Appendix 1

CAR and Decision Notice

28ºS
ENVIRONMENTAL

Appendix 1.1

Controlled Action Referral

2 June 2020

Chapter 1 - Summary of Proposed Action

1.1 Project Industry Type

Residential Development

1.2 Provide a detailed description of the proposed action, including all proposed activities

CLAG Pty Ltd (the **Applicant**) proposes a residential subdivision consisting of 541 lots (lot sizes ranging from 300m^2 to over 600m^2) over five existing lots in the suburb of Flinders View, within the Ipswich City Council (**ICC**) Local Government Area (**LGA**). The proposed action is known as the Ripley View Residential Subdivision (herein referred to as the ("**Proposed Action**") and occurs on land that totals 47.5 ha (the **Site**) (**Attachment 1**). The five lots that comprise the Site are Lot 208 on SL11067 (**Lot 208**), Lot 209 on SL11067 (**Lot 209**), Lot 210 on SL9238 (**Lot 210**), and Lot 211 on RP906067 (**Lot 211**).

The Site is currently used for rural and rural-residential purposes. The Site is situated in the northern extent of the Ripley Valley Priority Development Area (**PDA**) and its context, locality and position within the Ripley Valley PDA is shown in **Attachment 2** and **Figures 1** and **2**.

Within the PDA, the Site is subject to the provisions of the Ripley Valley Development Scheme (**Development Scheme**) rather than the ICC Planning Scheme. The Site is identified within the Development Scheme as Urban Living Zone and contains mapped values within the Development Scheme that include Endangered Regional Ecosystems, a Significant Riparian Corridor and an Urban Stormwater Flow Path (**Attachment 3**).

The Site is bound and accessed to the east by Fischer Road and to the south by Boyland Way. Urban residential development exists immediately north of the Site, off Melrose Drive. To the east of the Site is number of rural residential blocks averaging approximately 6,000m^2. South of the Site is a large vegetated block which has been approved for residential development and educational facilities, and recent residential subdivisions are located to the south-west and west of the Site. The Site's north-western boundary is adjacent to the Cunningham Highway road reserve for approximately 150 m. The Proposed Development layout is shown in **Attachment 1** and includes the proposal of 541 residential allotments, a

childcare centre, new roads, local parks, stormwater detention basin and an open space/conservation area.

The Proposed Action has been designed with consideration given to Site-specific topographical constraints and associated engineering requirements, coupled with the necessary considerations for new road infrastructure. The Proposed Action will result in an estimated 38.86 ha of ground disturbance for the establishment of residential lots and associated supporting infrastructure (the "**Project Footprint**") (see **Attachment 1**). Of this, 10.25 ha will require clearing of regulated vegetation.

1.3 What is the extent and location of your proposed action?

The Site totals 47.5 ha. The Project Footprint has an area of 38.86 ha.

The boundaries of the Site have been entered into the EPBC Act Referrals Portal.

1.4 Upload images of the proposed action area

Refer to **Figures 1** and **2**, and **Attachment 4.**

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for offshore actions, shortest distance to mainland).

The Site is bound and accessed to the east by Fischer Road and to the south by Boyland Way. Urban residential development exists immediately north of the Site, off Melrose Drive. To the east of the Site is number of rural residential blocks averaging approximately 6,000m^2. South of the Site is a large vegetated block which has been approved for residential development and educational facilities, and recent residential subdivisions are located to the south-west and west of the Site. The Site's north-western boundary is adjacent to the Cunningham Highway road reserve for approximately 150 m.

The Site is located within the suburb of Flinders View, approximately 1 km west of the Swanbank power station complex and 4.5 km south-east of the Ipswich CBD.

The Site is located on relatively flat topography, generally sloping towards the drainage line in the central and eastern portions of the Site. Alluvial geological deposits are associated with

the drainage line and are characterised by red sand becoming shallower on the lower and upper slopes. The vegetation supported by the Site has been subject to historical broadscale clearing and includes vegetation communities of various age cohorts including scattered remnant canopy retained in open paddocks, remnant open forest, advanced regrowth and regrowth areas.

Current aerial imagery clearly illustrates that the Site supports an existing dwelling in the north-east of Lot 208, with associated ancillary structures including sheds and a pool. The balance of the Site contains a mix of cleared paddocks, regrowth and remnant vegetation that has had broadscale clearing, with selective retention of some larger trees within the Site; particularly in the Site's south-east. Four dams are present in the northern half of the Site and the south-western part of the Site (Lot 209) appears to be used for informal recreation, with a number of dirt tracks evident from aerial imagery and confirmed as private motocross tracks during Site survey. The central components of the Site support an ephemeral drainage feature that flows from south to north. Lot 210 in the north-west of the Site is the most sparsely vegetated on the Site, while Lot 208 in the south-east is the most heavily vegetated on the Site. Lot 208 is, however, dominated by dense regrowth with highly scattered mature or remnant trees.

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

The Site encompasses five (5) existing properties, totalling 47.5 ha of land.

The Project Footprint (i.e. the area proposed for residential development and associated infrastructure (including roads and verges and a stormwater detention basin) and earthworks within the local park is 38.86 ha. The balance of the Site (8.64 ha) is set aside for retention and ecological restoration of the waterway corridor.

1.7 Is the proposed action a street address or Lot?

Five lots.

1.7.2 Describe the lot number and title

The Site consists of the following lots:

Lot 208 on SL11067;

Lot 209 on SL11067;

Lot 210 on SL9238;

Lot 211 on RP906067; and

Lot 2 on RP906067.

1.8 Primary Jurisdiction

Queensland

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

No

1.10 Is the proposed action subject to local government planning approval?

Yes. The Proposed Action requires ICC approval of a Development Application (**DA**) under the Development Scheme for a Material Change of Use (**MCU**) over the Site and Reconfiguration of a Lot (**RoL**).

1.10.1 Is there a local government area and council contact for the proposed action?

The Proposed Action is located within the ICC LGA.

Council's contact for the DA is Sandeep Nanjappa, Senior Planner (Development).

Email via: plandev@ipswich.qld.gov.au

Phone: 1300 477 942

1.11 Provide an estimated start and estimated end data for the proposed action.

The Proposed Action is expected to commence in **2021**, with completion (development of the full Proposed Action) anticipated by **2025**.

1.12 Provide detailed of the context, planning framework and State and/or Local government requirements.

The Proposed Action will require a MCU and RoL development approval under the Development Scheme, in accordance with the requirements of the *Economic Development Act 2012*.

The following information outlines the State and Local planning framework as it applies to the Proposed Action.

***Nature Conservation Act 1992* (NC Act) - Protected Plants Survey Trigger Mapping**

The NC Act establishes approval triggers and an assessment process for clearing protected plants. Three of the five lots that comprise the Site are located within a mapped "High Risk Trigger Area" (**Attachment 5**). Prior to clearing, a detailed botanical survey over the Site is required to be undertaken by a suitably qualified and experienced botanist in accordance with the Flora Survey Guidelines - Protected Plants 2016 (**Flora Survey Guidelines**) and a NC Act clearing permit or exempt clearing notification will be required. As such, a detailed botanical survey, in accordance with the Flora Survey Guidelines was undertaken on 9 October 2018 and 3-5 July 2019 to identify the presence of protected plants and/or suitable habitat for these species. The NC Act requires that a Flora Survey Report to accompany a clearing permit or exempt clearing notification must be submitted within a year of the survey and no more than two years before the clearing occurs. It is noted that further surveys in line with the Flora Survey Guidelines will be required to support the proposed clearing activities within the High Risk Trigger Area closer to the construction period.

The *Nature Conservation (Wildlife) Regulation 2006* (**NC Reg**) also lists Endangered, Vulnerable and Near Threatened (**EVNT**) fauna species. EVNT species are afforded special protection under the NC Act.

State Code 16 – Native Vegetation Clearing

The Site is mapped to contain a matrix of Category B, Category C and Category X Regulated Vegetation (see **Attachment 5**). Both the Category C and B are also mapped as Essential Habitat.

Under Schedule 21, Part 2 (2)(e) of the Planning Reg, the clearing of native vegetation for PDA-related development on freehold land is defined as "exempt clearing work" and therefore not assessable under State Code 16.

Within the Ripley Valley PDA, clearing of vegetation is regulated through the Development Scheme.

State Code 18 – Constructing or Raising Waterway Barrier Works in Fish Habitats

One tributary of Bundamba Creek (defined as a drainage feature by the *Water Act 2000*) extends in a south-west to north-east direction across the Site. This feature is mapped as a 'Low' and 'Moderate' Value Queensland Waterway for Waterway Barrier Works (see **Attachment 6**).

It is understood that all works proposed within the mapped waterway (e.g. culvert crossing or remediation works) will comply with the Self-Assessable Codes for Works within a Queensland Waterway. Should the development not comply with the self-assessable codes, the proposal will need to further address State Code 18. As per Economic Development Queensland's Practice Note 14 – State interests in development assessment in Priority Development Areas, no exemptions from State Code 18 requirements apply to PDA related development.

SDAP Module 11 – Wetland Protection Areas

SARA mapping shows that there are no referral triggers for Module 11. Consequently, there is no requirement for further assessment against Module 11 of the SDAP.

Koala assessable development areas under the *Planning Act 2016* and habitat under the State Planning Policy 2017

The Site is not located within a Koala Assessable Development Area, a Priority Koala Assessable Development Area, or an Identified Koala Broad-hectare Area.

However, the Koala SPP Mapping demonstrates that the Site contains a mix of habitat types; predominantly Low Value Rehabilitation Koala Habitat, with areas of High Value and Medium Value Bushland Habitat and a small area of Medium Value Rehabilitation Koala Habitat (see **Attachment 7**).

The Koala SPP mapping is not relevant to proposed development within a PDA.

Guideline 14 – Environmental Values and Sustainable Resource Use

PDA Guideline No. 14 *Environmental Values and Sustainable Resource Use* (**Guideline 14**) outlines values and strategies for protecting the environment and optimising resource use in

PDAs. Guideline 14 requires development within a PDA to consider relevant Commonwealth and State Government environmental legislation and planning policies in addition to areas noted as being of environmental significance within the PDA's Development Scheme and the inherent environmental values identified within the Site through ecological assessments.

Guideline 18 – Development Interfaces

PDA Guideline No. 18 *Development Interfaces* (**Guideline 18**) outlines the development considerations which should inform the planning and design phase of a project to ensure that potential interface issues are appropriately managed within the PDA. Development should consider ecological values at the land use interface and be informed by an ecological assessment.

Bushfire

State Planning Policy (**SPP**) mapping shows that the Site is characterised by bushfire constraint in the southern and eastern portions (see **Attachment 8**). This includes areas mapped as Bushfire Prone Areas with High Potential Bushfire Intensity and Medium Potential Bushfire Intensity. Much of the balance of the Site is within the Potential Impact Buffer.

A suitably qualified bushfire consultant has been engaged to undertake a detailed bushfire hazard assessment and to prepare a Bushfire Management Plan for the Proposed Development. This reporting accompanies the Development Application to ICC and its findings, recommendations and management requirements (e.g. any clearing works required to achieve sufficient separation) have informed the preparation of this Controlled Action Referral.

Ripley Valley PDA Development Scheme

Significant Vegetation

Under the Development Scheme, 'Significant Vegetation' is defined as:

> All vegetation, except those listed as pest vegetation by State or local government, that is significant in its:

- Ecological value at local, state or national levels including vegetation mapped as endangered remnant vegetation on the regional ecosystem maps prepared under the *Vegetation Management Act 1999*
- Contribution to the preservation of natural landforms
- Contribution to the character of the landscape
- Cultural or historical value
- Amenity value to the general public.

Note – vegetation may be living or dead and the term includes their root zone.

Under the Development Scheme, operational work that is the clearing of vegetation is exempt development, unless the clearing is of Significant Vegetation. An assessment of the Significant Vegetation within the Site is provided in **Table 1**.

Table 1: Assessment of Significant Vegetation within the Site

Significant Vegetation Element	Presence within the Site
Ecological value at local, state or national levels including vegetation mapped as endangered remnant vegetation on the regional ecosystem maps prepared under the *Vegetation Management Act 1999*	The Category B and Endangered RE 12.3.3 represents the extent of vegetation that is of considerable ecological value within the Site.
Contribution to the preservation of natural landforms	The Site consists of low rising undulations in an area enveloped by residential development and major transport corridors. The major natural landform within the Site is the mapped waterway. Vegetation that contributes to the preservation of this waterway consists of Endangered RE 12.3.3.
Contribution to the character of the landscape	The landscape surrounding the Site is highly modified. The Site's preserved natural features are limited to the mapped waterway and associated fringing remnant vegetation. This vegetation is Endangered RE 12.3.3 and provides the only meaningful vegetative contribution within the Site to landscape character.
Cultural or historical value	No vegetation within the Site is known to have cultural or historical value.
Amenity value to the general public.	The only vegetation within the Site that potentially provides amenity for the general public is that tall and mature vegetation fringing the mapped waterway and drainage feature. This vegetation coincides with Endangered RE 12.3.3 – Queensland blue gum woodland on alluvium.

Thus, Significant Vegetation within the Site is restricted to the Category B Endangered RE 12.3.3 within Lots 208, 209 and 211 (see **Figure 4**).

PDA Wide Criteria

The Development Scheme also contains numerous PDA Wide Criteria. Of relevance to this EAR is PDA Wide Criterion 3.3.8 – Natural and Cultural Values. An assessment of the Proposed Development against this criterion is provided in the Ecological Assessment Report (**EAR**) submitted to ICC (**Attachment 9**).

1.13 Describe any public consultation that has been, is being or will be undertaken, including indigenous stakeholders.

The Applicant has commenced engagement with the Yuggera Ugarapul People (the Traditional Owners of the Site) and intends to negotiate a Cultural Heritage Management Plan (**CHMP**) under Part 7 of the *Aboriginal Cultural Heritage Act 2003* (Qld). This has involved an initial meeting on 1 November 2019 to provide context to the Proposed Action and to establish key contacts and agree a pathway forward for negotiating a CHMP.

The Applicant has not yet undertaken any wider public consultation for the Proposed Action.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

As part of supporting documentation for the DA to ICC, 28 South Environmental Pty Ltd (**28 South**) was engaged to advise on ecological matters. Subsequently, the Site's ecological, environmental and landscape values were assessed as part of a detailed ecological assessment over the Site undertaken over four survey days on 9 October 2018 and 3-5 July 2019.

Botanical Surveys

This involved a complete traverse of the entire Site, the spatial mapping of all native trees along within the Site (at or above 200 mm diameter at breast height (**DBH**)), and the spatial mapping of all habitat trees throughout the entirety of the Site (i.e. trees with notable habitat features/significance). Surveys also involved an assessment to determine whether the Site:

i. supported vegetation analogous with Threatened Ecological Communities (**TEC**) identified as MNES under the EPBC Act;

ii. supported any plant species identified as MNES under the EPBC Act;

iii. was appropriately omitted or included within the RVMM;

iv. supported EVNT plant species; and

v. supported plant species or communities which were otherwise of conservation interest.

Fauna Habitat Surveys

Survey efforts included a detailed walk-through of the Site, assessment of all vegetation supported within and immediately adjoining the Site for habitat features important to species of conservation significance and active searches for fauna species or their evidence (such as koala and other scansorial fauna). Surveys were conducted over the course of four days and included:

- **Active searches of logs, rocks and ground debris** – Logs, rock and ground debris was turned in order to detect amphibians, reptiles and small terrestrial mammals;
- **Active searches for habitat trees** – searches were completed for hollow-bearing trees providing potential habitat for a range of tree hollow dependent fauna[1];
- **Random meander searches and aural surveys** – searches of riparian and vegetated areas were undertaken to identify any potential important habitats; and
- **Koala Spot Assessment Technique (SAT) searches** – 4 SAT[2] surveys were undertaken during survey efforts to determine the presence of koala throughout the

[1] For example, small hollow-bearing trees providing roost sites for microchiropteran bats and gliders, medium sized hollows providing nest sites for small to medium sized birds and possums, and large hollows providing potential nest sites for large forest owls.
[2] Stephen Phillips and John Callaghan (2011) The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas *Phascolarctos cinereus*. *Australian Zoologist*: 2011, Vol. 35, No. 3, pp. 774-780.

Site. These surveys were also coupled with general scratch and scat searches while traversing the Site.

It is also noted that tree surveys across the entire Site included the spatial location of each tree and any observable to potential habitat features.

Habitat types were qualified based on the presence of the following habitat features:

- vegetation cover and structure;
- size and range of arboreal and terrestrial hollows;
- woody debris and leaf litter;
- rocky outcrops, overhangs and crevices;
- freestanding natural and anthropogenic water bodies, ephemeral drainage or seepage areas;
- disturbances including weed incursion, clearing and/or inappropriate fire regimes; and
- surrounding habitats and connectivity or fragmentation to these.

The associated EAR (**Attachment 9**) outlines the detailed field surveys and environmental planning review undertaken to assess the impacts of the Proposed Action as proposed to ICC. This ecological assessment identified that a Controlled Action Referral (**CAR**) should be made due to potential impacts on MNES.

1.15 Is this action part of a staged development (or a component of a larger project)?

No

1.16 Is the proposed action related to other actions or proposals in the region?

No

Chapter 2 – Matters of National Environmental Significance

2.1 Is the proposed action likely to have ANY direct or indirect impact on values of any World Heritage properties?

No.

There are no World Heritage Properties within the 5 km search radius of the Site (refer to the Protected Matters Search Tool (**PMST**) data – **Attachment 10**). The nearest World Heritage Property is the Gondwana Rainforests of Australia (specifically, Lamington National Park), which is located approximately 60 km to the south-east of the Site. The Proposed Action is well removed from the Gondwana Rainforests of Australia World Heritage Property and is not expected to have any direct or indirect impacts on this area.

2.2 Is the proposed action likely to have ANY direct or indirect impact on values of any National Heritage places?

No.

The PMST data (**Attachment 10**) indicates that there are no National Heritage Places (**NHP**s) within a 5 km radius of the Site. The nearest NHP is the Gondwana Rainforests of Australia (specifically, Lamington National Park), which is located approximately 60 km to the south-east of the Site. The Proposed Action is well-removed from the Gondwana Rainforests of Australia and is not expected to have any direct or indirect impacts on this area.

2.3 Is the proposed action likely to have ANY direct or indirect impact on the ecological character of a Ramsar wetland?

No.

The Site includes a mapped waterway, which is a tributary of Bundamba Creek. Bundamba Creek is a higher-order tributary of the Brisbane River. The Brisbane River is a major catchment for the Moreton Bay Ramsar Site. The Proposed Action is located approximately 90 km from the Ramsar Site (measured by course of the River). The Proposed Action is highly unlikely to cause any direct or indirect impact to the Moreton Bay Ramsar Site. The Applicant will obtain necessary State and Local Government approvals for any works within or in proximity to the Bundamba Creek tributary. It is understood that the Proposed Action will implement the following measures in line within accepted industry practice:

- stormwater quality and quantity to be managed in accordance with an approved Stormwater Management Plan; and
- ecological restoration of the riparian corridor in accordance with an approved Rehabilitation Management Plan.

Considering the above, it is unlikely that the Proposed Action will have direct or indirect impacts upon the ecological character of a Ramsar wetland.

2.4 Is the proposed action likely to have ANY direct or indirect impact on values of any listed species or any threatened ecological community, or their habitat?

In order to determine the occurrence and subsequent potential impact to Matters of National Environmental Significance (**MNES**) listed threatened species and ecological communities, detailed in-field assessments were undertaken across the Site. To inform these in-field assessments, and to assess the likelihood of threatened species or ecological communities occurring within the Site, a desktop review of relevant sources was undertaken including the PMST (**Attachment 10**); Department of the Environment and Energy (**DoEE**) Species Profiles and Threats (**SPRAT**) Database; the Department of Environment and Science (**DES**) Wildlife Online Database (**Attachment 11**); DES Essential Habitat mapping; DES Watercourse mapping, and Atlas of Living Australia (**ALA**) spatial records. The table in **Section 2.4.1** provides an assessment summary of MNES potentially occurring within the Site.

The assessment of potential for significant impact has been completed by Mitchell Taylor of 28 South Environmental.

Utilising local records and perceived habitat suitability, the presence of conservation significant fauna was evaluated as 'Known', 'Likely', 'Possible', 'Unlikely', 'Highly Unlikely' or 'Transient' based on their perceived probability of inhabiting/frequenting the Site. The following table describes each category of perceived probability.

Assessment	Habitat Criteria	Local Record Criteria	Perceived Probability
Known	The species has been confirmed as present within the site, and those records are unlikely to represent transient or vagrant individuals.		100%
Likely	Habitat is considered moderately to good quality and similar to other	There is a number (~5 or greater) of local (≤ 10 km from the site), contemporary (post 1990) records of the species,	>50%

Assessment	Habitat Criteria	Local Record Criteria	Perceived Probability
	locations where the species is found	or There is strong evidence that a cryptic species (which may not be frequently recorded in databases) has a nearby resident population(s).	
Possible	Habitat is marginal to moderate	The species is known by a few local contemporary records and is not a transient species.	20-50%
Unlikely	The habitat is marginal	There are few, if any, local contemporary records.	≤19%
Highly unlikely	The habitat is unsuitable	There are few, if any, local contemporary records.	0%
Transient	The habitat is suitable, marginal or good quality	The species is highly mobile and vagrant. They may infrequently appear in the local area over a long timeframe (e.g. 100+years), but are never resident or frequent visitors (e.g. return migrants). These species are typically birds which, while having some probability of occurring, are unlikely rely on the site for their lifecycle or maintaining populations.	N/A

2.4.1 Impact Table - Assessment of MNES occurring within the Site

Table 2 presents an assessment of MNES potentially occurring within the Site and the corresponding potential for a significant impact attributable to the Proposed Action.

Table 2 – Impact Assessment for MNES Potentially Occurring within the Site

Listed threatened species or ecological communities (MNES)	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
Threatened Ecological Communities				
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland	Endangered	EPBC Act – PMST	Highly unlikely – due to historical selective clearing for rural-residential/agricultural purposes.	Low Potential – Not detected within the Site
Lowland Rainforest of Subtropical Australia	Critically Endangered	EPBC Act – PMST	Highly unlikely – due to historical selective clearing for rural-residential/agricultural purposes.	Low Potential – Not detected within the Site
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	EPBC Act – PMST	Highly unlikely – due to historical selective clearing for rural-residential/agricultural purposes.	Low Potential – Not detected within the Site
Swamp Tea-tree (Melaleuca irbyana) Forest of South-east Queensland	Critically Endangered	EPBC Act – PMST	Highly unlikely – due to historical selective clearing for rural-residential/agricultural purposes.	Low Potential – Not detected within the Site
White Bow-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	EPBC Act – PMST	Highly unlikely – due to historical selective clearing for rural-residential/agricultural purposes.	Low Potential– Not detected within the Site
Threatened Fauna Species				

Listed threatened species or ecological communities (MNES)	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
regent honeyeater (*Anthochaera phyrygia*)	Critically Endangered	EPBC Act – PMST (5 km radius)	Unlikely – this species prefers forests and woodlands of ironbark, box, swamp mahogany and river oak. These habitats are limited within the Site. There are occurrences of large individual *E. tereticornis* trees capable of producing resources sufficient to attract the regent honeyeater; however, many of these will be retained within the riparian corridor of the Site.	Low Potential – limited resources are available for the regent honeyeater, much of which will be retained and enhanced as part of the Proposed Action.
	Endangered	NCA – Wildlife Online (no records within a 5 km radius)		
Australasian bittern (*Botaurus poiciloptilus*)	Endangered	EPBC Act – PMST (5 km radius)	Unlikely – this species prefers freshwater wetlands with dense vegetation, with a particular preference for reeds and sedges. The Site does not contain such suitable habitats; the farm dams lack abundant tall reeds and sedges.	Low Potential – the Proposed Action will not impact the preferred habitat for this species, nor does it occur on Site.
	Least Concern	NCA – Wildlife Online (no records within a 5 km radius)		
curlew sandpiper (*Calidris ferruginea*)	Critically Endangered	EPBC Act – PMST (5 km radius)	Highly unlikely – suitable habitats include saline and freshwater wetlands, saltmarshes, estuaries, mudflats and areas of exposed mud for foraging. The Site does not support any such habitats.	Low Potential – the Proposed Action will not impact the preferred habitat for this species.
	Endangered	NCA – Wildlife Online (no records within a 5 km radius)		
eastern bristlebird (*Dasyornis brachypterus*)	Endangered	EPBC Act – PMST (5 km radius)	Highly unlikely – the south-east Queensland / northern New South Wales population of the eastern bristlebird occurs in moist mountain ranges where they inhabit forests with a mosaic of dense clumping grasses interspersed with shrubs, ferns and fallen logs. The species has been historically restricted to the Main Range (approximately 60 km to the south-west of the Site). As such, the species is not expected to occur within the vicinity of the Site.	Low Potential – the Site does not support suitable habitat for the eastern bristlebird and is not within the historical known range of the species.
	Endangered	NCA – Wildlife Online (no		

Listed threatened species or ecological communities (MNES)	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
		records within a 5 km radius)		
red goshawk (*Erythrotriorchis radiata*)	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely/Transient – this species prefers open forests, woodlands, wetlands and rainforest fringes. The Site contains suitable foraging habitat largely restricted to patches of remnant vegetation. The closest available record is approximately 5 km south of the Site; however, this is not considered to be a reliable record (pre- 1980 and limited to no collection data and high accuracy error). With continued urbanisation of the surrounding locality it is unlikely this species continues to persist.	Low Potential – limited resources are available for the species and the Site contains no critical habitat. Foraging habitat and connectivity along the riparian corridor would retain a level of foraging habitat for this species should it be a transient visitor to the locality.
	Endangered	NCA – Wildlife Online (no records within a 5 km radius)		
squatter pigeon (*Geophaps scripta scripta*)	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely – suitable habitat for this species usually consists of open dry grassy eucalypt woodlands and open forests, as well as Cypress Pine (*Callitris* spp.) and Acacia-dominated woodlands. Observations also indicate some use of artificial grasslands (i.e. grazing land). The Site does not support suitable habitat for this species due to the more-dense canopy and limited access to suitable watering points.	Low Potential – limited habitat within the Site is available for the squatter pigeon. No preferred watering points are present within the Site.
	Vulnerable	NCA – Wildlife Online (no records within a 5 km radius)		
painted honeyeater (*Grantiella picta*)	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely/Transient – this species is more common west of the great diving range on inland slopes. This species is heavily reliant on mistletoe for foraging resources which is heavily restricted to taller eucalyptus trees within riparian corridors.	Low Potential – limited habitat and foraging resources is available within the Site. The Proposed Action will retain many of the key foraging species on Site; namely the *E. tereticornis* within the lower alluvial areas. Ecological restoration works will also re-establish key foraging species.
	Vulnerable	NCA – Wildlife Online (no records within a 5 km radius)		
white-throated needletail	Vulnerable	EPBC Act – PMST (5 km radius)	**Possible** - A widespread (almost exclusively aerial) species which occurs over a wide range of habitats (DoEE 2019). This species is considered a possible occurrence at the Site.	Unlikely - This species is wide-ranging and highly mobile. It readily forages above urban areas and it is considered that

Listed threatened species or ecological communities (MNES)	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
(*Hirundapus caudacutus*)	Vulnerable	NCA – Wildlife Online (4 records within a 5 km radius)		the Proposed Action is unlikely to impact this species.
swift parrot (*Lathamus discolor*)	Critically Endangered	EPBC Act – PMST (5 km radius)	**Possible** – this species prefers habitats with flowering trees in forests and woodlands. It sporadically appears in south-east Queensland where it is typically associated with stands of large flowering *E. tereticornis.* The Site is located within the known range of this species and contains suitable habitat.	Low Potential – the Proposed Action will retain 676 of the 1,555 key foraging species on Site; namely the *E. tereticornis* within the riparian corridor. Ecological restoration works will also re-establish key foraging species.
	Endangered	NCA – Wildlife Online (no records within a 5 km radius)		
eastern curlew (*Numenius madagascariensis*)	Critically Endangered	EPBC Act – PMST (5 km radius)	Highly unlikely – suitable habitats include saline and freshwater wetlands, saltmarshes, estuaries, mudflats and areas of exposed mud for foraging. The Site does not support any such habitats.	Low Potential – the Proposed Action will not impact the preferred habitat for this species.
	Endangered	NCA – Wildlife Online (no records within a 5 km radius)		
Australian painted snipe (*Rostratula australis*)	Endangered	EPBC Act – PMST (5 km radius)	Unlikely – this species prefers a wide range of habitats including ephemeral swamps, dams, rice paddocks, waterlogged grasslands roadside drains and even brackish waterways. The Australian painted snipe requires mosaics of open mud flats for foraging and denser vegetation for shelter.	Low Potential – the Site does not contain and will not impact the preferred habitat for this species.
	Vulnerable	NCA – Wildlife Online (7 records within a 5 km radius)		
black-breasted button-quail	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely – this species prefers leaf litter in drier rainforests, vine thickets, lantana on rainforest edges and hoop pine plantations.	Low Potential – the Proposed Action will not remove any suitable habitat for this species.

Listed threatened species or ecological communities (MNES)	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
(*Turnix melanogaster*)	Vulnerable	NCA – Wildlife Online (No records within a 5 km radius)	The Site does not support dense rainforest habitats typically preferred by this species. Searches for the characteristic feeding platelets of this species were undertaken during detailed ecological survey. No platelets were detected, nor were any birds flushed, and it is considered unlikely that this species occurs at the Site due to historical fragmentation and limited suitable habitat regeneration.	
Australian fritillary (*Argynnis hyperbius inconstans*)	Critically Endangered	EPBC Act – PMST (5 km radius)	Highly unlikely – the species is typically found in lower coastal areas around river estuaries and swampy areas. It is further restricted to localities where its host plant *Viola betonicifolia* (arrowhead violet) occurs (NSWSC (2002)). This species was absent from the Site.	Low Potential – the Site does not contain and will not impact the preferred habitat for this species or its host plant.
	Least Concern	NCA – Wildlife Online (no records within a 5 km radius)		
large-eared pied bat (*Chalinolobus dwyeri*)	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely – this species is often observed along ecotones on rainforest edges or in association with sandstone escarpments. The Site does not support ecotonal mesic habitats. There are also no escarpment structures that might have suitable cavernous roost sites.	Low Potential - limited and degraded resources and habitats are available. Some habitats will be retained and enhanced as part of the Proposed Action.
	Vulnerable	NCA – Wildlife Online (no records within a 5 km radius)		
northern quoll (*Dasyurus hallucatus*)	Endangered	EPBC Act – PMST (5 km radius)	Unlikely – suitable habitat for this species is most commonly rocky eucalypt woodlands and open forests within 200 km from the coast. The Site does not contain suitable habitat for the species.	Low Potential – the Site does not contain and will not impact the preferred habitat for this species.
	Least Concern	NCA – Wildlife Online (no records within a 5 km radius)		

Listed threatened species or ecological communities (MNES)	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
spotted-tailed quoll (*Dasyurus maculatus maculatus*)	Endangered	EPBC Act – PMST (5 km radius)	Unlikely – this species inhabits a variety of forest habitats including subtropical and temperate rainforests, vine thickets, wet and dry sclerophyll forests, woodlands and coastal scrub. The Site is within the known range of the spotted-tailed quoll and provides suitable habitat. Historical locations include the D'Aguilar Range west of Brisbane and coastal areas from Coolangatta to Bundaberg. The species is now believed to be extinct in these regions (S. Burnett n.d., pers. comm. cited in Long & Nelson 2004). Historical records of this species occur from well removed larger intact areas of vegetation to the east and south of the Site. The Site is located within a rapidly urbanising landscape and it is unlikely this species occurs in these more northern reaches of patchwork remnant parcels. Given the significant level of ecological assessment within the broader Ripley Valley by way of development assessment process coupled with the lack of recent records, it is relevant to consider it that it is now unlikely to occur or occurs in larger tracts to the south of the Ripley area such as the Greenbank Military Reserve, White Rock Conservation Area and Spring Mountain Forest Park.	Low Potential – it is unlikely that this species will be present within the Site.
	Vulnerable	NCA – Wildlife Online (no records within a 5 km radius)		
southern greater glider (*Petauroides volans volans*)	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely – this species is mainly restricted to eucalypt forests and woodlands where they typically occur in highest abundance in taller, montane, moist eucalypt forests with larger, relatively old trees and abundant hollows. Although habitats supported within the Site are broadly analogous with this species' habitat associations, historical clearing and the lack of suitable hollows, particularly in the regrowth portions of the Site would suggest this species does not occur within the Site. Eyre (2002) suggests greater glider populations in southern Queensland require at least 2-4 live den trees for every 2 ha of suitable forest habitat. Records of this species within the region are noted in larger areas of remnant vegetation to the east of the Site.	Low Potential – Although foraging habitat for this species exists within the Site, no suitable denning habitat is present or abundant enough within the Site. Foraging habitat and connectivity will be retained and improved through the riparian corridor.
	Vulnerable	NCA – Wildlife Online (2 records within a 5 km radius)		

Listed threatened species or ecological communities (MNES)	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
brush-tailed rock-wallaby (*Petrogale penicillata*)	Vulnerable	EPBC Act – PMST (5 km radius)	**Unlikely -** In south-east Queensland, the brush-tailed rock-wallaby is found in fragmented populations along the Great Dividing Range. This species inhabits rocky escarpments and granite outcrops that have north facing caves and ledges for shelter and warmth. No suitable caves, escarpments or rocky habitat for this species exists within the Site.	Low Potential – the Site does not contain and will not impact the preferred habitat for this species.
	Vulnerable	NCA – Wildlife Online (no records within a 5 km radius)		
koala (*Phascolarctos cinereus*)	Vulnerable	EPBC Act – PMST (1 km radius)	**Present** – koalas are found in a diversity of habitats including temperate, subtropical and tropical forest, woodland and semi-arid communities, and sclerophyll forests, on foothills, plains and coastal areas. Detailed field assessment including koala SAT surveys indicated passive evidence of koalas occurring within the Site (scats, scratches).	**High Potential** – evidence of koalas was found during detailed ecological investigations within the Site. Removal of habitats as a result of the Proposed Action will likely result in a Significant Impact to the species.
	Vulnerable	NCA – Wildlife Online (199 records within a 5 km radius)		
long-nosed potoroo (*Potorous tridactylus tridactylus*)	Vulnerable	EPBC Act – PMST (5 km radius)	**Unlikely** – This species inhabits a variety of forests including both wet and dry sclerophyll forests and heath, with the primary micro-habitat requirement being the existence of a dense understorey. The presence of moist loamy soils in which their primary food sources such as hypogeous (underground-fruiting) fungi, larvae and worms are abundant is also a requirement. The understorey throughout the Site is sparse, and the fine to coarse grain sedimentary rock geology present within the Site is not consistent with the foraging requirements of the species.	Low Potential – the Site does not contain and will not impact the preferred habitat for this species.
	Vulnerable	NCA – Wildlife Online (no records within 5 km radius)		
collared delma (*Delma torquata*)	Vulnerable	EPBC Act – PMST (5 km radius)	**Unlieky –** this species has very specific habitat requirements and its distribution is highly fragmented. The species generally inhabits eucalypt-dominated woodlands and open forests with land zones constituting alluvium, fine-grained sedimentary rocks and sandstone ranges. Key microhabitat requirements for this species include an abundance of rocks, logs, bark and other woody debris/mats of leaf litter. In populations west of Brisbane (being the closets known population some 13 km north), this species is only known to occur where soils types include stony and quartzite rock ridges and exposed basalt rocks. Which are not present at the Site, nor	Low Potential – the Site does not contain and will not impact the preferred habitat for this species. No know records occur within proximity of the Site.
	Vulnerable	NCA – Wildlife Online (no records within a 5 km radius)		

Listed threatened species or ecological communities (MNES)	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
			were any exposed rocky substraights or surface rock. The Site is found on fine grained alluvium or sedimentary soils.	
Dunmall's snake (*Furina dunmalli*)	Vulnerable	EPBC Act – PMST (5 km radius)	**Unlikely –** This species is highly cryptic and little is known about its specific ecological requirements. Records indicate that the species inhabits fallen timber, leaf litter and cracks in alluvial clay soils; generally between 200 and 500 m above sea level. Known records of this species are generally restricted to the Brigalow Belt bioregion west of the Great Dividing Range or in coastal central Queensland areas. There are no local records of this species and no important habitat is mapped in proximity to the Site.	Low Potential – the Site occurs well outside the range of known sightings of this species and is well below 200m above sea level. No historical records of the species are located near the Site.
	Vulnerable	NCA – Wildlife Online (no records within a 5 km radius)		
grey-headed flying-fox (*Pteropus poliocephalus*)	Vulnerable	EPBC Act – PMST (5 km radius)	**Likely** – suitable foraging habitat for this species includes rainforests, open eucalypt forest, woodlands, melaleuca swamps and banksia woodlands. Roosts are commonly located within dense vegetation close to water, primarily rainforest patches, stands of melaleuca, mangroves or riparian vegetation. Suitable foraging habitat occurs at the Site and records of this species have been noted in desktop searches. This species requires a continuous sequence of productive foraging habitats, migration corridors or stopover habitats that link them, of which the Site and surrounds affords. No camps or roosting locations were observed during survey efforts; however, it is likely that this species uses the Site for foraging and movement throughout the landscape.	Low Potential – The Site is not evidenced to be utilised as a roosting camp for this species and the Proposed Action will result in the removal of marginal foraging habitat. However, preferred winter feed trees such as Queensland blue gum will be retained along the riparian corridor. Further, ecological restoration works will aim to re-establish foraging resources for this species as well as other conservation significant species.
	Least Concern	NCA – Wildlife Online (20 records within a 5 km radius)		
Threatened Flora Species				
hairy-joint grass (*Arthraxon hispidus*)	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely – this species occurs on the edges of rainforest, within wet sclerophyll forests and woodlands often near sandy alluvial creekbanks or gullies. This species has also been recorded in freshwater springs of coastal foreshore dunes.	Low Potential – the Site does not contain suitable habitats.
	Vulnerable	NCA – Wildlife Online (no		

Listed threatened species or ecological communities (MNES)	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
		records within 5 km radius)		
three-leaved bosistoa (*Bosistoa transversa*)	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely – This species is recorded from Nightcap Range (north of Lismore) up to Mount Larcom (near Gladstone) in south-east Queensland (DoEE 2019). This species occurs in lowland subtropical rainforest up to 300 m above sea level. Recorded locations include a closed rainforest, complex notophyll vine forest with emergent brush box (*Lophostemon confertus*) and remnant vine forest pockets. This species appears to occur in areas that have experienced minimal disturbance (DoEE 2019)	Low Potential – The Site does not contain suitable habitats that have not been disturbed historically or presently.
		NCA – Wildlife Online (no records within 5 km radius)		
wedge-leaf tuckeroo (*Cupaniopsis shirleyana*)	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely – This species occurs in dry rainforest and scrub on moderate to very steep slopes, screeslope gullies and rocky stream channels from 60 – 550 m above sea level.	Low Potential – The Site does not afford suitable habitat for this species and is below 60 m above sea level.
	Vulnerable	NCA – Wildlife Online (no records within 5 km radius)		
Boonah tuckeroo (*Cupaniopsis tomentella*)	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely – This species in known only from the area between Boonah and Ipswich and requires fertile clay soils supporting vine thickets. This known records of this species are located on screeslopes and roadside.	Low Potential – The Site does not afford suitable habitat; being fertile clay soils supporting vine thickets.
	Vulnerable	NCA – Wildlife Online (no records within 5 km radius)		
Cycas ophiolitica	Endangered	EPBC Act – PMST (5 km radius)	Unlikely – Whilst endemic to Queensland, the species is known to occur in Marlborough to Rockhampton in the central-eastern portions of the state.	Low Potential – The Site does not afford suitable habitat for this species.

Listed threatened species or ecological communities (MNES)	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
	Endangered	NCA – Wildlife Online (no records within 5 km radius)	The species occurs on hills and slopes in grassy open forest communities approximately 80-400 m above sea level. Associated canopy species include *Corymbia dallachiana, C. erythrophloia, C. xanthope* and *Eucalyptus fibrosa*.	
bluegrass *Dicanthium setosum*	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely – this species is reported to occur from inland NSW to Queensland. In QLD, the species is reported from Leichhardt, Morton, North Kennedy and Port Curtis regions and is known to occur in Mistake Range, Main Range National Park and possibly on Glen Rock Regional Park (DoEE 2019). This species is associated with heavy basaltic black soils and red-brown loams with clay subsoil. It is often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pastures (DoEE 2019).	Low Potential – The site does not contain preferred habitat for this species. Preferred surface geologies are also not present.
	Least Concern	NCA – Wildlife Online (no records within 5 km radius)		
Cooneana olive (*Notelaea ipsviciensis*)	Critically Endangered	EPBC Act – PMST (5 km radius)	Unlikely – this species is known from three (3) closely-clustered sub-populations within the suburb of Dinmore. Thorough surveys within the broader Ipswich area have been undertaken by a number of organisations to determine if other sub-populations exist, without success (DoEE 2019). The species prefers eucalypt dominated dry sclerophyll vegetation communities with soils generally being depauperate and low-fertility. The known populations are surrounded by residential development and industrial/extractive industries (DoEE 2019).	Low Potential – The Site does not afford suitable habitat for this species.
	Endangered	NCA – Wildlife Online (no records within 5 km radius)		
Lloyd's olive (*Notelaea lloydii*)	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely – records of this species occur within several locations across south-east Queensland including Mt Crosby, Boonah district, Moggill State Forest and Moogerah Peaks National Park. However, rare or only a few specimens are known to occur at each of these collection sites. This species generally occurs in the ecotone between open forests dominated by eucalypts and vine thickets approximately 80-480m above sea level and prefers undulating to hilly terrain in moist gullies or on gentle dry slopes.	Low Potential – The Site does not afford suitable habitat for this species.
	Vulnerable	NCA – Wildlife Online (no records within 5 km radius)		

Listed threatened species or ecological communities (MNES)	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
lesser swamp-orchid (*Phaius australis*)	Endangered	EPBC Act – PMST (5 km radius)	Unlikely – This species is endemic to Australia and is recorded to occur between Lake Cathie near Port Macquarie and Barron River in north-east Queensland; however, most populations are sporadically distributed between Coffs Harbour and Fraser Island (DoEE 2019). This species occurs in coastal wet heath/sedgeland wetlands, swampy grasslands or swamp sclerophyll forest and is often associated with broad-leaved paperbark or swamp mahogany. Soil requirements range from acidic waterlogged peat to peaty-sand and include materials such as shallow peat to humus/groundwater podzol (DoEE 2019).	Low Potential – The Site does not afford suitable habitat for this species.
	Endangered	NCA – Wildlife Online (no records within 5 km radius)		
quassia (*Samadera bidwillii*)	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely - this species occurs in lowland rainforests or on rainforest margins as well as open forests and woodlands. It often occurs adjacent to ephemeral or permanent watercourses up to 510 m elevation.	Low Potential – limited and degraded habitats are available within the Site; however, this is outside of the known range of the species. Some habitats will be retained as part of the proposed action.
	Vulnerable	NCA – Wildlife Online (no records within 5 km radius)		
Austral toadflax (*Thesium australe*)	Vulnerable	EPBC Act – PMST (5 km radius)	Unlikely – this species occurs in shrublands, grasslands and woodlands that are often damp, but on a variety of soil types and altitudes. This species is semi-parasitic on the roots of a range of species, most commonly kangaroo grass (*Themeda triandra*).	Low Potential – Limited and degraded habitats are available within the Site. Some habitats will be retained and enhanced as part of the proposed action.
	Vulnerable	NCA – Wildlife Online (no records within 5 km radius)		

2.4.2 Do you consider this impact to be significant?

Yes.

As identified within **Table 2**, the Proposed Action will likely result in a significant impact to the koala. As such, a response to the EPBC Koala Referral Guidelines and the Koala Habitat Assessment Tool has been prepared (see **Attachment 12**). In summary, the Proposed Action will result in the development of approximately 38.86 ha of a mixture of habitat types including native mature vegetation, regrowth vegetation and cleared paddocks with an overall habitat **score of 6** (i.e. habitat that is considered under the EPBC Koala Referral Guidelines to be critical to the survival of the koala).

2.5 Is the proposed action likely to have ANY direct or indirect impact on members of any listed migratory species, or their habitat?

No. Refer to **Table 3**.

Table 3: Assessment of Impacts for Listed Migratory Species

Migratory Species	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
black-faced monarch (*Monarcha melanopsis*)	Migratory	EPBC Act – PMST (5km radius)	**Possible** – the black-faced monarch mainly occurs in rainforest ecosystems; however, is occasionally found in nearby wet sclerophyll and dry sclerophyll forest (DoEE 2019).	Unlikely – the Proposed Action will remove a very small component of habitat for this species. Ecological restoration works will re-establish larger areas of habitat for this species and will consolidate an improved movement corridor within the riparian area.
rufous fantail (*Rhipidura rufifrons*)	Migratory	EPBC Act – PMST (5km radius)	**Possible** – this species inhabits wet sclerophyll forests, often in gullies dominated by eucalypts, usually with a dense shrubby understorey often including ferns (DoEE, 2019). During migratory movements, this species traverses drier sclerophyll habitats.	Unlikely – the Proposed Action will remove a very small component of habitat for this species. Ecological restoration works will re-establish larger areas of habitat for this species and will consolidate an improved movement corridor within the riparian area.
rainbow bee-eater (*Merops ornatus*)	Migratory	EPBC Act – PMST (5km radius)	**Present** - A widespread species which occupies a broad range of habitats, including open forest and woodlands, shrublands, including mallee, and in open forests that are usually dominated by eucalypts. It usually occurs in open, lightly-timbered areas that are often (but not always) located close to permanent water (DoEE 2019). The Site's habitats are broadly suitable for this species; particularly the lower drainage areas with exposed banks for nesting. This species was observed across the Site, including in cleared habitats.	Unlikely – it is considered unlikely that the Proposed Action will: destroy or isolate any important habitat; result in the establishment of an invasive species in important habitat; or seriously disrupt the lifecycle of an ecologically significant proportion of the species' population.

Migratory Species	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
oriental cuckoo (*Cuculus optatus*)	Migratory	EPBC Act – PMST (5km radius)	**Possible** - The oriental cuckoo is generally associated with rainforest margins, monsoon forest, vine scrub, riverine thickets, wetter densely canopied eucalypt forest, paperbark swamp and mangroves (Morcombe & Stewart (2013)). Habitats supported along the riparian corridor provide some suitable foraging habitat for this species.	Unlikely - The Proposed Action will not remove any suitable habitat for this species.
white-throated needletail (*Hirundapus caudacutus*)	Migratory	EPBC Act – PMST (5km radius)	**Possible** - A widespread (almost exclusively aerial) species which occurs over a wide range of habitats (DoEE 2019). This species is considered a possible occurrence at the Site.	Unlikely - This species is wide-ranging and highly mobile. It readily forages above urban areas and it is considered that the Proposed Action is unlikely to impact this species.
spectacled monarch (*Monarcha trivirgatus*)	Migratory	EPBC Act – PMST (5km radius)	**Possible** - The spectacled monarch is typically associated with rainforest, wet gullies and moist eucalypt forests. Although not observed during surveys, it is possible that this species would utilise the riparian corridor.	Unlikely - The Proposed Action will remove a very small component of habitat for this species. Ecological restoration works will re-establish larger areas of habitat for this species and will consolidate an improved movement corridor within the riparian area.
yellow wagtail (*Motacilla flava*)	Migratory	EPBC Act – PMST (5km radius)	**Unlikely** – this species is associated with open country near swamps, salt marches, sewage ponds, grassed surrounds to airfields, bare ground (Morcombe & Stewart (2013)). Further, this species is a transient visitor to the Australian coast and more common in northern coastal environments well removed from the Site.	Unlikely - The Proposed Action will not remove any suitable habitat for this species.

Migratory Species	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
satin flycatcher (*Myiagra cyanoleuca*)	Migratory	EPBC Act – PMST (1km radius)	**Possible** - The Site provides broadly suitable habitat for this species, particularly the riparian corridor (DoEE 2019) and the species is considered a possible occurrence.	Unlikely - The Proposed Action will not remove any suitable habitat for this species.
curlew sandpiper (*Calidris ferruginea*)	Critically Endangered and Migratory	EPBC Act – PMST (1km radius)	Unlikely - Although generally occurring within estuarine environments, records of this species have also been from inland areas around wetlands, bores, permanent lakes and waterholes (DoEE 2019). No suitable habitat occurs within the Site.	Unlikely - The Proposed Action will not remove any suitable habitat for this species.
eastern curlew (*Numenius madagascariensis*)	Critically Endangered and Migratory	EPBC Act – PMST (1km radius)	**Highly unlikely** – suitable habitats include saline and freshwater wetlands, saltmarshes, estuaries, mudflats and areas of exposed mud for foraging. The Site does not support any such habitats.	Low Potential – the Proposed Action will not impact the preferred habitat for this species.
osprey (*Pandion haliaetus*)	Migratory	EPBC Act – PMST (1km radius)	**Possible** - The lower riparian areas of the Site form potential foraging habitat for this species; however, these areas are well removed from larger waterways and marine environments this species is typically associated with and has limited foraging resources available to this larger raptor (e.g. small dam in the northern component of the Site would be marginal at best for this species foraging requirements).	Unlikely - The Proposed Action will not remove any suitable habitat for this species.

Migratory Species	Listed Status	Source	Likelihood of Occurrence	Potential for Significant Impact
common greenshank (*Tringa nebularia*)	Migratory	EPBC Act – PMST (1km radius)	**Possible** – This species is found in a wide variety of wetlands, mudflats and permanent and ephemeral terrestrial wetlands such as swamps, dams, lakes, rivers, billabongs waterholes and flooded plains. Habitats in lower cleared flood prone areas provide marginal habitat for this species.	Unlikely - The Proposed Action will not remove any suitable habitat for this species.
fork-tailed swift (*Apus pacificus*)	Migratory	EPBC Act – PMST (1km radius)	**Possible** - A widespread (almost exclusively aerial) species which occurs over a wide range of habitats (including urban areas) (DoEE 2016). This species is considered a likely occurrence at the Site.	Unlikely - This species is wide-ranging and highly mobile. It readily forages above urban areas and it is considered that Proposed Action is unlikely to impact this species.

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

No.

The Proposed Action is not within, nor in proximity to, a marine area.

2.7 Is the proposed action to be taken on or near Commonwealth Land?

No.

The Proposed Action will not occur on Commonwealth Land or in proximity to Commonwealth Land.

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No.

The Proposed Action will not occur within (or within a catchment of) the Great Barrier Reef Marine Park.

2.9 Is the proposed action likely to have ANY direct or indirect impact in a water resource related to coal/gas/mining?

No.

The Proposed Action is not a coal seam gas development or large coal development and will not occur within proximity to either type of development.

2.10 Is the proposed action a nuclear action?

No.

The Proposed Action is not a nuclear action.

2.11 Is the proposed action to be taken by the Commonwealth agency?

No.

The Proposed Action is to be undertaken by CLAG Pty Ltd.

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No.

The Proposed Action is not within a Commonwealth Heritage Place Overseas.

2.13 Is the proposed action likely to have ANY direct or indirect impact in any part of the environment in the Commonwealth marine area?

No.

The Proposed Action is not within a Commonwealth Marine Area, nor does it occur in proximity to a Commonwealth Marine Area.

Chapter 3 - Description of the project area

3.1 Describe the flora and fauna relevant to the project area.

In the preparation of the EAR, field surveys were informed by reviewing relevant databases and background information including the:

- PMST to identify MNES within 5 km of the Site (**Attachment 10**);
- Department of the Environment and Energy (**DoEE**) Species Profiles and Threats (**SPRAT**) Database;
- Department of Environment and Science (**DES**) Wildlife Online Database to identify fauna and flora species potentially occurring within 5 km of the Site (**Attachment 11**);
- DNRM Regulated Vegetation (**Attachment 5**), Remnant RE and Essential Habitat Mapping;
- DNRM Pre-clearing Extents of REs;
- DEHP Protected Plants Flora Tripper Mapping (**Attachment 5**);
- DEHP Biodiversity Planning Assessment Mapping;
- DEHP watercourse mapping; and
- Atlas of Living Australia spatial records and predicted distributions of fauna species.

Fauna

Survey efforts included a detailed walk-through of the Site, assessment of all vegetation supported within and immediately adjoining the Site for habitat features important to species of conservation significance and active searches for fauna species or their evidence (such as koala and other scansorial fauna). Surveys were conducted over the course of four days and included:

- **Active searches of logs, rocks and ground debris** – Logs, rock and ground debris was turned in order to detect amphibians, reptiles and small terrestrial mammals;

- **Active searches for habitat trees** – searches were completed for hollow-bearing trees providing potential habitat for a range of tree hollow dependent fauna[1];
- **Random meander searches and aural surveys** – searches of riparian and vegetated areas were undertaken to identify any potential important habitats; and
- **Koala Spot Assessment Technique (SAT) searches** – 4 SAT[2] surveys were undertaken during survey efforts to determine the presence of koala throughout the Site. These surveys were also coupled with general scratch and scat searches while traversing the Site.

It is also noted that tree surveys across the entire Site included the spatial location of each tree and any observable to potential habitat features.

Habitat types were qualified based on the presence of the following habitat features:

- vegetation cover and structure;
- size and range of arboreal and terrestrial hollows;
- woody debris and leaf litter;
- rocky outcrops, overhangs and crevices;
- freestanding natural and anthropogenic water bodies, ephemeral drainage or seepage areas;
- disturbances including weed incursion, clearing and/or inappropriate fire regimes; and
- surrounding habitats and connectivity or fragmentation to these.

Habitat values within the Site are generally aligned to the Vegetation Communities mapped in **Figure 5** and described below. Within the Site, a number of overarching habitat types and

[1] For example, small hollow-bearing trees providing roost sites for microchiropteran bats and gliders, medium sized hollows providing nest sites for small to medium sized birds and possums, and large hollows providing potential nest sites for large forest owls.
[2] Stephen Phillips and John Callaghan (2011) The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas *Phascolarctos cinereus*. *Australian Zoologist*: 2011, Vol. 35, No. 3, pp. 774-780.

habitat qualities are supported, ranging from low to moderate in ecological significance and condition. Generally, those areas located in the south of the Site, on lower slopes and immediately over existing waterways occur in a more advanced, higher quality state (e.g. the remnant and regrowth Endangered Regional Ecosystem). These areas supported a fully-layered forest type; however, weed incursion within the shrub and ground layer was consistent, particularly lantana. These lower areas supported mature trees, larger fallen debris / logs and hollow features. Riparian areas supported braided streams with pools and riffles, which at the time of survey were holding water (despite limited rain preceding the survey period). Where topography begins to elevate from these lower areas, ecological condition begins to diminish, particularly to the west of the waterway and within the north-eastern allotment; while the vegetation within the south-eastern allotment occurs as regrowth with large stands of weed infestation or historically earth-worked areas (dams, flat pads, etc.).

The following sections provide a brief synopsis of each broad habitat type within the Site and their relevance to vertebrate fauna.

Open exotic grasslands with scattered taller trees

This habitat type is the most abundant habitat on Site, comprising a significant portion of the Site (west of the riparian corridor and the north-east), reflecting Vegetation Community 4 within **Figure 5**. This habitat type has a reduced value for fauna communities due to its simplified vegetation composition, structure and lack of floristic diversity. This habitat type has fewer niches to accommodate vertebrate diversity and population densities. Vertebrate communities in grazing land are depauperate and, on balance, include common and widespread taxa. These areas often encourage populations of aggressive, sedentary fauna such as *Cracticus tibicen* (Australian magpie) and *Manorina melanocephala* (noisy miner) or pest species such as *Rhinella marina* (cane toad), particularly in proximity to water bodies such as dams.

Nevertheless, it is noted that this habitat type is not bereft of all ecological value. Where larger individual trees occur, particularly Queensland blue gum, these will attract mobile nectar-feeding species (e.g., friarbirds, lorikeets, etc.) and are a noted foraging resource of three threatened species; the koala, *Pteropus poliocephalus* (grey-headed flying-fox) and

Lathamus discolor (swift parrot). Koalas, grey-headed flying-foxes and swift parrots are mobile and known to move through open landscapes seeking individual tree-based resources. While not the only tree of value, Queensland blue gum is notable as it provides winter blossom/nectar resources for grey-headed flying-fox and swift parrot during winter bottlenecking periods or migratory periods. It is also a known primary koala feed species. This species is, however, generally restricted to lower slope and alluvial components of the Site, with considerably lower densities within the open exotic grasslands.

Regrowth vegetation

Two pockets of dense regrowth occur within the Site. These are confined to the south-eastern corner of the Site (between the riparian areas and Fischer Road) and a strip along the south-western boundary (reflecting Vegetation Community 2 within **Figure 5**). Where open paddock components of the Site transition abruptly into regrowth areas, habitat quality increases; albeit moderately. These habitats have a taller and denser shrub cover; however, they lack habitat features such as large woody debris and large canopy trees (emergent trees are rare). The denser shrub layering provides foraging and shelter substrates for a greater variety of birds. Vertebrate communities in these locations are more diverse compared to paddock areas; however, habitat qualities within these areas are limited for most conservation significant taxa. Emergent trees are uncommon to rare and generally limited to road verges and edges of remnant areas. Those sporadic and smaller eucalypts do not flower prolifically and provide a reduced habitat amenity for nectivorous species. Given the lack of flowering trees these habitats have limited resources to attract conservation significant fauna such as grey-headed flying foxes and other nectar feeding species. It is noted that koalas will forage within these areas; however, movement opportunities are generally limited by dense infestations of weeds such as lantana, most notably in the south-east of the Site.

Advanced regrowth vegetation over grassy paddocks

A small pocket of very advanced regrowth is present in the central south-west of the Site, where trees provide moderate canopy cover (this is represented by Vegetation Community 3 in **Figure 5**). This pocket of vegetation supports limited to no shrub layer due to historical clearing, ongoing management and deleterious impacts from motocross activities. These pockets and other small areas of remnant vegetation along the western boundary of the Site

have higher tree density than open paddocks or regrowth and provide better quality resources for conservation significant fauna; however, the quality of resources is still markedly reduced from that of the adjoining remnants on lower and alluvial surfaces to the east.

Riparian corridor

The most complex and valuable habitat for fauna within the Site is associated with the riparian habitat supported through the central components of the Site (associated with Vegetation Community 1 in **Figure 5**). This habitat supports an intact canopy of large mature trees, dominated by Queensland blue gum. This habitat supports a range of hollows throughout and provides roosting opportunities for arboreal hollow-obligatory fauna. This community occurs as two distinct sub-components: i) remnant / regrowth with a fully-layered forest structure in the southern half of the Site; and, ii) non-remnant canopy over a dense lantana shrub layer in the northern half of the Site.

Despite there being two separate sub-components of this habitat type, the canopy is consistently dominated by intact Queensland blue gum with suppressed pink bloodwood and smooth-barked apple with a distinct sub-canopy of Queensland blue gum and swamp box. The Queensland blue gums throughout these habitats provide a more stable and abundant supply of flowering resources within the Site. This area is of greatest utility to koalas and nectar feeding fauna.

It is noted that the lower shrub layer within this habitat type is in part heavily dominated by lantana thickets which provide foraging and refuge habitat for small passerine species and terrestrial fauna; however, exclude the regeneration of many native shrub and ground cover resources – thereby significantly reducing biodiversity in many areas.

Surveys along the main and secondary creek lines noted that riparian habitats conformed to the two sub-components of the habitat type; with the north being heavily infested by lantana and subject to a number of on-line dams, while the southern half occurred in a more relict state. Within the southern components of this habitat type, much of the lower alluvial terrace was dominated by lantana; however, where absent, areas of *Lomandra* and native sedges were dominant and leaf-litter was accumulating adjoining pooling water. The creek bed within these sections had long deep pools of static or slow-flowing water and steep or undercut banks

(some of which are subject to varying levels or stages of bank / gully erosion). Water observed in these habitats was generally turbid, holding suspended clays (potentially as a result of run-off from erosion in upstream catchments, exposed areas of soil through the Boyland Way road easement and natural processes). Numerous common amphibian species were detected in these areas during surveys.

Habitat assessments across the Site identified three conservation significant fauna species as being present or likely to be present, namely:

- koala;
- grey-headed flying-fox; and
- swift parrot.

These assessments noted that habitats along the lower alluvial and riparian habitats demonstrated the highest quality within the Site. Of these, the southern components of this alluvial system supported the highest quality and most connective habitat within the Site. The southern components of this riparian corridor provide a well-structured sclerophyll forest community that support a range of microhabitat features including hollow-bearing trees which are rare within the remaining areas of the Site; while the northern alluvial areas provide similar levels of abundant Queensland blue gum, and therefore important winter bottle-necking resources and forage resources for koalas. These habitats are associated with all three species of conservation significant fauna noted above.

The remaining habitat types within the Site (young regrowth, degraded waterways and open paddocks with scattered mature trees) are of lower quality; lacking vegetative structure and/or microhabitats which are often critical elements for the presence and persistence of conservation significant fauna, forest dependant fauna and cryptic fauna. Despite this, these areas still provide foraging and movement habitat for koala.

Flora

Baseline botanical assessment was undertaken over four survey days on 9 October 2018 and 3-5 July 2019. This involved a complete traverse of the entire Site, the spatial mapping

of all native trees along within the Site (at or above 200mm diameter at breast height (**DBH**)), and the spatial mapping of all habitat trees throughout the entirety of the Site (i.e. trees with notable habitat features/significance). Surveys also involved an assessment to determine whether the Site:

i. supported vegetation analogous with Threatened Ecological Communities (**TEC**) identified as MNES under the EPBC Act;

ii. supported any plant species identified as MNES under the EPBC Act;

iii. was appropriately omitted or included within the RVMM;

iv. supported EVNT plant species; and

v. supported plant species or communities which were otherwise of conservation interest.

To ensure that botanical specimens with similar or potential dichotomy of EVNT species were correctly identified, numerous specimens were submitted to the Queensland Herbarium for confirmation of species identification. The Site is located on relatively flat topography, generally sloping towards the drainage line in the central and eastern portions of the Site. Alluvial geological deposits were associated with the drainage line and characterised by red sand becoming shallower on the lower and upper slopes. The vegetation supported by the Site has been subject to historical broadscale clearing and includes vegetation communities of various age cohorts including scattered remnant canopy retained in open paddocks, remnant open forest, advanced regrowth and regrowth areas. A total of four (4) vegetation communities were observed during in-field ecological assessments and were found to be generally reflective of the mapped REs across the Site (**Figure 5**). A full flora species list is provided in **Attachment 13**. **Chapter 3** of this Referral describes the four vegetation communities in detail.

Threatened Flora and Vegetation Community Searches

Surveys failed to record any species listed as MNES under the EPBC Act, or any EVNT species listed under the NC Act. Nor does it support MNES TECs. Surveys have found that

tree species supported on Site is generally consistent with the Regulated Vegetation Mapping, although only scattered remnant canopy trees were observed throughout the Site.

Details of surveyed native trees and their location in relation to the proposed development footprint are shown in **Figure 3**. The Proposed Development layout allows for the retention of vegetation within the Open Space and Conservation Precinct associated with the riparian corridor. The remaining vegetation is proposed for removal.

3.2 Describe the hydrology relevant to the project area (including water flows).

A Stormwater Management Plan has been prepared by Engeny for the Proposed Action (this formed part of the development application to ICC (see **Attachment 14**).

The Site supports an existing dwelling in the north-east of Lot 208, with associated ancillary structures including sheds and a pool. The balance of the Site contains a mix of cleared paddocks, regrowth and remnant vegetation that has had broadscale clearing, with selective retention of some larger trees within the Site; particularly in the Site's south-east. Four dams are present in the northern half of the Site and the south-western part of the Site (Lot 209) appears to be used for informal recreation, with a number of dirt tracks evident from aerial imagery and confirmed as private motocross tracks during Site survey (see **Figure 2**). The central components of the Site support an ephemeral drainage feature that flows from south to north. This drainage feature is a tributary of Bundamba Creek (defined as a drainage feature by the *Water Act 2000*) extends in a south-west to north-east direction across the Site; this is the Site's main ecological feature and will be protected as an Open Space and Conservation Precinct as part of the Proposed Action. This feature is mapped as a 'Low' and 'Moderate' Value Queensland Waterway for Waterway Barrier Works (see **Attachment 6**).

3.3 Describe the soil and vegetation characteristics relevant to the project area.

The Site is located on relatively flat topography, generally sloping towards the drainage line in the central and eastern portions of the Site. Alluvial geological deposits were associated with the drainage line and characterised by red sand becoming shallower on the lower and upper slopes. The vegetation supported by the Site has been subject to historical broadscale

clearing and includes vegetation communities of various age cohorts including scattered remnant canopy retained in open paddocks, remnant open forest, advanced regrowth and regrowth areas. Additionally, the Vegetation Management Report included in **Attachment 5** indicates that the Site supports 12.3.3, 12.9-10.2, 12.9-10.7 and 12.9-10.16. These REs are described as follows:

- Endangered RE 12.3.3 described as '*Eucalyptus tereticornis* woodland*. Eucalyptus crebra* and *E. moluccana* 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 *Angophora subvelutina* or *A. floribunda, Corymbia clarksonii, C. intermedia, C. tessellaris, Lophostemon suaveolens* and *E. melanophloia.* Occurs on Quaternary Alluvial plains, terraces and fans where rainfall is usually less than 1000mm/y.'
    - This occurs as a thin linear strip through the lower components of the central south of the Site
- Least Concern RE 12.9-10.2 described as '*Corymbia citriodora* subsp*. variegata* open woodland or woodland usually with *Eucalyptus crebra*. Other species such as *Eucalyptus tereticornis, E. moluccana, E. acmenoides* and *E. siderophloia* may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of *Lophostemon confertus* (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments'
    - This occurs on the higher slopes adjoining the alluvial areas of the Site's south.
- Of Concern RE 12.9-10.7 described as '*Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora leiocarpa, E. melanophloia* woodland. Occurs on Cainozoic and Mesozoic sediments'
    - This occurs as a part of a mixed polygon of regrowth vegetation fringing lower alluvial areas of the Site.
- Of Concern RE 12.9-10.16 described as 'Microphyll to notophyll vine forest +/- *Araucaria cunninghamii*. Characteristic species include *Argyrodendron* sp., *Araucaria*

cunninghamii, *Agathis robusta*, *Backhousia myrtifolia*, *Cupaniopsis parvifolia*, *Dendrocnide photinophylla*, *Rhodosphaera rhodanthema*, *Flindersia australis*, *F. xanthoxyla*, *Drypetes deplanchei*, *Olea paniculata*, *Diospyros geminata*, Gossia *bidwillii*, *Excoecaria dallachyana* and *Vitex lignum-vitae*. *Archontophoenix cunninghamiana* often present in gully floors. Occurs on Cainozoic and Mesozoic sediments.

- This occurs as a part of a mixed polygon of regrowth vegetation fringing lower alluvial areas of the Site.

The pre-clear landscape historically contained similar representations of these REs across the whole of the Site. The four vegetation communities ground-truthed within the Site are described below.

Vegetation Community 1 – Queensland Blue Gum Open Forest on Alluvial Corridor and Plain

The waterway that extends through the Site in a south-west to north-east direction is a braided, meandering system that opens into an alluvial floodplain in the northern extent of the Site (see **Figure 5**). The vegetation forms a mix of remnant and regrowth open forest with a canopy dominated by *Eucalyptus tereticornis* (Queensland blue gum), with associated *Angophora leiocarpa* (smooth-barked apple), *Corymbia intermedia* (pink bloodwood) and the occasional *Corymbia tessellaris* (Moreton Bay ash). The mid-storey was dominated by *Lophostemon suaveolens* (swamp box) in dense stands adjoining the creek banks and the lower alluvial terrace*. Acacia disparrima* (hickory wattle) and *Alphitonia excelsa* (red ash) were also present throughout the mid-storey. The shrub layer was sparse and contained regenerating mid-storey and canopy species as well as *Alstonia constricta* (quinine bush), *Breynia oblongifolia* (coffee bush), *Glochidion ferdinandi* (cheese tree) and patch infestations of *Lantana camara** (lantana). The understorey contained a variety of native grasses and herbs including various *Lomandra* species*, Leersia hexandra* (swamp rice grass), *Ottochloa gracillima* (graceful grass), *Imperata cylindrica* (blady grass) and *Cynodon dactylon* (couch grass). The waterway itself contained aquatic species such as *Philydrum lanuginosum* (woolly frog's mouth), a number of *Juncus* species and *Nymphoides indica* (water snowflake).

This community became variable within the northern extent of the Site where the Site has been subject to greater historical disturbance and modification. Similarly, the extent of exotic pest plants increased towards the northern extent of the Site, with dense patches of lantana present. The southern extent of the community was generally intact and contained mature remnant canopy and scattered relict trees.

Vegetation Community 2 – Regrowth Open Forest on Lower Slopes

This community bounds Community 1 on the east and west and extends up the lower slopes within the Site (see **Figure 5**). These portions of the Site have been subject to historical modification and disturbance through broadscale clearing events, and as such, the community supports an earlier age cohort compared to much of Community 1. The canopy strata was similarly dominated by Queensland blue gum with associated smooth-barked apple and pink bloodwood, however, *Corymbia citriodora* subsp*. variegata* (spotted gum), *Eucalyptus siderophloia* (northern grey ironbark) and *Eucalyptus crebra* (narrow-leaved ironbark) became prevalent with increased elevation up the slope. The mid-storey and shrub layer was largely dominated by regenerating canopy species with hickory wattle, *Acacia leiocalyx* (black wattle) and *Allocasuarina littoralis* (black she-oak) with patch infestations of lantana. In the eastern extent of this community, the understorey became increasingly dominated by exotic grasses and herbs such as *Megathyrsus maximus* var*. pubiglumis** (green panic), *Melinis repens** (red natal grass), *Chloris gayana* (rhodes grass) and *Asparagus africanus* (climbing asparagus).

The western component of this community contained a largely native understorey with species such as *Heteropogon contortus* (black spear grass), *Cymbopogon refractus* (barbed wire grass), blady grass and various *Lomandra* species.

Vegetation Community 3 – Advanced Regrowth Open Forest over Pasture Grasses

This community is situated to the west of the riparian community and centrally within the Site (see **Figure 5**). This area of the Site has been subject to historical disturbance, likely in the form of grazing, with the mid-storey and shrub strata largely absent. There were a number of vehicle access trails through this community. The canopy was characterised by mature native species with spotted gum dominating on the higher slopes and Queensland blue gum on the lower slopes. Associated species including pink bloodwood and smooth-barked apple

were also present. The understorey was largely dominated by native and exotic pasture grasses described in Community 2.

Vegetation Community 4 – Open Paddocks with Scattered Mature Canopy Trees

This vegetation community occurs over the balance of the Site (see **Figure 5**) and is characterised by open paddocks containing scattered mature canopy trees over pasture grasses. Similar to the characteristics of the previous communities, the lower slopes were dominated by Queensland blue gum and the higher slopes were dominated by spotted gum. Associated species included pink bloodwood, smooth-barked apple and northern grey ironbark in the western extent of the community.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

From a MNES perspective, no outstanding natural features or other important or unique values were identified within or near to the Site. The Endangered RE 12.3.3 meets the definition of "Significant Vegetation" under the PDA Development Scheme; however, no other vegetation within the Site meets this definition.

3.5 Describe the status of native vegetation relevant to the project area.

The Site supports 12.3.3, 12.9-10.2, 12.9-10.7 and 12.9-10.16 (see **Attachment 5**). These REs are described in **Chapter 3.3**.

The pre-clear landscape historically contained similar representations of these REs across the whole of the Site.

3.6 Describe the gradient (or depth of range if the action is to be taken in a marine area).

No action is to be taken in a marine area for the Project.

3.7 Describe the current condition of the environment relevant to the project area.

Overall, the environment within the Site retains some significant ecological and habitat values despite historical and contemporary anthropogenic disturbances. The following

sections provide further detail on condition of habitat, connectivity and remnant vegetation within the Site.

Habitat Values

Habitat values within the Site are generally aligned to the Vegetation Communities mapped in **Figure 5**. Within the Site, a number of overarching habitat types and habitat qualities are supported, ranging from low to moderate in ecological significance and condition. Generally, those areas located in the south of the Site, on lower slopes and immediately over existing waterways occur in a more advanced, higher quality state (e.g. the remnant and regrowth Endangered Regional Ecosystem). These areas supported a fully-layered forest type; however, weed incursion within the shrub and ground layer was consistent, particularly lantana. These lower areas supported mature trees, larger fallen debris / logs and hollow features. Riparian areas supported braided streams with pools and riffles, which at the time of survey were holding water (despite limited rain preceding the survey period). Where topography begins to elevate from these lower areas, ecological condition begins to diminish, particularly to the west of the waterway and within the north-eastern allotment; while the vegetation within the south-eastern allotment occurs as regrowth with large stands of weed infestation or historically earth-worked areas (dams, flat pads, etc.).

Connectivity

The Site is within a rapidly evolving, peri-urban landscape which is seeing the ongoing conversion of semi-rural or vegetated land into contemporary urban residential, educational or commercial settings with associated infrastructures (e.g. establishment, formalisation of and upgrades to roads and services). This conversion of land within the broader Ripley Valley PDA, coupled with existing or recently established landscape ecological impediments (e.g. the Cunningham Highway, Centenary Highway and upgrades to Ripley Road) continue to increase the fragmentation of land within the immediate area.

Contextually, the Site falls at the extreme northern edge of this area, enveloped on three of its four sides by existing, significant urban infrastructures or future urban development. To the north of the Site occurs low-density residential development off Melrose Drive, which itself is bound to the north by the Cunningham Highway. To the west of the Site occurs a contemporary low-density residential development, also bound by the Cunningham Highway as well as Ripley Road and a recent commercial development. To the south of the Site

occurs a large parcel of land which has been recently approved for low-density residential development and educational facility over the majority of the Site (**Figure 6**). It is noted that the approved plans retain lower alluvial areas of the Site within open space and recreation zones. To the east of the Site occurs large rural residential allotments supporting varying levels of vegetation cover. These allotments fall outside of the PDA and are bound to the east by the Swanbank – New Chum industrial precincts further to the east (**Figure 1**).

Subject to the progression of the approved development to the south, and the eventual upgrade of Fischer Road to the east, the Site will ultimately become isolated from existing remnants to the south and west (which are also under pressure from development within the PDA). Consequently, the Site will have limited connectivity to offsite habitats and will be largely surrounded by significant ecological impediments.

It is unlikely that the larger rural residential allotments to the east of the Site will be subjected to residential development pressures in the short to medium term given these remain outside the PDA; however, longer-term it is reasonable to assume that these areas may also feasibly be considered as in-fill urban development sites.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage relevant to the project area.

The PMST (**Attachment 10**) indicated that no World Heritage Properties, National Heritage Places or any other Commonwealth Heritage Places exist within a 5 km radius of the Site.

3.9 Describe any Indigenous heritage values relevant to the project area.

Indigenous cultural heritage is managed in Queensland through the *Aboriginal Cultural Heritage Act 2003* (**ACH Act**). The Duty of Care Guidelines under the ACH Act place the onus of the duty of care upon any person undertaking an activity to ensure that all reasonable and practicable measures are taken to ensure the activity does not harm Indigenous cultural heritage.

Areas of historical significant ground disturbance (such as the majority of the Site) are generally unlikely to contain aspects of intact Indigenous cultural heritage. The Applicant will continue to operate in accordance with the Duty of Care Guidelines for the Project.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

The five existing lots that comprise the Site have freehold tenure.

3.11 Describe any existing or any proposed uses relevant to the project area.

Current aerial imagery clearly illustrates that the Site supports an existing dwelling in the north-east of Lot 208, with associated ancillary structures including sheds and a pool. The balance of the Site contains a mix of cleared paddocks, regrowth and remnant vegetation that has had broadscale clearing, with selective retention of some larger trees within the Site; particularly in the Site's south-east. Four dams are present in the northern half of the Site and the south-western part of the Site (Lot 209) appears to be used for informal recreation, with a number of dirt tracks evident from aerial imagery (see **Figure 2**) and confirmed as private motocross tracks during Site survey. The central components of the Site support an ephemeral drainage feature that flows from south to north. Lot 210 in the north-west of the Site is the most sparsely vegetated on the Site, while Lot 208 in the south-east is the most heavily vegetated on the Site. Lot 208 is, however, dominated by dense regrowth with highly scattered mature or remnant trees.

The Site is located within the Ripley Valley PDA and is therefore subject to the provisions of the Ripley Valley Development Scheme (**Development Scheme**) rather than the ICC Planning Scheme. The Site is identified within the Development Scheme as Urban Living Zone.

Within the Urban Living Zone, the Proposed Development is considered to be permissible development under Table 2: Levels of Assessment of the Development Scheme.

In addition to the Development Scheme, the Proposed Development is subject to environmental planning legislation at the Commonwealth and State levels.

The Site is within a rapidly evolving, peri-urban landscape which is seeing the ongoing conversion of semi-rural or vegetated land into contemporary urban residential, educational or commercial settings with associated infrastructures (e.g. establishment, formalisation of and upgrades to roads and services). This conversion of land within the broader Ripley Valley PDA, coupled with existing or recently established landscape ecological impediments

(e.g. the Cunningham Highway, Centenary Highway and upgrades to Ripley Road) continue to increase the fragmentation of land within the immediate area.

Contextually, the Site falls at the extreme northern edge of this area, enveloped on three of its four sides by existing, significant urban infrastructures or future urban development. To the north of the Site occurs low-density residential development off Melrose Drive, which itself is bound to the north by the Cunningham Highway.

Chapter 4 - Measures to avoid or reduce impacts

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

Unmitigated, the Proposed Action has the potential to significantly impact the ecological values and function of the Site through direct removal of native vegetation (including Significant Vegetation) and fauna habitat for a variety of conservation-significant and common fauna species. Indirect impacts to fauna also may include interaction with people and urban activities, domestic pets (i.e. dogs) and traffic generated by the Proposed Action. In order to avoid, minimise and mitigate such impacts, the Applicant has adopted a number of measures throughout the evolution of the Proposed Action's design.

