Zone applies to most of the area intended for urban development within the PDA. The majority of the zone is intended to be developed as neighbourhoods focused on identifiable and accessible centres comprising a mix of residential including houses, multiple residential and other residential and live work opportunities through home based business.

Development applications referred to **EDQ** for assessment against the *Greater Flagstone UDA Development Scheme* will be assessed against the EDQ's Implementation Guidelines. Specifically, the applicable guideline is *Guideline 14 – Environment and Natural Resource Sustainability* (IG14) and *Guideline 17 – Remnant vegetation and koala habitat obligations in Greater Flagstone and Yarrabilba PDAs* (IG17).

Overarching objectives for the natural environment have been prepared as part of the whole of site strategy (refer to Natural Environment Site Strategy). Once approved by **EDQ**, this document will act as the primary planning instrument for the development.



Legend

Site DCDB

UDA Boundary

Zones

Urban Living
 Major Centre
 Industry & Business
 Environmental Protection

Constraints

Q100 flood
 Steep Slope 16-20%
 Steep Slope >21%
 Bushfire Hazard
 Rail Buffer Area
 Electrical Transmission Easement
 Utilities
 Greenspace Buffer
 Waterways

Figure 12

EDQ Zoning

File ref. 7344 E Figure 12 EDQ Zoning A
Date 13/10/2017
Project Mountain Ridge Road, South Maclean

0 1,000 2,000 3,000 m

Scale (A4): 1:80,000 [GDA 1994 MGA Z56]



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3.12. Superseded Instruments

3.12.1 Logan Planning Scheme 2015

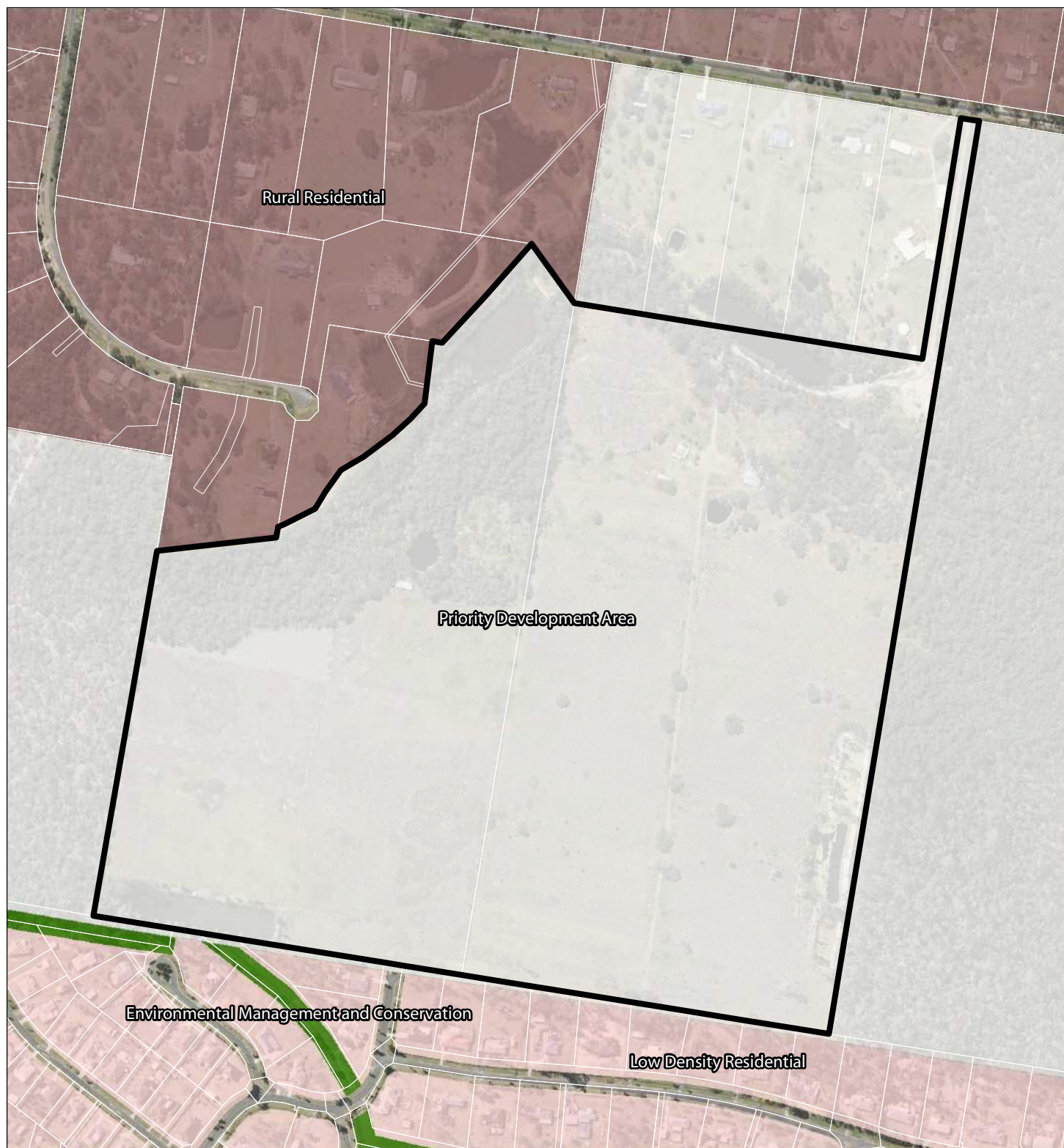
The *Logan Planning Scheme 2015 v1.1* was adopted by **Logan City Council** on 12 May 2015 and subsequently commenced on 19 May 2015. While not subject to the provisions of the planning scheme, it is important to note development intent for the site during consultation with Council, who will ultimately be responsible for the maintenance of any open space and conservation areas.

The *Logan Planning Scheme 2015* acknowledges the PDA status of the site through zoning (refer **Figure 13**).

In addition, the site is mapped within the following environmental overlays under the *Logan Planning Scheme 2015*:

- Biodiversity Areas Overlay as containing:
 - Primary and Secondary Vegetation Management Areas (refer **Figure 14**);
 - Biodiversity Corridors (refer **Figure 15**). It is noted that Undullah and Woollaman Creeks form a mapped Biodiversity Corridor along the property's south-western boundary;
 - Locally Significant Remnant Vegetation area (refer **Figure 16**).
 - Matters of State and Local Environmental Significance are reflected in LCC mapping across the site (refer **Figure 17**).
- Bushfire Hazard Overlay as containing areas of High and Medium Bushfire Hazard and Potential Impact Buffers (refer **Figure 18**).
- Flood Hazard Overlay as containing areas of flooding and inundation associated with some mapped waterways (refer **Figure 19**).
- Landslide Hazard Overlay as containing hazard areas equal to or greater than 15 percent slope (refer **Figure 20**).
- Waterway Corridors and Wetlands Overlay as containing a Medium waterway and Minor associated with Flagstone Creek and its tributaries (refer **Figures 21**).

The *Logan Planning Scheme 2015 v1.1* does not apply within the Greater Flagstone PDA. Federal, State and local mapping layers will be used in the creation of the NESS for the subject site.



Legend

-  Site DCDB
-  Qld DCDB

Zoning





-  Environmental management & conservation
-  Low density residential
-  Priority development area
-  Rural residential

Figure 13

Logan Planning Scheme
Zoning

File ref. 7344 E Figure 13 LCC Zoning A
Date 12/10/2017
Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

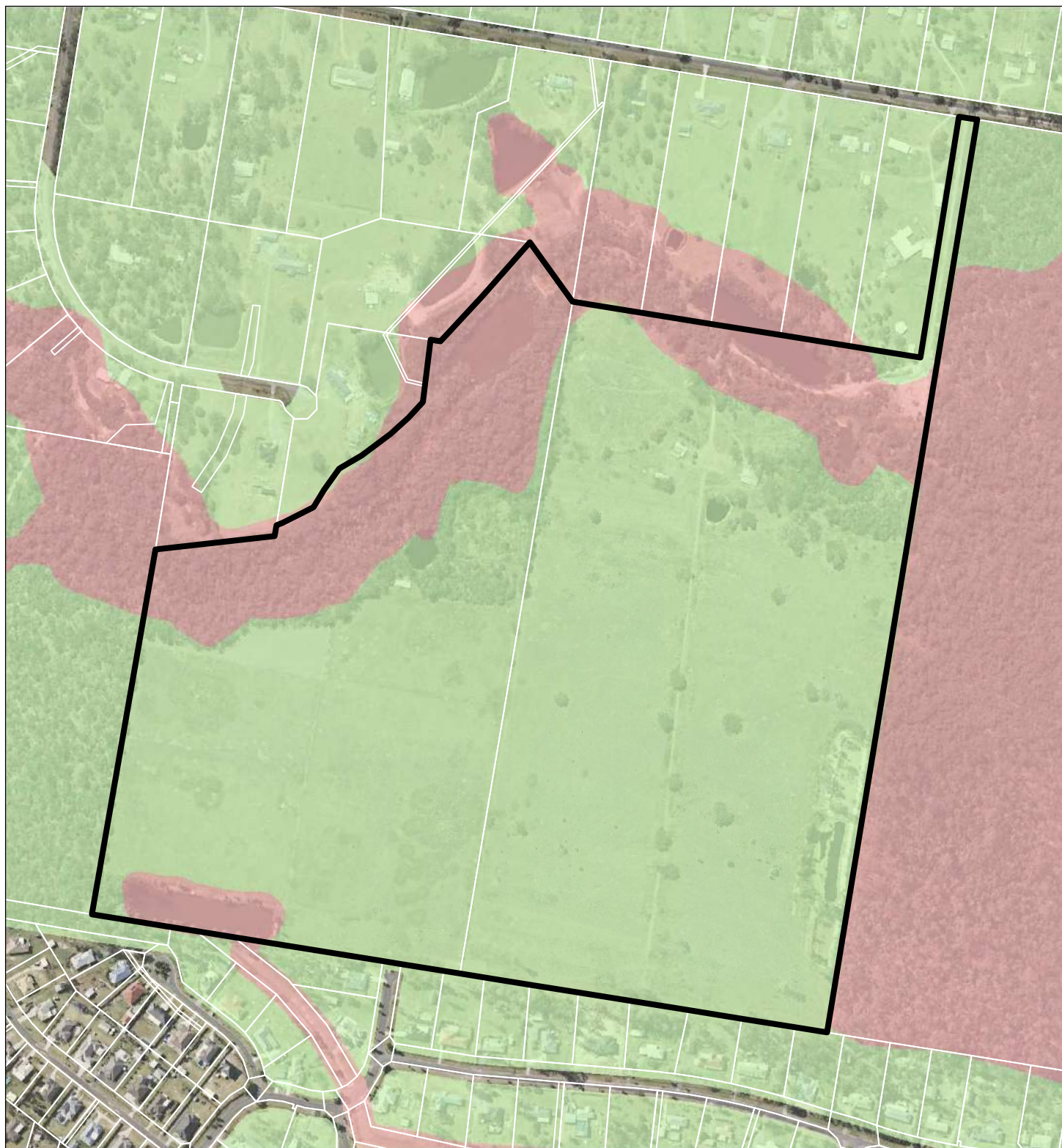
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Legend

-  Project Site Boundary
-  Qld DCDB

Vegetation Management Areas



-  Primary vegetation management area
-  Secondary vegetation management area

Figure 14

*Logan Planning Scheme
Vegetation Management Areas*

File ref. 7344 E Figure 14 LCC VM Areas A
Date 12/10/2017
Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

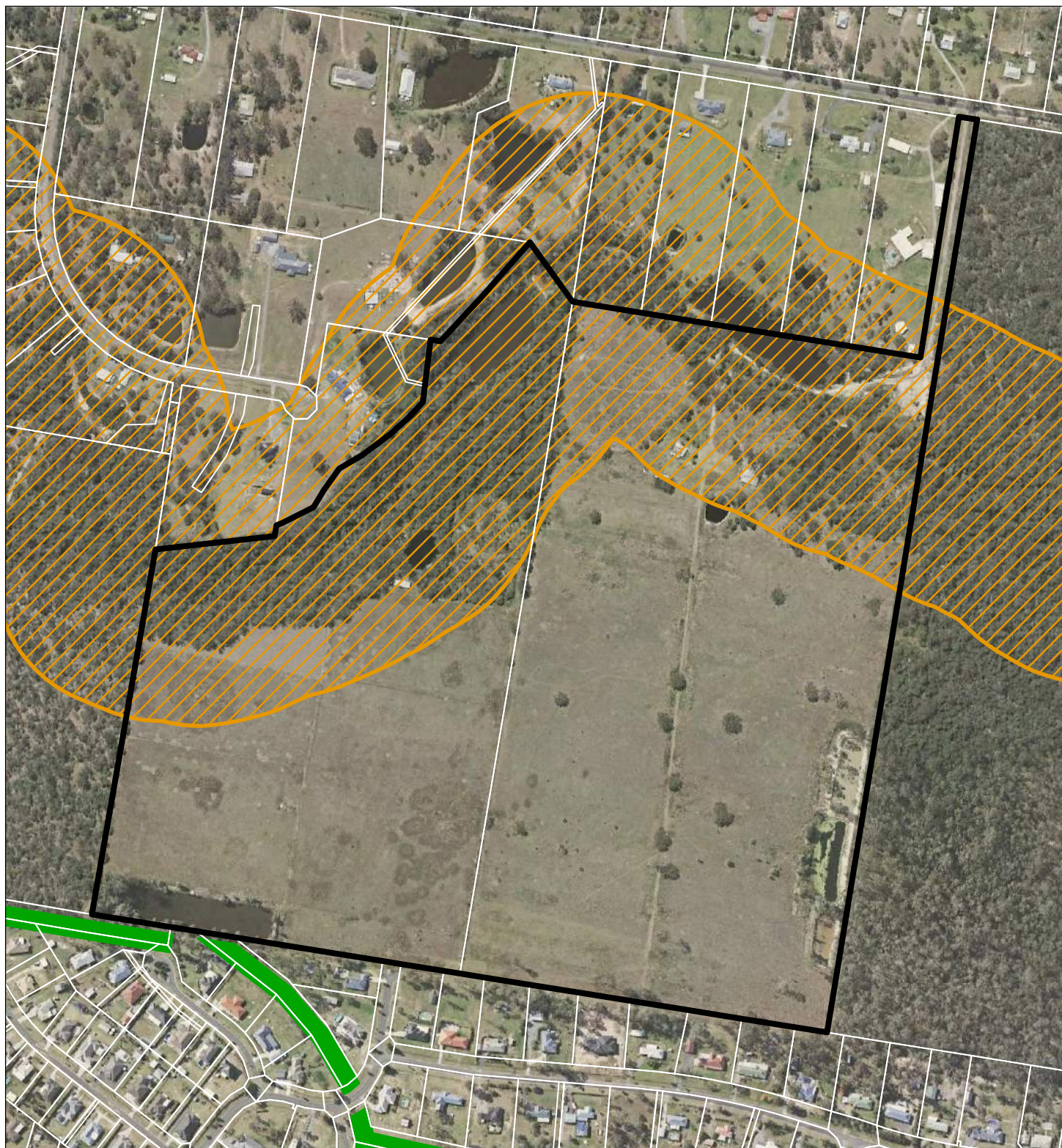
Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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Legend






-  Project Site Boundary
-  Qld DCDB
-  Koala corridor
-  Biodiversity corridor
-  Environmental management and conservation area

Figure 15

Logan Planning Scheme Biodiversity Corridors

File ref. 7344 E Figure 15 LCC Bio Corridors A

Date 12/10/2017

Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

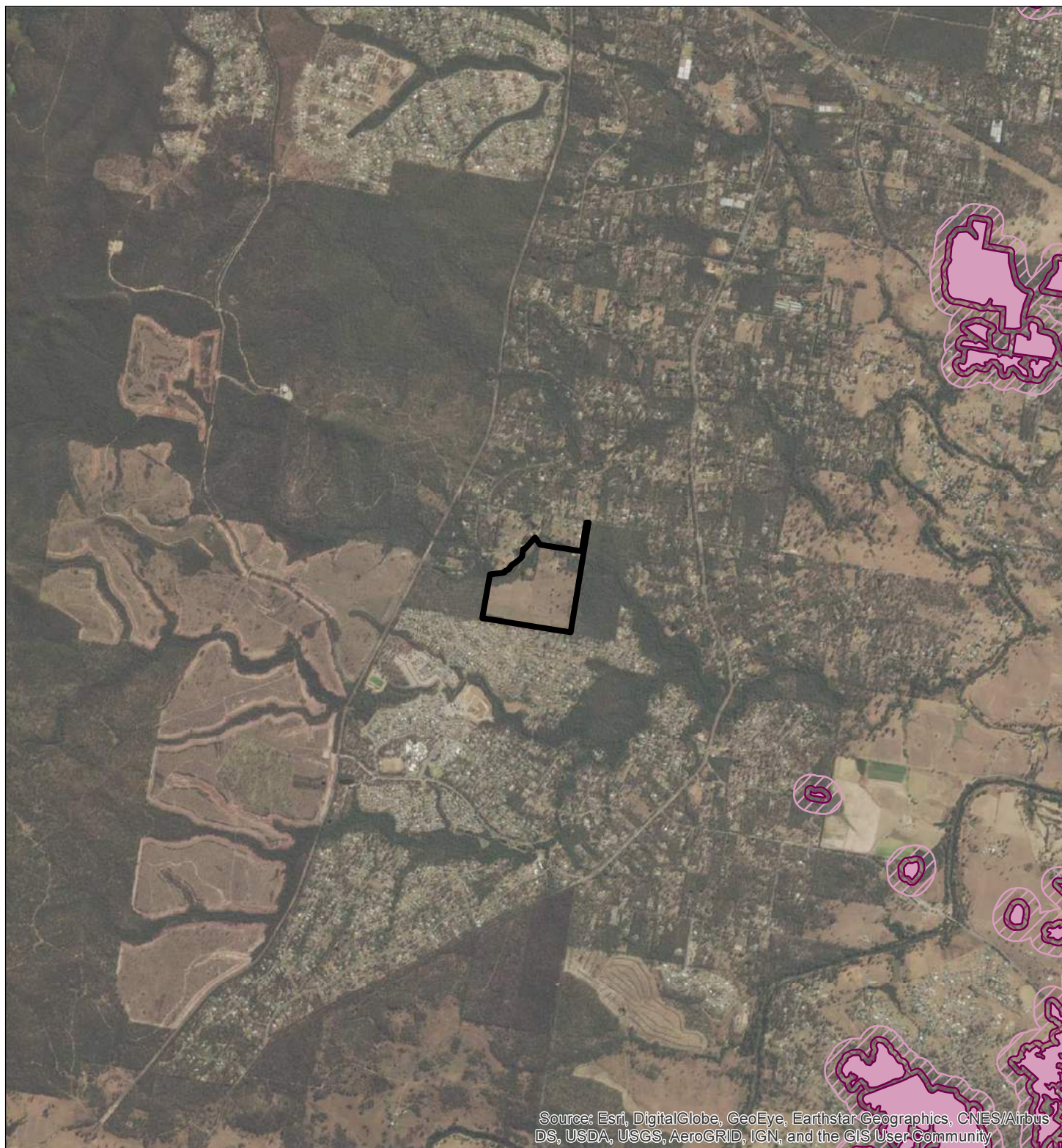
Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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Legend

-  Site DCDB
-  Qld DCDB

Locally significant vegetation




-  Melaleuca irbyana (swamp tea-tree)
100m hydrology protection buffer zone
-  Melaleuca irbyana (swamp tea-tree)
50m edge effect buffer zone
-  Melaleuca irbyana (swamp tea-tree)
Communities

Figure 16

Logan Planning Scheme
Locally Significant Species

File ref. 7344 E Figure 16 LCC Local significant veg A
Date 12/10/2017
Project Mountain Ridge Road, South Maclean

5000 m

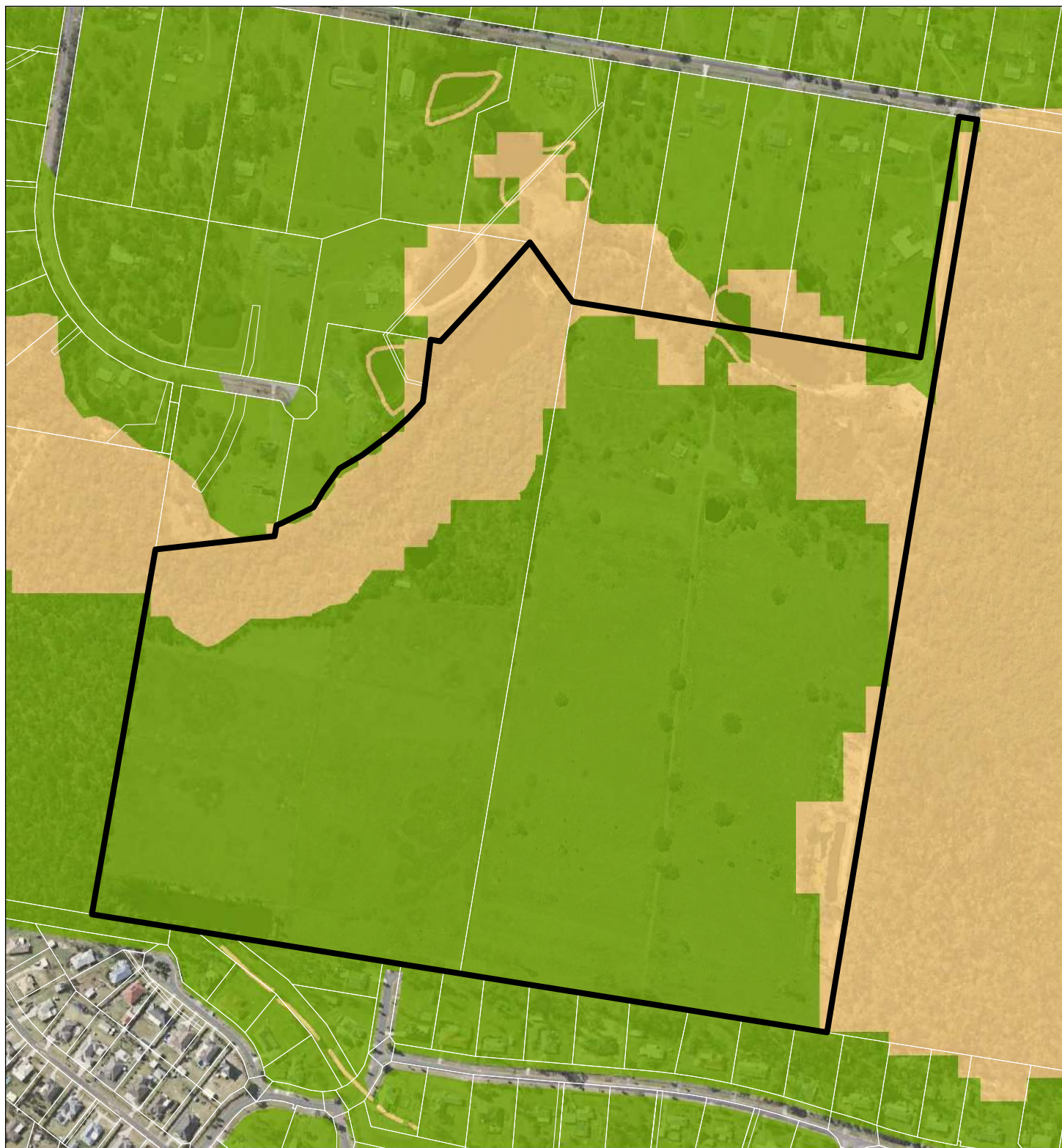
Scale (A4): 1:50,000 [GDA 1994 MGA Z56]