The 'avoid – minimise – mitigate' principle is a common tenet of conservation planning and is a standard against which development performance is assessed by all levels of government. The following discussion outlines the ways this principle has been adopted for the Proposed Action in both the: i) Initial Planning Processes; and ii) Refined Design Processes.

4.1.1 Approach to Design

Planning and Landscape Context

The Site forms a large rural area, located at the extreme northern extent of the Ripley Valley PDA. The Site is strategically positioned in a contemporary urban growth corridor with numerous recent land developments being established immediately to the west, south and north as well as being bound to the north by the Cunningham Highway. Future urban development of the area is expected to continue, particularly around major transport hubs such as the Cunningham and Centenary Highway as well as the future extension of the Springfield Rail Line through the Ripley Valley. The Queensland Government has identified the Site as having potential for urban development by virtue of its inclusion into the Urban Footprint, Ripley Valley PDA and being zoned under the Development Scheme as an Urban Living Zone.

As such, the Site's development represents logical and sequential expansion of existing urban development in this locality; however, development must still have consideration of

constraints and opportunities to ensure designs are appropriate. The Applicant has undertaken significant levels of due diligence over the Site.

Single Landowner Benefits

The coordinated establishment of a master planned community has significant advantage over piecemeal development of the Site over individual properties or other areas in the Ripley Valley PDA or surrounding areas, insofar that: Development of individual properties by different proponents would not be staged development, and (individually) such developments are unlikely to consider ecological / environmental impacts across the broader Site to achieve a beneficial and coordinated environment outcome. While the cumulative impact of such development may be at least the same (and most likely greater) than the Proposed Action, there would be limited requirement for assessment and approval of the individual projects under the EPBC Act. Differing commercial competition of various landowners can create greater constraint or opportunity over individual sites (e.g. location of ecological corridors would be disaggregated and potentially ineffective). Further, in our experience it is difficult to achieve well-coordinated conservation outcomes across a development front being delivered by multiple parties.

By comparison, the Proposed Action will be subject to holistic (landscape-scale) impact assessment, and provision of measures mitigating this impact. The Proponent can also achieve

- coordinated conservation outcomes (e.g. advanced compensatory planting staged clearing)[1];
- delivery of critical infrastructure such as underpasses to retain and enhance corridor functionality;
- delivery of development infrastructure such as water and sewer; and
- will be the sole entity accountable for delivering on these mitigation commitments.

[1] This approach will reduce the more significant dispersal of koalas that occurs when occupied habitat is cleared in a short time and will allow for the reorganisation of populations with the opportunity for utilisation of advanced compensatory planting areas.

This is a significant consideration in the initial planning process and provides confidence going forward that development over the Site can be undertaken by the single Applicant in a coordinated fashion to achieve the desired outcomes of regulators and the community alike.

Defining the Open Space and Conservation Precinct

The guiding principles for the location of the Residential and Open Space and Conservation Precincts in the Proposed Action are to:

- avoid impacts on areas with higher ecological values by locating the Residential Precinct outside of these areas;
- minimise/mitigate impacts by limiting the type and scale of uses that can occur in areas adjoining components of the Site with higher ecological importance such as stormwater infrastructure, parklands and landscaping within the Open Space and Conservation Precinct; and
- protect, enhance and expand areas with higher ecological value (i.e. the central alluvial corridor and surrounding green space (**Figure 3**)).

The establishment of these key elements within the Open Space and Conservation Precinct will see the Proposed Action avoid or minimise impacts to mapped fauna habitat; and provide opportunity for these areas to be enhanced and expanded to a minimum 120 m wide internal corridor through the Site. This Open Space and Conservation Precinct acts as an integrated parkland containing the core remnant and revegetated areas which will be buffered from the Residential Precinct by esplanade road and / or local parkland.

Iterative Design Process Based on In-field Ecological Information

The iterative design process underpinning the development of the Proposed Action demonstrates how it has aimed to achieve the provisions of relevant Development Scheme desired outcomes.

It has been an important process of consideration and review of constraints and opportunities available over the Site to accurately capture and protect the Site's environmental values where practicable. The design process was iterative in nature and

informed by ongoing accumulation of desktop and Site-based data. This iterative process of informing design has occurred through:

i. Desktop assessments;

ii. Site based surveys including a tree survey over the entire Site and a review of Tree Protection Zones (**TPZ**s) regarding design elements;

iii. Review and workshop of Site-based survey results;

iv. Review and testing of design; and

v. Review of Development Scheme and EDQ Policies.

The following sections provide a synopsis and outline of each of the key steps in this process and how they demonstrate the Proposed Action's 'avoid – minimise – mitigate' framework.

4.1.2 Mitigation in Design

More refined planning and design of the Proposed Action was undertaken once the key elements had been finalised through the initial iterative design process; establishing precinct areas and their associated uses.

Establishment of Park / Recreation Corridor

Ecological Site investigations undertaken across the Site identified areas of higher ecological value and connective with offsite habitats[2]. These areas are generally associated with mature or advanced regrowth vegetation supported within the Site that occur within the lower alluvial corridor. A review of this and adjoining vegetation occurring offsite illustrated clear areas of higher value which retain greater connectivity within the Site and surrounding locality in a post-development scenario. These areas were spatially referenced into the Proposed Action as a guide to aid in the iterative design process. Through this, the Open Space and Conservation Precinct corridor was defined. Further, the design of the Open

[2] Offsite habitats have been considered in a post-approval development scenario when considering adjoining allotments to the south and west. Noting the Cunningham Highway and existing residential bound the Site to the north/north-west and large lot residential to the east.

Space and Conservation Precinct has also considered limiting vehicular crossing points to one singular crossing. The extension of Boyland Way will not intersect with this Precinct; affording fauna movement without risk of vehicular interaction at this point (the extent of this can be fenced to avoid fauna movement into road corridors.

The intent of the Open Space and Conservation Precinct is to retain these important values, enhance them through ecological restoration works to achieve a minimum 120 m wide corridor through the Site connecting into offset habitat to the north and south, while also providing an opportunity to co-locate stormwater management devices outside of remnant areas.

The vegetation supported within the mapped Endangered RE is largely unaffected by the Proposed Action's layout and civil design. This has been achieved by avoiding the TPZs of trees supported within the mapped Endangered RE and through their inclusion within the Open Space and Conservation Precinct. **Figure 3** illustrates that this been considered in layout and civil design. All roads, lots and services are positioned outside of this area.

In order for waterway remediation works to avoid further significant erosion issues within the Site (including the erosion of highly dispersive clay soils), it is necessary to treat a number of head cuts with rock chutes and bank stabilisation or by other means (e.g. fill and planting of secondary channels) within riparian areas. Remediation works will only involve two such head cuts within the Endangered RE (see **Figure 3** and **Figure 4**). Works to remediate this erosion are necessary to avoid immediate and ongoing exacerbation of riparian erosion which will lead to deleterious impacts on this mapped RE and sedimentation loads to downstream environs. Remediation works will be governed by a specific management plan and will include the use of highly sensitive access, light plant, arboricultural oversight and will as a minimum attempt to first avoid impacts to all vegetation within the Endangered RE. Where avoidance of impacts to individual trees is not possible, sensitive removal will be required to avoid disturbance to other vegetation; while the area will be subject to mitigation measures such as soil improvements and revegetation. Further, all chutes will consider the retention of fish passage in their design (e.g. a 1 in 20 grade). Ecological restoration activities within this vegetation community will lead to a net benefit for Significant Vegetation within the Site.

Parks and Esplanade Roads to the Park/Recreation Area

The Proposed Action is designed such that the entire area being retained as Open Space and Conservation will be buffered from hard development areas (i.e. houses) by Local Parkland, revegetated bioretention basins or an esplanade road. This will ensure a transition from development areas to vegetated areas and will limit / avoid any requirement for clearing to accommodate bushfire hazards.

Retaining, Consolidating and Linking Habitat

Baseline ecological assessment identified that the lower riparian areas provide the most significant koala habitat within the Site. Koala SAT survey results noted koala usage occurred across the entire Site and varying levels; however, there was a distinct increase in usage within areas with mature vegetation along well-vegetated riparian and alluvial corridors. Retention, expansion, improvement and linking of this habitat to other areas of habitat to the south and north of the Site is the Proposed Action's primary mitigation measure.

Consolidation and linking of the habitat will be achieved by way of: (i) protection within a defined environmental corridor; (ii) assisted natural regeneration in areas of existing regrowth or remnant; and (iii) reconstruction in areas of open grassland or regrowth / weed infestation or where environmental management works are required to restore erosion issues.

It is important to note that the Applicant will commence the initial restoration and rehabilitation works concurrent to development works commencing. This will ensure that the entire corridor achieves an advanced state as soon as practicable in the development process. This approach will reduce the lag between habitat loss and the time at which restoration works begin to benefit the Site's flora and fauna. Much of the existing, mature vegetation within the Open Space and Conservation Precinct can be fenced off from development areas and subjected to weeding and improvement works immediately. Those areas which will be subject to civil works (e.g. the road crossing and bioretention basins) will commence restoration works upon completion of earthworks and will be managed in concert with retained areas of vegetation.

Green and Fauna Movement Infrastructure

The Proposed Action will retain the Site's key environmental corridor within the Open Space and Conservation Precinct. Although this corridor is significant in its width, its effectiveness is limited where movement is impeded by barriers such as water-sensitive urban design (**WSUD**) or road infrastructure. To assist in corridor functionality in the initial periods of the ecological restoration works and where barriers are proposed, the detailed design will be refined to consider the appropriateness of mitigation measures.

In the context of the wider landscape, the retained Open Space and Conservation Precinct will act as a refuge and wildlife corridor for native fauna species.

The use of locally endemic flora species in landscaping treatments, particularly those that flower prolifically in the winter bottlenecking season, will offer additional foraging opportunities for native fauna residing within the immediate locality.

Fauna management measures such as the preparation of: Bushland Management Plan; Fauna Management Plan; Pre-clearing Assessments; and Fauna Spotter Catchers, will reduce the potential for impacts to fauna during the clearing process.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

Through detailed desktop and in-field ecological assessments in October 2018 and July 2019, a number of MNES were identified as likely to occur within the Site. Of these, only the koala will potentially be significantly impacted by the Proposed Action. A review of other MNES which were identified within the EPBC PMST (**Attachment 10**) and Queensland's Wildlife Online database (**Attachment 11**) was undertaken against the impacts of the Proposed Action. It was considered unlikely that the Proposed Action will give rise to significant impacts on MNES other than that identified for the koala. Notwithstanding, other species considered likely to occur within the EAR (grey-headed flying-fox and swift parrot) have also been addressed in accordance with their EPBC listing advice for completeness.

A response to the EPBC Act Referral Guidelines for the Vulnerable koala is provided in **Attachment 12**. Approval of the Proposed Action will result in the removal of vegetation

communities over the Site, with retention of Endangered Remnant RE 12.3.3 and the riparian corridor; the main movement corridor through the Site. The Proposed Action will implement restoration and rehabilitation measures focusing on the retention and enhancement of the riparian corridor as environmental outcomes to be achieved.

Measurable environmental outcomes that are proposed for all MNES potentially impacted by the Proposed Action are provided in **Attachment 15**.

Chapter 5 - Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in Section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

No

5.1.2 National Heritage Places

No

5.1.3 Wetlands of International Importance (declared Ramsar wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

Yes

5.1.5 Listed migratory species

No

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No

5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reason why you think the proposed action is not likely to have a significant impact in a matter protected under the EPBC Act and therefore not a controlled action.

N/A

It is contended that the Proposed Action will have a significant impact on the koala, but will not have a significant impact on any other MNES. Justification for this position is provided within **Chapter 2** of this Referral; itemised by each MNES.

Chapter 6 – Environmental record of the person proposing to undertake the action

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

Yes – CLAG Pty Ltd has not previously contravened any environmental legislation. In Australia, the company has not undertaken any developments beyond the current proposed Project.

6.2 Provide detailed of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied in relation to the action – the person making the application.

CLAG Pty Ltd has does not have any past or present proceedings against it under Commonwealth, State or Territory Law for the protection of the environment or the conservation and sustainable use of natural resources.

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework.

The Applicant does not have specific environmental policies or frameworks. However, the Applicant acknowledges its environmental obligations under local, State and Commonwealth legislation and is committed to upholding these obligations.

6.3.1 If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework.

N/A

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act>

No.

Chapter 7 - Information Sources

7.1 List of references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Please refer to the reference table provided as **Attachment 16**.

Chapter 8 - Proposed alternatives

7.0 Provide a description of the feasible alternatives?

Alternatives beyond the Site

No feasible alternatives have been identified for the Proposed Action. The Site is included within the Ripley Valley PDA and is identified within the Ripley Valley Development Scheme as an Urban Living Zone. By virtue of this planning designation, the Queensland Government has effectively earmarked the Site for future residential development. Numerous land developments have recently been established surrounding the Site within the Ripley Valley PDA and as such it is relevant to consider that the Site and the broader locality will continue to transition and undergo urban development in line with regional growth objectives.

Further, the Queensland Government and ICC have identified the Site as being part of the region's future growth strategy by virtue of its inclusion into the Urban Footprint (SEQ Regional Plan 2017). On this basis, the Applicant identified the Site as a logical and sequential expansion of the urban areas within the broader locality. Alternative locations for the expansion of residential development within the region are invariably more constrained than the Site, which is largely degraded due to historical agricultural pursuits. As such, with appropriate mitigation measures for unavoidable impacts, the Project represents a logical approach to managing growth within south-east Queensland to achieve a balanced outcome across social, environmental and economic imperatives.

Alternatives within the Site

In the context of discussing alternatives within the Site, the 'avoid – minimise – mitigate' principle has been central to the formulation of the design. From the outset, the Applicant has made it a clear priority of the design process that the Proposed Action avoids the most significant ecological values within the Site. This has been achieved through the retention of

the riparian corridor and the associated Endangered Regional Ecosystem, all of which will become part of the Open Space and Conservation Precinct.

The Project requires a local park to be established in a central location within the Site to ensure all lots are in proximity to the open space. This park has been redesigned to improve bushfire setbacks and to reduce intrusion into the retained vegetated areas. The design has retained esplanade road frontages to all areas of open space to separate development from vegetated areas.

The Proposed Action's development footprint is generally focused on areas of lower quality ecological value; though this still does qualify as *habitat critical to the survival of the koala* through the EPBC Koala Referral Guidelines and the Koala Habitat Assessment Tool.

The Proposed Action relates well (geographically) to the residential and open space / conservation uses of the adjoining sites – this promotes a functional network of urban and open space uses that extend beyond the Site. It is considered that an increase in the footprint of the Open Space and Conservation Precinct within the Site (beyond what is currently proposed) would detract from the ability to satisfactorily capitalise on land that is appropriately designated through State Government processes to be developed for urban purposes. Similarly, the expansion of the development footprint into areas currently proposed as Open Space and Conservation Precinct would likely affect the ability of the Proposed Action to deliver appropriate ecological outcomes.

In summary, the design of the Proposed Action reflects an appropriate balancing of regional growth requirements and ecological outcomes for this Site.

7.1 Select the relevant alternatives related to your proposed action.

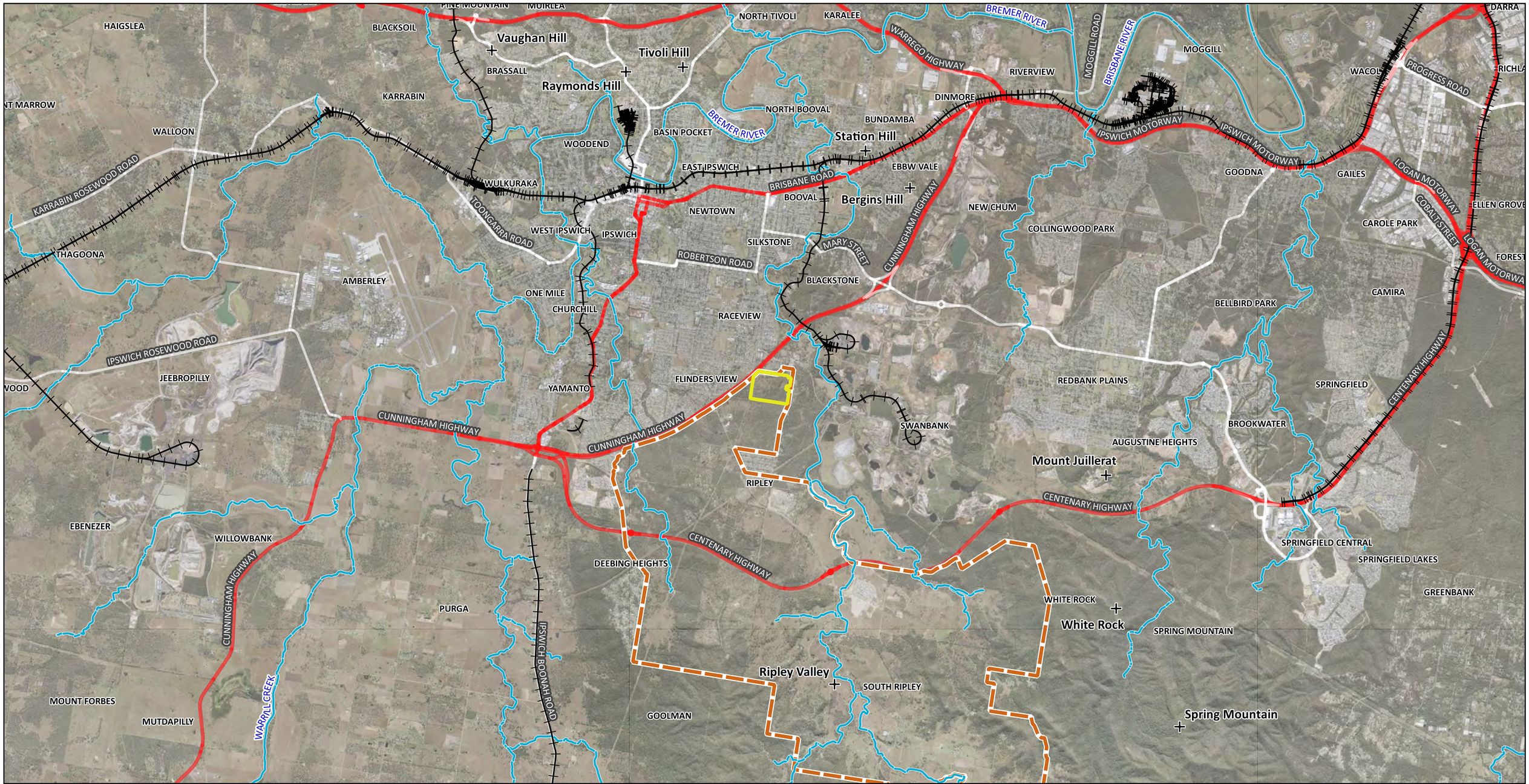
No relevant alternatives are applicable to the Project.

7.2 Do you have another alternative?

No other alternatives have been identified.

8 Contacts, signatures and declaration

See EPBC Referral Portal Online Form.



Ripley View Residential Development

Legend

- Site Boundary
- Ripley Valley Priority Development Area
- Railway Network
- Highway
- Road

Figure 1 - Locality

28 South Project Ref: 2018-079

Data Sources: QLD Globe Imagery (SISP 2016); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018); Watercourses (DNRME 2019).

28ºS ENVIRONMENTAL

Issue Date	Dwg No.	Author
27 November 2019	2018-079-CAR001	RF
Approved	**Revision Note**	
MT		

(A3) GDA 94 MGA 56

1:80000

N

2.5 0 2.5 5 7.5 10 km

Node Number	Latitude	Longitude	X Coordinate	Y Coordinate
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2	-27.6546101	152.7890308	479191.19257480436	6941039.4948972305
3	-27.6540539	152.7849841	478791.9382557962	6941100.410729419
4	-27.6513546	152.7854543	478837.8011981277	6941399.49708131
5	-27.649687	152.7857448	478866.13612221216	6941584.268930728
6	-27.6487803	152.7868409	478974.07576555526	6941684.886843072
7	-27.6492069	152.7899752	479283.32481861784	6941638.16079008
8	-27.6496571	152.7932649	479607.89878692006	6941588.848030592
9	-27.650014	152.7932029	479601.84978991025	6941549.29680638
10	-27.6501168	152.7939547	479676.0320905528	6941538.037420499
11	-27.6517263	152.7936751	479648.7500942324	6941359.70095375
12	-27.6516239	152.7929237	479574.60787877184	6941370.921354683
13	-27.6523554	152.7927964	479562.1954327565	6941289.873963674
14	-27.6524579	152.7935481	479636.35039867717	6941278.645354426

Ripley View Residential Development

Figure 2 - Site Context

28 South Project Ref: 2018-079

Data Sources: QLD Globe Imagery (SISP 2016); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018); Watercourses (DNRME 2019).

28ºS ENVIRONMENTAL

Legend

- Site Boundary
- Ripley Valley Priority Development Area Boundary
- Property Boundary
- Watercourse (DNRME)
- Highway
- Road
- Contours (5m)

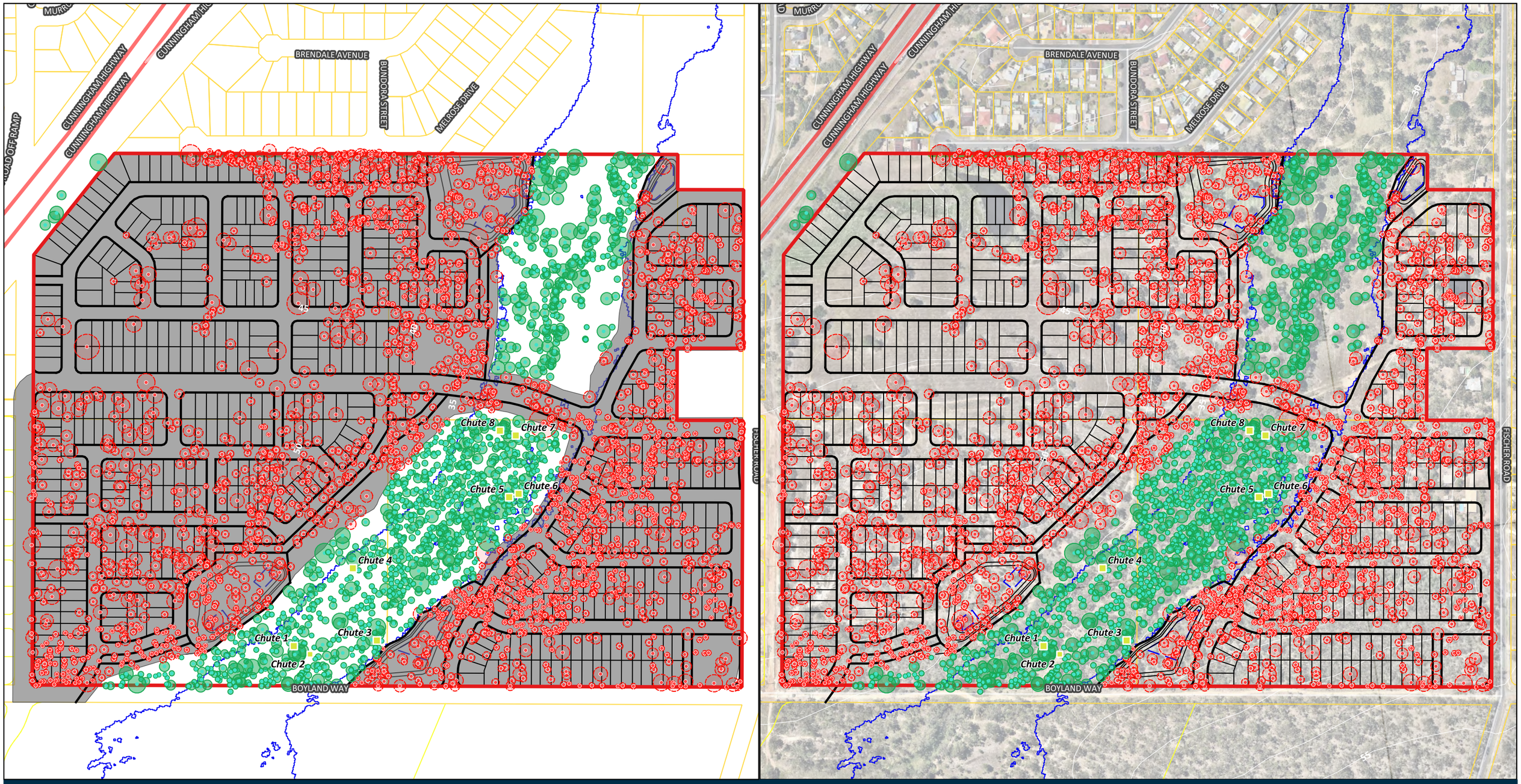
Issue Date	Dwg No.	Author
27 November 2019	2018-079-CAR002	RF
Approved	**Revision Note**	
MT		

(A3) GDA 94 MGA 56

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Ripley View Residential Development

Figure 3 - Tree Retention Plan

28 South Project Ref: 2018-079

Data Sources: QLD Globe Imagery (SISP 2016); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018); Watercourses (DNRME 2019).

28ºS ENVIRONMENTAL

Legend

Tree Protection Zones

- Trees to be removed (2425)
- Trees to be retained (1351)

Proposed Development

- Proposed Extent of Works
- Proposed Lots
- Flood Q100
- Site Boundary
- Property Boundaries
- Rock Chute for Erosion and Stormwater Management (Engeny SWMP)

Issue Date	Dwg No.	Author
5 December 2019	2018-079-003	RF
Approved	**Revision Note**	
MT		

(A3) GDA 94 MGA 56

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N

100 0 100 200 300 m

Services and infrastructure encroaching into the Linear Recreation Park. Proposed locations will be subject to sensitive alignment and tunnel boring to avoid impact to significant vegetation

BOYLAND WAY

Ripley View Residential Development

Figure 5 - Significant Vegetation

28 South Project Ref: 2018-079

Data Sources: Nearmap Aerial Imagery (Nearmap July 2019); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018).

28ºS ENVIRONMENTAL

Legend

- Site Boundary
- Tree Protection Zones of Significant Vegetation
- Endangered Remnant Vegetation (Category B)
- Property Boundaries
- Watercourse (DNRME)
- Rock Chute for Erosion and Stormwater Management (Engeny SWMP)

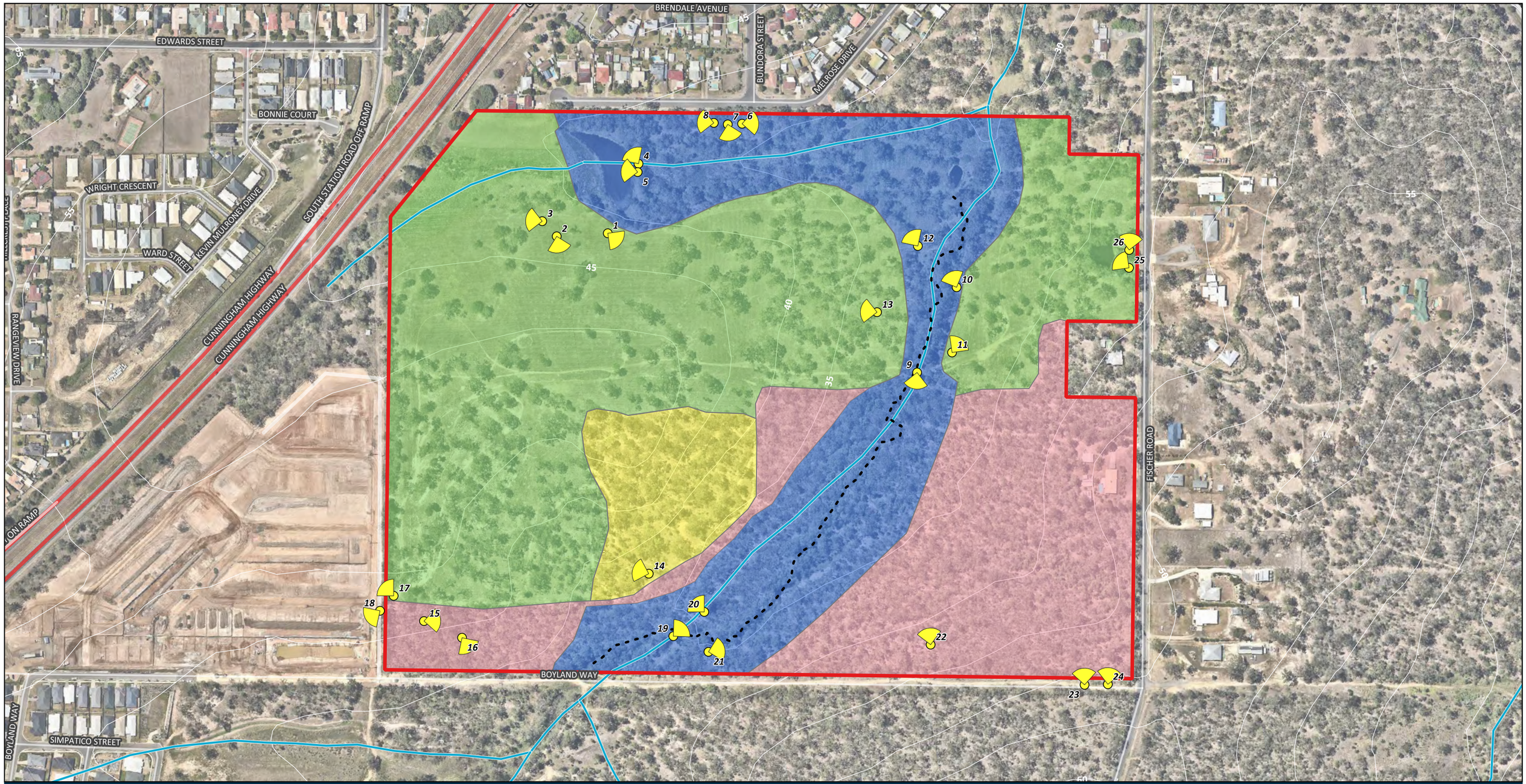
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Approved	**Revision Note**	
MT		

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Ripley Gateway North Residential Development

Figure 4 - Vegetation Communities

28 South Project Ref: 2018-079

Data Sources: Nearmap Aerial Imagery (Nearmap July 2019); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018).

28ºS ENVIRONMENTAL

Legend

- Site Boundary

Ground-truthed Vegetation Communities

- VC1 - Queensland Blue Gum on Alluvial Flats
- VC2 - Regrowth Open Forest on Slopes
- VC3 - Advanced Regrowth Open Forest over Exotic Grasses
- VC4 - Open Paddocks
- Property Boundaries
- Waterways (DNRME)
- Highway
- Roads
- Contours (5m)
- Photo Point Locations

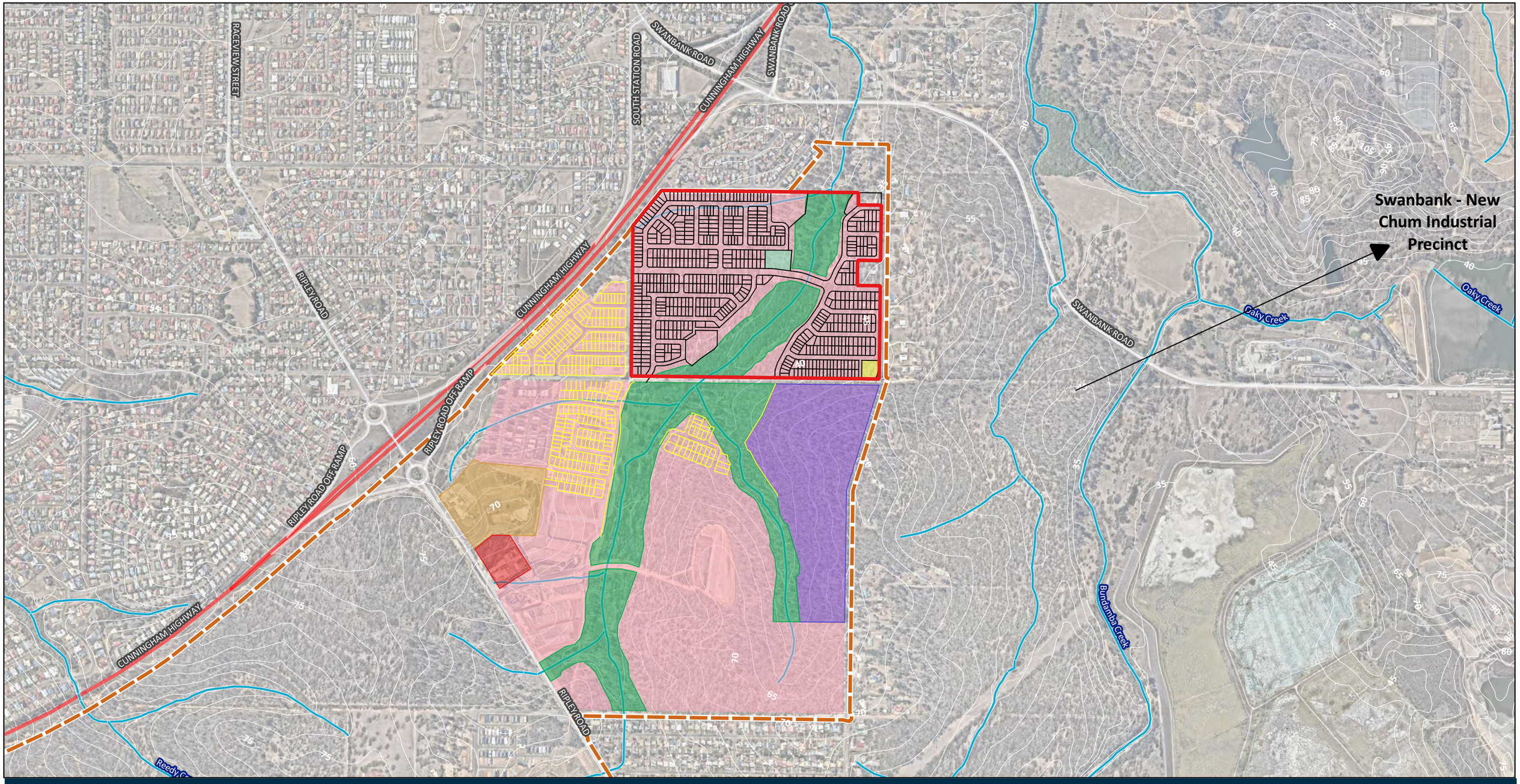
Issue Date	Dwg No.	Author
29 October 2019	2019-079-010	RF
Approved	**Revision Note**	
MT		

(A3) GDA 94 MGA 56

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Ripley View Residential Development

Figure 6 - Site Context and Surrounding Development

28 South Project Ref: 2018-079

Data Sources: Nearmap Aerial Imagery (Nearmap July 2019); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018).

28ºS ENVIRONMENTAL

Legend

- Site Boundary
- Ripley Valley Priority Development Area Boundary
- Proposed Lots
- Proposed Roads

Surrounding Development Uses

- Commercial
- Education
- Emergency Services
- Open Space and Ecological Corridor
- Residential
- Childcare
- Local Park
- Watercourses (DNRME)
- Highway
- Roads

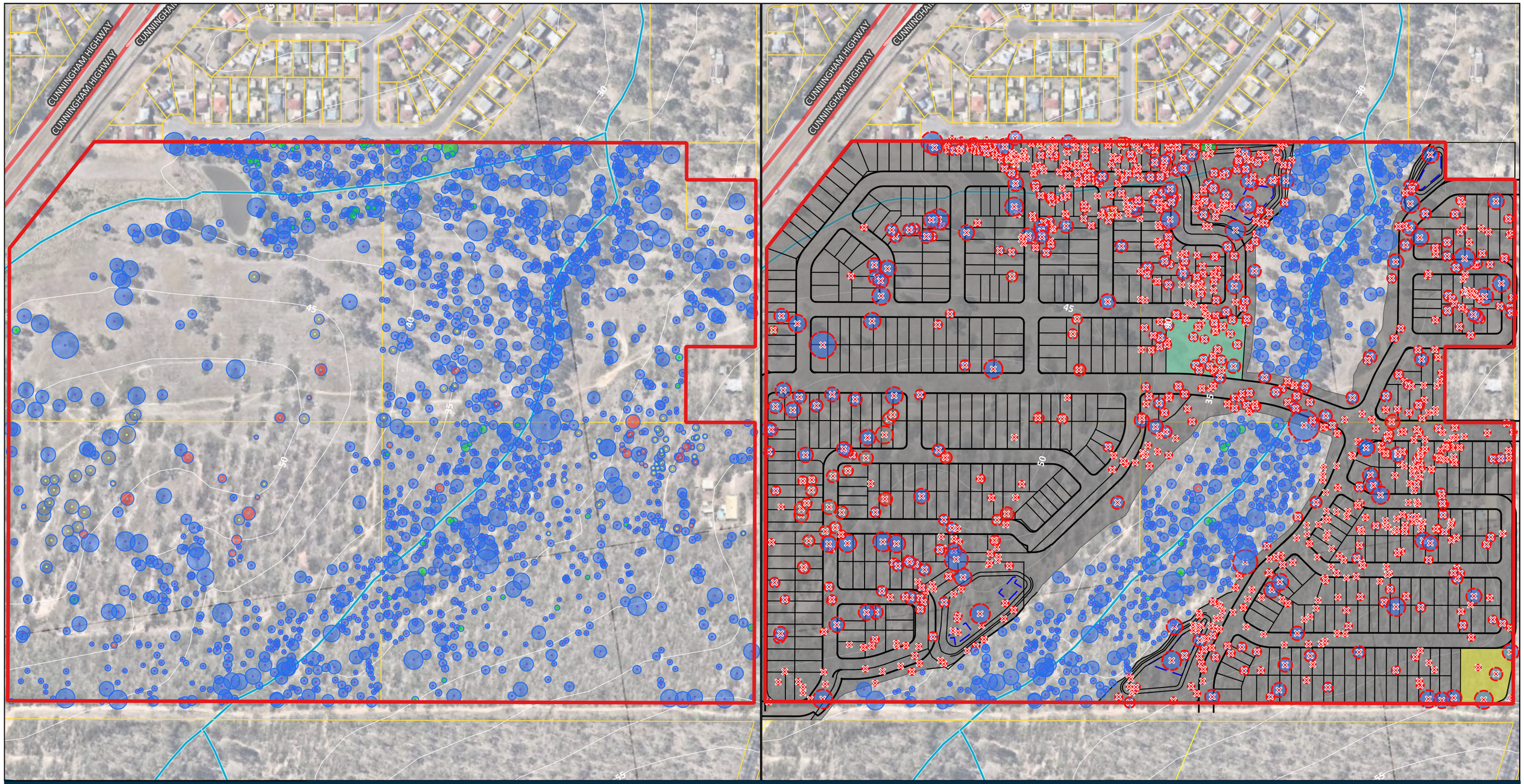
Issue Date	Dwg No.	Author
27 November 2019	2019-079-006	RF
Approved	**Revision Note**	
MT		

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250 0 250 500 750 m

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Ripley View Residential Development

Figure 7 - Winter/Spring Flowering Trees

28 South Project Ref: 2018-079

Data Sources: QLD Globe Imagery (SISP 2016); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018); Watercourses (DNRME 2019).

28ºS ENVIRONMENTAL

Legend

Site Boundary

Master Tree Protection Zones copy	Retained	Removed
Corymbia tessellaris (67)	17	50
Eucalyptus crebra (45)	1	44
Eucalyptus siderophloia (68)	1	67
Eucalyptus tereticornis (1555)	676	879

Issue Date	Dwg No.	Author
27 November 2019	2018-079-007	RF
Approved	**Revision Note**	
MT		

(A3) GDA 94 MGA 56

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28ºS
ENVIRONMENTAL

Attachment 1

PRELIMINARY LAYOUT FOR YIELD & DISCUSSION PURPOSES ONLY

SUBJECT TO MEETINGS WITH & APPROVALS FROM ECONOMIC DEVELOPMENT QUEENSLAND

LEGEND

- SUBJECT SITE
- PDA BOUNDARY
- NEIGHBOURHOOD BOUNDARY
- OPEN SPACE LINEAR & RECREATION
- EXCLUSION ZONE FOR REMNANT VEGETATION
- ENDANGERED REMNANT VEGETATION
- PROPOSED RETENTION BASINS
- MINING BOUNDARY OF INFLUENCE ZONE
- MINING BOUNDARY ABERDARE SEAM WORKINGS
- MINING BOUNDARY BLUFF SEAM WORKINGS
- FELDSPAR FAULT LOCATIONS & 15m OFFSET
- 10m WIDE FOOTPATH LOCATIONS
- PROPOSED ROAD WIDENING (SEE NOT BELOW)
- MGA TOP OF BANK (ENGENY)
- 10m OFFSET FROM TOP OF BANK (ENGENY)

LOT TYPES

- CHILD CARE
- LOTS 300m² MINIMUM
- LOTS 375m² MINIMUM
- LOTS 400m² MINIMUM
- LOTS 450m² MINIMUM
- DUPLEX LOTS 500m² MINIMUM

STATISTICS OVERALL

TOTAL AREA	47.12ha
Area of Linear Open Space	11.8458ha
Area of Local Park	0.5265ha
Area of Drainage Reserve	2.9094ha
Area of Road Widening	0.1220ha
Area of Child Care	0.3146ha

No OF LOTS		
Villa Lots 10.0m Frontage	113	(19%)
Courtyard Lots (1) 12.5m Frontage	134	(23%)
Courtyard Lots (2) 12.5m Frontage	193	(33%)
Traditional Lots 15m + Frontage	63	(11%)
Duplex Lots	39 (78)	(14%)
TOTAL No. LOTS	541 (580 Titles)	
Child Care Site	1	

TOTAL AREA OF LOTS	= 21.91ha
TOTAI AREA OF ROAD	= 9.828ha
LENGTH OF 22m WIDE ROAD	= 818m
LENGTH OF 16m WIDE ROAD	= 4897m
Length of Fischer Road	= 612m
Length of Boyland Road	= 400m
Length of South Station Road	= 354m
TOTAL No. LOTS	541
TOTAL No. OF TITLES	580

DENSITY CALCULATIONS

580 TITLES / 32.2545ha (Area of Lots 21.91ha , Local Roads 9.828ha, & Local Park .5265m) (excludes Child Care site) = Dwellings 18 / ha

FISCHER ROAD NOTE:
The width of Fischer Road varies from 22.6 metres to 25.6m along the frontage of the site as determined by field survey by LandPartners Pty Ltd.

NOTE: SITE SUBJECT TO GEOTECHNICAL ANALYSIS TO CONFIRM LAYOUT

40 0 80 200m

SCALE 1:4000

LANDPARTNERS built environment consultants

37, 39 - 49 & 63 FISCHER ROAD & 3 MELROSE DRIVE

FLINDERS VIEW

PLAN DESCRIPTION:
LOT 209 ON SL11067
LOT 210 ON SL9236 & LOTS 211 & 2 ON RP 906067
TOTAL AREA 34.5785ha

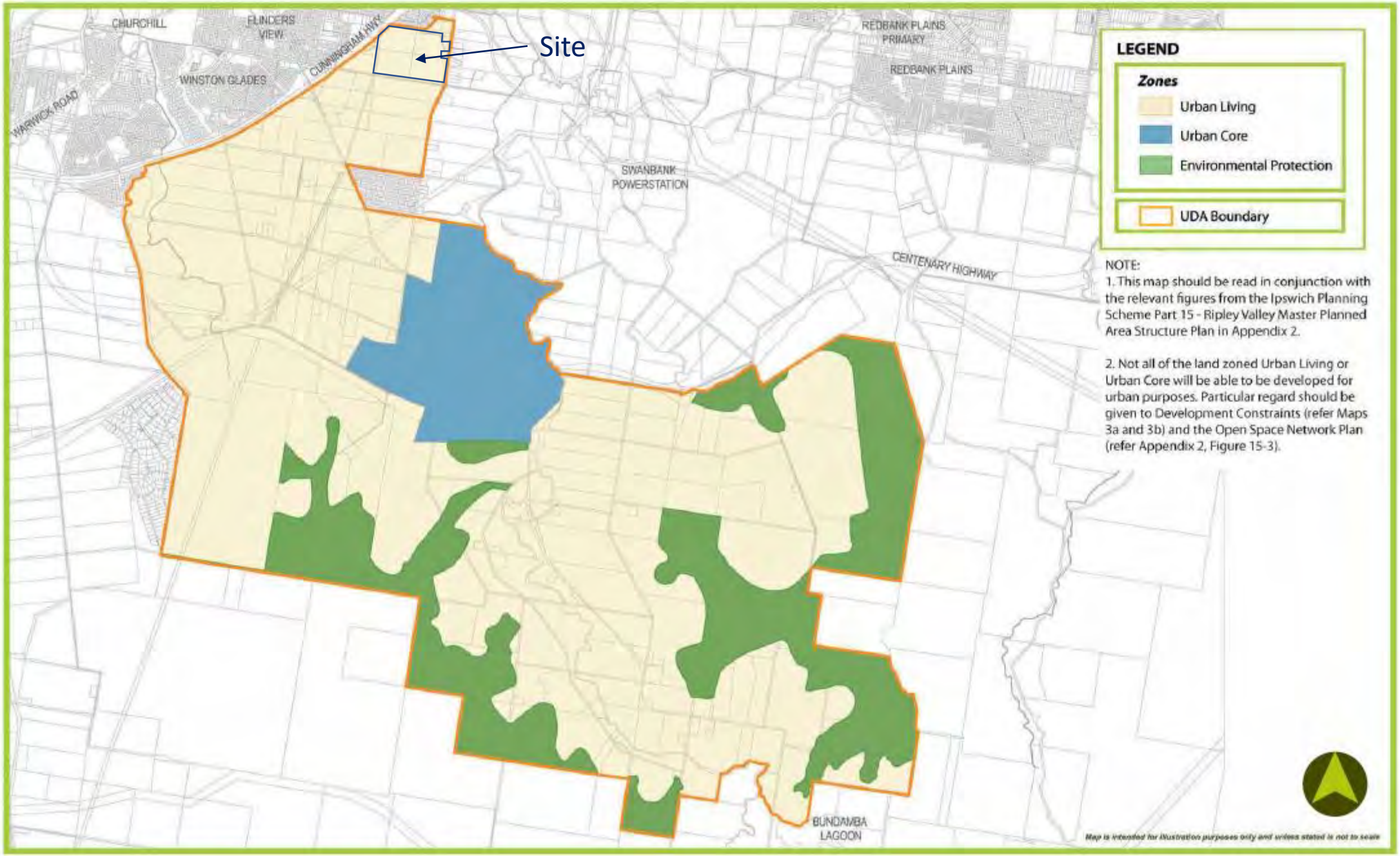
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Project Name: RIPLEY VIEW ESTATE

File: BRSS7261-XXX-3-14
Drawn: MIS
Date: 28/11/2019

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28ºS
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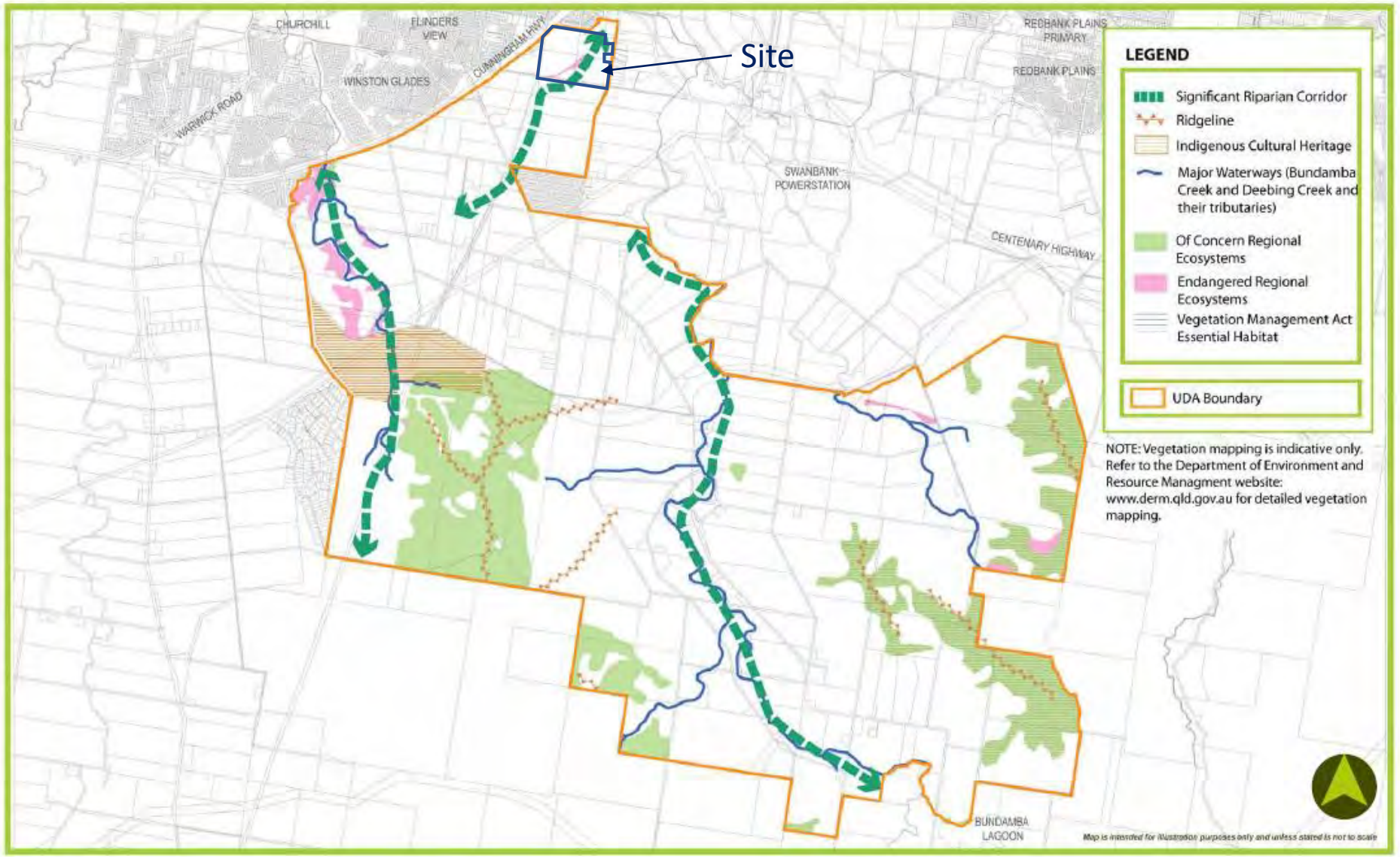
Attachment 2


Site
CHURCHILL
FLINDERS VIEW
CUNNINGHAM HWY
WINSTON GLADES
HARWICK ROAD
REDBANK PLAINS PRIMARY
REDBANK PLAINS
SWANBANK POWERSTATION
CENTENARY HIGHWAY
BUNDAMBA LAGOON
LEGEND
Zones
Urban Living
Urban Core
Environmental Protection
UDA Boundary
NOTE:
1. This map should be read in conjunction with the relevant figures from the Ipswich Planning Scheme Part 15 - Ripley Valley Master Planned Area Structure Plan in Appendix 2.
2. Not all of the land zoned Urban Living or Urban Core will be able to be developed for urban purposes. Particular regard should be given to Development Constraints (refer Maps 3a and 3b) and the Open Space Network Plan (refer Appendix 2, Figure 15-3).
Map is intended for illustration purposes only and unless stated is not to scale

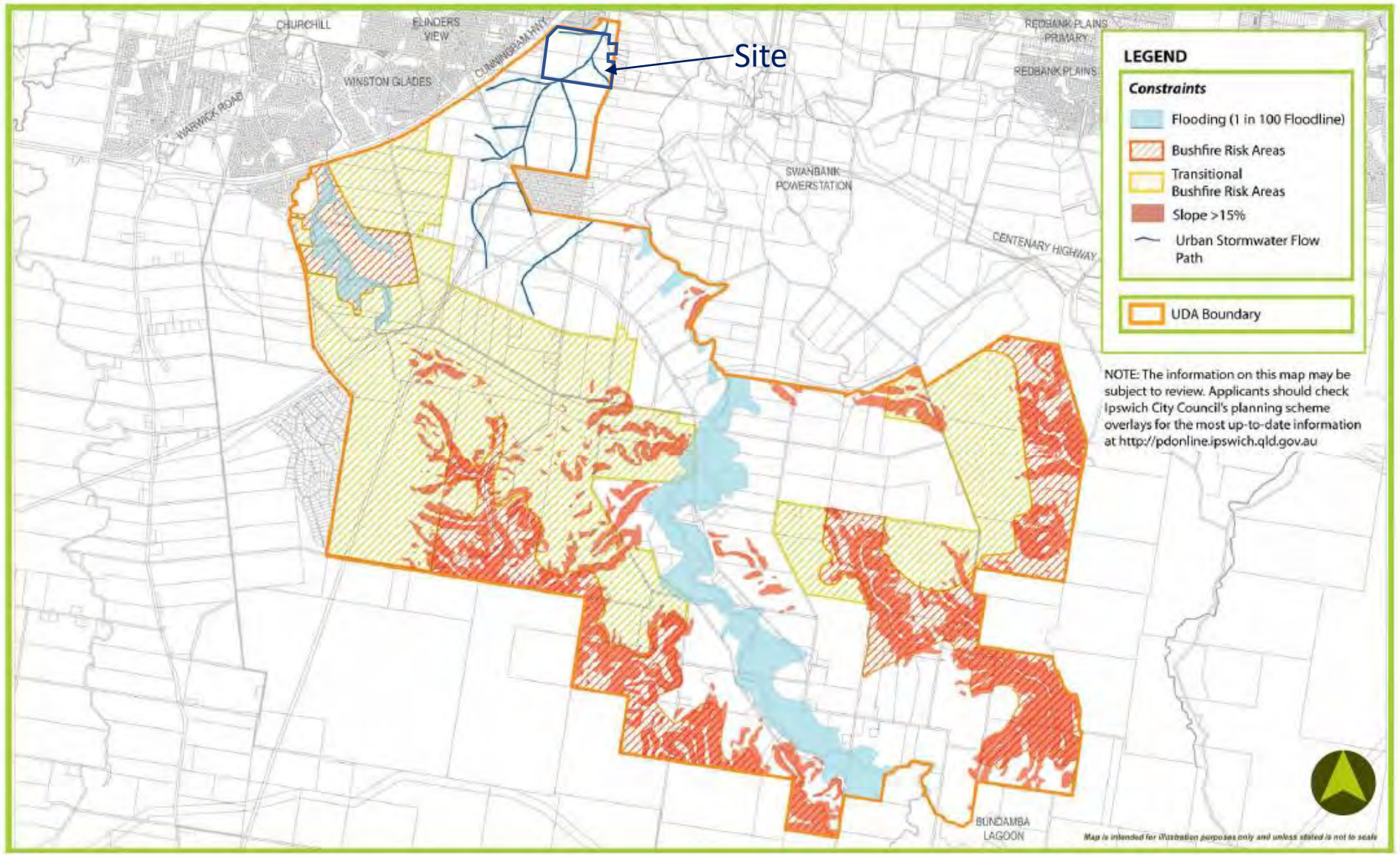
28ºS
ENVIRONMENTAL

Attachment 3

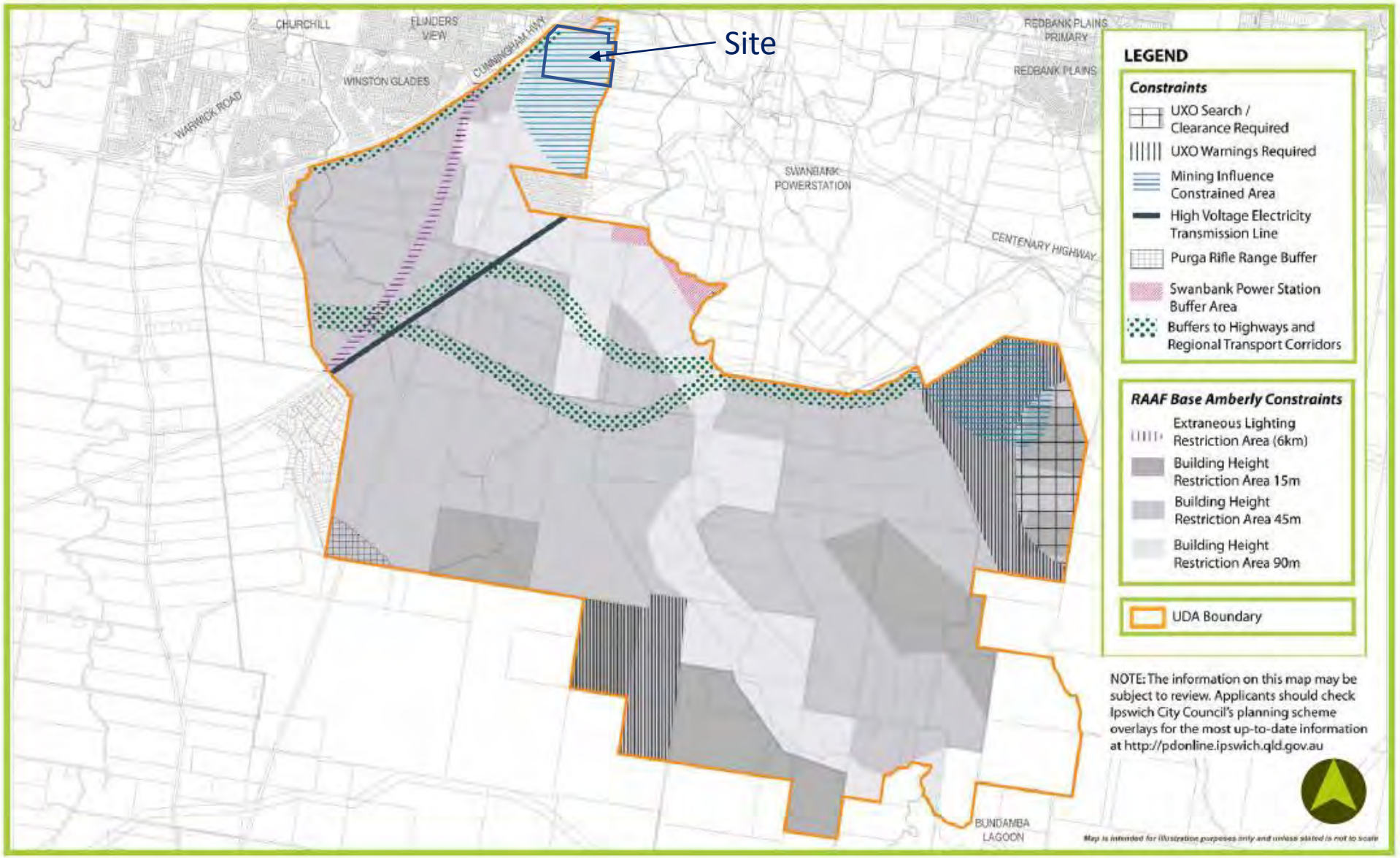
Map 2 -Values


Site
CHURCHILL
FLINDERS VIEW
CUNNINGHAM HWY
WINSTON GLADES
WARWICK ROAD
REDBANK PLAINS PRIMARY
REDBANK PLAINS
SWANBANK POWERSTATION
CENTENARY HIGHWAY
BUNDAMBA LAGOON
LEGEND
Significant Riparian Corridor
Ridgeline
Indigenous Cultural Heritage
Major Waterways (Bundamba Creek and Deebing Creek and their tributaries)
Of Concern Regional Ecosystems
Endangered Regional Ecosystems
Vegetation Management Act Essential Habitat
UDA Boundary
NOTE: Vegetation mapping is indicative only. Refer to the Department of Environment and Resource Managment website: www.derm.qld.gov.au for detailed vegetation mapping.
Map is intended for illustration purposes only and unless stated is not to scale

Map 3a - Development constraints



Map 3b - Development constraints



1948

1958

BUNDAMBA CREEK

OAKY CREEK

REEDY C

Ripley View Residential Development

Historical Aerial Imagery (1948 & 1958)

28 South Project Ref: 2018-079

Data Sources: Digital Cadastre Database (Dept. Natural Resources and Mines, 2016); Q Imagery (1948 & 1958)

28ºS ENVIRONMENTAL

Legend

- Site Boundary
- Watercourse (DNRME)

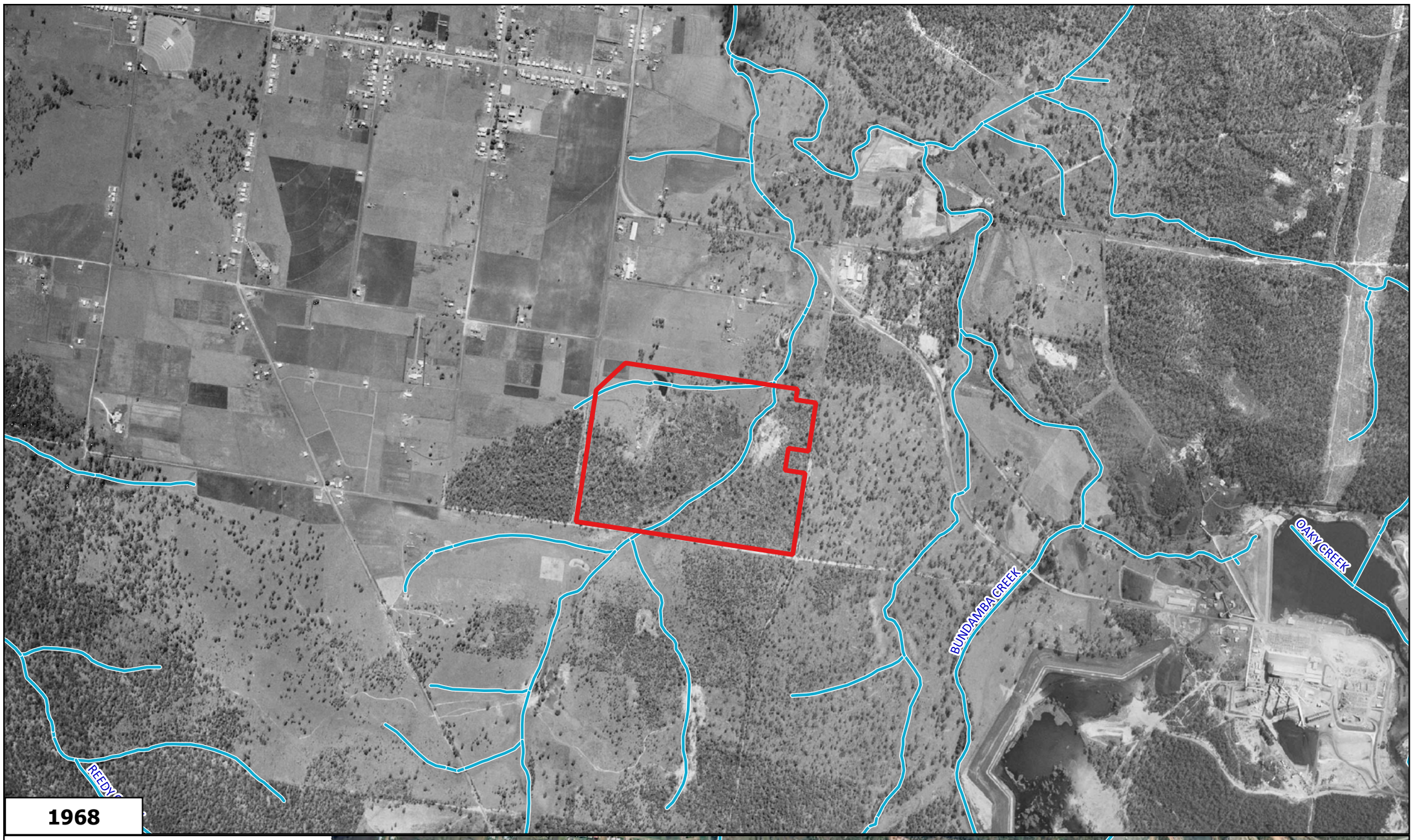
Issue Date	Revision	Author
27 November 2019	Rev A	RF
Approved	**Revision Note**	
MT		

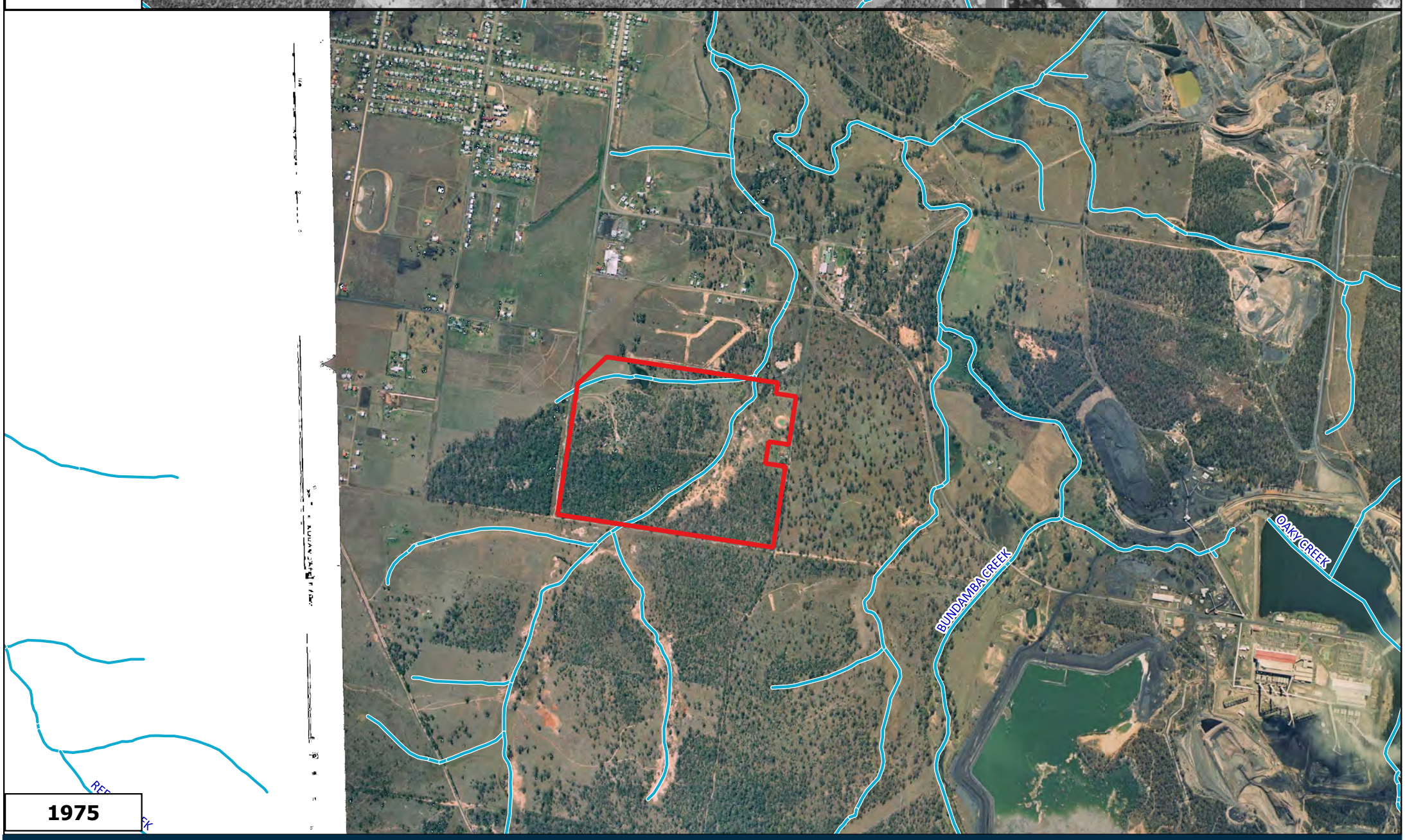
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Ripley View Residential Development

Legend

- Site Boundary
- Watercourse (DNRME)

Historical Aerial Imagery (1968 + 1975)

28 South Project Ref: 2018-079

Data Sources: Digital Cadastre Database (Dept. Natural Resources and Mines, 2016); Q Imagery (1968 - 1975)

28ºS ENVIRONMENTAL

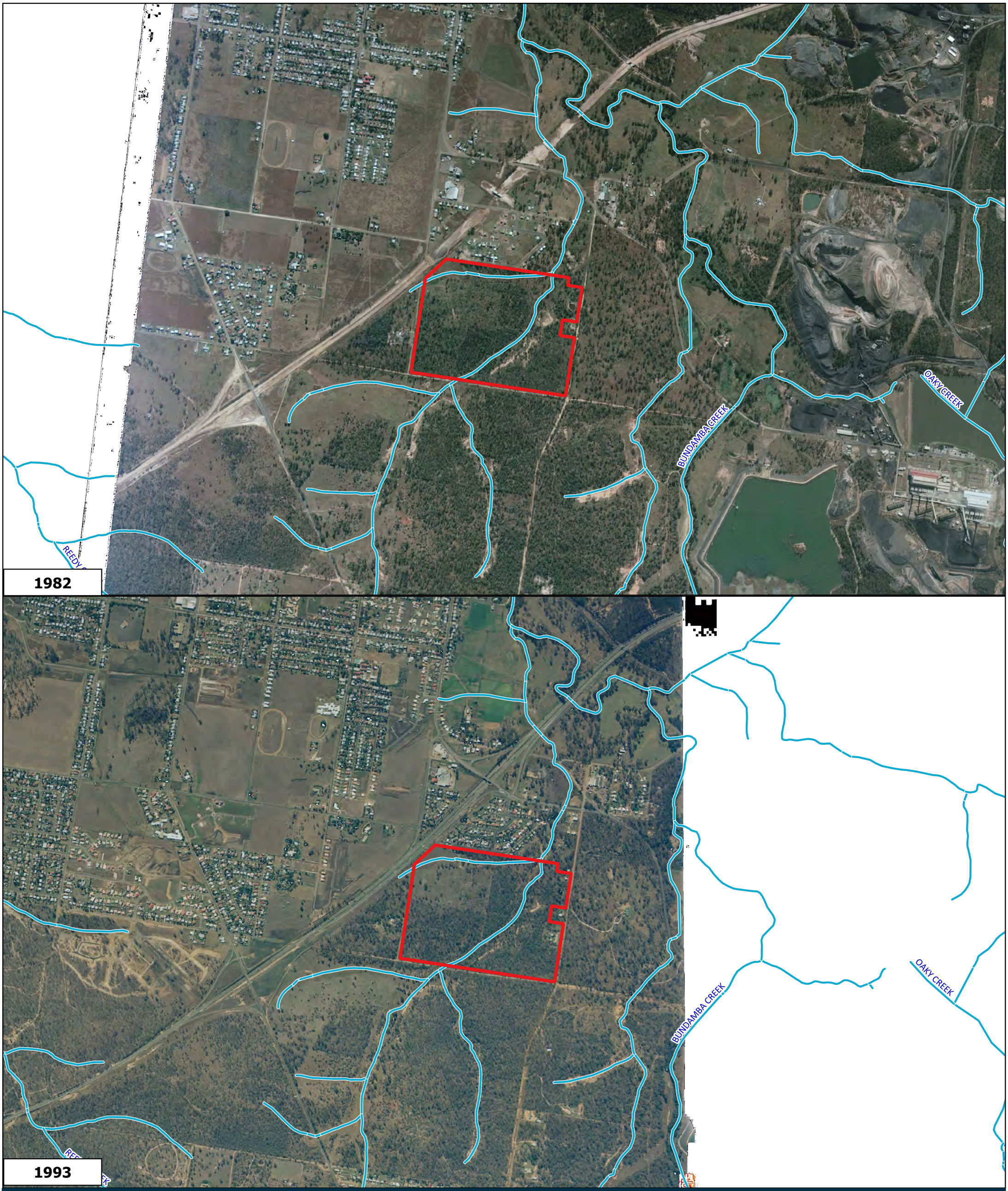
Issue Date	Revision	Author
27 November 2019	Rev A	RF
Approved	**Revision Note**	
MT		

(A3) GDA 94 MGA 56

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500 0 500 1000 1500 m

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Ripley Gateway North Residential Development

Legend

Site Boundary

Watercourse (DNRME)

Historical Aerial Imagery (1982 + 1993)

28 South Project Ref: 2018-079

Data Sources: Digital Cadastre Database (Dept. Natural Resources and Mines, 2016); Q Imagery (1982 + 1993)

28ºS ENVIRONMENTAL

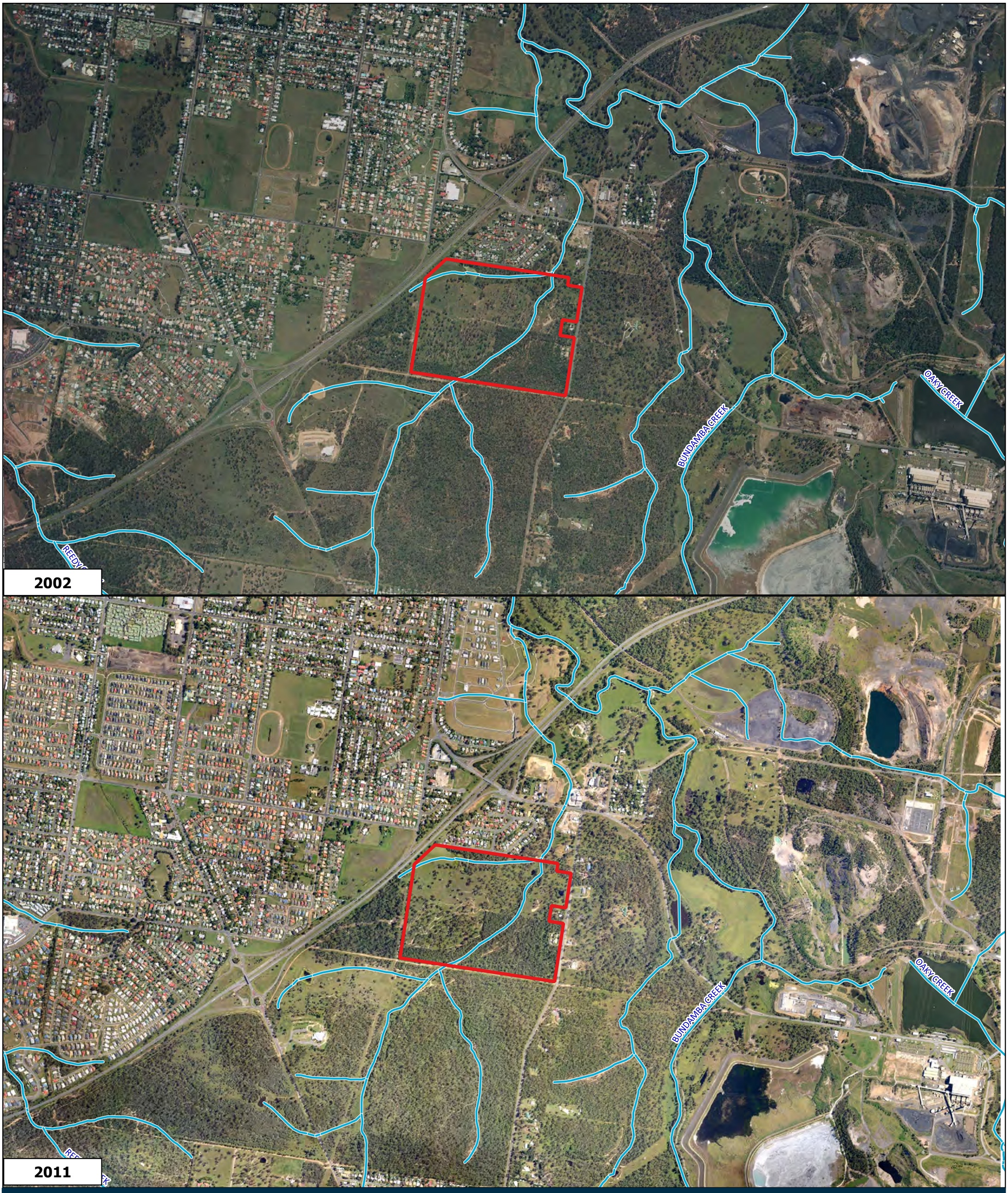
Issue Date	Revision	Author
27 November 2019	Rev A	RF
Approved	**Revision Note**	
MT		

(A3) GDA 94 MGA 56

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Ripley Gateway North Residential Development

Historical Aerial Imagery (2003 + 2011)

28 South Project Ref: 2018-079

Data Sources: Digital Cadastre Database (Dept. Natural Resources and Mines, 2016); Q Imagery (2003 + 2011)

28ºS ENVIRONMENTAL

Legend

- Site Boundary
- Watercourse (DNRME)

Issue Date	Revision	Author
27 November 2019	Rev A	RF
Approved	**Revision Note**	
MT		

(A3) GDA 94 MGA 56

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28ºS
ENVIRONMENTAL

Attachment 5

Department of Natural Resources, Mines and Energy



Vegetation management report

For Lot: 208 Plan: SL11067

Current as at 14/10/2019

Queensland Government

This publication has been compiled by Operations Support, Department of Natural Resources, Mines and Energy.

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Recent changes

Updated mapping

The Regulated Vegetation Management Map and Supporting Map was updated in June 2019 to reflect the most up to date information available in relation to regional ecosystems, essential habitat and wetland mapping (Version 11).

Overview

Based on the lot on plan details you have supplied, this report provides the following detailed information:

- *Vegetation management framework* - an explanation of the application of the framework.
- *Property details* - information about the specified Lot on Plan, lot size, local government area, bioregion(s), subregion(s), catchment(s), coastal or non coastal status, and any applicable area management plans associated with your property.
- *Vegetation management details for the specified Lot on Plan* - specific information about your property including vegetation categories, regional ecosystems, watercourses, wetlands, essential habitat, and protected plants.
- *Contact information.*
- *Maps* - a series of colour maps to assist in identifying regulated vegetation on your property.
- *Other legislation contact information.*

This information will assist you to determine your options for managing vegetation under the vegetation management framework, which may include:

- exempt clearing work
- accepted development vegetation clearing code
- an area management plan
- a development approval.

Other laws

The clearing of native vegetation is regulated by both Queensland and Australian legislation, and some local governments also regulate native vegetation clearing. You may need to obtain an approval or permit under another Act, such as Queensland's Protected Plants framework or the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Section 6 of this guide provides contact details of other agencies you should confirm requirements with, before commencing vegetation clearing.