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Legend






-  Site DCDB
-  Qld DCDB
-  Matters of State & Local Significance (lines)
-  Matters of State Significance (polygons)
-  Matters of Local Significance (polygons)

Figure 17

Logan Planning Scheme
Matters of State and Local
Environmental Significance

File ref. 7344 E Figure 17 LCC MSLES A
Date 12/10/2017
Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

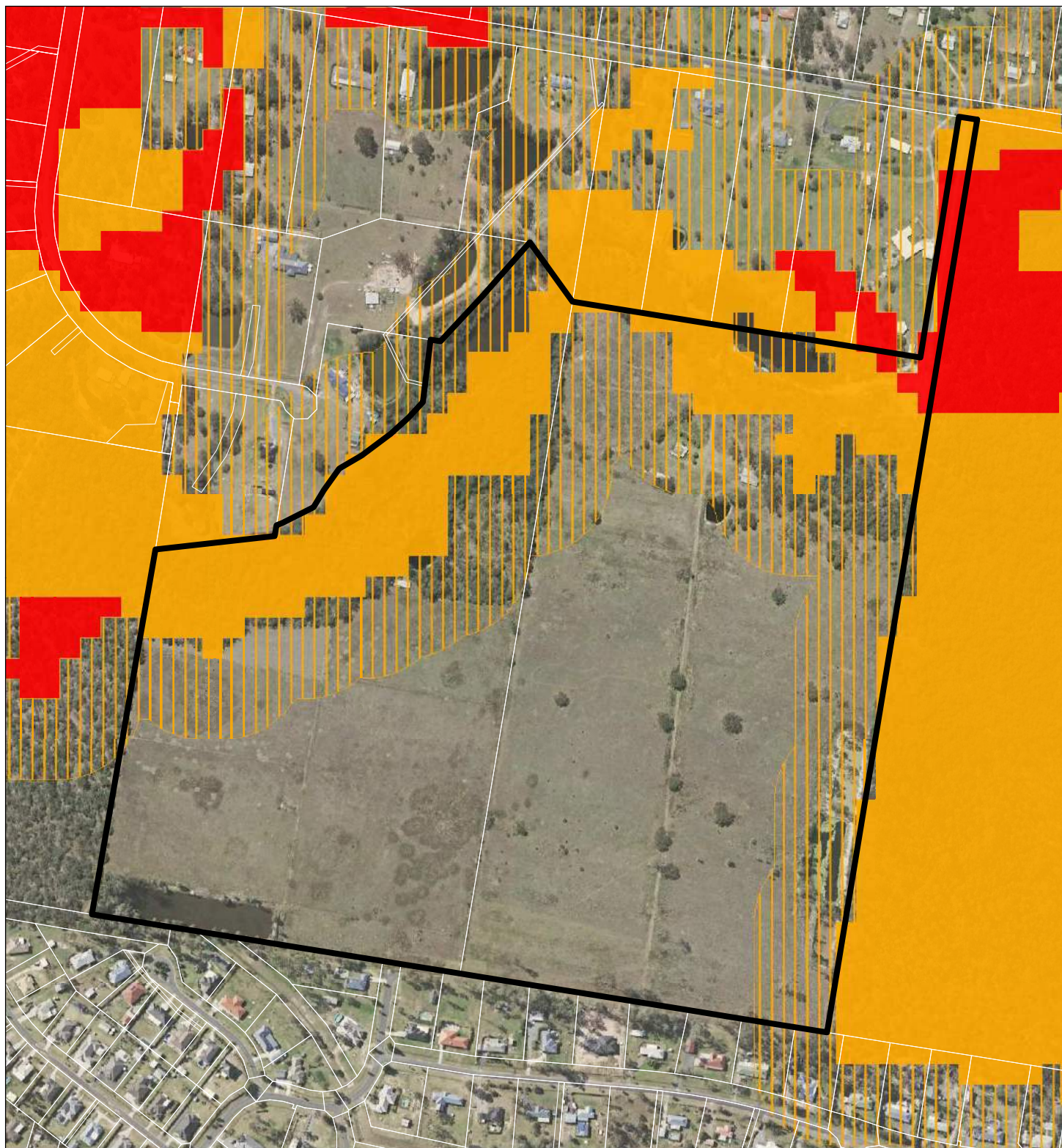
Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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Legend







-  Site DCDB
-  Qld DCDB
-  Bushfire hazard (Very High Potential)
-  Bushfire hazard (High Potential)
-  Bushfire hazard (Medium Potential)
-  Bushfire hazard (Potential Impact Buffer)

Figure 18

Logan Planning Scheme Bushfire Hazard Overlay

File ref. 7344 E Figure 18 LCC Bushfire Hazard A

Date 12/10/2017

Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

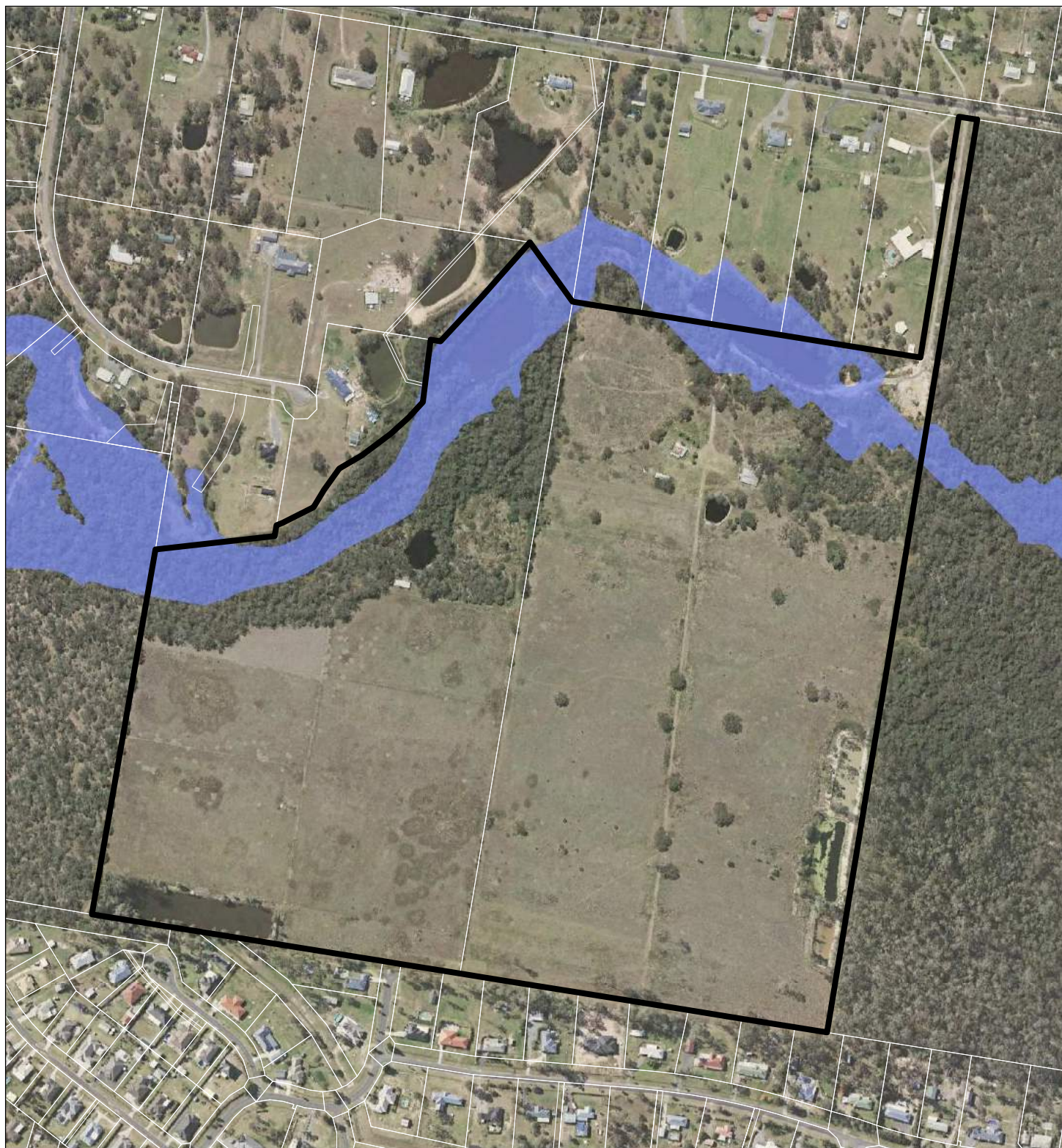
Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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Legend




-  Site DCDB
-  Qld DCDB
-  Flood Hazard Trigger

Figure 19

Logan Planning Scheme
Flood Hazard Overlay

File ref. 7344 E Figure 19 LCC Flood Hazard A

Date 12/10/2017

Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

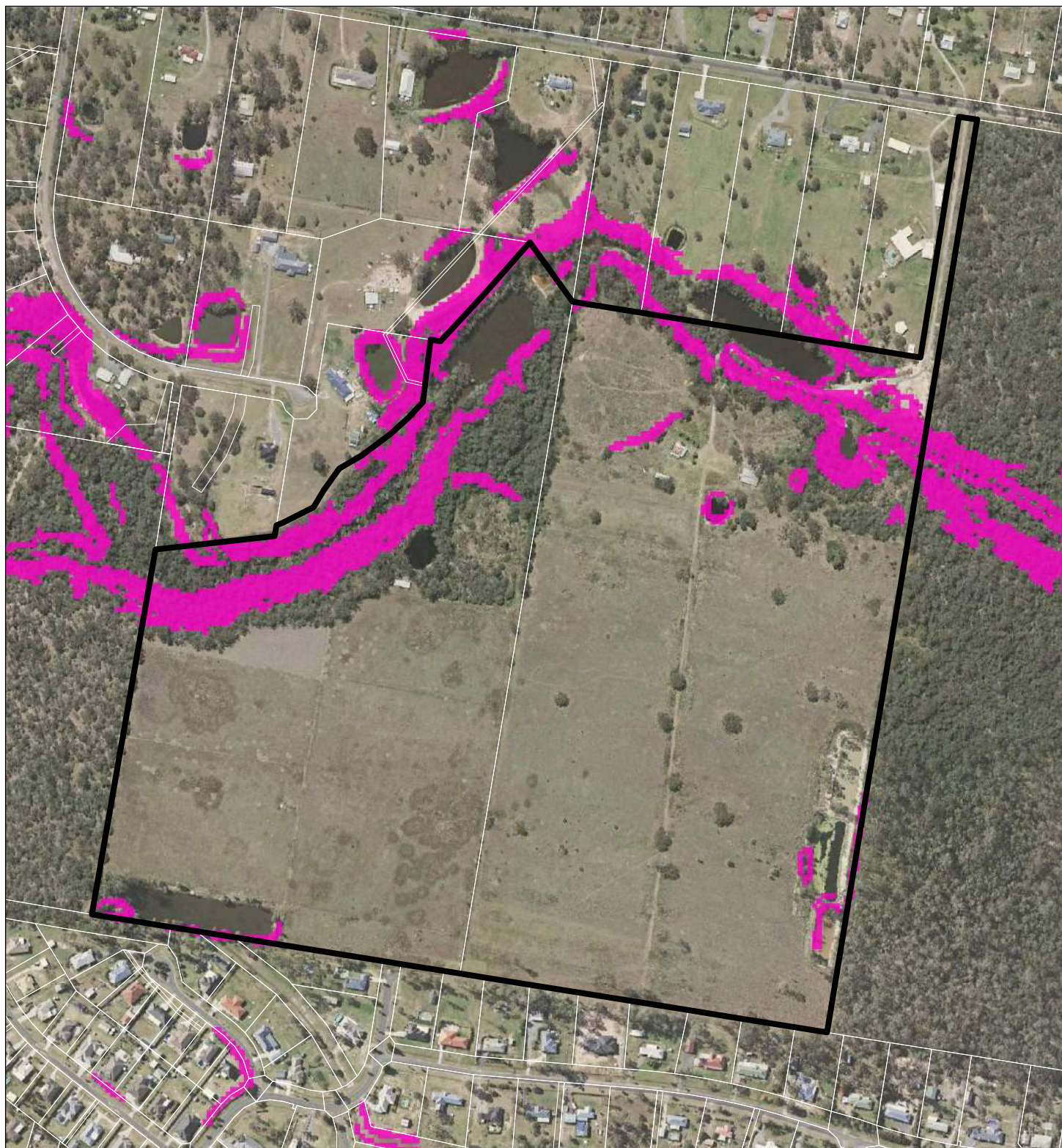
Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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Legend






-  Site DCDB
-  Qld DCDB
-  Equal to or greater than 12% slope hazard area
-  12% slope investigation area
-  Equal to or greater than 15% slope hazard area

Figure 20

Logan Planning Scheme Landslide Hazard Overlay

File ref. 7344 E Figure 20 LCC Landslide Hazard A

Date 12/10/2017

Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

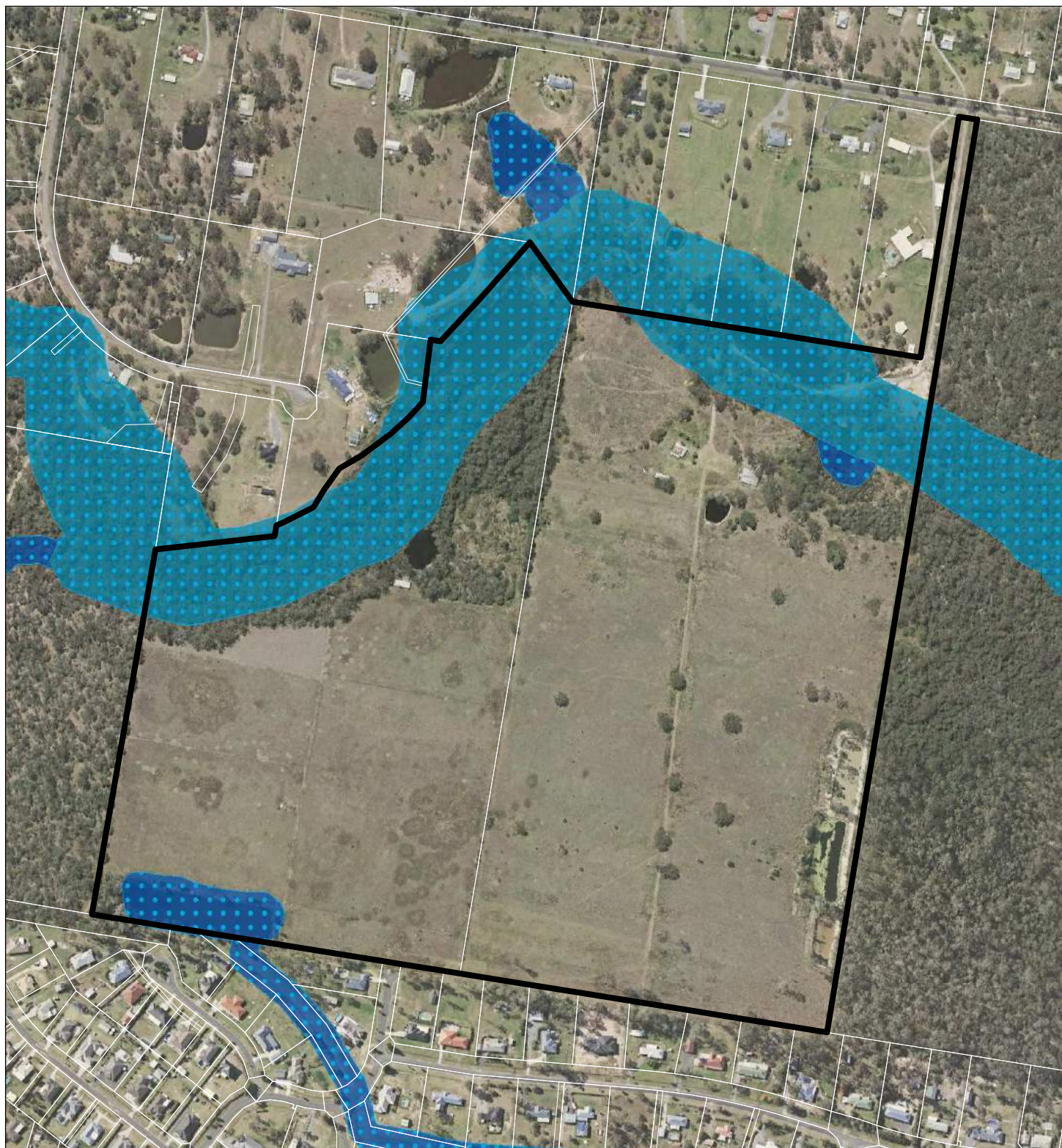
Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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Legend



Site DCDB



Qld DCDB

Waterways



Waterways



Minor waterway



Medium waterway



Major waterway



River waterway

Wetlands



Major Wetland



Minor Wetland

Figure 21

Logan Planning Scheme
Waterway Corridors and
Wetlands Overlay

File ref. 7344 E Figure 21 Waterway corridors Wetlands A

Date 12/10/2017

Project Mountain Ridge Road, South Maclean

0 50 100 150 200 m

Scale (A4): 1:6,000 [GDA 1994 MGA Z56]



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4. Ecological Assessment

4.1. Introduction

The site has been assessed by Senior Ecologists from the **Saunders Havill Group** as part of a detailed ecological assessment on the 17th of August 2017 and again on the 4th of October, 2017. This assessment involved recording ecological values within the application area in accordance with Federal, State and Local ecological survey guidelines, developing environmental constraints to development.

The investigation area covers Lot 9 on SP203507 and Lot 6 on RP193185 and can be accessed off Rose Almond Street or Mountain Ridge Road, South Maclean respectively. The total area of investigation is approximately 54 hectares in area and includes a portion of Flagstone Creek. Remaining vegetation is largely confined to within Flagstone Creek riparian corridor and including a number of mapped regional ecosystem communities. The majority of the investigation area is cleared of all vegetation values and is regularly maintained through slashing, apart from some scattered established native trees. The site had previously been managed as a turf farm and retains five (5) constructed dams outside of the Flagstone Creek riparian corridor.

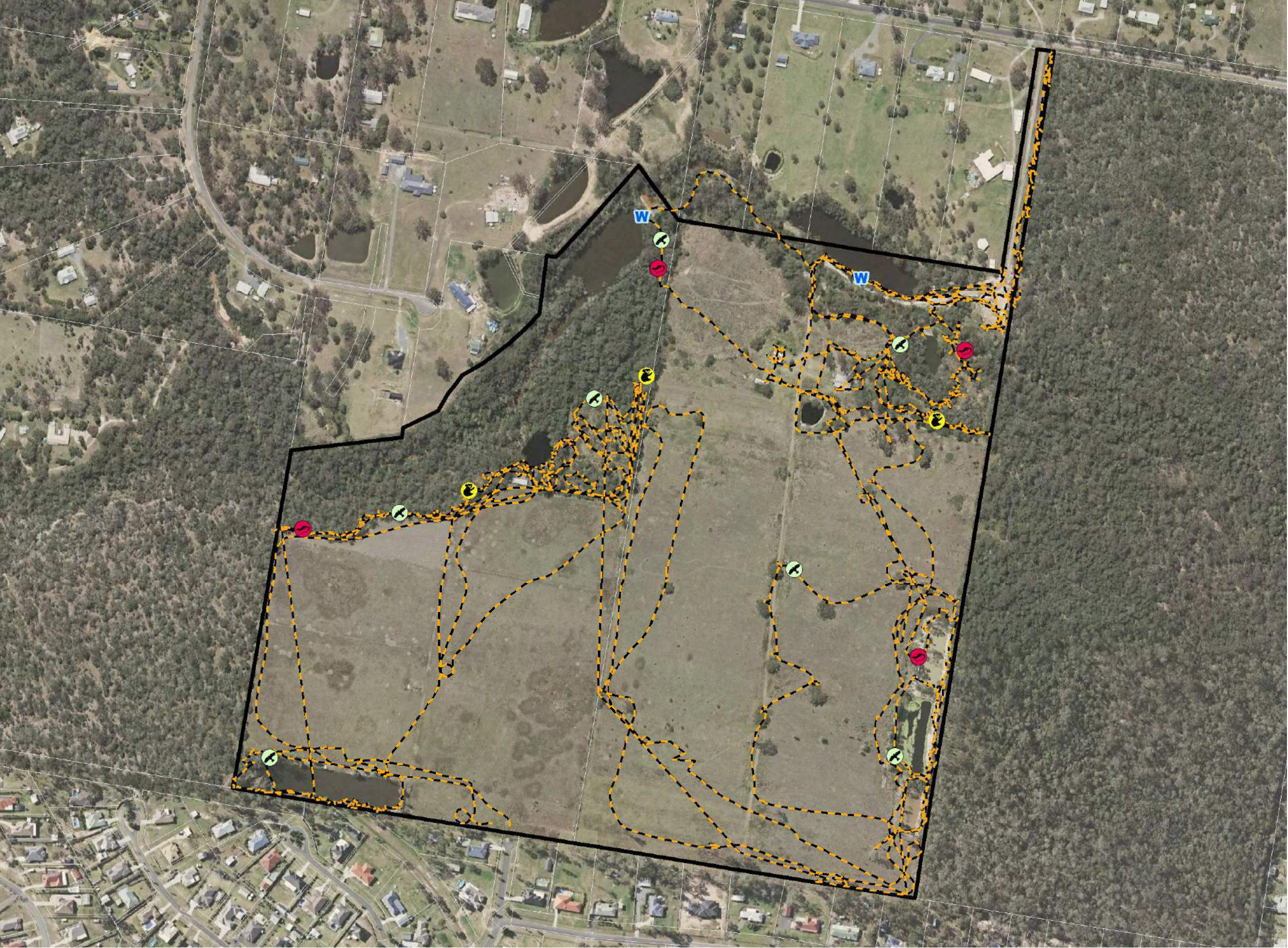
Contextually the site is located directly north of the Flagstone East development and is approximately 650 metres east of the Brisbane Sydney Railway line. Topography ranges from approximately 50 metres above sea level at the site access along Mountain Ridge Road, down to approximately 30 metres above sea level along Flagstone Creek. The site then rises to approximately 40 metres above sea level towards the centre of Lot 9 on SP203507.

Overall, the site was found to have undergone major disturbances by historical clearing, rural practices and particularly in the northern portion, weed invasion associated with Flagstone Creek. Some regrowth vegetation has been recorded around the constructed dams and is confined also along the edges of the remnant polygons along Flagstone Creek. The property has historically been managed for turf production.