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1. Vegetation management framework

The *Vegetation Management Act 1999* (VMA), the Vegetation Management Regulation 2012, the *Planning Act 2016* and the Planning Regulation 2017, in conjunction with associated policies and codes, form the Vegetation Management Framework.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenures under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA. Managing or clearing vegetation on these tenures may require approvals under these laws.

The following native vegetation is not regulated under the VMA but may require permit(s) under other laws:

- grass or non-woody herbage;
- a plant within a grassland regional ecosystem prescribed under Schedule 5 of the Vegetation Management Regulation 2012; and
- a mangrove.

1.1 Exempt clearing work

Exempt clearing work is an activity for which you do not need to notify DNRME or obtain an approval approval under the vegetation management framework. Exempt clearing work was previously known as exemptions.

In areas that are mapped as Category X (white in colour) on the regulated vegetation management map (see section 5.1), and where the land tenure is freehold, indigenous land and leasehold land for agriculture and grazing purposes, the clearing of vegetation is considered exempt clearing work and does not require notification or development approval approval under the vegetation management framework. For all other land tenures, contact DNRME before commencing clearing to ensure that the proposed activity is exempt clearing work.

A range of routine property management activities are considered exempt clearing work. A list of exempt clearing work is available at
https://www.qld.gov.au/environment/land/vegetation/exemptions/.

Exempt clearing work may be affected if the proposed clearing area is subject to development approval conditions, a covenant, an environmental offset, an exchange area, a restoration notice, or an area mapped as Category A. Exempt clearing work may require approval under other Commonwealth, State or Local Government laws, or local government planning schemes. Contact DNRME prior to clearing in any of these areas.

1.2 Accepted development vegetation clearing codes

Some clearing activities can be undertaken under an accepted development vegetation clearing code. The codes can be downloaded at
https://www.qld.gov.au/environment/land/vegetation/codes/

If you intend to clear vegetation under an accepted development vegetation clearing code, you must notify DNRME before commencing. The information in this report will assist you to complete the online notification form.

You can complete the online form at
https://apps.dnrm.qld.gov.au/vegetation/

1.3 Area management plans

Area Management Plans (AMP) provide an alternative approval system for vegetation clearing under the vegetation management framework. They list the purposes and clearing conditions that have been approved for the areas covered by the plan. It is not necessary to use an AMP, even when an AMP applies to your property.

AMPs for fodder harvesting, managing thickened vegetation and managing encroachment will continue until March 2020. New notifications cannot be made for these AMPs.

New notifications can be made for all other AMPs. These will continue to apply until their nominated end date.

If an area management plan applies to your property for which you can make a new notification, it will be listed in Section 2.2 of this report. Before clearing under one of these AMPs, you must first notify the DNRME and then follow the conditions and requirements listed in the AMP.
https://www.qld.gov.au/environment/land/vegetation/area-plans/

1.4 Development approvals

If under the vegetation management framework your proposed clearing is not exempt clearing work, or is not permitted under an accepted development vegetation clearing code, or an AMP, you may be able to apply for a development approval. Information on how to apply for a development approval is available at
https://www.qld.gov.au/environment/land/management/vegetation/development

2. Property details

2.1 Tenure

All of the lot, plan and tenure information associated with property Lot: 208 Plan: SL11067, including links to relevant Smart Maps, are listed in Table 1. The tenure of the property (whether it is freehold, leasehold, or other) may be viewed by clicking on the Smart Map link(s) provided.

Table 1: Lot, plan and tenure information for the property

Lot	Plan	Tenure	Link to property on SmartMap
8	RP222031	Below the Depth Plans	https://apps.information.qld.gov.au/data/cadastre/GenerateSmartMap?q=8\RP222031
208	SL11067	Freehold	https://apps.information.qld.gov.au/data/cadastre/GenerateSmartMap?q=208\SL11067

The tenure of the land may affect whether clearing is considered exempt clearing work or may be carried out under an accepted development vegetation clearing code.

2.2 Property location

Table 2 provides a summary of the locations for property Lot: 208 Plan: SL11067, in relation to natural and administrative boundaries.

Table 2: Property location details

Local Government(s)
Ipswich City

Bioregion(s)	Subregion(s)
Southeast Queensland	Moreton Basin

Catchment(s)
Brisbane

Area Management Plan(s)

Nil

For the purposes of the accepted development vegetation clearing codes and the State Development Assessment Provisions (SDAP), this property is regarded as*

Coastal

*See also Map 5.4

The following can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code:

Does this lot contain land that is mapped as Agricultural Land Class A or B in the State Planning Interactive Mapping System?

No Class A

No Class B

Note - This confirms Agricultural Land Classes as per the State Planning Interactive Mapping System only. This response does not include Agricultural Land Classes identified under local government planning schemes. For further information, check the Planning Scheme for your local government area.

See section 5 to identify the location and extent of Class A and/or Class B Agricultural land on Lot: 208 Plan: SL11067.

3. Vegetation management details for Lot: 208 Plan: SL11067

3.1 Vegetation categories

Vegetation categories are shown on the regulated vegetation management map in section 5.1 of this report. A summary of vegetation categories on the subject lot are listed in Table 3. Descriptions for these categories are shown in Table 4.

Table 3: Vegetation categories for subject property. Total area: 12.26ha

Vegetation category	Area (ha)
Category B	4.9
Category C	3.2
Category X	4.2

Table 4

Category	Colour on Map	Description	Requirements / options under the vegetation management framework
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	Special conditions apply to Category A areas. Before clearing, contact DNRME to confirm any requirements in a Category A area.
B	dark blue	Remnant vegetation areas	Exempt clearing work, or notification and compliance with accepted development vegetation clearing codes, area management plans or development approval.
C	light blue	High-value regrowth areas	Exempt clearing work, or notification and compliance with managing Category C regrowth vegetation accepted development vegetation clearing code.
R	yellow	Regrowth within 50m of a watercourse or drainage feature in the Great Barrier Reef catchment areas	Exempt clearing work, or notification and compliance with managing Category R regrowth accepted development vegetation clearing code or area management plans.
X	white	Clearing on freehold land, indigenous land and leasehold land for agriculture and grazing purposes is considered exempt clearing work under the vegetation management framework. Contact DNRME to clarify whether a development approval is required for other State land tenures.	No permit or notification required on freehold land, indigenous land and leasehold land for agriculture and grazing. A development approval may be required for some State land tenures.

Property Map of Assessable Vegetation (PMAV)

This report does not confirm if a Property Map of Assessable Vegetation (PMAV) exists on a lot. To confirm whether or not a PMAV exists on a lot, please check the PMAV layer on the Queensland Globe2, or contact DNRME on 135VEG (135 834).

3.2 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 5.2 and are listed in Table 5.

A description of regional ecosystems can be accessed online at https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/

Table 5: Regional ecosystems present on subject property

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
12.3.3	Endangered	B	1.17	Eucalyptus tereticornis woodland on Quaternary alluvium	Sparse
12.3.3	Endangered	C	2.53	Eucalyptus tereticornis woodland on Quaternary alluvium	Sparse
12.9-10.16	Of concern	C	0.03	Araucarian microphyll to notophyll vine forest on Cainozoic and Mesozoic sediments	Dense
12.9-10.2	Least concern	B	3.70	Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks	Mid-dense
12.9-10.2	Least concern	C	0.49	Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks	Mid-dense
12.9-10.7	Of concern	C	0.17	Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora spp., E. melanophloia woodland on sedimentary rocks	Sparse
non-rem	None	X	4.16	None	None

Please note:

1. All area and area derived figures included in this table have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

2. If Table 5 contains a Category 'plant', please be aware that this refers to 'plantations' such as forestry, and these areas are considered non-remnant under the VMA.

The VMA status of the regional ecosystem (whether it is endangered, of concern or least concern) also determines if any of the following are applicable:

- exempt clearing work
- accepted development vegetation clearing codes
- performance outcomes in State Development Assessment Provisions (SDAP).

3.3 Watercourses

Vegetation management watercourses and drainage features for this property are shown on the vegetation management supporting map in section 5.2.

3.4 Wetlands

There are no vegetation management wetlands present on this property.

3.5 Essential habitat

Protected wildlife is native wildlife prescribed under the *Nature Conservation Act 1992* (NCA), and includes endangered, vulnerable or near-threatened wildlife.

Essential habitat for protected wildlife includes suitable habitat on the lot, or where a species has been known to occur up to 1.1 kilometres from a lot on which there is assessable vegetation. These important habitat areas are protected under the VMA.

Any essential habitat on this property will be shown as blue hatching on the vegetation supporting map in section 5.2.

If essential habitat is identified on the lot, information about the protected wildlife species is provided in Table 6 below. The numeric labels on the vegetation management supporting map can be cross referenced with Table 6 to outline the essential habitat factors for that particular species. There may be essential habitat for more than one species on each lot, and areas of Category A, Category B and Category C can be mapped as Essential Habitat.

Essential habitat is compiled from a combination of species habitat models and buffered species records. Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated. Essential habitat, for protected wildlife, means an area of vegetation shown on the Regulated Vegetation Management Map as assessable vegetation -

1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database. Essential habitat factors are comprised of - regional ecosystem (mandatory for most species), vegetation community, altitude, soils, position in landscape; or

2) in which the protected wildlife, at any stage of its life cycle, is located.

If there is no essential habitat mapping shown on the vegetation management supporting map for this lot, and there is no table in the sections below, it confirms that there is no essential habitat on the lot.

Category A and/or Category B and/or Category C

Table 6: Essential habitat in Category A and/or Category B and/or Category C

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
860	Phascolarctos cinereus	koala	V	SEQ: Open eucalypt forest and woodland that has: a) multiple strata layers containing Eucalyptus, Corymbia, Angophora, Lophostemon or Melaleuca trees that-at 1.3 metres above the ground-have a diameter both greater and less than 30 centimetres; and b) at least 1 of the following species: Eucalyptus tereticornis, E. fibrosa, E. propinqua; E. umbra, E. grandis, E. microcorys, E. tindaliae, E. resinifera, E. populnea, E. robusta, E. nigra, E. racemosa, E. crebra, E. exserta, E. seeana, Lophostemon confertus, L. suaveolens, Melaleuca quinquenervia. Outside SEQ: Open eucalypt forest and woodland that contains Eucalyptus &/or Corymbia spp. Tree species used for food varies across State and can include Eucalyptus tereticornis, E. camaldulensis, E. coolabah; E. drepanophylla, E. platyphylla, E. orgadophilla, E. thozetiana, E. melanophloia, E. populnea, E. melliodora, E. dealbata, E. microtheca, E. crebra, E. exserta, E. blakelyi, E. papuana, Corymbia tessellaris, C. citriodora, Melaleuca quinquenervia, M. leucadendra.	Sea level to 1000m.	None	Riparian areas, plains and hill/escarpment slopes.
1883	Rostratula australis	Australian painted snipe	V	Shallow ephemeral and permanent swamps, water meadows and damp lake margins with rushes, long grass and herbage (e.g. lignum, chenopods) in good condition, as well as areas of muddy ground; also uses saltmarsh, samphire flats and waterlogged grasslands with trees present (e.g. Eucalyptus camaldulensis, E. brownii). Nest in shallow grass-lined hollow in damp ground under low shrub or grass tussock near shallow water.	None	None	Associated with wetlands.
7601	Plectranthus habrophyllus	None	E	open woodland of Eucalyptus spp. on sandstone, occasionally near vine forest margins	0 to 300 m	skeletal to shallow sandy soil	on rock ledges along cliffline and rock outcrops near creek bank, often in shaded situations

Label	Regional Ecosystem (mandatory unless otherwise specified)
860	SEQ: 11.3.2, 11.3.4, 11.3.25, 11.3.26, 11.8.2, 11.8.4, 11.8.5, 11.8.8, 11.9.9, 12.2.5, 12.2.6, 12.2.7, 12.2.8, 12.2.10, 12.3.2, 12.3.3, 12.3.4, 12.3.5, 12.3.6, 12.3.7, 12.3.9, 12.3.10, 12.3.11, 12.3.14, 12.3.18, 12.3.19, 12.3.20, 12.5.1, 12.5.2, 12.5.3, 12.5.4, 12.5.6, 12.5.7, 12.5.10, 12.5.12, 12.8.1, 12.8.8, 12.8.9, 12.8.11, 12.8.12, 12.8.14, 12.8.16, 12.8.17, 12.8.20, 12.8.24, 12.8.25, 12.9-10.1, 12.9-10.2, 12.9-10.3, 12.9-10.4, 12.9-10.5, 12.9-10.7, 12.9-10.8, 12.9-10.11, 12.9-10.12, 12.9-10.14, 12.9-10.17, 12.9-10.18, 12.9-10.19, 12.9-10.21, 12.9-10.25, 12.9-10.26, 12.9-10.27, 12.9-10.28, 12.9-10.29, 12.11.2, 12.11.3, 12.11.5, 12.11.6, 12.11.7, 12.11.8, 12.11.9, 12.11.14, 12.11.15, 12.11.16, 12.11.17, 12.11.18, 12.11.22, 12.11.23, 12.11.24, 12.11.25, 12.11.26, 12.11.27, 12.11.28, 12.12.2, 12.12.3, 12.12.5, 12.12.6, 12.12.7, 12.12.8, 12.12.9, 12.12.11, 12.12.12, 12.12.14, 12.12.15, 12.12.23, 12.12.24, 12.12.25, 12.12.28. Outside SEQ: 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.6, 4.3.8, 4.3.10, 4.3.11, 4.4.1, 4.5.3, 4.5.5, 4.5.6, 4.5.8, 4.5.9, 4.7.1, 4.7.7, 4.7.8, 4.9.6, 4.9.10, 4.9.12, 4.9.17, 6.3.1, 6.3.2, 6.3.3, 6.3.4, 6.3.5, 6.3.7, 6.3.8, 6.3.9, 6.3.11, 6.3.12, 6.3.17, 6.3.18, 6.3.22, 6.3.24, 6.3.25, 6.4.1, 6.4.2, 6.4.3, 6.4.4, 6.5.1, 6.5.2, 6.5.3, 6.5.5, 6.5.6, 6.5.7, 6.5.8, 6.5.9, 6.5.10, 6.5.11, 6.5.13, 6.5.14, 6.5.15, 6.5.16, 6.5.17, 6.5.18, 6.5.19, 6.6.2, 6.7.1, 6.7.2, 6.7.5, 6.7.6, 6.7.7, 6.7.9, 6.7.11, 6.7.12, 6.7.13, 6.7.14, 6.7.17, 6.9.3, 7.2.3, 7.2.4, 7.2.7, 7.2.11, 7.3.7, 7.3.8, 7.3.9, 7.3.12, 7.3.13, 7.3.14, 7.3.16, 7.3.19, 7.3.20, 7.3.21, 7.3.25, 7.3.26, 7.3.39, 7.3.40, 7.3.42, 7.3.43, 7.3.44, 7.3.45, 7.3.47, 7.3.48, 7.3.50, 7.5.1, 7.5.2, 7.5.3, 7.5.4, 7.8.7, 7.8.8, 7.8.10, 7.8.15, 7.8.16, 7.8.17, 7.8.18, 7.8.19, 7.11.5, 7.11.6, 7.11.13, 7.11.14, 7.11.16, 7.11.18, 7.11.19, 7.11.20, 7.11.21, 7.11.31, 7.11.32, 7.11.33, 7.11.34, 7.11.35, 7.11.37, 7.11.41, 7.11.42, 7.11.43, 7.11.44, 7.11.45, 7.11.46, 7.11.47, 7.11.48, 7.11.49, 7.11.50, 7.11.51, 7.12.4, 7.12.5, 7.12.17, 7.12.21, 7.12.22, 7.12.23, 7.12.24, 7.12.25, 7.12.26, 7.12.27, 7.12.28, 7.12.29, 7.12.30, 7.12.33, 7.12.34, 7.12.35, 7.12.51, 7.12.52, 7.12.53, 7.12.54, 7.12.55, 7.12.56, 7.12.57, 7.12.58, 7.12.59, 7.12.60, 7.12.61, 7.12.62, 7.12.63, 7.12.65, 7.12.66, 7.12.69, 8.1.5, 8.2.3, 8.2.6, 8.2.7, 8.2.8, 8.2.11, 8.2.12, 8.2.13, 8.2.14, 8.3.1, 8.3.2, 8.3.3, 8.3.5, 8.3.6, 8.3.8, 8.3.10, 8.3.11, 8.3.13, 8.5.1, 8.5.2, 8.5.3, 8.5.5, 8.5.6, 8.5.7, 8.9.1, 8.10.1, 8.11.1, 8.11.3, 8.11.4, 8.11.5, 8.11.6, 8.11.8, 8.11.10, 8.11.12, 8.12.4, 8.12.5, 8.12.6, 8.12.7, 8.12.8, 8.12.9, 8.12.12, 8.12.14, 8.12.20, 8.12.22, 8.12.23, 8.12.25, 8.12.26, 8.12.27, 8.12.29, 8.12.31, 8.12.32, 9.3.1, 9.3.2, 9.3.3, 9.3.4, 9.3.5, 9.3.6, 9.3.7, 9.3.8, 9.3.10, 9.3.11, 9.3.13, 9.3.14, 9.3.15, 9.3.16, 9.3.17, 9.3.19, 9.3.20, 9.3.21, 9.3.22, 9.3.27, 9.4.1, 9.4.2, 9.4.3, 9.5.1, 9.5.3, 9.5.4, 9.5.5, 9.5.6, 9.5.7, 9.5.8, 9.5.9, 9.5.10, 9.5.11, 9.5.12, 9.5.15, 9.5.16, 9.5.17, 9.7.1, 9.7.2, 9.7.3, 9.7.4, 9.7.5, 9.7.6, 9.8.1, 9.8.2, 9.8.3, 9.8.4, 9.8.5, 9.8.9, 9.8.10, 9.8.11, 9.8.13, 9.10.1, 9.10.3, 9.10.4, 9.10.5, 9.10.7, 9.10.8, 9.11.1, 9.11.2, 9.11.3, 9.11.4, 9.11.5, 9.11.7, 9.11.10, 9.11.12, 9.11.13, 9.11.14, 9.11.15, 9.11.16, 9.11.17, 9.11.18, 9.11.19, 9.11.21, 9.11.22, 9.11.23, 9.11.24, 9.11.25, 9.11.26, 9.11.28, 9.11.29, 9.11.30, 9.11.31, 9.11.32, 9.12.1, 9.12.2, 9.12.3, 9.12.4, 9.12.5, 9.12.6, 9.12.7, 9.12.10, 9.12.11, 9.12.12, 9.12.13, 9.12.14, 9.12.15, 9.12.16, 9.12.17, 9.12.18, 9.12.19, 9.12.20, 9.12.21, 9.12.22, 9.12.23, 9.12.24, 9.12.25, 9.12.26, 9.12.27, 9.12.28, 9.12.29, 9.12.30, 9.12.31, 9.12.32, 9.12.33, 9.12.35, 9.12.36, 9.12.37, 9.12.38, 9.12.39, 9.12.44, 10.3.2, 10.3.3, 10.3.5, 10.3.6, 10.3.9, 10.3.10, 10.3.11, 10.3.12, 10.3.13, 10.3.14, 10.3.15, 10.3.17, 10.3.20, 10.3.27, 10.3.28, 10.4.3, 10.4.9, 10.5.1, 10.5.2, 10.5.4, 10.5.5, 10.5.7, 10.5.8, 10.5.9, 10.5.10, 10.5.11, 10.5.12, 10.7.1, 10.7.2, 10.7.3, 10.7.4, 10.7.5, 10.7.9, 10.7.10, 10.7.11, 10.7.12, 10.9.2, 10.9.3, 10.9.5, 10.10.1, 10.10.3, 10.10.4, 10.10.5, 10.10.7, 11.2.1, 11.2.5, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.5, 11.3.6, 11.3.7, 11.3.9, 11.3.10, 11.3.12, 11.3.13, 11.3.14, 11.3.15, 11.3.16, 11.3.17, 11.3.18, 11.3.19, 11.3.21, 11.3.23, 11.3.25, 11.3.26, 11.3.27, 11.3.28, 11.3.29, 11.3.30, 11.3.32, 11.3.33, 11.3.35, 11.3.36, 11.3.37, 11.3.38, 11.3.39, 11.4.2, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.10, 11.4.12, 11.4.13, 11.5.1, 11.5.2, 11.5.3, 11.5.4, 11.5.5, 11.5.7, 11.5.8, 11.5.9, 11.5.12, 11.5.13, 11.5.14, 11.5.17, 11.5.18, 11.5.20, 11.5.21, 11.7.1, 11.7.2, 11.7.3, 11.7.4, 11.7.6, 11.7.7, 11.8.1, 11.8.2, 11.8.4, 11.8.5, 11.8.8, 11.8.11, 11.8.12, 11.8.14, 11.8.15, 11.9.1, 11.9.2, 11.9.3, 11.9.5, 11.9.6, 11.9.7, 11.9.9, 11.9.10, 11.9.11, 11.9.13, 11.9.14, 11.10.1, 11.10.2, 11.10.3, 11.10.4, 11.10.5, 11.10.6, 11.10.7, 11.10.9, 11.10.11, 11.10.12, 11.10.13, 11.11.1, 11.11.2, 11.11.3, 11.11.4, 11.11.6, 11.11.7, 11.11.8, 11.11.9, 11.11.10, 11.11.11, 11.11.12, 11.11.13, 11.11.14, 11.11.15, 11.11.16, 11.11.17, 11.11.19, 11.11.20, 11.12.1, 11.12.2, 11.12.3, 11.12.5, 11.12.6, 11.12.7, 11.12.8, 11.12.9, 11.12.10, 11.12.13, 11.12.14, 11.12.15, 11.12.16, 11.12.17, 11.12.19, 11.12.20, 13.3.1, 13.3.2, 13.3.3, 13.3.4, 13.3.5, 13.3.7, 13.9.2, 13.11.1, 13.11.2, 13.11.3, 13.11.4, 13.11.5, 13.11.6, 13.11.8, 13.11.9, 13.12.1, 13.12.2, 13.12.3, 13.12.4, 13.12.5, 13.12.6, 13.12.8, 13.12.9, 13.12.10.
1883	All regional ecosystems within the stream/wetland buffer as determined by VMA code.
7601	12.9-10.2, 12.9-10.7, 12.9-10.19

3.6 Protected plants (administered by the Department of Environment and Science (DES))

In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992* (NCA), with clearing of protected plants in the wild regulated by the Nature Conservation (Wildlife Management) Regulation 2006. These requirements apply irrespective of the classification of the vegetation under the *Vegetation Management Act 1999*.

Prior to clearing, if the plants proposed to be cleared are in the wild (see Operational policy: When a protected plant in Queensland is considered to be 'in the wild') and the exemptions under the Nature Conservation (Wildlife Management) Regulation 2006 are not applicable to the proposed clearing, you must check the flora survey trigger map to determine if any part of the area to be cleared is within a high risk area. The trigger map for this property is provided in section 5.6. The exemptions relate to:

- imminent risk of death or serious injury (refer s261A)
- imminent risk of serious damage to a building or other structure on land, or to personal property (refer s261B)
- *Fire and Emergency Service Act 1990* (refer 261C)
- previously cleared areas (refer s261ZB)
- maintenance activities (refer s261ZC)
- firebreak or fire management line (refer s261ZD)
- accepted development vegetation clearing code (refer s261ZE)
- conservation purposes (refer s261ZG)
- authorised in particular circumstances (refer s385).

Some exemptions under the NCA are the same as exempt clearing work (formerly known as exemptions) from the *Vegetation Management Act 1999* (i.e. listed in the Planning Regulations 2017) while some are different.

If the proposed area to be cleared is shown as high risk on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken in accordance with the flora survey guidelines. The main objective of a flora survey is to locate any endangered, vulnerable or near threatened plants (EVNT plants) that may be present in the clearing impact area.

If a flora survey identifies that EVNT plants are not present within the clearing impact area or clearing within 100m of EVNT plants can be avoided, the clearing activity is exempt from a permit. An exempt clearing notification form must be submitted to the Department of Environment and Science, with a copy of the flora survey report, at least one week prior to clearing. The clearing must be conducted within two years after the flora survey report was submitted.

If a flora survey identifies that EVNT plants are present in, or within 100m of, the area to be cleared, a clearing permit is required before any clearing is undertaken. The flora survey report, as well as an impact management report, must be submitted with the application form clearing permit.

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that EVNT plants are present in, or within 100m of, the area to be cleared. You must keep a copy of the flora survey trigger map for the area subject to clearing for five years from the day the clearing starts. If you do not clear within the 12 month period that the flora survey trigger map was printed, you need to print and check a new flora survey trigger map.

Further information on protected plants is available at
http://www.ehp.qld.gov.au/licences-permits/plants-animals/protected-plants/

For assistance on the protected plants flora survey trigger map for this property, please contact the Department of Environment and Science at palm@des.qld.gov.au.

3.7 Emissions Reduction Fund (ERF)

The ERF is an Australian Government scheme which offers incentives for businesses and communities across the economy to reduce emissions.

Under the ERF, landholders can earn money from activities such as planting (and keeping) trees, managing regrowth vegetation and adopting more sustainable agricultural practices.

The purpose of a project is to remove greenhouse gases from the atmosphere. Each project will provide new economic opportunities for farmers, forest growers and land managers.

Further information on ERF is available at https://www.qld.gov.au/environment/land/state/use/carbon-rights/.

4. Contact information for DNRME

For further information on vegetation management:
Phone 135VEG (135 834)
Email vegetation@dnrme.qld.gov.au
Visit https://www.dnrme.qld.gov.au/?contact=vegetation to submit an online enquiry.

For contact details for other State and Commonwealth agencies, please see Section 6.

5. Maps

Maps included in this report may also be requested individually at:

https://www.dnrme.qld.gov.au/qld/environment/land/vegetation/vegetation-map-request-form
and
http://www.ehp.qld.gov.au/licences-permits/plants-animals/protected-plants/map-request.php

Regulated vegetation management map

The regulated vegetation management map shows vegetation categories needed to determine clearing requirements. These maps are updated monthly to show new property maps of assessable vegetation (PMAV).

Vegetation management supporting map

The vegetation management supporting map provides information on regional ecosystems, wetlands, watercourses and essential habitat.

Pre-clear map

The vegetation management pre-clear regional ecosystem mapping shows the regional ecosystem, location and extent which is likely to have occurred at that location prior to clearing. This map can be used for identifying exchange areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code. It may also be used for for identifying offsets under the vegetation management framework.

Coastal/non coastal map

The coastal/non-coastal map confirms whether the lot, or which parts of the lot, are considered coastal or non-coastal for the purposes of the accepted development vegetation clearing codes and the State Development Assessment Provisions (SDAP).

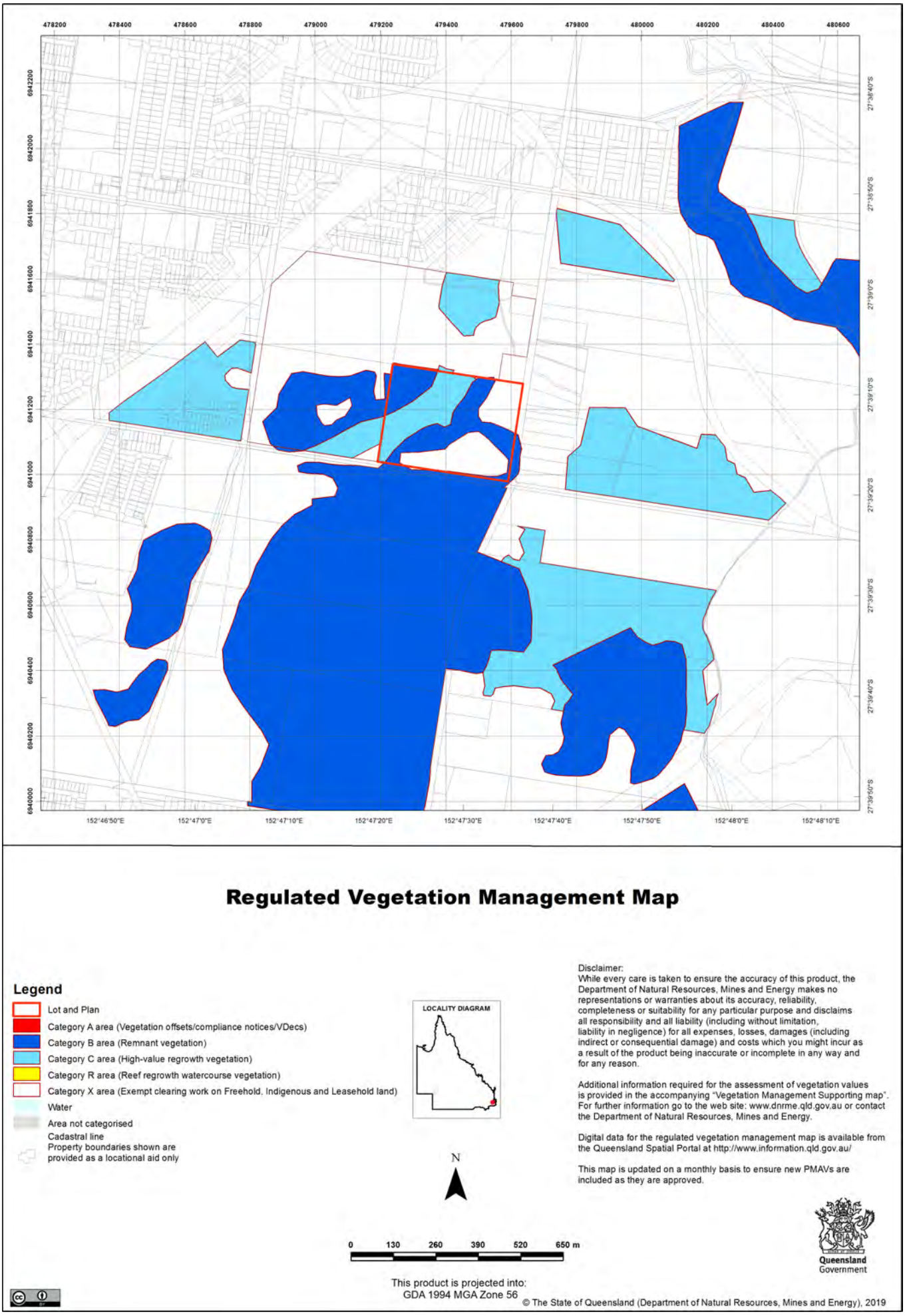
Agricultural Land Class A or B

The Agricultural Land Class map confirms the location and extent of land mapped as Agricultural Land Classes A or B as identified on the State Planning Interactive Mapping System. Please note that this map does not include areas identified as Agricultural Land Class A or B in local government planning schemes. This map can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code.

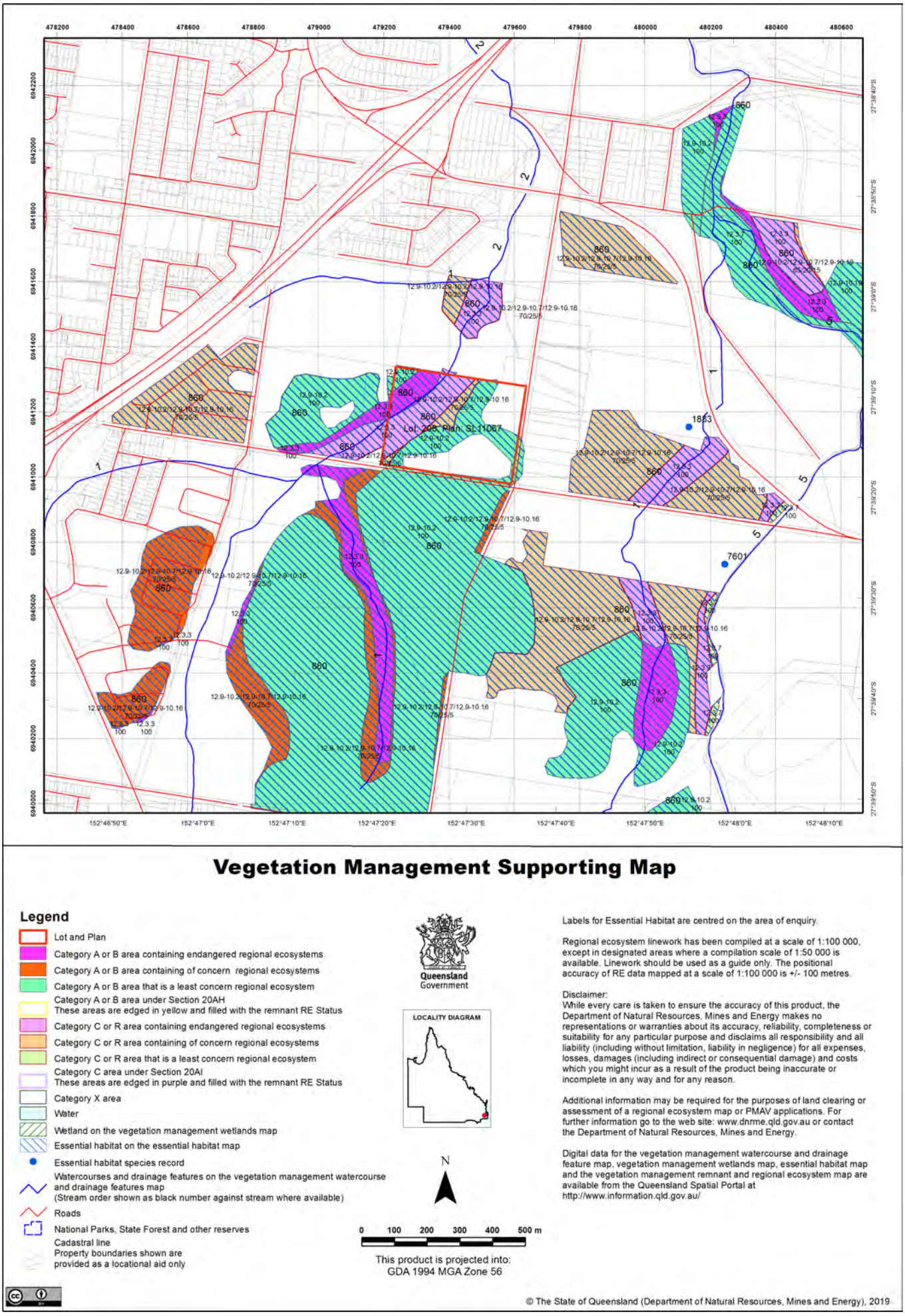
Protected plants map

The protected plants map shows areas where particular provisions of the *Nature Conservation Act 1992* apply to the clearing of protected plants.

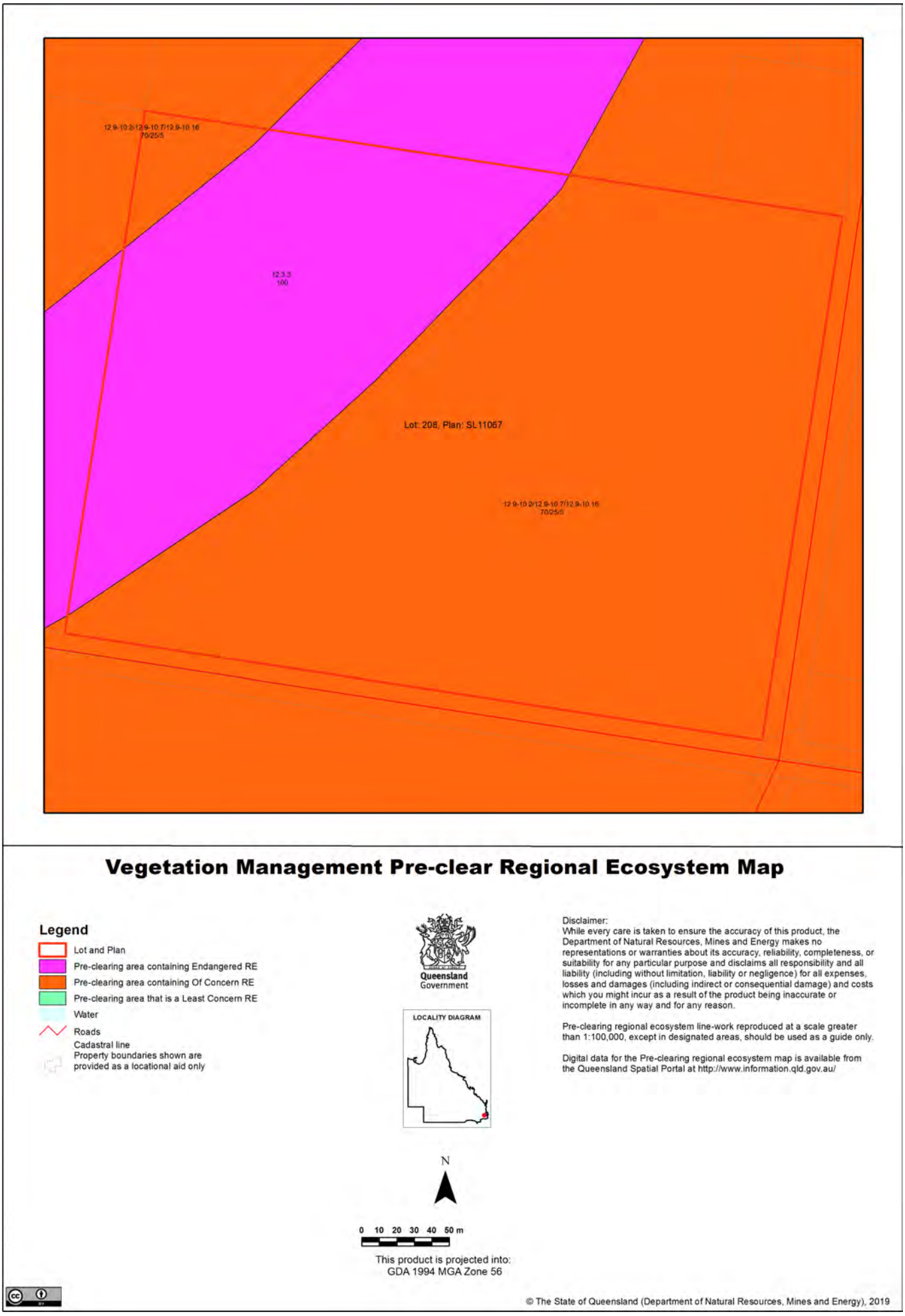
5.1 Regulated vegetation management map



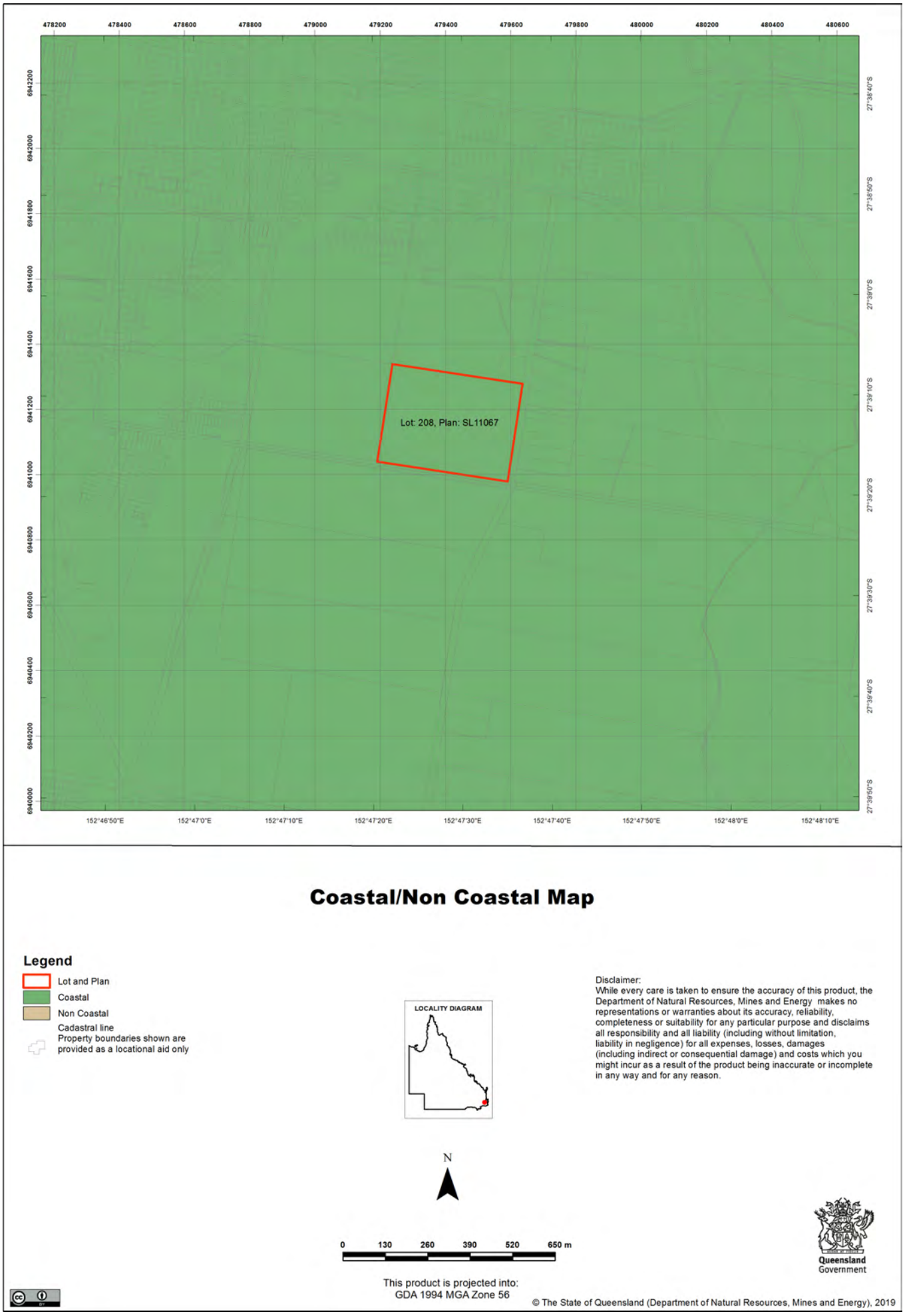
5.2 Vegetation management supporting map



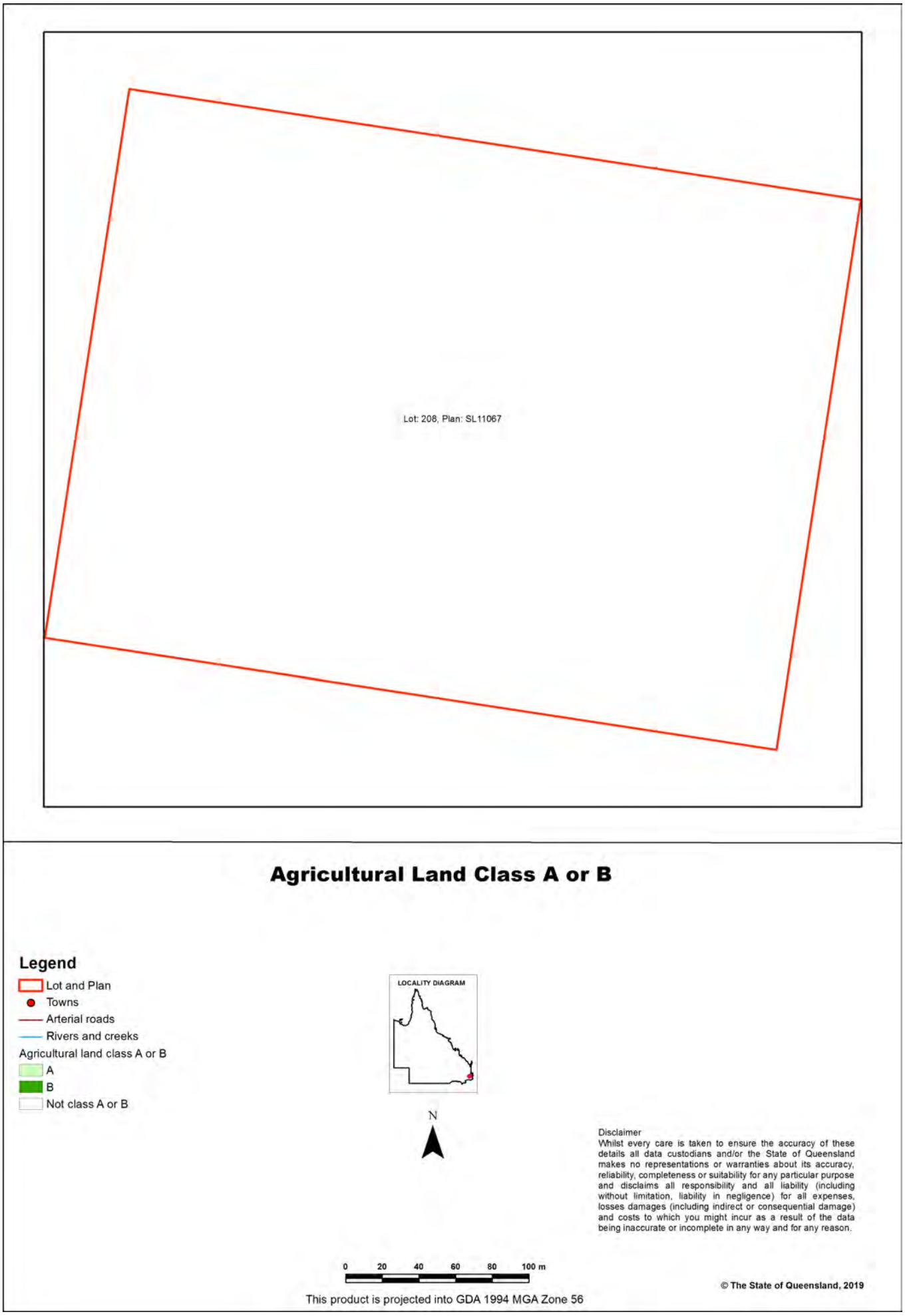
5.3 Pre-clear map



5.4 Coastal/non coastal map



5.5 Agricultural Land Class A or B map



5.6 Protected plants map administered by DES



Protected Plants Flora Survey Trigger Map

Legend

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

LOCALITY DIAGRAM



This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Science at palm@ehp.qld.gov.au

N

0 100 200 300 400 500 m

This product is projected into:
GDA 1994 MGA Zone 56

Disclaimer:
While every care is taken to ensure the accuracy of the data used to generate this product, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which might be incurred as a consequence of reliance on the data, or as a result of the data being inaccurate or incomplete in any way and for any reason.

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Protected plants flora survey trigger map

The protected plants flora survey trigger map identifies 'high risk areas' where endangered, vulnerable or near threatened plants are known to exist or are likely to exist. Under the *Nature Conservation Act 1992* (the Act) it is an offence to clear protected plants that are 'in the wild' unless you are authorised or the clearing is exempt, for more information see section 89 of the Act.

Please see the Department of Environment and Science webpage on the clearing of protected plants for information on what exemptions may apply in your circumstances, whether you may need to undertake a flora survey, and whether you may need a protected plants clearing permit.

Updates to the data informing the flora survey trigger map

The flora survey trigger map will be reviewed, and updated if necessary, at least every 12 months to ensure the map reflects the most up-to-date and accurate data available.

Species information

Please note that flora survey trigger maps do not identify species associated with 'high risk areas'. While some species information may be publicly available, for example via the Queensland Spatial Catalogue, the Department of Environment and Science does not provide species information on request. Regardless of whether species information is available for a particular high risk area, clearing plants in a high risk area may require a flora survey and/or clearing permit. Please see the Department of Environment and Science webpage on the clearing of protected plants for more information.

6. Other relevant legislation contacts list

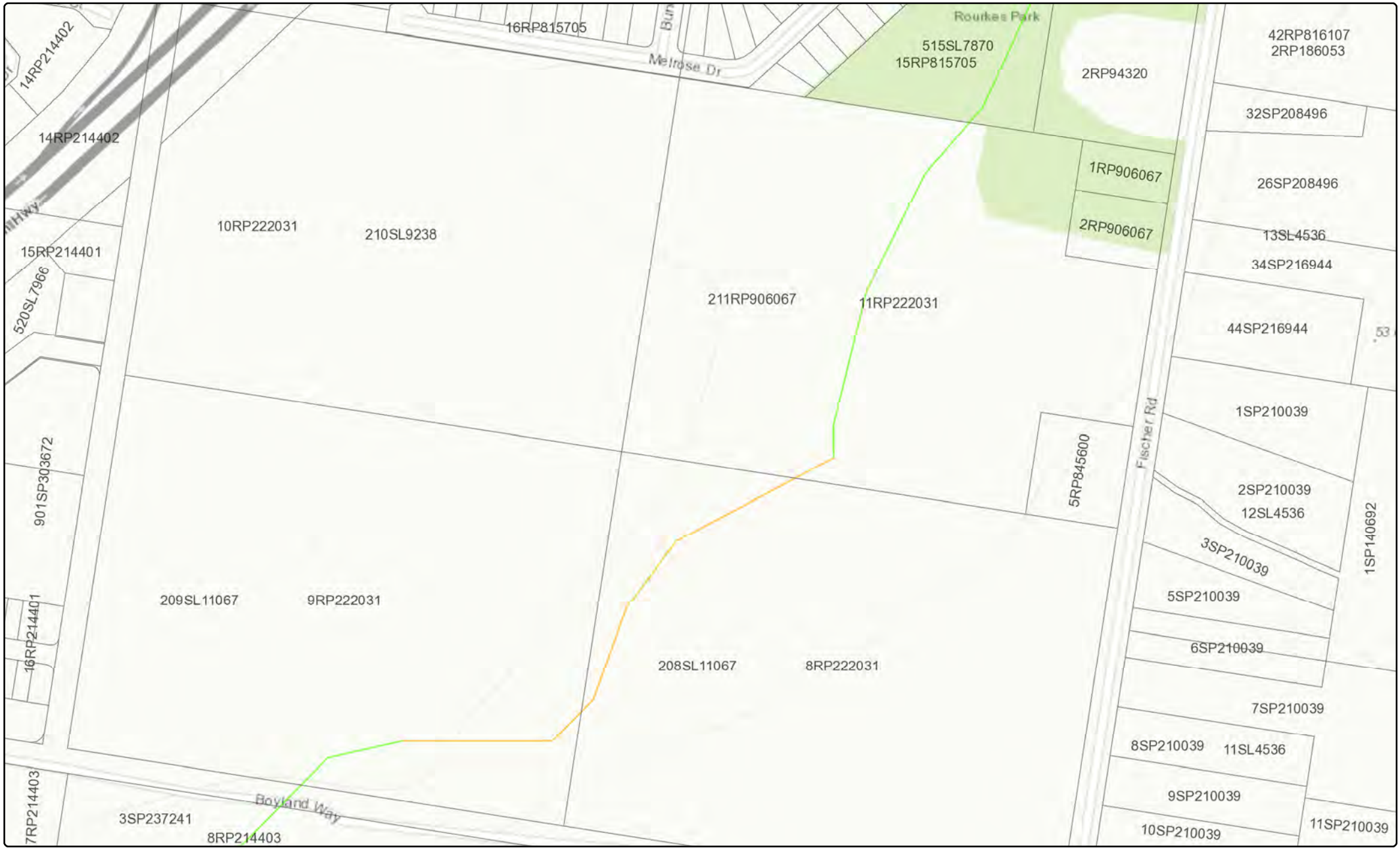
Activity	Legislation	Agency	Contact details
• Interference with overland flow • Earthworks, significant disturbance	*Water Act 2000* *Soil Conservation Act 1986*	Department of Natural Resources, Mines and Energy (Queensland Government)	Ph: 13 QGOV (13 74 68) www.dnrme.qld.gov.au
• Indigenous Cultural Heritage	*Aboriginal Cultural Heritage Act 2003* *Torres Strait Islander Cultural Heritage Act 2003*	Department of Aboriginal and Torres Strait Islander Partnerships (Queensland Government)	Ph: 13 QGOV (13 74 68) www.datsip.qld.gov.au
• Mining and environmentally relevant activities • Infrastructure development (coastal) • Heritage issues • Protected plants and protected areas[1]	*Environmental Protection Act 1994* *Coastal Protection and Management Act 1995* *Queensland Heritage Act 1992* *Nature Conservation Act 1992*	Department of Environment and Science (Queensland Government)	Ph: 13 QGOV (13 74 68) www.des.qld.gov.au
• Interference with fish passage in a watercourse, mangroves • Forestry activities[2]	*Fisheries Act 1994* *Forestry Act 1959*	Department of Agriculture and Fisheries (Queensland Government)	Ph: 13 QGOV (13 74 68) www.daf.qld.gov.au
• Matters of National Environmental Significance including listed threatened species and ecological communities	*Environment Protection and Biodiversity Conservation Act 1999*	Department of the Environment (Australian Government)	Ph: 1800 803 772 www.environment.gov.au
• Development and planning processes	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Department of State Development, Manufacturing, Infrastructure and Planning (Queensland Government)	Ph: 13 QGOV (13 74 68) www.dsdmip.qld.gov.au
• Local government requirements	*Local Government Act 2009* *Planning Act 2016*	Department of Local Government, Racing and Multicultural Affairs (Queensland Government)	Ph: 13 QGOV (13 74 68) Your relevant local government office

1. In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992*, which endeavours to ensure that protected plants (whether whole plants or protected plants parts) are not illegally removed from the wild, or illegally traded. Prior to clearing, you should check the flora survey trigger map to determine if the clearing is within a high-risk area by visiting www.des.qld.gov.au. For further information or assistance on the protected plants flora survey trigger map for your property, please contact the Department of Environment and Science on 13QGOV (13 74 68) or email palm@des.qld.gov.au.

2. Contact the Department of Agriculture and Fisheries before clearing:
   - Any sandalwood on state-owned land (including leasehold land)
   - On freehold land in a 'forest consent area' or a 'forest entitlement area'
   - More than five hectares on state-owned land (including leasehold land) containing commercial timber species listed in parts 2 or 3 of Schedule 6 of the Vegetation Management Regulation 2012 and located within any of the following local government management areas-Banana, Bundaberg Regional, Fraser Coast Regional, Gladstone Regional, Isaac Regional, North Burnett Regional, Somerset Regional, South Burnett Regional, Southern Downs Regional, Tablelands Regional, Toowoomba Regional, Western Downs Regional.

28ºS
ENVIRONMENTAL

Attachment 6



DA Mapping System – Print Screen

Department of State Development, Manufacturing, Infrastructure and Planning

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0 70 140 210 280

Metres

Date: 14/10/2019

N

Disclaimer:
This map has been generated from the information supplied to the Department of State Development, Manufacturing, Infrastructure and Planning for the purposes of the Development Assessment Mapping System. Note that this is a print screen only. The map generated has been prepared with due care based on the best available information at the time of publication. The State of Queensland holds no responsibility for any errors, inconsistencies or omissions within this document. Any decisions made by other parties based on this document are solely the responsibility of those parties. This information is supplied subject to the full terms and conditions available on the department's website.

Legend

Cadastre (5k)

Cadastre (5k)

Queensland waterways for waterway barrier works

1 - Low

2 - Moderate

3 - High

4 - Major

Queensland Government

Department of State Development, Manufacturing, Infrastructure and Planning

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DA Mapping System – Print Screen

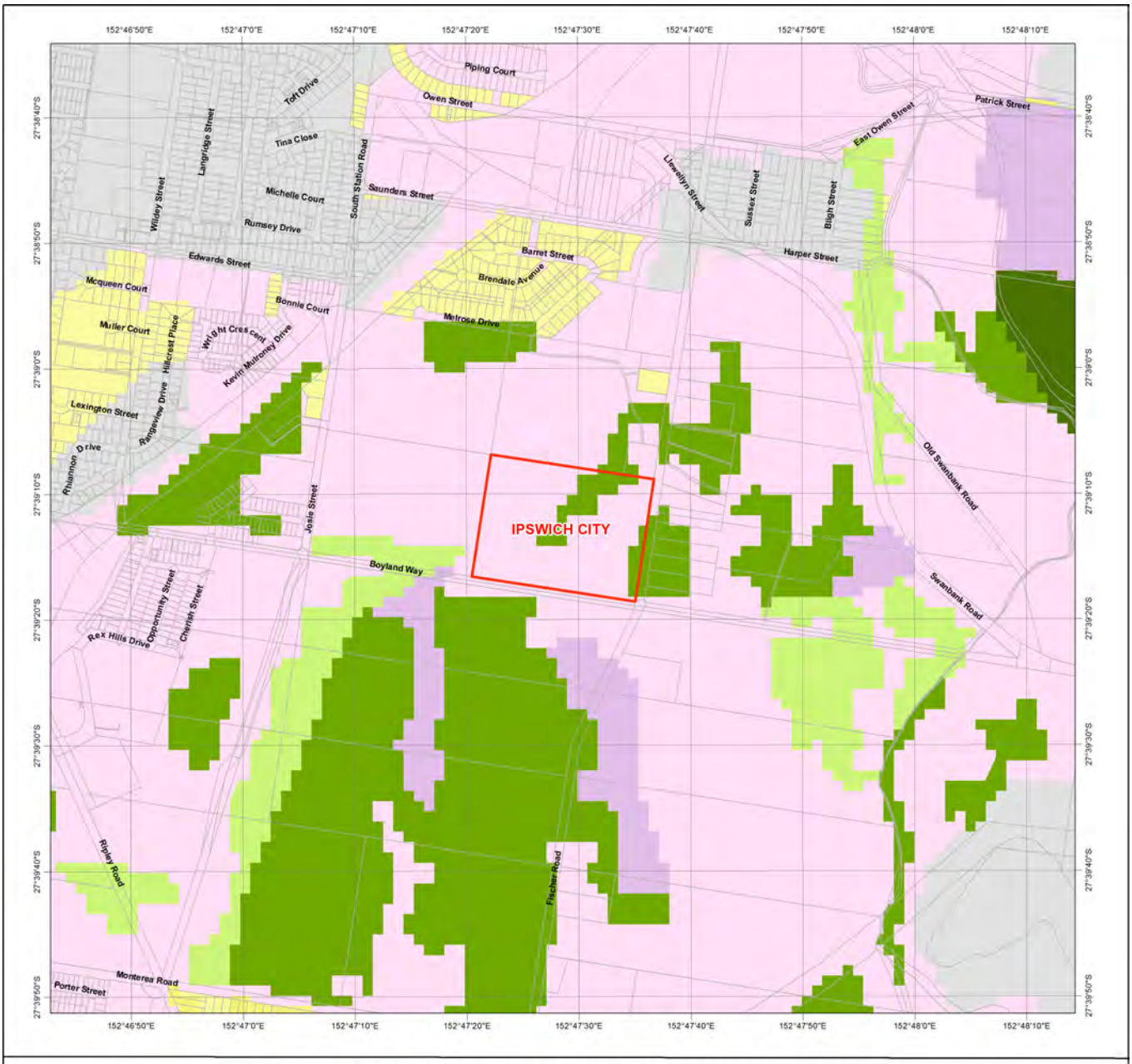
Date: 14/10/2019

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Attachment 7

Map requested: (14/10/2019 13:51:53)
Lot: 208 Plan: SL11067



Koala Habitat in South East Queensland

Lot and Plan

Koala SPP - 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
- Generally not suitable
- Water

South East Queensland Koala Habitat Values western SEQ
- Bushland Habitat
- Suitable for rehabilitation
- Other areas of value
- Generally not suitable
- Water
- Cadastral Boundaries
- Local Government Boundaries



N

0 130 260 390 520 650 m

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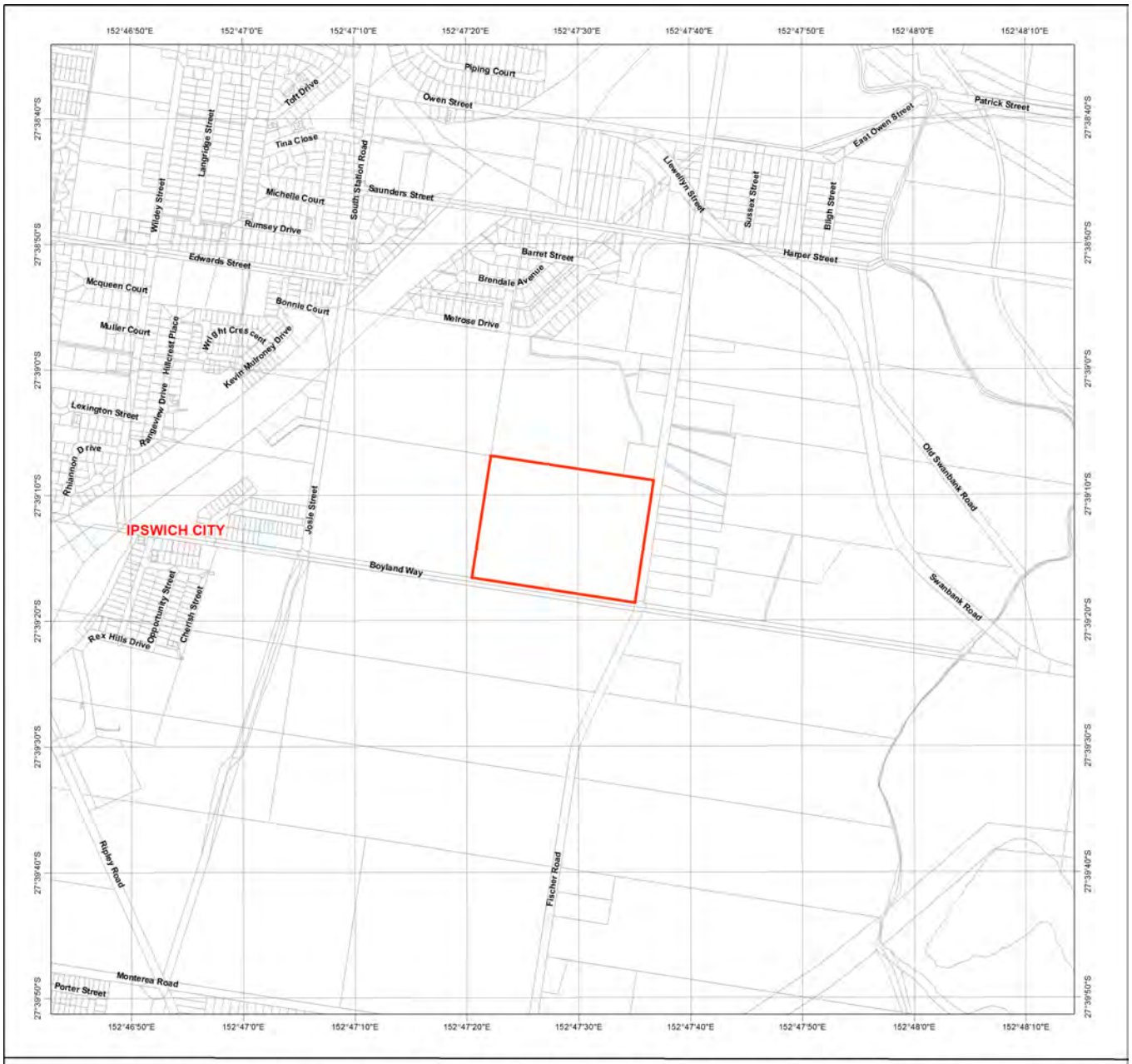
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Map requested: (14/10/2019 14:33:24)
Lot: 208 Plan: SL11067



Koala Conservation in South East Queensland State Planning Regulatory Provisions

- Lot and Plan
- Priority Koala Assessable Development Areas
- Koala Assessable Development Areas
- Outside SPRP Koala Assessable Development Areas

Koala SPRP - Identified Broad-Hectare Areas

- Koala SPRP - Identified Broad-Hectare Areas

Koala SPRP - 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
- Generally not suitable
- Water
- Cadastral Boundaries
- Local Government Boundaries



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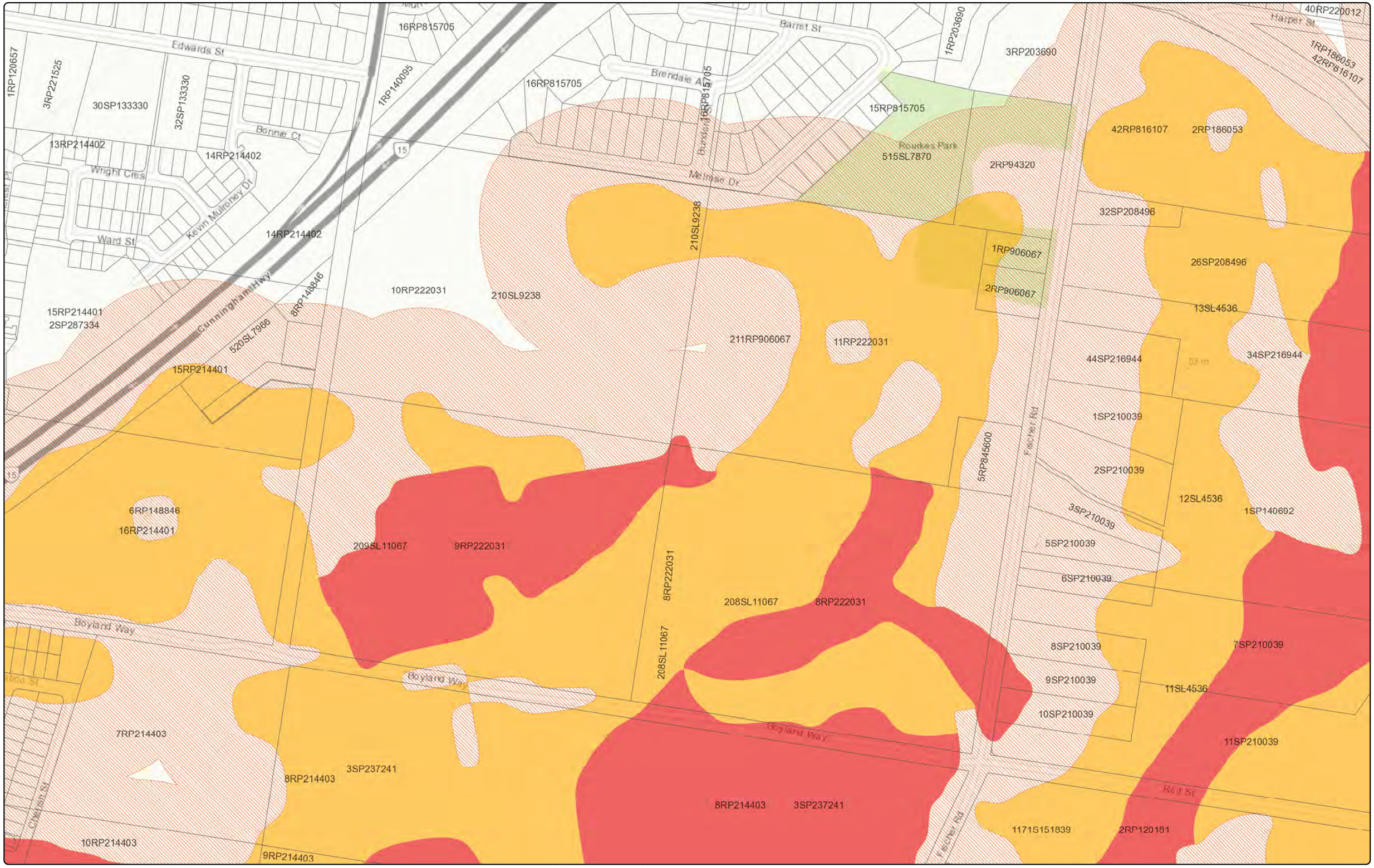
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Attachment 8



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N

State Planning Policy

Making or amending a local planning instrument and designating land for community infrastructure

0 75 150 225 300

Metres

Date: 29/08/2019

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Legend

Cadastre (5k)

Cadastre (5k)

Bushfire prone area

Very High Potential Bushfire Intensity

High Potential Bushfire Intensity

Medium Potential Bushfire Intensity

Potential Impact Buffer

Queensland Government

Department of State Development, Manufacturing, Infrastructure and Planning

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State Planning Policy

Making or amending a local planning instrument and designating land for community infrastructure

Date: 29/08/2019

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28°S ENVIRONMENTAL

ECOLOGICAL ASSESSMENT REPORT

Proposed Ripley Gateway North Residential Development at Flinders View



5 December 2019

Report prepared for CLAG Pty Ltd

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1 Introduction

1.1 Background

28 South Environmental has been engaged by CLAG Pty Ltd (the **Applicant)** to provide an ecological assessment of the proposed Reconfiguration of Lot (**RoL**) for the Ripley Gateway North residential subdivision (**Proposed Development**) within four existing lots in Flinders View; Lot 208 on SL11067, 209 on SL11067, Lot 210 on SL9238, and Lot 211 on RP906067 (referred to herein as 'the **Site'**). The Site is located within the Ipswich City Council (**ICC**) Local Government Area and is currently used for rural and rural-residential purposes. The Site is situated in the northern extent of the Ripley Valley Priority Development Area (**PDA**). The Site's context, locality and position within the Ripley Valley PDA is shown in **Attachment 1** and **Figures 1** and **2**.

The Site is bound and accessed to the east by Fischer Road and to the south by Boyland Way. Urban residential development exists immediately north of the Site, off Melrose Drive. To the east of the Site is number of rural residential blocks averaging approximately 6,000m^2. South of the Site is a large vegetated block which has been approved for residential development and educational facilities, and recent residential subdivisions are located to the south-west and west of the Site. The Site's north-western boundary is adjacent to the Cunningham Highway road reserve for approximately 150 m. The Proposed Development layout is shown in **Attachment 2** and includes the proposal of 541 residential allotments, a childcare centre, new roads, local parks, stormwater detention basin and an open space/conservation area.

1.2 Planning Context

The Site is located within the Ripley Valley PDA and is therefore subject to the provisions of the Ripley Valley Development Scheme (**Development Scheme**) rather than the ICC Planning Scheme. The Site is identified within the Development Scheme as Urban Living Zone and contains mapped values within the Development Scheme that include Endangered Regional Ecosystems, a Significant Riparian Corridor and an Urban Stormwater Flow Path (**Attachment 3**). Other development constraints on the Site identified within the Development Scheme include a Mining Influence Constrained Area and a Buffer to Highways and Regional Transport Corridors.

Within the Urban Living Zone, the Proposed Development is considered to be permissible development under Table 2: Levels of Assessment of the Development Scheme.

In addition to the Development Scheme, the Proposed Development is subject to environmental planning legislation at the Commonwealth and State levels.

1.3 Purpose of this Report

The purpose of this Ecological Assessment Report (**EAR**) is to provide an assessment of the Proposed Development against relevant ecological and environmental planning legislation, policies and instruments at the Commonwealth, State, Development Scheme and Local levels. The EAR achieves this through:

i) desktop assessments;

ii) field studies (methodology and results);

iii) determination of potential impacts of the Proposed Development on ecological features within and adjoining the Site;

iv) assessment against the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**);

v) assessment against the *Nature Conservation Act 1992* (**NC Act**);

vi) assessment against the Development Scheme and associated environmental guidelines including:

   a. Environmental values and sustainable resource use - PDA Guideline No. 14; and

   b. Development interfaces – PDA Guideline No. 18; and

vii) recommendations for measures to avoid, minimise and mitigate potential impacts of the Proposed Development on environmental values within the Site.

2 Statutory Environmental Matters for Consideration

Ecological values and ecologically important areas for the Proposed Development have been defined with reference to Federal and State environmental legislation and the PDA Development Scheme. A summary of relevant statutory considerations is provided below.

2.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act provides the legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. These are defined under the EPBC Act as 'Matters of National Environmental Significance' (**MNES**). Under the EPBC Act, a referral to the Department of the Environment Energy (**DoEE**) will be required if the proposed development could cause a Significant Impact on MNES. The determination of whether a Significant Impact will arise is made with reference to the Matters of National Environmental Significance Significant Impact Guidelines 1.1 (DoE 2013) and other EPBC Act policy statements.

A search[1] of the Protected Matters Search tool (**PMST**) indicates the likely or potential occurrence of MNES in the locality (**Attachment 4**). A search of the Department of Environment and Heritage Protection (**DEHP**) Wildlife Online database provides confirmed records of MNES within the same search radius (**Attachment 5**). These records indicate that *Phascolarctos cinereus* (koala) is known to exist within the immediate locality. An assessment of the implications under the EPBC Act of koala presence within the Site is provided in **Section 7.1.**

2.2 Nature Conservation Act 1992

The NC Act established approval triggers and an assessment process for clearing protected plants. Three of the four lots that comprise the Site are located within a mapped "High Risk Trigger Area" (**Attachment 6**). As such, a detailed botanical survey, in accordance with the *Flora Survey Guidelines for Protected Plants*, was undertaken on 9 October 2018 and 3-5 July 2019 to identify the presence of protected plants and/or suitable habitat for these species.

[1] A 2km radius around the Site was specified using a central coordinate (-27.57816, 152.76171).

The *Nature Conservation (Wildlife) Regulation 2006* (**NC Reg**) also lists Endangered, Vulnerable and Near Threatened (**EVNT**) fauna species. EVNT species are afforded special protection under the NC Act. The potential for the Proposed Development to have residual impacts on EVNT species is discussed in **Sections 5** and **6.2**.

2.3 Matters of State Interest

2.3.1 Planning Regulation 2017 Triggers

The Queensland Government defines matters of State Interest with referral triggers and responsible agencies set out in Schedule 10 of the *Planning Regulation 2017* (**Planning Reg**). Environmental matters of State Interest that have been considered as a part of this assessment are summarised in **Table 1.**

Table 1 - Referral Agencies and Triggers under the Planning Reg

State Interest	Schedule 10 Reference	Referral Agency if Triggered	Referral Agency Assessment Matters for Further Assessment
State Code 16 – Native Vegetation Clearing **Attachment 6**	Part 3, Division 2, Table 3	N/A	The Site is mapped to contain a matrix of Category B, Category C and Category X Regulated Vegetation (see **Attachment 6**). Both the Category C and B are also mapped as Essential Habitat. Under Schedule 21, Part 2 (2)(e) of the Planning Reg, the clearing of native vegetation for PDA-related development on freehold land is defined as "exempt clearing work" and therefore not assessable under State Code 16. Further assessment of the Clearing of the mapped Regulated Vegetation is provided in **Section 7.2.** Within the Ripley Valley PDA, clearing of vegetation is regulated through the Development Scheme (see **Section 2.4**).
State Code 18 – Constructing or Raising Waterway Barrier Works in Fish Habitats **Attachment 7**	Part 6, Division 2, Table 1 & Divisions 4, Table 1	Department of Agriculture and Fisheries	One tributary of Bundamba Creek (defined as a drainage feature by the *Water Act 2000*) extends in a south-west to north-east direction across the Site. This feature is mapped as a 'Low' and 'Moderate' Value Queensland Waterway for Waterway Barrier Works (see **Attachment 7**). It is understood that all works proposed within the mapped waterway (e.g. culvert crossing or remediation works) will comply with the Self-Assessable Codes for Works within a Queensland Waterway. Should the development not comply with the self-assessable codes, the

State Interest	Schedule 10 Reference	Referral Agency if Triggered	Referral Agency Assessment Matters for Further Assessment
			proposal will need to further address State Code 18. As per Economic Development Queensland's Practice Note 14 – State interests in development assessment in Priority Development Areas, no exemptions from State Code 18 requirements apply to PDA related development.
Koala Habitat Areas **Attachment 8**	Part 10, Division 2, Table 1	N/A	The Site is not located within a Koala Assessable Development Area, a Priority Koala Assessable Development Area, or an Identified Koala Broad-hectare Area. However, the Koala SPP Mapping demonstrates that the Site contains a mix of habitat types; predominantly Low Value Rehabilitation Koala Habitat, with areas of High Value and Medium Value Bushland Habitat and a small area of Medium Value Rehabilitation Koala Habitat (see **Attachment 8**). The Koala SPP mapping is not relevant to proposed development within a PDA.
Wetland Protection Area	Part 20	N/A	N/A – No areas mapped.

2.3.2 Guideline 14 – Environmental Values and Sustainable Resource Use

PDA Guideline No. 14 *Environmental Values and Sustainable Resource Use* (**Guideline 14**) outlines values and strategies for protecting the environment and optimising resource use in PDAs. Guideline 14 requires development within a PDA to consider relevant Commonwealth and State Government environmental legislation and planning policies in addition to areas noted as being of environmental significance within the PDA's Development Scheme and the inherent environmental values identified within the Site through ecological assessments. An assessment of the Proposed Development against the relevant components of Guideline 14 is provided in **Section 7.2.1**.

2.3.3 Guideline 18 – Development Interfaces

PDA Guideline No. 18 *Development Interfaces* (**Guideline 18**) outlines the development considerations which should inform the planning and design phase of a project to ensure that potential interface issues are appropriately managed within the PDA. Development should

consider ecological values at the land use interface and be informed by an ecological assessment. An assessment of the Proposed Development against the requirements of Guideline 18 is provided in **Section 7.2.2**.

2.3.4 Bushfire

State Planning Policy (**SPP**) mapping shows that the Site is characterised by bushfire constraint in the southern and eastern portions (see **Attachment 9**). This includes areas mapped as Bushfire Prone Areas with High Potential Bushfire Intensity and Medium Potential Bushfire Intensity. Much of the balance of the Site is within the Potential Impact Buffer.

A suitably qualified bushfire consultant has been engaged to undertake a detailed bushfire hazard assessment and to prepare a Bushfire Management Plan for the Proposed Development. This reporting accompanies the Development Application to ICC and its findings, recommendations and management requirements (e.g. any clearing works required to achieve sufficient separation) have informed the preparation of this EAR.

2.4 Ripley Valley PDA Development Scheme

2.4.1 Significant Vegetation

Under the Development Scheme, 'Significant Vegetation' is defined as:

> All vegetation, except those listed as pest vegetation by State or local government, that is significant in its:
>
> - Ecological value at local, state or national levels including vegetation mapped as endangered remnant vegetation on the regional ecosystem maps prepared under the *Vegetation Management Act 1999*
> - Contribution to the preservation of natural landforms
> - Contribution to the character of the landscape
> - Cultural or historical value
> - Amenity value to the general public.
>
> Note – vegetation may be living or dead and the term includes their root zone.

Under the Development Scheme, operational work that is the clearing of vegetation is exempt development, unless the clearing is of Significant Vegetation. The presence of Significant

Vegetation within the Site, the potential impacts of the Proposed Development on the Significant Vegetation, and the statutory implications are discussed in **Sections 3.4**, **6.1.2** and **7.3.1** respectively.

2.4.2 PDA Wide Criteria

The Development Scheme also contains numerous PDA Wide Criteria. Of relevance to this EAR is PDA Wide Criterion 3.3.8 – Natural and Cultural Values. An assessment of the Proposed Development against this criterion is provided in **Section 7.3.2**.

3 Flora Assessment

3.1 Desktop Assessment and Survey Methods

The Site is mapped to contain a matrix of Remnant and Regrowth Regulated Vegetation associated with Regional Ecosystems (**RE**s) 12.3.3, 12.9-10.2, 12.9-10.7 and 12.9-10.16 (see **Attachment 6**). These REs are described as follows:

- Endangered RE 12.3.3 described as '*Eucalyptus tereticornis woodland. Eucalyptus crebra* and *E. moluccana* 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 *Angophora subvelutina* or *A. floribunda, Corymbia clarksonii, C. intermedia, C. tessellaris, Lophostemon suaveolens* and *E. melanophloia.* Occurs on Quaternary Alluvial plains, terraces and fans where rainfall is usually less than 1000mm/y.'
    - This occurs as a thin linear strip through the lower components of the central south of the Site
- Least Concern RE 12.9-10.2 described as '*Corymbia citriodora* subsp. *variegata* open woodland or woodland usually with *Eucalyptus crebra*. Other species such as *Eucalyptus tereticornis, E. moluccana, E. acmenoides* and *E. siderophloia* may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of *Lophostemon confertus* (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments'
    - This occurs on the higher slopes adjoining the alluvial areas of the Site's south.
- Of Concern RE 12.9-10.7 described as '*Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora leiocarpa, E. melanophloia* woodland. Occurs on Cainozoic and Mesozoic sediments'
    - This occurs as a part of a mixed polygon of regrowth vegetation fringing lower alluvial areas of the Site.

- Of Concern RE 12.9-10.16 described as 'Microphyll to notophyll vine forest +/- *Araucaria cunninghamii*. Characteristic species include *Argyrodendron* sp., *Araucaria cunninghamii*, *Agathis robusta*, *Backhousia myrtifolia*, *Cupaniopsis parvifolia*, *Dendrocnide photinophylla*, *Rhodosphaera rhodanthema*, *Flindersia australis*, *F. xanthoxyla*, *Drypetes deplanchei*, *Olea paniculata*, *Diospyros geminata*, Gossia *bidwillii*, *Excoecaria dallachyana* and *Vitex lignum-vitae*. *Archontophoenix cunninghamiana* often present in gully floors. Occurs on Cainozoic and Mesozoic sediments.
    - This occurs as a part of a mixed polygon of regrowth vegetation fringing lower alluvial areas of the Site.

The pre-clear landscape historically contained similar representations of these REs across the whole of the Site.

Current aerial imagery clearly illustrates that the Site supports an existing dwelling in the north-east of Lot 208, with associated ancillary structures including sheds and a pool. The balance of the Site contains a mix of cleared paddocks, regrowth and remnant vegetation that has had broadscale clearing, with selective retention of some larger trees within the Site; particularly in the Site's south-east. Four dams are present in the northern half of the Site and the south-western part of the Site (Lot 209) appears to be used for informal recreation, with a number of dirt tracks evident from aerial imagery and confirmed as private motocross tracks during Site survey. The central components of the Site support an ephemeral drainage feature that flows from south to north. Lot 210 in the north-west of the Site is the most sparsely vegetated on the Site, while Lot 208 in the south-east is the most heavily vegetated on the Site. Lot 208 is, however, dominated by dense regrowth with highly scattered mature or remnant trees.

The PMST data (**Attachment 4**) indicates the potential occurrence of MNES vegetation communities and species in the locality. The Wildlife Online data indicates confirmed records of EVNT species in the locality (**Attachment 5**). The conservation-significant species identified by these database searches formed a target for Site surveys.

Baseline botanical assessment was undertaken over four survey days on 9 October 2018 and 3-5 July 2019. This involved a complete traverse of the entire Site, the spatial mapping of all

native trees along within the Site (at or above 200mm diameter at breast height (**DBH**)), and the spatial mapping of all habitat trees throughout the entirety of the Site (i.e. trees with notable habitat features/significance). Surveys also involved an assessment to determine whether the Site:

i. supported vegetation analogous with Threatened Ecological Communities (**TEC**) identified as MNES under the EPBC Act;

ii. supported any plant species identified as MNES under the EPBC Act;

iii. was appropriately omitted or included within the RVMM;

iv. supported EVNT plant species; and

v. supported plant species or communities which were otherwise of conservation interest.

To ensure that botanical specimens with similar or potential dichotomy of EVNT species were correctly identified, numerous specimens were submitted to the Queensland Herbarium for confirmation of species identification.

3.2 Survey Results

The Site is located on relatively flat topography, generally sloping towards the drainage line in the central and eastern portions of the Site. Alluvial geological deposits were associated with the drainage line and characterised by red sand becoming shallower on the lower and upper slopes. The vegetation supported by the Site has been subject to historical broadscale clearing and includes vegetation communities of various age cohorts including scattered remnant canopy retained in open paddocks, remnant open forest, advanced regrowth and regrowth areas. A total of four (4) vegetation communities were observed during in-field ecological assessments and were found to be generally reflective of the mapped REs across the Site (**Figure 4**). A full flora species list is provided in **Attachment 10**. **Photo Plates 1-26** indicate the general composition and characteristics of each of the vegetation communities throughout the Site and described in the following sections.

3.2.1 Vegetation Community 1 – Queensland Blue Gum Open Forest on Alluvial Corridor and Plain

The waterway that extends through the Site in a south-west to north-east direction is a braided, meandering system that opens into an alluvial floodplain in the northern extent of the Site (see **Figure 4**). The vegetation forms a mix of remnant and regrowth open forest with a canopy dominated by *Eucalyptus tereticornis* (Queensland blue gum), with associated *Angophora leiocarpa* (smooth-barked apple), *Corymbia intermedia* (pink bloodwood) and the occasional *Corymbia tessellaris* (Moreton Bay ash). The mid-storey was dominated by *Lophostemon suaveolens* (swamp box) in dense stands adjoining the creek banks and the lower alluvial terrace. *Acacia disparrima* (hickory wattle) and *Alphitonia excelsa* (red ash) were also present throughout the mid-storey. The shrub layer was sparse and contained regenerating mid-storey and canopy species as well as *Alstonia constricta* (quinine bush), *Breynia oblongifolia* (coffee bush), *Glochidion ferdinandi* (cheese tree) and patch infestations of *Lantana camara** (lantana). The understorey contained a variety of native grasses and herbs including various *Lomandra* species, *Leersia hexandra* (swamp rice grass), *Ottochloa gracillima* (graceful grass), *Imperata cylindrica* (blady grass) and *Cynodon dactylon* (couch grass). The waterway itself contained aquatic species such as *Philydrum lanuginosum* (woolly frog's mouth), a number of *Juncus* species and *Nymphoides indica* (water snowflake).

This community became variable within the northern extent of the Site where the Site has been subject to greater historical disturbance and modification. Similarly, the extent of exotic pest plants increased towards the northern extent of the Site, with dense patches of lantana present. The southern extent of the community was generally intact and contained mature remnant canopy and scattered relict trees.

3.2.2 Vegetation Community 2 – Regrowth Open Forest on Lower Slopes

This community bounds Community 1 on the east and west and extends up the lower slopes within the Site (see **Figure 4**). These portions of the Site have been subject to historical modification and disturbance through broadscale clearing events, and as such, the community supports an earlier age cohort compared to much of Community 1. The canopy strata was similarly dominated by Queensland blue gum with associated smooth-barked apple and pink bloodwood, however, *Corymbia citriodora* subsp. *variegata* (spotted gum), *Eucalyptus siderophloia* (northern grey ironbark) and *Eucalyptus crebra* (narrow-leaved ironbark) became

prevalent with increased elevation up the slope. The mid-storey and shrub layer was largely dominated by regenerating canopy species with hickory wattle, *Acacia leiocalyx* (black wattle) and *Allocasuarina littoralis* (black she-oak) with patch infestations of lantana. In the eastern extent of this community, the understorey became increasingly dominated by exotic grasses and herbs such as *Megathyrsus maximus* var*. pubiglumis** (green panic), *Melinis repens** (red natal grass), *Chloris gayana* (rhodes grass) and *Asparagus africanus* (climbing asparagus).

The western component of this community contained a largely native understorey with species such as *Heteropogon contortus* (black spear grass), *Cymbopogon refractus* (barbed wire grass), blady grass and various *Lomandra* species.

3.2.3 Vegetation Community 3 – Advanced Regrowth Open Forest over Pasture Grasses

This community is situated to the west of the riparian community and centrally within the Site (see **Figure 4**). This area of the Site has been subject to historical disturbance, likely in the form of grazing, with the mid-storey and shrub strata largely absent. There were a number of vehicle access trails through this community. The canopy was characterised by mature native species with spotted gum dominating on the higher slopes and Queensland blue gum on the lower slopes. Associated species including pink bloodwood and smooth-barked apple were also present. The understorey was largely dominated by native and exotic pasture grasses described in Community 2.

3.2.4 Vegetation Community 4 – Open Paddocks with Scattered Mature Canopy Trees

This vegetation community occurs over the balance of the Site (see **Figure 4**) and is characterised by open paddocks containing scattered mature canopy trees over pasture grasses. Similar to the characteristics of the previous communities, the lower slopes were dominated by Queensland blue gum and the higher slopes were dominated by spotted gum. Associated species included pink bloodwood, smooth-barked apple and northern grey ironbark in the western extent of the community.

3.3 Threatened Flora and Vegetation Community Searches

Surveys failed to record any species listed as MNES under the EPBC Act, or any EVNT species listed under the NC Act. Nor does it support MNES TECs. Surveys have found that

tree species supported on Site is generally consistent with the Regulated Vegetation Mapping, although only scattered remnant canopy trees were observed throughout the Site.

Details of surveyed native trees and their location in relation to the proposed development footprint north western interface, as well as the location of native habitat trees are shown in **Figure 3 – Tree Retention Plan**. The Proposed Development layout allows for the retention of vegetation within the green space/conservation area dedication in the north western extent of the Site. The remaining vegetation is proposed for removal.

3.4 Significant Vegetation

An assessment of the Significant Vegetation (with reference to the Development Scheme definition in **Section 2.4.1**) within the Site is provided in **Table 2**.

Table 2: Assessment of Significant Vegetation within the Site

Significant Vegetation Element	Presence within the Site
Ecological value at local, state or national levels including vegetation mapped as endangered remnant vegetation on the regional ecosystem maps prepared under the *Vegetation Management Act 1999*	The Category B and Endangered RE 12.3.3 represents the extent of vegetation that is of considerable ecological value within the Site.
Contribution to the preservation of natural landforms	The Site consists of low rising undulations in an area enveloped by residential development and major transport corridors. The major natural landform within the Site is the mapped waterway. Vegetation that contributes to the preservation of this waterway consists of Endangered RE 12.3.3.
Contribution to the character of the landscape	The landscape surrounding the Site is highly modified. The Site's preserved natural features are limited to the mapped waterway and associated fringing remnant vegetation. This vegetation is Endangered RE 12.3.3 and provides the only meaningful vegetative contribution within the Site to landscape character.
Cultural or historical value	No vegetation within the Site is known to have cultural or historical value.
Amenity value to the general public.	The only vegetation within the Site that potentially provides amenity for the general public is that tall and mature vegetation fringing the mapped waterway and drainage feature. This vegetation coincides with Endangered RE 12.3.3 – Queensland blue gum woodland on alluvium.

Thus, Significant Vegetation within the Site is restricted to the Category B Endangered RE 12.3.3 within Lots 208, 209 and 211 (see **Figure 5**).

4 Fauna Habitat Assessment

4.1 Landscape Context

The Site is within a rapidly evolving, peri-urban landscape which is seeing the ongoing conversion of semi-rural or vegetated land into contemporary urban residential, educational or commercial settings with associated infrastructures (e.g. establishment, formalisation of and upgrades to roads and services). This conversion of land within the broader Ripley Valley PDA, coupled with existing or recently established landscape ecological impediments (e.g. the Cunningham Highway, Centenary Highway and upgrades to Ripley Road) continue to increase the fragmentation of land within the immediate area.

Contextually, the Site falls at the extreme northern edge of this area, enveloped on three of its four sides by existing, significant urban infrastructures or future urban development. To the north of the Site occurs low-density residential development off Melrose Drive, which itself is bound to the north by the Cunningham Highway. To the west of the Site occurs a contemporary low-density residential development, also bound by the Cunningham Highway as well as Ripley Road and a recent commercial development. To the south of the Site occurs a large parcel of land which has been recently approved for low-density residential development and educational facility over the majority of the Site (**Figure 6**). It is noted that the approved plans retain lower alluvial areas of the Site within open space and recreation zones. To the east of the Site occurs large rural residential allotments supporting varying levels of vegetation cover. These allotments fall outside of the PDA and are bound to the east by the Swanbank – New Chum industrial precincts further to the east (**Figure 1**).

Subject to the progression of the approved development to the south, and the eventual upgrade of Fischer Road to the east, the Site will ultimately become isolated from existing remnants to the south and west (which are also under pressure from development within the PDA). Consequently, the Site will have limited connectivity to offsite habitats and will be largely surrounded by significant ecological impediments.

It is unlikely that the larger rural residential allotments to the east of the Site will be subjected to residential development pressures in the short to medium term given these remain outside the PDA; however, longer-term it is reasonable to assume that these areas may also feasibly be considered as in-fill urban development sites.

4.2 Survey Methods

Database searches revealed the occurrence of several conservation-significant species in the locality (**Attachments 4** and **5**). Survey efforts included a detailed walk-through of the Site, assessment of all vegetation supported within and immediately adjoining the Site for habitat features important to species of conservation significance and active searches for fauna species or their evidence (such as koala and other scansorial fauna). Surveys were conducted over the course of four days and included:

- **Active searches of logs, rocks and ground debris** – Logs, rock and ground debris was turned in order to detect amphibians, reptiles and small terrestrial mammals;
- **Active searches for habitat trees** – searches were completed for hollow-bearing trees providing potential habitat for a range of tree hollow dependent fauna[2];
- **Random meander searches and aural surveys** – searches of riparian and vegetated areas were undertaken to identify any potential important habitats; and
- **Koala Spot Assessment Technique (SAT) searches** – 4 SAT[3] surveys were undertaken during survey efforts to determine the presence of koala throughout the Site. These surveys were also coupled with general scratch and scat searches while traversing the Site.

It is also noted that tree surveys across the entire Site included the spatial location of each tree and any observable to potential habitat features.

Habitat types were qualified based on the presence of the following habitat features:

- vegetation cover and structure;
- size and range of arboreal and terrestrial hollows;

[2] For example, small hollow-bearing trees providing roost sites for microchiropteran bats and gliders, medium sized hollows providing nest sites for small to medium sized birds and possums, and large hollows providing potential nest sites for large forest owls.
[3] Stephen Phillips and John Callaghan (2011) The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas *Phascolarctos cinereus*. *Australian Zoologist*: 2011, Vol. 35, No. 3, pp. 774-780.

- woody debris and leaf litter;
- rocky outcrops, overhangs and crevices;
- freestanding natural and anthropogenic water bodies, ephemeral drainage or seepage areas;
- disturbances including weed incursion, clearing and/or inappropriate fire regimes; and
- surrounding habitats and connectivity or fragmentation to these.

The quality of habitat persisting within the Site was assessed based on several criteria which are outlined within **Table 3**.

Table 3: Habitat Quality Criteria

Rating	Description of Habitat
Low	Many fauna habitat elements in low quality areas have been removed or altered such as mature, hollow bearing trees, fallen timber and deep leaf litter. For terrestrial habitats remnants are often small in size, support substantial weed infestations and are poorly connected to other areas of remnant vegetation. For aquatic habitats these may be waterways that have been de-snagged and riparian vegetation removed, or constructed drains.
Moderate	Some habitat components are present but others are lacking. For terrestrial habitats an example is remnant vegetation may have a reasonably intact understorey but lack fallen timber and hollow bearing trees. Linkages with other remnant habitats in the landscape may be lacking or somewhat tenuous. For aquatic habitats these may be semi-natural streams (including artificial channels and wetlands) with varying degrees of overhanging and instream vegetation with some snags and connectivity.
High	Most habitat components are present. For terrestrial habitats, habitats with old-growth trees, fallen timber, lack of weeds, the remnant is large enough to support forest dependant species and is well connected or contiguous with other areas of native vegetation. Habitat features such as rocky outcrops, steep jumps and areas supporting caves provide significant habitat features for a great many fauna species persisting within arid areas. For aquatic habitats these are natural water bodies (or water bodies designed along natural ecological functioning principles) with a high degree of in-stream and riparian features and good connectivity.

4.3 Survey Limitations

Ecological surveys often fail to record all species of flora and fauna present in a Site for a variety of reasons, including seasonal absence, migratory patterns, cryptic behaviours,

temporal survey periods, population fluctuation or reduced flowering during certain seasons. Furthermore, the ecology and nature of some significant and/or cryptic species means that such species are potentially not recorded during short survey periods. Botanical and fauna habitat assessments undertaken for this project have overcome some of these limitations by identifying those species that were not recorded but are still considered to have a potential of being present (based on: known distribution; habitat availability within the Site; and habitat associations of species).

While the Proposed Development takes advantage of unconstrained components of the Site (e.g. flooding or planning overlays), the objective of the layout is to ensure that the entirety of any mapped Endangered RE is retained, buffered and expanded upon, with connectivity also maintained along the lower riparian corridor. These areas of Endangered RE support the Site's highest ecological values while also directly linking into the areas that will be retained within the development to the south and the ICC parkland to the north. Furthermore, these areas will be separated from development areas through inclusion of esplanade roads and local parkland buffering development areas. This approach to the development layout has identified areas where more appropriate development uses should be located, and where development impacts are proposed, these are in areas of lower significance (e.g. disturbed habitats, paddocks or regrowth vegetation).

4.4 Survey Results

4.4.1 Likelihood of Presence

Desktop information derived from the EPBC PMST (**Attachment 4**) and Wildlife Online (**Attachment 5**) utilised a 10, 5 and 2 km buffer. These search results formed the basis for further in-field assessment, with habitat present at the Site assessed for its suitability to accommodate locally known conservation significant fauna. In-field assessments considered a variety of factors such as vegetation complexities and structure, ground cover and debris, water bodies, hollows, weed infestations and important microhabitats for specific features (e.g. foraging resources such as winter flowering trees). A description of the Site's habitat values is provided in **Section 4.4.2**.

Utilising known records within a 10 km radius (**Attachment 5**) and perceived habitat suitability within the Site, the presence of conservation significant fauna was evaluated as 'Known',

‘Likely’, ‘Possible’, ‘Unlikely’, ‘Will not Occur’ or ‘Transient’ based on the species’ perceived probability of inhabiting/frequenting the Site (**Table 4**). The outcome of this habitat suitability assessment is provided in **Section 4.4.3**.

Table 4: Likelihood Assessment Criteria

Assessment	Habitat Criteria	Local Record Criteria	Perceived Probability
Known	The species has been confirmed as present within the site, and those records are unlikely to represent transient or vagrant individuals.		100%
Likely	Habitat is considered moderately to good quality and similar to other locations where the species is found	There is a number (~5 or greater) of local (≤ 10 km from the site), contemporary (post 1990) records of the species, or There is strong evidence that a cryptic species (which may not be frequently recorded in databases) has a nearby resident population(s).	>50%
Possible	Habitat is marginal to moderate	The species is known by a few local contemporary records and is not a transient species.	20-50%
Unlikely	The habitat is marginal	There are few, if any, local contemporary records.	≤19%
Will not Occur	The habitat is unsuitable	There are few, if any, local contemporary records.	0%
Transient	The habitat is suitable, marginal or good quality	The species is highly mobile and vagrant. They may infrequently appear in the local area over a long timeframe (e.g. 100+years), but are never resident or frequent visitors (e.g. return migrants). These species are typically birds which, while having some probability of occurring, are unlikely rely on the site for their lifecycle or maintaining populations.	N/A

4.4.2 Habitat Values

Habitat values within the Site are generally aligned to the Vegetation Communities mapped in **Figure 4** and described within **Section 3.2**. Within the Site, a number of overarching habitat

types and habitat qualities are supported, ranging from low to moderate in ecological significance and condition. Generally, those areas located in the south of the Site, on lower slopes and immediately over existing waterways occur in a more advanced, higher quality state (e.g. the remnant and regrowth Endangered Regional Ecosystem). These areas supported a fully-layered forest type; however, weed incursion within the shrub and ground layer was consistent, particularly lantana. These lower areas supported mature trees, larger fallen debris / logs and hollow features. Riparian areas supported braided streams with pools and riffles, which at the time of survey were holding water (despite limited rain preceding the survey period). Where topography begins to elevate from these lower areas, ecological condition begins to diminish, particularly to the west of the waterway and within the north-eastern allotment; while the vegetation within the south-eastern allotment occurs as regrowth with large stands of weed infestation or historically earth-worked areas (dams, flat pads, etc.).

The following sections provide a brief synopsis of each broad habitat type within the Site and their relevance to vertebrate fauna.

Open exotic grasslands with scattered taller trees

This habitat type is the most abundant habitat on Site, comprising a significant portion of the Site (west of the riparian corridor and the north-east), reflecting Vegetation Community 4 within **Figure 4**. This habitat type has a reduced value for fauna communities due to its simplified vegetation composition, structure and lack of floristic diversity. This habitat type has fewer niches to accommodate vertebrate diversity and population densities. Vertebrate communities in grazing land are depauperate and, on balance, include common and widespread taxa. These areas often encourage populations of aggressive, sedentary fauna such as *Cracticus tibicen* (Australian magpie) and *Manorina melanocephala* (noisy miner) or pest species such as *Rhinella marina* (cane toad), particularly in proximity to water bodies such as dams.

Nevertheless, it is noted that this habitat type is not bereft of all ecological value. Where larger individual trees occur, particularly Queensland blue gum, these will attract mobile nectar-feeding species (e.g., friarbirds, lorikeets, etc.) and are a noted foraging resource of three threatened species; the koala, *Pteropus poliocephalus* (grey-headed flying-fox) and *Lathamus discolor* (swift parrot). Koalas, grey-headed flying-foxes and swift parrots are mobile and known to move through open landscapes seeking individual tree-based resources. While not

the only tree of value, Queensland blue gum is notable as it provides winter blossom/nectar resources for grey-headed flying-fox and swift parrot during winter bottlenecking periods or migratory periods. It is also a known primary koala feed species. This species is, however, generally restricted to lower slope and alluvial components of the Site, with considerably lower densities within the open exotic grasslands.

Regrowth vegetation

Two pockets of dense regrowth occur within the Site. These are confined to the south-eastern corner of the Site (between the riparian areas and Fischer Road) and a strip along the south-western boundary (reflecting Vegetation Community 2 within **Figure 4**). Where open paddock components of the Site transition abruptly into regrowth areas, habitat quality increases; albeit moderately. These habitats have a taller and denser shrub cover; however, they lack habitat features such as large woody debris and large canopy trees (emergent trees are rare). The denser shrub layering provides foraging and shelter substrates for a greater variety of birds. Vertebrate communities in these locations are more diverse compared to paddock areas; however, habitat qualities within these areas are limited for most conservation significant taxa. Emergent trees are uncommon to rare and generally limited to road verges and edges of remnant areas. Those sporadic and smaller eucalypts do not flower prolifically and provide a reduced habitat amenity for nectivorous species. Given the lack of flowering trees these habitats have limited resources to attract conservation significant fauna such as grey-headed flying foxes and other nectar feeding species. It is noted that koalas will forage within these areas; however, movement opportunities are generally limited by dense infestations of weeds such as lantana, most notably in the south-east of the Site.

Advanced regrowth vegetation over grassy paddocks

A small pocket of very advanced regrowth is present in the central south-west of the Site, where trees provide moderate canopy cover (this is represented by Vegetation Community 3 in **Figure 4**). This pocket of vegetation supports limited to no shrub layer due to historical clearing, ongoing management and deleterious impacts from motocross activities. These pockets and other small areas of remnant vegetation along the western boundary of the Site have higher tree density than open paddocks or regrowth and provide better quality resources for conservation significant fauna; however, the quality of resources is still markedly reduced from that of the adjoining remnants on lower and alluvial surfaces to the east.

Riparian corridor

The most complex and valuable habitat for fauna within the Site is associated with the riparian habitat supported through the central components of the Site (associated with Vegetation Community 1 in **Figure 4**). This habitat supports an intact canopy of large mature trees, dominated by Queensland blue gum. This habitat supports a range of hollows throughout and provides roosting opportunities for arboreal hollow-obligatory fauna. This community occurs as two distinct sub-components: i) remnant / regrowth with a fully-layered forest structure in the southern half of the Site; and, ii) non-remnant canopy over a dense lantana shrub layer in the northern half of the Site.

Despite there being two separate sub-components of this habitat type, the canopy is consistently dominated by intact Queensland blue gum with suppressed pink bloodwood and smooth-barked apple with a distinct sub-canopy of Queensland blue gum and swamp box. The Queensland blue gums throughout these habitats provide a more stable and abundant supply of flowering resources within the Site. This area is of greatest utility to koalas and nectar feeding fauna.

It is noted that the lower shrub layer within this habitat type is in part heavily dominated by lantana thickets which provide foraging and refuge habitat for small passerine species and terrestrial fauna; however, exclude the regeneration of many native shrub and ground cover resources – thereby significantly reducing biodiversity in many areas.

Surveys along the main and secondary creek lines noted that riparian habitats conformed to the two sub-components of the habitat type; with the north being heavily infested by lantana and subject to a number of on-line dams, while the southern half occurred in a more relict state. Within the southern components of this habitat type, much of the lower alluvial terrace was dominated by lantana; however, wehre absent, areas of *Lomandra* and native sedges were dominant and leaf-litter was accumulating adjoining pooling water. The creek bed within these sections had long deep pools of static or slow-flowing water and steep or undercut banks (some of which are subject to varying levels or stages of bank / gully erosion). Water observed in these habitats was generally turbid, holding suspended clays (potentially as a result of run-off from erosion in upstream catchments, exposed areas of soil through the Boyland Way road

easement and natural processes). Numerous common amphibian species were detected in these areas during surveys.

4.4.3 Habitat for Conservation Significant Fauna Potentially Occurring within the Site

Habitat assessments across the Site identified three conservation significant fauna species as being present or likely to be present, namely:

- koala;
- grey-headed flying-fox; and
- swift parrot.

These assessments noted that habitats along the lower alluvial and riparian habitats demonstrated the highest quality within the Site. Of these, the southern components of this alluvial system supported the highest quality and most connective habitat within the Site. The southern components of this riparian corridor provide a well-structured sclerophyll forest community that support a range of microhabitat features including hollow-bearing trees which are rare within the remaining areas of the Site; while the northern alluvial areas provide similar levels of abundant Queensland blue gum, and therefore important winter bottle-necking resources and forage resources for koalas. These habitats are associated with all three species of conservation significant fauna noted above.

The remaining habitat types within the Site (young regrowth, degraded waterways and open paddocks with scattered mature trees) are of lower quality; lacking vegetative structure and/or microhabitats which are often critical elements for the presence and persistence of conservation significant fauna, forest dependant fauna and cryptic fauna. Despite this, these areas still provide foraging and movement habitat for koala.

5 Potential Impacts and Proposed Avoidance and Mitigation Measures

5.1 Potential Impacts

Unmitigated, the Proposed Development has the potential to significantly impact the ecological values and function of the Site through direct removal of native vegetation (including Significant Vegetation) and fauna habitat for a variety of conservation-significant and common fauna species. Indirect impacts to fauna also may include interaction with people and urban activities, domestic pets (i.e. dogs) and traffic generated by the Proposed Development. In order to avoid, minimise and mitigate such impacts, the Applicant has adopted a number of measures throughout the evolution of the Proposed Development's design. These are described in **Sections 5.2** and **5.3**.

5.2 Approach to Design

The 'avoid – minimise – mitigate' principle is a common tenet of conservation planning and is a standard against which development performance is assessed by all levels of government. The following discussion outlines the ways this principle has been adopted for the Proposed Development in both the: i) Initial Planning Processes; and ii) Refined Design Processes.

5.2.1 Planning and Landscape Context

As outlined within **Section 1.2**, the Proposed Development forms a large rural area, located at the extreme northern extent of the Ripley Valley PDA. The Site is strategically positioned in a contemporary urban growth corridor with numerous recent land developments being established immediately to the west, south and north as well as being bound to the north by the Cunningham Highway. Future urban development of the area is expected to continue, particularly around major transport hubs such as the Cunningham and Centenary Highway as well as the future extension of the Springfield Rail Line through the Ripley Valley. The Queensland Government has identified the Site as having potential for urban development by virtue of its inclusion into the Urban Footprint, Ripley Valley PDA and being zoned under the Development Scheme as an Urban Living Zone.

As such, the Site's development represents logical and sequential expansion of existing urban development in this locality; however, development must still have consideration of constraints

and opportunities to ensure designs are appropriate. The Applicant has undertaken significant levels of due diligence over the Site.

5.2.2 Single Landowner Benefits

The coordinated establishment of a master planned community has significant advantage over piecemeal development of the Site over individual properties or other areas in the Ripley Valley PDA or surrounding areas, insofar that: Development of individual properties by different proponents would not be staged development, and (individually) such developments are unlikely to consider ecological / environmental impacts across the broader Site to achieve a beneficial and coordinated environment outcome. While the cumulative impact of such development may be at least the same (and most likely greater) than the Proposed Development, there would be limited requirement for assessment and approval of the individual projects under the EPBC Act. Differing commercial competition of various landowners can create greater constraint or opportunity over individual sites (e.g. location of ecological corridors would be disaggregated and potentially ineffective). Further, in our experience it is difficult to achieve well-coordinated conservation outcomes across a development front being delivered by multiple parties.

By comparison, the Proposed Development will be subject to holistic (landscape-scale) impact assessment, and provision of measures mitigating this impact. The Proponent can also achieve

- coordinated conservation outcomes (e.g. advanced compensatory planting staged clearing)[4];
- delivery of critical infrastructure such as underpasses to retain and enhance corridor functionality;
- delivery of development infrastructure such as water and sewer; and
- will be the sole entity accountable for delivering on these mitigation commitments.

[4] This approach will reduce the more significant dispersal of koalas that occurs when occupied habitat is cleared in a short time and will allow for the reorganisation of populations with the opportunity for utilisation of advanced compensatory planting areas.

This is a significant consideration in the initial planning process and provides confidence going forward that development over the Site can be undertaken by the single Applicant in a coordinated fashion to achieve the desired outcomes of regulators and the community alike.

5.2.3 Defining the Open Space and Conservation Precinct

The guiding principles for the location of the Residential and Open Space and Conservation Precincts in the Proposed Development are to:

- avoid impacts on areas with higher ecological values by locating the Residential Precinct outside of these areas;
- minimise/mitigate impacts by limiting the type and scale of uses that can occur in areas adjoining components of the Site with higher ecological importance such as stormwater infrastructure, parklands and landscaping within the Open Space and Conservation Precinct; and
- protect, enhance and expand areas with higher ecological value (i.e. the central alluvial corridor and surrounding green space (**Figure 3**)).

The establishment of these key elements within the Open Space and Conservation Precinct will see the Proposed Development avoid or minimise impacts to mapped fauna habitat; and provide opportunity for these areas to be enhanced and expanded to a minimum 120 m wide internal corridor through the Site. This Open Space and Conservation Precinct acts as an integrated parkland containing the core remnant and revegetated areas which will be buffered from the Residential Precinct by esplanade road and / or local parkland.

5.2.4 Iterative Design Process Based on In-field Ecological Information

The iterative design process underpinning the development of the Proposed Development demonstrates how it has aimed to achieve the provisions of relevant Development Scheme desired outcomes.

It has been an important process of consideration and review of constraints and opportunities available over the Site to accurately capture and protect the Site's environmental values where practicable. The design process was iterative in nature and informed by ongoing accumulation

of desktop and Site-based data. This iterative process of informing design has occurred through:

i. Desktop assessments;

ii. Site based surveys including a tree survey over the entire Site and a review of Tree Protection Zones (**TPZ**s) regarding design elements;

iii. Review and workshop of Site-based survey results;

iv. Review and testing of design; and

v. Review of Development Scheme and EDQ Policies.

The following sections provide a synopsis and outline of each of the key steps in this process and how they demonstrate the Proposed Development's 'avoid – minimise – mitigate' framework.

5.3 Mitigation in Design

More refined planning and design of the Proposed Development was undertaken once the key elements had been finalised through the initial iterative design process; establishing precinct areas and their associated uses.

5.3.1 Establishment of Park / Recreation Corridor

Ecological Site investigations undertaken across the Site identified areas of higher ecological value and connective with offsite habitats[5]. These areas are generally associated with mature or advanced regrowth vegetation supported within the Site that occur within the lower alluvial corridor. A review of this and adjoining vegetation occurring offsite illustrated clear areas of higher value which retain greater connectivity within the Site and surrounding locality in a post-development scenario. These areas were spatially referenced into the Proposed Development as a guide to aid in the iterative design process. Through this, the Open Space and Conservation Precinct corridor was defined. Further, the design of the Open Space and

[5] Offsite habitats have been considered in a post-approval development scenario when considering adjoining allotments to the south and west.

Conservation Precinct has also considered limiting vehicular crossing points to one singular crossing. The extension of Boyland Way will not intersect with this Precinct; affording fauna movement without risk of vehicular interaction at this point.

The intent of the Open Space and Conservation Precinct is to retain these important values, enhance them through ecological restoration works to achieve a minimum 120 m wide corridor through the Site connecting into offset habitat to the north and south, while also providing an opportunity to co-locate stormwater management devices outside of remnant areas.

The vegetation supported within the mapped Endangered RE is almost entirely unaffected by the Proposed Development layout and civil design. This has been achieved by avoiding the TPZs of trees supported within the mapped Endangered RE and through their inclusion within the Open Space and Conservation Precinct. **Figure 3** illustrates that this been considered in layout and civil design. All roads, lots and services are positioned outside of this area.

In order for waterway remediation works to avoid further significant erosion issues within the Site (including the erosion of highly dispersive clay soils), it is necessary to treat a number of head cuts with rock chutes and bank stabilisation or by other means (e.g. fill and planting of secondary channels) within riparian areas. Remediation works will only involve two such head cuts within the Endangered RE (see **Figure 3** and **Figure 5**). Works to remediate this erosion are necessary to avoid immediate and ongoing exacerbation of riparian erosion which will lead to deleterious impacts on this mapped RE and sedimentation loads to downstream environs. Remediation works will be governed by a specific management plan and will include the use of highly sensitive access, light plant, arboricultural oversight and will as a minimum attempt to first avoid impacts to all vegetation within the Endangered RE. Where avoidance of impacts to individual trees is not possible, sensitive removal will be required to avoid disturbance to other vegetation; while the area will be subject to mitigation measures such as soil improvements and revegetation. Further, all chutes will consider the retention of fish passage in their design (e.g. a 1 in 20 grade). Ecological restoration activities within this vegetation community (see **Section 5.3.3**) will lead to a net benefit for Significant Vegetation within the Site.

5.3.2 Parks and Esplanade Roads to the Park / Recreation Area

The Proposed Development is designed such that the entire area being retained as Open Space and Conservation will be buffered from hard development areas (i.e. houses) by Local Parkland, revegetated bioretention basins or an esplanade road. This will ensure a transition from development areas to vegetated areas and will limit any requirement for clearing to accommodate bushfire hazards.

5.3.3 Retaining, Consolidating and Linking Habitat

Baseline ecological assessment identified that the lower riparian areas provide the most significant koala habitat within the Site. Koala SAT survey results noted koala usage occurred across the entire Site and varying levels; however, there was a distinct increase in usage within areas with mature vegetation along well-vegetated riparian and alluvial corridors. Retention, expansion, improvement and linking of this habitat to other areas of habitat to the south and north of the Site is the Proposed Development's primary mitigation measure.

Consolidation and linking of the habitat will be achieved by way of: (i) protection within a defined environmental corridor; (ii) assisted natural regeneration in areas of existing regrowth or remnant; and (iii) reconstruction in areas of open grassland or regrowth / weed infestation or where environmental management works are required to restore erosion issues. These methods of ecological reconstruction are shown in **Inset 1**.

ASSISTED NATURAL REGENERATION	
Applies:	• To natural areas where the native plant community is largely healthy and functioning. • When native plant seed is still stored in the soil or will be able to reach the site from nearby natural areas, by birds or other animals, wind or water. • Where the natural regeneration processes (seedling germination, root suckering, etc.) are being inhibited by external factors, such as weed invasion, soil compaction, cattle grazing, mechanical slashing, etc. • When limited human intervention, such as weed control, minor amelioration of soil conditions, erection of fencing, cessation of slashing, etc. will be enough to trigger the recovery processes through natural regeneration. • When the main management issue is weed infestation and/or current land use practices.
Role of planting:	• Planting in such areas can work against the aims of restoration by interfering with natural regeneration except where species cannot return to site without direct intervention.
Goal vegetation community:	• The re-establishing plant community will be substantially similar in structure, composition and diversity to the original vegetation.
RECONSTRUCTION	
Applies:	• Where the site is highly degraded or altered. • When the degree of disturbance has been so great and long-standing that the pre-existing native plant community cannot recover by natural means. • To sites such as areas of fill, sites affected by stormwater flow, areas that have been drastically cleared, even though there may be a few remaining native trees or shrubs. • When a greater degree of human intervention is required, such as weed control, cessation of grazing and/or slashing, amelioration of soil conditions such as importation of soils, drainage works or re-shaping of the landscape.
Role of planting:	• Importation of native species to the area is required, either through planting or direct seeding (in some situations). Natural regeneration and recruitment is insufficient to initially re-establish the original vegetation. Depending on the prevailing circumstances, the planting of a broad diversity of species from the target ecosystem may be unnecessary and the use of pioneers may be sufficient to re-establish ecological processes.
Goal vegetation community:	• The re-establishing planted community should be similar to the original vegetation in structure, composition and diversity.

Inset 1 – Extract from South East Queensland Ecological Restoration Guideline

It is important to note that the Applicant will commence the initial restoration and rehabilitation works concurrent to development works commencing. This will ensure that the entire corridor achieves an advanced state as practicable in the development process. This approach will reduce the lag between habitat loss and the time at which restoration works begin to benefit the Site's flora and fauna. Much of the existing, mature vegetation within the Open Space and Conservation Precinct can be fenced off from development areas and subjected to weeding and improvement works immediately. Those areas which will be subject to civil works (e.g. the

road crossing and bioretention basins) will commence restoration works upon completion of earthworks and will be managed in concert with retained areas of vegetation.

5.3.4 Green and Fauna Movement Infrastructure

The Proposed Development will retain key environmental corridors within the Open Space and Conservation Precinct. Although this corridor is significant in its width, its effectiveness is limited where movement is impeded by barriers such as water-sensitive urban design (**WSUD**) or road infrastructure. To assist in corridor functionality in the initial periods of the ecological restoration works and where barriers are proposed, the detailed design will be refined to consider the appropriateness of mitigation measures such as:

- nest boxes throughout vegetated areas and parklands (minimum to compensate for any physical losses of such features);
- glider poles with launch pads and nest boxes;
- rope crossings;
- functional fauna underpass or bridge sections of main road crossing where levels permit;
- fauna furniture within and adjoining underpasses or bridge sections to funnel fauna into crossing points and provide safe passage (e.g. raised walks or gantries between trees and under roads);
- fauna furniture within corridors where limited existing mature trees with interlocking canopy occurs (assisting scansorial/arboreal fauna to move between trees without the requirement to come to ground – avoiding dogs/foxes);
- fauna exclusion and friendly fencing;
- koala entry furniture (to regain access to corridors); and
- restored riparian, waterway and wetland habitats.

In the context of the wider landscape, the retained Open Space and Conservation Precinct will act as a refuge and wildlife corridor for native fauna species.

The use of locally endemic flora species in landscaping treatments, particularly those that flower prolifically in the winter bottlenecking season, will offer additional foraging opportunities for native fauna residing within the immediate locality.

Fauna management measures such as the preparation of: Bushland Management Plan; Fauna Management Plan; Pre-clearing Assessments; and Fauna Spotter Catchers, will reduce the potential for impacts to fauna during the clearing process.

6 Residual Impacts

6.1 Vegetation

6.1.1 General

The proposed development will result in 541 residential allotments, a childcare centre, new roads, local park, stormwater detention basin and green space/conservation areas.

Figure 3 illustrates the Proposed Development's Tree Retention Plan (**TRP**). This TRP has been prepared based on:

i) the Proposed Development layout;

ii) mature native vegetation supported within the Site and their individual TPZ based on the Australian Standard 4970-2009; and

iii) Necessary separation to achieve bushfire management setbacks (refer to Bushfire Management Plan under separate cover).

No flora species of conservation significance will be removed as part of the Proposed Development. Specific arboricultural treatments and management may be required for the retained trees to ensure they are not significantly impacted by the Proposed Development. This should be assessed in greater detail by a Level 5 Arborist at an operational works stage once design, engineering and earthworks are final.

6.1.2 Significant Vegetation

Within the central southern components of the Site, a thin strip of remnant Endangered RE 12.3.3 meets the Development Scheme's definition of Significant Vegetation (see **Sections 2.4.2** and **3.4**). This is illustrated within '*Map 2 – Values'* of the Development Scheme (**Attachment 3**) and is more clearly illustrated in **Figure 5**. Ensuring the avoidance of this mapped Endangered RE has been an important component of the iterative design process for the Proposed Development. To ensure Significant Vegetation is largely unaffected by the Proposed Development layout and civil design, the TPZ of each native tree within this mapping overlay has been avoided by the footprint of the Proposed Development, with the exception of two head cuts to address erosion issues within the waterway (see **Figure 3**). This includes

all TPZs that project outwards from the mapped Endangered RE as shown in **Figure 5**, where it is demonstrated that all mature trees within the mapped Endangered RE 12.3.3 have been considered within the design process by way of defining an exclusion area on the outer periphery of the TPZs within the mapped Endangered RE. **Figure 3** and **Figure 5** illustrates that this been considered in layout and civil design with works (roads, lots and services) positioned outside this area. Further, this mapped Endangered RE will be supported by the retention of adjoining areas to the east and north which are analogous with this vegetation community.

In order for waterway remediation works to avoid further significant erosion issues within the Site (including the erosion of highly dispersive clay soils), it is necessary to treat a number of head cuts with rock chutes and bank stabilisation or by other means (e.g. fill and planting of secondary channels) within riparian areas. Remediation works will only involve two such head cuts within the Endangered RE (see **Figure 3** and **Figure 5**). Works to remediate this erosion are necessary to avoid immediate and ongoing exacerbation of riparian erosion which will lead to deleterious impacts on this mapped RE and sedimentation loads to downstream environs. Remediation works will be governed by a specific management plan and will include the use of highly sensitive access, light plant, arboricultural oversight and will as a minimum attempt to first avoid impacts to all vegetation within the Endangered RE. Where avoidance of impacts to individual trees is not possible, sensitive removal will be required to avoid disturbance to other vegetation; while the area will be subject to mitigation measures such as soil improvements and revegetation. Further, all chutes will consider the retention of fish passage in their design (e.g. a 1 in 20 grade). Ecological restoration activities within this vegetation community (see **Section 5.3.3**) will lead to a net benefit for Significant Vegetation within the Site.

Considering the measures outlined above, the Proposed Development will have no notable detrimental impacts on Significant Vegetation within the Site.

6.2 Habitat for Conservation Significant Fauna

6.2.1 Koala

The Site is within the Ripley Valley PDA, an area encompassing existing residential developments such as Ripley Valley and South Ripley. Due to the Site's planning designation,

it is expected that future vegetated corridors will generally reflect the strategic corridor mapping under the Development Scheme with the drainage line within the Site mapped as a Significant Riparian Corridor (**Attachment 1**). **Section 7.3** provides further discussion on the Proposed Development in relation to the Development Scheme.

As noted within **Section 4.1**, the Site occurs within an area under rapid urban transition with large low-density residential, commercial, educational and infrastructures being established throughout the immediate area. Contextually, the Site falls at the extreme northern edge of this area, enveloped on three of its four sides by existing, significant urban infrastructures or future urban development as shown in **Figure 6**. Both the Cunningham and Centenary Highways and Ripley Road (though to a lesser extent)[6], present significant landscape ecological impediments to many terrestrial and forest dependant fauna species. Numerous underpasses have been established across the large State-controlled highways; however, no movement infrastructure exists on Ripley Road. Underpasses are restricted to waterway crossings; severing larger tracts of contiguous vegetation and offering sporadic movement opportunities, particularly for koala.

Koalas are well known to the locality and their presence has been confirmed within the Site and adjoining properties to the south[7] through indirect evidence (indicative scat and scratch). Higher quality koala habitat within the surrounding locality and Site are associated with lower slope and riparian corridors where the primary feed tree Queensland blue gum is dominant and forms intact corridors. It is also noted that drier upper slope vegetation does afford movement and foraging opportunities and is readily used by koala; however, is of lower importance to koalas for key resources such as high-quality forage habitat, particularly during dry periods.

As defined in **Section 4.4.3** the higher quality habitats take the form of the lower slope remnants and regrowth vegetation associated within the waterway traversing the central components of the Site. These areas represent the best quality koala habitat within the Site and connect into other adjoining, higher quality habitats to the north and south of the Site. Koala SAT surveys found activity levels were low to moderate across the Site (an average of

[6] Relevant to the 'Connectivity' scoring of Habitat Critical to the Survival of Koala.
[7] EPBC Referral 2017/8095

approximately 16%). The areas of highest usage were within the lower alluvial areas which will be retained within a minimum 120 m wide corridor, for use as a green space / conservation area. **Figure 3** illustrates the locations of the identified habitat trees within the Site.

With reference to the *EPBC Act referral guidelines for the vulnerable koala 2014* the Proposed Development will result in a Significant Residual Impact to Habitat Critical to the Survival of Koala. This has been acknowledged by the Applicant and as such they have self-identified the need for a Controlled Action Referral (**CAR**) to be submitted to the Department of the Environment and Energy (**DoEE**). The referral process under the EPBC Act will be progressed in parallel to the Development Application process under the Development Scheme. In summary, the CAR has assigned the Site (as a whole) a habitat score of 5[8].

In total, the Proposed Development will result in the removal of approximately 34 ha of koala habitat largely comprising cleared paddocks with scattered trees or regrowth vegetation. Approximately 14 ha of the Site will be retained as a designated recreation / open space corridor (minimum 120 m wide) comprising remnant and regrowth vegetation and rehabilitated cleared areas. The designated corridor aligns with the highest quality habitats and remnant vegetation within the Site. This area will be subject to advanced compensatory plantings and will be embellished with koala habitat creating a large corridor through the Site connecting into vegetation within Rourkes Park to the north and retained conservation areas of the approved development to the south.

The Residential Precinct is considered to impact approximately 34 ha of Koala Rehabilitation Habitat, which in the context of the *EPBC Act referral guidelines for the vulnerable koala 2014* is likely to give rise to a Significant Residual Impact. Koala habitat impacts, mitigation and management measures will continue to be refined over the course of the application and CAR process.

6.2.2 Grey-headed flying-fox

Resources for the grey-headed flying-fox are most critical during two key periods within their life cycle; winter when other resources are scarce, and during the breeding season between

[8] in the context of the criterion for habitat critical to the survival of koala within the *EPBC Act referral guidelines for the vulnerable koala 2014*; the scoring can be summarised as: Koala Occurrence **(2)**; Vegetation Composition **(2)**; Habitat Connectivity **(1)**; Key Existing Threats **(0)**; and Recovery Value **(0)**.

late gestation and early lactation (DoEE 2019a). Tree survey data, which plotted the location of trees >200 mm DBH across the Site, has been used to map important flowering resources during these two key periods (**Figure 7**).

This shows that vegetation associated with creek lines and waterways has a high density of winter and spring flowering resources. Most notable is the alluvial and the associated riparian corridor through the central component of the Site where there is a mix of eucalypts but the community is heavily dominated by Queensland blue gum. Some of the largest old-growth Queensland blue gums observed within or adjacent to the Site are associated with this alluvial system and will provide abundant blossom during winter. While there are winter and spring flowering trees in other areas, many are immature and lack the height or flowering vigour to attract large numbers of grey-headed flying-foxes.

No known roosts sites are present within the Site nor are any known within proximity, with the closets known roost sites being Queens Park, Ipswich (approximately 4.5 km north-west); Yamanto (4.5 km west); and Paice Street, Bundamba (approximately 5 km north-east).

The Proposed Development retains the vast majority of important habitat for this species. The residual of the Site supports only marginal foraging habitat which is abundant in the broader landscape. As such, the Proposed Development will have limited impacts on the grey-headed flying-fox, particularly given the species' ability to readily persist within urban and peri-urban environments with suitable foraging resources proximate to camp sites.

6.2.3 Swift parrot

The swift parrot breeds in Tasmania during the austral summer and the entire population migrates north to mainland Australia for the austral winter. The swift parrot uses habitats across all tenures, with the majority of habitats occurring outside formal conservation reserves. Whilst on the mainland the swift parrot disperses widely, foraging on flowers and lerps in *Eucalyptus* spp. mainly in Victoria and New South Wales, but small numbers are observed on a regular basis in Queensland. Swift parrot presence in Queensland is more likely during times when the species' preferred wintering habitat in Victoria is in drought (Saunders *et al.* 2016).

Research within mainland over-wintering habitats has identified key foraging habitat types. In south-east Queensland these habitats include the following key species: *Eucalyptus*

microcarpa (grey box), *Eucalyptus melliodora* (yellow box), *Eucalyptus robusta* (swamp mahogany) and Queensland blue gum (Saunders & Tzaros 2011). Within these habitats and their greater breeding and wintering ranges, the swift parrot has been found to preferentially forage in large, mature trees that provide more reliable foraging resources (i.e. more intense and frequent flowering) than smaller, younger trees (Brereton *et al*. 2004; Kennedy & Tzaros 2005; Saunders & Tzaros 2011). Although they are also known to use a wider range of habitat types, they are thought to do so opportunistically as these do not provide the quality and quantity of resources upon which the species can depend. Due to the presence of aggressive competitors, disturbed areas are thought to provide sub-optimal habitat for the swift parrot (Saunders & Tzaros 2011). Conversely, the presence of non-aggressive competitor species, as well as increasing frequency of lerp and nectar-producing flowers, are all positively correlated with the occurrence of swift parrots at foraging sites (Saunders & Heinsohn 2008).

The swift parrot only nests in Tasmania but relies on mainland regions for over-wintering. Roost-tree requirements in mainland Australia are likely similar to those of nest-tree requirements in Tasmania. Nest-tree suitability has been shown to increase with increasing height, diameter at breast height, degree of senescence, and number of hollows (Webb *et al*. 2012). Ecosystems with significant numbers of trees matching these requirements will likely provide important potential habitat for swift parrots in south-east Queensland.

Large winter flowering trees which might attract swift parrot (Queensland blue gum) are largely restricted to the lower alluvial and riparian environments within the Site (**Figure 7**). These will be preserved within the Open Space and Conservation Precinct (**Figure 3**). While other Queensland blue gums are present across the Site, most are isolated and occur within higher and drier environs.

The Site's most important habitat for the swift parrot is restricted to the alluvial and riparian corridor through the centre of the Site. Other scattered Queensland blue gums throughout the Site are less likely to attract the swift parrot, due to the potential lack of extensive winter flower resources and their isolated nature. The habitat within the riparian and alluvial corridor is considered to be locally important for the swift parrot, whereas the habitat within the balance of the Site is considered to be marginal and may attract only transient individuals of the species.

The Proposed Development retains the vast majority of important habitat for this species. The residual of the Site supports only marginal foraging habitat which is abundant in the broader landscape. As such, the Proposed Development will have limited impact on the swift parrot, particularly given it is a highly seasonal and transient visitor to the locality and the higher quality vegetation within the Site will be retained and improved. It is noted that this species readily forages and through urban environments during its over-wintering migration.

7 Statutory Compliance

7.1 EPBC Act

An assessment of the likelihood of occurrence for TECs, flora and fauna species identified by the desktop assessment was undertaken to establish those species of conservation significance which may occur within the locality or Site. Those species identified as Likely or Known to occur within the Site were assessed in more detail within the report (**Section 6.2**).

This assessment found that the Proposed Development is likely to have a significant residual impact on the Vulnerable koala. As such, the Applicant has self-identified that the Proposed Development will require a CAR to be submitted to the DoEE for assessment against the EPBC Act. The referral process will occur in parallel to this Development Application under the Development Scheme. No other MNES will be significantly impacted by the Proposed Development.

7.2 State Triggers

The Site is mapped to contain a matrix of Category B, Category C and Category X Regulated Vegetation (see **Attachment 6**). Both the Category C and B are also mapped as Essential Habitat. The Proposed Development will not require the clearing of Category B Regulated Vegetation (see **Figure 3**).

Under Schedule 21, Part 2 (2)(e) of the Planning Regulation, the clearing of native vegetation for PDA-related development on freehold land is defined as “exempt clearing work” and is therefore not assessable under State Code 16.

7.2.1 Guideline 14 – Environmental Values and Sustainable Resource Use

The overall design of the Proposed Development has considered the environmental values and strategies outlined with PDA Guideline No. 14 *Environmental Values and Sustainable Resource Use.* The Proposed Development’s specific strategies are described in **Table 5**.

Table 5: Environmental Values and Strategies

Values	Strategies
Ecological processes and natural systems	
1. Significant terrestrial biodiversity values	Prior to any field assessment surveys, considerable desktop investigations were undertaken to determine the potential biodiversity values located within or associated with the Site. Desktop investigations were conducted at local, state and federal level and appropriately informed the on-ground ecological assessments. The on-ground ecological field surveys undertaken for the Proposed Development subsequently ground-truthed and confirmed the various biodiversity values within the Site and have further informed the overall design to achieve a layout that is sensitive to the existing bushland areas. **Section 4** of this EAR outlines the methodologies utilised. **Section 5** of this report outlines various strategies to manage environmental values. <u>Avoiding and Minimising Impacts</u> The Proposed Development predominantly avoids impacts to the most significant habitat within the Site through the retention of the Endangered RE and its inclusion within the Open Space and Conservation Precinct. In order for waterway remediation works to avoid further significant erosion issues within the Site (including the erosion of highly dispersive clay soils), it is necessary to treat a number of head cuts with rock chutes and bank stabilisation or by other means (e.g. fill and planting of secondary channels) within riparian areas. Remediation works will only involve two such head cuts within the Endangered RE (see **Figure 3** and **Figure 5**). Works to remediate this erosion are necessary to avoid immediate and ongoing exacerbation of riparian erosion which will lead to deleterious impacts on this mapped RE and sedimentation loads to downstream environs. Remediation works will be governed by a specific management plan and will include the use of highly sensitive access, light plant, arboricultural oversight and will as a minimum attempt to first avoid impacts to all vegetation within the Endangered RE. Where avoidance of impacts to individual trees is not possible, sensitive removal will be required to avoid disturbance to other vegetation; while the area will be subject to mitigation measures such as soil improvements and revegetation. Further, all chutes will consider the retention of fish passage in their design (e.g. a 1 in 20 grade). Ecological restoration activities within this vegetation community (see **Section 5.3.3**) will lead to a net benefit for Significant Vegetation within the Site.
2. Ecological connectivity	During the course of the detailed ecological field assessment, significant habitat features and fauna movement corridors within or associated with the Site were identified. This identification of significant ecological features within the Site has provided guidance to the overall design of the Proposed Development. Overall, the habitat features identified within the Site were largely associated with the alluvial waterway corridor and the associated Endangered RE. The Proposed Development will retain and enhance this alluvial corridor and will implement measures and strategies to mitigate impacts and

Values	Strategies
	improve retained habitats. Refer to **Sections 5.2** and **5.3** for detailed mitigation of impacts through ecological restoration. Specific strategies for surrounding fauna movement measures in relation to infrastructure crossing the alluvial corridor is provided in **Section 5.3.4**.
Wetlands and Waterways	
1. Waterways	A significant ecological feature of the Proposed Development is the mapped waterway and the values that this riparian area retains for ecological processes, including connectivity, movement opportunities, habitat and resources for fauna and hydraulic ecosystem services. The retention of bushland along this alluvial corridor also provides a variety of habitats which will promote greater diversity and a more complex matrix of habitats. As discussed in **Section 5.3**, a number of specific strategies will be implemented as part of the development to avoid impacts to this alluvial corridor, and to further enhance this significant ecological feature.

7.2.2 Guideline 18 – Development Interfaces

Guideline 18 requires that projects consider ecological values and are informed by an ecological assessment. The material provided in this EAR (a) outlines how ecological values were considered in the design of the Proposed Development, and (b) constitutes the ecological assessment required by Guideline 18.

The Proposed Development is an extension of the urban development within the Ripley Valley locality and interfaces with existing land uses will be consistent with those already existing in surrounding areas.

The approach to managing land use interfaces is described in detail within the Landscape Concept Report (prepared under separate cover). A key element of managing the ecological interface relates to the retention and restoration of the Open Space and Conservation Precinct following the waterway through the Site. This will contribute to the retention and enhancement of local ecological systems, including significant remnant vegetation and corridors for the movement of local fauna within the Site and to habitat in neighbouring areas – this is a fundamental component of Guideline 18.

7.3 Ripley Valley Development Scheme

7.3.1 Significant Vegetation

As noted within **Section 6.1.2** Significant Vegetation within the Site is largely unaffected by the Proposed Development layout and civil design. This has been achieved by avoiding the TPZs of trees supported within the mapped Endangered RE, with the exception of two proposed rock chutes to avoid further erosion issues. **Figure 3** illustrates that this been considered in layout and civil design with roads, lots and positioned outside of this area. Further, this mapped Endangered RE will be expanded through the retention of land adjoining to the east and north which is analogous with this vegetation community.

In order for waterway remediation works to avoid further significant erosion issues within the Site (including the erosion of highly dispersive clay soils), it is necessary to treat a number of head cuts with rock chutes and bank stabilisation or by other means (e.g. fill and planting of secondary channels) within riparian areas. Remediation works will only involve two such head cuts within the Endangered RE (see **Figure 3** and **Figure 5**). Works to remediate this erosion are necessary to avoid immediate and ongoing exacerbation of riparian erosion which will lead to deleterious impacts on this mapped RE and sedimentation loads to downstream environs. Remediation works will be governed by a specific management plan and will include the use of highly sensitive access, light plant, arboricultural oversight and will as a minimum attempt to first avoid impacts to all vegetation within the Endangered RE. Where avoidance of impacts to individual trees is not possible, sensitive removal will be required to avoid disturbance to other vegetation; while the area will be subject to mitigation measures such as soil improvements and revegetation. Further, all chutes will consider the retention of fish passage in their design (e.g. a 1 in 20 grade). Ecological restoration activities within this vegetation community (see **Section 5.3.3**) will lead to a net benefit for Significant Vegetation within the Site.

The proposed development layout retains the wide alluvial systems through the central components of the Site which comprises the most significant landform and landscape character within the Site. The residual of the Site takes the form of gently undulating rises and lower plains. To the north and west occurs higher, residential development areas, while the approved development to the south will retain the lower alluvial corridor in a vegetated state, contributing to the continued preservation of these lower well-vegetated corridors.

7.3.2 PDA Wide Criteria – Natural and Cultural Values

The Proposed Development is situated within the northern extent of the Urban Living zone in the Ripley Valley PDA. The site is also traversed by a designated Significant Riparian Corridor as described in the Development Scheme. As such, an assessment of the Proposed Development against environmental values defined in Section 3.3.8 (Natural and Cultural Values) and Section 3.4.2 (Urban Living Zone Intentions) of the Development Scheme is provided below:

With regard to UDA Wide Criteria, Natural and Cultural Values (Section 3.3.8) – The Proposed Development will protect and enhance the identified Endangered RE (RE 12.3.3), and the riparian area contained within, through the designation of this land as Open Space and Conservation Precinct. This will include a minimum 10 m buffer from the top of the surveyed waterway's bank. This is considered to have the highest ecological value of the Site and will act as a nature refuge and wildlife corridor within the wider landscape. It is also understood that locally endemic native flora species will be utilised within landscaping and will make a positive contribution to the streetscape.

This protected riparian Park / Recreation area will also contribute to the Development Scheme community greenspace network of parks, environmental areas and open space along waterways. Best practice erosion and sediment control measures will be implemented through both the construction and residential phases of the proposed development to maintain the health and characteristics of the natural hydrological network.

8 Conclusion

This EAR has described the environmental values of the Site and has investigated the potential impacts on these values associated with the Proposed Development. This has also included an assessment of the statutory compliance of the Proposed Development against Commonwealth, State and Local instruments.

Importantly, the design of the Proposed Development has involved the identification and avoidance of the areas of highest ecological value within the Site; the mature/advanced regrowth vegetation supported within the Site that occurs within the lower alluvial corridor. The Open Space and Conservation Precinct incorporates this area (which is also mapped as Endangered RE and meets the definition of Significant Vegetation under the PDA Development Scheme). The intent of the Open Space and Conservation Precinct is to retain these important values, enhance them through ecological restoration works to achieve a minimum 120 m wide corridor through the Site connecting into offset habitat to the north and south, while also providing an opportunity to co-locate stormwater management devices outside of remnant areas.

The vegetation supported within the mapped Endangered RE is unaffected by the Proposed Development layout and civil design, with the exception of two proposed rock chutes to address existing significant erosion issues. This has been achieved by avoiding the TPZs of trees supported within the mapped Endangered RE and through their inclusion within the Open Space and Conservation Precinct.

The removal of NJKHTs within disturbed areas in the balance of the Site will require a CAR to be submitted to the DoEE for assessment against the EPBC Act. The referral process will occur in parallel to this Development Application under the Development Scheme. No other MNES under the EPBC Act will be significantly impacted by the Proposed Development.

Through considerate design and the mitigation measures proposed in this EAR, the Proposed Development complies with all relevant environmental planning considerations triggered by the Development Application under the Development Scheme.

Photo Plates

Photo Plates



Photo Plate 1 – View illustrating the general composition and structure of Vegetation Community 4.



Photo Plate 2 – View illustrating the general composition and structure of Vegetation Community 4.



Photo Plate 3 – View illustrating the general composition and structure of Vegetation Community 4.



Photo Plate 4 – View illustrating a dam located in the north-western extent of Vegetation Community 1.



Photo Plate 5 – View illustrating a dam located in the north-western extent of Vegetation Community 1.



Photo Plate 6 – View illustrating vegetation supported in the northern extent of Vegetation Community 1 (Melrose Drive - left)



Photo Plate 7 – View illustrating vegetation supported in the northern extent of Vegetation Community 1



Photo Plate 8 – View illustrating vegetation supported in the northern extent of Vegetation Community 1 (Melrose Drive - right)



Photo Plate 9 – View illustrating the watercourse within Vegetation Community 1



Photo Plate 10 – View illustrating the watercourse within Vegetation Community 1



Photo Plate 11 – View illustrating Vegetation Community 4 in the eastern extent of the Site (Fischer Road – background)



Photo Plate 12 – View illustrating vegetation supported in the northern extent of Vegetation Community 1



Photo Plate 13 – View illustrating Vegetation Community 4 centrally within the Site



Photo Plate 14 – View illustrating Vegetation Community 3



Photo Plate 15 – View illustrating the western extent of Vegetation Community 2



Photo Plate 16 – View illustrating the western extent of Vegetation Community 2



Photo Plate 17 – View illustrating the recent residential subdivision to the west



Photo Plate 18 – View illustrating the recent residential subdivision to the west



Photo Plate 19 – View illustrating the southern extent of the watercourse in Vegetation Community 1



Photo Plate 20 – View illustrating the vegetation present in the southern extent of Vegetation Community 1



Photo Plate 21 – View illustrating the southern extent of Vegetation Community 1



Photo Plate 22 – View illustrating the southern extent of Vegetation Community 2



Photo Plate 23 – View illustrating the south-eastern extent of Vegetation Community 2 (note presence of mature *Corymbia citriodora* subsp*. variegata*).



Photo Plate 24 – View illustrating the south-eastern extent of Vegetation Community 2

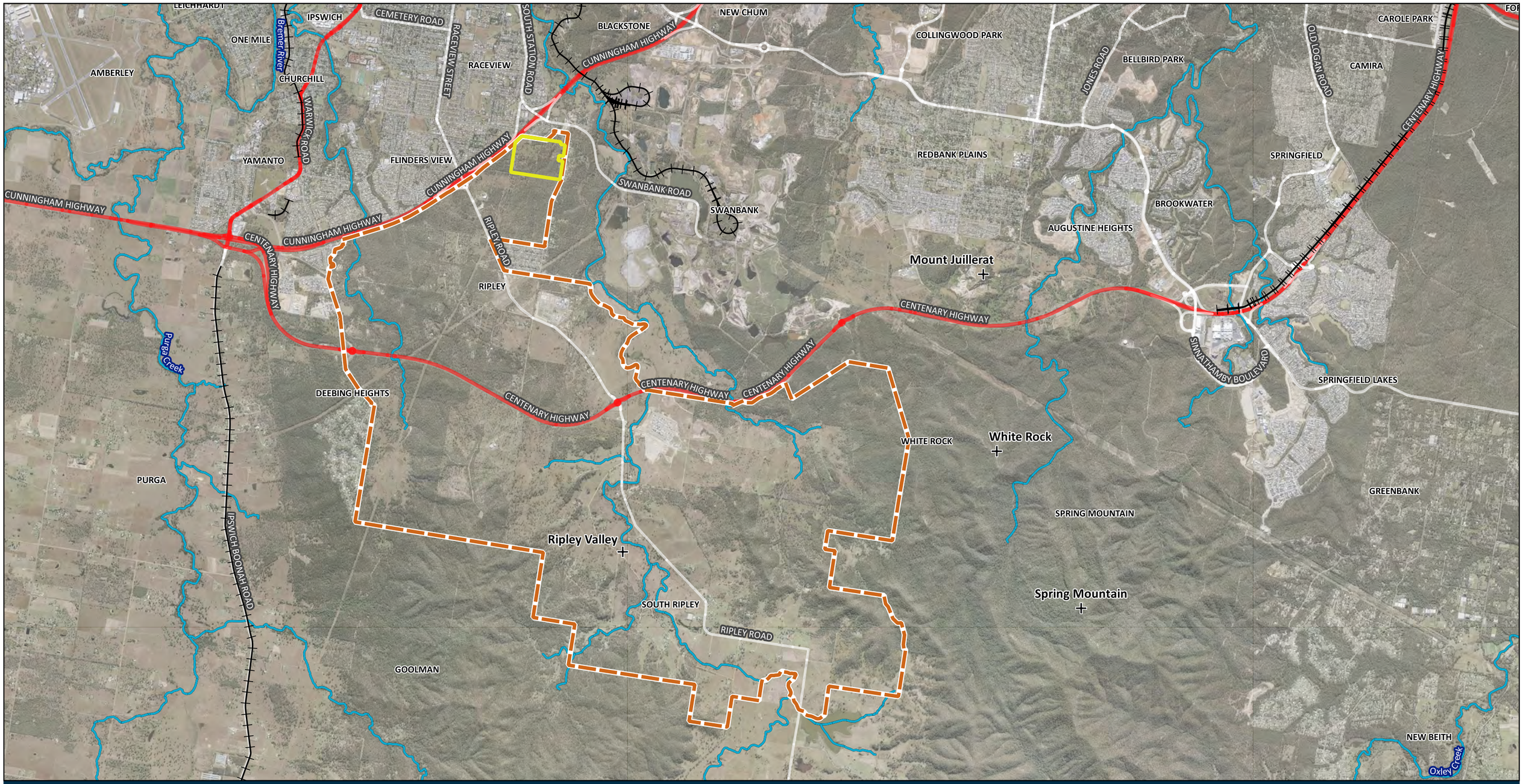


Photo Plate 25 – View illustrating the eastern extent of Vegetation Community 4



Photo Plate 26 – View illustrating the eastern extent of Vegetation Community 4 (Fischer Road - right)

Figures



Ripley Gateway North Residential Development

Figure 1 - Locality

28 South Project Ref: 2018-079

Data Sources: QLD Globe Imagery (SISP 2016); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018); Watercourses (DNRME 2019).

28ºS ENVIRONMENTAL

Legend

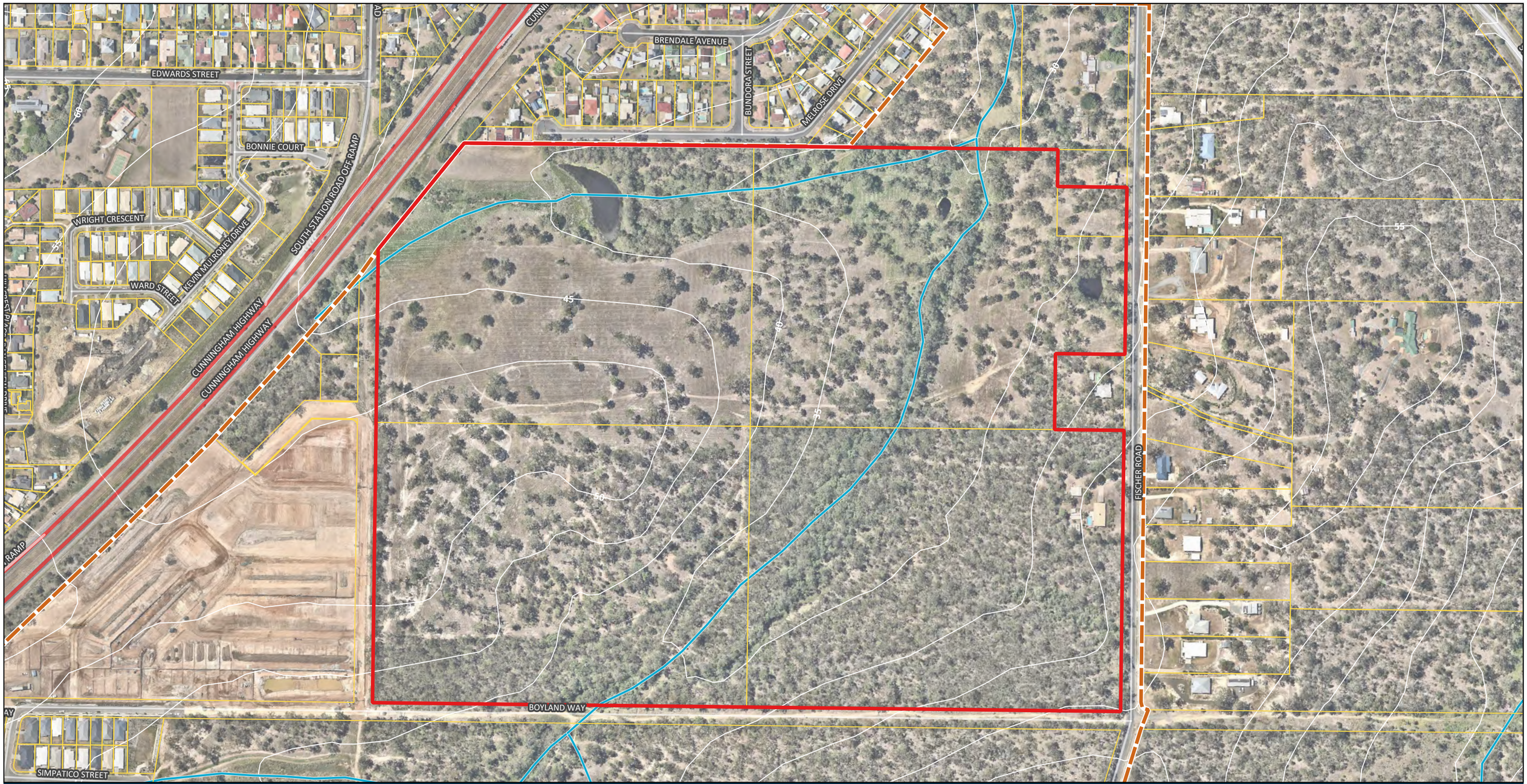
- Site Boundary
- Ripley Valley Priority Development Area
- Watercourse (DNRME)
- Railway Network
- Highway
- Road

Issue Date	Dwg No.	Author
31 October 2019	2018-079-001	RF
Approved	**Revision Note**	
MT		

(A3) GDA 94 MGA 56

1:60000

2.5 0 2.5 5 7.5 km



Ripley Gateway North Residential Development

Figure 2 - Site Context

28 South Project Ref: 2018-079

Data Sources: QLD Globe Imagery (SISP 2016); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018); Watercourses (DNRME 2019).

28ºS ENVIRONMENTAL

Legend

- Site Boundary
- Ripley Valley Priority Development Area Boundary
- Property Boundary
- Watercourse (DNRME)
- Highway
- Road
- Contours (5m)

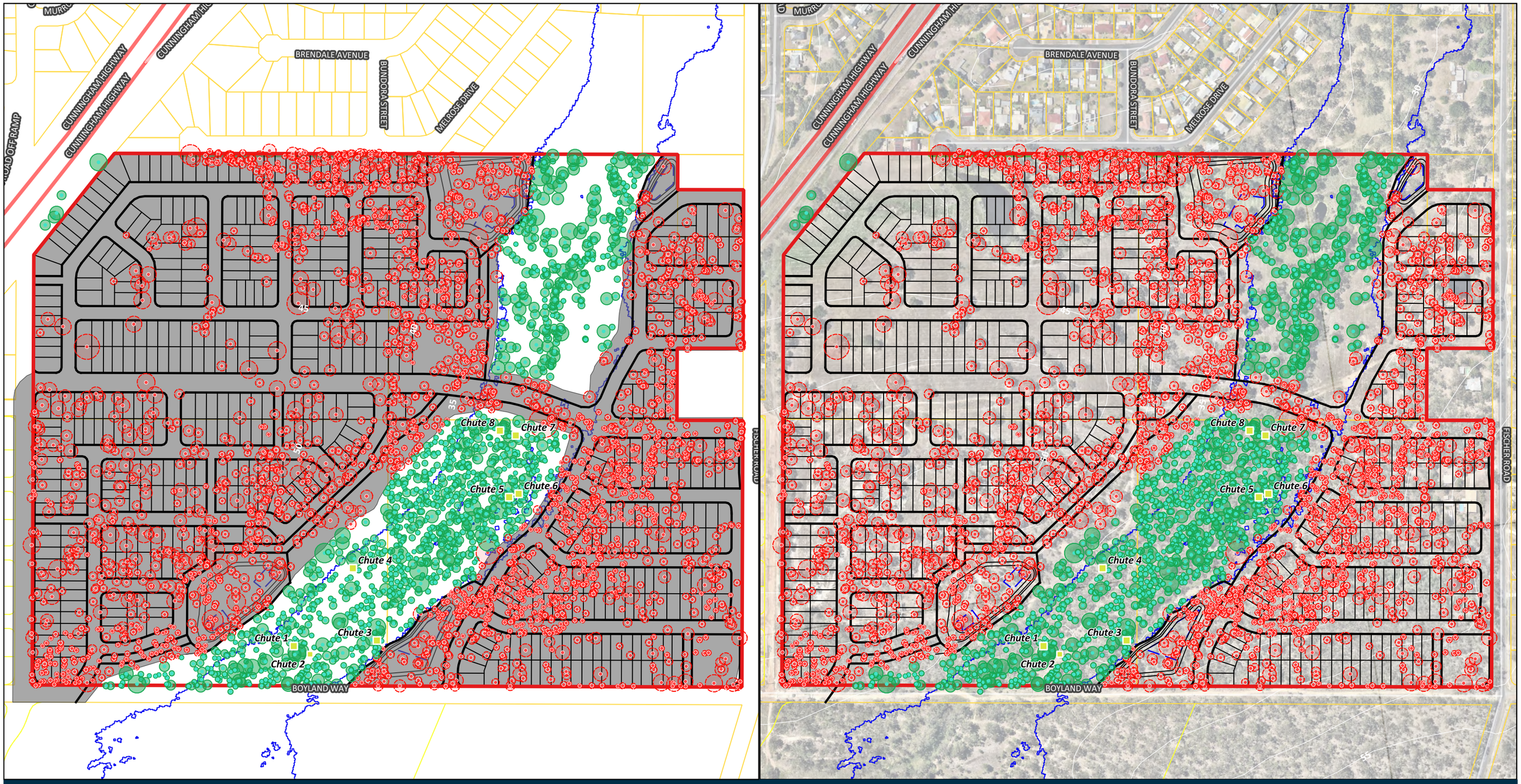
Issue Date	Dwg No.	Author
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MT		

(A3) GDA 94 MGA 56

1:4000

100 0 100 200 300 m

N 64



Ripley Gateway North Residential Development

Figure 3 - Tree Retention Plan

28 South Project Ref: 2018-079

Data Sources: QLD Globe Imagery (SISP 2016); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018); Watercourses (DNRME 2019).