The investigation area is predominantly cleared of most vegetation values however, remnant vegetation remains within the Flagstone Creek corridor. Three Endangered remnant polygons, a single Of Concern polygon as well as a number of Least Concern polygons are all mapped within the investigation area.

- **Endangered RE12.3.3** described as *Eucalyptus tereticornis* woodland on Quaternary alluvium. (not confirmed onsite to occur)
- **Of Concern RE12.3.11** described *Eucalyptus tereticornis* +/- *Eucalyptus siderophloia*, *Corymbia intermedia* open forest on alluvial plains usually near coast.
- **Least Concern RE12.3.6** described as *Melaleuca quinquenervia* +/- *Eucalyptus tereticornis*, *Lophostemon suaveolens*, *Corymbia intermedia* open forest on coastal alluvial plains.
- **Least Concern RE12.9-10.2** described as *Corymbia citriodora* subsp. *Variegata* +/- *Eucalyptus crebra* open forest on sedimentary rocks.
- **Of Concern RE12.3.7** described as *Eucalyptus tereticornis*, *Casuarina cunninghamiana* subsp. *Cunninghamiana* +/- *Melaleuca* spp. *fringing* woodland.
- **Of Concern RE12.3.11** described as *Eucalyptus tereticornis* +/- *Eucalyptus siderophloia*, *Corymbia intermedia* open forest on alluvial plains usually near coast.

3. FIELD SURVEY EFFORT




NOTES
This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.


Layer Sources: QLD GIS Layers (QLD Gov. Information Service 2016), Aerial (Nearmap 2016)

* This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.


LEGEND



Project site DCDB




Qld DCDB




Tracklogs (2 days)


Survey type




Diurnal bird survey



Opportunistic Koala survey



Diurnal reptile survey



Waterway assessment

PLAN ISSUE:

Issue	Date	Description	Drawn	Checked
A	13/10/2017	Prelim Draft	MC	AH

0

50

100

150

200 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:4,500 @ A3



4.2. Threatened Species Notes

- The *Environment Protection and Biodiversity Conservation* Online Protected Matters Search Tool (PMST) have listed three (3) threatened ecological communities as likely to or may occur within the area and within five (5) kilometres of the site. The Lowland Rainforest of Subtropical Australia, Swamp Tea-tree (*Melaleuca irbyana*) Forest of South East Queensland and the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Threatened Ecological Communities, all listed as critically endangered, did not occur on or immediately adjacent to the application site.
 - The Lowland Rainforest of Subtropical Australia has typically relatively low abundance of species from the genera *Eucalyptus*, *Melaleuca* and *Casuarina*. Buttresses are common as is an abundance and diversity of vines. This community is usually associated with Regional Ecosystems 12.3.1, 12.5.13, 12.8.3, 12.8.4, 12.8.13, 12.11.1, 12.11.10, 12.12.1, and 12.12.16, none of which are located within or adjacent to the application site.
 - The Swamp Tea-Tree (*Melaleuca irbyana*) Forest of South East Queensland characteristic feature is *Melaleuca irbyana* (Swamp Tea-tree) and is associated with regional ecosystem communities 12.9-10.11 and 12.3.3. The Endangered RE12.3.3 is mapped on site however, no evidence of this species was observed throughout the survey period.
 - The White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Threatened Ecological Community is characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs and the dominance of White Box, Yellow Box, or Blakely's Red gum trees. This community is usually associated with Regional Ecosystem 11.8.2a, 11.8.8, 11.9.9a, 13.3.1, 13.11.8, and 13.12.9. It can also be a small component of Regional Ecosystem 11.3.23, 12.8.16, 13.3.4, 13.11.3 and 13.11.4. None of which are located within or adjacent to the application site.
- The PMST listed thirty-nine (39) threatened native flora and fauna species as possibly occurring on the application site and thirteen (13) listed migratory species.
 - Of all the listed fauna species, habitat conditions throughout the Flagstone Creek corridor could support *Phascolarctos cinereus* (Koala). It is also noted that conditions both directly east and west of the application site is vegetation with both remnant and non-remnant vegetation, providing habitat also for this listed species.
 - No EPBC threatened flora or fauna species were observed throughout the survey periods.
- The *Nature Conservation (Wildlife) Regulation 1994* (NCWR) lists eight (8) threatened species as possibly occurring within ten (10) kilometres of the application site. Of these seven (7) are fauna species, and a single flora species is listed.
 - No NCA listed species were identified throughout the survey.

4.3. General Flora Observations

A GPS tree plot survey has been completed throughout the development footprint, the interface between the proposed development and throughout the Flagstone Creek corridor where site access is proposed from Mountain Ridge Road. The vegetation survey plotted all native trees with a DBH of 100mm DBH or greater. Six hundred and ninety four (694) individual specimens were recorded throughout the survey period.

- Twenty three (23) species were recorded as part of the tree plot survey. However, eighteen (18) of these species represent less than 5% of the total specimens recorded.
- The most common species recorded throughout the survey is identified as *Eucalyptus tereticornis* (Forest Red Gum) and included 29.39% of the surveyed species, followed by *Acacia disparrima* (Hickory Wattle) at



15.13% and *Corymbia tessellaris* (Moreton Bay Ash) at 11.10%. All other species represent less than 10% of the surveyed specimens.

Table 5: Vegetation composition breakdown

Species	Common Name	Number Recorded	Percentage Recorded
<i>Acacia concurrens</i>	Black Wattle	5	0.72
<i>Acacia diaparrima</i>	Hickory Wattle	105	15.13
<i>Acacia fimbriata</i>	Fringed Wattle	17	2.45
<i>Acacia leiocalyx</i>	Early Flowering Wattle	48	6.92
<i>Acacia melanoxylon</i>	Australian Blackwood	5	0.72
<i>Allocasuarina littoralis</i>	Black She Oak	1	0.14
<i>Alphitonia excelsa</i>	Soap Tree	41	5.91
<i>Angophora leiocarpa</i>	Smooth Bark Apple	8	1.15
<i>Angophora subvelutina</i>	Broad-leaved Apple	7	1.01
<i>Angophora woodsiana</i>	Rough Barked Apple	2	0.29
<i>Casuarina cunninghamiana</i>	River She Oak	3	0.43
<i>Corymbia citriodora</i>	Spotted Gum	56	8.07
<i>Corymbia henryi</i>	Large Leaf Spotted Gum	1	0.14
<i>Corymbia intermedia</i>	Pink Bloodwood	29	4.18
<i>Corymbia tessellaris</i>	Morton Bay Ash	77	11.10
Dead / Stag		1	0.14
<i>Eucalyptus crebra</i>	Narrow Leaf Ironbark	17	2.45
<i>Eucalyptus moluccana</i>	Gum Topped Box	7	1.01
<i>Eucalyptus siderophloia</i>	Grey Ironbark	31	4.47
<i>Eucalyptus tereticornis</i>	Forest Red Gum	204	29.39
<i>Grevillea robusta</i>	Silky Oak	1	0.14
<i>Lophostemon suaveolens</i>	Swamp Box	26	3.75
<i>Petalostigma pubescens</i>	Quinine Bush	1	0.14
<i>Waterhousia floribunda</i>	Weeping Lily Pily	1	0.14
Total		694	100.00

- The majority of the trees recorded as part of the tree plot survey recorded a trunk DBH of between 100mm and 199mm, amounting to 43.23%. Over 80% of trees recorded have a trunk DBH of less than 399mm.



Table 6: Diameter at breast height (DBH) breakdown

DBH	Number Recorded	Percent Recorded
100 - 199 mm	300	43.23
200 - 299 mm	203	29.25
300 - 399 mm	68	9.80
400 - 499 mm	45	6.48
500 - 599 mm	27	3.89
600 - 699 mm	29	4.18
700 - 799 mm	7	1.01
800 - 899 mm	2	0.29
900 - 999 mm	6	0.86
< 1000 mm	7	1.01
Total	694	100.00

- The results of the GPS tree plot survey highlight the direct nature of the site with the majority of trees recorded regarded as regrowth specimens.
- The pre-clear vegetation mapping includes the majority of the site and proposed development area as once containing the Least Concern Regional ecosystem 12.9-10.2. The species recorded throughout the tree plot survey are typical of this community, including *Corymbia citriodora* (Spotted Gum), *Eucalyptus siderophloia* (Grey Ironbark) and *Eucalyptus tereticornis* (Forest Red Gum).
- *Acacia* species including *Acacia leiocalyx* (Early Flowering Black Wattle), *Acacia fimbriata* (Fringed Wattle), and *Acacia disparrima* (Hickory Wattle) as well as *Alphitonia excelsa* (Soap Tree) dominate the edge of the remnant polygons, with a shrub layer dominated by *Lantana camara* (Lantana).

4.3.1 Flagstone Creek Corridor

The Flagstone Creek corridor is located towards the sites northern property boundary and includes both remnant and non-remnant vegetation. Of the remnant polygons, five (5) regional Ecosystem communities are represented on site, including a composite Of Concern Regional Ecosystem community mapped as containing 70% Of Concern RE12.3.11 and 30% Least Concern RE12.3.6, Endangered RE12.3.3, Least Concern RE12.3.7 and Least Concern RE12.9-10.2.

- **Of Concern RE12.3.11** described as *Eucalyptus tereticornis* +/- *Eucalyptus siderophloia*, *Corymbia intermedia* open forest on alluvial plains usually near coast.
- **Least Concern RE12.3.6** described as *Melaleuca quinquenervia* +/- *Eucalyptus tereticornis*, *Lophostemon suaveolens*, *Corymbia intermedia* open forest on coastal alluvial plains.
- **Endangered RE12.3.3** described as *Eucalyptus tereticornis* woodland on Quaternary alluvium. (not confirmed onsite to occur)
- **Of Concern RE12.3.11** described *Eucalyptus tereticornis* +/- *Eucalyptus siderophloia*, *Corymbia intermedia* open forest on alluvial plains usually near coast.
- **Of Concern RE12.3.7** described as *Eucalyptus tereticornis*, *Casuarina cunninghamiana* subsp. *Cunninghamiana* +/- *Melaleuca* spp. fringing woodland.
- **Least Concern RE12.9-10.2** described as *Corymbia citriodora* subsp. *Variegata* +/- *Eucalyptus crebra* open forest on sedimentary rocks.



General flora conditions observed throughout Flagstone Creek:

- The dominant canopy species observed is identified as *Eucalyptus tereticornis* (Forest Red Gum), particularly along the lower embankment areas. Other canopy species included *Eucalyptus siderophloia* (Grey Ironbark), *Corymbia intermedia* (Pink Bloodwood) and scattered *Corymbia tessellaris* (Moreton Bay Ash).
- Species representing each of the regional ecosystem communities mapped on site were observed throughout each of the polygons.
- Riparian vegetation growing along the edge of the waterway and extending into floodplain areas, particularly towards the western portion of the investigation area, is limited to the sub-canopy layer and wetland dependant species. This includes the emergent aquatic plants growing at the edge of the waterway channel and scattered ground cover plants and shrubs within the riparian zone.
- The lineal vegetation along the edge of the waterway, particularly within the area mapped as Least Concern RE12.3.7, is dominated by an edge of *Melaleuca viminalis* (Weeping Bottlebrush) and patches of *Melaleuca linifolia* (Snow in Summer). The canopy is dominated by *Eucalyptus tereticornis* (Forest Red Gum).
- A number of physical disturbances are observed throughout the waterway zone including constructed dams having been built instream within and adjacent to the application site, site access track including a constructed weir, vegetation clearing for existing power to the old site residence, weed invasion and the dumping of rubbish (domestic and what appeared to be old farm equipment).
- Although not harmful to the environment, but directly downstream of the major dam located along the northern boundary of Lot 6 on RP193185 and partly within the adjacent property, a portion of the waterway contains iron-oxidising bacteria. Generally, this bacteria colonize in the transition zone where de-oxygenated water from an anaerobic environment flows into an aerobic environment.
- Regrowth vegetation along the edge of the mapped remnant polygons are dominated by Acacia species including *Acacia leiocalyx* (Early Flowering Black Wattle) and *Acacia fimbriata* (Fringed Wattle). This portion of the site is also heavily infested with *Lantana camara* (Lantana).

Elements of all regional ecosystems were observed on site throughout the survey. Species observed throughout the canopy were identified as *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus siderophloia* (Grey Ironbark), with scattered *Corymbia intermedia* (Pink Bloodwood) and *Corymbia tessellaris* (Moreton Bay Ash) also observed. The lower embankment area retained a sub-canopy dominated by *Lophostemon suaveolens* (Swamp Box) and scattered *Melaleuca viminalis* (Weeping Bottle Tree) whereas the higher embankments are dominated by Acacia species including *Acacia disparima* (Hickory Wattle), *Acacia leiocalyx* (Early Flowering Black Wattle) and *Acacia fimbriata* (Fringed Wattle).

- The dominance of each species is relative to the position in the landscape with *Eucalyptus tereticornis* (Forest Red Gum) dominant along the lower slopes. In particular the Least Concern RE12.3.7 which is a fringing vegetation community is restricted to a lineal form along the lower embankments of Flagstone Creek. This includes *Casuarina cunninghamiana* (River She Oak) and *Melaleuca viminalis* (Weeping Bottlebrush). Species observed throughout this portion of the corridor are consistent with the current regional ecosystem mapping. .

4.3.2 Endangered RE 12.3.3

- Directly adjacent to this RE12.3.7 is mapped Endangered polygons including RE12.3.3. These two polygons extend into the adjacent property towards the east. The major differences within this portion of the mapping is particularly evident on the upper embankment areas where areas that have been maintained through slashing and contain only regrowth understorey species dominated by *Acacia disparima* (Hickory Wattle) and *Acacia fimbriata* (Fringed Wattle) as well as regrowth *Lophostemon suaveolens* (Swamp Box).



- The Mapped Endangered polygon on the northern side of Flagstone Creek does not contain any established trees and is dominated by species including *Megathyrsus maximus* (Guinea Grass) and *Lantana camara* (Lantana).
- A large portion of this polygon is maintained through slashing and also includes piles of garden waste and what appears to be old gravel piles most likely from the maintenance of the sites access track.
- The Endangered polygon mapped along the southern embankment of Flagstone Creek is also located where no established trees are located. Although some regrowth *Eucalyptus tereticornis* (Forest Red Gum) and *Corymbia tessellaris* (Moreton Bay Ash) are located within the vicinity, these individuals are recorded within areas mapped as non-remnant.
- It is also noted that old spoil piles were also located within the mapped Endangered polygon as well as within the non-remnant area most likely associated with the construction of the adjacent dam. These old spoil piles contained evidence of buried waste including old farm equipment and vegetation within this portion is restricted to regrowth and weeds.





Photos 1 & 2: Flagstone Creek Riparian Area – Predominantly void of Endangered RE 12.3.3 and showing high levels of weed incursion





Photos 3 & 4: Scattered vegetation along open farmed areas and constructed dams

4.4. Site Flora

A total of ninety one (91) flora species were identified across the investigation area, of which fifty (50) species are native flora species and the remaining forty-one (41) are introduced or weed species (**Table 7**).

Table 7: Native Flora Species List

Species	Common Name
<i>Acacia concurrens</i>	Black Wattle
<i>Acacia diaparrima</i>	Hickory Wattle
<i>Acacia fimbriata</i>	Fringed Wattle
<i>Acacia leiocalyx</i>	Early Flowering Wattle
<i>Acacia melanoxylon</i>	Australian Blackwood
<i>Allocasuarina littoralis</i>	Black She Oak
<i>Alphitonia excelsa</i>	Soap Tree
<i>Angophora leiocarpa</i>	Smooth Bark Apple
<i>Angophora subvelutina</i>	Broad-leaved Apple
<i>Angophora woodsiana</i>	Rough Barked Apple
<i>Breynia oblongifolia</i>	Coffee Bush
<i>Casuarina cunninghamiana</i>	River She Oak
<i>Cheilanthes distans</i>	Bristle Cloak Fern
<i>Chrysocephalum apiculatum</i>	Yellow Buttons



Species	Common Name
<i>Corymbia citriodora</i>	Spotted Gum
<i>Corymbia henryi</i>	Large Leaf Spotted Gum
<i>Corymbia intermedia</i>	Pink Bloodwood
<i>Corymbia tessellaris</i>	Morton Bay Ash
<i>Cymbopogon refractus</i>	Barbed Wire Grass
<i>Dianella caerulea</i>	Blueberry Lily
<i>Eucalyptus crebra</i>	Narrow Leaf Ironbark
<i>Eucalyptus moluccana</i>	Gum Topped Box
<i>Eucalyptus siderophloia</i>	Grey Ironbark
<i>Eucalyptus tereticornis</i>	Forest Red Gum
<i>Eustrephus latifolius</i>	Wombat Berry
<i>Exocarpus cupressiformis</i>	Native Cherry
<i>Ficus coronata</i>	Sandpaper Fig
<i>Gahnia aspera</i>	Saw Sedge
<i>Geitonoplesium cymosum</i>	Scrambling Lily
<i>Glochidion sumatranum</i>	Large Leaf Cheese Tree
<i>Goodenia rotundifolia</i>	Goodenia
<i>Grevillea robusta</i>	Silky Oak
<i>Hardenbergia violacea</i>	Native Sarsaparilla
<i>Imperata cylindrica</i>	Blady Grass
<i>Jagera pseudorhus</i>	Foambark
<i>Lobelia purpurascens</i>	White Root
<i>Lomandra multiflora</i>	Many-flowered Mat Rush
<i>Lophostemon suaveolens</i>	Swamp Box
<i>Macaranga tanarius</i>	Macaranga
<i>Mallotus philippensis</i>	Red Kamala
<i>Melaleuca linariifolia</i>	Snow in Summer
<i>Melaleuca viminalis</i>	Weeping Bottlebrush
<i>Melia azedarach</i>	White Cedar
<i>Parsonsia straminea</i>	Monkey Rope Vine
<i>Petalostigma pubescens</i>	Quinine Bush
<i>Smilax australis</i>	Barbed Wire Vine
<i>Stephania japonica</i>	Tape Vine
<i>Themeda triandra</i>	Kangaroo Grass
<i>Trema tomentosa</i>	Poison Peach



Species	Common Name
<i>Waterhousia floribunda</i>	Weeping Lily Pilly

4.5. Weed Species

Of the forty-one (41) introduced species recorded throughout the survey period, seventeen (17) are listed under *Queensland's Biosecurity Act 2014*, with ten (10) listed as a 'restricted invasive plant' and seven (7) as 'other invasive plant' (**Table 8**).

Table 8: Exotic Flora Species List

Species	Common Name	Restricted Invasive Plants	Other Invasive Plants
<i>Ageratum houstonianum</i>	Blue Billygoat Weed		
<i>Ambrosia artemisiifolia</i>	Annual Ragweed	Restricted	
<i>Archontophoenix alexandrae</i>	Alexandra Palm		
<i>Asparagus africanus</i>	Climbing Asparagus Fern	Restricted	
<i>Baccharis halimifolia</i>	Groundsel Bush	Restricted	
<i>Bidens pilosa</i>	Cobbler's Pegs		
<i>Celtis sinensis</i>	Chinese Elm	Restricted	
<i>Chloris gayana</i>	Rhodes Grass		Other
<i>Chloris virgata</i>	Feathertop Rhodes Grass		
<i>Cinnamomum camphora</i>	Camphor Laurel	Restricted	
<i>Commelina diffusa</i>	Wandering Jew		
<i>Conyza bonariensis</i>	Flaxleaf Fleabane		
<i>Corymbia torelliana</i>	Cadaghi		
<i>Cyperus polystachyos</i>	Bunchy Sedge		
<i>Gomphocarpus physocarpus</i>	Balloon Cotton Bush		
<i>Gompholobium foliolosum</i>	Fern-leaved Wedge Pea		
<i>Ipomoea cairica</i>	Mile-a-minute		
<i>Juncus usitatus</i>	Common Rush		
<i>Lantana camara</i>	Lantana	Restricted	
<i>Lantana montevidensis</i>	Creeping Lantana	Restricted	
<i>Leucaena leucocephala</i>	Leucaena		Other
<i>Ludwigia peploides</i>	Water Primrose		
<i>Megathyrsus maximus</i>	Guinea Grass		
<i>Melinis repens</i>	Red Natal Grass		
<i>Nymphaea caerulea</i>	Blue Water Lily		
<i>Ochna serrulata</i>	Ochna		Other



Species	Common Name	Restricted Invasive Plants	Other Invasive Plants
<i>Passiflora suberosa</i>	Corky Passion Vine		Other
<i>Persicaria decipiens</i>	Slender Knotweed		
<i>Pinus elliottii</i>	Slash Pine		
<i>Pteridium esculentum</i>	Bracken		
<i>Schinus terebinthifolius</i>	Broadleaved Pepper	Restricted	
<i>Senecio madagascariensis</i>	Fireweed	Restricted	
<i>Senna pendula</i>	Easter Cassia		Other
<i>Sida cordifolia</i>	Flannel Weed		
<i>Solanum mauritianum</i>	Wild Tobacco Tree		Other
<i>Solanum nigrum</i>	Blackberry Nightshade		
<i>Solanum seaforthianum</i>	Brazilian Nightshade		
<i>Solanum torvum</i>	Devil's Fig		
<i>Syragrus romanzoffiana</i>	Cocus Palm		
<i>Tecoma stans</i>	Yellow Bells	Restricted	
<i>Typhya orientalis</i>	Bulrush		Other



Photo 5: Major weed incursion along Flagstone Creek



4.6. Fauna Survey

The following observations were made during site surveys regarding fauna;

- A total of thirty-eight (38) fauna species were observed on site, consisting of two (2) amphibians, twenty-eight (28) birds, two (2) mammals and six (6) reptile species.
- All species observed are common to the local area and typical of an environment that merges between residential to rural residential and rural.
- Fauna connectivity will be maintained on site through the retention of a vegetated corridor running east west along Flagstone Creek. The properties directly west and east of the site are completely vegetated and provide refuge habitat to local fauna, including the mob of *Macropus giganteus* (Eastern Grey Kangaroo) observed on site.
- Habitat features throughout the majority of the property are restricted to established native trees dominated by *Eucalyptus tereticornis* (Forest Red Gum). Very few of these trees or any of the other native trees recorded contained hollows or nests to support native fauna. It is worth noting that the largest native trees recorded adjacent to the existing site shed did not retain any hollows or habitat features outside of being an established tree.

Table 9: Fauna Species List

Species	Common Name
BIRDS	
<i>Alcedo azurea</i>	Azure Kingfisher
<i>Ardea ibis</i>	Cattle Egret
<i>Ardea intermedia</i>	Intermediate Egret
<i>Centropus phasianinus</i>	Pheasant Coucal
<i>Chenonetta jubata</i>	Australian Wood Duck
<i>Corvus orru</i>	Torresian Crow
<i>Dacelo novaeguineae</i>	Laughing Kookaburra
<i>Dendrocygna eytoni</i>	Plumed Whistling Duck
<i>Eolophus roseicapilla</i>	Galah
<i>Gallinula tenebrosa</i>	Dusky Moorhen
<i>Geopelia cuneata</i>	Diamond Dove
<i>Gymnorhina tibicen</i>	Australian Magpie
<i>Malurus cyaneus</i>	Superb Fairy-wren
<i>Malurus melanocephalus</i>	Red-backed Fairy Wren
<i>Manorina melanocephala</i>	Noisy Miner
<i>Meliphaga lewinii</i>	Lewins' Honeyeater
<i>Merops ornatus</i>	Rainbow Bee-eater
<i>Milvus migrans</i>	Black Kite
<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant
<i>Philemon corniculatus</i>	Noisy Friarbird



Species	Common Name
<i>Platycercus adscitus</i>	Pale-headed Rosella
<i>Podargus strigoides</i>	Tawny Frogmouth
<i>Rhipidura leucophrys</i>	Willie Wagtail
<i>Threskiornis molucca</i>	Australian White Ibis
<i>Threskiornis spinicollis</i>	Straw-necked Ibis
<i>Trichoglossus chlorolepidotsu</i>	Scaly-breasted Lorikeet
<i>Trichoglossus haematodus</i>	Rainbow Lorikeet
<i>Vanellus miles</i>	Masked Lapwing
REPTILES	
<i>Hemidactylus frenatus</i>	Asian House Gecko
<i>Physignathus lesueurii</i>	Eastern Water Dragon
<i>Pogona barbata</i>	Common Bearded Dragon
<i>Cryptoblepharus virgatus</i>	Wall Skink
<i>Pseudonaja textilis</i>	Eastern Brown Snake
<i>Pseudechis porphyriacus</i>	Red-bellied Black Snake
MAMMALS	
<i>Trichosurus vulpecula</i>	Common Brushtail Possum
<i>Macropus giganteus</i>	Grey Kangaroo
AMPHIBIANS	
<i>Bufo marinus</i>	Cane Toad
<i>Litoria fallax</i>	Eastern Sedgefrog

- *Pteropus poliocephalus* (Grey Headed Flying Fox), listed as Vulnerable under The *Environmental Protection and Biodiversity Conservation Act*, is expected to utilise the site at various stages when trees are in flower.
- This species requires foraging resources and roosting sites. It is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. It also feeds on commercial fruit crops and on introduced tree species within urban environments.
- The most common time that this species is expected to occur is between June and December, when the *Eucalyptus tereticornis* (Forest Red Gum) are in flower, however could occur in lower numbers throughout the remainder of the year.
 - No roost site is located on site or within the immediate vicinity of the site.
 - The Department of Environment national flying-fox monitoring viewer has mapped a Grey-headed Flying Fox Camp approximately two (2) kilometers directly south of the site. However, records show that this camp has not been used since August 2013. The closest know camp is approximately 6.6 kilometers southeast of the site with records as recent as November 2016. This camp is located within Oak Tree Court, Cedar Vale.

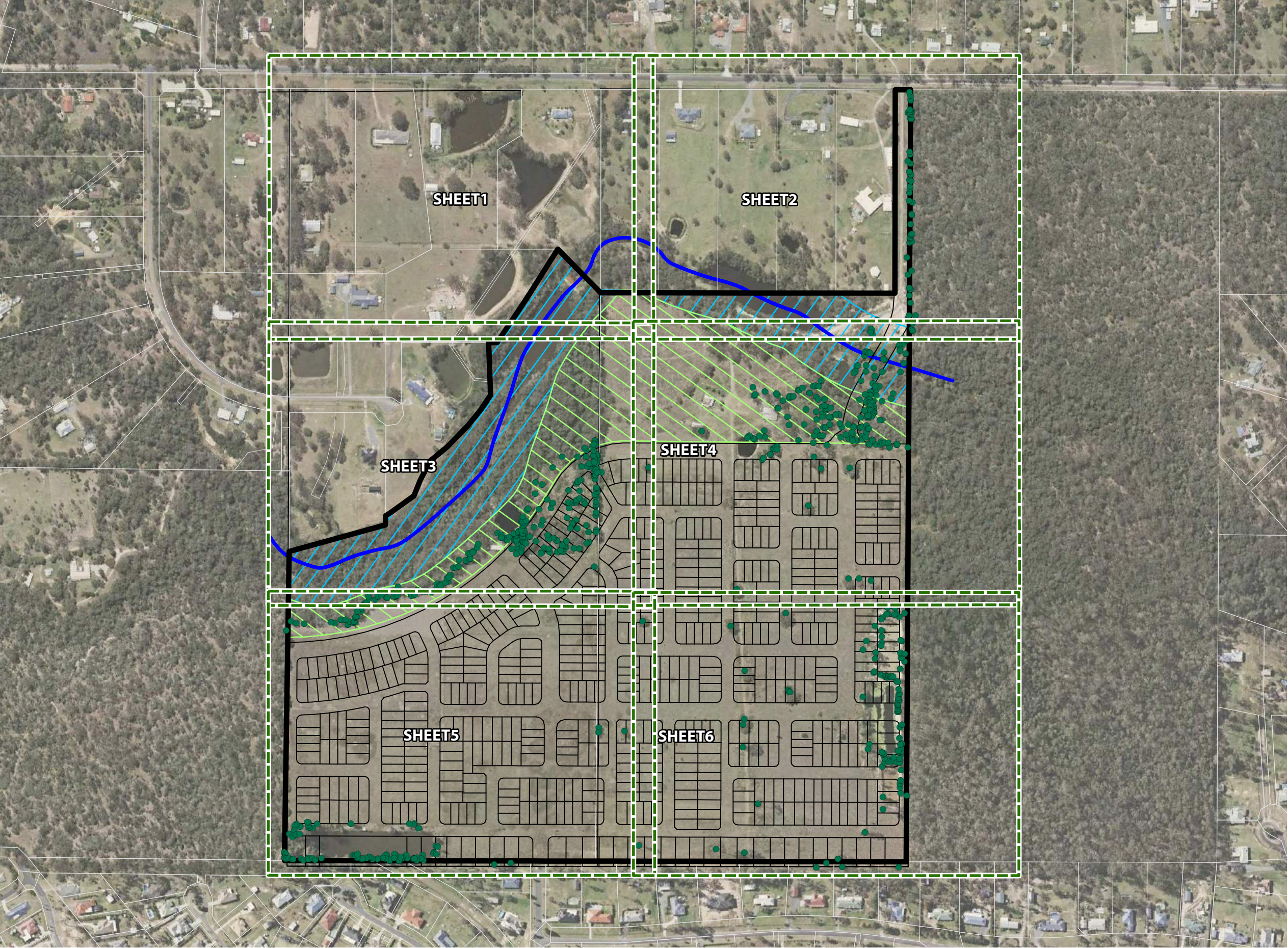


- Although no SAT surveys were completed as part of this survey, it is confirmed that *Phascolarctos cinereus* (Koala) activity was observed in the form of scats at only some of the individual *Eucalyptus tereticornis* (Forest Red Gum) specimens associated with the Flagstone Creek.
- A portion of the site is mapped as containing Medium Value Bushland habitat along the sites eastern property boundary, including the access handle. This area of the property contains two constructed dams and an open paddock which is regularly maintained through slashing. Although some regrowth koala food trees were recorded as part of the tree plot survey containing *Corymbia tessellaris* (Moreton Bay Ash), *Eucalyptus tereticornis* (Forest Red Gum), *Corymbia citriodora* (Spotted Gum) and *Eucalyptus crebra* (Narrow Leaf Ironbark), these specimens are only located along the dam walls.
- This regrowth vegetation does not represent bushland habitat and contains no vegetative structure including canopy, subcanopy and shrub layer. This should be regarded as low value rehabilitation in line with the balance of the property.
- The site contains a number of different regional ecosystem communities and with that, a variety of Eucalypt and Corymbia species as well as other koala food trees including Lophostemons, Angophoras and Melaleucas. The diversity of koala food trees throughout the Flagstone Creek corridor provides further opportunity for koala movement throughout the broader landscape.



Phot 6: *Macropus giganteus* (Eastern Grey Kangaroo) observed on site








4. TREE PLOT - CONTEXT



NOTES
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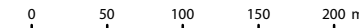
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- LEGEND**
-  Project site DCDB
 -  Qld DCDB
 -  Native tree location
 -  Design layout
 -  Waterway centreline
 -  District Park
 -  Riparian Zone (50m buffer from waterway)

PLAN ISSUE:

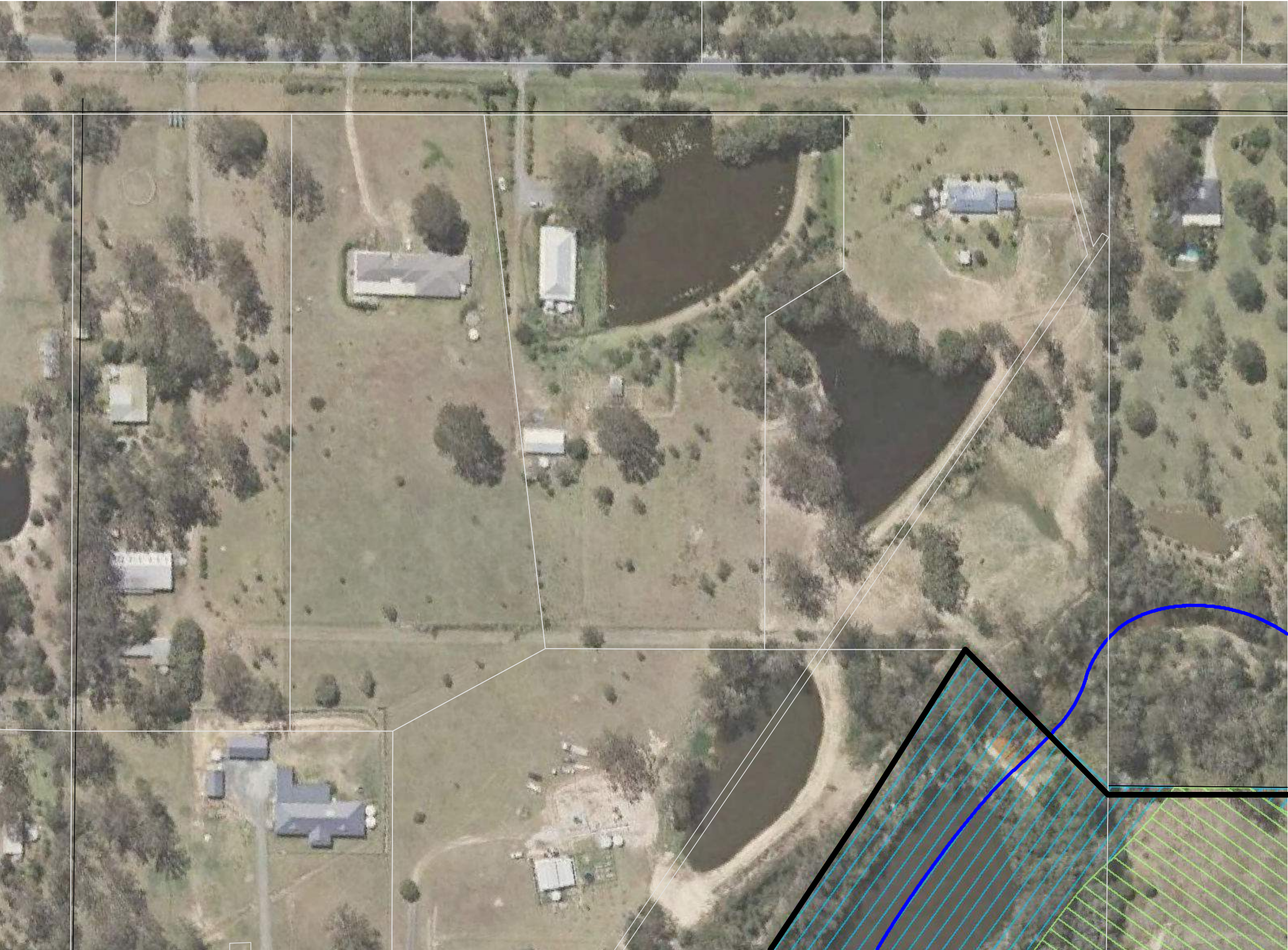
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A	13/10/2017	Prelim Draft	MC	AH
B	18/10/2017	Amendments	MC	AH



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4. TREE PLOT (I)



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B	18/10/2017	Amendments	M.C.	A.H.



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4. TREE PLOT (2)



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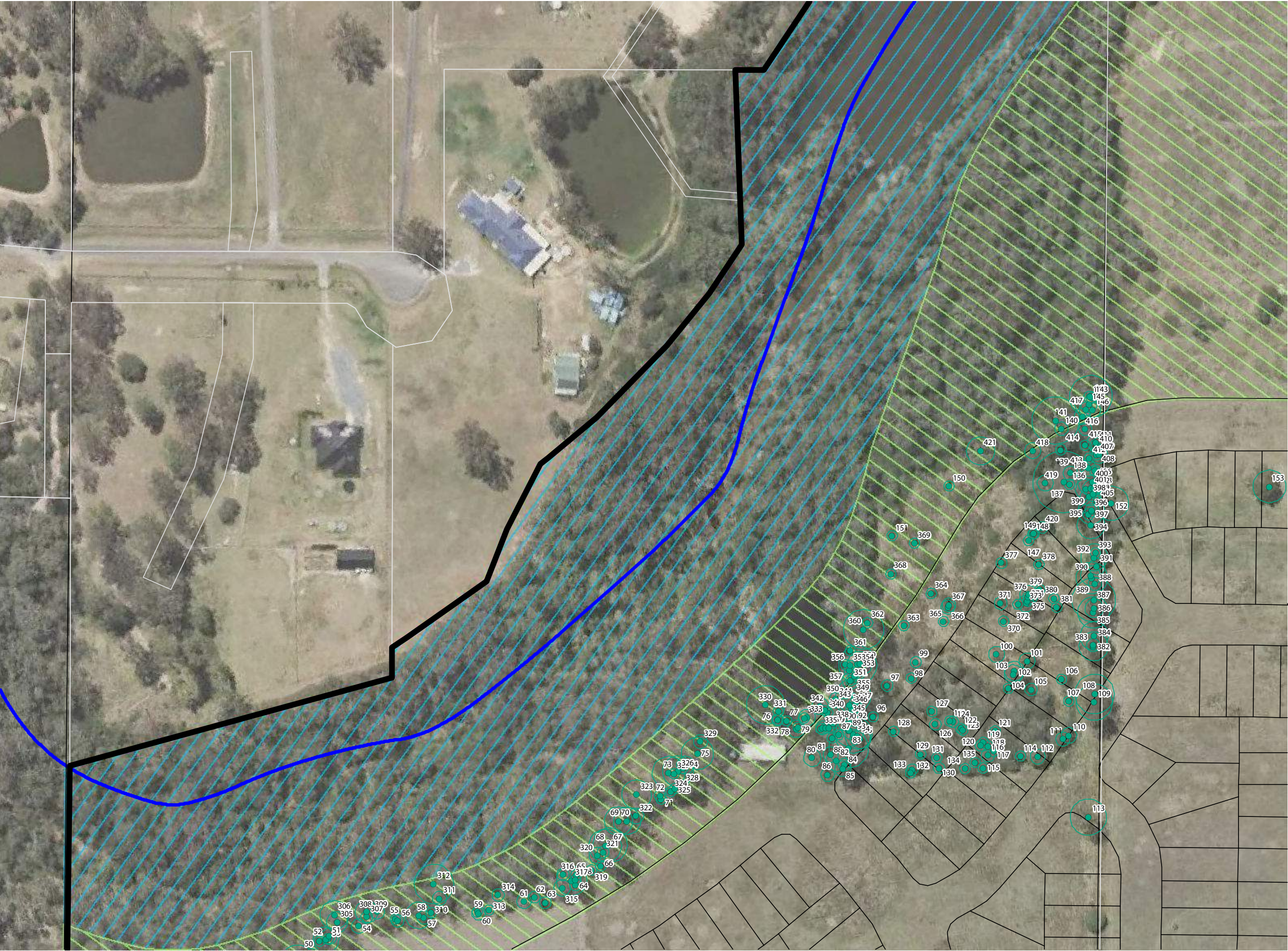
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4. TREE PLOT (3)



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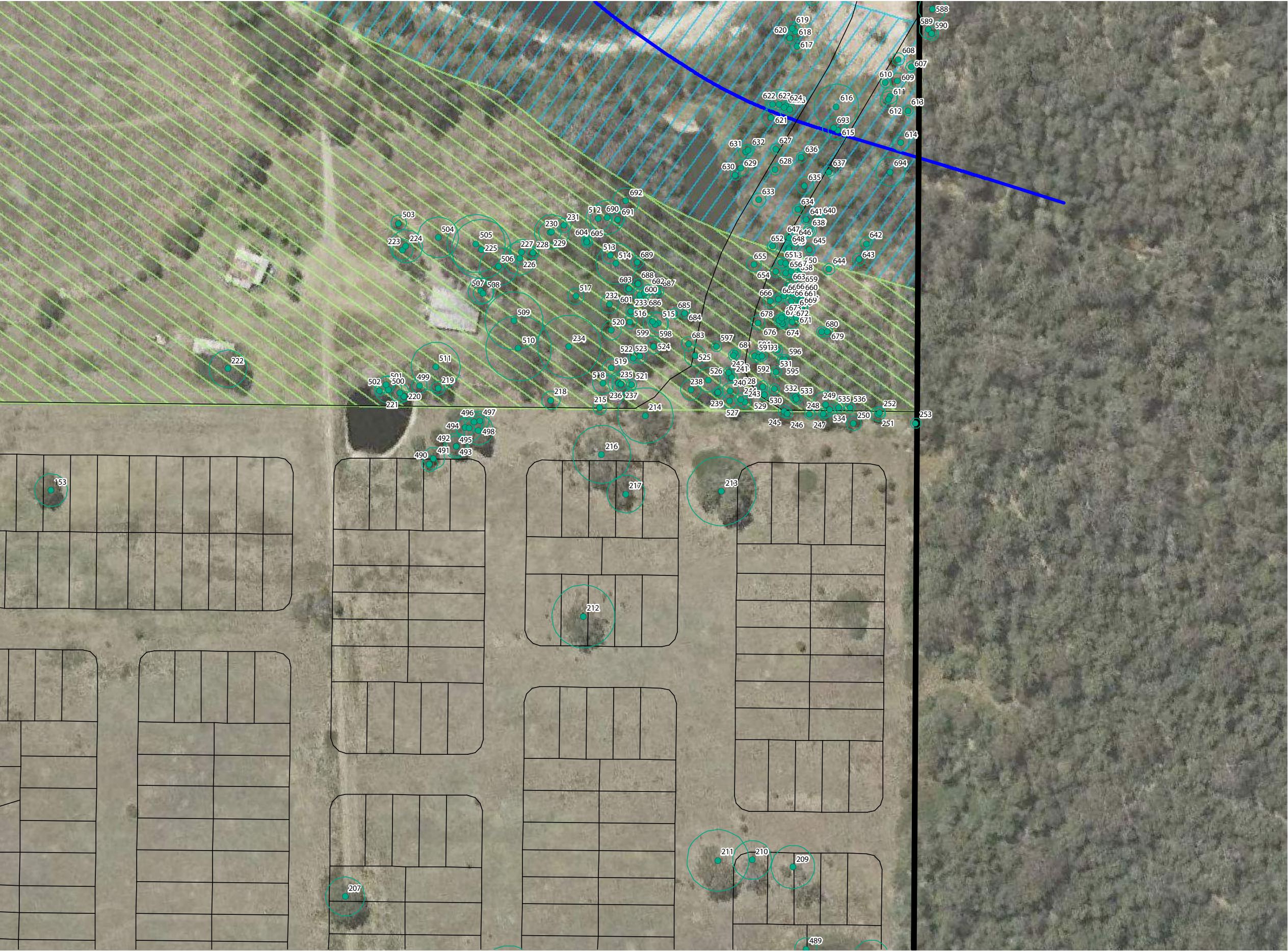
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4. TREE PLOT (4)



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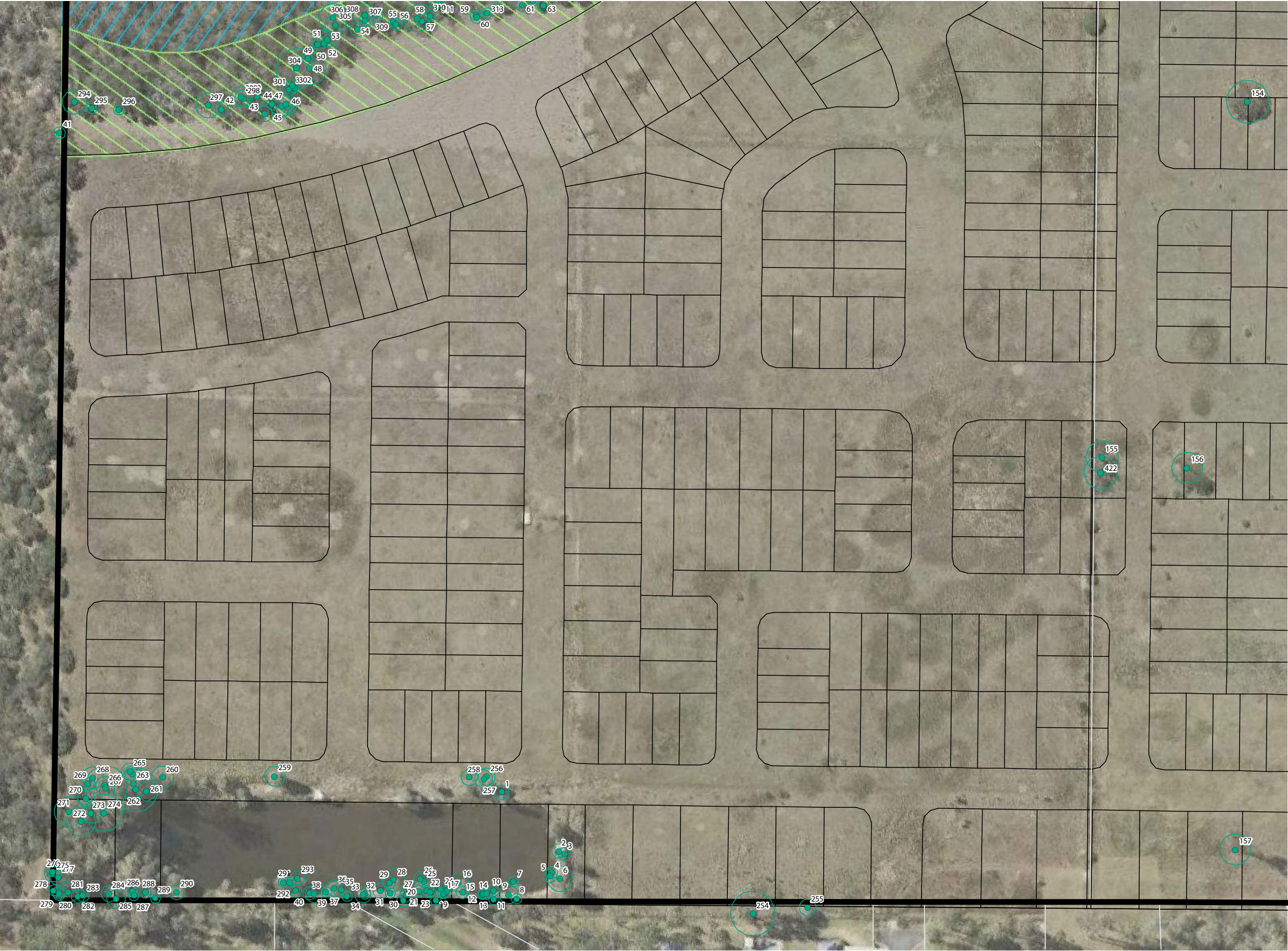
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4. TREE PLOT (5)