28ºS ENVIRONMENTAL

Legend

Tree Protection Zones

- Trees to be removed (2425)
- Trees to be retained (1351)

Proposed Development

- Proposed Extent of Works
- Proposed Lots
- Flood Q100
- Site Boundary
- Property Boundaries
- Rock Chute for Erosion and Stormwater Management (Engeny SWMP)

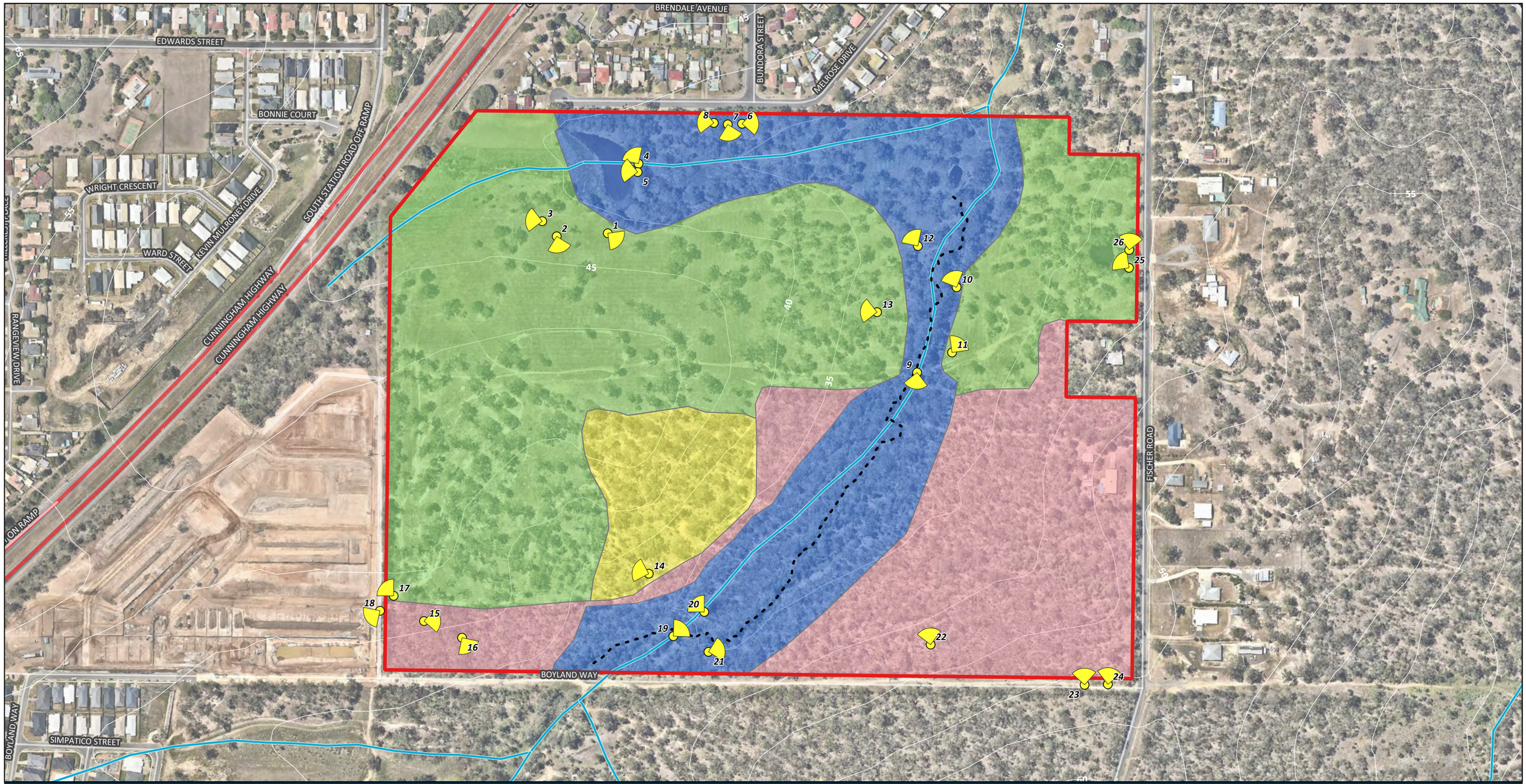
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MT		

(A3) GDA 94 MGA 56

1:4200

N 65

100 0 100 200 300 m



Ripley Gateway North Residential Development

Figure 4 - Vegetation Communities

28 South Project Ref: 2018-079

Data Sources: Nearmap Aerial Imagery (Nearmap July 2019); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018).

28°S ENVIRONMENTAL

Legend

- Site Boundary

Ground-truthed Vegetation Communities

- VC1 - Queensland Blue Gum on Alluvial Flats
- VC2 - Regrowth Open Forest on Slopes
- VC3 - Advanced Regrowth Open Forest over Exotic Grasses
- VC4 - Open Paddocks
- Property Boundaries
- Waterways (DNRME)
- Highway
- Roads
- Contours (5m)
- Photo Point Locations

Issue Date	Dwg No.	Author
29 October 2019	2019-079-010	RF
Approved	**Revision Note**	
MT		

(A3) GDA 94 MGA 56

1:4000

100 0 100 200 300 m

N

Services and infrastructure encroaching into the Linear Recreation Park. Proposed locations will be subject to sensitive alignment and tunnel boring to avoid impact to significant vegetation

BOYLAND WAY

Ripley Gateway North Residential Development

Figure 5 - Significant Vegetation

28 South Project Ref: 2018-079

Data Sources: Nearmap Aerial Imagery (Nearmap July 2019); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018).

28ºS ENVIRONMENTAL

Legend

- Site Boundary
- Tree Protection Zones of Significant Vegetation
- Endangered Remnant Vegetation (Category B)
- Property Boundaries
- Watercourse (DNRME)
- Rock Chute for Erosion and Stormwater Management (Engeny SWMP)

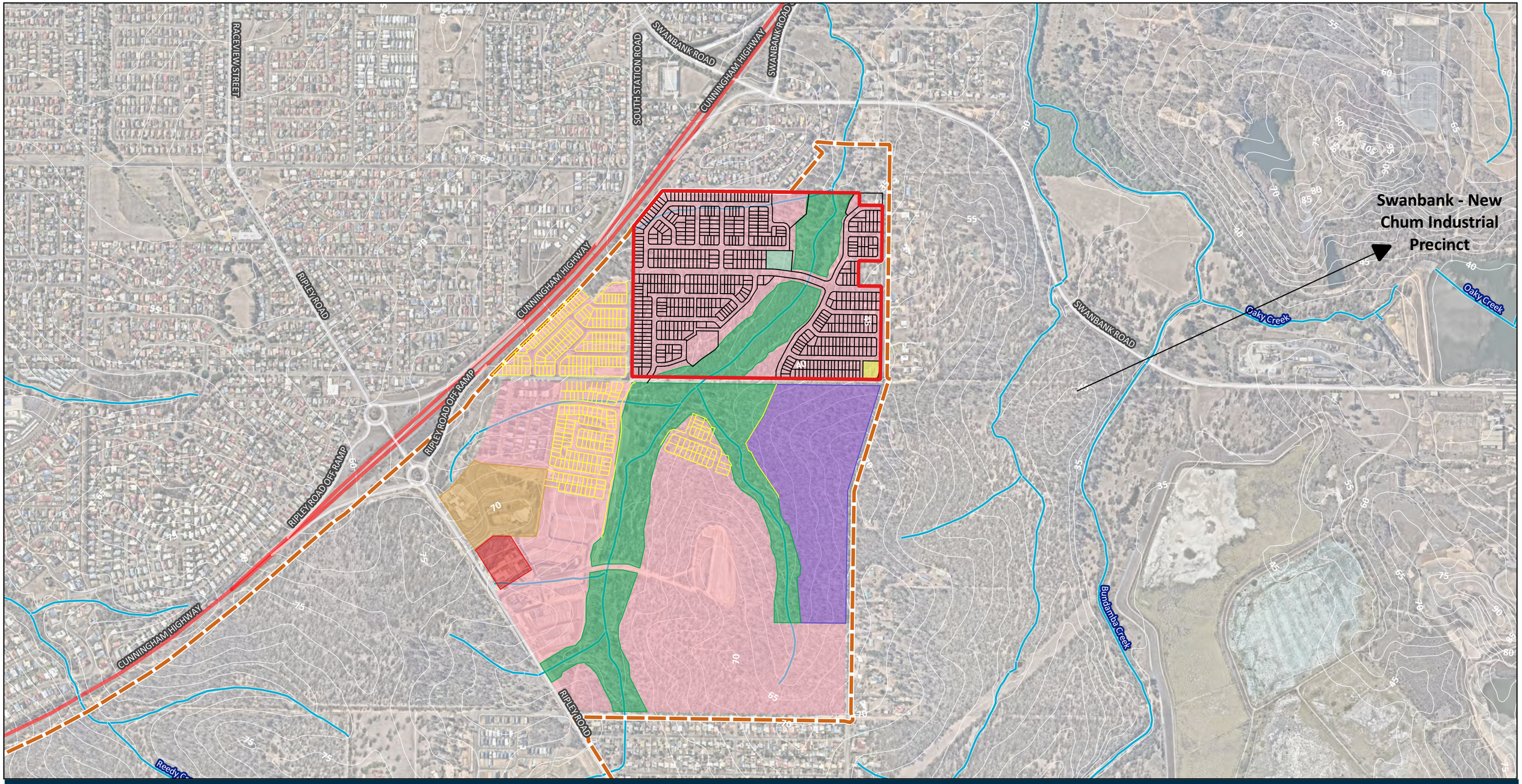
Issue Date	Dwg No.	Author
5 December 2019	2019-079-05	RF
Approved	**Revision Note**	
MT		

(A3) GDA 94 MGA 56

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50 0 50 100 150 m



Ripley Gateway North Residential Development

Figure 6 - Site Context and Surrounding Development

28 South Project Ref: 2018-079

Data Sources: Nearmap Aerial Imagery (Nearmap July 2019); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018).

28ºS ENVIRONMENTAL

Legend

- Site Boundary
- Ripley Valley Priority Development Area Boundary
- Proposed Lots
- Proposed Roads

Surrounding Development Uses

- Commercial
- Education
- Emergency Services
- Open Space and Ecological Corridor
- Residential
- Childcare
- Local Park
- Watercourses (DNRME)
- Highway
- Roads

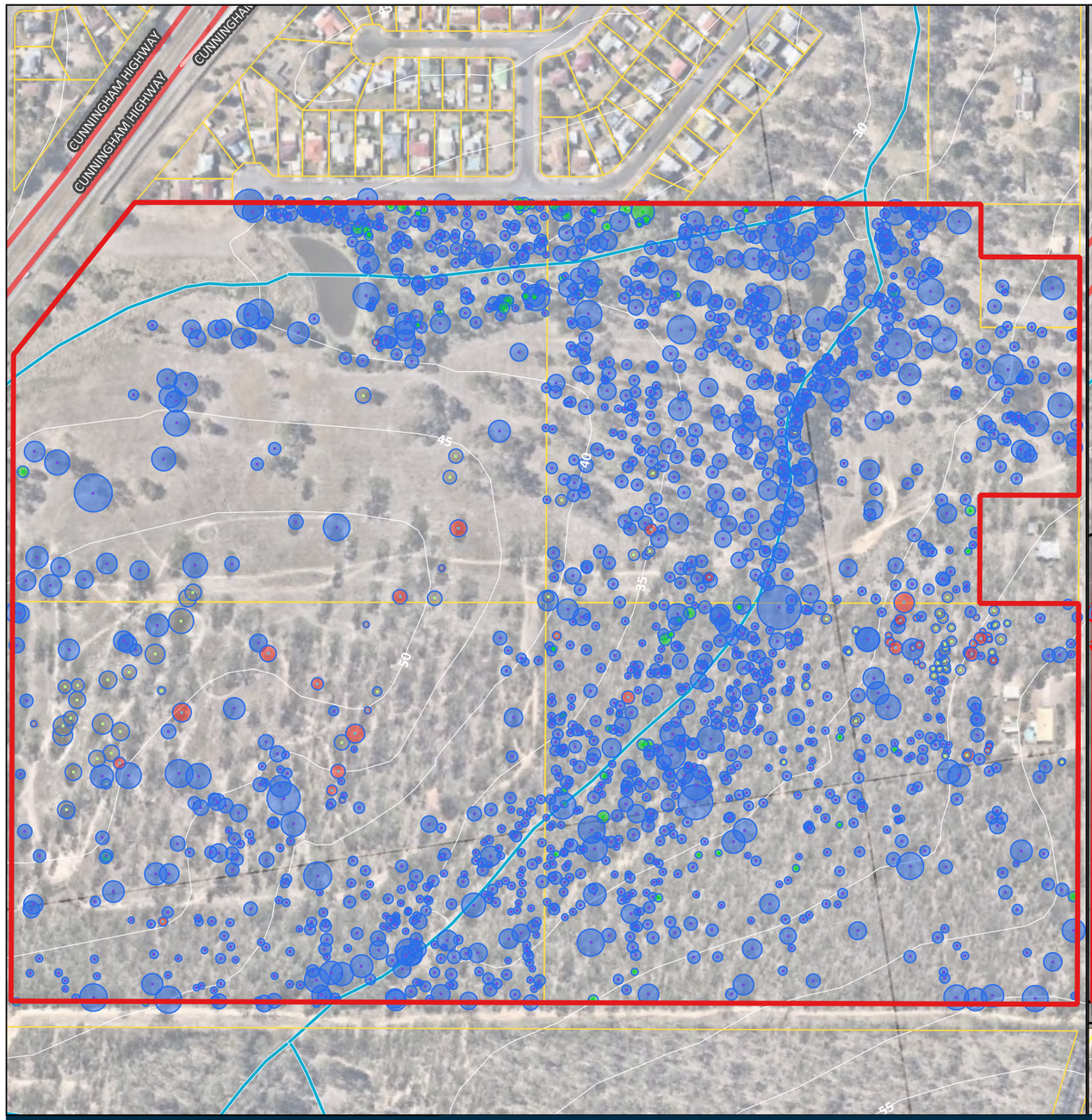
Issue Date	Dwg No.	Author
27 November 2019	2019-079-006	RF
Approved	**Revision Note**	
MT		

(A3) GDA 94 MGA 56

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250 0 250 500 750 m

N



Ripley Gateway North Residential Development

Figure 7 - Winter/Spring Flowering Trees

28 South Project Ref: 2018-079

Data Sources: QLD Globe Imagery (SISP 2016); Digital Cadastre Database (Dept. Natural Resources and Mines, 2019); Roads (DNRME, 2018); Watercourses (DNRME 2019).

28°S ENVIRONMENTAL

Legend

Site Boundary

Master Tree Protection Zones copy	Retained	Removed
Corymbia tessellaris (67)	17	50
Eucalyptus crebra (45)	1	44
Eucalyptus siderophloia (68)	1	67
Eucalyptus tereticornis (1555)	676	879

Issue Date	Dwg No.	Author
27 November 2019	2018-079-007	RF
Approved	**Revision Note**	
MT		

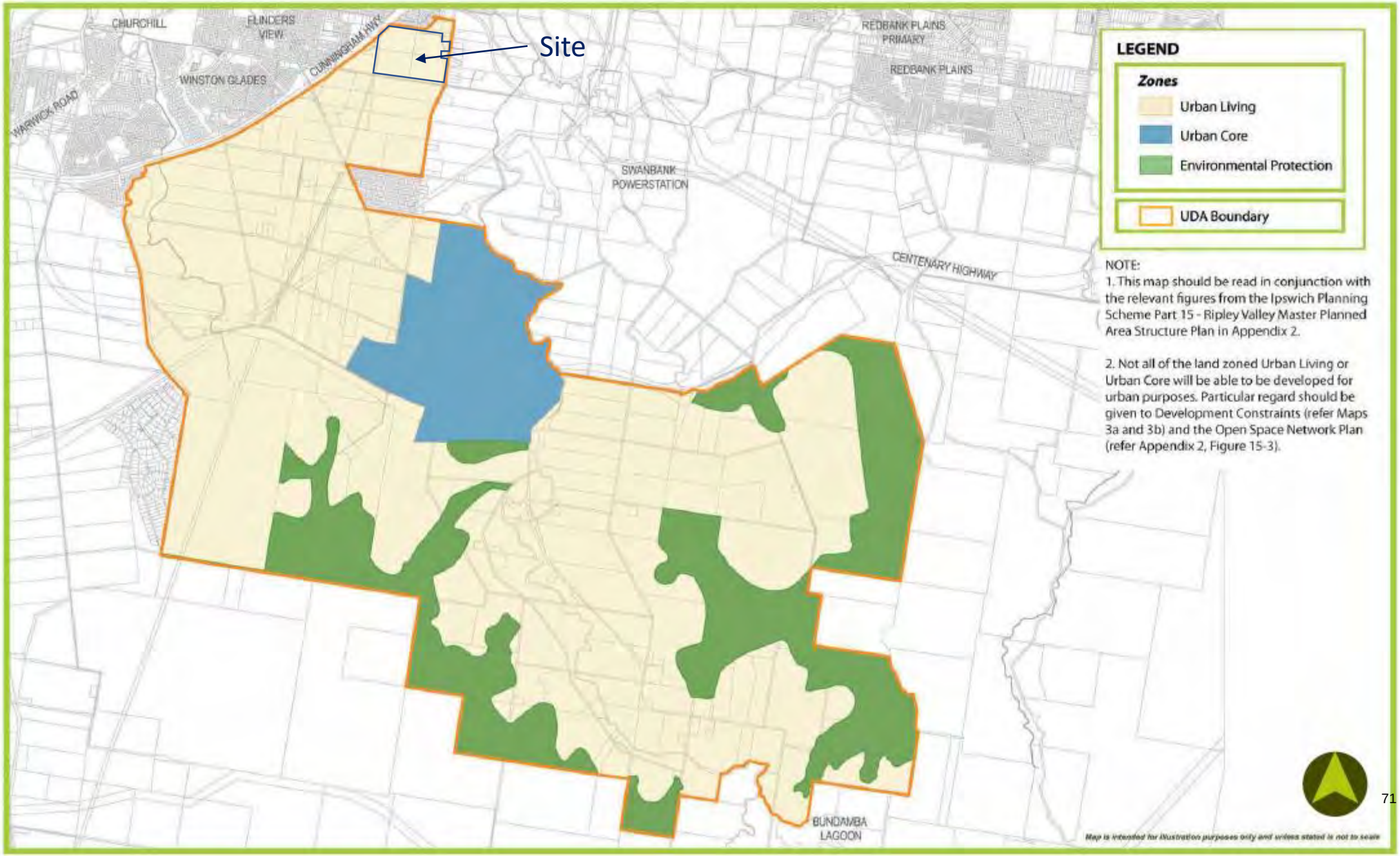
(A3) GDA 94 MGA 56

1:4000

N 69

100 0 100 200 300 m

Attachment 1


Site
CHURCHILL
FLINDERS VIEW
CUNNINGHAM HWY
WINSTON GLADES
HARWICK ROAD
REDBANK PLAINS PRIMARY
REDBANK PLAINS
SWANBANK POWERSTATION
CENTENARY HIGHWAY
BUNDAMBA LAGOON
LEGEND
Zones
Urban Living
Urban Core
Environmental Protection
UDA Boundary
NOTE:
1. This map should be read in conjunction with the relevant figures from the Ipswich Planning Scheme Part 15 - Ripley Valley Master Planned Area Structure Plan in Appendix 2.
2. Not all of the land zoned Urban Living or Urban Core will be able to be developed for urban purposes. Particular regard should be given to Development Constraints (refer Maps 3a and 3b) and the Open Space Network Plan (refer Appendix 2, Figure 15-3).
Map is intended for illustration purposes only and unless stated is not to scale

Attachment 2

PRELIMINARY LAYOUT FOR YIELD & DISCUSSION PURPOSES ONLY

SUBJECT TO MEETINGS WITH & APPROVALS FROM ECONOMIC DEVELOPMENT QUEENSLAND

LEGEND

- SUBJECT SITE
- PDA BOUNDARY
- NEIGHBOURHOOD BOUNDARY
- OPEN SPACE LINEAR & RECREATION
- EXCLUSION ZONE FOR REMNANT VEGETATION
- ENDANGERED REMNANT VEGETATION
- PROPOSED RETENTION BASINS
- MINING BOUNDARY OF INFLUENCE ZONE
- MINING BOUNDARY ABERDARE SEAM WORKINGS
- MINING BOUNDARY BLUFF SEAM WORKINGS
- FELDSPAR FAULT LOCATIONS & 15m OFFSET
- 10m WIDE FOOTPATH LOCATIONS
- PROPOSED ROAD WIDENING (SEE NOT BELOW)
- MGA TOP OF BANK (ENGENY)
- 10m OFFSET FROM TOP OF BANK (ENGENY)

LOT TYPES

- CHILD CARE
- LOTS 300m² MINIMUM
- LOTS 375m² MINIMUM
- LOTS 400m² MINIMUM
- LOTS 450m² MINIMUM
- DUPLEX LOTS 500m² MINIMUM

STATISTICS OVERALL

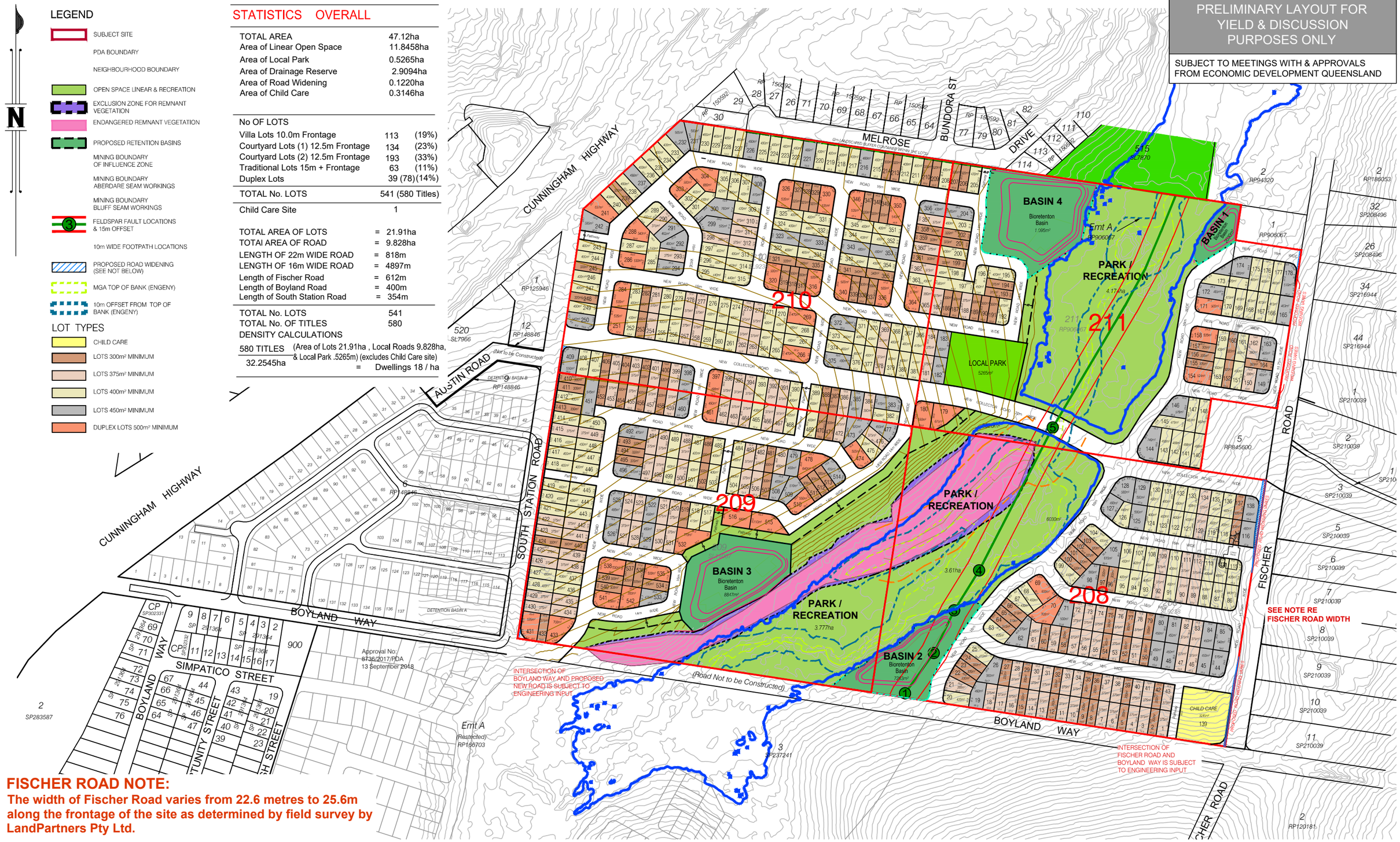
TOTAL AREA	47.12ha
Area of Linear Open Space	11.8458ha
Area of Local Park	0.5265ha
Area of Drainage Reserve	2.9094ha
Area of Road Widening	0.1220ha
Area of Child Care	0.3146ha

No OF LOTS		
Villa Lots 10.0m Frontage	113	(19%)
Courtyard Lots (1) 12.5m Frontage	134	(23%)
Courtyard Lots (2) 12.5m Frontage	193	(33%)
Traditional Lots 15m + Frontage	63	(11%)
Duplex Lots	39 (78)	(14%)
TOTAL No. LOTS	541 (580 Titles)	
Child Care Site	1	

TOTAL AREA OF LOTS	=	21.91ha
TOTAI AREA OF ROAD	=	9.828ha
LENGTH OF 22m WIDE ROAD	=	818m
LENGTH OF 16m WIDE ROAD	=	4897m
Length of Fischer Road	=	612m
Length of Boyland Road	=	400m
Length of South Station Road	=	354m
TOTAL No. LOTS		541
TOTAL No. OF TITLES		580

DENSITY CALCULATIONS

580 TITLES / 32.2545ha (Area of Lots 21.91ha , Local Roads 9.828ha, & Local Park .5265m) (excludes Child Care site) = Dwellings 18 / ha



FISCHER ROAD NOTE:

The width of Fischer Road varies from 22.6 metres to 25.6m along the frontage of the site as determined by field survey by LandPartners Pty Ltd.

NOTE: SITE SUBJECT TO GEOTECHNICAL ANALYSIS TO CONFIRM LAYOUT

40 0 80 200m

SCALE 1:4000

LANDPARTNERS built environment consultants

37, 39 - 49 & 63 FISCHER ROAD & 3 MELROSE DRIVE

FLINDERS VIEW

PLAN DESCRIPTION:
LOT 209 ON SL11067
LOT 210 ON SL9236 & LOTS 211 & 2 ON RP 906067
TOTAL AREA 34.5785ha

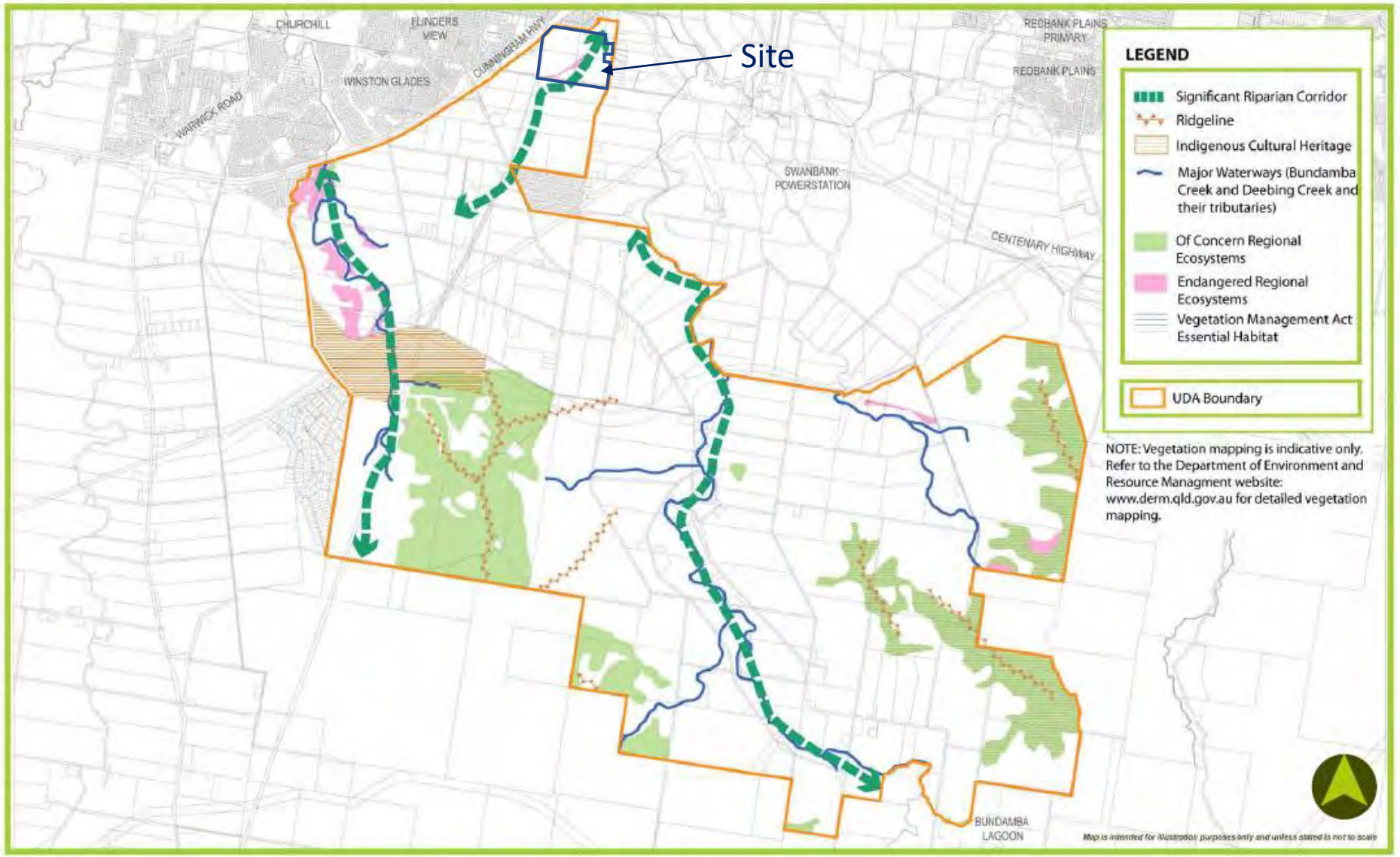
Client Name: HALL PROPERTY SOLUTIONS
Project Name: RIPLEY VIEW ESTATE

File: BRSS7261-XXX-3-14
Drawn: MIS 73
Date: 28/11/2019

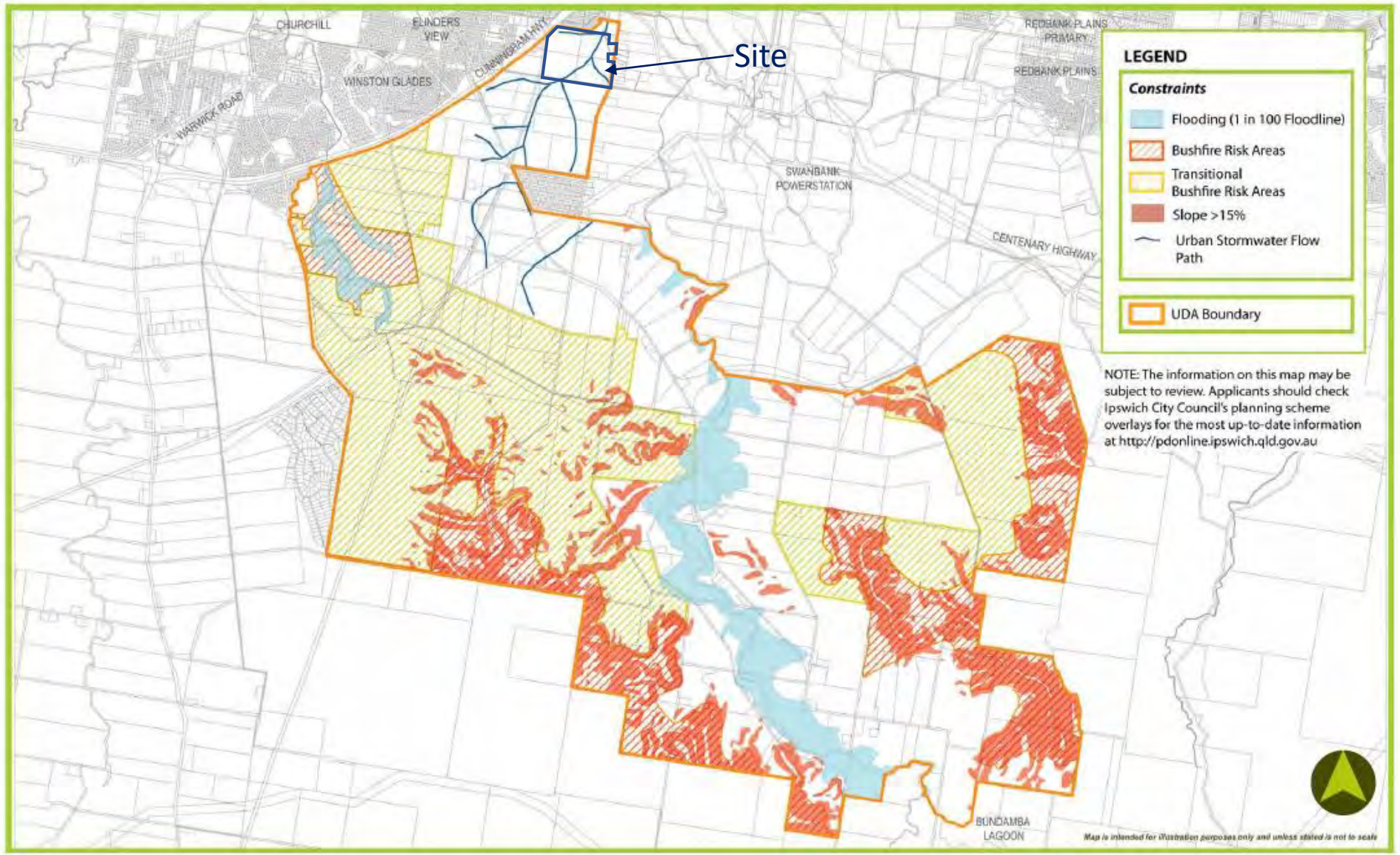
© LandPartners 2019

Attachment 3

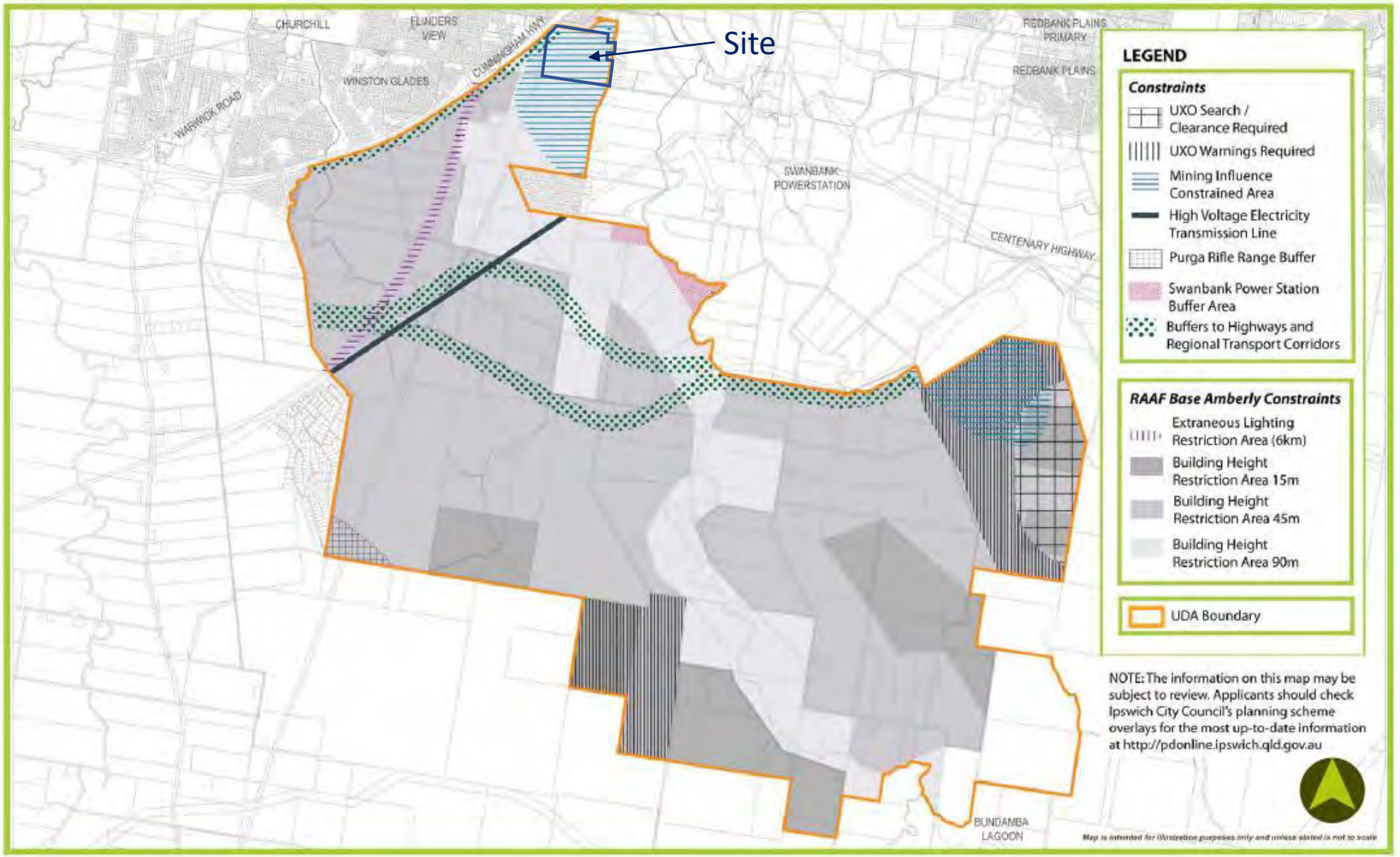
Map 2 -Values


Site
CHURCHILL
FLINDERS VIEW
CUNNINGHAM HWY
WINSTON GLADES
WARWICK ROAD
REDBANK PLAINS PRIMARY
REDBANK PLAINS
SWANBANK POWERSTATION
CENTENARY HIGHWAY
BUNDAMBA LAGOON
LEGEND
Significant Riparian Corridor
Ridgeline
Indigenous Cultural Heritage
Major Waterways (Bundamba Creek and Deebing Creek and their tributaries)
Of Concern Regional Ecosystems
Endangered Regional Ecosystems
Vegetation Management Act Essential Habitat
UDA Boundary
NOTE: Vegetation mapping is indicative only. Refer to the Department of Environment and Resource Managment website: www.derm.qld.gov.au for detailed vegetation mapping.
Map is intended for illustration purposes only and unless stated is not to scale

Map 3a - Development constraints



Map 3b - Development constraints



Attachment 4

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.

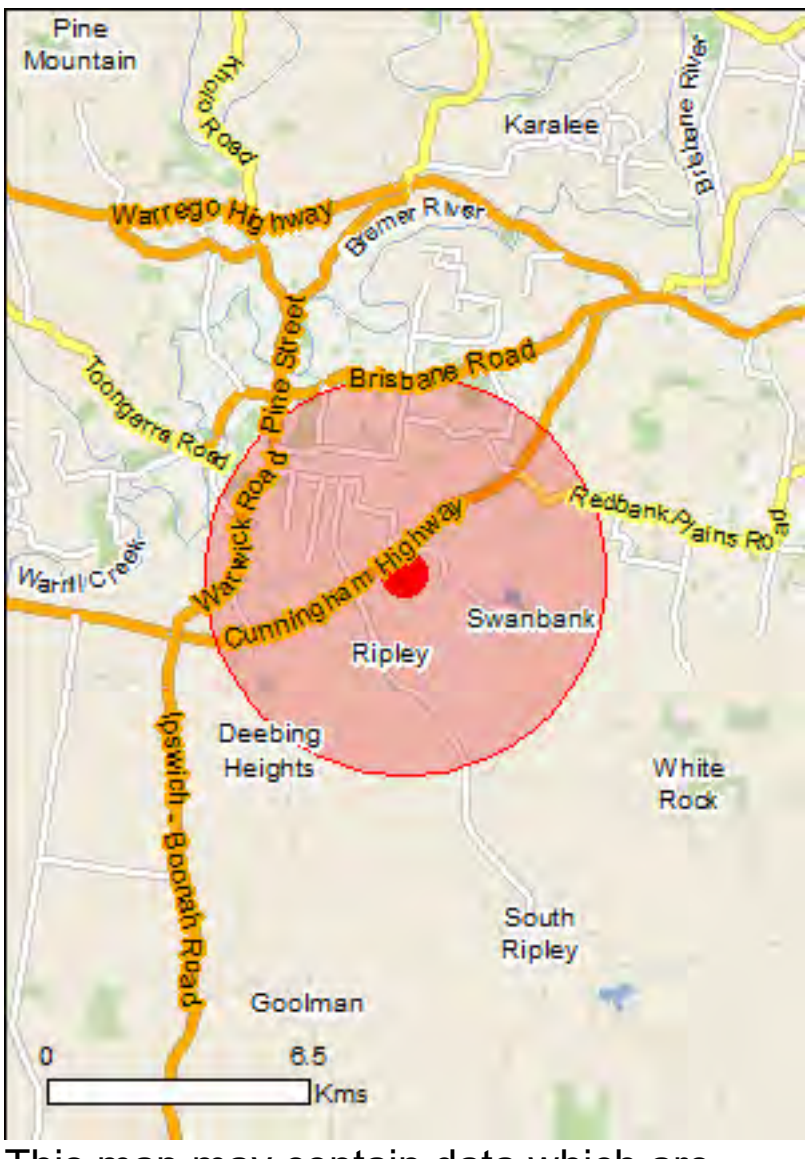
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 14/10/19 14:50:02

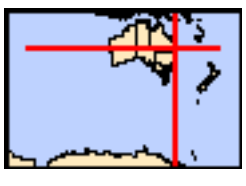
Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements



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

Coordinates
Buffer: 5.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	35
Listed Migratory Species:	16

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:	None
Listed Marine Species:	22
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	39
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Moreton bay	30 - 40km 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
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area
Poplar Box Grassy Woodland on Alluvial Plains	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 may 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 may 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
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat known 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
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area
Fish		
Neoceratodus forsteri Australian Lungfish, Queensland Lungfish [67620]	Vulnerable	Species or species habitat known to occur within area
Insects		
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically 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 hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely 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 likely 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
Plants		
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within area
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area
Cupaniopsis shirleyana Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Cupaniopsis tomentella Boonah Tuckeroo [3322]	Vulnerable	Species or species habitat may occur within area
Cycas ophiolitica [55797]	Endangered	Species or species habitat likely to occur within area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area
Notelaea ipsviciensis Cooneana Olive [81858]	Critically Endangered	Species or species habitat known to 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 may 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 Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat likely to occur within area
Furina dunmalli Dunmall's Snake [59254]	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]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
[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		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		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 known to 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 - IPSWICH TRAINING DEPOT

Listed Marine Species [Resource Information]

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

Name	Threatened	Type of Presence
Birds		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area
[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

Name	Threatened	Type of Presence
[Ardea alba](#) Great Egret, White Egret [59541]		Species or species habitat known to occur within area
[Ardea ibis](#) Cattle Egret [59542]		Species or species habitat may occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		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]	Vulnerable	Species or species habitat known to occur within area
[Lathamus discolor](#) Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat known to occur within area
[Monarcha trivirgatus](#) Spectacled Monarch [610]		Species or species habitat may occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area
[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 known to occur within area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area
[Rostratula benghalensis (sensu lato)](#) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area

Name	Threatened	Type of Presence
[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
Denmark Hill	QLD

Invasive Species [Resource Information]

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

Name	Status	Type of Presence
Birds		
Acridotheres tristis 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 known to occur within area
Mammals		

Name	Status	Type of Presence
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
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus africanus Climbing Asparagus, Climbing Asparagus Fern [66907]		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
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
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

Name	Status	Type of Presence
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
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
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
Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat may occur within area

Caveat

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

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-27.6519 152.7895

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.

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Attachment 5

Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: All
Records: All
Date: All
Latitude: -27.6519
Longitude: 152.7895
Distance: 5
Email: chris@28south.com.au
Date submitted: Monday 14 Oct 2019 13:50:13
Date extracted: Monday 14 Oct 2019 14:00:16

The number of records retrieved = 561

Disclaimer

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

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

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

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			17
animals	amphibians	Hylidae	*Litoria dentata*	bleating treefrog		C		4
animals	amphibians	Hylidae	*Litoria rubella*	ruddy treefrog		C		1
animals	amphibians	Hylidae	*Litoria caerulea*	common green treefrog		C		11
animals	amphibians	Hylidae	*Litoria wilcoxii*	eastern stony creek frog		C		1
animals	amphibians	Hylidae	*Litoria gracilenta*	graceful treefrog		C		3
animals	amphibians	Hylidae	*Litoria latopalmata*	broad palmed rocketfrog		C		2
animals	amphibians	Hylidae	*Litoria fallax*	eastern sedgefrog		C		11
animals	amphibians	Hylidae	*Litoria nasuta*	striped rocketfrog		C		5
animals	amphibians	Limnodynastidae	*Platyplectrum ornatum*	ornate burrowing frog		C		3
animals	amphibians	Limnodynastidae	*Limnodynastes peronii*	striped marshfrog		C		8
animals	amphibians	Limnodynastidae	*Adelotus brevis*	tusked frog		V		1
animals	amphibians	Limnodynastidae	*Limnodynastes terraereginae*	scarlet sided pobblebonk		C		3
animals	amphibians	Myobatrachidae	*Crinia parinsignifera*	beeping froglet		C		7
animals	amphibians	Myobatrachidae	*Pseudophryne raveni*	copper backed broodfrog		C		1
animals	amphibians	Myobatrachidae	*Crinia signifera*	clicking froglet		C		3
animals	amphibians	Myobatrachidae	*Uperoleia fusca*	dusky gungan		C		2
animals	amphibians	Myobatrachidae	*Pseudophryne coriacea*	red backed broodfrog		C		1
animals	birds	Acanthizidae	*Sericornis citreogularis*	yellow-throated scrubwren		C		1
animals	birds	Acanthizidae	*Smicrornis brevirostris*	weebill		C		15
animals	birds	Acanthizidae	*Acanthiza nana*	yellow thornbill		C		3
animals	birds	Acanthizidae	*Gerygone mouki*	brown gerygone		C		2
animals	birds	Acanthizidae	*Pyrrholaemus sagittatus*	speckled warbler		C		12
animals	birds	Acanthizidae	*Gerygone olivacea*	white-throated gerygone		C		18
animals	birds	Acanthizidae	*Acanthiza reguloides*	buff-rumped thornbill		C		4
animals	birds	Acanthizidae	*Sericornis frontalis*	white-browed scrubwren		C		17
animals	birds	Acanthizidae	*Acanthiza chrysorrhoa*	yellow-rumped thornbill		C		14
animals	birds	Acanthizidae	*Acanthiza pusilla*	brown thornbill		C		1
animals	birds	Accipitridae	*Aquila audax*	wedge-tailed eagle		C		11
animals	birds	Accipitridae	*Accipiter novaehollandiae*	grey goshawk		C		1
animals	birds	Accipitridae	*Accipiter cirrocephalus*	collared sparrowhawk		C		5
animals	birds	Accipitridae	*Milvus migrans*	black kite		C		4
animals	birds	Accipitridae	*Haliastur indus*	brahminy kite		C		3
animals	birds	Accipitridae	*Elanus axillaris*	black-shouldered kite		C		8
animals	birds	Accipitridae	*Pandion cristatus*	eastern osprey		SL		1
animals	birds	Accipitridae	*Circus approximans*	swamp harrier		C		4
animals	birds	Accipitridae	*Lophoictinia isura*	square-tailed kite		C		1
animals	birds	Accipitridae	*Accipiter fasciatus*	brown goshawk		C		10
animals	birds	Accipitridae	*Aviceda subcristata*	Pacific baza		C		3
animals	birds	Accipitridae	*Haliastur sphenurus*	whistling kite		C		6
animals	birds	Accipitridae	*Haliaeetus leucogaster*	white-bellied sea-eagle		C		11
animals	birds	Acrocephalidae	*Acrocephalus australis*	Australian reed-warbler		C		14
animals	birds	Aegothelidae	*Aegotheles cristatus*	Australian owlet-nightjar		C		2
animals	birds	Alcedinidae	*Ceyx azureus*	azure kingfisher		C		6
animals	birds	Anatidae	*Anas castanea*	chestnut teal		C		5
animals	birds	Anatidae	*Malacorhynchus membranaceus*	pink-eared duck		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Anatidae	*Nettapus coromandelianus*	cotton pygmy-goose		C		1
animals	birds	Anatidae	*Tadorna tadornoides*	Australian shelduck		C		1
animals	birds	Anatidae	*Dendrocygna arcuata*	wandering whistling-duck		C		1
animals	birds	Anatidae	*Spatula rhynchotis*	Australasian shoveler		C		2
animals	birds	Anatidae	*Dendrocygna eytoni*	plumed whistling-duck		C		2
animals	birds	Anatidae	*Anas platyrhynchos*	northern mallard	Y			2
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		41
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		29
animals	birds	Anatidae	*Aythya australis*	hardhead		C		18
animals	birds	Anatidae	*Cygnus atratus*	black swan		C		13
animals	birds	Anatidae	*Anas gracilis*	grey teal		C		14
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		18
animals	birds	Anseranatidae	*Anseranas semipalmata*	magpie goose		C		3
animals	birds	Apodidae	*Hirundapus caudacutus*	white-throated needletail		V	V	4
animals	birds	Ardeidae	*Ardea alba modesta*	eastern great egret		C		8
animals	birds	Ardeidae	*Nycticorax caledonicus*	nankeen night-heron		C		2
animals	birds	Ardeidae	*Bubulcus ibis*	cattle egret		C		23
animals	birds	Ardeidae	*Ardea pacifica*	white-necked heron		C		6
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		24
animals	birds	Ardeidae	*Butorides striata*	striated heron		C		1
animals	birds	Ardeidae	*Egretta garzetta*	little egret		C		3
animals	birds	Ardeidae	*Ardea intermedia*	intermediate egret		C		8
animals	birds	Ardeidae	*Botaurus poiciloptilus*	Australasian bittern		E	E	1
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		58
animals	birds	Artamidae	*Gymnorhina tibicen*	Australian magpie		C		92
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		16
animals	birds	Artamidae	*Artamus cyanopterus*	dusky woodswallow		C		1
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		41
animals	birds	Artamidae	*Artamus leucorynchus*	white-breasted woodswallow		C		6
animals	birds	Artamidae	*Artamus superciliosus*	white-browed woodswallow		C		1
animals	birds	Burhinidae	*Burhinus grallarius*	bush stone-curlew		C		2
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		24
animals	birds	Cacatuidae	*Cacatua sanguinea*	little corella		C		3
animals	birds	Cacatuidae	*Cacatua tenuirostris*	long-billed corella	Y	C		3
animals	birds	Cacatuidae	*Nymphicus hollandicus*	cockatiel		C		1
animals	birds	Cacatuidae	*Eolophus roseicapilla*	galah		C		32
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		76
animals	birds	Campephagidae	*Coracina tenuirostris*	cicadabird		C		5
animals	birds	Campephagidae	*Lalage tricolor*	white-winged triller		C		1
animals	birds	Campephagidae	*Lalage leucomela*	varied triller		C		3
animals	birds	Charadriidae	*Erythrogonys cinctus*	red-kneed dotterel		C		4
animals	birds	Charadriidae	*Elseyornis melanops*	black-fronted dotterel		C		12
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		5
animals	birds	Charadriidae	*Vanellus miles novaehollandiae*	masked lapwing (southern subspecies)		C		28
animals	birds	Ciconiidae	*Ephippiorhynchus asiaticus*	black-necked stork		C		8
animals	birds	Cisticolidae	*Cisticola exilis*	golden-headed cisticola		C		39

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Climacteridae	*Cormobates leucophaea metastasis*	white-throated treecreeper (southern)		C		6
animals	birds	Columbidae	*Columba livia*	rock dove	Y			21
animals	birds	Columbidae	*Geopelia cuneata*	diamond dove		C		1
animals	birds	Columbidae	*Geopelia striata*	peaceful dove		C		8
animals	birds	Columbidae	*Columba leucomela*	white-headed pigeon		C		2
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		35
animals	birds	Columbidae	*Phaps chalcoptera*	common bronzewing		C		5
animals	birds	Columbidae	*Geopelia humeralis*	bar-shouldered dove		C		14
animals	birds	Columbidae	*Macropygia amboinensis*	brown cuckoo-dove		C		2
animals	birds	Columbidae	*Streptopelia chinensis*	spotted dove	Y			60
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		20
animals	birds	Corvidae	*Corvus sp.*					1
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		108
animals	birds	Cuculidae	*Cacomantis pallidus*	pallid cuckoo		C		1
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		20
animals	birds	Cuculidae	*Cacomantis variolosus*	brush cuckoo		C		1
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		12
animals	birds	Cuculidae	*Cacomantis flabelliformis*	fan-tailed cuckoo		C		15
animals	birds	Cuculidae	*Scythrops novaehollandiae*	channel-billed cuckoo		C		18
animals	birds	Cuculidae	*Chalcites basalis*	Horsfield's bronze-cuckoo		C		6
animals	birds	Cuculidae	*Cuculus optatus*	oriental cuckoo		SL		1
animals	birds	Cuculidae	*Chalcites lucidus*	shining bronze-cuckoo		C		3
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		24
animals	birds	Estrildidae	*Lonchura punctulata*	nutmeg mannikin	Y			5
animals	birds	Estrildidae	*Neochmia modesta*	plum-headed finch		C		2
animals	birds	Estrildidae	*Lonchura castaneothorax*	chestnut-breasted mannikin		C		16
animals	birds	Estrildidae	*Neochmia temporalis*	red-browed finch		C		12
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		34
animals	birds	Eurostopodidae	*Eurostopodus mystacalis*	white-throated nightjar		C		2
animals	birds	Falconidae	*Falco berigora*	brown falcon		C		3
animals	birds	Falconidae	*Falco longipennis*	Australian hobby		C		5
animals	birds	Falconidae	*Falco cenchroides*	nankeen kestrel		C		12
animals	birds	Falconidae	*Falco peregrinus*	peregrine falcon		C		4
animals	birds	Halcyonidae	*Dacelo leachii*	blue-winged kookaburra		C		5
animals	birds	Halcyonidae	*Todiramphus macleayii*	forest kingfisher		C		4
animals	birds	Halcyonidae	*Todiramphus sanctus*	sacred kingfisher		C		21
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		57
animals	birds	Halcyonidae	*Todiramphus pyrrhopygius*	red-backed kingfisher		C		2
animals	birds	Hirundinidae	*Petrochelidon nigricans*	tree martin		C		5
animals	birds	Hirundinidae	*Cheramoeca leucosterna*	white-backed swallow		C		2
animals	birds	Hirundinidae	*Petrochelidon ariel*	fairy martin		C		13
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		35
animals	birds	Jacanidae	*Irediparra gallinacea*	comb-crested jacana		C		9
animals	birds	Laridae	*Chroicocephalus novaehollandiae*	silver gull		C		1
animals	birds	Laridae	*Chlidonias hybrida*	whiskered tern		C		1
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		56

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Maluridae	*Malurus lamberti*	variegated fairy-wren		C		23
animals	birds	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren		C		34
animals	birds	Megaluridae	*Cincloramphus cruralis*	brown songlark		C		1
animals	birds	Megaluridae	*Megalurus timoriensis*	tawny grassbird		C		13
animals	birds	Megaluridae	*Megalurus gramineus*	little grassbird		C		5
animals	birds	Megapodiidae	*Alectura lathami*	Australian brush-turkey		C		1
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		56
animals	birds	Meliphagidae	*Myzomela sanguinolenta*	scarlet honeyeater		C		32
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		19
animals	birds	Meliphagidae	*Anthochaera chrysoptera*	little wattlebird		C		3
animals	birds	Meliphagidae	*Melithreptus albogularis*	white-throated honeyeater		C		19
animals	birds	Meliphagidae	*Plectorhyncha lanceolata*	striped honeyeater		C		4
animals	birds	Meliphagidae	*Acanthorhynchus tenuirostris*	eastern spinebill		C		1
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		61
animals	birds	Meliphagidae	*Melithreptus lunatus*	white-naped honeyeater		C		3
animals	birds	Meliphagidae	*Melithreptus gularis*	black-chinned honeyeater		C		6
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		48
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		23
animals	birds	Meliphagidae	*Caligavis chrysops*	yellow-faced honeyeater		C		21
animals	birds	Meliphagidae	*Meliphaga lewinii*	Lewin's honeyeater		C		3
animals	birds	Meliphagidae	*Ptilotula fusca*	fuscous honeyeater		C		9
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		C		25
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		65
animals	birds	Monarchidae	*Monarcha melanopsis*	black-faced monarch		SL		1
animals	birds	Monarchidae	*Symposiachrus trivirgatus*	spectacled monarch		SL		1
animals	birds	Monarchidae	*Myiagra inquieta*	restless flycatcher		C		1
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		6
animals	birds	Motacillidae	*Anthus novaeseelandiae*	Australasian pipit		C		5
animals	birds	Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird		C		32
animals	birds	Neosittidae	*Daphoenositta chrysoptera*	varied sittella		C		8
animals	birds	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird		C		49
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		9
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		28
animals	birds	Pachycephalidae	*Colluricincla megarhyncha*	little shrike-thrush		C		1
animals	birds	Pachycephalidae	*Pachycephala pectoralis*	golden whistler		C		22
animals	birds	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush		C		12
animals	birds	Pardalotidae	*Pardalotus punctatus*	spotted pardalote		C		6
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		52/2
animals	birds	Passeridae	*Passer domesticus*	house sparrow	Y			21
animals	birds	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican		C		22
animals	birds	Petroicidae	*Petroica goodenovii*	red-capped robin		C		1
animals	birds	Petroicidae	*Eopsaltria australis*	eastern yellow robin		C		12
animals	birds	Petroicidae	*Petroica rosea*	rose robin		C		11
animals	birds	Petroicidae	*Petroica boodang*	scarlet robin		C		2
animals	birds	Petroicidae	*Microeca fascinans*	jacky winter		C		6
animals	birds	Phaethontidae	*Phaethon lepturus*	white-tailed tropicbird		SL		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		25
animals	birds	Phalacrocoracidae	*Phalacrocorax varius*	pied cormorant		C		13
animals	birds	Phalacrocoracidae	*Phalacrocorax carbo*	great cormorant		C		8
animals	birds	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant		C		25
animals	birds	Phasianidae	*Coturnix ypsilophora*	brown quail		C		9
animals	birds	Phasianidae	*Coturnix pectoralis*	stubble quail		C		2
animals	birds	Podargidae	*Podargus strigoides*	tawny frogmouth		C		15
animals	birds	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe		C		22
animals	birds	Podicipedidae	*Podiceps cristatus*	great crested grebe		C		9
animals	birds	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler		C		8
animals	birds	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet		C		40
animals	birds	Psittacidae	*Psephotus pulcherrimus*	paradise parrot		PE	EX	1
animals	birds	Psittacidae	*Platycercus adscitus palliceps*	pale-headed rosella (southern form)		C		1
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		72
animals	birds	Psittacidae	*Parvipsitta porphyrocephala*	purple-crowned lorikeet		C		1
animals	birds	Psittacidae	*Melopsittacus undulatus*	budgerigar		C		2
animals	birds	Psittacidae	*Barnardius zonarius*	Australian ringneck		C		5
animals	birds	Psittacidae	*Parvipsitta pusilla*	little lorikeet		C		19
animals	birds	Psittacidae	*Platycercus eximius*	eastern rosella		C		2
animals	birds	Psittacidae	*Alisterus scapularis*	Australian king-parrot		C		6
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		48
animals	birds	Psittacidae	*Glossopsitta concinna*	musk lorikeet		C		2
animals	birds	Psophodidae	*Psophodes olivaceus*	eastern whipbird		C		10
animals	birds	Psophodidae	*Cinclosoma punctatum*	spotted quail-thrush		C		3
animals	birds	Rallidae	*Porzana pusilla*	Baillon's crake		C		13
animals	birds	Rallidae	*Amaurornis moluccana*	pale-vented bush-hen		C		1
animals	birds	Rallidae	*Porphyrio melanotus*	purple swamphen		C		17
animals	birds	Rallidae	*Gallinula tenebrosa*	dusky moorhen		C		28
animals	birds	Rallidae	*Lewinia pectoralis*	Lewin's rail		C		4
animals	birds	Rallidae	*Fulica atra*	Eurasian coot		C		19
animals	birds	Rallidae	*Gallirallus philippensis*	buff-banded rail		C		6
animals	birds	Rallidae	*Porzana fluminea*	Australian spotted crake		C		6
animals	birds	Rallidae	*Porzana tabuensis*	spotless crake		C		6
animals	birds	Recurvirostridae	*Himantopus himantopus*	black-winged stilt		C		11
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		60
animals	birds	Rhipiduridae	*Rhipidura rufifrons*	rufous fantail		SL		5
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		35
animals	birds	Rostratulidae	*Rostratula australis*	Australian painted snipe		E	E	7
animals	birds	Scolopacidae	*Calidris melanotos*	pectoral sandpiper		SL		1
animals	birds	Scolopacidae	*Tringa stagnatilis*	marsh sandpiper		SL		1
animals	birds	Scolopacidae	*Gallinago hardwickii*	Latham's snipe		SL		6
animals	birds	Scolopacidae	*Limosa limosa*	black-tailed godwit		SL		4
animals	birds	Scolopacidae	*Actitis hypoleucos*	common sandpiper		SL		9
animals	birds	Scolopacidae	*Calidris acuminata*	sharp-tailed sandpiper		SL		1
animals	birds	Strigidae	*Ninox boobook*	southern boobook		C		7
animals	birds	Strigidae	*Ninox connivens*	barking owl		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Sturnidae	*Sturnus vulgaris*	common starling	Y			18
animals	birds	Sturnidae	*Acridotheres tristis*	common myna	Y			34
animals	birds	Threskiornithidae	*Platalea regia*	royal spoonbill		C		12
animals	birds	Threskiornithidae	*Platalea flavipes*	yellow-billed spoonbill		C		8
animals	birds	Threskiornithidae	*Plegadis falcinellus*	glossy ibis		SL		2
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		9
animals	birds	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis		C		20
animals	birds	Timaliidae	*Zosterops lateralis*	silvereye		C		78
animals	birds	Turnicidae	*Turnix varius*	painted button-quail		C		2
animals	birds	Turnicidae	*Turnix maculosus*	red-backed button-quail		C		2
animals	birds	Tytonidae	*Tyto delicatula*	eastern barn owl		C		2
animals	insects	Aeshnidae	*Anax papuensis*	Australian Emperor				1
animals	insects	Aeshnidae	*Adversaeschna brevistyla*	blue-spotted hawker				1
animals	insects	Coenagrionidae	*Ischnura heterosticta heterosticta*	common bluetail				1
animals	insects	Corduliidae	*Hemicordulia australiae*	Australian emerald				1
animals	insects	Corduliidae	*Hemicordulia continentalis*	fat-bellied emerald				1
animals	insects	Hesperiidae	*Suniana sunias rectivitta*	wide-brand grass-dart				1
animals	insects	Hesperiidae	*Toxidia peron*	dingy grass-skipper				1
animals	insects	Hesperiidae	*Ocybadistes walkeri sothis*	green grass-dart				1
animals	insects	Lestidae	*Austrolestes leda*	wandering ringtail				1
animals	insects	Libellulidae	*Macrodiplax cora*	wandering pennant				1
animals	insects	Libellulidae	*Tramea loewii*	common glider				1
animals	insects	Libellulidae	*Diplacodes haematodes*	scarlet percher				1
animals	insects	Libellulidae	*Diplacodes bipunctata*	wandering percher				1
animals	insects	Libellulidae	*Crocothemis nigrifrons*	black-headed skimmer				1
animals	insects	Libellulidae	*Orthetrum villosovittatum*	fiery skimmer				1
animals	insects	Libellulidae	*Pantala flavescens*	wandering glider				1
animals	insects	Libellulidae	*Orthetrum sabina*	slender skimmer				1
animals	insects	Libellulidae	*Orthetrum caledonicum*	blue skimmer				1
animals	insects	Lycaenidae	*Prosotas dubiosa dubiosa*	purple line-blue				1
animals	insects	Lycaenidae	*Zizina otis labradus*	common grass-blue (Australian subspecies)				1
animals	insects	Lycaenidae	*Catopyrops florinda*					1
animals	insects	Lycaenidae	*Psychonotis caelius taygetus*	small green-banded blue				2
animals	insects	Nymphalidae	*Danaus sp.*					1
animals	insects	Nymphalidae	*Danaus petilia*	lesser wanderer				2
animals	insects	Nymphalidae	*Euploea corinna*	common crow				8
animals	insects	Nymphalidae	*Danaus plexippus*	monarch	Y			5
animals	insects	Nymphalidae	*Vanessa kershawi*	Australian painted lady				2
animals	insects	Nymphalidae	*Charaxes sempronius sempronius*	tailed emperor				5
animals	insects	Nymphalidae	*Tirumala hamata hamata*	blue tiger				4
animals	insects	Nymphalidae	*Junonia villida villida*	meadow argus				3
animals	insects	Nymphalidae	*Hypocysta adiante adiante*	orange ringlet				1
animals	insects	Nymphalidae	*Acraea andromacha andromacha*	glasswing				4
animals	insects	Nymphalidae	*Phaedyma shepherdi shepherdi*	white-banded plane (southern subspecies)				4

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	insects	Nymphalidae	*Melanitis leda bankia*	evening brown				8
animals	insects	Papilionidae	*Papilio demoleus sthenelus*	chequered swallowtail				1
animals	insects	Papilionidae	*Cressida cressida cressida*	clearwing swallowtail				1
animals	insects	Papilionidae	*Graphium eurypylus lycaon*	pale triangle				1
animals	insects	Papilionidae	*Papilio aegeus aegeus*	orchard swallowtail (Australian subspecies)				3
animals	insects	Papilionidae	*Graphium choredon*	blue triangle				6
animals	insects	Papilionidae	*Papilio anactus*	dainty swallowtail				1
animals	insects	Papilionidae	*Papilio aegeus*					1
animals	insects	Pieridae	*Eurema smilax*	small grass-yellow				1
animals	insects	Pieridae	*Eurema hecabe*	large grass-yellow				5
animals	insects	Pieridae	*Pieris rapae*	cabbage white	Y			1
animals	insects	Pieridae	*Delias nigrina*	black jezebel				1
animals	insects	Pieridae	*Catopsilia gorgophone gorgophone*	yellow migrant				3
animals	insects	Pieridae	*Belenois java teutonia*	caper white				5
animals	insects	Pieridae	*Cepora perimale scyllara*	caper gull (Australian subspecies)				1
animals	insects	Pieridae	*Catopsilia pyranthe crokera*	white migrant				1
animals	insects	Pieridae	*Delias argenthona argenthona*	scarlet jezebel				1
animals	insects	Pieridae	*Catopsilia pomona*	lemon migrant				9
animals	mammals	Acrobatidae	*Acrobates pygmaeus*	feathertail glider		C		1
animals	mammals	Canidae	*Vulpes vulpes*	red fox	Y			4
animals	mammals	Canidae	*Canis lupus dingo*	dingo				1
animals	mammals	Dasyuridae	*Antechinus flavipes flavipes*	yellow-footed antechinus (south-east Queensland)		C		2
animals	mammals	Dasyuridae	*Phascogale tapoatafa tapoatafa*	brush-tailed phascogale		C		1
animals	mammals	Emballonuridae	*Saccolaimus flaviventris*	yellow-bellied sheathtail bat		C		2
animals	mammals	Felidae	*Felis catus*	cat	Y			1
animals	mammals	Leporidae	*Lepus europaeus*	European brown hare	Y			11
animals	mammals	Macropodidae	*Macropus giganteus*	eastern grey kangaroo		C		5
animals	mammals	Macropodidae	*Macropus sp.*					2
animals	mammals	Macropodidae	*Macropus parryi*	whiptail wallaby		C		1
animals	mammals	Macropodidae	*Wallabia bicolor*	swamp wallaby		C		3
animals	mammals	Macropodidae	*Macropus dorsalis*	black-striped wallaby		C		1
animals	mammals	Macropodidae	*Macropus rufogriseus*	red-necked wallaby		C		9
animals	mammals	Miniopteridae	*Miniopterus schreibersii oceanensis*	eastern bent-wing bat		C		1
animals	mammals	Miniopteridae	*Miniopterus australis*	little bent-wing bat		C		1
animals	mammals	Molossidae	*Mormopterus lumsdenae*	northern free-tailed bat		C		1
animals	mammals	Molossidae	*Tadarida australis*	white-striped freetail bat		C		8
animals	mammals	Muridae	*Rattus rattus*	black rat	Y			2
animals	mammals	Muridae	*Mus musculus*	house mouse	Y			3
animals	mammals	Peramelidae	*Isoodon macrourus*	northern brown bandicoot		C		3
animals	mammals	Petauridae	*Petaurus breviceps*	sugar glider		C		4
animals	mammals	Petauridae	*Petaurus norfolcensis*	squirrel glider		C		5
animals	mammals	Petauridae	*Petaurus sp.*					1
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		12
animals	mammals	Phalangeridae	*Trichosurus caninus*	short-eared possum		C		1

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animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		V	V	199
animals	mammals	Pseudocheiridae	*Pseudocheirus peregrinus*	common ringtail possum		C		2
animals	mammals	Pseudocheiridae	*Petauroides volans volans*	southern greater glider		V	V	2/2
animals	mammals	Pteropodidae	*Pteropus alecto*	black flying-fox		C		21
animals	mammals	Pteropodidae	*Pteropus poliocephalus*	grey-headed flying-fox		C	V	20
animals	mammals	Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna		SL		8
animals	mammals	Vespertilionidae	*Nyctophilus gouldi*	Gould's long-eared bat		C		1
animals	mammals	Vespertilionidae	*Chalinolobus gouldii*	Gould's wattled bat		C		1
animals	mammals	Vespertilionidae	*Vespadelus troughtoni*	eastern cave bat		C		1
animals	mammals	Vespertilionidae	*Chalinolobus morio*	chocolate wattled bat		C		1
animals	mammals	Vespertilionidae	*Scotorepens sp. (Parnaby)*	central-eastern broad-nosed bat		C		1
animals	mammals	Vespertilionidae	*Myotis macropus*	large-footed myotis		C		1
animals	ray-finned fishes	Ambassidae	*Ambassis agassizii*	Agassiz's glassfish				1
animals	ray-finned fishes	Anguillidae	*Anguilla australis*	southern shortfin eel				9
animals	ray-finned fishes	Anguillidae	*Anguilla reinhardtii*	longfin eel				16
animals	ray-finned fishes	Atherinidae	*Craterocephalus stercusmuscarum*	flyspecked hardyhead				4
animals	ray-finned fishes	Atherinidae	*Craterocephalus marjoriae*	silverstreak hardyhead				1
animals	ray-finned fishes	Cichlidae	*Oreochromis mossambica*	Mozambique mouthbrooder	Y			3
animals	ray-finned fishes	Clupeidae	*Nematalosa erebi*	bony bream				1
animals	ray-finned fishes	Eleotridae	*Hypseleotris sp.*					1
animals	ray-finned fishes	Eleotridae	*Hypseleotris galii*	firetail gudgeon				13
animals	ray-finned fishes	Eleotridae	*Hypseleotris compressa*	empire gudgeon				11
animals	ray-finned fishes	Eleotridae	*Philypnodon grandiceps*	flathead gudgeon				1
animals	ray-finned fishes	Eleotridae	*Hypseleotris klunzingeri*	western carp gudgeon				1
animals	ray-finned fishes	Eleotridae	*Gobiomorphus australis*	striped gudgeon				10
animals	ray-finned fishes	Melanotaeniidae	*Melanotaenia duboulayi*	crimsonspotted rainbowfish				6
animals	ray-finned fishes	Mugilidae	*Mugil cephalus*	sea mullet				6
animals	ray-finned fishes	Plotosidae	*Tandanus tandanus*	freshwater catfish				4
animals	ray-finned fishes	Poeciliidae	*Xiphophorus maculatus*	platy	Y			8
animals	ray-finned fishes	Poeciliidae	*Gambusia holbrooki*	mosquitofish	Y			17
animals	ray-finned fishes	Pseudomugilidae	*Pseudomugil signifer*	Pacific blue eye				5
animals	ray-finned fishes	Retropinnidae	*Retropinna semoni*	Australian smelt				5
animals	ray-finned fishes	Scorpaenidae	*Notesthes robusta*	bullrout				3
animals	ray-finned fishes	Terapontidae	*Leiopotherapon unicolor*	spangled perch				8
animals	reptiles	Agamidae	*Pogona barbata*	bearded dragon		C		15
animals	reptiles	Agamidae	*Intellagama lesueurii*	eastern water dragon		C		8
animals	reptiles	Agamidae	*Diporiphora australis*	tommy roundhead		C		2
animals	reptiles	Boidae	*Morelia spilota*	carpet python		C		6
animals	reptiles	Chelidae	*Chelodina longicollis*	eastern snake-necked turtle		C		3
animals	reptiles	Chelidae	*Chelodina expansa*	broad-shelled river turtle		C		2
animals	reptiles	Chelidae	*Emydura macquarii macquarii*	Murray turtle		C		1
animals	reptiles	Colubridae	*Tropidonophis mairii*	freshwater snake		C		1
animals	reptiles	Colubridae	*Dendrelaphis punctulatus*	green tree snake		C		11
animals	reptiles	Colubridae	*Boiga irregularis*	brown tree snake		C		1
animals	reptiles	Diplodactylidae	*Diplodactylus vittatus*	wood gecko		C		1
animals	reptiles	Elapidae	*Furina diadema*	red-naped snake		C		6

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animals	reptiles	Elapidae	*Pseudonaja textilis*	eastern brown snake		C		8
animals	reptiles	Elapidae	*Demansia psammophis*	yellow-faced whipsnake		C		2
animals	reptiles	Elapidae	*Pseudechis porphyriacus*	red-bellied black snake		C		2
animals	reptiles	Elapidae	*Brachyurophis australis*	coral snake		C		1
animals	reptiles	Elapidae	*Cacophis krefftii*	dwarf crowned snake		C		1
animals	reptiles	Elapidae	*Hemiaspis signata*	black-bellied swamp snake		C		1
animals	reptiles	Elapidae	*Cacophis harriettae*	white-crowned snake		C		3
animals	reptiles	Gekkonidae	*Gehyra dubia*	dubious dtella		C		4
animals	reptiles	Gekkonidae	*Hemidactylus frenatus*	house gecko	Y			2
animals	reptiles	Pygopodidae	*Delma plebeia*	common delma		C		2
animals	reptiles	Scincidae	*Carlia vivax*	tussock rainbow-skink		C		2
animals	reptiles	Scincidae	*Cryptoblepharus pulcher pulcher*	elegant snake-eyed skink		C		10
animals	reptiles	Scincidae	*Karma murrayi*	Murray's skink		C		1
animals	reptiles	Scincidae	*Lampropholis sp.*			C		1
animals	reptiles	Scincidae	*Carlia pectoralis*	open-litter rainbow skink		C		2
animals	reptiles	Scincidae	*Concinnia martini*	dark bar-sided skink		C		1
animals	reptiles	Scincidae	*Ctenotus spaldingi*	straight-browed ctenotus		C		8
animals	reptiles	Scincidae	*Tiliqua scincoides*	eastern blue-tongued lizard		C		6
animals	reptiles	Scincidae	*Lygisaurus foliorum*	tree-base litter-skink		C		1
animals	reptiles	Scincidae	*Ctenotus taeniolatus*	copper-tailed skink		C		1
animals	reptiles	Scincidae	*Lampropholis amicula*	friendly sunskink		C		1
animals	reptiles	Scincidae	*Anomalopus verreauxii*	three-clawed worm-skink		C		6/1
animals	reptiles	Scincidae	*Lampropholis delicata*	dark-flecked garden sunskink		C		9
animals	reptiles	Scincidae	*Carlia pectoralis sensu lato*			C		1
animals	reptiles	Varanidae	*Varanus varius*	lace monitor		C		3
animals	uncertain	Indeterminate	*Indeterminate*	Unknown or Code Pending		C		3
bacteria	blue-green algae	Aphanothecaceae	*Aphanothece elabens*			C		1/1
bacteria	blue-green algae	Microcoleaceae	*Porphyrosiphon notarisii*			C		3/3
bacteria	blue-green algae	Scytonemataceae	*Scytonema crispum*			C		1/1
fungi	Agaricomycetes	Suillaceae	*Suillus granulatus*			C		1/1
fungi	lecanoromycetes	Cladoniaceae	*Cladia muelleri*			C		1/1
fungi	lecanoromycetes	Teloschistaceae	*Caloplaca cinnabarina*			C		1/1
fungi	sordariomycetes	Obryzaceae	*Obryzum scabrosum*			C		1/1
plants	Compsopogonophyceae	Compsopogonaceae	*Compsopogon coeruleus*			C		1/1
plants	Florideophyceae	Acrochaetiaceae	*Audouinella*			C		1/1
plants	Florideophyceae	Delesseriaceae	*Caloglossa ogasawaraensis*			C		1/1
plants	Florideophyceae	Delesseriaceae	*Caloglossa leprieurii var. angustata*			C		1/1
plants	Ulvophyceae	Pithophoraceae	*Pithophora oedogonia var. oedogonia*			C		1/1
plants	Ulvophyceae	Trentepohliaceae	*Cephaleuros parasiticus*			C		1/1
plants	Ulvophyceae	Trentepohliaceae	*Trentepohlia rigidula*			C		2/2
plants	land plants	Acanthaceae	*Brunoniella australis*	blue trumpet		C		1/1
plants	land plants	Acanthaceae	*Pseuderanthemum variabile*	pastel flower		C		2/2
plants	land plants	Acanthaceae	*Ruellia simplex*		Y			5/5
plants	land plants	Adoxaceae	*Sambucus nigra*		Y			3/3
plants	land plants	Aizoaceae	*Aptenia cordifolia*		Y			1/1
plants	land plants	Amaranthaceae	*Alternanthera nana*	hairy joyweed		C		1/1

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plants	land plants	Amaranthaceae	*Alternanthera denticulata*	lesser joyweed		C		1/1
plants	land plants	Amaryllidaceae	*Zephyranthes carinata*		Y			1/1
plants	land plants	Apiaceae	*Daucus carota*	wild carrot	Y			1/1
plants	land plants	Apiaceae	*Ammi majus*	bishop's weed	Y			3/3
plants	land plants	Apiaceae	*Cyclospermum leptophyllum*		Y			1/1
plants	land plants	Apocynaceae	*Marsdenia coronata*	slender milkvine		V		11/11
plants	land plants	Apocynaceae	*Parsonsia brisbanensis*	broad-leaved monkey vine		C		7/7
plants	land plants	Apocynaceae	*Nerium oleander*	oleander	Y			1/1
plants	land plants	Araliaceae	*Hydrocotyle laxiflora*	stinking pennywort		C		1/1
plants	land plants	Aristolochiaceae	*Aristolochia meridionalis subsp. meridionalis*			C		1/1
plants	land plants	Asphodelaceae	*Aloe maculata*		Y			2/2
plants	land plants	Asphodelaceae	*Aloe cameronii*		Y			1/1
plants	land plants	Asteraceae	*Dimorphotheca ecklonis*		Y			1/1
plants	land plants	Asteraceae	*Ambrosia artemisiifolia*	annual ragweed	Y			1/1
plants	land plants	Asteraceae	*Ozothamnus diosmifolius*	white dogwood		C		1/1
plants	land plants	Asteraceae	*Lactuca serriola forma serriola*		Y			1/1
plants	land plants	Asteraceae	*Solidago altissima subsp. altissima*	goldenrod	Y			1/1
plants	land plants	Asteraceae	*Verbesina encelioides var. encelioides*		Y			1/1
plants	land plants	Asteraceae	*Tagetes minuta*	stinking roger	Y			1/1
plants	land plants	Asteraceae	*Centaurea jacea*		Y			1/1
plants	land plants	Asteraceae	*Cichorium intybus*	chicory	Y			2/2
plants	land plants	Asteraceae	*Cassinia straminea*			C		1/1
plants	land plants	Asteraceae	*Erigeron canadensis*		Y			1/1
plants	land plants	Asteraceae	*Calyptocarpus vialis*	creeping cinderella weed	Y			2/2
plants	land plants	Asteraceae	*Leiocarpa brevicompta*			C		1/1
plants	land plants	Bignoniaceae	*Pyrostegia venusta*		Y			1/1
plants	land plants	Bignoniaceae	*Pandorea floribunda*			C		1/1
plants	land plants	Boraginaceae	*Cordia myxa*		Y			1/1
plants	land plants	Brassicaceae	*Cardamine hirsuta*	common bittercress	Y			1/1
plants	land plants	Brassicaceae	*Brassica chinensis*	Chinese cabbage	Y			1/1
plants	land plants	Brassicaceae	*Raphanus raphanistrum*	wild radish	Y			2/2
plants	land plants	Cactaceae	*Opuntia aurantiaca*	tiger pear	Y			1/1
plants	land plants	Campanulaceae	*Wahlenbergia littoricola*			C		1/1
plants	land plants	Caryophyllaceae	*Stellaria media*	chickweed	Y			1/1
plants	land plants	Casuarinaceae	*Casuarina cunninghamiana subsp. cunninghamiana*			C		1/1
plants	land plants	Celastraceae	*Hippocratea barbata*	knotvine		C		1/1
plants	land plants	Celastraceae	*Denhamia cunninghamii*			C		2/2
plants	land plants	Celastraceae	*Denhamia silvestris*			C		1/1
plants	land plants	Chenopodiaceae	*Einadia nutans subsp. linifolia*			C		1/1
plants	land plants	Chenopodiaceae	*Maireana microphylla*			C		1/1
plants	land plants	Colchicaceae	*Iphigenia indica*			C		1/1
plants	land plants	Combretaceae	*Combretum paniculatum*		Y			1/1
plants	land plants	Commelinaceae	*Commelina diffusa*	wandering jew		C		1/1
plants	land plants	Commelinaceae	*Callisia repens*		Y			1/1
plants	land plants	Commelinaceae	*Commelina benghalensis*		Y			1/1
plants	land plants	Crassulaceae	*Bryophyllum fedtschenkoi*		Y			1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Cupressaceae	*Callitris baileyi*	Bailey's cypress		NT		1/1
plants	land plants	Cyperaceae	*Cyperus involucratus*		Y			1/1
plants	land plants	Cyperaceae	*Cyperus brevifolius*	Mullumbimby couch	Y			1/1
plants	land plants	Cyperaceae	*Caustis blakei*			C		1
plants	land plants	Cyperaceae	*Cyperus bifax*	western nutgrass		C		1/1
plants	land plants	Cyperaceae	*Fimbristylis dichotoma*	common fringe-rush		C		1/1
plants	land plants	Euphorbiaceae	*Euphorbia umbellata*		Y			1/1
plants	land plants	Euphorbiaceae	*Euphorbia hyssopifolia*		Y			2/2
plants	land plants	Euphorbiaceae	*Euphorbia ophthalmica*		Y			2/2
plants	land plants	Euphorbiaceae	*Euphorbia cyathophora*	dwarf poinsettia	Y			1/1
plants	land plants	Fabaceae	*Glycine*			C		1/1
plants	land plants	Fabaceae	*Hovea lorata*			C		2/2
plants	land plants	Fabaceae	*Hovea planifolia*			C		1/1
plants	land plants	Fabaceae	*Melilotus indicus*	hexham scent	Y			1/1
plants	land plants	Fabaceae	*Indigofera baileyi*			C		3/3
plants	land plants	Fabaceae	*Sesbania cannabina var. cannabina*			C		1/1
plants	land plants	Fabaceae	*Stylosanthes scabra*		Y			1/1
plants	land plants	Fabaceae	*Swainsona brachycarpa*			C		1/1
plants	land plants	Fabaceae	*Swainsona queenslandica*			C		1/1
plants	land plants	Fabaceae	*Desmodium rhytidophyllum*			C		1/1
plants	land plants	Fabaceae	*Macroptilium atropurpureum*	siratro	Y			1/1
plants	land plants	Fabaceae	*Indigofera spicata*	creeping indigo	Y			2/2
plants	land plants	Goodeniaceae	*Goodenia hederacea subsp. hederacea*			C		1/1
plants	land plants	Hypoxidaceae	*Hypoxis pratensis var. tuberculata*			C		2/2
plants	land plants	Lamiaceae	*Ajuga australis*	Australian bugle		C		1/1
plants	land plants	Lamiaceae	*Coleus habrophyllus*			E		1/1
plants	land plants	Lamiaceae	*Mentha satureioides*	native pennyroyal		C		1/1
plants	land plants	Lamiaceae	*Westringia eremicola*	slender westringia		C		1/1
plants	land plants	Lauraceae	*Cassytha filiformis*	dodder laurel		C		1/1
plants	land plants	Lauraceae	*Cryptocarya triplinervis var. triplinervis*			C		1/1
plants	land plants	Lauraceae	*Cryptocarya triplinervis var. pubens*			C		1/1
plants	land plants	Laxmanniaceae	*Lomandra confertifolia subsp. pallida*			C		1/1
plants	land plants	Laxmanniaceae	*Laxmannia gracilis*	slender wire lily		C		1/1
plants	land plants	Loranthaceae	*Amyema miquelii*			C		1/1
plants	land plants	Malvaceae	*Pavonia hastata*	pink pavonia	Y			1/1
plants	land plants	Malvaceae	*Gossypium hirsutum*		Y			1/1
plants	land plants	Malvaceae	*Malvaviscus arboreus*		Y			1/1
plants	land plants	Malvaceae	*Hibiscus tridactylites*			C		1/1
plants	land plants	Marsileaceae	*Marsilea hirsuta*	hairy nardoo		C		1/1
plants	land plants	Mimosaceae	*Acacia falcata*	sickle wattle		C		1/1
plants	land plants	Mimosaceae	*Acacia salicina*	doolan		C		1/1
plants	land plants	Mimosaceae	*Albizia lebbeck*	Indian siris		C		1/1
plants	land plants	Mimosaceae	*Acacia complanata*	flatstem wattle		C		2/2
plants	land plants	Mimosaceae	*Acacia juncifolia*			C		2/2
plants	land plants	Mimosaceae	*Acacia penninervis var. longiracemosa*			C		1/1
plants	land plants	Moraceae	*Morus alba*	white mulberry	Y			1/1

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Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Myrtaceae	*Eucalyptus dura*			C		1/1
plants	land plants	Myrtaceae	*Melaleuca irbyana*			E		2/2
plants	land plants	Myrtaceae	*Eucalyptus acmenoides*			C		2/2
plants	land plants	Myrtaceae	*Eucalyptus melanophloia subsp. melanophloia*			C		1/1
plants	land plants	Oleaceae	*Notelaea lloydii*	Lloyd's native olive		V	V	7/7
plants	land plants	Oleaceae	*Olea europaea subsp. cuspidata*		Y			2/2
plants	land plants	Oleaceae	*Notelaea ovata*	forest olive		C		1/1
plants	land plants	Oleaceae	*Notelaea ipsviciensis*			E	CE	7/7
plants	land plants	Orchidaceae	*Chiloglottis diphylla*			C		1/1
plants	land plants	Passifloraceae	*Passiflora pallida*		Y			1/1
plants	land plants	Phyllanthaceae	*Phyllanthus hirtellus*			C		1/1
plants	land plants	Plantaginaceae	*Plantago lanceolata*		Y			1/1
plants	land plants	Plantaginaceae	*Bacopa monnieri*			C		1/1
plants	land plants	Poaceae	*Eremochloa bimaculata*	poverty grass		C		1/1
plants	land plants	Poaceae	*Cleistochloa subjuncea*			C		1/1
plants	land plants	Poaceae	*Dichanthium aristatum*	angleton grass	Y			1/1
plants	land plants	Poaceae	*Dichanthium annulatum*	sheda grass	Y			1/1
plants	land plants	Poaceae	*Sporobolus africanus*	Parramatta grass	Y			1/1
plants	land plants	Poaceae	*Digitaria didactyla*	Queensland blue couch	Y			1/1
plants	land plants	Poaceae	*Urochloa whiteana*			C		1/1
plants	land plants	Poaceae	*Cenchrus setaceus*		Y			1/1
plants	land plants	Poaceae	*Themeda triandra*	kangaroo grass		C		1/1
plants	land plants	Poaceae	*Aristida vagans*			C		1/1
plants	land plants	Poaceae	*Calyptochloa gracillima subsp. ipsviciensis*			C		3/3
plants	land plants	Poaceae	*Anthosachne kingiana subsp. multiflora*			C		1/1
plants	land plants	Poaceae	*Microlaena stipoides var. stipoides*			C		1/1
plants	land plants	Poaceae	*Chloris divaricata var. divaricata*	slender chloris		C		1/1
plants	land plants	Poaceae	*Austrostipa rudis subsp. nervosa*			C		1/1
plants	land plants	Poaceae	*Aristida calycina var. calycina*			C		1/1
plants	land plants	Poaceae	*Cynodon dactylon var. dactylon*		Y			2/2
plants	land plants	Poaceae	*Lachnagrostis filiformis*			C		1/1
plants	land plants	Poaceae	*Aristida leichhardtiana*			C		1/1
plants	land plants	Poaceae	*Panicum simile*			C		2/2
plants	land plants	Polygonaceae	*Persicaria attenuata*			C		1/1
plants	land plants	Polygonaceae	*Antigonon leptopus*		Y			1/1
plants	land plants	Polygonaceae	*Acetosa vesicaria*		Y			1/1
plants	land plants	Polygonaceae	*Rumex crispus*	curled dock	Y			1/1
plants	land plants	Potamogetonaceae	*Stuckenia pectinata*			C		1/1
plants	land plants	Proteaceae	*Grevillea robusta*			C		1/1
plants	land plants	Pteridaceae	*Acrostichum speciosum*	mangrove fern		C		1/1
plants	land plants	Pteridaceae	*Cheilanthes distans*	bristly cloak fern		C		1/1
plants	land plants	Pteridaceae	*Cheilanthes sieberi subsp. sieberi*			C		1/1
plants	land plants	Ptychomitriaceae	*Ptychomitrium australe*			C		1/1
plants	land plants	Ranunculaceae	*Ranunculus sceleratus subsp. sceleratus*		Y			1/1
plants	land plants	Rhamnaceae	*Cryptandra longistaminea*			C		1/1
plants	land plants	Rosaceae	*Prunus persica var. persica*		Y			1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Rubiaceae	*Richardia stellaris*		Y			3/3
plants	land plants	Rubiaceae	*Spermacoce multicaulis*			C		2/2
plants	land plants	Sapindaceae	*Cardiospermum grandiflorum*	heart seed vine	Y			2/2
plants	land plants	Sapindaceae	*Dodonaea triangularis*			C		1/1
plants	land plants	Scrophulariaceae	*Buddleja madagascariensis*	buddleia	Y			1/1
plants	land plants	Scrophulariaceae	*Eremophila debilis*	winter apple		C		1/1
plants	land plants	Solanaceae	*Solanum pseudolulo*		Y			1/1
plants	land plants	Solanaceae	*Solanum linnaeanum*	apple of Sodom	Y			1/1
plants	land plants	Sparrmanniaceae	*Corchorus olitorius*	jute		C		1/1
plants	land plants	Stackhousiaceae	*Stackhousia muricata*			C		1/1
plants	land plants	Ulmaceae	*Celtis sinensis*	Chinese elm	Y			1/1
plants	land plants	Verbenaceae	*Lantana montevidensis*	creeping lantana	Y			1/1
plants	land plants	Vitaceae	*Cayratia clematidea*	slender grape		C		1/1

CODES

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

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

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

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Attachment 6

Department of Natural Resources, Mines and Energy



Vegetation management report

For Lot: 208 Plan: SL11067

Current as at 14/10/2019

Queensland Government

This publication has been compiled by Operations Support, Department of Natural Resources, Mines and Energy.

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Recent changes

Updated mapping

The Regulated Vegetation Management Map and Supporting Map was updated in June 2019 to reflect the most up to date information available in relation to regional ecosystems, essential habitat and wetland mapping (Version 11).

Overview

Based on the lot on plan details you have supplied, this report provides the following detailed information:

- *Vegetation management framework* - an explanation of the application of the framework.
- *Property details* - information about the specified Lot on Plan, lot size, local government area, bioregion(s), subregion(s), catchment(s), coastal or non coastal status, and any applicable area management plans associated with your property.
- *Vegetation management details for the specified Lot on Plan* - specific information about your property including vegetation categories, regional ecosystems, watercourses, wetlands, essential habitat, and protected plants.
- *Contact information.*
- *Maps* - a series of colour maps to assist in identifying regulated vegetation on your property.
- *Other legislation contact information.*

This information will assist you to determine your options for managing vegetation under the vegetation management framework, which may include:

- exempt clearing work
- accepted development vegetation clearing code
- an area management plan
- a development approval.

Other laws

The clearing of native vegetation is regulated by both Queensland and Australian legislation, and some local governments also regulate native vegetation clearing. You may need to obtain an approval or permit under another Act, such as Queensland's Protected Plants framework or the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Section 6 of this guide provides contact details of other agencies you should confirm requirements with, before commencing vegetation clearing.

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1. Vegetation management framework

The *Vegetation Management Act 1999* (VMA), the Vegetation Management Regulation 2012, the *Planning Act 2016* and the Planning Regulation 2017, in conjunction with associated policies and codes, form the Vegetation Management Framework.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenures under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA. Managing or clearing vegetation on these tenures may require approvals under these laws.

The following native vegetation is not regulated under the VMA but may require permit(s) under other laws:

- grass or non-woody herbage;
- a plant within a grassland regional ecosystem prescribed under Schedule 5 of the Vegetation Management Regulation 2012; and
- a mangrove.

1.1 Exempt clearing work

Exempt clearing work is an activity for which you do not need to notify DNRME or obtain an approval approval under the vegetation management framework. Exempt clearing work was previously known as exemptions.

In areas that are mapped as Category X (white in colour) on the regulated vegetation management map (see section 5.1), and where the land tenure is freehold, indigenous land and leasehold land for agriculture and grazing purposes, the clearing of vegetation is considered exempt clearing work and does not require notification or development approval approval under the vegetation management framework. For all other land tenures, contact DNRME before commencing clearing to ensure that the proposed activity is exempt clearing work.

A range of routine property management activities are considered exempt clearing work. A list of exempt clearing work is available at
https://www.qld.gov.au/environment/land/vegetation/exemptions/.

Exempt clearing work may be affected if the proposed clearing area is subject to development approval conditions, a covenant, an environmental offset, an exchange area, a restoration notice, or an area mapped as Category A. Exempt clearing work may require approval under other Commonwealth, State or Local Government laws, or local government planning schemes. Contact DNRME prior to clearing in any of these areas.

1.2 Accepted development vegetation clearing codes

Some clearing activities can be undertaken under an accepted development vegetation clearing code. The codes can be downloaded at
https://www.qld.gov.au/environment/land/vegetation/codes/

If you intend to clear vegetation under an accepted development vegetation clearing code, you must notify DNRME before commencing. The information in this report will assist you to complete the online notification form.

You can complete the online form at
https://apps.dnrm.qld.gov.au/vegetation/

1.3 Area management plans

Area Management Plans (AMP) provide an alternative approval system for vegetation clearing under the vegetation management framework. They list the purposes and clearing conditions that have been approved for the areas covered by the plan. It is not necessary to use an AMP, even when an AMP applies to your property.

AMPs for fodder harvesting, managing thickened vegetation and managing encroachment will continue until March 2020. New notifications cannot be made for these AMPs.

New notifications can be made for all other AMPs. These will continue to apply until their nominated end date.

If an area management plan applies to your property for which you can make a new notification, it will be listed in Section 2.2 of this report. Before clearing under one of these AMPs, you must first notify the DNRME and then follow the conditions and requirements listed in the AMP.
https://www.qld.gov.au/environment/land/vegetation/area-plans/

1.4 Development approvals

If under the vegetation management framework your proposed clearing is not exempt clearing work, or is not permitted under an accepted development vegetation clearing code, or an AMP, you may be able to apply for a development approval. Information on how to apply for a development approval is available at
https://www.qld.gov.au/environment/land/management/vegetation/development

2. Property details

2.1 Tenure

All of the lot, plan and tenure information associated with property Lot: 208 Plan: SL11067, including links to relevant Smart Maps, are listed in Table 1. The tenure of the property (whether it is freehold, leasehold, or other) may be viewed by clicking on the Smart Map link(s) provided.

Table 1: Lot, plan and tenure information for the property

Lot	Plan	Tenure	Link to property on SmartMap
8	RP222031	Below the Depth Plans	https://apps.information.qld.gov.au/data/cadastre/GenerateSmartMap?q=8\RP222031
208	SL11067	Freehold	https://apps.information.qld.gov.au/data/cadastre/GenerateSmartMap?q=208\SL11067

The tenure of the land may affect whether clearing is considered exempt clearing work or may be carried out under an accepted development vegetation clearing code.

2.2 Property location

Table 2 provides a summary of the locations for property Lot: 208 Plan: SL11067, in relation to natural and administrative boundaries.

Table 2: Property location details

Local Government(s)
Ipswich City

Bioregion(s)	Subregion(s)
Southeast Queensland	Moreton Basin

Catchment(s)
Brisbane

Area Management Plan(s)

Nil

For the purposes of the accepted development vegetation clearing codes and the State Development Assessment Provisions (SDAP), this property is regarded as*

Coastal

*See also Map 5.4

The following can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code:

Does this lot contain land that is mapped as Agricultural Land Class A or B in the State Planning Interactive Mapping System?

No Class A

No Class B

Note - This confirms Agricultural Land Classes as per the State Planning Interactive Mapping System only. This response does not include Agricultural Land Classes identified under local government planning schemes. For further information, check the Planning Scheme for your local government area.

See section 5 to identify the location and extent of Class A and/or Class B Agricultural land on Lot: 208 Plan: SL11067.

3. Vegetation management details for Lot: 208 Plan: SL11067

3.1 Vegetation categories

Vegetation categories are shown on the regulated vegetation management map in section 5.1 of this report. A summary of vegetation categories on the subject lot are listed in Table 3. Descriptions for these categories are shown in Table 4.

Table 3: Vegetation categories for subject property. Total area: 12.26ha

Vegetation category	Area (ha)
Category B	4.9
Category C	3.2
Category X	4.2

Table 4

Category	Colour on Map	Description	Requirements / options under the vegetation management framework
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	Special conditions apply to Category A areas. Before clearing, contact DNRME to confirm any requirements in a Category A area.
B	dark blue	Remnant vegetation areas	Exempt clearing work, or notification and compliance with accepted development vegetation clearing codes, area management plans or development approval.
C	light blue	High-value regrowth areas	Exempt clearing work, or notification and compliance with managing Category C regrowth vegetation accepted development vegetation clearing code.
R	yellow	Regrowth within 50m of a watercourse or drainage feature in the Great Barrier Reef catchment areas	Exempt clearing work, or notification and compliance with managing Category R regrowth accepted development vegetation clearing code or area management plans.
X	white	Clearing on freehold land, indigenous land and leasehold land for agriculture and grazing purposes is considered exempt clearing work under the vegetation management framework. Contact DNRME to clarify whether a development approval is required for other State land tenures.	No permit or notification required on freehold land, indigenous land and leasehold land for agriculture and grazing. A development approval may be required for some State land tenures.

Property Map of Assessable Vegetation (PMAV)

This report does not confirm if a Property Map of Assessable Vegetation (PMAV) exists on a lot. To confirm whether or not a PMAV exists on a lot, please check the PMAV layer on the Queensland Globe2, or contact DNRME on 135VEG (135 834).

3.2 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 5.2 and are listed in Table 5.

A description of regional ecosystems can be accessed online at https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/

Table 5: Regional ecosystems present on subject property

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
12.3.3	Endangered	B	1.17	Eucalyptus tereticornis woodland on Quaternary alluvium	Sparse
12.3.3	Endangered	C	2.53	Eucalyptus tereticornis woodland on Quaternary alluvium	Sparse
12.9-10.16	Of concern	C	0.03	Araucarian microphyll to notophyll vine forest on Cainozoic and Mesozoic sediments	Dense
12.9-10.2	Least concern	B	3.70	Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks	Mid-dense
12.9-10.2	Least concern	C	0.49	Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks	Mid-dense
12.9-10.7	Of concern	C	0.17	Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora spp., E. melanophloia woodland on sedimentary rocks	Sparse
non-rem	None	X	4.16	None	None

Please note:

1. All area and area derived figures included in this table have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

2. If Table 5 contains a Category 'plant', please be aware that this refers to 'plantations' such as forestry, and these areas are considered non-remnant under the VMA.

The VMA status of the regional ecosystem (whether it is endangered, of concern or least concern) also determines if any of the following are applicable:

- exempt clearing work
- accepted development vegetation clearing codes
- performance outcomes in State Development Assessment Provisions (SDAP).

3.3 Watercourses

Vegetation management watercourses and drainage features for this property are shown on the vegetation management supporting map in section 5.2.

3.4 Wetlands

There are no vegetation management wetlands present on this property.

3.5 Essential habitat

Protected wildlife is native wildlife prescribed under the *Nature Conservation Act 1992* (NCA), and includes endangered, vulnerable or near-threatened wildlife.

Essential habitat for protected wildlife includes suitable habitat on the lot, or where a species has been known to occur up to 1.1 kilometres from a lot on which there is assessable vegetation. These important habitat areas are protected under the VMA.

Any essential habitat on this property will be shown as blue hatching on the vegetation supporting map in section 5.2.

If essential habitat is identified on the lot, information about the protected wildlife species is provided in Table 6 below. The numeric labels on the vegetation management supporting map can be cross referenced with Table 6 to outline the essential habitat factors for that particular species. There may be essential habitat for more than one species on each lot, and areas of Category A, Category B and Category C can be mapped as Essential Habitat.

Essential habitat is compiled from a combination of species habitat models and buffered species records. Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated. Essential habitat, for protected wildlife, means an area of vegetation shown on the Regulated Vegetation Management Map as assessable vegetation -

1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database. Essential habitat factors are comprised of - regional ecosystem (mandatory for most species), vegetation community, altitude, soils, position in landscape; or

2) in which the protected wildlife, at any stage of its life cycle, is located.

If there is no essential habitat mapping shown on the vegetation management supporting map for this lot, and there is no table in the sections below, it confirms that there is no essential habitat on the lot.

Category A and/or Category B and/or Category C

Table 6: Essential habitat in Category A and/or Category B and/or Category C

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
860	Phascolarctos cinereus	koala	V	SEQ: Open eucalypt forest and woodland that has: a) multiple strata layers containing Eucalyptus, Corymbia, Angophora, Lophostemon or Melaleuca trees that-at 1.3 metres above the ground-have a diameter both greater and less than 30 centimetres; and b) at least 1 of the following species: Eucalyptus tereticornis, E. fibrosa, E. propinqua; E. umbra, E. grandis, E. microcorys, E. tindaliae, E. resinifera, E. populnea, E. robusta, E. nigra, E. racemosa, E. crebra, E. exserta, E. seeana, Lophostemon confertus, L. suaveolens, Melaleuca quinquenervia. Outside SEQ: Open eucalypt forest and woodland that contains Eucalyptus &/or Corymbia spp. Tree species used for food varies across State and can include Eucalyptus tereticornis, E. camaldulensis, E. coolabah; E. drepanophylla, E. platyphylla, E. orgadophilla, E. thozetiana, E. melanophloia, E. populnea, E. melliodora, E. dealbata, E. microtheca, E. crebra, E. exserta, E. blakelyi, E. papuana, Corymbia tessellaris, C. citriodora, Melaleuca quinquenervia, M. leucadendra.	Sea level to 1000m.	None	Riparian areas, plains and hill/escarpment slopes.
1883	Rostratula australis	Australian painted snipe	V	Shallow ephemeral and permanent swamps, water meadows and damp lake margins with rushes, long grass and herbage (e.g. lignum, chenopods) in good condition, as well as areas of muddy ground; also uses saltmarsh, samphire flats and waterlogged grasslands with trees present (e.g. Eucalyptus camaldulensis, E. brownii). Nest in shallow grass-lined hollow in damp ground under low shrub or grass tussock near shallow water.	None	None	Associated with wetlands.
7601	Plectranthus habrophyllus	None	E	open woodland of Eucalyptus spp. on sandstone, occasionally near vine forest margins	0 to 300 m	skeletal to shallow sandy soil	on rock ledges along cliffline and rock outcrops near creek bank, often in shaded situations

Label	Regional Ecosystem (mandatory unless otherwise specified)
860	SEQ: 11.3.2, 11.3.4, 11.3.25, 11.3.26, 11.8.2, 11.8.4, 11.8.5, 11.8.8, 11.9.9, 12.2.5, 12.2.6, 12.2.7, 12.2.8, 12.2.10, 12.3.2, 12.3.3, 12.3.4, 12.3.5, 12.3.6, 12.3.7, 12.3.9, 12.3.10, 12.3.11, 12.3.14, 12.3.18, 12.3.19, 12.3.20, 12.5.1, 12.5.2, 12.5.3, 12.5.4, 12.5.6, 12.5.7, 12.5.10, 12.5.12, 12.8.1, 12.8.8, 12.8.9, 12.8.11, 12.8.12, 12.8.14, 12.8.16, 12.8.17, 12.8.20, 12.8.24, 12.8.25, 12.9-10.1, 12.9-10.2, 12.9-10.3, 12.9-10.4, 12.9-10.5, 12.9-10.7, 12.9-10.8, 12.9-10.11, 12.9-10.12, 12.9-10.14, 12.9-10.17, 12.9-10.18, 12.9-10.19, 12.9-10.21, 12.9-10.25, 12.9-10.26, 12.9-10.27, 12.9-10.28, 12.9-10.29, 12.11.2, 12.11.3, 12.11.5, 12.11.6, 12.11.7, 12.11.8, 12.11.9, 12.11.14, 12.11.15, 12.11.16, 12.11.17, 12.11.18, 12.11.22, 12.11.23, 12.11.24, 12.11.25, 12.11.26, 12.11.27, 12.11.28, 12.12.2, 12.12.3, 12.12.5, 12.12.6, 12.12.7, 12.12.8, 12.12.9, 12.12.11, 12.12.12, 12.12.14, 12.12.15, 12.12.23, 12.12.24, 12.12.25, 12.12.28. Outside SEQ: 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.6, 4.3.8, 4.3.10, 4.3.11, 4.4.1, 4.5.3, 4.5.5, 4.5.6, 4.5.8, 4.5.9, 4.7.1, 4.7.7, 4.7.8, 4.9.6, 4.9.10, 4.9.12, 4.9.17, 6.3.1, 6.3.2, 6.3.3, 6.3.4, 6.3.5, 6.3.7, 6.3.8, 6.3.9, 6.3.11, 6.3.12, 6.3.17, 6.3.18, 6.3.22, 6.3.24, 6.3.25, 6.4.1, 6.4.2, 6.4.3, 6.4.4, 6.5.1, 6.5.2, 6.5.3, 6.5.5, 6.5.6, 6.5.7, 6.5.8, 6.5.9, 6.5.10, 6.5.11, 6.5.13, 6.5.14, 6.5.15, 6.5.16, 6.5.17, 6.5.18, 6.5.19, 6.6.2, 6.7.1, 6.7.2, 6.7.5, 6.7.6, 6.7.7, 6.7.9, 6.7.11, 6.7.12, 6.7.13, 6.7.14, 6.7.17, 6.9.3, 7.2.3, 7.2.4, 7.2.7, 7.2.11, 7.3.7, 7.3.8, 7.3.9, 7.3.12, 7.3.13, 7.3.14, 7.3.16, 7.3.19, 7.3.20, 7.3.21, 7.3.25, 7.3.26, 7.3.39, 7.3.40, 7.3.42, 7.3.43, 7.3.44, 7.3.45, 7.3.47, 7.3.48, 7.3.50, 7.5.1, 7.5.2, 7.5.3, 7.5.4, 7.8.7, 7.8.8, 7.8.10, 7.8.15, 7.8.16, 7.8.17, 7.8.18, 7.8.19, 7.11.5, 7.11.6, 7.11.13, 7.11.14, 7.11.16, 7.11.18, 7.11.19, 7.11.20, 7.11.21, 7.11.31, 7.11.32, 7.11.33, 7.11.34, 7.11.35, 7.11.37, 7.11.41, 7.11.42, 7.11.43, 7.11.44, 7.11.45, 7.11.46, 7.11.47, 7.11.48, 7.11.49, 7.11.50, 7.11.51, 7.12.4, 7.12.5, 7.12.17, 7.12.21, 7.12.22, 7.12.23, 7.12.24, 7.12.25, 7.12.26, 7.12.27, 7.12.28, 7.12.29, 7.12.30, 7.12.33, 7.12.34, 7.12.35, 7.12.51, 7.12.52, 7.12.53, 7.12.54, 7.12.55, 7.12.56, 7.12.57, 7.12.58, 7.12.59, 7.12.60, 7.12.61, 7.12.62, 7.12.63, 7.12.65, 7.12.66, 7.12.69, 8.1.5, 8.2.3, 8.2.6, 8.2.7, 8.2.8, 8.2.11, 8.2.12, 8.2.13, 8.2.14, 8.3.1, 8.3.2, 8.3.3, 8.3.5, 8.3.6, 8.3.8, 8.3.10, 8.3.11, 8.3.13, 8.5.1, 8.5.2, 8.5.3, 8.5.5, 8.5.6, 8.5.7, 8.9.1, 8.10.1, 8.11.1, 8.11.3, 8.11.4, 8.11.5, 8.11.6, 8.11.8, 8.11.10, 8.11.12, 8.12.4, 8.12.5, 8.12.6, 8.12.7, 8.12.8, 8.12.9, 8.12.12, 8.12.14, 8.12.20, 8.12.22, 8.12.23, 8.12.25, 8.12.26, 8.12.27, 8.12.29, 8.12.31, 8.12.32, 9.3.1, 9.3.2, 9.3.3, 9.3.4, 9.3.5, 9.3.6, 9.3.7, 9.3.8, 9.3.10, 9.3.11, 9.3.13, 9.3.14, 9.3.15, 9.3.16, 9.3.17, 9.3.19, 9.3.20, 9.3.21, 9.3.22, 9.3.27, 9.4.1, 9.4.2, 9.4.3, 9.5.1, 9.5.3, 9.5.4, 9.5.5, 9.5.6, 9.5.7, 9.5.8, 9.5.9, 9.5.10, 9.5.11, 9.5.12, 9.5.15, 9.5.16, 9.5.17, 9.7.1, 9.7.2, 9.7.3, 9.7.4, 9.7.5, 9.7.6, 9.8.1, 9.8.2, 9.8.3, 9.8.4, 9.8.5, 9.8.9, 9.8.10, 9.8.11, 9.8.13, 9.10.1, 9.10.3, 9.10.4, 9.10.5, 9.10.7, 9.10.8, 9.11.1, 9.11.2, 9.11.3, 9.11.4, 9.11.5, 9.11.7, 9.11.10, 9.11.12, 9.11.13, 9.11.14, 9.11.15, 9.11.16, 9.11.17, 9.11.18, 9.11.19, 9.11.21, 9.11.22, 9.11.23, 9.11.24, 9.11.25, 9.11.26, 9.11.28, 9.11.29, 9.11.30, 9.11.31, 9.11.32, 9.12.1, 9.12.2, 9.12.3, 9.12.4, 9.12.5, 9.12.6, 9.12.7, 9.12.10, 9.12.11, 9.12.12, 9.12.13, 9.12.14, 9.12.15, 9.12.16, 9.12.17, 9.12.18, 9.12.19, 9.12.20, 9.12.21, 9.12.22, 9.12.23, 9.12.24, 9.12.25, 9.12.26, 9.12.27, 9.12.28, 9.12.29, 9.12.30, 9.12.31, 9.12.32, 9.12.33, 9.12.35, 9.12.36, 9.12.37, 9.12.38, 9.12.39, 9.12.44, 10.3.2, 10.3.3, 10.3.5, 10.3.6, 10.3.9, 10.3.10, 10.3.11, 10.3.12, 10.3.13, 10.3.14, 10.3.15, 10.3.17, 10.3.20, 10.3.27, 10.3.28, 10.4.3, 10.4.9, 10.5.1, 10.5.2, 10.5.4, 10.5.5, 10.5.7, 10.5.8, 10.5.9, 10.5.10, 10.5.11, 10.5.12, 10.7.1, 10.7.2, 10.7.3, 10.7.4, 10.7.5, 10.7.9, 10.7.10, 10.7.11, 10.7.12, 10.9.2, 10.9.3, 10.9.5, 10.10.1, 10.10.3, 10.10.4, 10.10.5, 10.10.7, 11.2.1, 11.2.5, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.5, 11.3.6, 11.3.7, 11.3.9, 11.3.10, 11.3.12, 11.3.13, 11.3.14, 11.3.15, 11.3.16, 11.3.17, 11.3.18, 11.3.19, 11.3.21, 11.3.23, 11.3.25, 11.3.26, 11.3.27, 11.3.28, 11.3.29, 11.3.30, 11.3.32, 11.3.33, 11.3.35, 11.3.36, 11.3.37, 11.3.38, 11.3.39, 11.4.2, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.10, 11.4.12, 11.4.13, 11.5.1, 11.5.2, 11.5.3, 11.5.4, 11.5.5, 11.5.7, 11.5.8, 11.5.9, 11.5.12, 11.5.13, 11.5.14, 11.5.17, 11.5.18, 11.5.20, 11.5.21, 11.7.1, 11.7.2, 11.7.3, 11.7.4, 11.7.6, 11.7.7, 11.8.1, 11.8.2, 11.8.4, 11.8.5, 11.8.8, 11.8.11, 11.8.12, 11.8.14, 11.8.15, 11.9.1, 11.9.2, 11.9.3, 11.9.5, 11.9.6, 11.9.7, 11.9.9, 11.9.10, 11.9.11, 11.9.13, 11.9.14, 11.10.1, 11.10.2, 11.10.3, 11.10.4, 11.10.5, 11.10.6, 11.10.7, 11.10.9, 11.10.11, 11.10.12, 11.10.13, 11.11.1, 11.11.2, 11.11.3, 11.11.4, 11.11.6, 11.11.7, 11.11.8, 11.11.9, 11.11.10, 11.11.11, 11.11.12, 11.11.13, 11.11.14, 11.11.15, 11.11.16, 11.11.17, 11.11.19, 11.11.20, 11.12.1, 11.12.2, 11.12.3, 11.12.5, 11.12.6, 11.12.7, 11.12.8, 11.12.9, 11.12.10, 11.12.13, 11.12.14, 11.12.15, 11.12.16, 11.12.17, 11.12.19, 11.12.20, 13.3.1, 13.3.2, 13.3.3, 13.3.4, 13.3.5, 13.3.7, 13.9.2, 13.11.1, 13.11.2, 13.11.3, 13.11.4, 13.11.5, 13.11.6, 13.11.8, 13.11.9, 13.12.1, 13.12.2, 13.12.3, 13.12.4, 13.12.5, 13.12.6, 13.12.8, 13.12.9, 13.12.10.
1883	All regional ecosystems within the stream/wetland buffer as determined by VMA code.
7601	12.9-10.2, 12.9-10.7, 12.9-10.19

3.6 Protected plants (administered by the Department of Environment and Science (DES))

In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992* (NCA), with clearing of protected plants in the wild regulated by the Nature Conservation (Wildlife Management) Regulation 2006. These requirements apply irrespective of the classification of the vegetation under the *Vegetation Management Act 1999*.

Prior to clearing, if the plants proposed to be cleared are in the wild (see Operational policy: When a protected plant in Queensland is considered to be 'in the wild') and the exemptions under the Nature Conservation (Wildlife Management) Regulation 2006 are not applicable to the proposed clearing, you must check the flora survey trigger map to determine if any part of the area to be cleared is within a high risk area. The trigger map for this property is provided in section 5.6. The exemptions relate to:

- imminent risk of death or serious injury (refer s261A)
- imminent risk of serious damage to a building or other structure on land, or to personal property (refer s261B)
- *Fire and Emergency Service Act 1990* (refer 261C)
- previously cleared areas (refer s261ZB)
- maintenance activities (refer s261ZC)
- firebreak or fire management line (refer s261ZD)
- accepted development vegetation clearing code (refer s261ZE)
- conservation purposes (refer s261ZG)
- authorised in particular circumstances (refer s385).

Some exemptions under the NCA are the same as exempt clearing work (formerly known as exemptions) from the *Vegetation Management Act 1999* (i.e. listed in the Planning Regulations 2017) while some are different.

If the proposed area to be cleared is shown as high risk on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken in accordance with the flora survey guidelines. The main objective of a flora survey is to locate any endangered, vulnerable or near threatened plants (EVNT plants) that may be present in the clearing impact area.

If a flora survey identifies that EVNT plants are not present within the clearing impact area or clearing within 100m of EVNT plants can be avoided, the clearing activity is exempt from a permit. An exempt clearing notification form must be submitted to the Department of Environment and Science, with a copy of the flora survey report, at least one week prior to clearing. The clearing must be conducted within two years after the flora survey report was submitted.

If a flora survey identifies that EVNT plants are present in, or within 100m of, the area to be cleared, a clearing permit is required before any clearing is undertaken. The flora survey report, as well as an impact management report, must be submitted with the application form clearing permit.

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that EVNT plants are present in, or within 100m of, the area to be cleared. You must keep a copy of the flora survey trigger map for the area subject to clearing for five years from the day the clearing starts. If you do not clear within the 12 month period that the flora survey trigger map was printed, you need to print and check a new flora survey trigger map.

Further information on protected plants is available at
http://www.ehp.qld.gov.au/licences-permits/plants-animals/protected-plants/

For assistance on the protected plants flora survey trigger map for this property, please contact the Department of Environment and Science at palm@des.qld.gov.au.

3.7 Emissions Reduction Fund (ERF)

The ERF is an Australian Government scheme which offers incentives for businesses and communities across the economy to reduce emissions.

Under the ERF, landholders can earn money from activities such as planting (and keeping) trees, managing regrowth vegetation and adopting more sustainable agricultural practices.

The purpose of a project is to remove greenhouse gases from the atmosphere. Each project will provide new economic opportunities for farmers, forest growers and land managers.

Further information on ERF is available at https://www.qld.gov.au/environment/land/state/use/carbon-rights/.

4. Contact information for DNRME

For further information on vegetation management:
Phone 135VEG (135 834)
Email vegetation@dnrme.qld.gov.au
Visit https://www.dnrme.qld.gov.au/?contact=vegetation to submit an online enquiry.

For contact details for other State and Commonwealth agencies, please see Section 6.

5. Maps

Maps included in this report may also be requested individually at:

https://www.dnrme.qld.gov.au/qld/environment/land/vegetation/vegetation-map-request-form
and
http://www.ehp.qld.gov.au/licences-permits/plants-animals/protected-plants/map-request.php

Regulated vegetation management map

The regulated vegetation management map shows vegetation categories needed to determine clearing requirements. These maps are updated monthly to show new property maps of assessable vegetation (PMAV).

Vegetation management supporting map

The vegetation management supporting map provides information on regional ecosystems, wetlands, watercourses and essential habitat.

Pre-clear map

The vegetation management pre-clear regional ecosystem mapping shows the regional ecosystem, location and extent which is likely to have occurred at that location prior to clearing. This map can be used for identifying exchange areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code. It may also be used for for identifying offsets under the vegetation management framework.

Coastal/non coastal map

The coastal/non-coastal map confirms whether the lot, or which parts of the lot, are considered coastal or non-coastal for the purposes of the accepted development vegetation clearing codes and the State Development Assessment Provisions (SDAP).

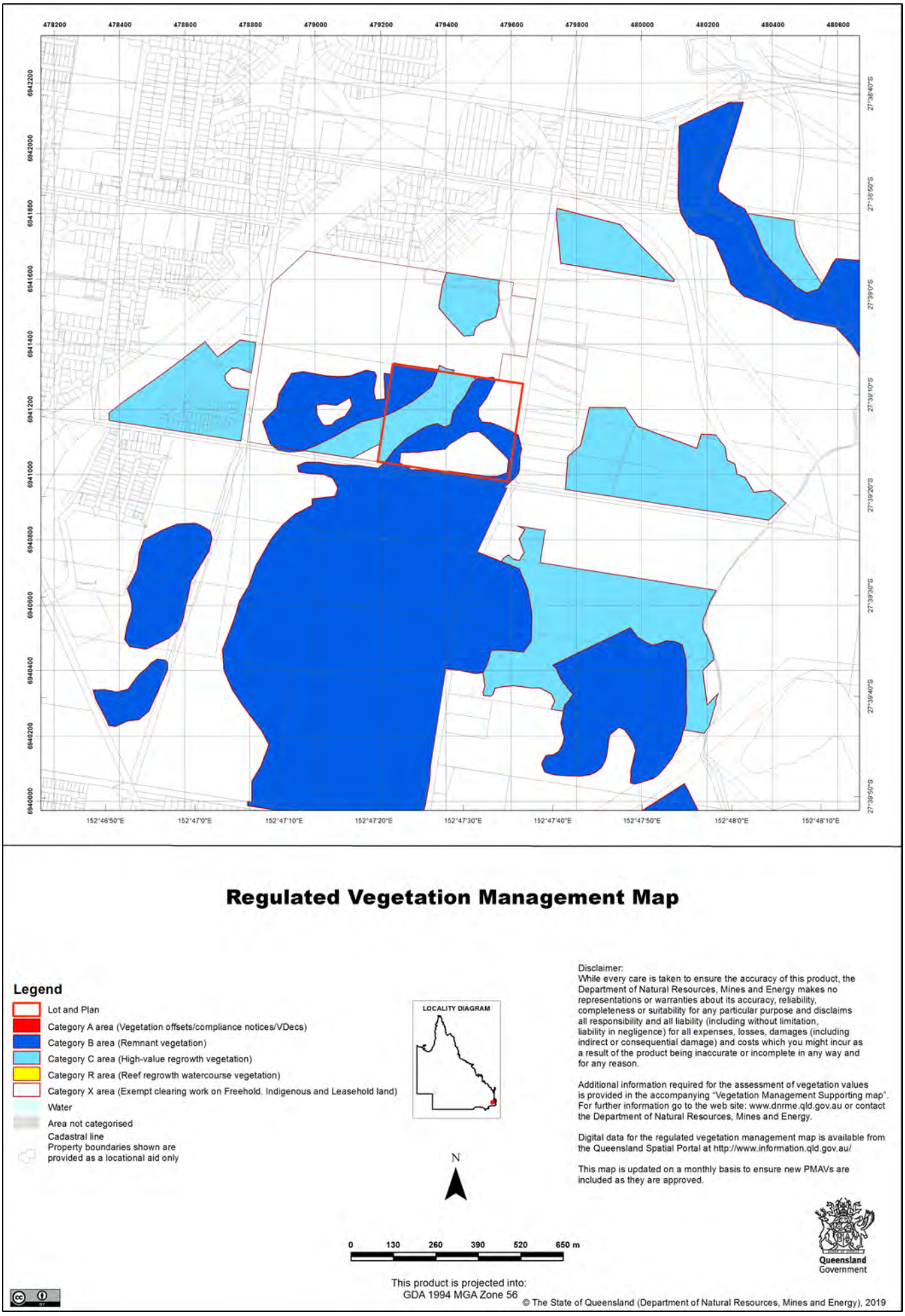
Agricultural Land Class A or B

The Agricultural Land Class map confirms the location and extent of land mapped as Agricultural Land Classes A or B as identified on the State Planning Interactive Mapping System. Please note that this map does not include areas identified as Agricultural Land Class A or B in local government planning schemes. This map can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code.

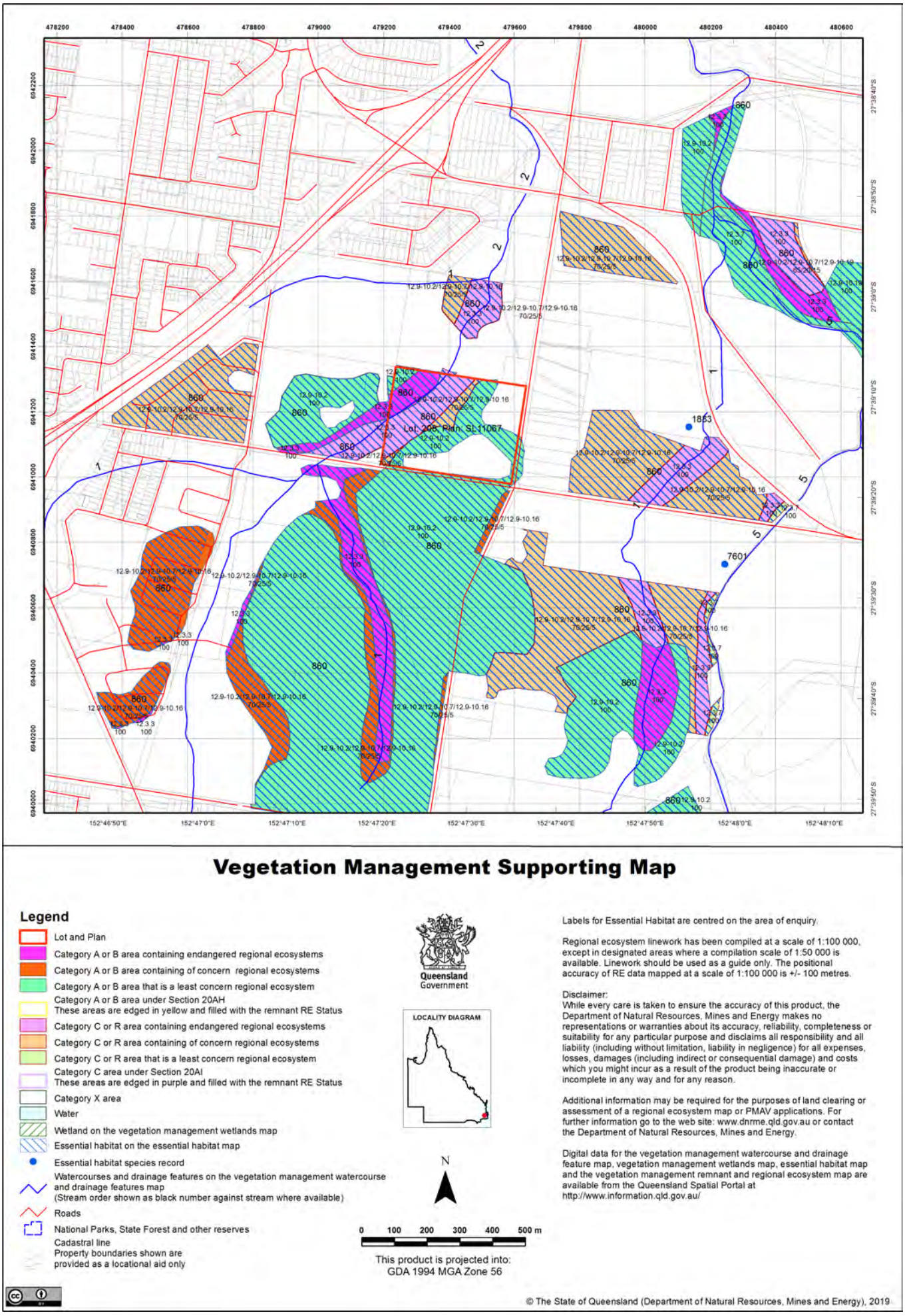
Protected plants map

The protected plants map shows areas where particular provisions of the *Nature Conservation Act 1992* apply to the clearing of protected plants.

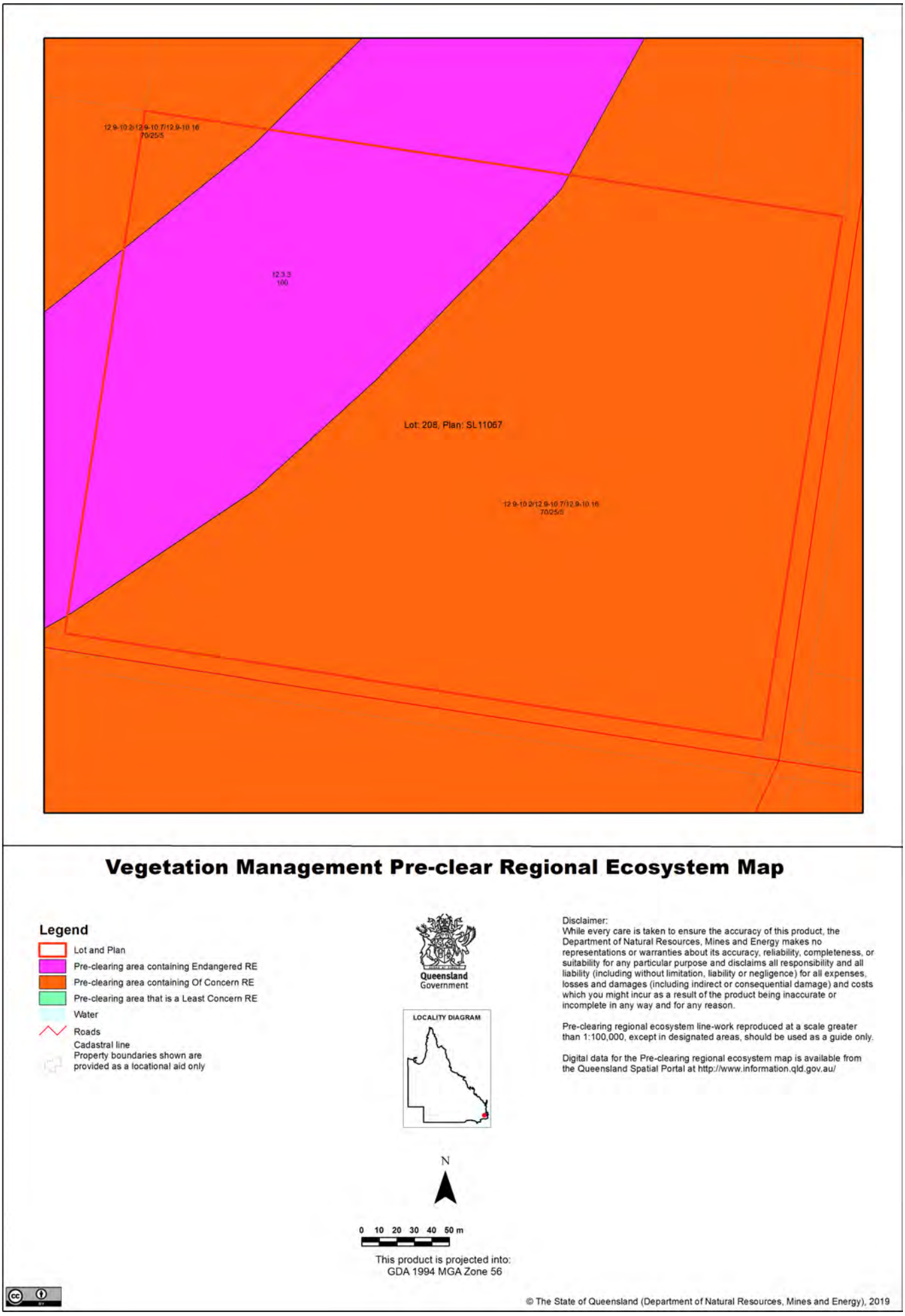
5.1 Regulated vegetation management map



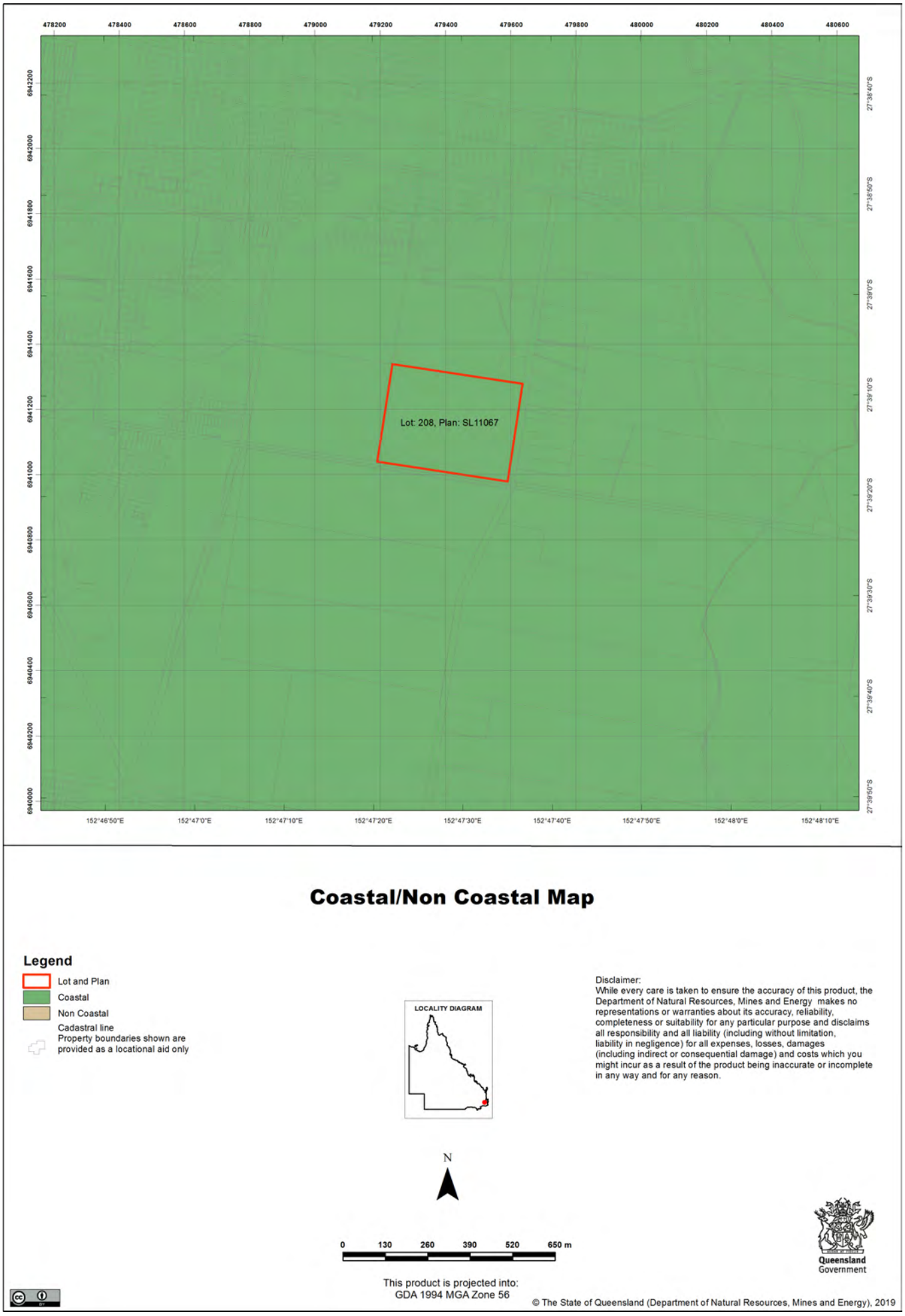
5.2 Vegetation management supporting map



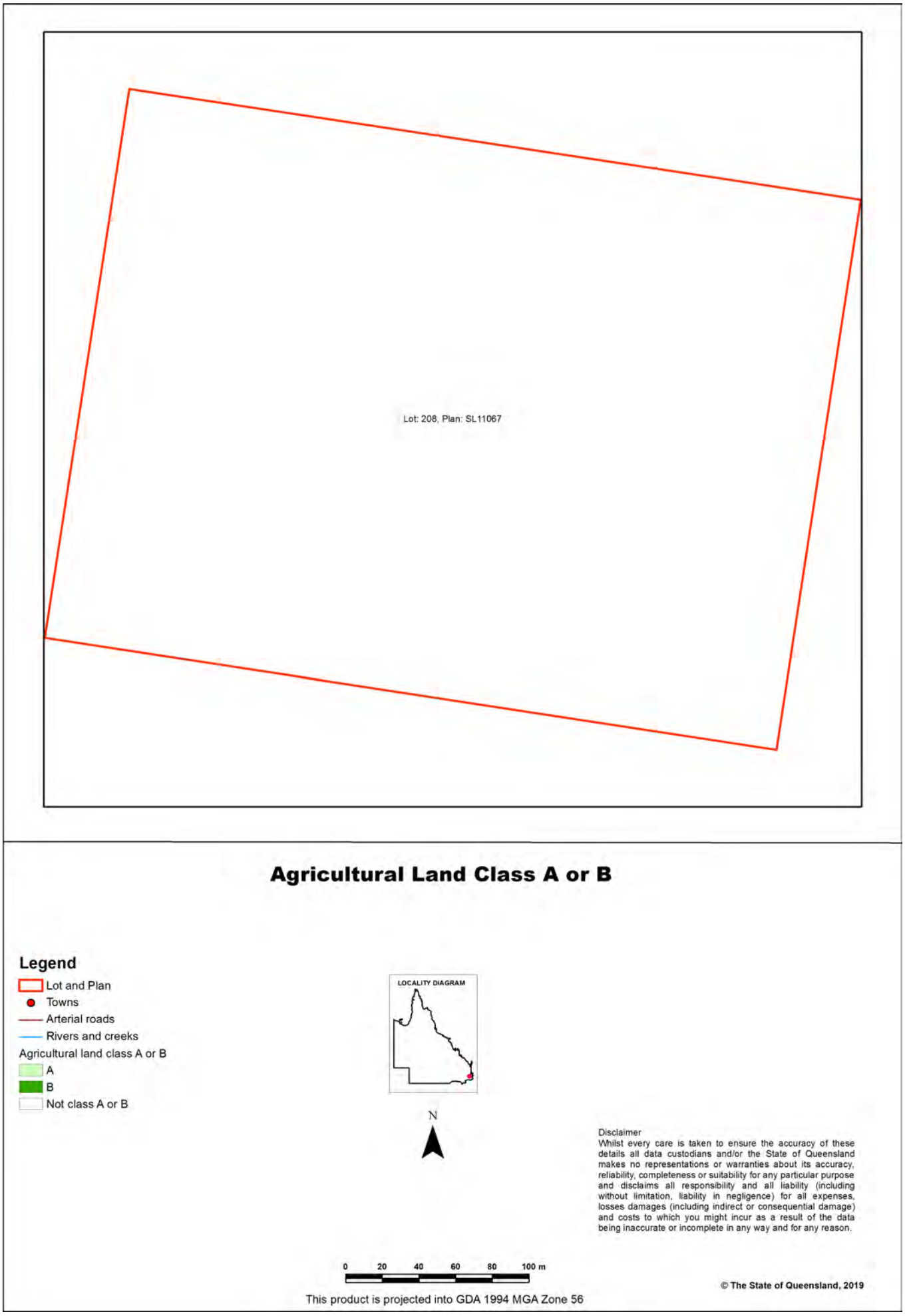
5.3 Pre-clear map



5.4 Coastal/non coastal map



5.5 Agricultural Land Class A or B map



5.6 Protected plants map administered by DES



Protected Plants Flora Survey Trigger Map

Legend

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

LOCALITY DIAGRAM



This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Science at palm@ehp.qld.gov.au

N

0 100 200 300 400 500 m

This product is projected into:
GDA 1994 MGA Zone 56

Disclaimer:
While every care is taken to ensure the accuracy of the data used to generate this product, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which might be incurred as a consequence of reliance on the data, or as a result of the data being inaccurate or incomplete in any way and for any reason.

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Protected plants flora survey trigger map

The protected plants flora survey trigger map identifies 'high risk areas' where endangered, vulnerable or near threatened plants are known to exist or are likely to exist. Under the *Nature Conservation Act 1992* (the Act) it is an offence to clear protected plants that are 'in the wild' unless you are authorised or the clearing is exempt, for more information see section 89 of the Act.

Please see the Department of Environment and Science webpage on the clearing of protected plants for information on what exemptions may apply in your circumstances, whether you may need to undertake a flora survey, and whether you may need a protected plants clearing permit.

Updates to the data informing the flora survey trigger map

The flora survey trigger map will be reviewed, and updated if necessary, at least every 12 months to ensure the map reflects the most up-to-date and accurate data available.

Species information

Please note that flora survey trigger maps do not identify species associated with 'high risk areas'. While some species information may be publicly available, for example via the Queensland Spatial Catalogue, the Department of Environment and Science does not provide species information on request. Regardless of whether species information is available for a particular high risk area, clearing plants in a high risk area may require a flora survey and/or clearing permit. Please see the Department of Environment and Science webpage on the clearing of protected plants for more information.

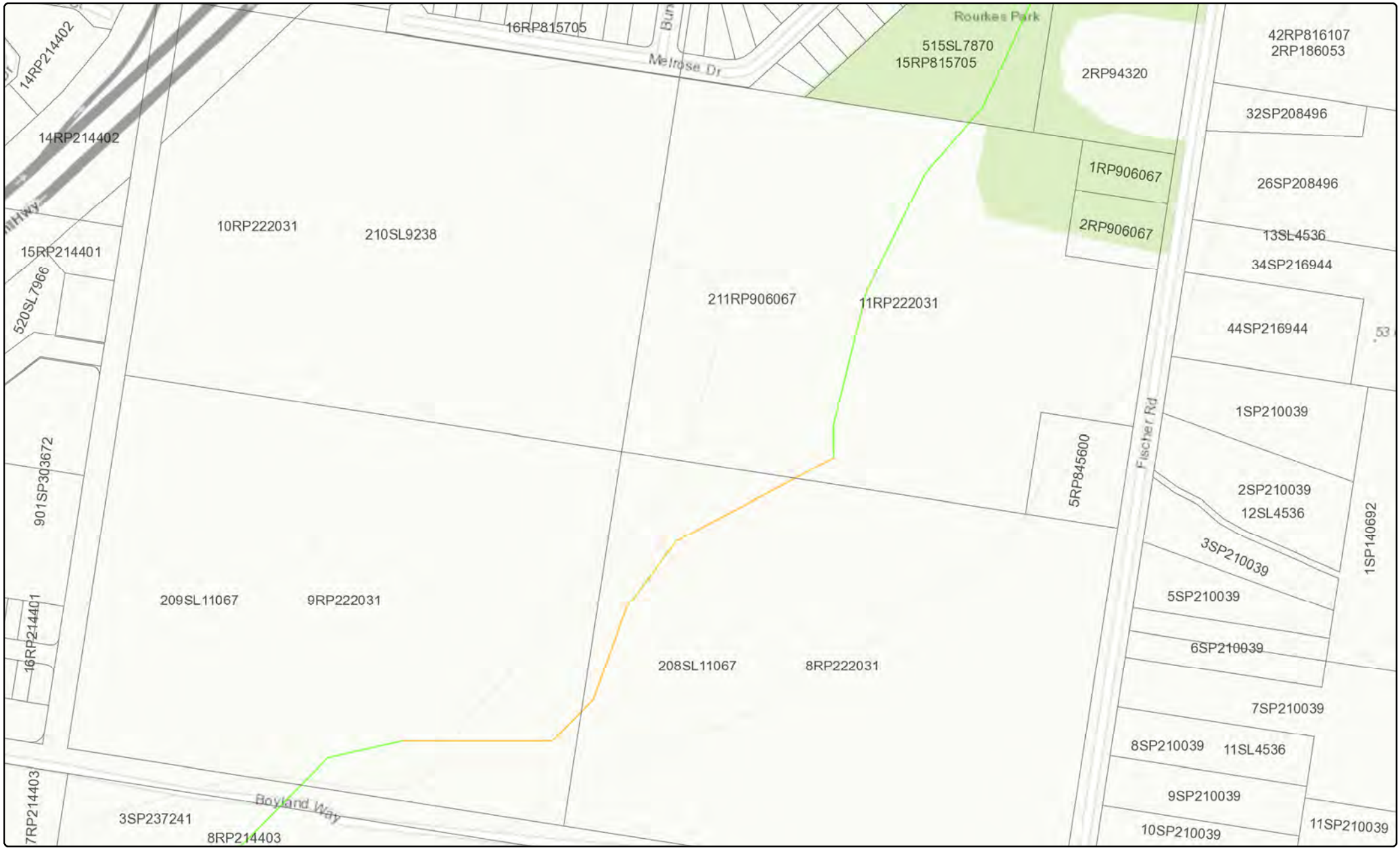
6. Other relevant legislation contacts list

Activity	Legislation	Agency	Contact details
• Interference with overland flow • Earthworks, significant disturbance	*Water Act 2000* *Soil Conservation Act 1986*	Department of Natural Resources, Mines and Energy (Queensland Government)	Ph: 13 QGOV (13 74 68) www.dnrme.qld.gov.au
• Indigenous Cultural Heritage	*Aboriginal Cultural Heritage Act 2003* *Torres Strait Islander Cultural Heritage Act 2003*	Department of Aboriginal and Torres Strait Islander Partnerships (Queensland Government)	Ph: 13 QGOV (13 74 68) www.datsip.qld.gov.au
• Mining and environmentally relevant activities • Infrastructure development (coastal) • Heritage issues • Protected plants and protected areas[1]	*Environmental Protection Act 1994* *Coastal Protection and Management Act 1995* *Queensland Heritage Act 1992* *Nature Conservation Act 1992*	Department of Environment and Science (Queensland Government)	Ph: 13 QGOV (13 74 68) www.des.qld.gov.au
• Interference with fish passage in a watercourse, mangroves • Forestry activities[2]	*Fisheries Act 1994* *Forestry Act 1959*	Department of Agriculture and Fisheries (Queensland Government)	Ph: 13 QGOV (13 74 68) www.daf.qld.gov.au
• Matters of National Environmental Significance including listed threatened species and ecological communities	*Environment Protection and Biodiversity Conservation Act 1999*	Department of the Environment (Australian Government)	Ph: 1800 803 772 www.environment.gov.au
• Development and planning processes	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Department of State Development, Manufacturing, Infrastructure and Planning (Queensland Government)	Ph: 13 QGOV (13 74 68) www.dsdmip.qld.gov.au
• Local government requirements	*Local Government Act 2009* *Planning Act 2016*	Department of Local Government, Racing and Multicultural Affairs (Queensland Government)	Ph: 13 QGOV (13 74 68) Your relevant local government office

1. In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992*, which endeavours to ensure that protected plants (whether whole plants or protected plants parts) are not illegally removed from the wild, or illegally traded. Prior to clearing, you should check the flora survey trigger map to determine if the clearing is within a high-risk area by visiting www.des.qld.gov.au. For further information or assistance on the protected plants flora survey trigger map for your property, please contact the Department of Environment and Science on 13QGOV (13 74 68) or email palm@des.qld.gov.au.

2. Contact the Department of Agriculture and Fisheries before clearing:
   - Any sandalwood on state-owned land (including leasehold land)
   - On freehold land in a 'forest consent area' or a 'forest entitlement area'
   - More than five hectares on state-owned land (including leasehold land) containing commercial timber species listed in parts 2 or 3 of Schedule 6 of the Vegetation Management Regulation 2012 and located within any of the following local government management areas-Banana, Bundaberg Regional, Fraser Coast Regional, Gladstone Regional, Isaac Regional, North Burnett Regional, Somerset Regional, South Burnett Regional, Southern Downs Regional, Tablelands Regional, Toowoomba Regional, Western Downs Regional.