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LEGEND

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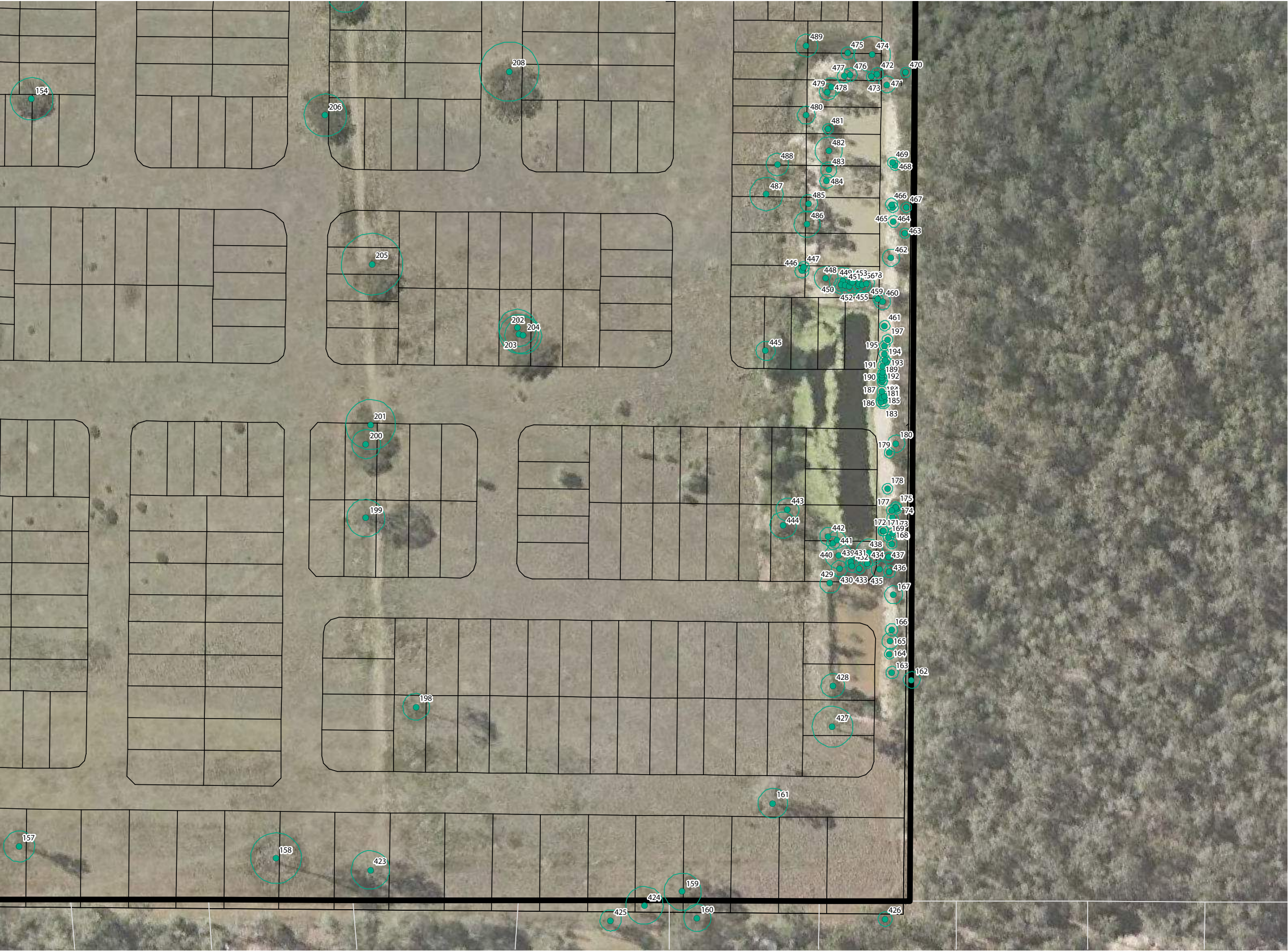
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0 10 20 40 60 m

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4. TREE PLOT (6)



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5. Proposed Development Plan

5.1. Site Design

The proposed Development Plan (has been guided by ongoing ecological advice as well as engineering and hydrological inputs. Issues identified through these processes have been further surveyed in accordance with relevant intergovernmental requirements for specific *Matters of State* and *National Environmental Significance*. Site design directly reflects identified ecological areas and values with a focus on utilisation of lower values areas and retention of highest priority areas.

Key environmental features of the proposed development include:

Flagstone Creek Corridor – Encompasses the park area on the southern portion of the site between the riparian upper bank and the development site. The park will retain existing trees where possible to provide for site amenity and ecological connectivity. The corridor will form linkages to a land parcels in the east and west

Riparian Zone (50m from centreline or top of Bank whichever is wider) – This portion of the site includes the Flagstone Creek area up to the upper bank of the riparian zone or bordering allotment boundary (northern portion). The Riparian Zone provides strategic linear connectivity along Flagstone Creek and equates to approximately 7.4 ha of retained bushland.

Portions of the broader site are to be retained to provide ongoing environmental values as per the intent of the Guidelines 14 & 17. The preservation of these areas is intended to augment the values preserved within adjoining landscapes. The over-arching design philosophy of the site layout is to concentrate development impacts within the lower value areas across the property to enable genuine and robust protection of the Significant Biodiversity Values in the Flagstone Creek Corridor. This will ensure that areas of greater habitat value within the development area will remain connected and intact. The concentration of impacts away from these values integrates environmental features within development zones. Any habitat losses are to be compensated by retention of trees within proposed park area and the ground truthed bushland.



6. Conclusion & Impacts

Ecological Assessments were conducted over the proposed residential development site by **SHG** on 17 August 2017 and again on 4 October 2017. The survey effort was designed to provide adequate information to assess the likelihood of adverse impacts on listed species.

The following conclusions have been made:

- The proposed development area is predominantly cleared due to past agricultural practices (turf farm), and site maintenance. Exotic flora was prevalent across the site, especially within the waterway
- Of threatened flora or fauna species listed under the *Environmental Protection and Biodiversity Conservation Act, 1999* (EPBC Act), field surveys recorded potential for site utilisation by the Koala.
- No Koala sightings were recorded within the proposed development area. Evidence of Koalas in the form of scats was identified during the ecological field survey. However, the scats were located within the Riparian Zone adjacent to Flagstone Creek, which will be protected and enhanced by the development. It is also noted that conditions both directly east and west of the application site is vegetation with both remnant and non-remnant vegetation, providing habitat also for this listed species.
- No threatened flora nor fauna species listed under the *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act) were recorded during field studies.
- Notably, no evidence of the *Swamp Tea-tree (Melaleuca irbyana) Forest of South-east Queensland* Threatened Ecological Community, Lowland Rainforest of Sub Tropical Australia and The White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Threatened Ecological Community was recorded on-site.
- Despite extensive searches, no evidence or positive sightings of *Pteropus poliocephalus* (Grey-headed Flying-fox) and Greater Glider *Petauroides volans* were recorded in ecological assessment of the site.
- Flagstone Creek supports the highest quality connectivity potential however, is highly degraded and largely populated with weed species.

6.1. Guideline 14 – Environmental Values and Sustainable Resource Use

Guideline 14 outlines the values and strategies for protecting the environment and optimising resource use in PDAs and includes the following strategies:

- Environmental values
- Pollution sources
- Climate change issues
- Natural resources

As such, a response to Guideline 14 is below.



Guideline 14 Response: Ecological Processes and Systems

Values	Strategies	Comments
<p>1. Significant terrestrial biodiversity values</p> <p>Areas of significant biodiversity value may include:</p> <ul style="list-style-type: none"> Land mapped in the applicable PDA development scheme as having significant biodiversity values Mapped biodiversity corridors identified in the applicable PDA development scheme Other areas of significance identified in the applicable PDA development scheme Viable areas of remnant vegetation containing endangered regional ecosystems as defined in Appendix 1 Listed threatened species habitat 	<p>Identify significant terrestrial biodiversity values within and adjoining the development area by undertaking:</p> <ul style="list-style-type: none"> Robust field surveys Desktop assessments using local, state and commonwealth environment databases and mapping searches <p>Demonstrate how the development minimises impacts on significant biodiversity values by minimising vegetation clearing generally within the area and by specifically:</p> <ul style="list-style-type: none"> Retaining and enhancing areas of viable remnant vegetation containing endangered regional ecosystems as defined in Appendix 1 Avoiding, minimising or off-setting the clearing of non-viable remnant vegetation containing endangered regional ecosystems as defined in Appendix 1 Minimising the clearing of remnant and regulated regrowth vegetation within the area Providing adequate buffers between development and any identified significant biodiversity value within or adjoining the development site Providing management plans to reduce and control clearing and manage other development and construction impacts in the area. 	<p>Detailed ecological surveys by SHG were undertaken over the project area in August 2017 and October 2017. These have been carried out using a number of survey methods to describe various on-site habitat and vegetation characteristics. These surveys included targeted flora and fauna surveys, specifically to identify the potential presence of listed threatened species and locate ecologically significant areas.</p> <p>The project site is located within the Greater Flagstone Priority Development Area, and is supported by this Significant Biodiversity Assessment Report (SBAR). As part of this reporting, desktop and ground truthing flora, fauna, habitat and waterway field assessments were completed over the entire project site.</p> <p>As discussed in this SBAR, ecological values which meet the Guideline 14 definition of 'significant biodiversity values' are contained within the Riparian Zone, which is intended to be retained and rehabilitated as part of the development. It is noted that the majority of mapped remnant vegetation communities will be retained within the Riparian Zone.</p> <p>The proposed development footprint contains primarily grassed paddock used for Turf Farming. Notably, the Proposed Clearing Area is not mapped within an Environmental Area or Biodiversity Corridor under the GFPDA Development Scheme. This was also ground-</p>



Values	Strategies	Comments
		<p>truthed by SHG during field surveys, the results of which are contained within the SBAR and confirm the above statement. Importantly, the Proposed Development Area is located within the Urban Living precinct under the Development Scheme, which has been strategically identified to minimise impacts on significant biodiversity values within the region.</p> <p>Notably, the proposed Development Area is located outside areas of ground-truthed Of Concern and Endangered remnant vegetation and is located primarily within areas of Category X (non-remnant) vegetation.</p> <p>Removal of small patches of Least Concern and regrowth vegetation is required to facilitate the construction of trunk infrastructure, which includes an access bridge and pump station. No significant biodiversity values will be impacted by clearing. Importantly, the proposal provides sufficient buffers between the development and significant biodiversity values in the form of open space to ensure edge effects associated with the development are minimised and values are retained.</p> <p>Ongoing connectivity values will be ably facilitated by the retention and rehabilitation of the Riparian Zone, which encapsulates Flagstone Creek.</p> <p>Overall, no significant biodiversity values were identified by SHG within the proposed Development Area. Biodiversity values associated with Of Concern and Least Concern vegetation and waterways within the northern extent of the project area will be retained and rehabilitated as part of the development.</p>



Values	Strategies	Comments
		<p>The Mountain Ridge Road Project Natural Environment Overarching Site Strategy (NESS) has been prepared for the management of clearing and construction as well as ongoing operational impacts on terrestrial biodiversity values and is subject to approval by EDQ. As part of the Operational Works stage, specific Vegetation Clearing Management Plans and Fauna Management Plans will be prepared in accordance with the NESS to mitigate and manage clearing and construction impacts as the development is sequenced.</p>
2. Ecological connectivity	<ul style="list-style-type: none"> Identify priority vegetation patches, fauna habitat features and fauna movement corridors in and beyond the application site through detailed site assessments completed in accordance with the relevant local government authority guidelines or planning scheme policies for ecological assessment Retain vegetation connections between priority vegetation patches, fauna habitat features and fauna linkages to ensure ecological connectivity is maintained or enhanced Minimise locating major infrastructure through identified corridor linkages Undertake strategic rehabilitation of degraded land where required to improve or create functioning corridors. 	<p>Ecological assessments completed by SHG in accordance with Guideline 14 requirements did not identify any priority vegetation patches, habitat features or fauna corridors within the Proposed Development Area, which has been largely set to avoid the removal or impact on Significant Biodiversity Areas.</p> <p>The Proposed Development Area is located outside areas of ground-truthed remnant vegetation and is located primarily within areas of Category X (non-remnant) and only very small patches of Category B Least Concern vegetation.</p> <p>The Proposal retains 'Significant Vegetation' as Riparian Zone, which will maintain connectivity through the surrounding landscape. Ancillary linear parks extend from northern Riparian Zone, with the intent of strategic rehabilitation of the degraded waterways. Detailed Rehabilitation Plans will be prepared and issued to EDQ for assessment at the Operations Works stage in accordance with the NESS.</p>



Values	Strategies	Comments
		Any trunk infrastructure required within the Riparian Zone will be suitably rehabilitated to provide maximum connectivity values.
3. Sustainable landscaping practices	<ul style="list-style-type: none"> ▪ Incorporate biodiversity friendly landscape principles and practices such as retaining habitat trees in road reserves and opens space areas ▪ Maximise use of locally occurring native species in landscaping ▪ Identified opportunities for revegetation and rehabilitation along waterways and biodiversity corridors 	<p>Sustainable landscape principles and practices will be incorporated under the Proposal.</p> <p>It is intended that site strategies in the Riparian Zone and the Flagstone Creek Corridor will include:</p> <ul style="list-style-type: none"> • Stabilisation of the riparian interface (beds and banks) through on-ground rehabilitation works; • Reinstate the natural flow regime through minor civil works and on-ground rehabilitation works; • Restoration of the floodplain with bio-retention basins and structural integrity; • Restoration of native plant communities in the floodplain, along stream banks, and in off-channel wetlands; and • Control of weeds and invasive plant species. <p>These methods will be implemented where natural flow regimes and bank stability have been altered through previous land uses (i.e. farming).</p> <p>Landscaping Plans will be provided at the Operational Works stage in accordance with the NESS. These will be subject to approval by EDQ.</p>
4. Bushfire risk management	<ul style="list-style-type: none"> ▪ Ensure significant biodiversity values are protected from exempt clearing by ensuring 	A <i>Bushfire Management Plan</i> has been prepared for the Mountain Ridge Road Project and submitted with the



Values	Strategies	Comments
	<p>new built infrastructure is adequately set back from identified biodiversity areas</p> <ul style="list-style-type: none"> Where a firebreak is required to protect new infrastructure ensure clearing associated with the firebreaks is located external to significant biodiversity areas. <p>Note: Protection from bushfire is not considered suitable justification for impacts on significant biodiversity values.</p>	MCU Application. The strategies will ensure significant biodiversity values are protected, and new exempt clearing is not created for significant biodiversity areas (i.e. Riparian Zone).

Guideline 14 Response: Waterways and Wetlands

1. Wetlands	<ul style="list-style-type: none"> Identify and accurately map the extent of, and describe the values for, any identified wetlands of high ecological significance and referable wetlands Provide adequate buffers between development and wetlands that are in and adjacent to the PDA (where feasible incorporate open space, storm water treatment or fauna corridors within wetland buffers) Where a wetland of high ecological significance occurs, a minimum buffer of 50 metres between the development proposal and the wetland is recommended <p>Note: Trigger for assessment of wetland areas is where the stage of works occurs within 100m of the wetland area.</p>	SARA Wetland Protection Area mapping and SPP MSES mapping does not identify protected wetlands within or adjacent the Proposed Clearing Area. Surveys by SHG confirmed that no natural wetland values were identified across the site.



2. Waterways	<ul style="list-style-type: none"> Identify and accurately map waterways in accordance with DEHP's stream order hierarchy (1-5). Determine existing and proposed waterway values of site stream orders (eg. Intact remnant vegetation, riparian values, fauna connectivity, natural water quality function, watercourse stability) Retain waterways in their undisturbed condition by minimising disturbance to natural drainage. Where this is not proposed provide a detailed waterway assessment report justifying encroachment or removal of waterway areas. Provide adequate buffers between development and retained waterways to provide waterway protection including temperature, bank stability, light, aquatic habitat, terrestrial habitat. Where waterways have been designated or identified to provide dual use (fauna corridor, open space connection, stormwater conveyance) provide additional buffer setback. 	<p>One watercourse (Flagstone Creek) mapped under the <i>Vegetation Management Act 1999</i>, <i>Fisheries Act 1994</i> and <i>State Planning Policy 2014</i> traverses the project area. As part of the ecological assessment, ground-truthed watercourse determinations were undertaken by SHG.</p> <p>Flagstone Creek has been retained by the proposal within the Riparian Zone and Flagstone Creek Corridor and the degraded flow paths will be rehabilitated as part of the development to restore bed and banks and enhance natural hydrology and ecological function. Detailed Rehabilitation Plans will be prepared at the Operational Works stage in accordance with the NESS and issued to EDQ for assessment.</p> <p>Buffers to waterways and Significant Biodiversity Values have been considered in site design and will be incorporated within the NESS.</p>
3. Water Quality	<ul style="list-style-type: none"> Water discharge to on-site and adjacent water systems (freshwater, estuarine and marine) must meet water quality standards under current Queensland legislation. Soil disturbance must be managed to avoid associated contaminants entering adjacent water systems. Identify nutrient hazard areas and appropriately manage soil and groundwater disturbance to avoid or minimise nutrient mobilisation that may increase the risk of coastal algal blooms. 	<p>Refer to Stormwater Management Plan prepared by Water Technology.</p> <p>Erosion and Sediment Control Plans will be prepared as part of the Operational Works Stage in accordance with the NESS. These plans will manage and minimise impacts on mapped waterways and will be subject to compliance assessment by EDQ.</p>



	<ul style="list-style-type: none"> ▪ Avoid or minimise waste water discharge from the site in accordance with a waste water management plan prepared by a suitably qualified person. ▪ Avoid areas with highly permeable soils or a high water table when locating waste disposal activities or facilities. ▪ Provide adequate buffers for water quality between development and retained waterways. 	<p>Buffers to waterways and Significant Biodiversity Values have been considered in site design and will be incorporated within the NESS.</p>



6.2. Guideline 17 – Remnant Vegetation and Koala Obligations

Guideline 17 applies to development in the Greater Flagstone PDA where the project will result in clearing of:

1. Remnant vegetation containing endangered regional ecosystems; or
2. Koala bushland habitat or areas suitable for high and medium value rehabilitation, as shown on the Koala Habitat Values Map.

Preliminary master planning indicates that some areas that contain mapped Koala Habitat Values will be impacted by the proposed development. The vast majority of mapped Koala values will be retained and rehabilitated within the Riparian Zone. Desktop calculations demonstrate that only 9,332m² of Low Value Bushland will be unavoidably removed to facilitate the development intent of the proposal (refer **Plan 6**).

A portion of the site is mapped as containing Medium Value Bushland habitat along the sites eastern property boundary. This area of the property contains two constructed dams and an open paddock which is regularly maintained through slashing. Although some regrowth koala food trees were recorded as part of the tree plot survey containing by *Corymbia tessellaris* (Moreton Bay Ash), *Eucalyptus tereticornis* (Forest Red Gum), *Corymbia citriodora* (Spotted Gum) and *Eucalyptus crebra* (Narrow Leaf Ironbark), these specimens are only located along the dam walls. The entry handle of the site is also mapped as Medium Value Bushland habitat, despite containing no tree specimens.

This regrowth vegetation does not represent bushland habitat and contains no vegetative structure including canopy, sub canopy and shrub layer. This should be regarded as low value rehabilitation in line with the balance of the property

As per IG17, the following Koala obligations will likely apply at the State level under the proposal:

Value	Rate	Total
Bushland Habitat	\$15,000 per hectare	\$13,998
Total		\$13,998

A per dwelling cost of \$150 also applies under IG17.

6.3 Potential Impacts

The proposal has the potential to generate the following generic impacts, although the actual impact of many of those listed are likely to be either fully or partially mitigated through suitable design and construction methods:

POTENTIAL CONSTRUCTION IMPACTS

- Direct removal of site vegetation (Remnant, Non Remnant and Isolated Tree Specimens)
- Loss of habitat – Primarily associated with the above vegetation due to site access (bridge infrastructure, stormwater treatment and pump station). These areas will be fully rehabilitated post construction.
- Excavation / compaction / changes in existing ground levels



- Altering of hydrological flows (note that flows leaving the site will be managed in accordance with the Stormwater Management Plan)
- Noise, vibration and dust
- Fragmentation (should be able to be minimised with sequencing and directional clearing)
- Erosion and sedimentation
- Threats associated with open cut trenching etc. and fauna entrapment

POTENTIAL OPERATIONAL IMPACTS

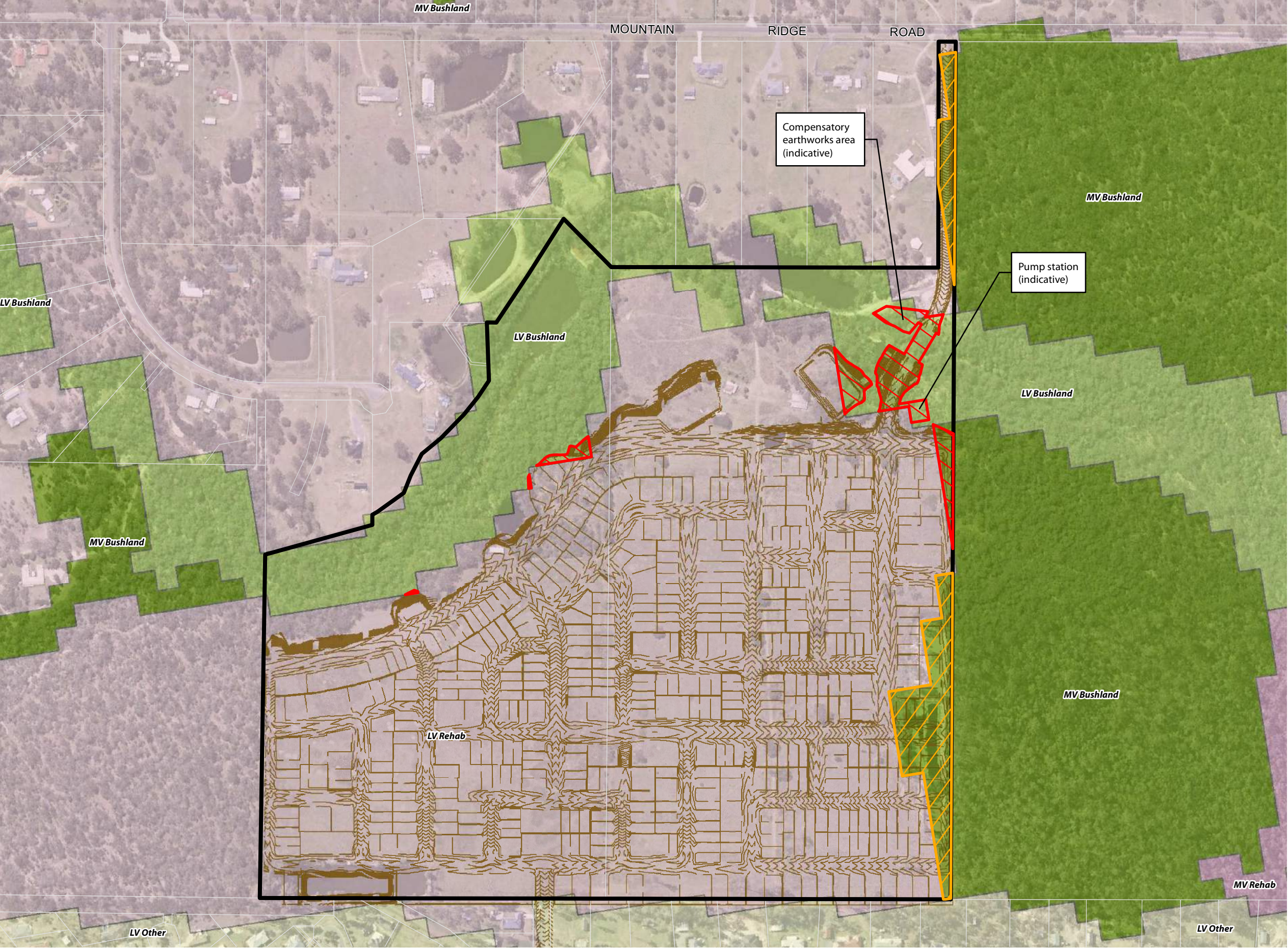
- Weed introduction (domestic garden escapees)
- Increased hydrology with increased hardstand (Waterway stability)
- Altering of run-off chemical and nutrient components (Quality)
- Barriers to fauna movement
- Vehicle and pedestrian movement and trespass
- Introduction of domestic and predatory species

Potential impacts associated with construction are direct and occur at set times over an acute period, whereas, operational impacts are ongoing and less measurable. Housing density outcomes sought by **EDQ** in relation to housing affordability (see **Guideline 16**) are not conducive to micro-scale integration of natural features with large earthworks modelling required to make housing product workable and affordable while maintaining density targets. Almost the entire land holding fits within this category. Ecological connectivity is best enhanced via retention and rehabilitation of Flagstone Creek through the centre of the site. The project design focuses on consolidating the environmental assets and sensitive land uses to the adjoining corridor where the ecological values were assessed at their highest and ongoing connectivity through the broader landscape can be facilitated.

Importantly, the development plan reflects the original outcomes outlined by the Urban Land Development Authority (ULDA – Now EDQ) in the *Development Scheme*.

Impacts will be managed through the measures outlined in the Implementation Guidelines or as altered through site specific outcomes listed in the approval conditions. Where impacts to Koala habit values occur, offsets will be triggered under guideline 17.

5. GUIDELINE 17 OFFSET AREA CALCULATION



NOTES
This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.
Layer Sources: QLD GIS Layers (QLD Gov. Information Service 2016), Aerial (Nearmap 2016)
* This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

Qld DCDB

Design contours

Bushland habitat offset area - 9,332.0sqm

No offset (does not constitute Bushland habitat) - 16,554 sqm

Koala Habitat Values

Bushland Habitat

High Value Bushland

Medium Value Bushland

Low Value Bushland

Suitable for Rehabilitation

High Value Rehabilitation

Medium Value Rehabilitation

Low Value Rehabilitation

Other Areas of Value

High Value Other

Medium Value Other

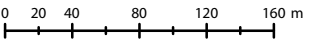
Low Value Other

Non-habitat

Water

PLAN ISSUE:

Issue	Date	Description	Drawn	Checked
A	18/10/2017	Prelim Draft	MC	AH



Transverse Mercator | GDA 1994 | Zone 56 | 1:4,500 @ A3





7. Recommendations

The Mountain Ridge Road Project represents a major project requiring extensive design, planning and management to ensure potential adverse environmental impacts are considered and mitigated.

Significant technical studies have been completed to date covering flora and fauna over the proposal area, which has resulted in ground truthed scientific data being used to inform the planning process. Notwithstanding the above, there are natural limitations to the ability to assess ecological aspects to the micro scale given the size of the site and the overall duration in delivering a project of this scale.

In this regard, the following recommendations are made by this Significant Biodiversity Assessment Report:

1. Preclearance Surveys

Further to the assessment completed in this Report, additional pre-clearance surveys should be undertaken prior to the application of approved operational works management plans for Vegetation and Fauna.

2. Vegetation Clearing and Fauna Management Plan

A Vegetation Clearing and Fauna Management Plan (VCFMP) should form part of a broader management strategy. The document will be prepared as part of the OPERATIONAL WORKS drawings for works including vegetation removal. The VCFMP covers clearing of all vegetation:

- Clearly show all trees to be removed and retained
- Include details of all civil works likely to impact on existing vegetation
- Temporary and permanent exclusion and protection fencing
- Roles and responsibilities for site contractors, the client and the consultant group
- Stockpiling and site access locations
- A clearing sequencing plan showing the commencement of clearing and direction of removal (this should be in conjunction with the Fauna Management Plan component to allow for the appropriate flushing of fauna towards surrounding safe haven areas.
- Links to weed management and revegetation proposals
- The stock piling and reuse of cleared vegetation
- Specific details on the removal of previously identified potential fauna habitat trees
- Where trees which are shown to be retained occur within disturbance zones, they should be accompanied by necessary arborist specifications incorporated into the VCFMP
- Summary of species surveyed as using the site and which of those are likely to be impacted by works occurring within each stage of works.
- List relevant State and Federal legislation constraints and controls for the above listed fauna
- A plan showing existing habitat opportunities and locations
- Detail the threats for existing fauna species
- Specify management and mitigation measures – could include temporary use of fauna exclusion fencing
- Details of fauna spotter role, contacts and certification
- Specific fauna management procedures for potential or known habitat trees



8. Appendices

Appendix A

Development Proposal

Appendix B

Environment Protection and Biodiversity Conservation Act 1999 Protected Matters Database Search

Appendix C

Nature Conservation Act 1992 (Qld) Wildnet Database Search Results

Appendix D

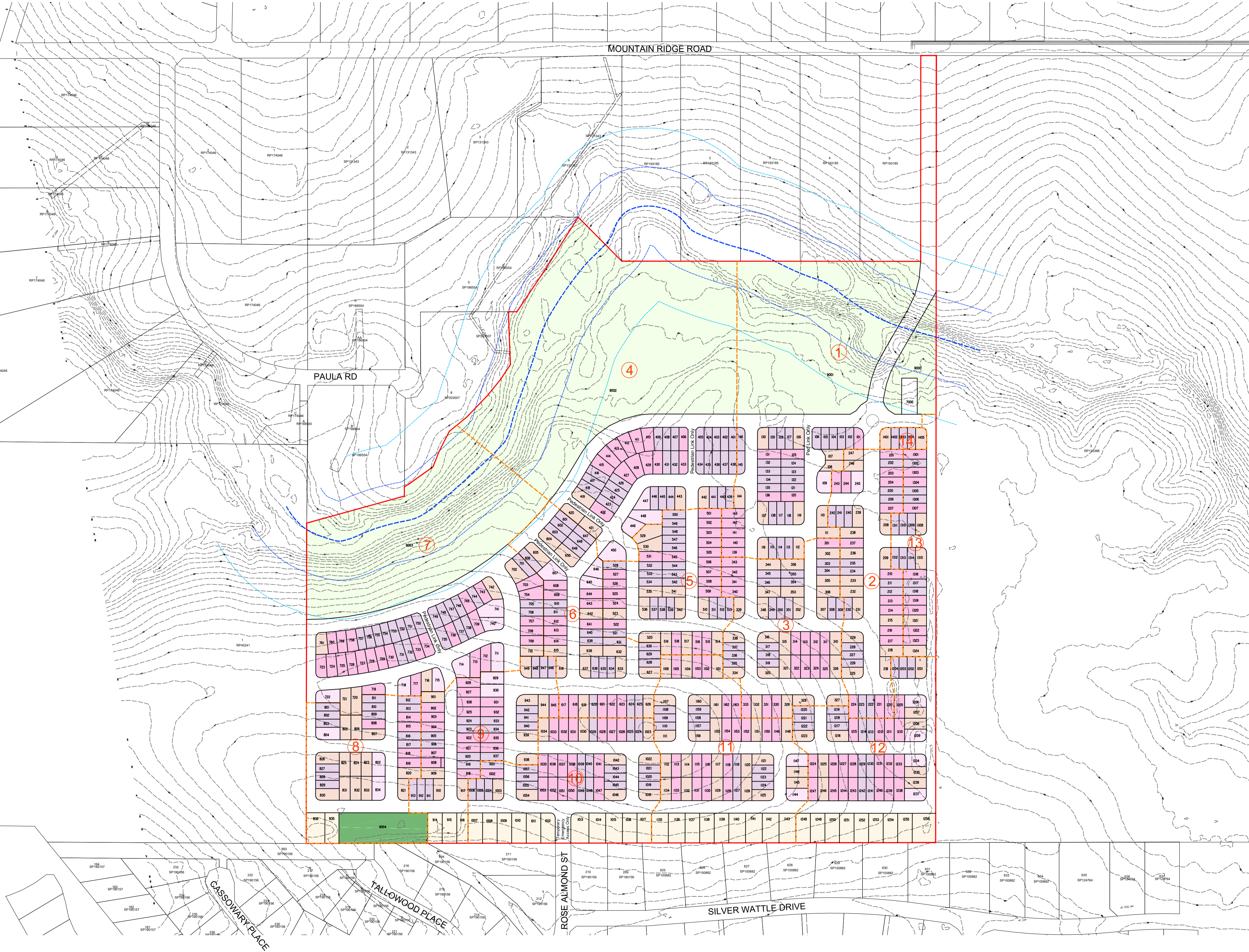
Other Environmental Searches



Appendix A

Development Proposal

STAGING PLAN - OVERALL



NOT TO BE USED FOR ENGINEERING DESIGN
OR CONSTRUCTION

NOTES

This plan was prepared as a conceptual layout only. The information on this plan is not suitable for any other purpose.

Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions.

No reliance should be placed on the information on this plan for detailed subdivision design or for any financial dealings involving the land.

Pavements and centrelines shown are indicative only and are subject to Engineering Design.

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LEGEND

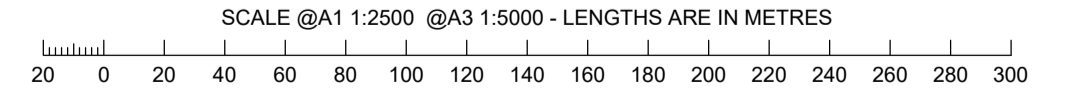
- Site Boundary
- Logan City Council 2016 Flood Mapping
- Major Contour 1.0m interval
- 50m Centreline Waterway Buffer
- 100m Centreline Waterway Buffer
- Staging No.
- Staging Boundary

- Gross density (53.91 ha) = 12.3 dwellings per hectare
- Net density (38.35 ha) = 17.0 dwellings per hectare (excluding District Park/Linear Open Space)

DEVELOPMENT STATISTICS		
Development Area	53.914 ha	
Total Length of New Roads	7018 m	
Total Area of New Roads	12.90 ha	23.9%
Villa (10.5m -12.49m frontage)	237	36.5%
Premium Villa (12.5m - 13.99m frontage)	197	30.3%
Courtyard (14m - 15.99m frontage)	155	23.9%
Premium Courtyard (16m + frontage)	27	4.1%
Interface Lots	34	5.2%
Total Residential Allotments	650	100%
Average Lot Size	390 m²	
Total Open Space	15.653 ha	29.0%
Stormwater / Detention Basin	4455 m²	0.8%

STAGING STATISTICS		
	Stage Area	No of Lots
STAGE 1	7.164 ha	46
STAGE 2	2.486 ha	47
STAGE 3	3.025 ha	56
STAGE 4	10.889 ha	50
STAGE 5	3.199 ha	50
STAGE 6	2.41 ha	50
STAGE 7	6.897 ha	61
STAGE 8	3.063 ha	36
STAGE 9	3.397 ha	49
STAGE 10	2.849 ha	57
STAGE 11	3.064 ha	63
STAGE 12	1.989 ha	56
STAGE 13	3.3 ha	24
STAGE 14	1825 m²	5
TOTALS	53.914 ha	650

RP DESCRIPTION LOT 6 on RP193185 & LOT 9 on SP203507



MOUNTAIN RIDGE PTY LTD



Appendix B

Environment Protection and Biodiversity Conservation Act 1999
Protected Matters Database Search



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: 16/01/17 14:05:18

[Summary](#)

[Details](#)

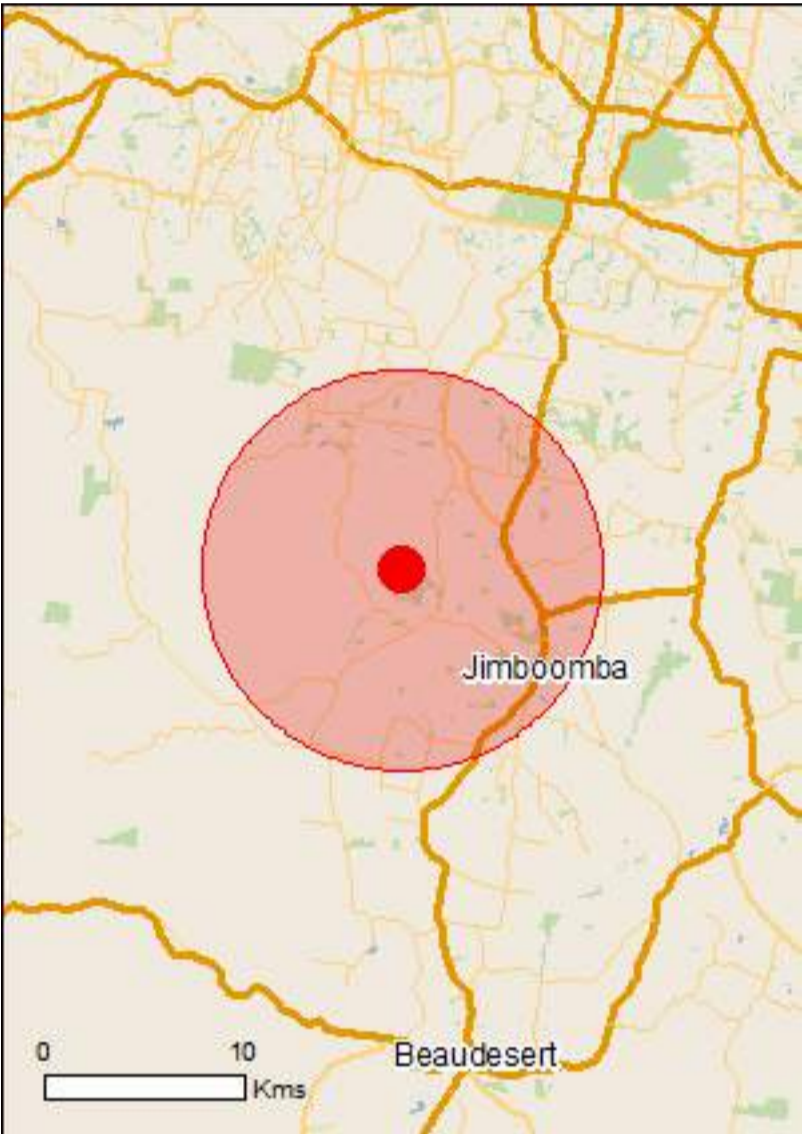
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are
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[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:	3
Listed Threatened Species:	39
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:	4
Regional Forest Agreements:	None
Invasive Species:	42
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
Swamp Tea-tree (Melaleuca irbyana) Forest of South-east Queensland	Critically Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species

[Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat may occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Poephila cincta cincta Southern Black-throated Finch [64447]	Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area
Fish		
Maccullochella mariensis Mary River Cod [83806]	Endangered	Translocated population known to occur within area
Insects		
Phyllodes imperialis smithersi Pink Underwing Moth [86084]	Endangered	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat likely 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		
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
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat likely to occur within area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat may 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
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
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

Name	Threatened	Type of Presence
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat likely to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area

Migratory Wetlands Species		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely 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		[<u>Resource Information</u>]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Anseranas semipalmata		
Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species

Name	Threatened	Type of Presence
Ardea ibis Cattle Egret [59542]	Critically Endangered	habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]		Species or species habitat may occur within area
Cuculus saturatus Oriental Cuckoo, Himalayan Cuckoo [710]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Critically Endangered	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat likely to occur within area
Motacilla flava Yellow Wagtail [644]	Critically Endangered	Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves		[Resource Information]
Name		State
A&T Koala Billabong		QLD
Henderson Reserve		QLD
Koolena		QLD
Van der Loos		QLD

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

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
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		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus africanus Climbing Asparagus, Climbing Asparagus Fern [66907]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		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
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species

Name	Status	Type of Presence
Cryptostegia grandiflora		habitat likely to occur within area
Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda [18913]		Species or species habitat likely to 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
Hymenachne amplexicaulis		
Hymenachne, Olive Hymenachne, Water Stargrass, West Indian Grass, West Indian Marsh Grass [31754]		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
Protasparagus plumosus		
Climbing Asparagus-fern, Ferny Asparagus [11747]		Species or species habitat likely to occur within area
Sagittaria platyphylla		
Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii		
Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta		
Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis		
Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Solanum elaeagnifolium		
Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus		
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.

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-27.79381 152.96599

Acknowledgements

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

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

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

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



Appendix C

Nature Conservation Act 1992 (Qld)
Wildlife Online Database Search Results



Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point

Species: All

Type: All

Status: Rare and threatened species

Records: All

Date: All

Latitude: -27.7938

Longitude: 152.9659

Distance: 10

Email: kimdelaney@saundershavill.com

Date submitted: Monday 16 Jan 2017 15:29:39

Date extracted: Monday 16 Jan 2017 15:30:13

The number of records retrieved = 8

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	Limnodynastidae	<i>Adelotus brevis</i>	tusked frog		V		2
animals	birds	Cacatuidae	<i>Calyptorhynchus lathamii lathamii</i>	glossy black-cockatoo (eastern)		V		5
animals	birds	Falconidae	<i>Falco hypoleucos</i>	grey falcon		V		1
animals	birds	Strigidae	<i>Ninox strenua</i>	powerful owl		V		6
animals	mammals	Dasyuridae	<i>Dasyurus maculatus maculatus</i>	spotted-tailed quoll (southern subspecies)		V	E	13
animals	mammals	Macropodidae	<i>Petrogale penicillata</i>	brush-tailed rock-wallaby		V	V	3
animals	mammals	Phascolarctidae	<i>Phascolarctos cinereus</i>	koala		V	V	368
plants	higher dicots	Myrtaceae	<i>Melaleuca irbyana</i>			E		12/9

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.