Attachment 7



DA Mapping System – Print Screen

Department of State Development, Manufacturing, Infrastructure and Planning

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0 70 140 210 280

Metres

Date: 14/10/2019

N

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Legend

Cadastre (5k)

Cadastre (5k)

Queensland waterways for waterway barrier works

1 - Low

2 - Moderate

3 - High

4 - Major

Queensland Government

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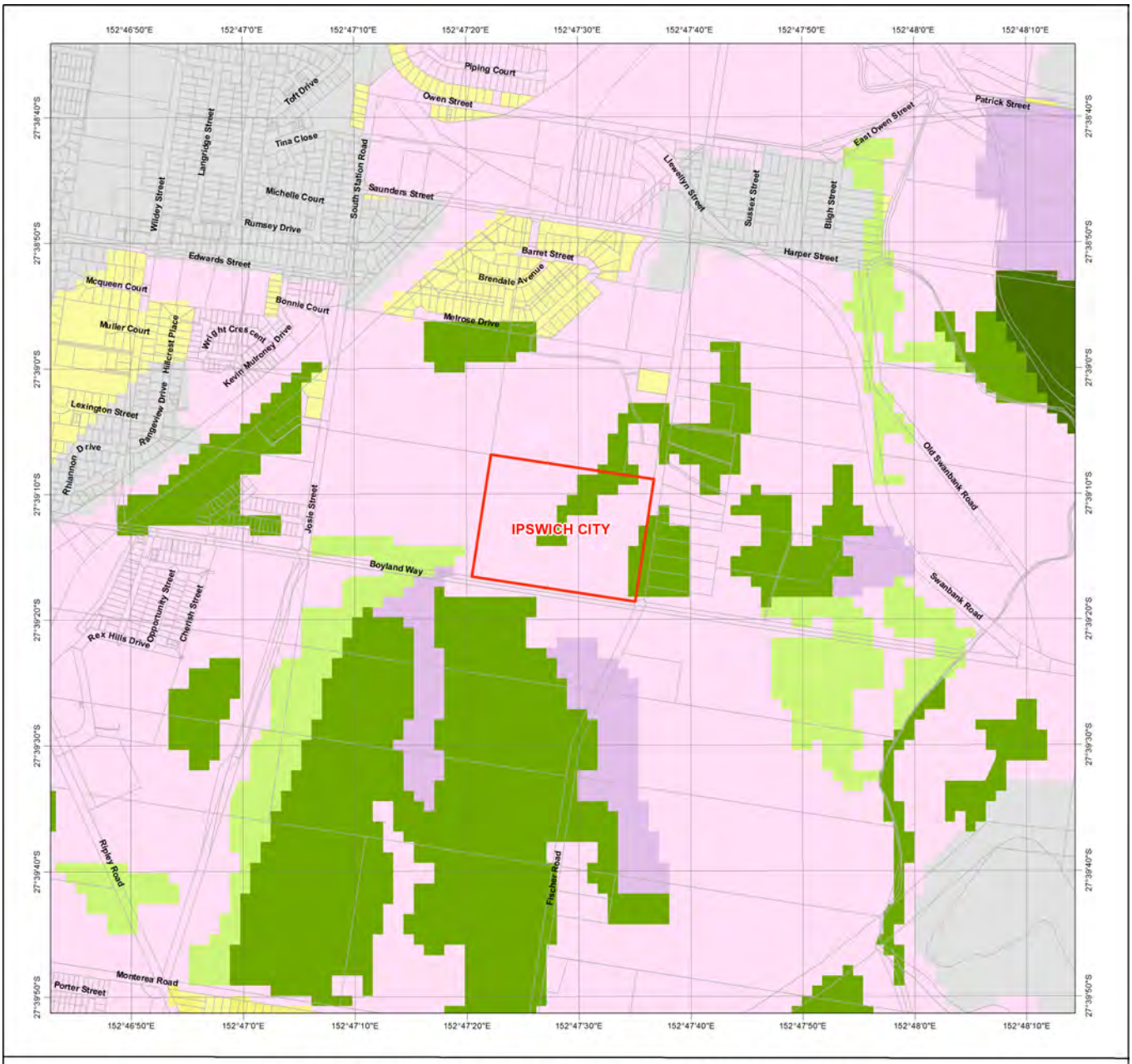
DA Mapping System – Print Screen

Date: 14/10/2019

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Attachment 8

Map requested: (14/10/2019 13:51:53)
Lot: 208 Plan: SL11067



Koala Habitat in South East Queensland

Lot and Plan

Koala SPP - 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
- Generally not suitable
- Water

South East Queensland Koala Habitat Values western SEQ
- Bushland Habitat
- Suitable for rehabilitation
- Other areas of value
- Generally not suitable
- Water
- Cadastral Boundaries
- Local Government Boundaries



N

0 130 260 390 520 650 m

This product is projected into GDA 1994 MGA Zone 56

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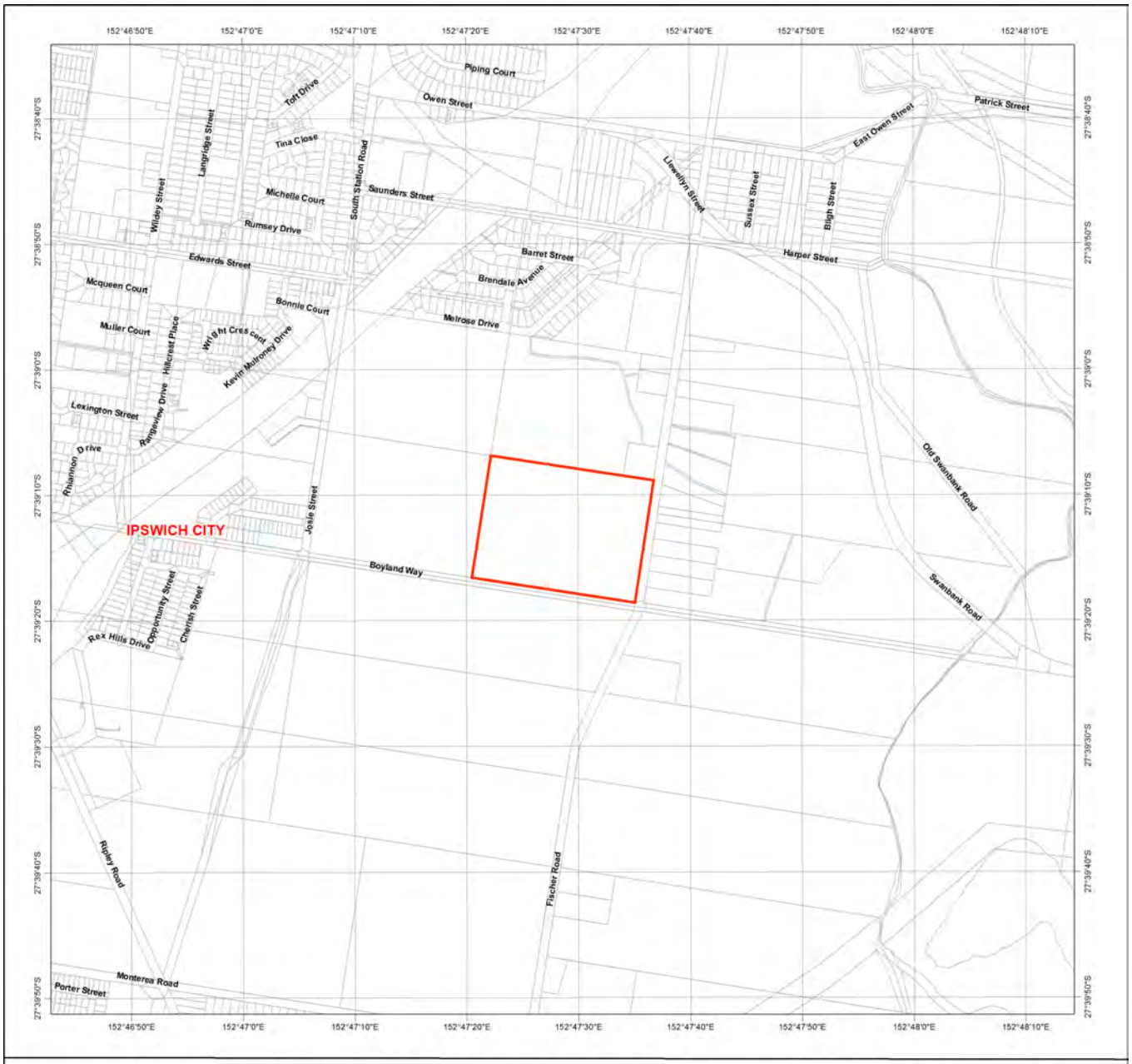
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Map requested: (14/10/2019 14:33:24)
Lot: 208 Plan: SL11067



Koala Conservation in South East Queensland State Planning Regulatory Provisions

- Lot and Plan
- Priority Koala Assessable Development Areas
- Koala Assessable Development Areas
- Outside SPRP Koala Assessable Development Areas

Koala SPRP - Identified Broad-Hectare Areas

- Koala SPRP - Identified Broad-Hectare Areas

Koala SPRP - 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
- Generally not suitable
- Water
- Cadastral Boundaries
- Local Government Boundaries



N

0 130 260 390 520 650 m

This product is projected into GDA 1994 MGA Zone 56

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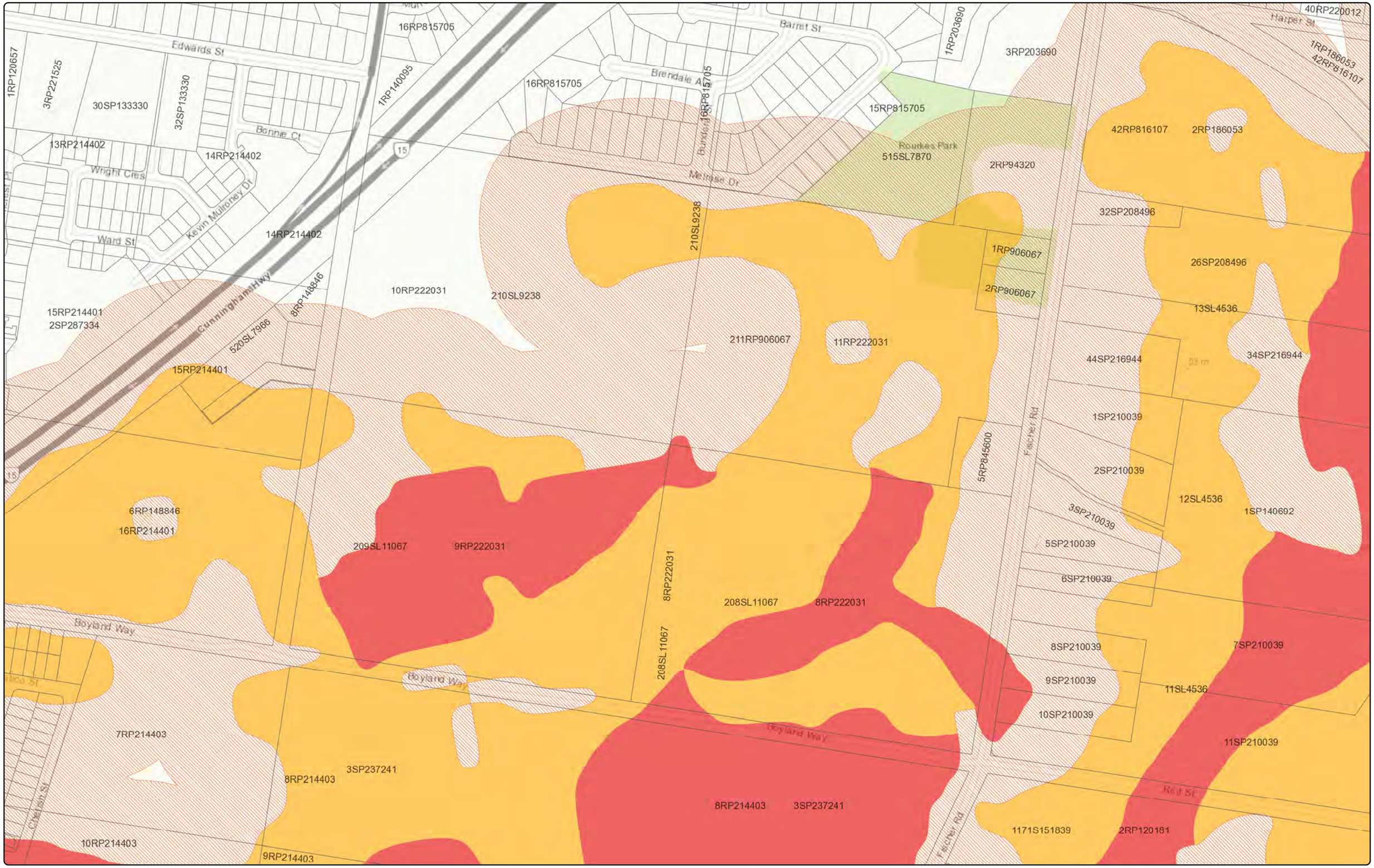
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Attachment 9



Department of State Development, Manufacturing, Infrastructure and Planning

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State Planning Policy

Making or amending a local planning instrument and designating land for community infrastructure

0 75 150 225 300

Metres

Date: 29/08/2019

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Legend

Cadastre (5k)

Cadastre (5k)

Bushfire prone area

Very High Potential Bushfire Intensity

High Potential Bushfire Intensity

Medium Potential Bushfire Intensity

Potential Impact Buffer

Queensland Government

Department of State Development, Manufacturing, Infrastructure and Planning

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State Planning Policy

Making or amending a local planning instrument and designating land for community infrastructure

Date: 29/08/2019

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Attachment 10

Family	Botanical Name	Common Name	EPBC Act 1999	NC Act 1992
Native Species				
Mimosaceae	*Acacia disparrima* subsp. *disparrima*	Hickory Wattle	NL	LC
Mimosaceae	*Acacia leiocalyx*		NL	LC
Mimosaceae	*Acacia maidenii*	Maiden's Wattle	NL	LC
Mimosaceae	*Acacia podalyriifolia*		NL	LC
Casuarinaceae	*Allocasuarina littoralis*	Black She-oak	NL	LC
Rhamnaceae	*Alphitonia excelsa*	Red Ash	NL	LC
Apocynaceae	*Alstonia constricta*	Bitterbark	NL	LC
Amaranthaceae	*Alternanthera denticulata*	Lesser Joyweed	NL	LC
Myrtaceae	*Angophora leiocarpa*	Smooth-barked Apple	NL	LC
Poaceae	*Aristida sp.*	a grass	NL	LC
Poaceae	*Arundinella nepalensis*	Reed Grass	NL	LC
Proteaceae	*Banksia integrifolia* subsp. *integrifolia*		NL	LC
Phyllanthaceae	*Breynia oblongifolia*	Coffee Bush	NL	LC
Cyperaceae	*Carex sp.*		NL	LC
Asteraceae	*Cassinia sp.*		NL	LC
Lauraceae	*Cassytha sp.*		NL	LC
Asteraceae	*Chrysocephalum apiculatum*	Golden Yellow Buttons	NL	LC
Myrtaceae	*Corymbia citriodora* subsp. *variegata*	Spotted Gum	NL	LC
Myrtaceae	*Corymbia intermedia*	Pink Bloodwood	NL	LC
Myrtaceae	*Corymbia tessellaris*	Carbeen	NL	LC
Myrtaceae	*Corymbia torelliana*	Cadaghi	NL	LC
Sapindaceae	*Cupaniopsis anacardioides*	Tuckeroo	NL	LC
Asteraceae	*Cyanthillium cinereum*		NL	LC
Thelypteridaceae	*Cyclosorus interruptus*		NL	LC
Poaceae	*Cymbopogon refractus*	Barbed Wire Grass	NL	LC
Cyperaceae	*Cyperus gracilis*	Whisker Grass	NL	LC
Cyperaceae	*Cyperus polystachyos*	Bunchy Sedge	NL	LC
Loranthaceae	*Dendrophthoe glabrescens*	Orange Mistletoe	NL	LC
Fabaceae	*Desmodium rhytidophyllum*	Hairy Tre-foil	NL	LC
Hemerocallidaceae	Dianella brevipedunculata		NL	LC
Chenopodiaceae	*Einadia hastata*	(a) Saltbush	NL	LC
Cyperaceae	*Eleocharis* sp.		NL	LC
Poaceae	*Eragrostis* sp.		NL	LC
Poaceae	*Eragrostis* sp.		NL	LC
Myrtaceae	*Eucalyptus crebra*	Narrow-leaved Red Ironbark	NL	LC
Myrtaceae	*Eucalyptus seeana*	Narrow-leaved Bluegum	NL	LC
Myrtaceae	*Eucalyptus tereticornis*	Queensland Blue Gum	NL	LC
Laxmanniaceae	*Eustrephus latifolius*	Wombat Berry	NL	LC
Santalaceae	*Exocarpos cupressiformis*		NL	LC
Moraceae	*Ficus coronata*	Creek Sandpaper Fig	NL	LC

Family	Botanical Name	Common Name	EPBC Act 1999	NC Act 1992
Cyperaceae	*Gahnia aspera*	Red-fruited Saw Sedge	NL	LC
Geraniaceae	*Geranium solanderi*	Native Geranium	NL	LC
Phyllanthaceae	*Glochidion ferdinandi*	Cheese Tree	NL	LC
Fabaceae	*Glycine clandestina*		NL	LC
Poaceae	*Heteropogon contortus*	Black Speargrass	NL	LC
Araliaceae	*Hydrocotyle laxiflora*	Pennyweed	NL	LC
Dennstaedtiaceae	*Hypolepis muelleri*	Harsh Ground Fern	NL	LC
Poaceae	*Imperata cylindrica*	Blady Grass	NL	LC
Fabaceae	*Jacksonia scoparia*		NL	LC
Juncaceae	*Juncus planifolius*		NL	LC
Juncaceae	*Juncus usitatus*	Common Rush	NL	LC
Asteraceae	*Lagenophora* sp.		NL	LC
Laxmanniaceae	*Laxmannia gracilis*	Slender Wire Lily	NL	LC
Poaceae	*Leersia hexandra*	Swamp Ricegrass	NL	LC
Campanulaceae	*Lobelia concolor*		NL	LC
Campanulaceae	*Lobelia purpurascens*	White Root	NL	LC
Campanulaceae	*Lobelia stenophylla*		NL	LC
Laxmanniaceae	*Lomandra laxa*		NL	LC
Laxmanniaceae	*Lomandra longifolia*	Spiny-headed Mat Rush	NL	LC
Laxmanniaceae	*Lomandra* sp.		NL	LC
Myrtaceae	*Lophostemon suaveolens*	Swamp Box	NL	LC
Onagraceae	*Ludwigia octovalvis*	Native Willow Primrose	NL	LC
Moraceae	*Maclura cochinchinensis*	Cockspur Vine	NL	LC
Marsileaceae	*Marsilea* sp.		NL	LC
Meliaceae	*Melia azedarach*	White Cedar	NL	LC
Poaceae	*Microlaena stipoides*	Weeping Meadow Grass	NL	LC
Haloragaceae	*Myriophyllum gracile*		NL	LC
Menyanthaceae	*Nymphoides indica*		NL	LC
Poaceae	*Ottochloa gracillima*	Graceful Grass	NL	LC
Poaceae	*Panicum* sp.		NL	LC
Apocynaceae	*Parsonsia brisbanensis*		NL	LC
Apocynaceae	*Parsonsia straminea*	Monkey Rope	NL	LC
Poaceae	*Paspalum* sp.		NL	LC
Polygonaceae	*Persicaria attenuata*	Smartweed	NL	LC
Polygonaceae	*Persicaria decipiens*	Slender Knotweed	NL	LC
Polygonaceae	*Persicaria orientalis*	Prince's Feather	NL	LC
Proteaceae	*Persoonia* sp.		NL	LC
Picrodendraceae	*Petalostigma pubescens*	Quinine Bush	NL	LC
Philydraceae	*Philydrum lanuginosum*	Woolly Frogmouth	NL	LC
Phyllanthaceae	*Phyllanthus* sp.		NL	LC
Asteraceae	*Pterocaulon redolens*		NL	LC
Phyllanthaceae	*Sauropus hirtellus*		NL	LC
Cyperaceae	*Scleria* sp.		NL	LC
Fabaceae	*Sesbania* sp.		NL	LC
Poaceae	*Sporobolus* sp.		NL	LC
Ulmaceae	*Trema aspera*		NL	LC
Typhaceae	*Typha orientalis*		NL	LC

Family	Botanical Name	Common Name	EPBC Act 1999	NC Act 1992
Exotic Species				
Asteraceae	*Ageratum houstonianum*	Blue Billygoat Weed	NL	*
Apocynaceae	*Asclepias curassavica*	Tropical Milkweed	NL	*
Asteraceae	*Aster subulatus*	Wild aster	NL	*
Asteraceae	*Bidens pilosa*	Cobbler's Pegs	NL	*
Poaceae	*Brachiaria decumbens*	Signal grass	NL	*
Commelinaceae	*Callisia fragrans*		NL	*
Commelinaceae	*Callisia repens*	Money Plant	NL	*
Bignoniaceae	*Campsis radicans*		NL	*
Cannaceae	*Canna indica*		NL	*
Apocynaceae	*Catharanthus roseus*	Pink Periwinkle	NL	*
Chenopodiaceae	*Chenopodium album*		NL	*
Poaceae	*Chloris gayana*	Rhodes Grass	NL	*
Arecaceae	*Syagrus romanzoffiana*	Cocos Palm	NL	*
Poaceae	*Cortaderia selloana*		NL	*
Lythraceae	*Cuphea carthagenensis*	Columbian Waxweed	NL	*
Poaceae	*Cynodon dactylon*	Couch	NL	*
Poaceae	*Digitaria didactyla*	Blue Couch	NL	*
Poaceae	*Digitaria violascens*		NL	*
Chenopodiaceae	*Dysphania ambrosioides*		NL	*
Asteraceae	*Eclipta prostrata*	White Eclipta	NL	*
Asteraceae	*Emilia sonchifolia*	Emilia	NL	*
Poaceae	*Eragrostis curvula*		NL	*
Asteraceae	*Erechtites valerianifolius*		NL	*
Apocynaceae	*Gomphocarpus physocarpus*	Balloon Cotton Bush	NL	*
Poaceae	*Hyparrhenia rufa*		NL	*
Asteraceae	*Hypochaeris radicata*	Flatweed	NL	*
Bignoniaceae	*Jacaranda mimosifolia*	Jacaranda	NL	*
Myrsinaceae	*Lysimachia arvensis*		NL	*
Fabaceae	*Macroptilium atropurpureum*	Siratro	NL	*
Fabaceae	*Macroptilium lathyroides*	Phasey Bean	NL	*
Poaceae	*Megathyrsus maximus* var. *pubiglumis*	Green Panic	NL	*
Poaceae	*Melinis repens*	Red Natal Grass	NL	*
Moraceae	*Morus alba*		NL	*
Cactaceae	*Opuntia tomentosa*	Velvety Tree Pear	NL	*
Passifloraceae	*Passiflora suberosa*	Corky Passionvine	NL	*
Plantaginaceae	*Plantago lanceolata*		NL	*
Acanthaceae	*Ruellia simplex*		NL	*
Polygonaceae	*Rumex crispus*		NL	*
Plantaginaceae	*Scoparia dulcis*		NL	*
Caesalpiniaceae	*Senna pendula* var. *glabrata*		NL	*
Poaceae	*Setaria sphacelata*		NL	*
Malvaceae	*Sida cordifolia*		NL	*
Malvaceae	*Sida rhombifolia*		NL	*
Solanaceae	*Solanum seaforthianum*		NL	*
Verbenaceae	*Verbena bonariensis*		NL	*
Asteraceae	*Ambrosia artemisiifolia*	Annual Ragweed	NL	*(RI)
Asparagaceae	*Asparagus africanus*	Asparagus Fern	NL	*(RI)
Asteraceae	*Baccharis halimifolia*	Groundsel Bush	NL	*(RI)
Crassulaceae	*Bryophyllum delagoense*	Mother of Millions	NL	*(RI)

Family	Botanical Name	Common Name	EPBC Act 1999	NC Act 1992
Ulmaceae	*Celtis sinensis*	Chinese Celtis	NL	*(RI)
Lauraceae	*Cinnamomum camphora*	Camphor Laurel	NL	*(RI)
Verbenaceae	*Lantana camara*	Common Lantana	NL	*(RI)
Verbenaceae	*Lantana montevidensis*	Creeping Lantana	NL	*(RI)
Anacardiaceae	*Schinus terebinthifolius*	Broad-leaved Pepper Tree	NL	*(RI)
Asteraceae	*Senecio madagascariensis*	Fireweed	NL	*(RI)

28ºS
ENVIRONMENTAL

Attachment 10

Australian Government
Department of the Environment and Energy

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.

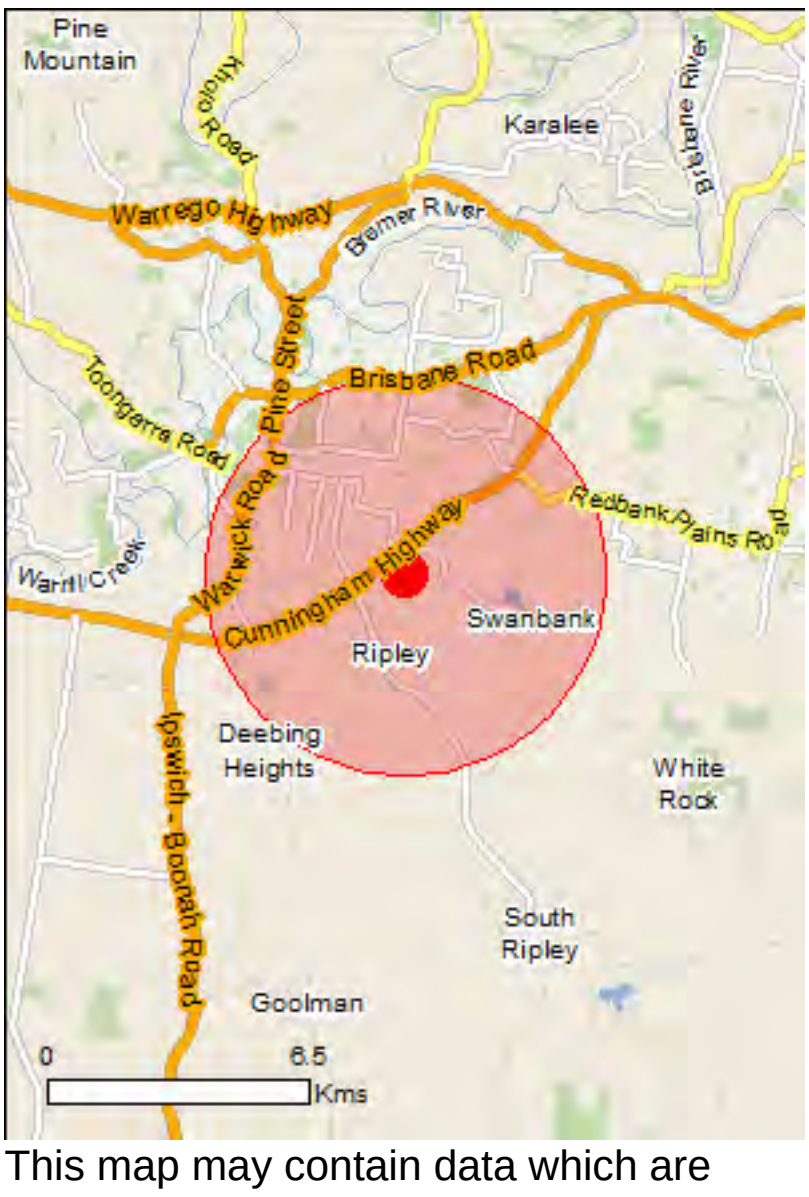
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 14/10/19 14:50:02

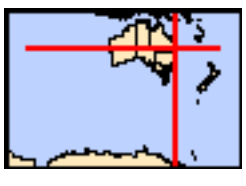
Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements



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Coordinates
Buffer: 5.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	35
Listed Migratory Species:	16

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:	None
Listed Marine Species:	22
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	39
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Moreton bay	30 - 40km 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
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area
Poplar Box Grassy Woodland on Alluvial Plains	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 may 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 may 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
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat known 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
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area
Fish		
Neoceratodus forsteri Australian Lungfish, Queensland Lungfish [67620]	Vulnerable	Species or species habitat known to occur within area
Insects		
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically 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 hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely 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 likely 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
Plants		
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within area
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area
Cupaniopsis shirleyana Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
[Cupaniopsis tomentella](#) Boonah Tuckeroo [3322]	Vulnerable	Species or species habitat may occur within area
[Cycas ophiolitica](#) [55797]	Endangered	Species or species habitat likely to occur within area
[Dichanthium setosum](#) bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area
[Notelaea ipsviciensis](#) Cooneana Olive [81858]	Critically Endangered	Species or species habitat known to 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 may 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](#) Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat likely to occur within area
[Furina dunmalli](#) Dunmall's Snake [59254]	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]	Vulnerable	Species or species habitat known to occur within area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat known to occur within area
[Monarcha trivirgatus](#) Spectacled Monarch [610]		Species or species habitat may occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
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		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		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 known to 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 - IPSWICH TRAINING DEPOT

Listed Marine Species [Resource Information]

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

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
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

Name	Threatened	Type of Presence
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		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]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
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 known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area

Name	Threatened	Type of Presence
[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
Denmark Hill	QLD

Invasive Species [Resource Information]

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

Name	Status	Type of Presence
Birds		
Acridotheres tristis 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 known to occur within area
Mammals		

Name	Status	Type of Presence
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
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus africanus Climbing Asparagus, Climbing Asparagus Fern [66907]		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
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
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

Name	Status	Type of Presence
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
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
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
Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat may occur within area

Caveat

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

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-27.6519 152.7895

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.

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28ºS
ENVIRONMENTAL

Attachment 11

Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: All
Records: All
Date: All
Latitude: -27.6519
Longitude: 152.7895
Distance: 5
Email: chris@28south.com.au
Date submitted: Monday 14 Oct 2019 13:50:13
Date extracted: Monday 14 Oct 2019 14:00:16

The number of records retrieved = 561

Disclaimer

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

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

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

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			17
animals	amphibians	Hylidae	*Litoria dentata*	bleating treefrog		C		4
animals	amphibians	Hylidae	*Litoria rubella*	ruddy treefrog		C		1
animals	amphibians	Hylidae	*Litoria caerulea*	common green treefrog		C		11
animals	amphibians	Hylidae	*Litoria wilcoxii*	eastern stony creek frog		C		1
animals	amphibians	Hylidae	*Litoria gracilenta*	graceful treefrog		C		3
animals	amphibians	Hylidae	*Litoria latopalmata*	broad palmed rocketfrog		C		2
animals	amphibians	Hylidae	*Litoria fallax*	eastern sedgefrog		C		11
animals	amphibians	Hylidae	*Litoria nasuta*	striped rocketfrog		C		5
animals	amphibians	Limnodynastidae	*Platyplectrum ornatum*	ornate burrowing frog		C		3
animals	amphibians	Limnodynastidae	*Limnodynastes peronii*	striped marshfrog		C		8
animals	amphibians	Limnodynastidae	*Adelotus brevis*	tusked frog		V		1
animals	amphibians	Limnodynastidae	*Limnodynastes terraereginae*	scarlet sided pobblebonk		C		3
animals	amphibians	Myobatrachidae	*Crinia parinsignifera*	beeping froglet		C		7
animals	amphibians	Myobatrachidae	*Pseudophryne raveni*	copper backed broodfrog		C		1
animals	amphibians	Myobatrachidae	*Crinia signifera*	clicking froglet		C		3
animals	amphibians	Myobatrachidae	*Uperoleia fusca*	dusky gungan		C		2
animals	amphibians	Myobatrachidae	*Pseudophryne coriacea*	red backed broodfrog		C		1
animals	birds	Acanthizidae	*Sericornis citreogularis*	yellow-throated scrubwren		C		1
animals	birds	Acanthizidae	*Smicrornis brevirostris*	weebill		C		15
animals	birds	Acanthizidae	*Acanthiza nana*	yellow thornbill		C		3
animals	birds	Acanthizidae	*Gerygone mouki*	brown gerygone		C		2
animals	birds	Acanthizidae	*Pyrrholaemus sagittatus*	speckled warbler		C		12
animals	birds	Acanthizidae	*Gerygone olivacea*	white-throated gerygone		C		18
animals	birds	Acanthizidae	*Acanthiza reguloides*	buff-rumped thornbill		C		4
animals	birds	Acanthizidae	*Sericornis frontalis*	white-browed scrubwren		C		17
animals	birds	Acanthizidae	*Acanthiza chrysorrhoa*	yellow-rumped thornbill		C		14
animals	birds	Acanthizidae	*Acanthiza pusilla*	brown thornbill		C		1
animals	birds	Accipitridae	*Aquila audax*	wedge-tailed eagle		C		11
animals	birds	Accipitridae	*Accipiter novaehollandiae*	grey goshawk		C		1
animals	birds	Accipitridae	*Accipiter cirrocephalus*	collared sparrowhawk		C		5
animals	birds	Accipitridae	*Milvus migrans*	black kite		C		4
animals	birds	Accipitridae	*Haliastur indus*	brahminy kite		C		3
animals	birds	Accipitridae	*Elanus axillaris*	black-shouldered kite		C		8
animals	birds	Accipitridae	*Pandion cristatus*	eastern osprey		SL		1
animals	birds	Accipitridae	*Circus approximans*	swamp harrier		C		4
animals	birds	Accipitridae	*Lophoictinia isura*	square-tailed kite		C		1
animals	birds	Accipitridae	*Accipiter fasciatus*	brown goshawk		C		10
animals	birds	Accipitridae	*Aviceda subcristata*	Pacific baza		C		3
animals	birds	Accipitridae	*Haliastur sphenurus*	whistling kite		C		6
animals	birds	Accipitridae	*Haliaeetus leucogaster*	white-bellied sea-eagle		C		11
animals	birds	Acrocephalidae	*Acrocephalus australis*	Australian reed-warbler		C		14
animals	birds	Aegothelidae	*Aegotheles cristatus*	Australian owlet-nightjar		C		2
animals	birds	Alcedinidae	*Ceyx azureus*	azure kingfisher		C		6
animals	birds	Anatidae	*Anas castanea*	chestnut teal		C		5
animals	birds	Anatidae	*Malacorhynchus membranaceus*	pink-eared duck		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Anatidae	*Nettapus coromandelianus*	cotton pygmy-goose		C		1
animals	birds	Anatidae	*Tadorna tadornoides*	Australian shelduck		C		1
animals	birds	Anatidae	*Dendrocygna arcuata*	wandering whistling-duck		C		1
animals	birds	Anatidae	*Spatula rhynchotis*	Australasian shoveler		C		2
animals	birds	Anatidae	*Dendrocygna eytoni*	plumed whistling-duck		C		2
animals	birds	Anatidae	*Anas platyrhynchos*	northern mallard	Y			2
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		41
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		29
animals	birds	Anatidae	*Aythya australis*	hardhead		C		18
animals	birds	Anatidae	*Cygnus atratus*	black swan		C		13
animals	birds	Anatidae	*Anas gracilis*	grey teal		C		14
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		18
animals	birds	Anseranatidae	*Anseranas semipalmata*	magpie goose		C		3
animals	birds	Apodidae	*Hirundapus caudacutus*	white-throated needletail		V	V	4
animals	birds	Ardeidae	*Ardea alba modesta*	eastern great egret		C		8
animals	birds	Ardeidae	*Nycticorax caledonicus*	nankeen night-heron		C		2
animals	birds	Ardeidae	*Bubulcus ibis*	cattle egret		C		23
animals	birds	Ardeidae	*Ardea pacifica*	white-necked heron		C		6
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		24
animals	birds	Ardeidae	*Butorides striata*	striated heron		C		1
animals	birds	Ardeidae	*Egretta garzetta*	little egret		C		3
animals	birds	Ardeidae	*Ardea intermedia*	intermediate egret		C		8
animals	birds	Ardeidae	*Botaurus poiciloptilus*	Australasian bittern		E	E	1
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		58
animals	birds	Artamidae	*Gymnorhina tibicen*	Australian magpie		C		92
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		16
animals	birds	Artamidae	*Artamus cyanopterus*	dusky woodswallow		C		1
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		41
animals	birds	Artamidae	*Artamus leucorynchus*	white-breasted woodswallow		C		6
animals	birds	Artamidae	*Artamus superciliosus*	white-browed woodswallow		C		1
animals	birds	Burhinidae	*Burhinus grallarius*	bush stone-curlew		C		2
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		24
animals	birds	Cacatuidae	*Cacatua sanguinea*	little corella		C		3
animals	birds	Cacatuidae	*Cacatua tenuirostris*	long-billed corella	Y	C		3
animals	birds	Cacatuidae	*Nymphicus hollandicus*	cockatiel		C		1
animals	birds	Cacatuidae	*Eolophus roseicapilla*	galah		C		32
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		76
animals	birds	Campephagidae	*Coracina tenuirostris*	cicadabird		C		5
animals	birds	Campephagidae	*Lalage tricolor*	white-winged triller		C		1
animals	birds	Campephagidae	*Lalage leucomela*	varied triller		C		3
animals	birds	Charadriidae	*Erythrogonys cinctus*	red-kneed dotterel		C		4
animals	birds	Charadriidae	*Elseyornis melanops*	black-fronted dotterel		C		12
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		5
animals	birds	Charadriidae	*Vanellus miles novaehollandiae*	masked lapwing (southern subspecies)		C		28
animals	birds	Ciconiidae	*Ephippiorhynchus asiaticus*	black-necked stork		C		8
animals	birds	Cisticolidae	*Cisticola exilis*	golden-headed cisticola		C		39

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Climacteridae	*Cormobates leucophaea metastasis*	white-throated treecreeper (southern)		C		6
animals	birds	Columbidae	*Columba livia*	rock dove	Y			21
animals	birds	Columbidae	*Geopelia cuneata*	diamond dove		C		1
animals	birds	Columbidae	*Geopelia striata*	peaceful dove		C		8
animals	birds	Columbidae	*Columba leucomela*	white-headed pigeon		C		2
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		35
animals	birds	Columbidae	*Phaps chalcoptera*	common bronzewing		C		5
animals	birds	Columbidae	*Geopelia humeralis*	bar-shouldered dove		C		14
animals	birds	Columbidae	*Macropygia amboinensis*	brown cuckoo-dove		C		2
animals	birds	Columbidae	*Streptopelia chinensis*	spotted dove	Y			60
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		20
animals	birds	Corvidae	*Corvus sp.*					1
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		108
animals	birds	Cuculidae	*Cacomantis pallidus*	pallid cuckoo		C		1
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		20
animals	birds	Cuculidae	*Cacomantis variolosus*	brush cuckoo		C		1
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		12
animals	birds	Cuculidae	*Cacomantis flabelliformis*	fan-tailed cuckoo		C		15
animals	birds	Cuculidae	*Scythrops novaehollandiae*	channel-billed cuckoo		C		18
animals	birds	Cuculidae	*Chalcites basalis*	Horsfield's bronze-cuckoo		C		6
animals	birds	Cuculidae	*Cuculus optatus*	oriental cuckoo		SL		1
animals	birds	Cuculidae	*Chalcites lucidus*	shining bronze-cuckoo		C		3
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		24
animals	birds	Estrildidae	*Lonchura punctulata*	nutmeg mannikin	Y			5
animals	birds	Estrildidae	*Neochmia modesta*	plum-headed finch		C		2
animals	birds	Estrildidae	*Lonchura castaneothorax*	chestnut-breasted mannikin		C		16
animals	birds	Estrildidae	*Neochmia temporalis*	red-browed finch		C		12
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		34
animals	birds	Eurostopodidae	*Eurostopodus mystacalis*	white-throated nightjar		C		2
animals	birds	Falconidae	*Falco berigora*	brown falcon		C		3
animals	birds	Falconidae	*Falco longipennis*	Australian hobby		C		5
animals	birds	Falconidae	*Falco cenchroides*	nankeen kestrel		C		12
animals	birds	Falconidae	*Falco peregrinus*	peregrine falcon		C		4
animals	birds	Halcyonidae	*Dacelo leachii*	blue-winged kookaburra		C		5
animals	birds	Halcyonidae	*Todiramphus macleayii*	forest kingfisher		C		4
animals	birds	Halcyonidae	*Todiramphus sanctus*	sacred kingfisher		C		21
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		57
animals	birds	Halcyonidae	*Todiramphus pyrrhopygius*	red-backed kingfisher		C		2
animals	birds	Hirundinidae	*Petrochelidon nigricans*	tree martin		C		5
animals	birds	Hirundinidae	*Cheramoeca leucosterna*	white-backed swallow		C		2
animals	birds	Hirundinidae	*Petrochelidon ariel*	fairy martin		C		13
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		35
animals	birds	Jacanidae	*Irediparra gallinacea*	comb-crested jacana		C		9
animals	birds	Laridae	*Chroicocephalus novaehollandiae*	silver gull		C		1
animals	birds	Laridae	*Chlidonias hybrida*	whiskered tern		C		1
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		56

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Maluridae	*Malurus lamberti*	variegated fairy-wren		C		23
animals	birds	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren		C		34
animals	birds	Megaluridae	*Cincloramphus cruralis*	brown songlark		C		1
animals	birds	Megaluridae	*Megalurus timoriensis*	tawny grassbird		C		13
animals	birds	Megaluridae	*Megalurus gramineus*	little grassbird		C		5
animals	birds	Megapodiidae	*Alectura lathami*	Australian brush-turkey		C		1
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		56
animals	birds	Meliphagidae	*Myzomela sanguinolenta*	scarlet honeyeater		C		32
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		19
animals	birds	Meliphagidae	*Anthochaera chrysoptera*	little wattlebird		C		3
animals	birds	Meliphagidae	*Melithreptus albogularis*	white-throated honeyeater		C		19
animals	birds	Meliphagidae	*Plectorhyncha lanceolata*	striped honeyeater		C		4
animals	birds	Meliphagidae	*Acanthorhynchus tenuirostris*	eastern spinebill		C		1
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		61
animals	birds	Meliphagidae	*Melithreptus lunatus*	white-naped honeyeater		C		3
animals	birds	Meliphagidae	*Melithreptus gularis*	black-chinned honeyeater		C		6
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		48
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		23
animals	birds	Meliphagidae	*Caligavis chrysops*	yellow-faced honeyeater		C		21
animals	birds	Meliphagidae	*Meliphaga lewinii*	Lewin's honeyeater		C		3
animals	birds	Meliphagidae	*Ptilotula fusca*	fuscous honeyeater		C		9
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		C		25
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		65
animals	birds	Monarchidae	*Monarcha melanopsis*	black-faced monarch		SL		1
animals	birds	Monarchidae	*Symposiachrus trivirgatus*	spectacled monarch		SL		1
animals	birds	Monarchidae	*Myiagra inquieta*	restless flycatcher		C		1
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		6
animals	birds	Motacillidae	*Anthus novaeseelandiae*	Australasian pipit		C		5
animals	birds	Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird		C		32
animals	birds	Neosittidae	*Daphoenositta chrysoptera*	varied sittella		C		8
animals	birds	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird		C		49
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		9
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		28
animals	birds	Pachycephalidae	*Colluricincla megarhyncha*	little shrike-thrush		C		1
animals	birds	Pachycephalidae	*Pachycephala pectoralis*	golden whistler		C		22
animals	birds	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush		C		12
animals	birds	Pardalotidae	*Pardalotus punctatus*	spotted pardalote		C		6
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		52/2
animals	birds	Passeridae	*Passer domesticus*	house sparrow	Y			21
animals	birds	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican		C		22
animals	birds	Petroicidae	*Petroica goodenovii*	red-capped robin		C		1
animals	birds	Petroicidae	*Eopsaltria australis*	eastern yellow robin		C		12
animals	birds	Petroicidae	*Petroica rosea*	rose robin		C		11
animals	birds	Petroicidae	*Petroica boodang*	scarlet robin		C		2
animals	birds	Petroicidae	*Microeca fascinans*	jacky winter		C		6
animals	birds	Phaethontidae	*Phaethon lepturus*	white-tailed tropicbird		SL		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		25
animals	birds	Phalacrocoracidae	*Phalacrocorax varius*	pied cormorant		C		13
animals	birds	Phalacrocoracidae	*Phalacrocorax carbo*	great cormorant		C		8
animals	birds	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant		C		25
animals	birds	Phasianidae	*Coturnix ypsilophora*	brown quail		C		9
animals	birds	Phasianidae	*Coturnix pectoralis*	stubble quail		C		2
animals	birds	Podargidae	*Podargus strigoides*	tawny frogmouth		C		15
animals	birds	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe		C		22
animals	birds	Podicipedidae	*Podiceps cristatus*	great crested grebe		C		9
animals	birds	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler		C		8
animals	birds	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet		C		40
animals	birds	Psittacidae	*Psephotus pulcherrimus*	paradise parrot		PE	EX	1
animals	birds	Psittacidae	*Platycercus adscitus palliceps*	pale-headed rosella (southern form)		C		1
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		72
animals	birds	Psittacidae	*Parvipsitta porphyrocephala*	purple-crowned lorikeet		C		1
animals	birds	Psittacidae	*Melopsittacus undulatus*	budgerigar		C		2
animals	birds	Psittacidae	*Barnardius zonarius*	Australian ringneck		C		5
animals	birds	Psittacidae	*Parvipsitta pusilla*	little lorikeet		C		19
animals	birds	Psittacidae	*Platycercus eximius*	eastern rosella		C		2
animals	birds	Psittacidae	*Alisterus scapularis*	Australian king-parrot		C		6
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		48
animals	birds	Psittacidae	*Glossopsitta concinna*	musk lorikeet		C		2
animals	birds	Psophodidae	*Psophodes olivaceus*	eastern whipbird		C		10
animals	birds	Psophodidae	*Cinclosoma punctatum*	spotted quail-thrush		C		3
animals	birds	Rallidae	*Porzana pusilla*	Baillon's crake		C		13
animals	birds	Rallidae	*Amaurornis moluccana*	pale-vented bush-hen		C		1
animals	birds	Rallidae	*Porphyrio melanotus*	purple swamphen		C		17
animals	birds	Rallidae	*Gallinula tenebrosa*	dusky moorhen		C		28
animals	birds	Rallidae	*Lewinia pectoralis*	Lewin's rail		C		4
animals	birds	Rallidae	*Fulica atra*	Eurasian coot		C		19
animals	birds	Rallidae	*Gallirallus philippensis*	buff-banded rail		C		6
animals	birds	Rallidae	*Porzana fluminea*	Australian spotted crake		C		6
animals	birds	Rallidae	*Porzana tabuensis*	spotless crake		C		6
animals	birds	Recurvirostridae	*Himantopus himantopus*	black-winged stilt		C		11
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		60
animals	birds	Rhipiduridae	*Rhipidura rufifrons*	rufous fantail		SL		5
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		35
animals	birds	Rostratulidae	*Rostratula australis*	Australian painted snipe		E	E	7
animals	birds	Scolopacidae	*Calidris melanotos*	pectoral sandpiper		SL		1
animals	birds	Scolopacidae	*Tringa stagnatilis*	marsh sandpiper		SL		1
animals	birds	Scolopacidae	*Gallinago hardwickii*	Latham's snipe		SL		6
animals	birds	Scolopacidae	*Limosa limosa*	black-tailed godwit		SL		4
animals	birds	Scolopacidae	*Actitis hypoleucos*	common sandpiper		SL		9
animals	birds	Scolopacidae	*Calidris acuminata*	sharp-tailed sandpiper		SL		1
animals	birds	Strigidae	*Ninox boobook*	southern boobook		C		7
animals	birds	Strigidae	*Ninox connivens*	barking owl		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Sturnidae	*Sturnus vulgaris*	common starling	Y			18
animals	birds	Sturnidae	*Acridotheres tristis*	common myna	Y			34
animals	birds	Threskiornithidae	*Platalea regia*	royal spoonbill		C		12
animals	birds	Threskiornithidae	*Platalea flavipes*	yellow-billed spoonbill		C		8
animals	birds	Threskiornithidae	*Plegadis falcinellus*	glossy ibis		SL		2
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		9
animals	birds	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis		C		20
animals	birds	Timaliidae	*Zosterops lateralis*	silvereye		C		78
animals	birds	Turnicidae	*Turnix varius*	painted button-quail		C		2
animals	birds	Turnicidae	*Turnix maculosus*	red-backed button-quail		C		2
animals	birds	Tytonidae	*Tyto delicatula*	eastern barn owl		C		2
animals	insects	Aeshnidae	*Anax papuensis*	Australian Emperor				1
animals	insects	Aeshnidae	*Adversaeschna brevistyla*	blue-spotted hawker				1
animals	insects	Coenagrionidae	*Ischnura heterosticta heterosticta*	common bluetail				1
animals	insects	Corduliidae	*Hemicordulia australiae*	Australian emerald				1
animals	insects	Corduliidae	*Hemicordulia continentalis*	fat-bellied emerald				1
animals	insects	Hesperiidae	*Suniana sunias rectivitta*	wide-brand grass-dart				1
animals	insects	Hesperiidae	*Toxidia peron*	dingy grass-skipper				1
animals	insects	Hesperiidae	*Ocybadistes walkeri sothis*	green grass-dart				1
animals	insects	Lestidae	*Austrolestes leda*	wandering ringtail				1
animals	insects	Libellulidae	*Macrodiplax cora*	wandering pennant				1
animals	insects	Libellulidae	*Tramea loewii*	common glider				1
animals	insects	Libellulidae	*Diplacodes haematodes*	scarlet percher				1
animals	insects	Libellulidae	*Diplacodes bipunctata*	wandering percher				1
animals	insects	Libellulidae	*Crocothemis nigrifrons*	black-headed skimmer				1
animals	insects	Libellulidae	*Orthetrum villosovittatum*	fiery skimmer				1
animals	insects	Libellulidae	*Pantala flavescens*	wandering glider				1
animals	insects	Libellulidae	*Orthetrum sabina*	slender skimmer				1
animals	insects	Libellulidae	*Orthetrum caledonicum*	blue skimmer				1
animals	insects	Lycaenidae	*Prosotas dubiosa dubiosa*	purple line-blue				1
animals	insects	Lycaenidae	*Zizina otis labradus*	common grass-blue (Australian subspecies)				1
animals	insects	Lycaenidae	*Catopyrops florinda*					1
animals	insects	Lycaenidae	*Psychonotis caelius taygetus*	small green-banded blue				2
animals	insects	Nymphalidae	*Danaus sp.*					1
animals	insects	Nymphalidae	*Danaus petilia*	lesser wanderer				2
animals	insects	Nymphalidae	*Euploea corinna*	common crow				8
animals	insects	Nymphalidae	*Danaus plexippus*	monarch	Y			5
animals	insects	Nymphalidae	*Vanessa kershawi*	Australian painted lady				2
animals	insects	Nymphalidae	*Charaxes sempronius sempronius*	tailed emperor				5
animals	insects	Nymphalidae	*Tirumala hamata hamata*	blue tiger				4
animals	insects	Nymphalidae	*Junonia villida villida*	meadow argus				3
animals	insects	Nymphalidae	*Hypocysta adiante adiante*	orange ringlet				1
animals	insects	Nymphalidae	*Acraea andromacha andromacha*	glasswing				4
animals	insects	Nymphalidae	*Phaedyma shepherdi shepherdi*	white-banded plane (southern subspecies)				4

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	insects	Nymphalidae	*Melanitis leda bankia*	evening brown				8
animals	insects	Papilionidae	*Papilio demoleus sthenelus*	chequered swallowtail				1
animals	insects	Papilionidae	*Cressida cressida cressida*	clearwing swallowtail				1
animals	insects	Papilionidae	*Graphium eurypylus lycaon*	pale triangle				1
animals	insects	Papilionidae	*Papilio aegeus aegeus*	orchard swallowtail (Australian subspecies)				3
animals	insects	Papilionidae	*Graphium choredon*	blue triangle				6
animals	insects	Papilionidae	*Papilio anactus*	dainty swallowtail				1
animals	insects	Papilionidae	*Papilio aegeus*					1
animals	insects	Pieridae	*Eurema smilax*	small grass-yellow				1
animals	insects	Pieridae	*Eurema hecabe*	large grass-yellow				5
animals	insects	Pieridae	*Pieris rapae*	cabbage white	Y			1
animals	insects	Pieridae	*Delias nigrina*	black jezebel				1
animals	insects	Pieridae	*Catopsilia gorgophone gorgophone*	yellow migrant				3
animals	insects	Pieridae	*Belenois java teutonia*	caper white				5
animals	insects	Pieridae	*Cepora perimale scyllara*	caper gull (Australian subspecies)				1
animals	insects	Pieridae	*Catopsilia pyranthe crokera*	white migrant				1
animals	insects	Pieridae	*Delias argenthona argenthona*	scarlet jezebel				1
animals	insects	Pieridae	*Catopsilia pomona*	lemon migrant				9
animals	mammals	Acrobatidae	*Acrobates pygmaeus*	feathertail glider		C		1
animals	mammals	Canidae	*Vulpes vulpes*	red fox	Y			4
animals	mammals	Canidae	*Canis lupus dingo*	dingo				1
animals	mammals	Dasyuridae	*Antechinus flavipes flavipes*	yellow-footed antechinus (south-east Queensland)		C		2
animals	mammals	Dasyuridae	*Phascogale tapoatafa tapoatafa*	brush-tailed phascogale		C		1
animals	mammals	Emballonuridae	*Saccolaimus flaviventris*	yellow-bellied sheathtail bat		C		2
animals	mammals	Felidae	*Felis catus*	cat	Y			1
animals	mammals	Leporidae	*Lepus europaeus*	European brown hare	Y			11
animals	mammals	Macropodidae	*Macropus giganteus*	eastern grey kangaroo		C		5
animals	mammals	Macropodidae	*Macropus sp.*					2
animals	mammals	Macropodidae	*Macropus parryi*	whiptail wallaby		C		1
animals	mammals	Macropodidae	*Wallabia bicolor*	swamp wallaby		C		3
animals	mammals	Macropodidae	*Macropus dorsalis*	black-striped wallaby		C		1
animals	mammals	Macropodidae	*Macropus rufogriseus*	red-necked wallaby		C		9
animals	mammals	Miniopteridae	*Miniopterus schreibersii oceanensis*	eastern bent-wing bat		C		1
animals	mammals	Miniopteridae	*Miniopterus australis*	little bent-wing bat		C		1
animals	mammals	Molossidae	*Mormopterus lumsdenae*	northern free-tailed bat		C		1
animals	mammals	Molossidae	*Tadarida australis*	white-striped freetail bat		C		8
animals	mammals	Muridae	*Rattus rattus*	black rat	Y			2
animals	mammals	Muridae	*Mus musculus*	house mouse	Y			3
animals	mammals	Peramelidae	*Isoodon macrourus*	northern brown bandicoot		C		3
animals	mammals	Petauridae	*Petaurus breviceps*	sugar glider		C		4
animals	mammals	Petauridae	*Petaurus norfolcensis*	squirrel glider		C		5
animals	mammals	Petauridae	*Petaurus sp.*					1
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		12
animals	mammals	Phalangeridae	*Trichosurus caninus*	short-eared possum		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		V	V	199
animals	mammals	Pseudocheiridae	*Pseudocheirus peregrinus*	common ringtail possum		C		2
animals	mammals	Pseudocheiridae	*Petauroides volans volans*	southern greater glider		V	V	2/2
animals	mammals	Pteropodidae	*Pteropus alecto*	black flying-fox		C		21
animals	mammals	Pteropodidae	*Pteropus poliocephalus*	grey-headed flying-fox		C	V	20
animals	mammals	Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna		SL		8
animals	mammals	Vespertilionidae	*Nyctophilus gouldi*	Gould's long-eared bat		C		1
animals	mammals	Vespertilionidae	*Chalinolobus gouldii*	Gould's wattled bat		C		1
animals	mammals	Vespertilionidae	*Vespadelus troughtoni*	eastern cave bat		C		1
animals	mammals	Vespertilionidae	*Chalinolobus morio*	chocolate wattled bat		C		1
animals	mammals	Vespertilionidae	*Scotorepens sp. (Parnaby)*	central-eastern broad-nosed bat		C		1
animals	mammals	Vespertilionidae	*Myotis macropus*	large-footed myotis		C		1
animals	ray-finned fishes	Ambassidae	*Ambassis agassizii*	Agassiz's glassfish				1
animals	ray-finned fishes	Anguillidae	*Anguilla australis*	southern shortfin eel				9
animals	ray-finned fishes	Anguillidae	*Anguilla reinhardtii*	longfin eel				16
animals	ray-finned fishes	Atherinidae	*Craterocephalus stercusmuscarum*	flyspecked hardyhead				4
animals	ray-finned fishes	Atherinidae	*Craterocephalus marjoriae*	silverstreak hardyhead				1
animals	ray-finned fishes	Cichlidae	*Oreochromis mossambica*	Mozambique mouthbrooder	Y			3
animals	ray-finned fishes	Clupeidae	*Nematalosa erebi*	bony bream				1
animals	ray-finned fishes	Eleotridae	*Hypseleotris sp.*					1
animals	ray-finned fishes	Eleotridae	*Hypseleotris galii*	firetail gudgeon				13
animals	ray-finned fishes	Eleotridae	*Hypseleotris compressa*	empire gudgeon				11
animals	ray-finned fishes	Eleotridae	*Philypnodon grandiceps*	flathead gudgeon				1
animals	ray-finned fishes	Eleotridae	*Hypseleotris klunzingeri*	western carp gudgeon				1
animals	ray-finned fishes	Eleotridae	*Gobiomorphus australis*	striped gudgeon				10
animals	ray-finned fishes	Melanotaeniidae	*Melanotaenia duboulayi*	crimsonspotted rainbowfish				6
animals	ray-finned fishes	Mugilidae	*Mugil cephalus*	sea mullet				6
animals	ray-finned fishes	Plotosidae	*Tandanus tandanus*	freshwater catfish				4
animals	ray-finned fishes	Poeciliidae	*Xiphophorus maculatus*	platy	Y			8
animals	ray-finned fishes	Poeciliidae	*Gambusia holbrooki*	mosquitofish	Y			17
animals	ray-finned fishes	Pseudomugilidae	*Pseudomugil signifer*	Pacific blue eye				5
animals	ray-finned fishes	Retropinnidae	*Retropinna semoni*	Australian smelt				5
animals	ray-finned fishes	Scorpaenidae	*Notesthes robusta*	bullrout				3
animals	ray-finned fishes	Terapontidae	*Leiopotherapon unicolor*	spangled perch				8
animals	reptiles	Agamidae	*Pogona barbata*	bearded dragon		C		15
animals	reptiles	Agamidae	*Intellagama lesueurii*	eastern water dragon		C		8
animals	reptiles	Agamidae	*Diporiphora australis*	tommy roundhead		C		2
animals	reptiles	Boidae	*Morelia spilota*	carpet python		C		6
animals	reptiles	Chelidae	*Chelodina longicollis*	eastern snake-necked turtle		C		3
animals	reptiles	Chelidae	*Chelodina expansa*	broad-shelled river turtle		C		2
animals	reptiles	Chelidae	*Emydura macquarii macquarii*	Murray turtle		C		1
animals	reptiles	Colubridae	*Tropidonophis mairii*	freshwater snake		C		1
animals	reptiles	Colubridae	*Dendrelaphis punctulatus*	green tree snake		C		11
animals	reptiles	Colubridae	*Boiga irregularis*	brown tree snake		C		1
animals	reptiles	Diplodactylidae	*Diplodactylus vittatus*	wood gecko		C		1
animals	reptiles	Elapidae	*Furina diadema*	red-naped snake		C		6

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	reptiles	Elapidae	*Pseudonaja textilis*	eastern brown snake		C		8
animals	reptiles	Elapidae	*Demansia psammophis*	yellow-faced whipsnake		C		2
animals	reptiles	Elapidae	*Pseudechis porphyriacus*	red-bellied black snake		C		2
animals	reptiles	Elapidae	*Brachyurophis australis*	coral snake		C		1
animals	reptiles	Elapidae	*Cacophis krefftii*	dwarf crowned snake		C		1
animals	reptiles	Elapidae	*Hemiaspis signata*	black-bellied swamp snake		C		1
animals	reptiles	Elapidae	*Cacophis harriettae*	white-crowned snake		C		3
animals	reptiles	Gekkonidae	*Gehyra dubia*	dubious dtella		C		4
animals	reptiles	Gekkonidae	*Hemidactylus frenatus*	house gecko	Y			2
animals	reptiles	Pygopodidae	*Delma plebeia*	common delma		C		2
animals	reptiles	Scincidae	*Carlia vivax*	tussock rainbow-skink		C		2
animals	reptiles	Scincidae	*Cryptoblepharus pulcher pulcher*	elegant snake-eyed skink		C		10
animals	reptiles	Scincidae	*Karma murrayi*	Murray's skink		C		1
animals	reptiles	Scincidae	*Lampropholis sp.*			C		1
animals	reptiles	Scincidae	*Carlia pectoralis*	open-litter rainbow skink		C		2
animals	reptiles	Scincidae	*Concinnia martini*	dark bar-sided skink		C		1
animals	reptiles	Scincidae	*Ctenotus spaldingi*	straight-browed ctenotus		C		8
animals	reptiles	Scincidae	*Tiliqua scincoides*	eastern blue-tongued lizard		C		6
animals	reptiles	Scincidae	*Lygisaurus foliorum*	tree-base litter-skink		C		1
animals	reptiles	Scincidae	*Ctenotus taeniolatus*	copper-tailed skink		C		1
animals	reptiles	Scincidae	*Lampropholis amicula*	friendly sunskink		C		1
animals	reptiles	Scincidae	*Anomalopus verreauxii*	three-clawed worm-skink		C		6/1
animals	reptiles	Scincidae	*Lampropholis delicata*	dark-flecked garden sunskink		C		9
animals	reptiles	Scincidae	*Carlia pectoralis sensu lato*			C		1
animals	reptiles	Varanidae	*Varanus varius*	lace monitor		C		3
animals	uncertain	Indeterminate	*Indeterminate*	Unknown or Code Pending		C		3
bacteria	blue-green algae	Aphanothecaceae	*Aphanothece elabens*			C		1/1
bacteria	blue-green algae	Microcoleaceae	*Porphyrosiphon notarisii*			C		3/3
bacteria	blue-green algae	Scytonemataceae	*Scytonema crispum*			C		1/1
fungi	Agaricomycetes	Suillaceae	*Suillus granulatus*			C		1/1
fungi	lecanoromycetes	Cladoniaceae	*Cladia muelleri*			C		1/1
fungi	lecanoromycetes	Teloschistaceae	*Caloplaca cinnabarina*			C		1/1
fungi	sordariomycetes	Obryzaceae	*Obryzum scabrosum*			C		1/1
plants	Compsopogonophyceae	Compsopogonaceae	*Compsopogon coeruleus*			C		1/1
plants	Florideophyceae	Acrochaetiaceae	*Audouinella*			C		1/1
plants	Florideophyceae	Delesseriaceae	*Caloglossa ogasawaraensis*			C		1/1
plants	Florideophyceae	Delesseriaceae	*Caloglossa leprieurii var. angustata*			C		1/1
plants	Ulvophyceae	Pithophoraceae	*Pithophora oedogonia var. oedogonia*			C		1/1
plants	Ulvophyceae	Trentepohliaceae	*Cephaleuros parasiticus*			C		1/1
plants	Ulvophyceae	Trentepohliaceae	*Trentepohlia rigidula*			C		2/2
plants	land plants	Acanthaceae	*Brunoniella australis*	blue trumpet		C		1/1
plants	land plants	Acanthaceae	*Pseuderanthemum variabile*	pastel flower		C		2/2
plants	land plants	Acanthaceae	*Ruellia simplex*		Y			5/5
plants	land plants	Adoxaceae	*Sambucus nigra*		Y			3/3
plants	land plants	Aizoaceae	*Aptenia cordifolia*		Y			1/1
plants	land plants	Amaranthaceae	*Alternanthera nana*	hairy joyweed		C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Amaranthaceae	*Alternanthera denticulata*	lesser joyweed		C		1/1
plants	land plants	Amaryllidaceae	*Zephyranthes carinata*		Y			1/1
plants	land plants	Apiaceae	*Daucus carota*	wild carrot	Y			1/1
plants	land plants	Apiaceae	*Ammi majus*	bishop's weed	Y			3/3
plants	land plants	Apiaceae	*Cyclospermum leptophyllum*		Y			1/1
plants	land plants	Apocynaceae	*Marsdenia coronata*	slender milkvine		V		11/11
plants	land plants	Apocynaceae	*Parsonsia brisbanensis*	broad-leaved monkey vine		C		7/7
plants	land plants	Apocynaceae	*Nerium oleander*	oleander	Y			1/1
plants	land plants	Araliaceae	*Hydrocotyle laxiflora*	stinking pennywort		C		1/1
plants	land plants	Aristolochiaceae	*Aristolochia meridionalis subsp. meridionalis*			C		1/1
plants	land plants	Asphodelaceae	*Aloe maculata*		Y			2/2
plants	land plants	Asphodelaceae	*Aloe cameronii*		Y			1/1
plants	land plants	Asteraceae	*Dimorphotheca ecklonis*		Y			1/1
plants	land plants	Asteraceae	*Ambrosia artemisiifolia*	annual ragweed	Y			1/1
plants	land plants	Asteraceae	*Ozothamnus diosmifolius*	white dogwood		C		1/1
plants	land plants	Asteraceae	*Lactuca serriola forma serriola*		Y			1/1
plants	land plants	Asteraceae	*Solidago altissima subsp. altissima*	goldenrod	Y			1/1
plants	land plants	Asteraceae	*Verbesina encelioides var. encelioides*		Y			1/1
plants	land plants	Asteraceae	*Tagetes minuta*	stinking roger	Y			1/1
plants	land plants	Asteraceae	*Centaurea jacea*		Y			1/1
plants	land plants	Asteraceae	*Cichorium intybus*	chicory	Y			2/2
plants	land plants	Asteraceae	*Cassinia straminea*			C		1/1
plants	land plants	Asteraceae	*Erigeron canadensis*		Y			1/1
plants	land plants	Asteraceae	*Calyptocarpus vialis*	creeping cinderella weed	Y			2/2
plants	land plants	Asteraceae	*Leiocarpa brevicompta*			C		1/1
plants	land plants	Bignoniaceae	*Pyrostegia venusta*		Y			1/1
plants	land plants	Bignoniaceae	*Pandorea floribunda*			C		1/1
plants	land plants	Boraginaceae	*Cordia myxa*		Y			1/1
plants	land plants	Brassicaceae	*Cardamine hirsuta*	common bittercress	Y			1/1
plants	land plants	Brassicaceae	*Brassica chinensis*	Chinese cabbage	Y			1/1
plants	land plants	Brassicaceae	*Raphanus raphanistrum*	wild radish	Y			2/2
plants	land plants	Cactaceae	*Opuntia aurantiaca*	tiger pear	Y			1/1
plants	land plants	Campanulaceae	*Wahlenbergia littoricola*			C		1/1
plants	land plants	Caryophyllaceae	*Stellaria media*	chickweed	Y			1/1
plants	land plants	Casuarinaceae	*Casuarina cunninghamiana subsp. cunninghamiana*			C		1/1
plants	land plants	Celastraceae	*Hippocratea barbata*	knotvine		C		1/1
plants	land plants	Celastraceae	*Denhamia cunninghamii*			C		2/2
plants	land plants	Celastraceae	*Denhamia silvestris*			C		1/1
plants	land plants	Chenopodiaceae	*Einadia nutans subsp. linifolia*			C		1/1
plants	land plants	Chenopodiaceae	*Maireana microphylla*			C		1/1
plants	land plants	Colchicaceae	*Iphigenia indica*			C		1/1
plants	land plants	Combretaceae	*Combretum paniculatum*		Y			1/1
plants	land plants	Commelinaceae	*Commelina diffusa*	wandering jew		C		1/1
plants	land plants	Commelinaceae	*Callisia repens*		Y			1/1
plants	land plants	Commelinaceae	*Commelina benghalensis*		Y			1/1
plants	land plants	Crassulaceae	*Bryophyllum fedtschenkoi*		Y			1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Cupressaceae	*Callitris baileyi*	Bailey's cypress		NT		1/1
plants	land plants	Cyperaceae	*Cyperus involucratus*		Y			1/1
plants	land plants	Cyperaceae	*Cyperus brevifolius*	Mullumbimby couch	Y			1/1
plants	land plants	Cyperaceae	*Caustis blakei*			C		1
plants	land plants	Cyperaceae	*Cyperus bifax*	western nutgrass		C		1/1
plants	land plants	Cyperaceae	*Fimbristylis dichotoma*	common fringe-rush		C		1/1
plants	land plants	Euphorbiaceae	*Euphorbia umbellata*		Y			1/1
plants	land plants	Euphorbiaceae	*Euphorbia hyssopifolia*		Y			2/2
plants	land plants	Euphorbiaceae	*Euphorbia ophthalmica*		Y			2/2
plants	land plants	Euphorbiaceae	*Euphorbia cyathophora*	dwarf poinsettia	Y			1/1
plants	land plants	Fabaceae	*Glycine*			C		1/1
plants	land plants	Fabaceae	*Hovea lorata*			C		2/2
plants	land plants	Fabaceae	*Hovea planifolia*			C		1/1
plants	land plants	Fabaceae	*Melilotus indicus*	hexham scent	Y			1/1
plants	land plants	Fabaceae	*Indigofera baileyi*			C		3/3
plants	land plants	Fabaceae	*Sesbania cannabina var. cannabina*			C		1/1
plants	land plants	Fabaceae	*Stylosanthes scabra*		Y			1/1
plants	land plants	Fabaceae	*Swainsona brachycarpa*			C		1/1
plants	land plants	Fabaceae	*Swainsona queenslandica*			C		1/1
plants	land plants	Fabaceae	*Desmodium rhytidophyllum*			C		1/1
plants	land plants	Fabaceae	*Macroptilium atropurpureum*	siratro	Y			1/1
plants	land plants	Fabaceae	*Indigofera spicata*	creeping indigo	Y			2/2
plants	land plants	Goodeniaceae	*Goodenia hederacea subsp. hederacea*			C		1/1
plants	land plants	Hypoxidaceae	*Hypoxis pratensis var. tuberculata*			C		2/2
plants	land plants	Lamiaceae	*Ajuga australis*	Australian bugle		C		1/1
plants	land plants	Lamiaceae	*Coleus habrophyllus*			E		1/1
plants	land plants	Lamiaceae	*Mentha satureioides*	native pennyroyal		C		1/1
plants	land plants	Lamiaceae	*Westringia eremicola*	slender westringia		C		1/1
plants	land plants	Lauraceae	*Cassytha filiformis*	dodder laurel		C		1/1
plants	land plants	Lauraceae	*Cryptocarya triplinervis var. triplinervis*			C		1/1
plants	land plants	Lauraceae	*Cryptocarya triplinervis var. pubens*			C		1/1
plants	land plants	Laxmanniaceae	*Lomandra confertifolia subsp. pallida*			C		1/1
plants	land plants	Laxmanniaceae	*Laxmannia gracilis*	slender wire lily		C		1/1
plants	land plants	Loranthaceae	*Amyema miquelii*			C		1/1
plants	land plants	Malvaceae	*Pavonia hastata*	pink pavonia	Y			1/1
plants	land plants	Malvaceae	*Gossypium hirsutum*		Y			1/1
plants	land plants	Malvaceae	*Malvaviscus arboreus*		Y			1/1
plants	land plants	Malvaceae	*Hibiscus tridactylites*			C		1/1
plants	land plants	Marsileaceae	*Marsilea hirsuta*	hairy nardoo		C		1/1
plants	land plants	Mimosaceae	*Acacia falcata*	sickle wattle		C		1/1
plants	land plants	Mimosaceae	*Acacia salicina*	doolan		C		1/1
plants	land plants	Mimosaceae	*Albizia lebbeck*	Indian siris		C		1/1
plants	land plants	Mimosaceae	*Acacia complanata*	flatstem wattle		C		2/2
plants	land plants	Mimosaceae	*Acacia juncifolia*			C		2/2
plants	land plants	Mimosaceae	*Acacia penninervis var. longiracemosa*			C		1/1
plants	land plants	Moraceae	*Morus alba*	white mulberry	Y			1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Myrtaceae	*Eucalyptus dura*			C		1/1
plants	land plants	Myrtaceae	*Melaleuca irbyana*			E		2/2
plants	land plants	Myrtaceae	*Eucalyptus acmenoides*			C		2/2
plants	land plants	Myrtaceae	*Eucalyptus melanophloia subsp. melanophloia*			C		1/1
plants	land plants	Oleaceae	*Notelaea lloydii*	Lloyd's native olive		V	V	7/7
plants	land plants	Oleaceae	*Olea europaea subsp. cuspidata*		Y			2/2
plants	land plants	Oleaceae	*Notelaea ovata*	forest olive		C		1/1
plants	land plants	Oleaceae	*Notelaea ipsviciensis*			E	CE	7/7
plants	land plants	Orchidaceae	*Chiloglottis diphylla*			C		1/1
plants	land plants	Passifloraceae	*Passiflora pallida*		Y			1/1
plants	land plants	Phyllanthaceae	*Phyllanthus hirtellus*			C		1/1
plants	land plants	Plantaginaceae	*Plantago lanceolata*		Y			1/1
plants	land plants	Plantaginaceae	*Bacopa monnieri*			C		1/1
plants	land plants	Poaceae	*Eremochloa bimaculata*	poverty grass		C		1/1
plants	land plants	Poaceae	*Cleistochloa subjuncea*			C		1/1
plants	land plants	Poaceae	*Dichanthium aristatum*	angleton grass	Y			1/1
plants	land plants	Poaceae	*Dichanthium annulatum*	sheda grass	Y			1/1
plants	land plants	Poaceae	*Sporobolus africanus*	Parramatta grass	Y			1/1
plants	land plants	Poaceae	*Digitaria didactyla*	Queensland blue couch	Y			1/1
plants	land plants	Poaceae	*Urochloa whiteana*			C		1/1
plants	land plants	Poaceae	*Cenchrus setaceus*		Y			1/1
plants	land plants	Poaceae	*Themeda triandra*	kangaroo grass		C		1/1
plants	land plants	Poaceae	*Aristida vagans*			C		1/1
plants	land plants	Poaceae	*Calyptochloa gracillima subsp. ipsviciensis*			C		3/3
plants	land plants	Poaceae	*Anthosachne kingiana subsp. multiflora*			C		1/1
plants	land plants	Poaceae	*Microlaena stipoides var. stipoides*			C		1/1
plants	land plants	Poaceae	*Chloris divaricata var. divaricata*	slender chloris		C		1/1
plants	land plants	Poaceae	*Austrostipa rudis subsp. nervosa*			C		1/1
plants	land plants	Poaceae	*Aristida calycina var. calycina*			C		1/1
plants	land plants	Poaceae	*Cynodon dactylon var. dactylon*		Y			2/2
plants	land plants	Poaceae	*Lachnagrostis filiformis*			C		1/1
plants	land plants	Poaceae	*Aristida leichhardtiana*			C		1/1
plants	land plants	Poaceae	*Panicum simile*			C		2/2
plants	land plants	Polygonaceae	*Persicaria attenuata*			C		1/1
plants	land plants	Polygonaceae	*Antigonon leptopus*		Y			1/1
plants	land plants	Polygonaceae	*Acetosa vesicaria*		Y			1/1
plants	land plants	Polygonaceae	*Rumex crispus*	curled dock	Y			1/1
plants	land plants	Potamogetonaceae	*Stuckenia pectinata*			C		1/1
plants	land plants	Proteaceae	*Grevillea robusta*			C		1/1
plants	land plants	Pteridaceae	*Acrostichum speciosum*	mangrove fern		C		1/1
plants	land plants	Pteridaceae	*Cheilanthes distans*	bristly cloak fern		C		1/1
plants	land plants	Pteridaceae	*Cheilanthes sieberi subsp. sieberi*			C		1/1
plants	land plants	Ptychomitriaceae	*Ptychomitrium australe*			C		1/1
plants	land plants	Ranunculaceae	*Ranunculus sceleratus subsp. sceleratus*		Y			1/1
plants	land plants	Rhamnaceae	*Cryptandra longistaminea*			C		1/1
plants	land plants	Rosaceae	*Prunus persica var. persica*		Y			1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Rubiaceae	*Richardia stellaris*		Y			3/3
plants	land plants	Rubiaceae	*Spermacoce multicaulis*			C		2/2
plants	land plants	Sapindaceae	*Cardiospermum grandiflorum*	heart seed vine	Y			2/2
plants	land plants	Sapindaceae	*Dodonaea triangularis*			C		1/1
plants	land plants	Scrophulariaceae	*Buddleja madagascariensis*	buddleia	Y			1/1
plants	land plants	Scrophulariaceae	*Eremophila debilis*	winter apple		C		1/1
plants	land plants	Solanaceae	*Solanum pseudolulo*		Y			1/1
plants	land plants	Solanaceae	*Solanum linnaeanum*	apple of Sodom	Y			1/1
plants	land plants	Sparrmanniaceae	*Corchorus olitorius*	jute		C		1/1
plants	land plants	Stackhousiaceae	*Stackhousia muricata*			C		1/1
plants	land plants	Ulmaceae	*Celtis sinensis*	Chinese elm	Y			1/1
plants	land plants	Verbenaceae	*Lantana montevidensis*	creeping lantana	Y			1/1
plants	land plants	Vitaceae	*Cayratia clematidea*	slender grape		C		1/1

CODES

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

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

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

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

28ºS
ENVIRONMENTAL

Attachment 12

Attachment 12 – Response to EPBC Koala Referral Guidelines

Will the Proposed Action: (a) Affect Habitat Critical to the Survival of Koala; and (b) Substantially Interfere with the Recovery of Koala

(a) Will the Proposed Action affect habitat critical to the survival of the koala?

The Koala Referral Guidelines (**Guidelines**) define "koala habitat" as:

> any forest or woodland containing species that are known koala food trees, or shrubland with emergent food trees. This can include remnant and non-remnant vegetation in natural, agricultural, urban and peri-urban environments. Koala Habitat is defined by the vegetation community present, and the vegetation structure, the koala does not necessarily have to be present.

The remnant vegetation observed on the Site fits the description provided above, koalas are known to be present within the Proposed Masterplan area, and koalas persist in the broader landscape. A search of the Wildlife Online database (**Attachment 11**) indicates 199 records within a 5 km radius of the Site. This search area encompasses heavily vegetated areas to the south and south-east of the Site including Deebing Heights and the foothills of White Rock Conservation Area. Within a reduced 2 km radius (the Site and immediate surrounds), there are 44 records of koala. Furthermore, within a 1 km radius since 1980, there are 11 records of the species. This is in keeping with the results of the numerous koala surveys undertaken over the Site and the surrounding area, which identify considerable koala usage throughout.

Koala surveys and koala habitat assessments were undertaken in conjunction with field surveys by 28 South Environmental over the Site for a total of four (4) days; 9 October 2018 and 3-5 July 2019.

Survey efforts included a detailed walk-through of the Site, assessment of all vegetation supported within and immediately adjoining the Site for habitat features important to species of conservation significance and active searches for fauna species or their evidence (such as koala and other scansorial fauna). Surveys were conducted over the course of four days and included:

- **Active searches of logs, rocks and ground debris** – Logs, rock and ground debris was turned in order to detect amphibians, reptiles and small terrestrial mammals;

- **Active searches for habitat trees** – searches were completed for hollow-bearing trees providing potential habitat for a range of tree hollow dependent fauna[1];
- **Random meander searches and aural surveys** – searches of riparian and vegetated areas were undertaken to identify any potential important habitats; and
- **Koala Spot Assessment Technique (SAT) searches** – 4 SAT[2] surveys were undertaken during survey efforts to determine the presence of koala throughout the Site. These surveys were also coupled with general scratch and scat searches while traversing the Site.

It is also noted that tree surveys across the entire Site included the spatial location of each tree and any observable to potential habitat features.

Habitat types were qualified based on the presence of the following habitat features:

- vegetation cover and structure;
- size and range of arboreal and terrestrial hollows;
- woody debris and leaf litter;
- rocky outcrops, overhangs and crevices;
- freestanding natural and anthropogenic water bodies, ephemeral drainage or seepage areas;
- disturbances including weed incursion, clearing and/or inappropriate fire regimes; and
- surrounding habitats and connectivity or fragmentation to these.

[1] For example, small hollow-bearing trees providing roost sites for microchiropteran bats and gliders, medium sized hollows providing nest sites for small to medium sized birds and possums, and large hollows providing potential nest sites for large forest owls.
[2] Stephen Phillips and John Callaghan (2011) The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas *Phascolarctos cinereus*. *Australian Zoologist*: 2011, Vol. 35, No. 3, pp. 774-780.

Koalas are well known to the locality and their presence has been confirmed within the Site and adjoining properties to the south[3] through indirect evidence (indicative scat and scratch). Higher quality koala habitat within the surrounding locality and Site are associated with lower slope and riparian corridors where the primary feed tree Queensland blue gum is dominant and forms intact corridors. It is also noted that drier upper slope vegetation does afford movement and foraging opportunities and is readily used by koala; however, is of lower importance to koalas for key resources such as high-quality forage habitat, particularly during dry periods.

The higher quality habitats within the Site take the form of the lower slope remnants and regrowth vegetation associated within the waterway traversing the central components of the Site. These areas represent the best quality koala habitat within the Site and connect into other adjoining, higher quality habitats to the north and south of the Site. Koala SAT surveys found activity levels were low to moderate across the Site (an average of approximately 16%). The areas of highest usage were within the lower alluvial areas which will be retained within a minimum 120 m wide corridor, for use as a green space / conservation area. **Figure 3** illustrates the locations of the identified koala feed trees within the Site[4].

In total, the Proposed Development will result in the removal of approximately 38.86 ha of koala habitat largely comprising cleared paddocks with scattered trees or regrowth vegetation. Approximately 11.86 ha of the Site will be retained as a designated recreation / open space corridor (minimum 120 m wide) comprising remnant and regrowth vegetation and rehabilitated cleared areas. The designated corridor aligns with the highest quality habitats and remnant vegetation within the Site. This area will be subject to advanced compensatory plantings and will be embellished with koala habitat creating a large corridor through the Site connecting into vegetation within Rourkes Park to the north and retained conservation areas of the approved development to the south.

Further discussion of this design to mitigate impacts to koala is provided in **Chapter 4**.

[3] EPBC Referral 2017/8095
[4] *Angophora, Corymbia, Eucalyptus, Lophostemon* and *Melaleuca* species with a Diameter at Breast Height greater than 200mm.

Drawing these findings together, the Koala Habitat Assessment Tool is addressed as follows:

- **Koala Occurrence** – there is evidence of koala occurrence at the Site within the last 2 years. A **score of 2** (high) is applied;

- **Vegetation Composition** – although the Site is predominantly characterised as open paddocks with scattered mature canopy trees, it does support remnant and advanced regrowth open forest communities with a number of known koala food trees and evidence of koala usage. A **score of 2** (high) is applied.

- **Habitat Connectivity** – the Site occurs in a largely modified landscape with the historical Swanbank mining precinct bounding it to the east, the Cunningham Highway to the north, the Centenary Highway to the South, residential development and Ripley Road to the west. When measuring connected, forested habitats, a score of 1 (medium) should be applied; however, larger cleared areas to the south-east are applicable by virtue of limited barriers to koala movement existing, meaning an area of just greater than 500 ha is achieved. A **Score of 2** is applied in this instance

- **Key Existing Threats –** During the in-field ecological assessments, evidence of domestic dogs was observed within the Site. Additionally, given that the Cunningham Highway immediately adjoins the Site, it is considered that vehicle strikes are a contributor to koala mortality. A **score of 0** (low) is applied.

- **Recovery Value** – with reference to Table 1 of the Guidelines, it is uncertain whether the Site is not important for achieving the Interim Recovery Objectives for the coastal populations of koala. A **score of 0** is applied to this criterion.

An overall **score of 6** is achieved, indicating that the Site provides habitat critical to the survival of the koala.

(b) Will the Proposed Action substantially interfere with the recovery of the koala

Dog Attack

The Site is currently utilised as rural-residential lifestyle blocks and is bordering an urban landscape to the south, west, north-west and north, and peri-urban to the east, where dog

attack is likely already occurring. Of note, during the detailed field assessment of the Site, domestic dogs were observed within the Site. The Applicant intends to introduce a number of mitigation measures to manage the risk of dog attack to koalas. The establishment of fauna-friendly fencing (or other agreed barrier/buffer) and safe koala movement facilities in combination with dog-proof fencing will be implemented along and within the retained riparian corridor within the Open Space and Conservation Precinct within the Site.

In the absence of dog restrictions from the urban areas of the development (i.e. families with dogs) it is concluded that the Proposed Action may cause a slight increase in dog attacks in the locality. Through the implementation of the avoidance, minimisation and mitigation measures (discussed in further detail in **Chapter 4**), the Proposed Action will not have a significant increased impact through dog attack on the recovery of the koala in the locality.

Vehicle Strike

The Proposed Action will establish additional road infrastructure within the Site and will increase traffic on the local surrounding street network. Considering the existing extent of vehicle traffic within the immediate Site surrounds, and the avoidance, minimisation and mitigation measures to be adopted, it is unlikely that the Proposed Action will significantly affect recovery of koala through vehicle strike in the locality.

As part of the Proposed Action, new streets will be established to access and service allotments once established. One koala/wildlife underpass will be established where the new collector road crosses the Open Space and Conservation Precinct, facilitating koala movement through the riparian corridor. Additionally, the following measures are proposed throughout the urban areas of the Proposed Action:

- Traffic calming devices will be established on the new roads that border the recreational interface areas either side of the core koala corridor;
- Erection of fauna movement signage; and
- Assigning appropriate speed zones throughout the Site, particularly where the Open Space and Conservation Precinct is traversed by the new collector road (a maximum of 40km/h in this area).

These measures are designed to directly reduce the likelihood of vehicular strike and to have the added benefit of improving public awareness and education about sensitive fauna populations in the surrounding area.

Landscaping measures throughout the Site will also include, but not be limited to:

- Use of koala habitat trees, preferably endemic known feed trees such as Queensland blue gum and grey gum (*Eucalyptus propinqua*) where practicable;
- More dense landscape plantings in areas proximate to the Open Space and Conservation Precinct whilst also complying with relevant bushfire management measures. Koala habitat trees utilised in these areas as landscape embellishments will provide long term higher quality habitat for koala and other native fauna species, particularly with species such as Queensland blue gum providing good winter foraging for arboreal, avifauna and flying mammals; and
- Future property owners will be encouraged to incorporate native endemic koala habitat trees into their property.

Facilitate the introduction or spread of disease or pathogens

The Proposed Action incorporates residential development that will result in the reduction of habitat within the Site; but will not require the translocation of koalas to other areas. If koalas are encountered in clearing areas during the clearing program, the clearing program will reflect the following sequential steps:

- Avoid the clearing of this tree and other trees with an interlocking canopy; and
- Leave the koala to vacate the clearing area of its own volition as per Schedule 11, Part 3 of the *Planning Regulation 2017*.

It is expected that some individuals could migrate towards the retained vegetation within the core koala corridors, as well as off site as a result of clearing. These individuals will move locally, where the incidence of (for example) chlamydial disease would be representative of that which occurs at the Site. It is considered highly unlikely that these local movements will

result in the transmission of disease or pathogens to populations where no such disease is known to occur.

Barriers to Dispersal and Fragmentation

The Site is bordered by an urban landscape to the south, west, north-west and north, and peri-urban uses to the east where habitat fragmentation has already occurred due to urban development and clearing for paddocks and other agricultural pursuits. The Proposed Action will result in vegetation loss; however, will retain, consolidate and enhance the Site's key movement corridor and habitats (along the riparian corridor). This will ensure that connectivity within and through the Site is retained.

Degradation of habitat critical to the survival of koala through hydrological change

Through adherence to accepted industry practice for stormwater management and erosion and sediment control, the Proposed Action will not degrade habitat through hydrological change. This will ensure that the core koala corridors are not adversely affected over time through uncontrolled stormwater impacts from the impervious areas associated with the Proposed Action.