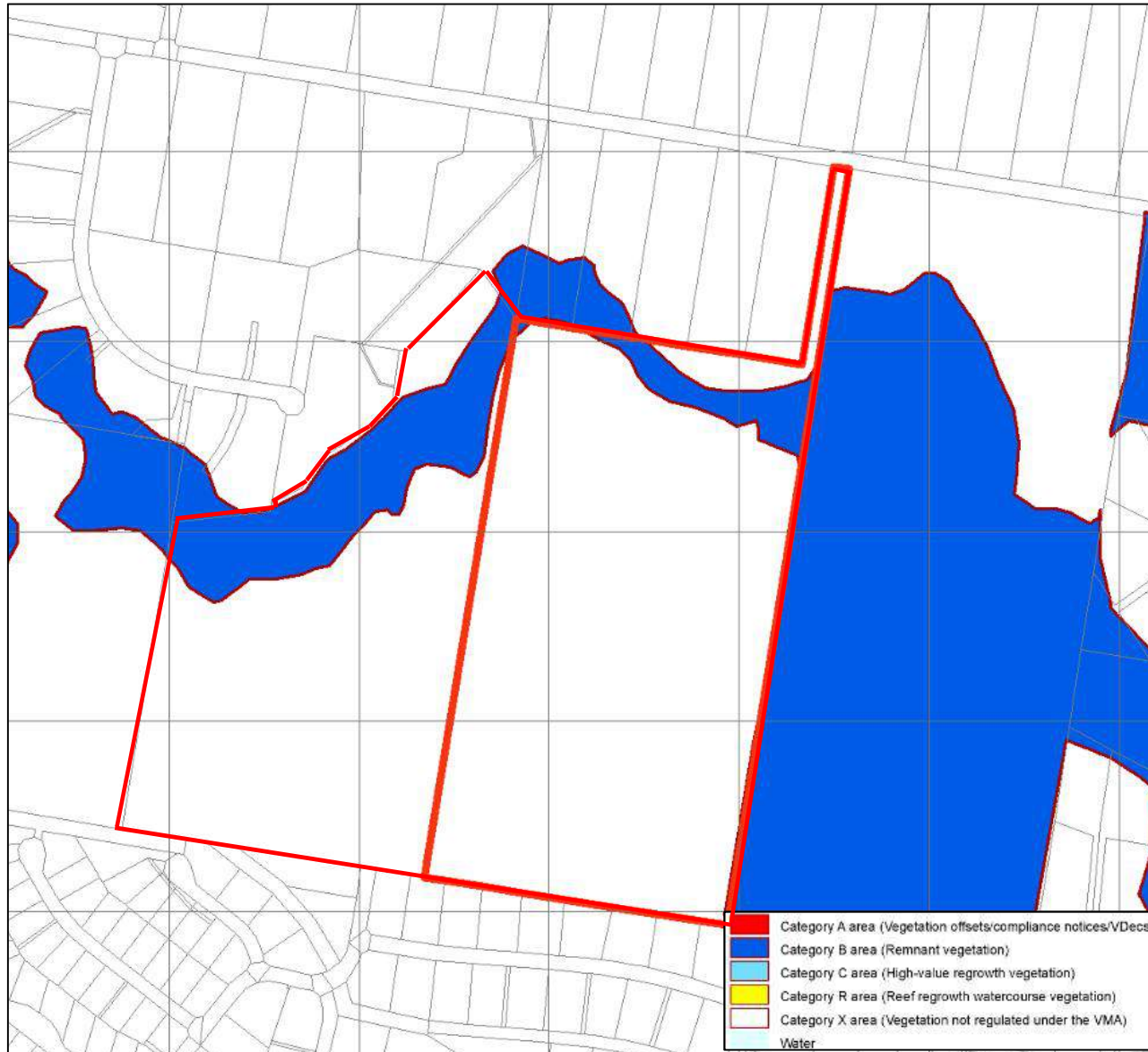
Appendix D

Other Environmental Searches

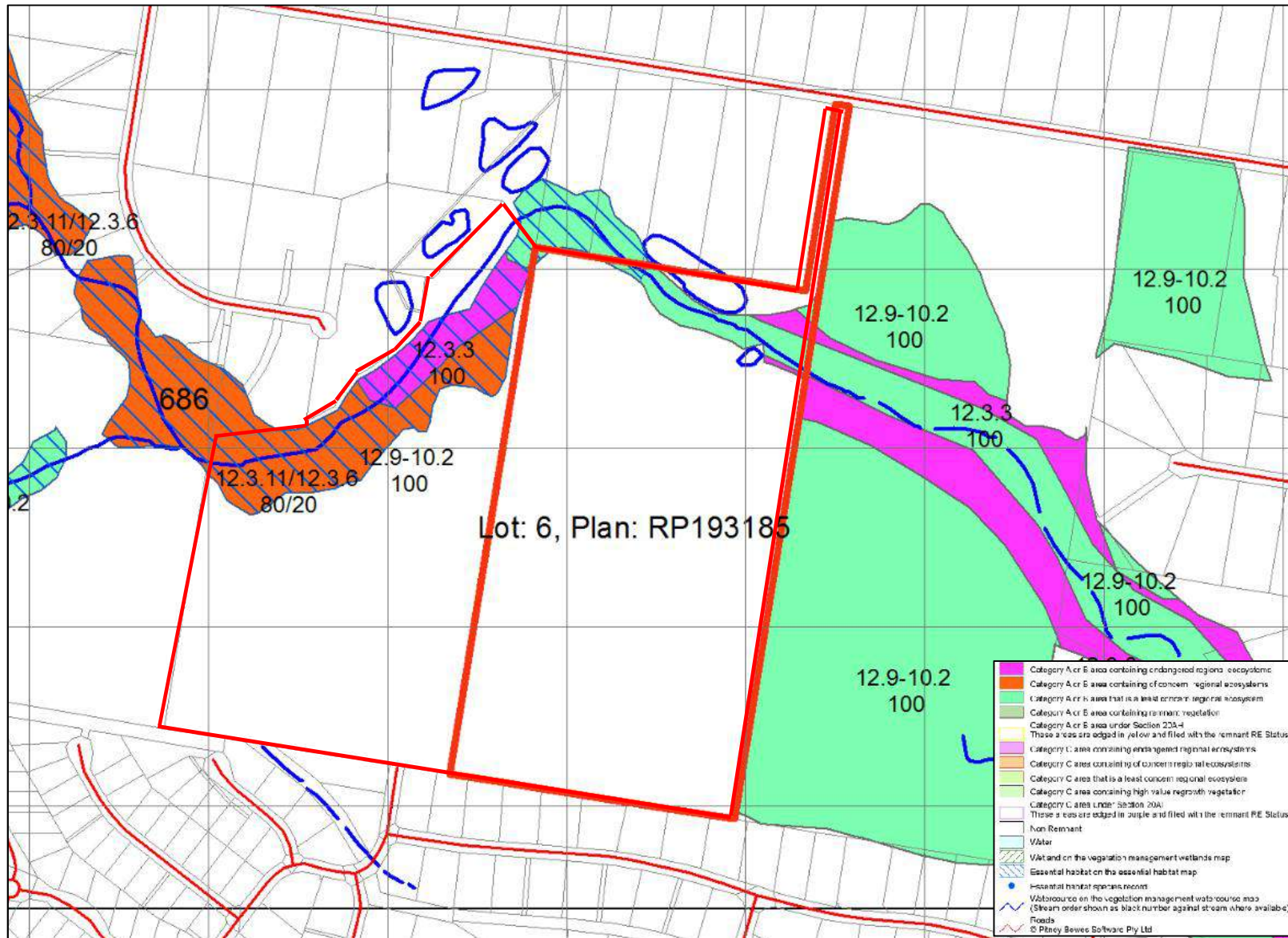
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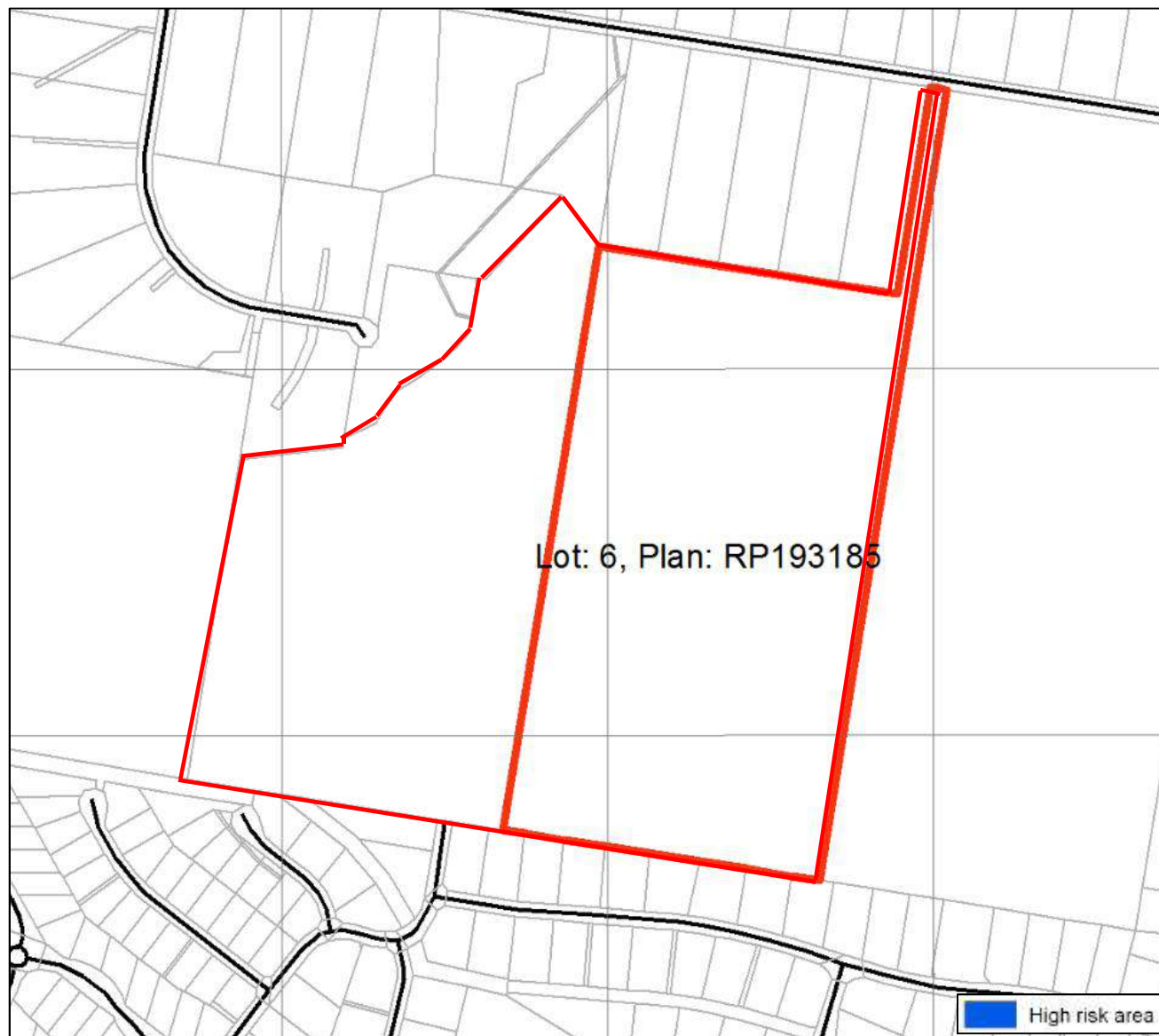
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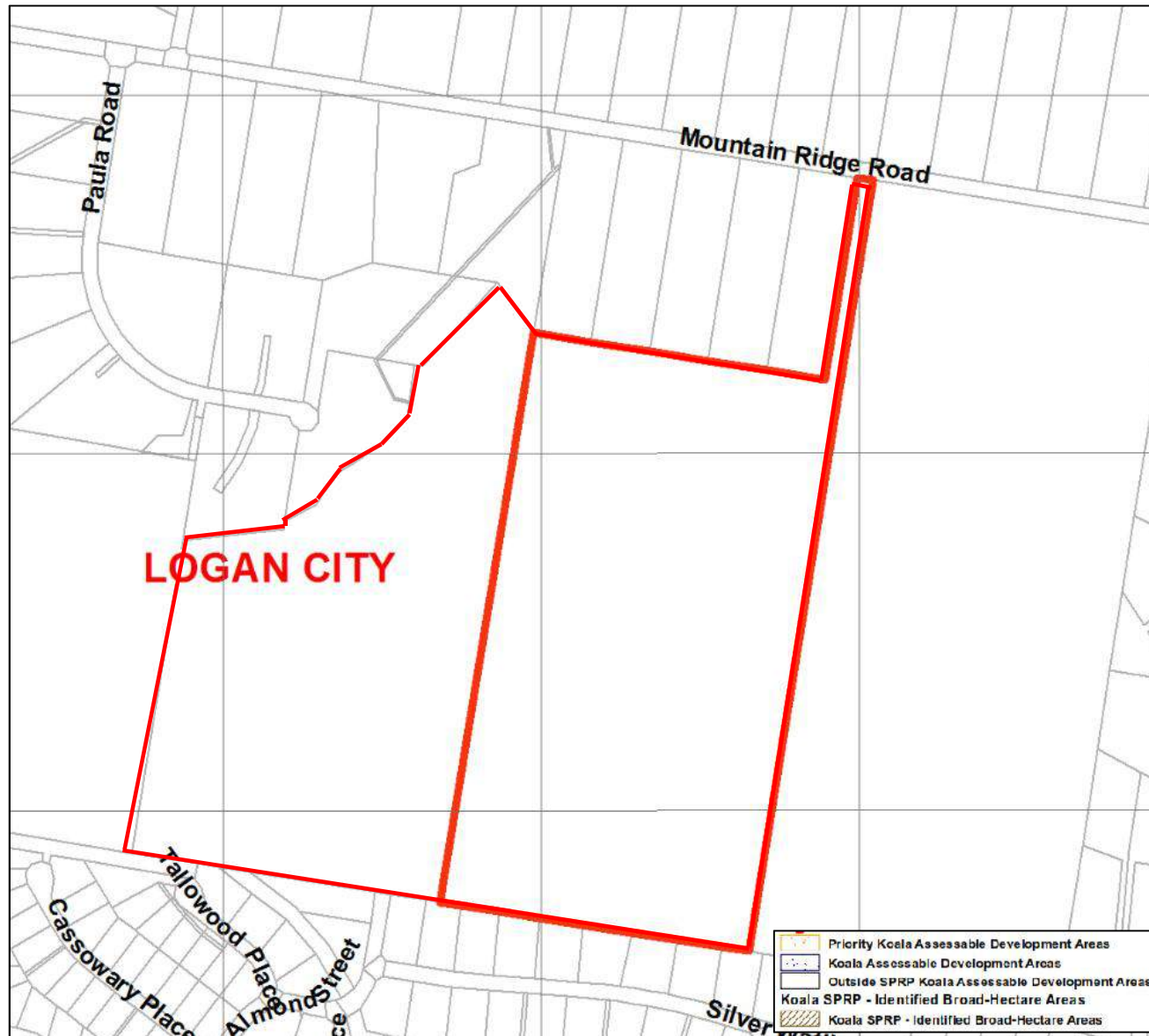
v e g i t a t i o n



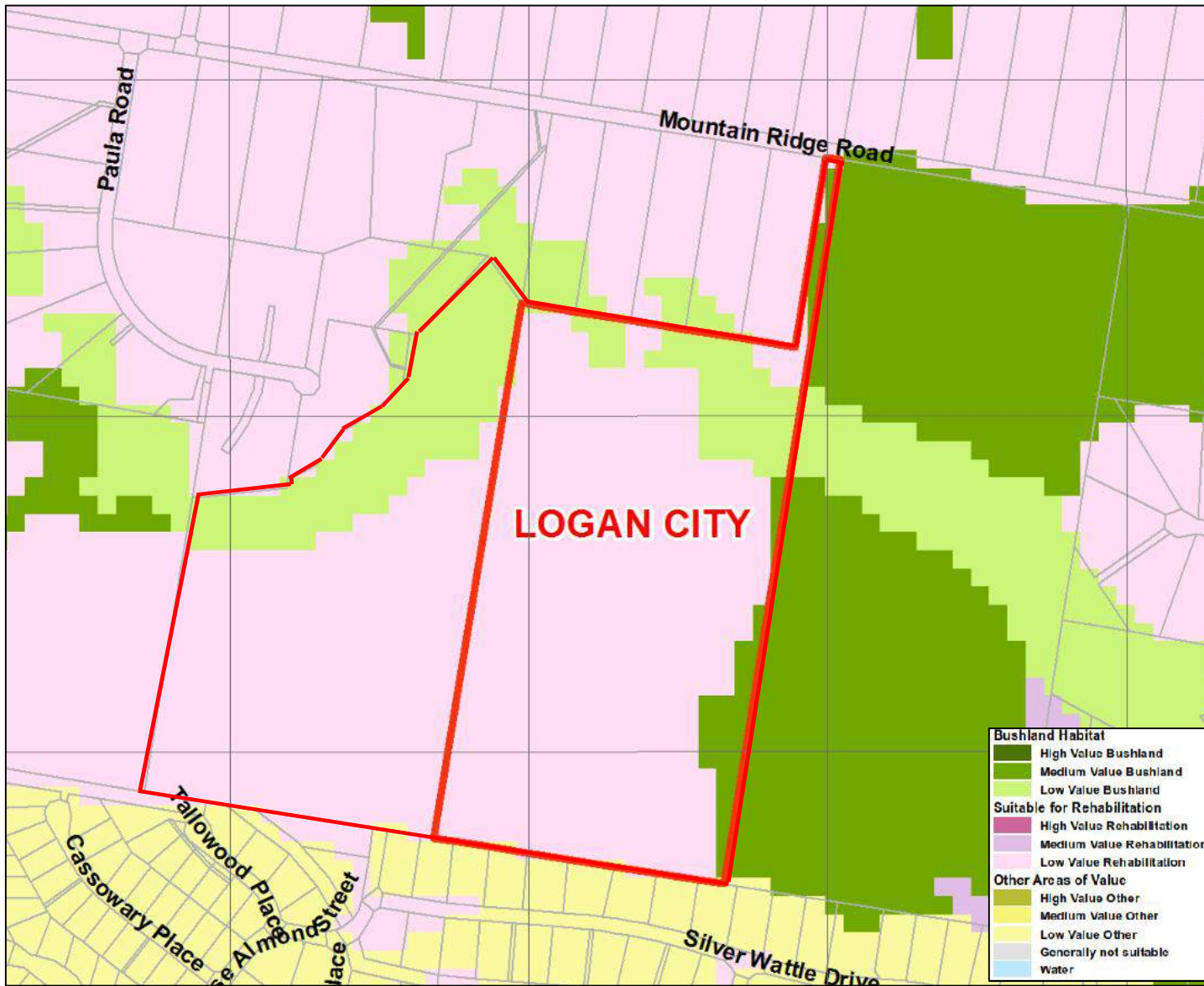
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sbp h Z sor o l



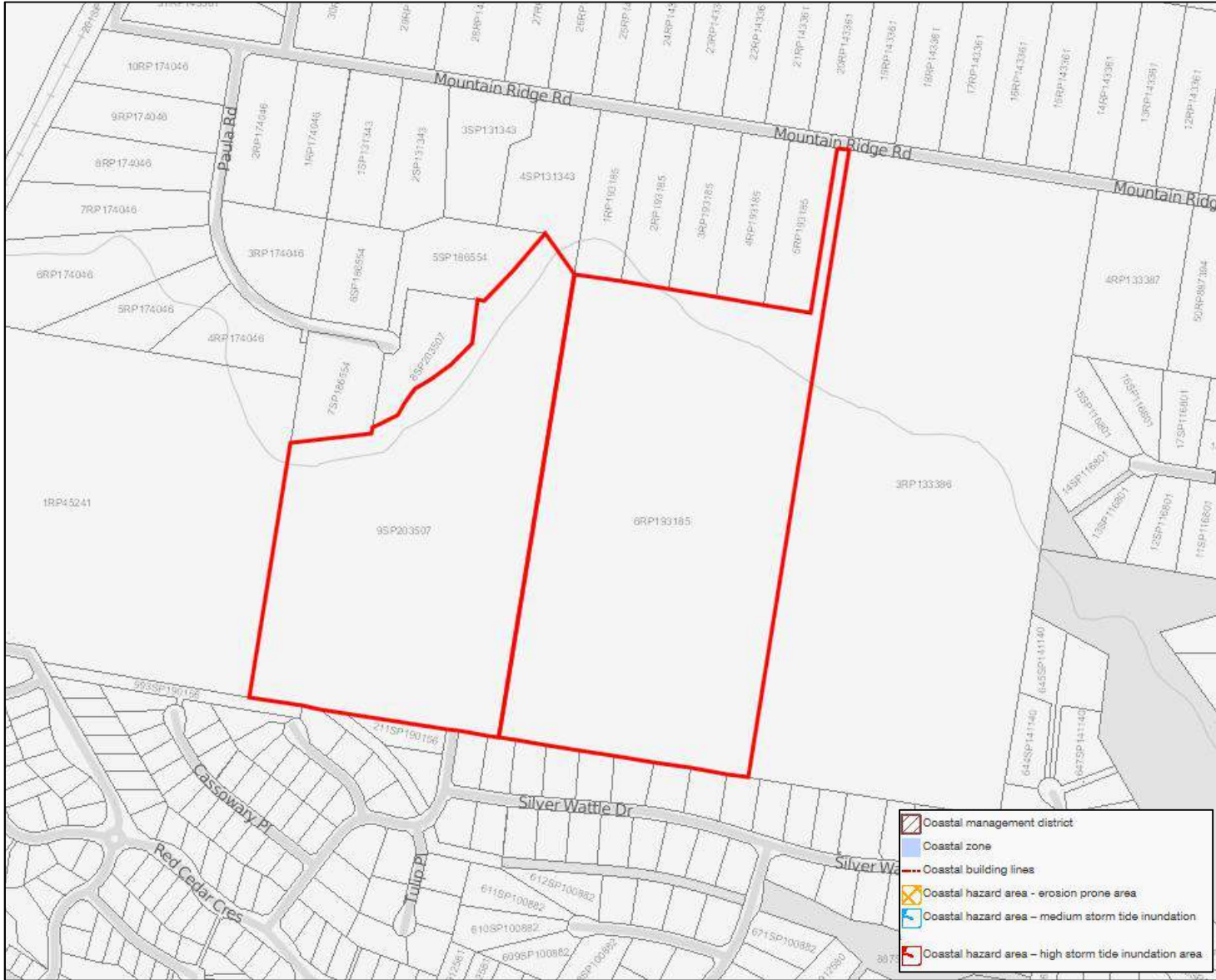
soo h e



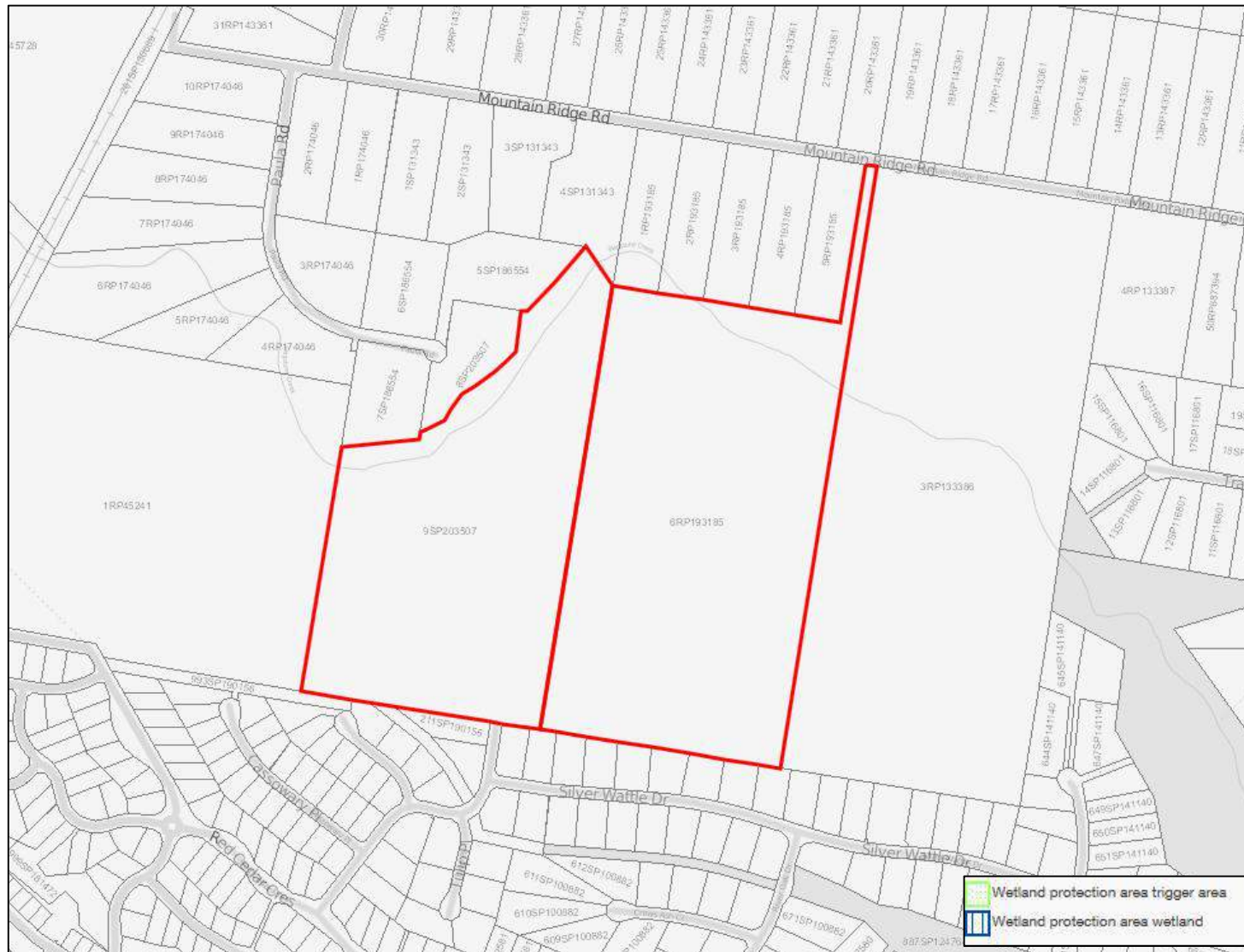
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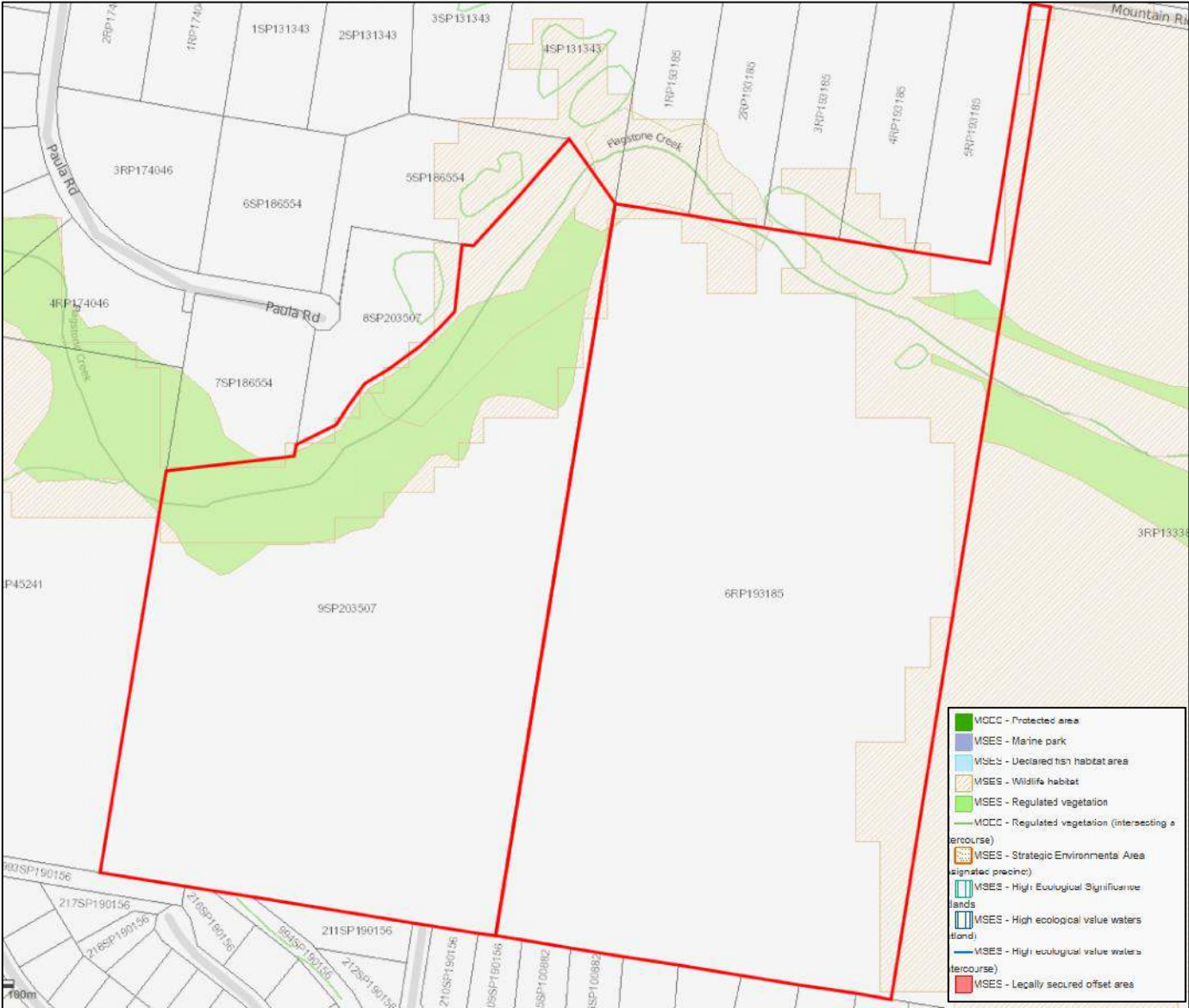
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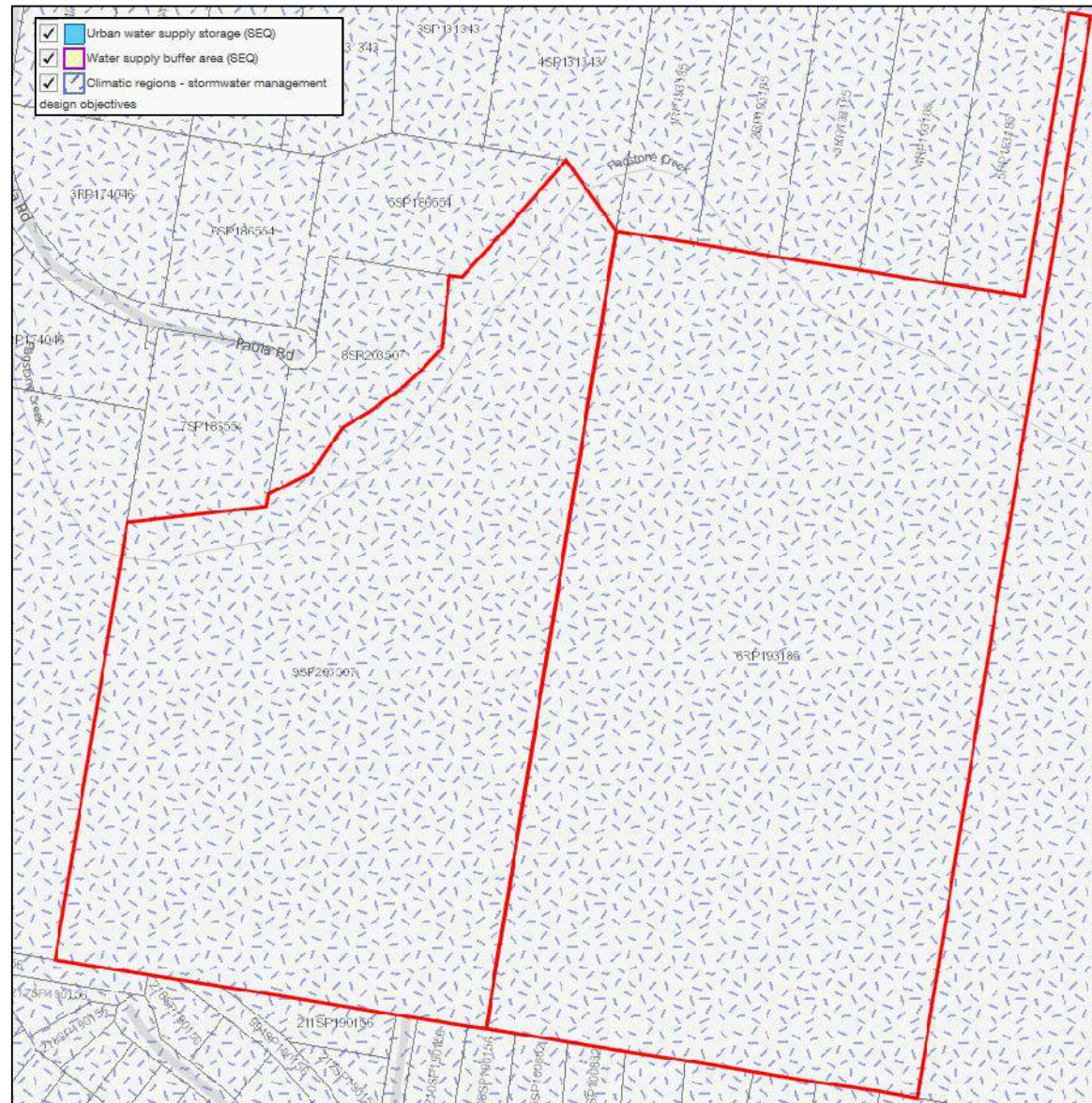
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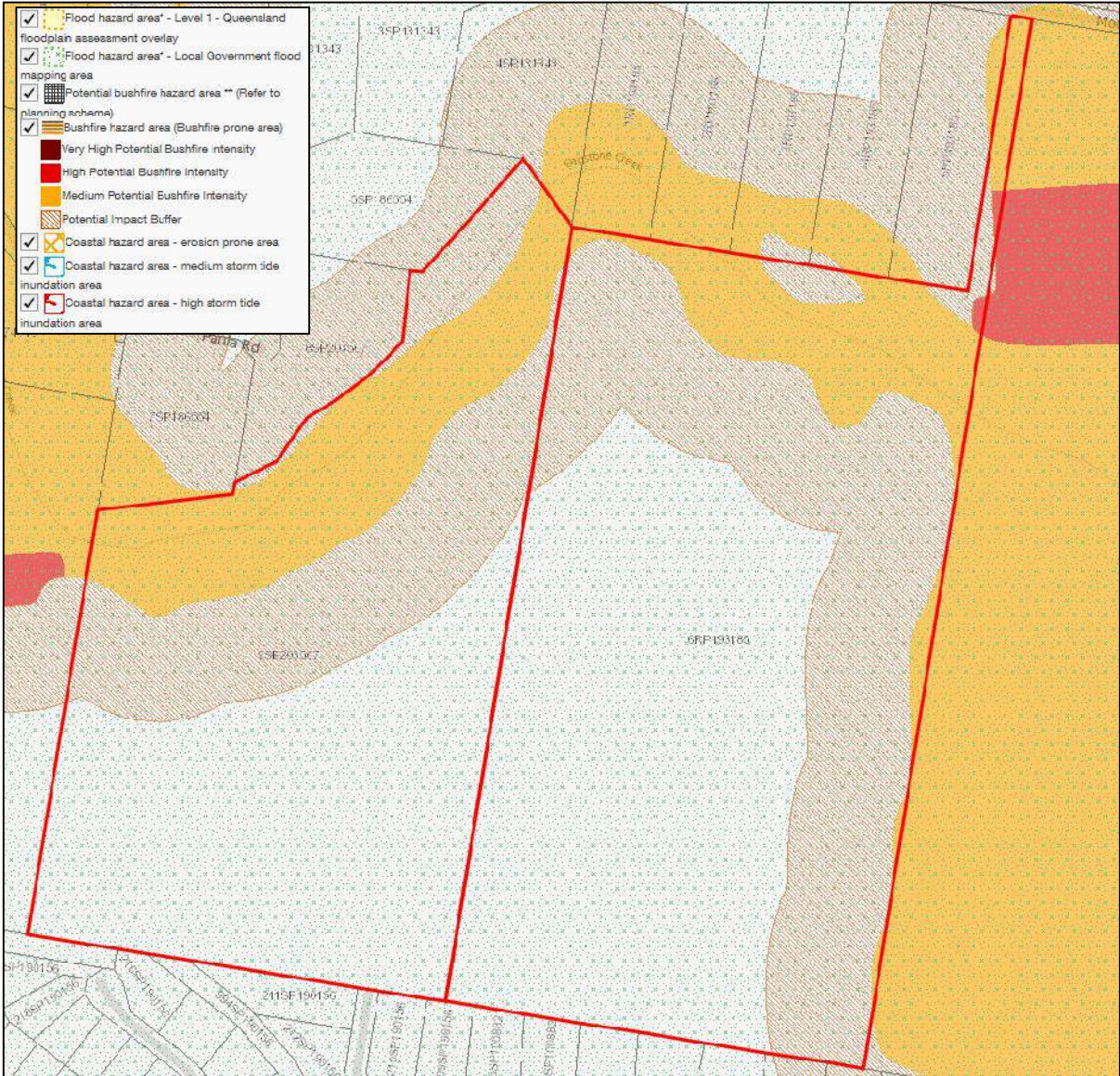
S O O 8W



s o o w p

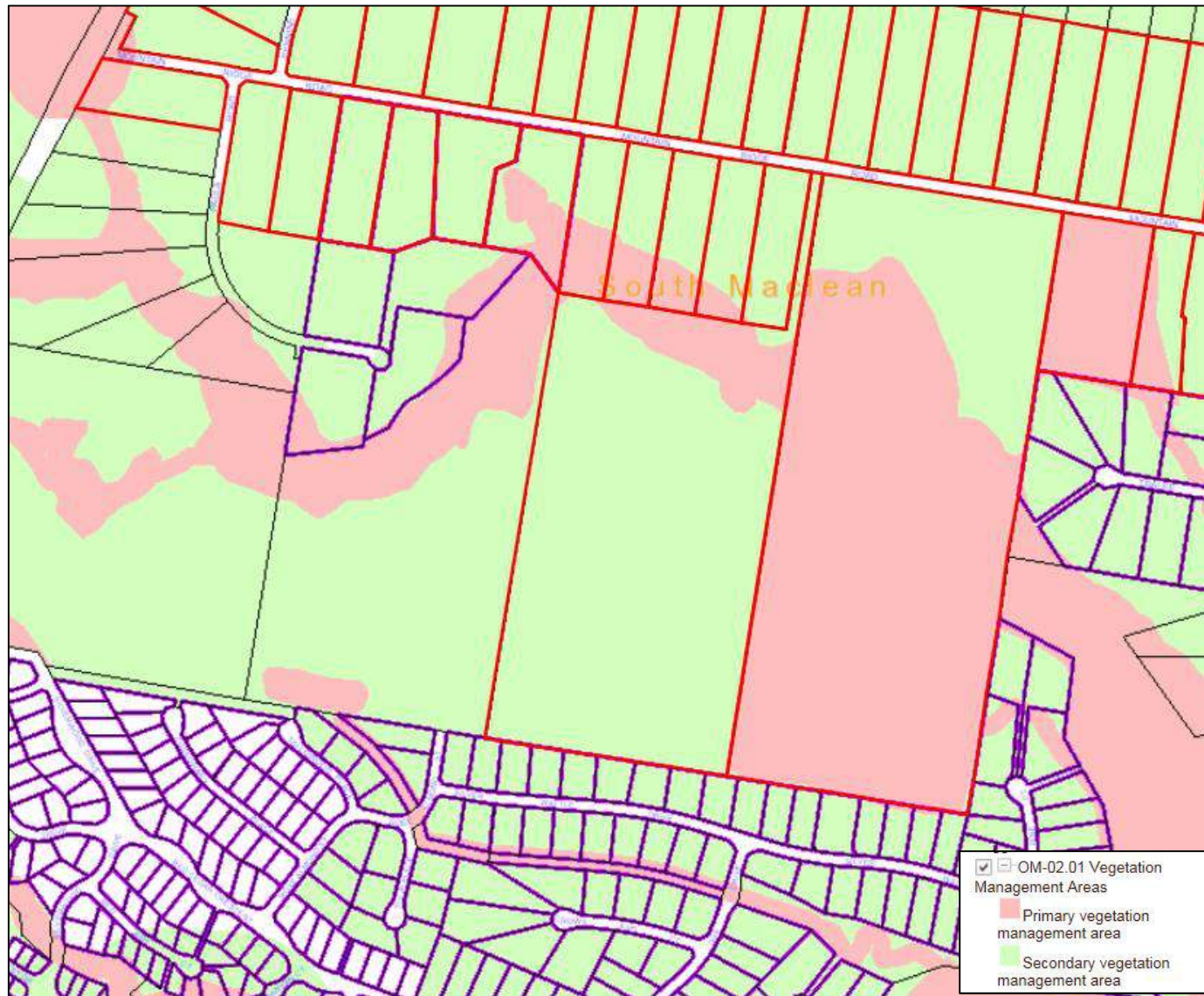


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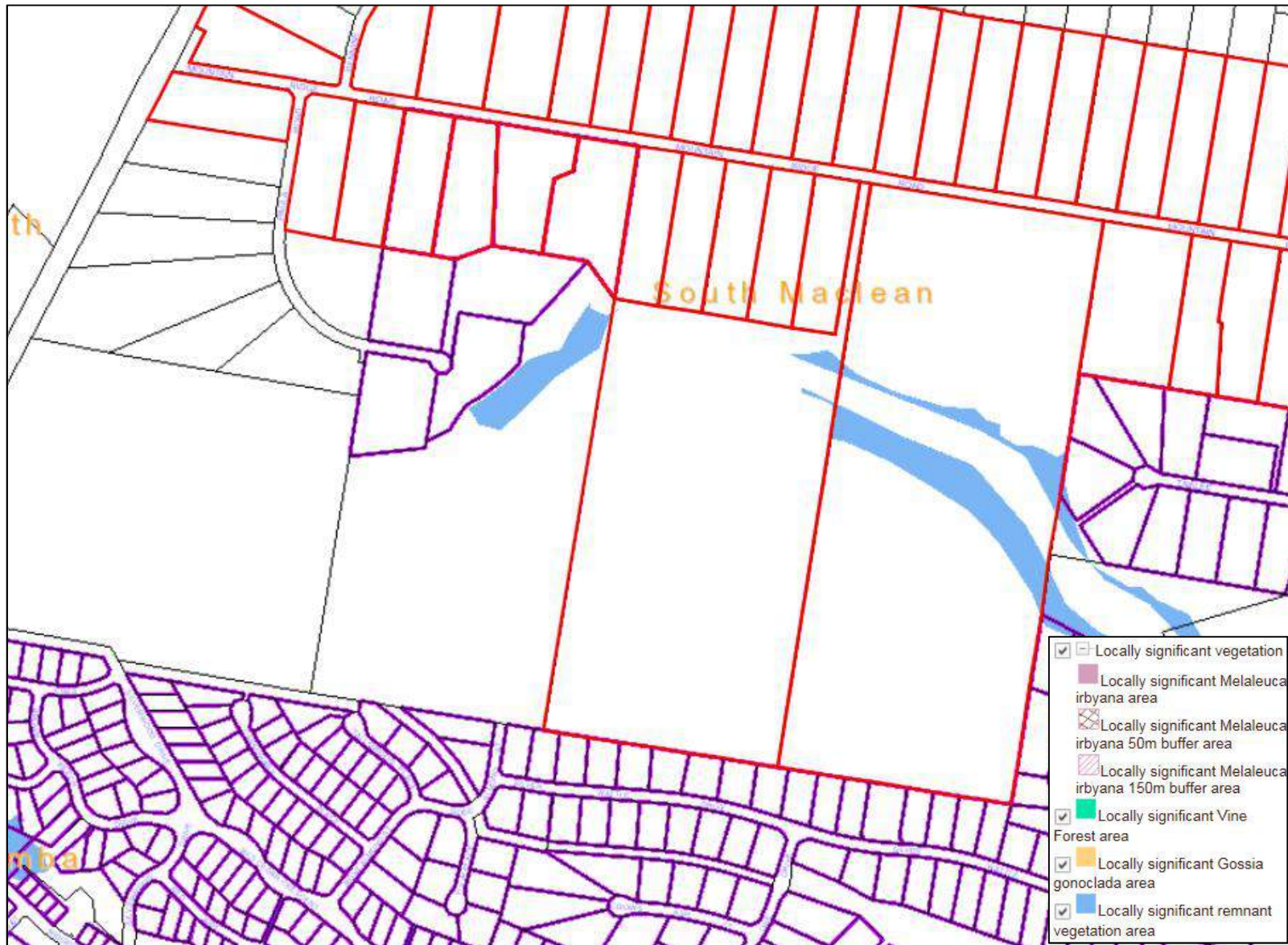
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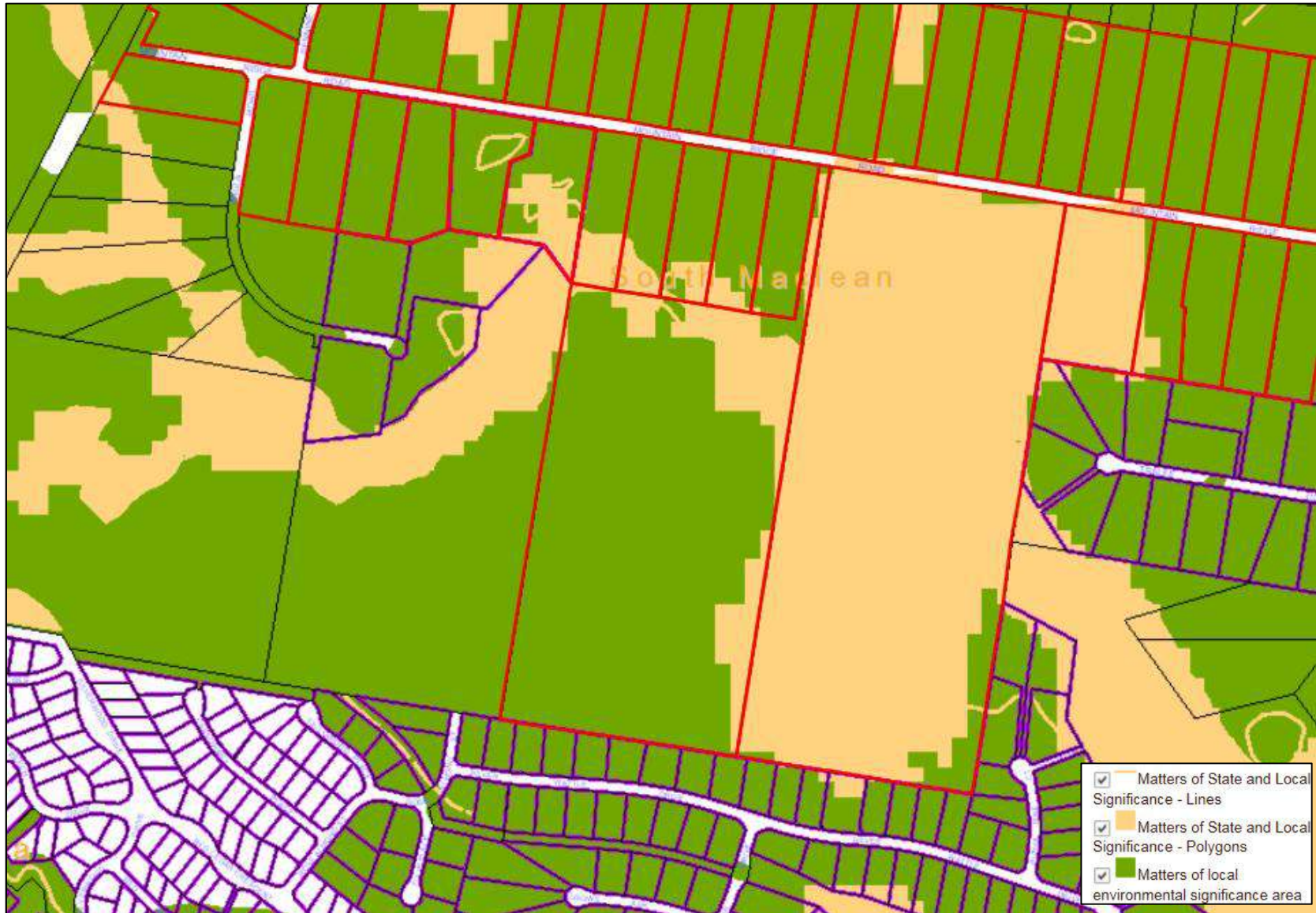


i o s CABG W NW Z



i o s CABG W N s v t





i o s CABG w Z w t



i o s CABG w Z w t Nw