28ºS
ENVIRONMENTAL

Attachment 13

Family	Botanical Name	Common Name	EPBC Act 1999	NC Act 1992
Native Species				
Mimosaceae	*Acacia disparrima* subsp. *disparrima*	Hickory Wattle	NL	LC
Mimosaceae	*Acacia leiocalyx*		NL	LC
Mimosaceae	*Acacia maidenii*	Maiden's Wattle	NL	LC
Mimosaceae	*Acacia podalyriifolia*		NL	LC
Casuarinaceae	*Allocasuarina littoralis*	Black She-oak	NL	LC
Rhamnaceae	*Alphitonia excelsa*	Red Ash	NL	LC
Apocynaceae	*Alstonia constricta*	Bitterbark	NL	LC
Amaranthaceae	*Alternanthera denticulata*	Lesser Joyweed	NL	LC
Myrtaceae	*Angophora leiocarpa*	Smooth-barked Apple	NL	LC
Poaceae	*Aristida sp.*	a grass	NL	LC
Poaceae	*Arundinella nepalensis*	Reed Grass	NL	LC
Proteaceae	*Banksia integrifolia* subsp. *integrifolia*		NL	LC
Phyllanthaceae	*Breynia oblongifolia*	Coffee Bush	NL	LC
Cyperaceae	*Carex sp.*		NL	LC
Asteraceae	*Cassinia sp.*		NL	LC
Lauraceae	*Cassytha sp.*		NL	LC
Asteraceae	*Chrysocephalum apiculatum*	Golden Yellow Buttons	NL	LC
Myrtaceae	*Corymbia citriodora* subsp. *variegata*	Spotted Gum	NL	LC
Myrtaceae	*Corymbia intermedia*	Pink Bloodwood	NL	LC
Myrtaceae	*Corymbia tessellaris*	Carbeen	NL	LC
Myrtaceae	*Corymbia torelliana*	Cadaghi	NL	LC
Sapindaceae	*Cupaniopsis anacardioides*	Tuckeroo	NL	LC
Asteraceae	*Cyanthillium cinereum*		NL	LC
Thelypteridaceae	*Cyclosorus interruptus*		NL	LC
Poaceae	*Cymbopogon refractus*	Barbed Wire Grass	NL	LC
Cyperaceae	*Cyperus gracilis*	Whisker Grass	NL	LC
Cyperaceae	*Cyperus polystachyos*	Bunchy Sedge	NL	LC
Loranthaceae	*Dendrophthoe glabrescens*	Orange Mistletoe	NL	LC
Fabaceae	*Desmodium rhytidophyllum*	Hairy Tre-foil	NL	LC
Hemerocallidaceae	Dianella brevipedunculata		NL	LC
Chenopodiaceae	*Einadia hastata*	(a) Saltbush	NL	LC
Cyperaceae	*Eleocharis* sp.		NL	LC
Poaceae	*Eragrostis* sp.		NL	LC
Poaceae	*Eragrostis* sp.		NL	LC
Myrtaceae	*Eucalyptus crebra*	Narrow-leaved Red Ironbark	NL	LC
Myrtaceae	*Eucalyptus seeana*	Narrow-leaved Bluegum	NL	LC
Myrtaceae	*Eucalyptus tereticornis*	Queensland Blue Gum	NL	LC
Laxmanniaceae	*Eustrephus latifolius*	Wombat Berry	NL	LC
Santalaceae	*Exocarpos cupressiformis*		NL	LC
Moraceae	*Ficus coronata*	Creek Sandpaper Fig	NL	LC

Family	Botanical Name	Common Name	EPBC Act 1999	NC Act 1992
Cyperaceae	*Gahnia aspera*	Red-fruited Saw Sedge	NL	LC
Geraniaceae	*Geranium solanderi*	Native Geranium	NL	LC
Phyllanthaceae	*Glochidion ferdinandi*	Cheese Tree	NL	LC
Fabaceae	*Glycine clandestina*		NL	LC
Poaceae	*Heteropogon contortus*	Black Speargrass	NL	LC
Araliaceae	*Hydrocotyle laxiflora*	Pennyweed	NL	LC
Dennstaedtiaceae	*Hypolepis muelleri*	Harsh Ground Fern	NL	LC
Poaceae	*Imperata cylindrica*	Blady Grass	NL	LC
Fabaceae	*Jacksonia scoparia*		NL	LC
Juncaceae	*Juncus planifolius*		NL	LC
Juncaceae	*Juncus usitatus*	Common Rush	NL	LC
Asteraceae	*Lagenophora* sp.		NL	LC
Laxmanniaceae	*Laxmannia gracilis*	Slender Wire Lily	NL	LC
Poaceae	*Leersia hexandra*	Swamp Ricegrass	NL	LC
Campanulaceae	*Lobelia concolor*		NL	LC
Campanulaceae	*Lobelia purpurascens*	White Root	NL	LC
Campanulaceae	*Lobelia stenophylla*		NL	LC
Laxmanniaceae	*Lomandra laxa*		NL	LC
Laxmanniaceae	*Lomandra longifolia*	Spiny-headed Mat Rush	NL	LC
Laxmanniaceae	*Lomandra* sp.		NL	LC
Myrtaceae	*Lophostemon suaveolens*	Swamp Box	NL	LC
Onagraceae	*Ludwigia octovalvis*	Native Willow Primrose	NL	LC
Moraceae	*Maclura cochinchinensis*	Cockspur Vine	NL	LC
Marsileaceae	*Marsilea* sp.		NL	LC
Meliaceae	*Melia azedarach*	White Cedar	NL	LC
Poaceae	*Microlaena stipoides*	Weeping Meadow Grass	NL	LC
Haloragaceae	*Myriophyllum gracile*		NL	LC
Menyanthaceae	*Nymphoides indica*		NL	LC
Poaceae	*Ottochloa gracillima*	Graceful Grass	NL	LC
Poaceae	*Panicum* sp.		NL	LC
Apocynaceae	*Parsonsia brisbanensis*		NL	LC
Apocynaceae	*Parsonsia straminea*	Monkey Rope	NL	LC
Poaceae	*Paspalum* sp.		NL	LC
Polygonaceae	*Persicaria attenuata*	Smartweed	NL	LC
Polygonaceae	*Persicaria decipiens*	Slender Knotweed	NL	LC
Polygonaceae	*Persicaria orientalis*	Prince's Feather	NL	LC
Proteaceae	*Persoonia* sp.		NL	LC
Picrodendraceae	*Petalostigma pubescens*	Quinine Bush	NL	LC
Philydraceae	*Philydrum lanuginosum*	Woolly Frogmouth	NL	LC
Phyllanthaceae	*Phyllanthus* sp.		NL	LC
Asteraceae	*Pterocaulon redolens*		NL	LC
Phyllanthaceae	*Sauropus hirtellus*		NL	LC
Cyperaceae	*Scleria* sp.		NL	LC
Fabaceae	*Sesbania* sp.		NL	LC
Poaceae	*Sporobolus* sp.		NL	LC
Ulmaceae	*Trema aspera*		NL	LC
Typhaceae	*Typha orientalis*		NL	LC

Family	Botanical Name	Common Name	EPBC Act 1999	NC Act 1992
Exotic Species				
Asteraceae	*Ageratum houstonianum*	Blue Billygoat Weed	NL	*
Apocynaceae	*Asclepias curassavica*	Tropical Milkweed	NL	*
Asteraceae	*Aster subulatus*	Wild aster	NL	*
Asteraceae	*Bidens pilosa*	Cobbler's Pegs	NL	*
Poaceae	*Brachiaria decumbens*	Signal grass	NL	*
Commelinaceae	*Callisia fragrans*		NL	*
Commelinaceae	*Callisia repens*	Money Plant	NL	*
Bignoniaceae	*Campsis radicans*		NL	*
Cannaceae	*Canna indica*		NL	*
Apocynaceae	*Catharanthus roseus*	Pink Periwinkle	NL	*
Chenopodiaceae	*Chenopodium album*		NL	*
Poaceae	*Chloris gayana*	Rhodes Grass	NL	*
Arecaceae	*Syagrus romanzoffiana*	Cocos Palm	NL	*
Poaceae	*Cortaderia selloana*		NL	*
Lythraceae	*Cuphea carthagenensis*	Columbian Waxweed	NL	*
Poaceae	*Cynodon dactylon*	Couch	NL	*
Poaceae	*Digitaria didactyla*	Blue Couch	NL	*
Poaceae	*Digitaria violascens*		NL	*
Chenopodiaceae	*Dysphania ambrosioides*		NL	*
Asteraceae	*Eclipta prostrata*	White Eclipta	NL	*
Asteraceae	*Emilia sonchifolia*	Emilia	NL	*
Poaceae	*Eragrostis curvula*		NL	*
Asteraceae	*Erechtites valerianifolius*		NL	*
Apocynaceae	*Gomphocarpus physocarpus*	Balloon Cotton Bush	NL	*
Poaceae	*Hyparrhenia rufa*		NL	*
Asteraceae	*Hypochaeris radicata*	Flatweed	NL	*
Bignoniaceae	*Jacaranda mimosifolia*	Jacaranda	NL	*
Myrsinaceae	*Lysimachia arvensis*		NL	*
Fabaceae	*Macroptilium atropurpureum*	Siratro	NL	*
Fabaceae	*Macroptilium lathyroides*	Phasey Bean	NL	*
Poaceae	*Megathyrsus maximus* var. *pubiglumis*	Green Panic	NL	*
Poaceae	*Melinis repens*	Red Natal Grass	NL	*
Moraceae	*Morus alba*		NL	*
Cactaceae	*Opuntia tomentosa*	Velvety Tree Pear	NL	*
Passifloraceae	*Passiflora suberosa*	Corky Passionvine	NL	*
Plantaginaceae	*Plantago lanceolata*		NL	*
Acanthaceae	*Ruellia simplex*		NL	*
Polygonaceae	*Rumex crispus*		NL	*
Plantaginaceae	*Scoparia dulcis*		NL	*
Caesalpiniaceae	*Senna pendula* var. *glabrata*		NL	*
Poaceae	*Setaria sphacelata*		NL	*
Malvaceae	*Sida cordifolia*		NL	*
Malvaceae	*Sida rhombifolia*		NL	*
Solanaceae	*Solanum seaforthianum*		NL	*
Verbenaceae	*Verbena bonariensis*		NL	*
Asteraceae	*Ambrosia artemisiifolia*	Annual Ragweed	NL	*(RI)
Asparagaceae	*Asparagus africanus*	Asparagus Fern	NL	*(RI)
Asteraceae	*Baccharis halimifolia*	Groundsel Bush	NL	*(RI)
Crassulaceae	*Bryophyllum delagoense*	Mother of Millions	NL	*(RI)

Family	Botanical Name	Common Name	EPBC Act 1999	NC Act 1992
Ulmaceae	*Celtis sinensis*	Chinese Celtis	NL	*(RI)
Lauraceae	*Cinnamomum camphora*	Camphor Laurel	NL	*(RI)
Verbenaceae	*Lantana camara*	Common Lantana	NL	*(RI)
Verbenaceae	*Lantana montevidensis*	Creeping Lantana	NL	*(RI)
Anacardiaceae	*Schinus terebinthifolius*	Broad-leaved Pepper Tree	NL	*(RI)
Asteraceae	*Senecio madagascariensis*	Fireweed	NL	*(RI)

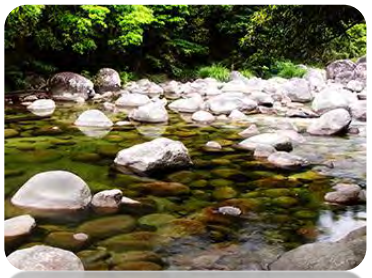
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CLAG Pty Ltd

Ripley View Estate

Stormwater Management Plan and Flood Impact Assessment



November 2019

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1. INTRODUCTION

This report has been provided for information purposes and client review only. It is incomplete in nature and requires internal Quality Assurance checks and approvals upon completion.

1.1 Project Background

Engeny has been commissioned to undertake a Stormwater Management Plan (SMP) and Flood Impact Assessment (FIA) for the proposed residential subdivision located on 37, 39-49 and 63 Fischer Road, Ripley View (Lot 208 on SL11067, Lot 209 on SL11067, Lot 210 on SL9238 and Lot 211 on RP906067 – 'the Site'). This report provides details regarding the stormwater quantity and quality management strategies and the local and regional flood impact assessments. The Site is located within the Ipswich City Council (ICC) Local Government Area (LGA) and the Ripley Valley Priority Development Area (PDA).

The proposed development layout is included for reference in Appendix A.

1.2 Scope Objectives

The scope of works and objectives for the project are outlined below:

- Undertake an assessment of the pre and post development flood conditions to ensure non-worsening at multiple locations downstream of the development site to the confluence of Lucas Creek and Bundamba Creek.
- Size and specify required stormwater detention and water quality treatment measures.
- Undertake a local flood assessment of the pre and post development flood conditions to ensure no off-site impacts are expected due to the development and to ensure the proposed internal access road has adequate freeboard.
- Undertake a regional flood impact assessment utilising the Bundamba Creek Flood Model to ensure non-worsening at multiple locations downstream of the development site to the confluence of the overland flow path and Bundamba Creek.

1.3 Site Location

The Site is bound by Fischer Road to the east, Boyland Way to the south and existing development to the north and west. Refer to Figure 1.1 for the Site location.

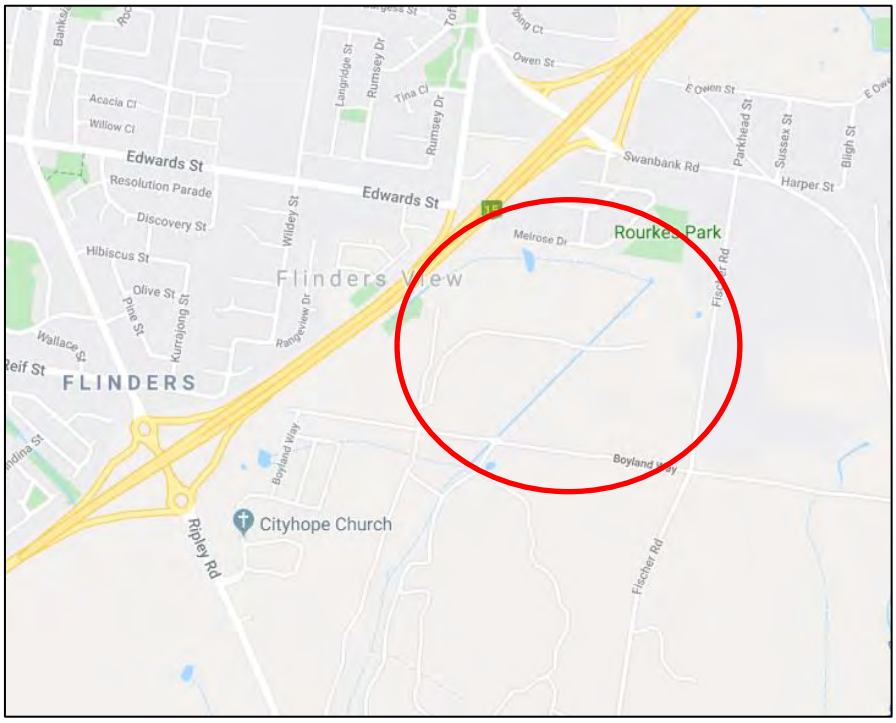


Figure 1.1 Area of Interest

1.4 Existing Flow Paths

Three ICC Urban Catchment Flowpaths (Overlay 5) are mapped over the Site, as shown in Figure 1.2. An adopted flood regulation line has not been defined for the overland flow paths within the Site. A site-specific flood assessment has been undertaken as summarised in the later sections.



Figure 1.2 ICC Urban Catchment Flowpaths

2. STORMWATER QUANTITY MANAGEMENT

The Site currently discharges to the ICC defined Urban Catchment Flowpaths that ultimately discharge to Bundamba Creek. The proposed development is predicted to result in an increase in the peak local runoff from the Site. Therefore, off-line detention basins to mitigate frequent events, in combination with an internal road crossing to mitigate less frequent event, have been proposed to ensure that the non-worsening of peak flows are achieved at the Site discharge location.

2.1 Hydrological Model Development

Hydrologic and hydraulic analysis and detention basin design has been undertaken for the Site using a purpose-built XPRAFTS hydrologic model. XPRAFTS estimates the runoff hydrograph from individual sub-catchments based on rainfall intensities, rainfall losses, fraction impervious, catchment slope, Manning's 'n', temporal patterns and catchment area. The modelling undertaken is consistent with the existing Bundamba Creek XPRAFTS model (Water Technology, 2017) for this area.

Detention basin volumes and pipe outlets were sized using XPRAFTS for the 1:1 AEP to the 1:100 AEP design storms.

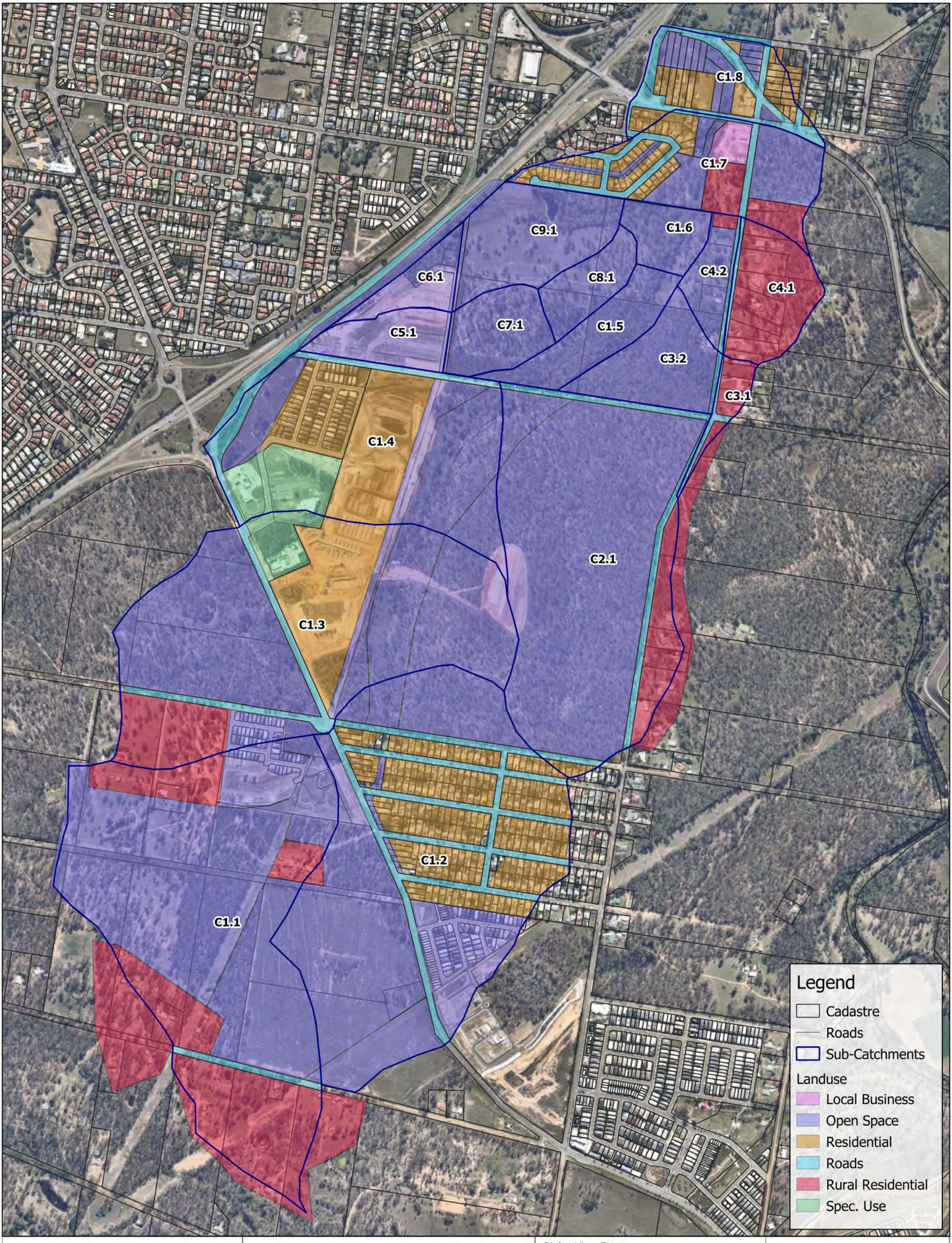
2.1.1 Sub-catchments

Survey contours, the proposed lot layout plan (provided by LandPartners) and the design surface (provided by Urban Engineering Solutions) were used to determine existing and developed catchment boundaries. The adopted catchment boundaries and land use are presented in Figure 2.1 and Figure 2.2. The land use parameters adopted for the existing scenario models were based on aerial photography. Where already constructed or approved development exists, the following land uses were applied:

- If a detention basin is proposed or constructed, the land use chosen was consistent with the pre-development land use to replicate the effect of the detention basin in mitigating post-development flows back to pre-development flows.
- If no detention basin is proposed or constructed, the land use chosen was consistent with the ultimate land use.

The land use parameters for the post-development model were updated from the existing case scenario to reflect the Site's development layout and dwelling density. Percentage impervious areas for the existing and developed catchments are consistent with the typical values outlined in QUDM.

XPRAFTS sub-catchment parameters are provided in Appendix B.



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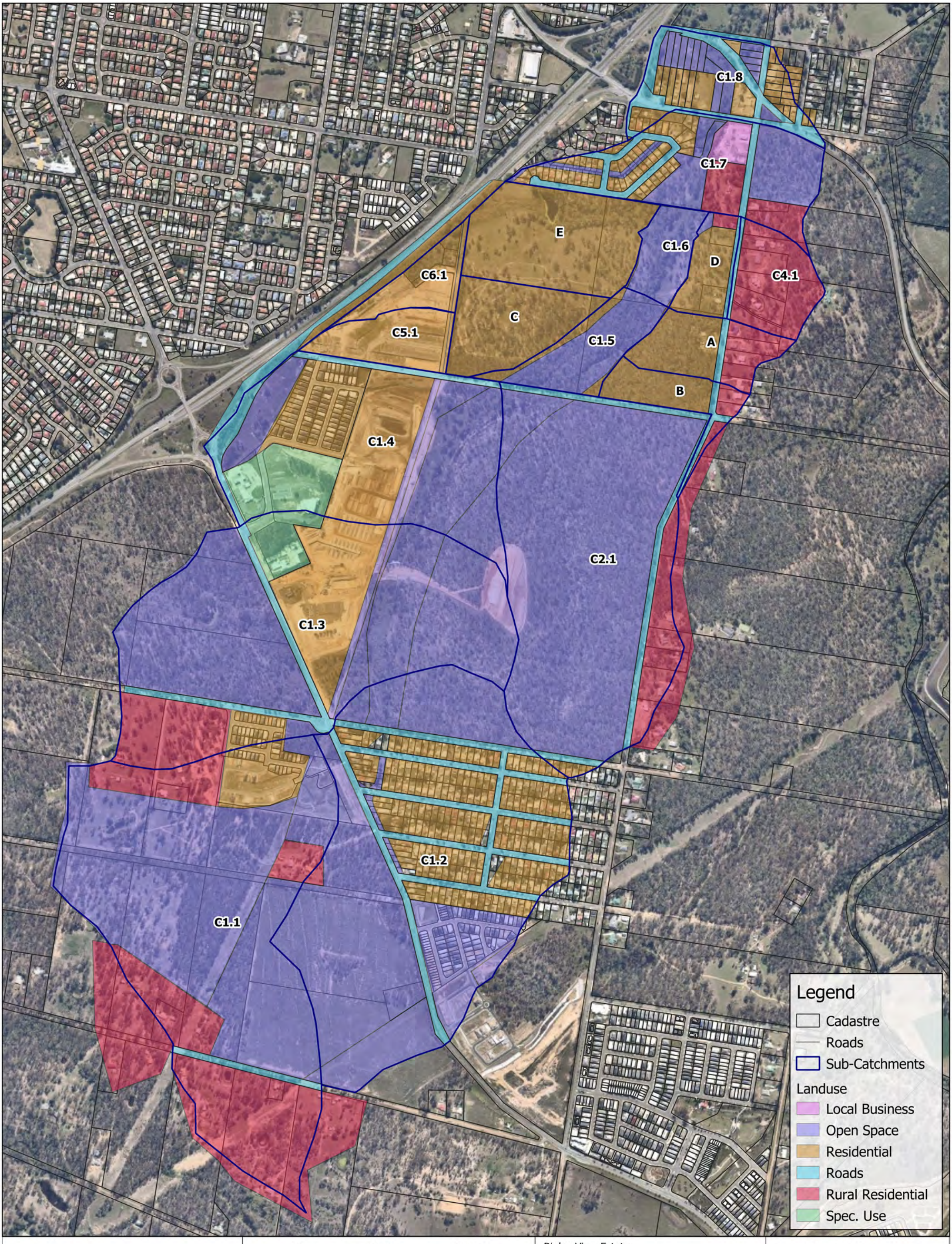
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Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

Existing Case Scenario Scenario
Sub-Catchments and Landuse

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Drawn: SW
Checked: KM
Date: 21/11/2019



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0 250 500 m

Scale in metres (1:10000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

Post-Development Scenario
Sub-Catchments and Landuse

Job Number: M64000_004
Revision: 0
Drawn: SW
Checked: KM
Date: 21/11/2019

2.1.2 Rainfall

The design rainfall Intensity-Frequency-Duration (IFD) data for the design storm events were derived from the IFD generation tool available on the Bureau of Meteorology (BoM) website (www.bom.gov.au) and are the same of those used in the Bundamba Creek Flood Study (Water Technology, 2017). The AR&R (EA, 1987) temporal patterns for Zone 3 have been applied to all design storms.

2.1.3 Losses and PERN Values

The assumed catchment rainfall loss parameters used in XPRAFTS are summarised below:

- Initial and continuing rainfall loss parameters were adopted for the pervious areas as follows (as consistent with the Bundamba Creek Flood Study (Water Technology, 2017)):
  - 40 mm and 1 mm/hr respectively for 1:1 AEP – 1:10 AEP events
  - 20 mm and 1 mm/hr respectively for 1:20 AEP event
  - 10 mm and 1 mm/hr respectively for 1:50 AEP event
  - 5 mm and 1 mm/hr respectively for 1:100 AEP event.
- 1 mm initial loss and 0 mm/hr continuing rainfall loss parameters were adopted for the impervious areas as follows:

  XPSTORM default values of m = -0.285 and Bx = 1 have been adopted.

2.1.4 Peak Flow Validation

The peak flow estimates from the XPRAFTS model was validated using the Rational Method calculation outlined in QUDM (IPWEAQ, 2017). The key inputs for the Rational Method calculations are summarised in Table 2.1 and the results are summarised in Table 2.2. Catchment A has been selected for validation.

Table 2.1 Rational Method Calculation Input

Parameter	Parameter
Catchment Area (ha)	380.9
1 hour 10-year Rainfall Intensity (mm/hr)	66
C10	0.66 (18% Impervious)

Parameter	Parameter
Time of Concentration (minutes)	70.83 (Average stream velocity of 1 m/s)

Table 2.2 Rational Method Results

Event (1:x AEP)	Existing Catchment- XPRAFTS (m^3/s)	Existing Catchment - Rational Method (m^3/s)	Difference
100	70.9	79.8	-11.2%
50	58.8	67.7	-13.2%
2	43.6	51.4	-15.3%
10	26.9	41.9	-36.0%
5	21.3	34.9	-39.1%
2	14.1	24.0	-41.2%
1	10.7	17.4	-38.6%

It is observed from Table 2.2 that there is good agreement between the Rational Method and XPRAFTS peak flow estimates for the 1:20 AEP to 1:100 AEP events. It is noted that for the 1:1 AEP to 1:10 AEP flood events, the XPRAFTS model produced estimates greater than 30% lower than the Rational Method. This is likely due to the inappropriateness of the large initial loss values adopted from the Bundamba Creek Flood Study (Water Technology, 2017) for a catchment of this size. As per ICC's request, these have not been altered to achieve a closer validation.

2.2 Proposed Detention Basins

As a result of the proposed development, the peak discharge from the Site increases due to the increase in impervious area. To mitigate the increased discharge, three off-line detention basins have been proposed. Key basin details are outlined in Table 2.3.

The detention basins have been designed assuming a maximum depth of 1.2 m in the 20-year ARI storm event to adhere to the QUDM safety recommendation. The location of the detention basins are shown in Appendix A.

Table 2.3 Conceptual Detention Basin Details

Detail	Basin 2	Basin 3	Basin 4
Sub-Catchment detained	B	C	E + C6.1
Primary Outlet	1/300 RCP at invert	2/300 RCP at invert	3/375 RCP at invert
High Flow Outlet	1/375 RCP at 32.8 m AHD	3/300 RCP at 36 m AHD	5/300 RCP at 30.3 m AHD
Spillway	25 m wide at 33.3 m AHD	30 m wide at 36.4 m AHD	40 m wide at 30.5 m AHD
Embankment Crest Level	33.7 m AHD	36.9 m AHD	31 m AHD

The internal road crossing has also been modelled in the hydrologic model to represent the attenuation expected due to the combination of the road embankment and culverts. The road configuration details are below. It is noted that exact invert will be confirmed at Operational Works with detailed survey.

- Road elevation at 33.3 m AHD
- Culverts are 3/2400x2100 RCBC at 30 m AHD and 1/2400 x 2400 RCBC at 29.7 m AHD.

The total peak discharge for the 1:1 AEP to 1:100 AEP design storm events experienced at the downstream site boundary (catchment C1.6 as shown on Figure 2.1 and Figure 2.2), inclusive of the upstream ultimate development scenario catchment, are summarised in Table 2.4 below. The proposed detention basins are shown to achieve the non-worsening objectives at the discharge location.

Furthermore, the incorporation of the detention basins and road crossing result in a benefit for the catchment downstream of the Site location. The stormwater management strategy provides over attenuation of total Urban Catchment Flowpath peak flows, resulting in a benefit to downstream flood levels and velocities.

Table 2.4 Existing, Developed and Mitigated Peak Flows at Downstream Site Boundary (C1.6)

AEP (1:x AEP)	Existing (m^3/s)	Developed Unmitigated (m^3/s)	Developed Mitigated (m^3/s)	Difference
100	70.85	67.15	52.05	-26.5%
50	58.79	55.95	44.04	-25.1%

AEP (1:x AEP)	Existing (m^3/s)	Developed Unmitigated (m^3/s)	Developed Mitigated (m^3/s)	Difference
20	43.55	51.82	32.96	-24.3%
10	26.85	28.56	22.21	-17.3%
5	21.28	23.30	17.91	-15.8%
2	14.14	16.31	12.63	-10.7%
1	10.69	12.32	9.76	-8.7%

3. FLOOD ASSESSMENT

3.1 Overview

Flood impact assessments have been undertaken for the local catchment as well as the regional Bundamba Creek catchment. These were undertaken for the purpose of determining potential flood impacts upstream and downstream of the Site as a result of the development.

3.2 Local Flood Assessment

3.2.1 Existing Case Scenario

A 2D TUFLOW hydraulic model was developed to assess any potential flood impacts associated with the proposed development (inclusive of calculated detention basin outflows and internal road crossing) external to the Site on the Urban Catchment Flowpath. A 2 m model cell size was adopted for the model, with the model extending from approximately 200 m upstream and 600 m downstream of the Site. The following data and key parameters were used in the development of the TUFLOW model:

- All culvert and pipe drainage data located within the model extent in accordance with ICC records and the Bundamba Creek Flood Study (Water Technology, 2017)
- Topography based on 1m Digital Elevation Model generated from 2014 LiDAR data
- Land use and Manning's roughness digitised based on aerial photography
- Local and total hydrologic inflows from the existing case scenario from the purpose-built XPRAFTS model (as outlined in Section 2)
- Downstream boundary conditions:
  - 1:1 AEP: steady-state value of 24.3m AHD (1:10 AEP flood elevation from Bundamba Creek flood model (Water Technology, 2017)
  - 1:2 AEP: steady-state value of 25.1 m AHD (1:2 AEP flood elevation from Bundamba Creek flood model (Water Technology, 2017)
  - 1:5 AEP: steady-state value of 25.4 m AHD (1:5 AEP flood elevation from Bundamba Creek flood model (Water Technology, 2017)
  - 1:10 AEP: steady-state value of 25.6 m AHD (1:10 AEP flood elevation from Bundamba Creek flood model (Water Technology, 2017)
  - 1:20 AEP – 1:100 AEP flood events: steady-state value of 25.8 m AHD (1:20 AEP flood elevation from Bundamba Creek flood model (Water Technology, 2017).
- Table 3.1 below outlines the adopted Manning's 'n' values. These values are consistent with the Bundamba Creek Flood Study (Water Technology, 2017).

Table 3.1 **Manning's** Roughness Values

Land Use	**Manning's 'n' Value**
Waterway – Concrete Lined Channel	0.020
Roads – with Road Reserve	0.025
Open Space – Sports	0.035
Waterway – Low Vegetation / Rock Pools	0.045
Open Space – Other	0.050
Vegetation – Open Space with Trees/Shrubs	0.060
Vegetation – Trees and Shrubs	0.080
Vegetation – Trees and Shrubs with Large Undergrowth	0.100
Urbanised Areas	0.200

The TUFLOW model layout is provided in Figure 3.1.



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0 250 500 m

Scale in metres (1:9000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

TUFLOW Layout

Job Number: M64000_004
Revision: 0
Drawn: SW
Checked: KM
Date: 21/11/2019

3.2.2 Post Development Scenario

A post development scenario TUFLOW model was developed in order to quantify the impacts of the proposed development on the existing flooding conditions. The post development scenario utilised the existing scenario TUFLOW model with the following key changes:

- Incorporation of post-development earthworks provided by Urban Engineering Solutions, inclusive of the proposed internal road crossing.
- Incorporation of proposed internal road crossing including the culverts.
- Update of hydrologic inflows for the post-development scenario XPRAFTS hydrologic model (as outlined in Section 2), inclusive of detention basin outflows and internal road crossing.

3.2.3 Flood Impact Results and Immunity

The existing case scenario and post-development TUFLOW model was simulated for all flood events from the 1:1 AEP to 1:100 AEP flood event, for durations ranging from 30 minutes to 6 hours. The existing case and post-development 1:100 AEP flood height maps and flood impact maps are provided in Appendix C.

The mapping provided shows that no material impacts are expected along the local Urban Catchment Flowpath outside of the Site boundaries as a result of incorporating the development earthworks, detention basins or internal road crossing. Minor increases in flood level along the Urban Catchment Flowpath downstream of the Site in the 1:1 AEP and 1:2 AEP flood events are observed (25 mm and 20 mm, respectively), however, as the local TUFLOW model only contains a stationary downstream boundary condition, impacts downstream of the Site are more likely to be accurately estimated in the regional (Bundamba Creek) flood model as discussed in the Section 3.3. Additionally, these minor differences are located within public open space.

The maps also indicate that the proposed internal road crossing achieves the required 1:100 AEP flood immunity, and that all other access roads and lots also achieve the required 1:100 AEP flood immunity. The flood elevation results at the road crossing are:

- Road elevation at 33.3 m AHD
- 1:100 AEP flood elevation at road of 32.23 m AHD.
- Freeboard of 1.07 m.

3.3 Regional Flood Assessment

3.3.1 Existing Models

Hydrologic (XPRAFTS) and hydraulic (TUFLOW) models developed for the Bundamba Creek Flood Study Update (Water Technology, 2017) were supplied by Ipswich City Council (ICC) for use in this study. ICC has previously confirmed the model's suitability for this study.

3.3.2 Model Updates to Assess Development

Existing Case Scenario Model

The previously developed TUFLOW model (Water Technology, 2017) was utilised for the pre-development scenario simulations. The only update to this scenario was:

- Replacement of the Water Technology XPRAFTS hydrologic inflows for the Urban Catchment Flowpath on which the Site is located with those produced by the Engeny purpose-built XPRAFTS model (as outlined in Section 2). This is necessary to accurately reflect the changes in the upstream land use (as reflected in the purpose-built hydrologic model). These inflows are C1.6 and C1.7, as shown in Figure 3.2.



Figure 3.2 Purpose-Built XPRAFTS Inflow Locations

- The simulation time for the Bundamba Creek TUFLOW model was found to be excessive (i.e. days) for the purpose of this assessment. Therefore, simulation in TUFLOW GPU/HPC mode was undertaken to reduce the simulation time.

Further details on the pre-development TUFLOW model setup is provided in the Bundamba Creek Flood Study Update (Water Technology, 2017).

Post-Development Scenario Model

The existing case scenario model as outlined above was modified to represent the post-development scenario by:

- Updating the purpose-built hydrologic model inflows (C1.6, C1.7) to those from the developed case scenario hydrologic model (inclusive of detention basin outflows, internal road crossing).

All available storm durations available in the Bundamba Creek Flood Study model (1 hour to 12 hours) were simulated for all events from the 1:1 AEP to 1:100 AEP flood event.

Flood Impact Results

The peak flood level and velocity results for key reporting points are summarised in Table 3.3 and Table 3.4 respectively. The results indicate no material increase in peak flood levels and velocities at the reporting locations. These key locations are shown on the flood Impact mapping for the 1:1 AEP to 1:100 AEP flood events, as provided in Appendix D. Within the flood impact mapping, isolated areas of increase are observed as summarised in Table 3.2. These minor areas of increase do not impact upon private property and are expected to not have any effect on the useability of the land. Furthermore, hydrographs comparing peak flow and timing for all design events at three key reporting locations (as shown on the flood impact mapping in Appendix D) are provided in Appendix E to further demonstrate that there are no expected flood behaviour impacts due to the development.

Table 3.2 Flood Impact Commentary

Flood Event	Impact Commentary
1:1 AEP	Impact of up to 18 mm within low-flow channel of Bundamba Creek. Location is within the waterway and the impact will not affect use. Inspection of the flood velocity results in this location show that there is no change in the peak flood velocity between the existing and developed scenarios of more than 0.01 m/s.
1:50 AEP	Impact of up to 44 mm in racecourse. Location is already flood affected and impact will not affect use. Inspection of the flood velocity results in this location show that there is no change in the peak flood velocity between the existing and developed scenarios of more than 0.01 m/s.

Table 3.3 Peak Flood Level (m AHD) at Key Locations

Reporting Location ID	100 yr ARI			50 yr ARI			20 yr ARI			10 yr ARI			5 yr ARI			2 yr ARI			1 yr ARI		
	Exg.	Post	Diff.	Exg.	Post	Diff.	Exg.	Post	Diff.	Exg.	Post	Diff.	Exg.	Post	Diff.	Exg.	Post	Diff.	Exg.	Post	Diff.
1	27.08	27.08	0.00	26.97	26.97	0.00	26.90	26.90	0.00	26.89	26.89	0.00	26.89	26.89	0.00	26.89	26.89	0.00	26.88	26.88	0.00
2	23.76	23.76	0.00	23.49	23.49	0.00	23.10	23.10	0.00	22.63	22.63	0.00	22.40	22.41	0.00	21.69	21.69	0.00	21.00	21.00	0.00
3	21.16	21.17	0.00	20.92	20.93	0.00	20.60	20.60	0.00	20.07	20.07	0.00	19.80	19.80	0.00	19.03	19.03	0.00	18.22	18.22	0.00
4	17.98	17.98	0.00	17.58	17.59	0.00	17.05	17.06	0.01	16.26	16.26	0.01	15.83	15.83	0.00	14.84	14.85	0.00	13.76	13.76	0.00
5	14.12	14.12	0.00	12.16	12.16	0.00	11.07	11.07	0.01	10.06	10.06	0.01	9.62	9.63	0.00	8.66	8.66	0.00			0.00
6	13.93	13.93	0.00	11.17	11.17	0.00	8.68	8.68	0.00	5.49	5.49	0.00	2.83	2.84	0.00	2.05	2.05	0.00	1.44	1.45	0.01

Table 3.4 Peak Flood Velocity (m/s) at Key Locations

Reporting Location ID	100 yr ARI			50 yr ARI			20 yr ARI			10 yr ARI			5 yr ARI			2 yr ARI			1 yr ARI		
	Exg.	Post	Diff.	Exg.	Post	Diff.	Exg.	Post	Diff.	Exg.	Post	Diff.	Exg.	Post	Diff.	Exg.	Post	Diff.	Exg.	Post	Diff.
1	0.73	0.73	0.00	0.72	0.70	-0.02	0.76	0.76	0.00	0.82	0.83	0.02	0.94	0.71	-0.23	0.79	0.79	0.00	0.70	0.70	0.00
2	1.97	1.97	-0.01	1.97	1.96	-0.01	1.94	1.94	0.00	1.85	1.85	0.00	1.79	1.79	0.00	1.65	1.65	0.00	1.63	1.63	0.00
3	1.78	1.77	0.00	1.77	1.77	0.00	1.72	1.72	0.00	1.60	1.60	0.00	1.48	1.48	0.00	1.32	1.32	0.00	1.16	1.16	0.00
4	1.57	1.57	0.00	1.15	1.15	0.00	1.03	1.03	0.00	0.76	0.76	0.00	0.64	0.64	0.00	0.35	0.35	0.00	0.12	0.12	0.00
5	1.19	1.19	0.00	1.97	1.97	0.00	2.14	2.14	0.00	1.90	1.90	0.00	1.71	1.71	0.00	1.17	1.17	0.00			0.00
6	0.37	0.37	0.00	0.86	0.86	0.00	1.04	1.05	0.00	1.22	1.22	0.00	2.27	2.31	0.05	1.61	1.61	0.00	0.70	0.71	0.01

4. STORMWATER QUALITY MANAGEMENT

4.1 Construction Phase

A comprehensive erosion and sediment control plan will be completed for the Site in the detailed design phase. This will ensure that water quality is not compromised during construction. The design will be in accordance with Ipswich City Council City Plan and the International Erosion Control Association guidelines. This is to be kept on site and implemented for the duration of the construction phase.

4.2 Operational Phase

A conceptual stormwater quality treatment strategy has been developed in accordance with the State Planning Policy (SPP) 2017 for the operational phase of the development. Based on the provisions of the SPP, the load-based pollutant reduction targets have been used to demonstrate compliance with objectives. Load based targets identified in the SPP were adopted for discharge targets as outlined in Table 4.1.

Table 4.1 Adopted Water Quality Objectives

Pollutant	Minimum Load Reduction Target (%)
Total Suspended Solids (TSS)	80
Total Phosphorus (TP)	60
Total Nitrogen (TN)	45
Gross Pollutants (GP)	90

4.2.1 Climate Data

Climate data for the catchment was sourced from the Bureau of Meteorology (BOM). Rainfall data was obtained from the Greenbank Thompson Road Station (40659) for the 10 years between 1989 and 1989 at six (6) minute intervals. The rainfall data for this catchment was adopted given that this is the recommended station in the MUSIC Modelling Guidelines.

4.2.2 Catchment Properties

The catchment areas for water quality are outlined in Figure 4.1. A split catchment approach was considered appropriate for implementing a residential land use. Rainfall-runoff and pollutant export parameters were adopted from the recommended values identified in MUSIC Modelling Guidelines for South East Queensland (Water by Design, 2010).



Figure 4.1 Stormwater Quality Catchments and Bioretention Basin Locations

Table 4.2 provides a summary of the MUSIC Model parameters implemented for each catchment. The split of each catchment into ground, roof and road nodes and the associated impervious values for each were adopted based on the recommended values provided by MUSIC Modelling Guidelines for South East Queensland (Water by Design, 2010), based upon the proposed dwelling density in each catchment.

Table 4.2 MUSIC Model Parameters

Catchment	Land Use	Area (ha)
Basin 1 Catchment	Residential	3.80
Basin 2 Catchment	Residential	7.39
Basin 3 Catchment	Residential	8.53
Basin 4 Catchment	Residential	15.19
Bypassed Catchment	Residential	1.66

4.2.3 Treatment System

Runoff from the Site will be treated by off-line bioretention systems. Where there is a detention basin proposed in the same location, the bioretention will be co-located with the detention basin. Bioretention systems will be located as shown in Figure 4.1.

4.2.4 Treatment Train and Sizing

Bioretention systems have been modelled in MUSIC with the aforementioned climate data, catchment properties and pollutant concentrations in accordance with the MUSIC modelling guidelines (Water by Design, 2010). The treatment train produced in MUSIC is outlined in Figure 4.2. The catchment labelled “bypass” can not be piped to a bioretention system. This catchment has been accounted for through over-treatment in bioretention basin 2.

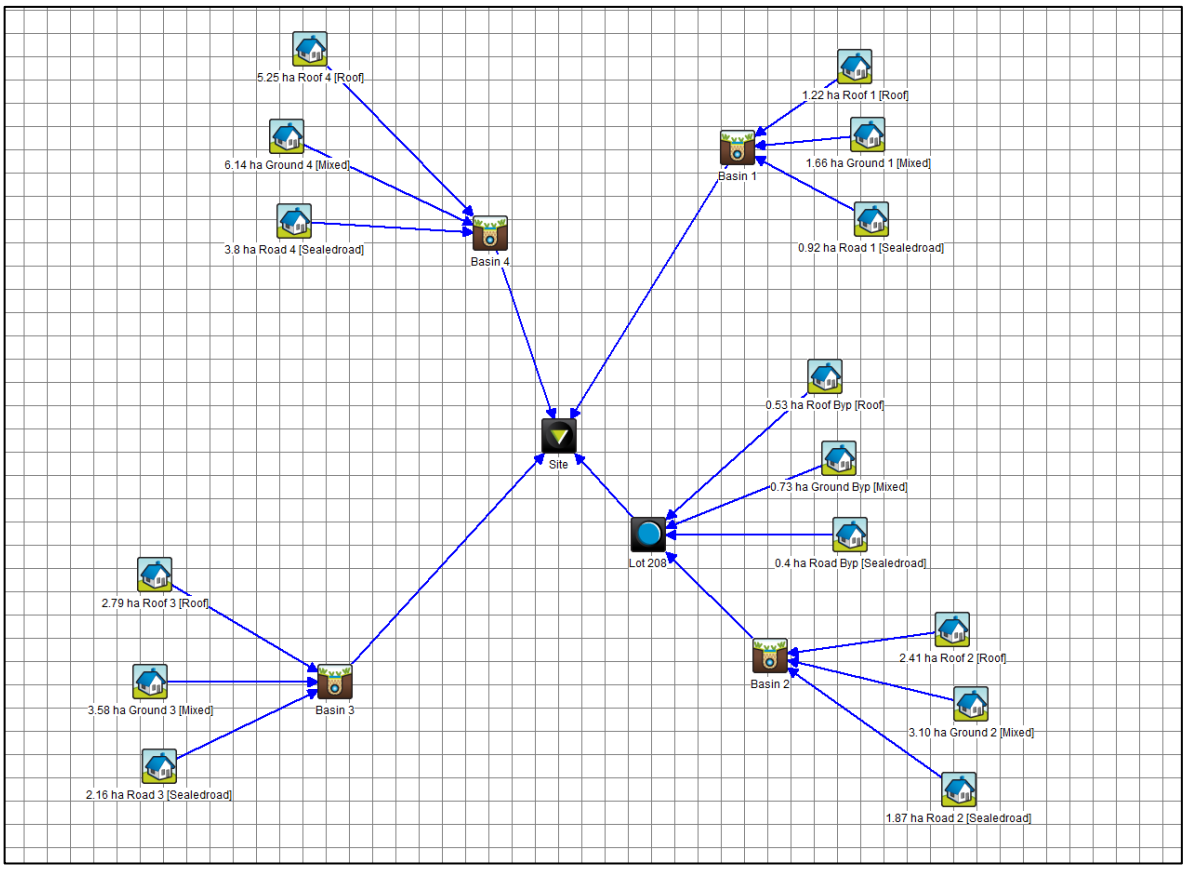


Figure 4.2 MUSIC Model Layout

Bioretention basins proposed to treat the development are saturated systems (saturated zone of 250 mm) and have parameters as outlined below in Table 4.3.

Table 4.3 Adopted Bioretention Basin Parameters

Basin	Extended Detention Depth (mm)	Filter Area (m^2)	Filter Depth (mm)
1	300	250	500
2	300	2,200*	500
3	300	550	500
4	300	1,000	500

**Bioretention system 2 will be split into 3 separate cells due to size*

4.3 Water Quality Model Results

Results of the MUSIC model are presented in Table 4.4. The results of the MUSIC modelling indicate that the load-based reduction targets have been achieved with the proposed treatment train. As such, the proposed treatment train will be adopted for the development site.

Table 4.4 MUSIC Model Results

Pollutant	Load Based Reduction Target (%)	Modelled Reduction (%)
TSS	80	80.4
TP	60	63.1
TN	45	52.4
GP	90	95.8

5. CONCLUSION

Engeny has completed a study into the stormwater quantity, stormwater quality and local and regional flooding requirements for the proposed development to be located at 37, 39-49 and 63 Fischer Road, Ripley View. The following point summarise the findings of the report:

- Off-line detention basins to mitigate frequent events, in combination with an internal road crossing to mitigate less frequent event, have been proposed such that the non-worsening of peak flows are achieved at the discharge location.
- Stormwater quality treatment will be provided via offline bioretention basins.
- A local flood impact assessment has been undertaken for the 1:1 AEP to 1:100 AEP flood events to show that no upstream impacts are expected due to the incorporation of the proposed internal road crossing and that the road crossing has the required 1:100 AEP immunity.
- A regional flood impact assessment has been undertaken utilising the Bundamba Creek Flood model to show that no material impacts are expected downstream of the Site due to the incorporation of the development, proposed detention basins and road crossing. The model has been simulated for all available durations for the 1:1 AEP to the 1:100 AEP flood event.

6. QUALIFICATIONS

a. In preparing this document, including all relevant calculation and modelling, Engeny Water Management (Engeny) has exercised the degree of skill, care and diligence normally exercised by members of the engineering profession and has acted in accordance with accepted practices of engineering principles.

b. Engeny has used reasonable endeavours to inform itself of the parameters and requirements of the project and has taken reasonable steps to ensure that the works and document is as accurate and comprehensive as possible given the information upon which it has been based including information that may have been provided or obtained by any third party or external sources which has not been independently verified.

c. Engeny reserves the right to review and amend any aspect of the works performed including any opinions and recommendations from the works included or referred to in the works if:

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   (ii) Engeny considers it prudent to revise any aspect of the works in light of any information which becomes known to it after the date of submission.

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g. This report does not provide legal advice.

7. REFERENCES

ICC (2016), *Implementation Guideline No. 24.*

IPWEAQ (2017), *Queensland Urban Drainage Manual.*

Water by Design (2010), *MUSIC Modelling Guidelines.* Version 1.0

Water Technology (2017), *Bundamba Creek Flood Study.*

APPENDIX A

Proposed Development Layout

PRELIMINARY LAYOUT FOR YIELD & DISCUSSION PURPOSES ONLY

SUBJECT TO MEETINGS WITH & APPROVALS FROM ECONOMIC DEVELOPMENT QUEENSLAND

LEGEND

- SUBJECT SITE
- PDA BOUNDARY
- NEIGHBOURHOOD BOUNDARY
- OPEN SPACE LINEAR & RECREATION
- EXCLUSION ZONE FOR REMNANT VEGETATION
- ENDANGERED REMNANT VEGETATION
- PROPOSED RETENTION BASINS
- MINING BOUNDARY OF INFLUENCE ZONE
- MINING BOUNDARY ABERDARE SEAM WORKINGS
- MINING BOUNDARY BLUFF SEAM WORKINGS
- FELDSPAR FAULT LOCATIONS & 15m OFFSET
- 10m WIDE FOOTPATH LOCATIONS
- PROPOSED ROAD WIDENING (SEE NOT BELOW)
- MGA TOP OF BANK (ENGENY)
- 10m OFFSET FROM TOP OF BANK (ENGENY)

LOT TYPES

- CHILD CARE
- LOTS 300m² MINIMUM
- LOTS 375m² MINIMUM
- LOTS 400m² MINIMUM
- LOTS 450m² MINIMUM
- DUPLEX LOTS 500m² MINIMUM

STATISTICS OVERALL

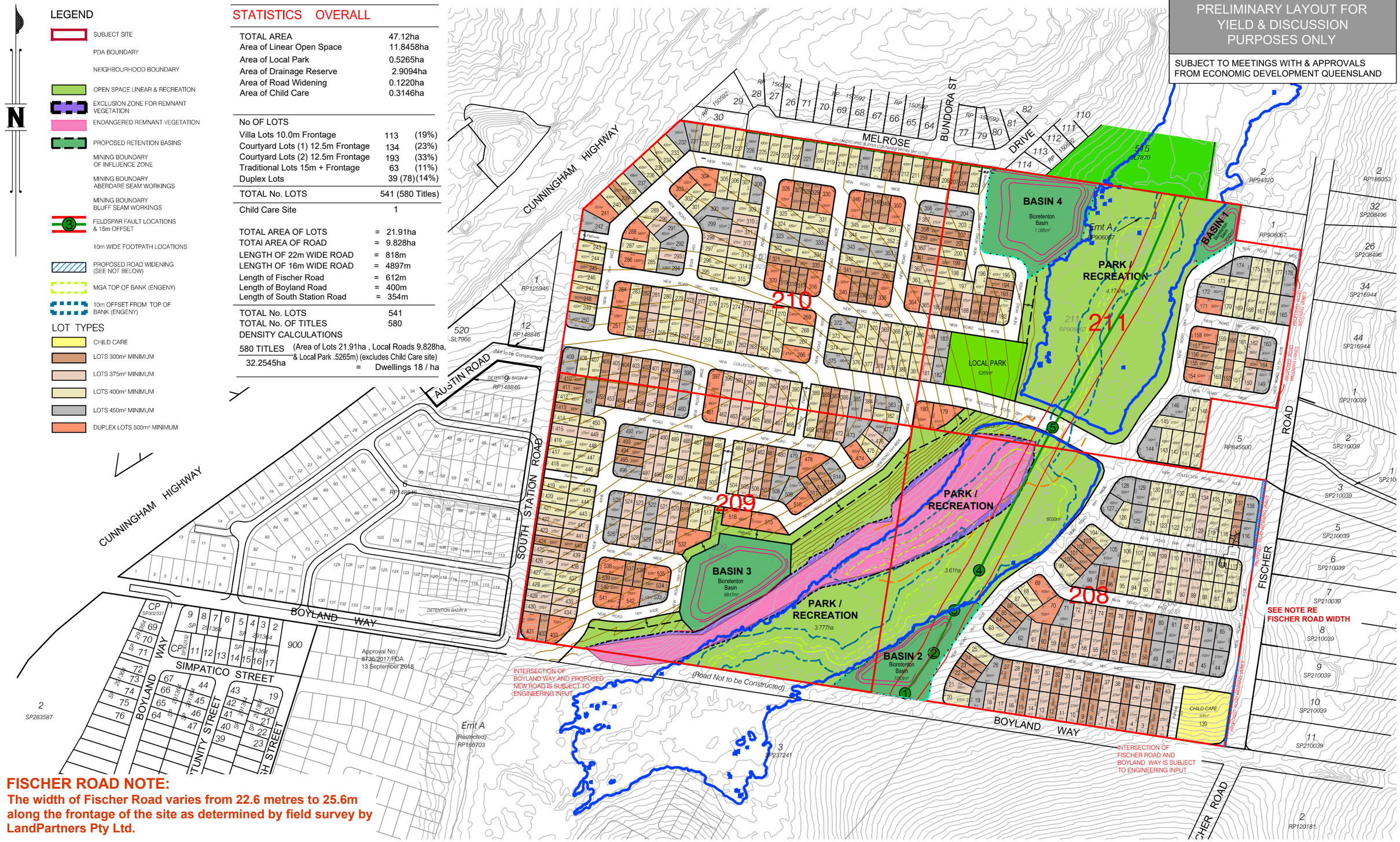
TOTAL AREA	47.12ha
Area of Linear Open Space	11.8458ha
Area of Local Park	0.5265ha
Area of Drainage Reserve	2.9094ha
Area of Road Widening	0.1220ha
Area of Child Care	0.3146ha

No OF LOTS		
Villa Lots 10.0m Frontage	113	(19%)
Courtyard Lots (1) 12.5m Frontage	134	(23%)
Courtyard Lots (2) 12.5m Frontage	193	(33%)
Traditional Lots 15m + Frontage	63	(11%)
Duplex Lots	39 (78)	(14%)
TOTAL No. LOTS	541 (580 Titles)	
Child Care Site	1	

TOTAL AREA OF LOTS	=	21.91ha
TOTAI AREA OF ROAD	=	9.828ha
LENGTH OF 22m WIDE ROAD	=	818m
LENGTH OF 16m WIDE ROAD	=	4897m
Length of Fischer Road	=	612m
Length of Boyland Road	=	400m
Length of South Station Road	=	354m
TOTAL No. LOTS		541
TOTAL No. OF TITLES		580

DENSITY CALCULATIONS

580 TITLES / 32.2545ha (Area of Lots 21.91ha , Local Roads 9.828ha, & Local Park .5265m) (excludes Child Care site) = Dwellings 18 / ha



FISCHER ROAD NOTE:
The width of Fischer Road varies from 22.6 metres to 25.6m along the frontage of the site as determined by field survey by LandPartners Pty Ltd.

NOTE: SITE SUBJECT TO GEOTECHNICAL ANALYSIS TO CONFIRM LAYOUT

40 0 80 200m

SCALE 1:4000

LANDPARTNERS
built environment consultants

37, 39 - 49 & 63 FISCHER ROAD & 3 MELROSE DRIVE

FLINDERS VIEW

PLAN DESCRIPTION:
LOT 209 ON SL11067
LOT 210 ON SL9236 & LOTS 211 & 2 ON RP 906067
TOTAL AREA 34.5785ha

Client Name: HALL PROPERTY SOLUTIONS
Project Name: RIPLEY VIEW ESTATE

File: BRSS7261-XXX-3-14
Drawn: MIS
Date: 28/11/2019

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APPENDIX B

XPRAFTS Sub-Catchment Parameters

Existing Scenario Sub-Catchment Parameters

ID	Subcatchment Number	Storm Number	Total Area [ha]	Catchment Manning's 'n' [n value]	Percentage Impervious [%]	Vectored Slope [%]
C1.1	1	Critical Storm	6.5	0.025	100	1.37
	2	Critical Storm	66.84	0.067	0	1.37
C1.2	1	Critical Storm	24.16	0.025	100	1.3
	2	Critical Storm	49.72	0.053	0	1.3
C1.3	1	Critical Storm	13.71	0.025	100	1.67
	2	Critical Storm	51.36	0.078	0	1.67
C1.4	1	Critical Storm	16.32	0.025	100	2.35
	2	Critical Storm	23.96	0.054	0	2.35
C1.5	1	Critical Storm	0.08	0.025	100	1.02
	2	Critical Storm	7.49	0.078	0	1.02
C1.6	1	Critical Storm	0.05	0.025	100	0.6
	2	Critical Storm	4.43	0.077	0	0.6
C1.7	1	Critical Storm	7.3	0.025	100	3.44
	2	Critical Storm	12.62	0.051	0	3.44
C1.8	1	Critical Storm	6.88	0.025	100	4.22
	2	Critical Storm	5.17	0.048	0	4.22
C2.1	1	Critical Storm	4.45	0.025	100	2.15
	2	Critical Storm	52.31	0.076	0	2.15
C3.2	1	Critical Storm	0.52	0.025	100	5.02
	2	Critical Storm	8.59	0.078	0	6.83
C3.1	1	Critical Storm	0.68	0.025	100	6.83

	2	Critical Storm	1.73	0.065	0	5.02
C4.2	1	Critical Storm	0.64	0.025	100	6.24
	2	Critical Storm	3.68	0.068	0	7.07
C4.1	1	Critical Storm	1.27	0.025	100	7.07
	2	Critical Storm	7.93	0.059	0	6.24
C7.1	1	Critical Storm	0.07	0.025	100	6.69
	2	Critical Storm	6.79	0.073	0	2.83
C5.1	1	Critical Storm	0.06	0.025	100	2.83
	2	Critical Storm	5.84	0.04	0	2.12
C6.1	1	Critical Storm	0.04	0.025	100	2.12
	2	Critical Storm	4.25	0.054	0	6.69
C8.1	1	Critical Storm	0.05	0.025	100	7.49
	2	Critical Storm	4.87	0.066	0	7.49
C9.1	1	Critical Storm	0.15	0.025	100	2.5
	2	Critical Storm	12.36	0.065	0	2.5

Post-Development Scenario Sub-Catchment Parameters

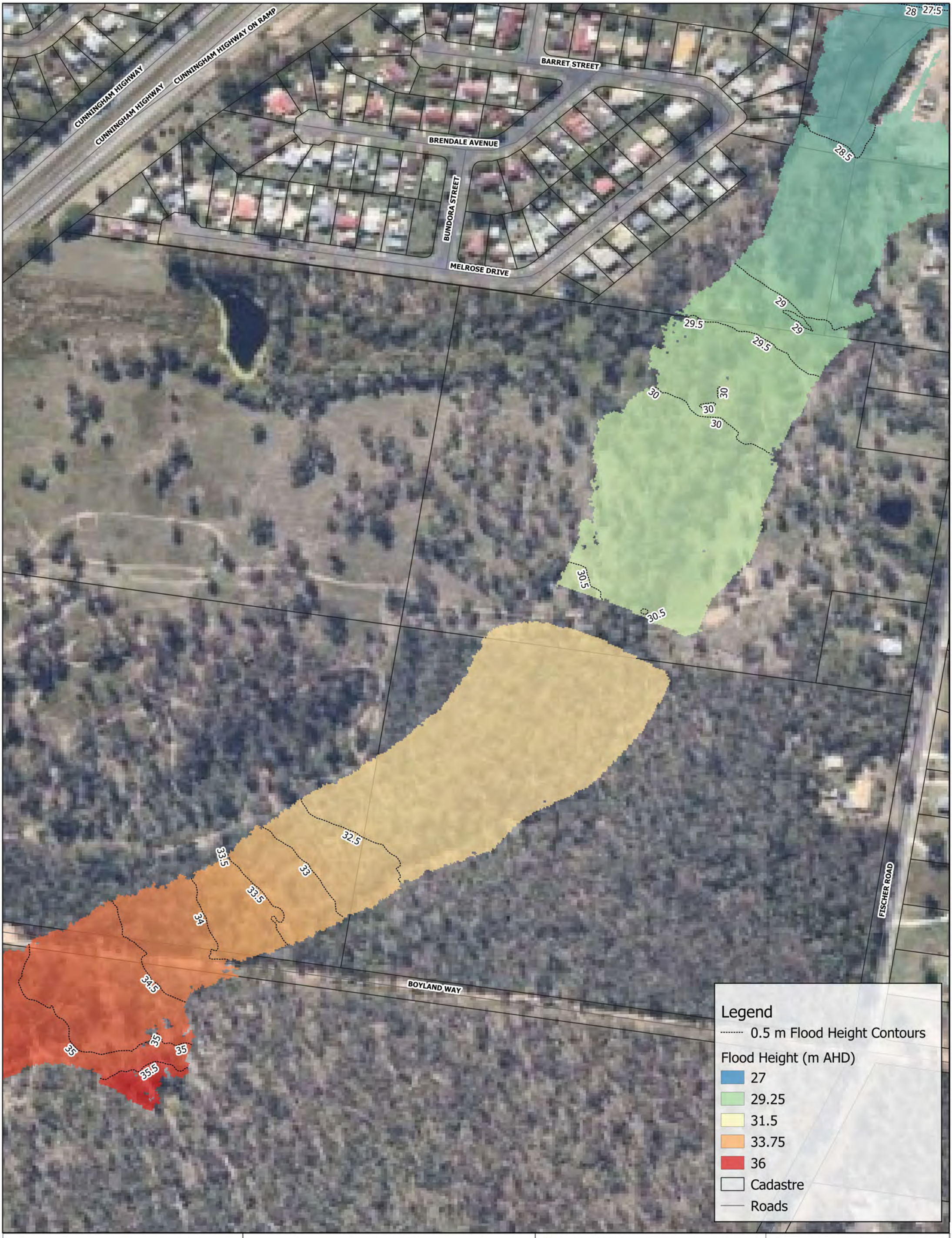
ID	Subcatchment Number	Storm Number	Total Area [ha]	Catchment Manning's 'n' [n value]	Percentage Impervious [%]	Vectored Slope [%]
C1.1	1	Critical Storm	6.5	0.025	100	1.37
	2	Critical Storm	66.84	0.067	0	1.37
C1.2	1	Critical Storm	24.16	0.025	100	1.3
	2	Critical Storm	49.72	0.053	0	1.3
C1.3	1	Critical Storm	13.71	0.025	100	1.67

	2	Critical Storm	51.36	0.078	0	1.67
C1.4	1	Critical Storm	16.3	0.025	100	2.35
	2	Critical Storm	23.94	0.054	0	2.35
C1.5	1	Critical Storm	0.09	0.025	100	1.02
	2	Critical Storm	8.77	0.078	0	1.02
C1.6	1	Critical Storm	0.03	0.025	100	0.6
	2	Critical Storm	3.07	0.077	0	0.6
C1.7	1	Critical Storm	7.3	0.025	100	3.44
	2	Critical Storm	12.62	0.051	0	3.44
C1.8	1	Critical Storm	6.88	0.025	100	4.22
	2	Critical Storm	5.17	0.048	0	4.22
C2.1	1	Critical Storm	4.45	0.025	100	2.15
	2	Critical Storm	52.31	0.076	0	2.15
B	1	Critical Storm	2.57	0.025	100	5.48
	2	Critical Storm	2.58	0.048	0	5.48
D	1	Critical Storm	3.05	0.025	100	3.25
	2	Critical Storm	1.31	0.04	0	3.25
C4.1	1	Critical Storm	1.03	0.025	100	7.07
	2	Critical Storm	6.33	0.059	0	7.07
C	1	Critical Storm	6.55	0.025	100	5.31
	2	Critical Storm	2.81	0.04	0	5.31
C5.1	1	Critical Storm	0.06	0.025	100	2.83
	2	Critical Storm	6.04	0.04	0	2.83

C6.1	1	Critical Storm	0.05	0.025	100	2.12
	2	Critical Storm	4.61	0.054	0	2.12
E	1	Critical Storm	10.74	0.025	100	2.5
	2	Critical Storm	4.6	0.04	0	4.6
A	1	Critical Storm	3.21	0.025	100	5.89
	2	Critical Storm	4.13	0.05	0	5.89
A+B	1	Critical Storm	0.001	0.025	0	0.001
	2	Critical Storm	0.001	0.025	0	0.001

APPENDIX C

Local Flood Impact Assessment Mapping



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PO Box 10183 Brisbane QLD 4000

www.engeny.com.au

P: 07 3221 7174
F: 07 3236 2399

E: admin@engeny.com.au

ENGENY
WATER MANAGEMENT

0 50 100 150 m

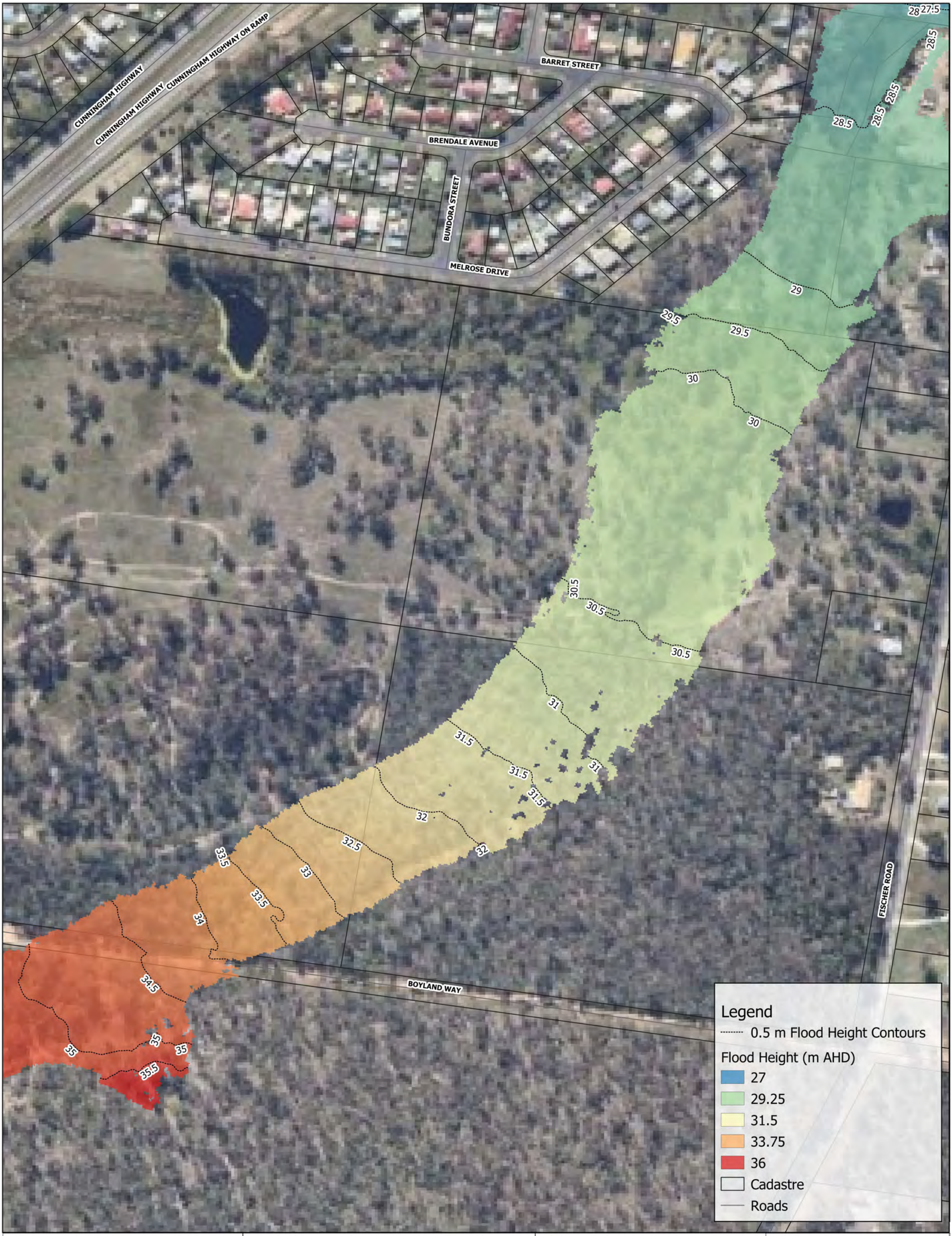
Scale in metres (1:2000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:100 AEP Post-Development Flood Height
Local Flood Impact Assessment

Job Number: M64000_004
Revision: 0
Drawn: SW
Checked: KM
Date: 20/11/2019



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ENGENY
WATER MANAGEMENT

0 50 100 150 m

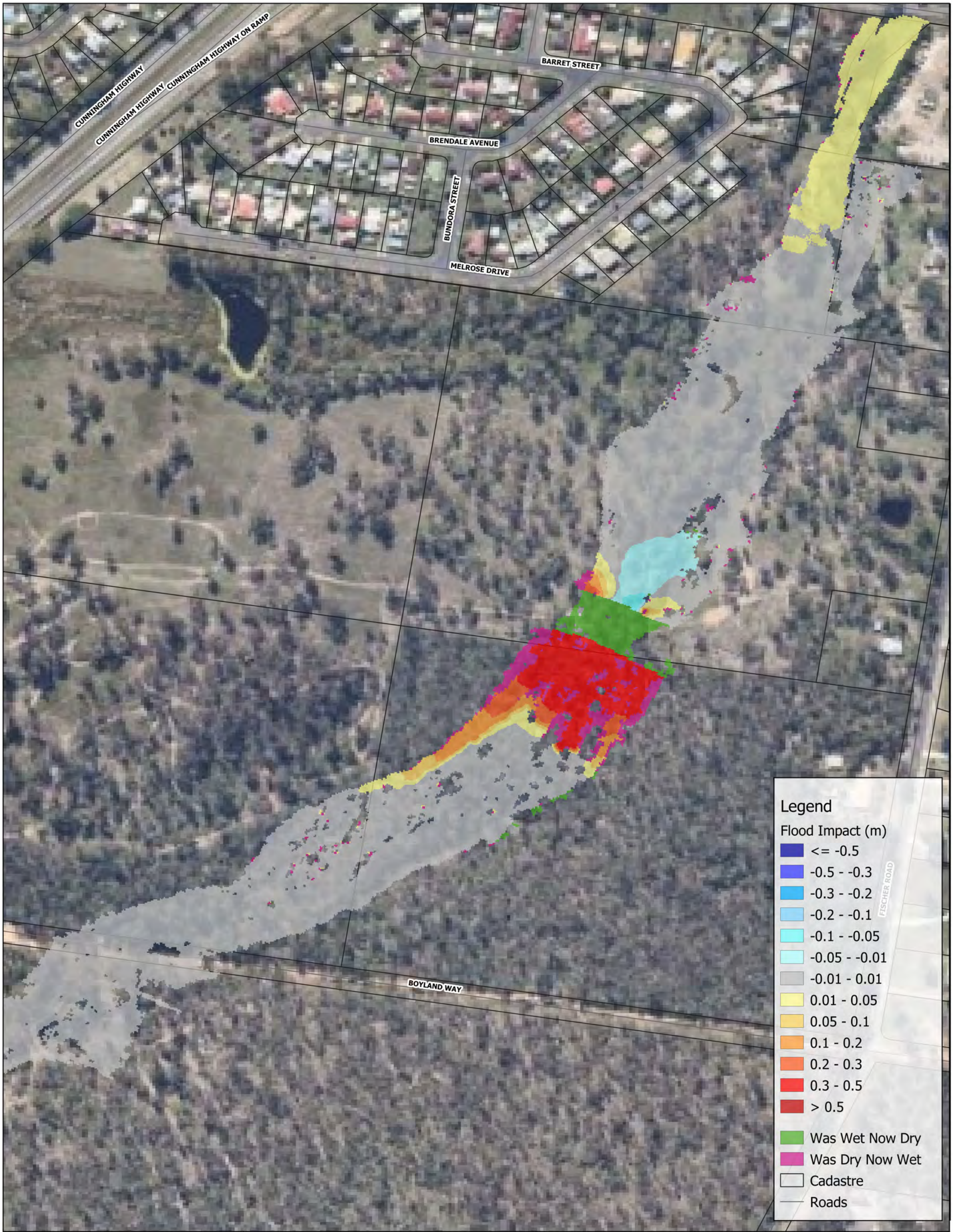
Scale in metres (1:2000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:100 AEP Pre-Development Flood Height
Local Flood Impact Assessment

Job Number: M64000_004
Revision: 0
Drawn: SW
Checked: KM
Date: 20/11/2019



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ENGENY
WATER MANAGEMENT

0 50 100 150 m

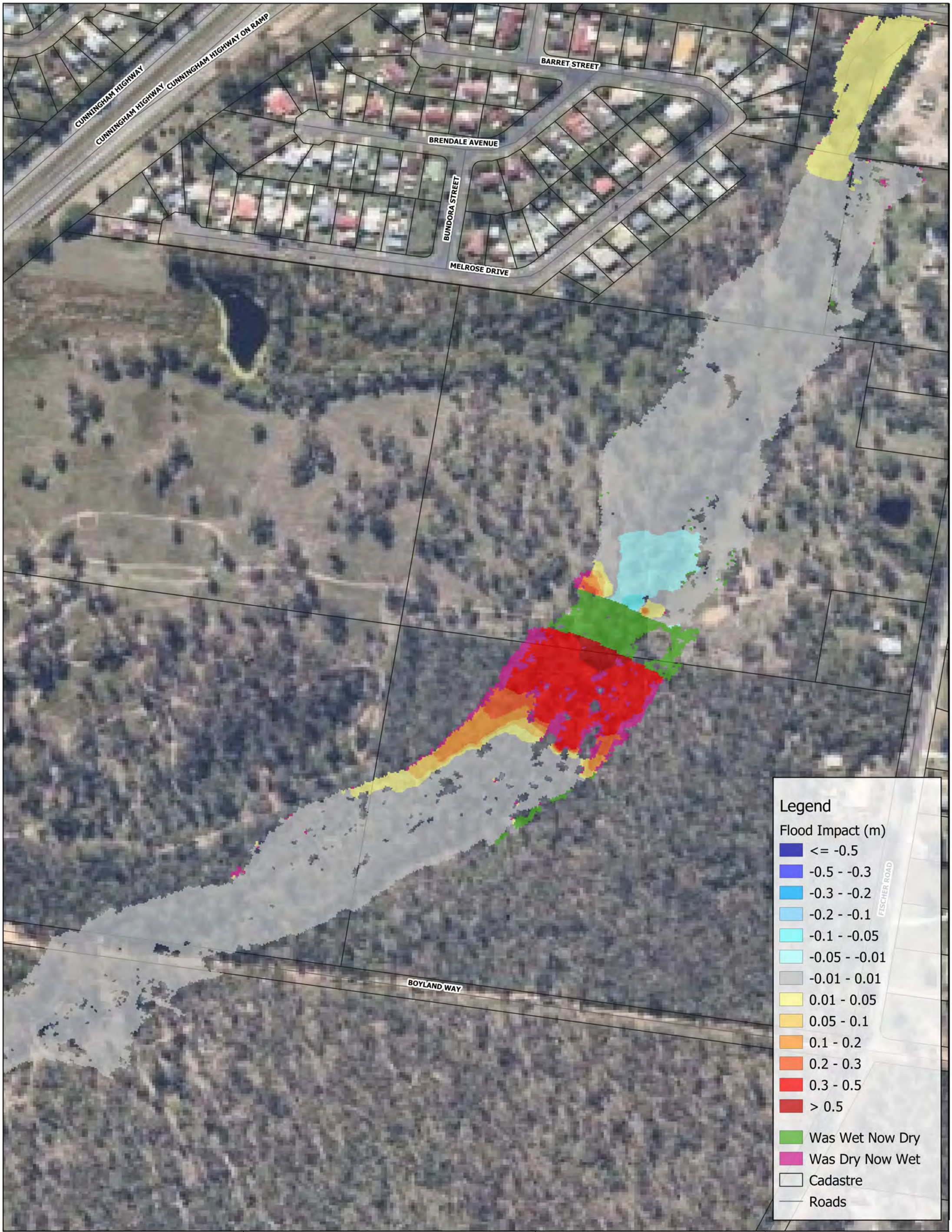
Scale in metres (1:2000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:1 AEP Flood Impact
Local Flood Impact Assessment

Job Number: M64000_004
Revision: 0
Drawn: SW
Checked: KM
Date: 20/11/2019



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WATER MANAGEMENT

0 50 100 150 m

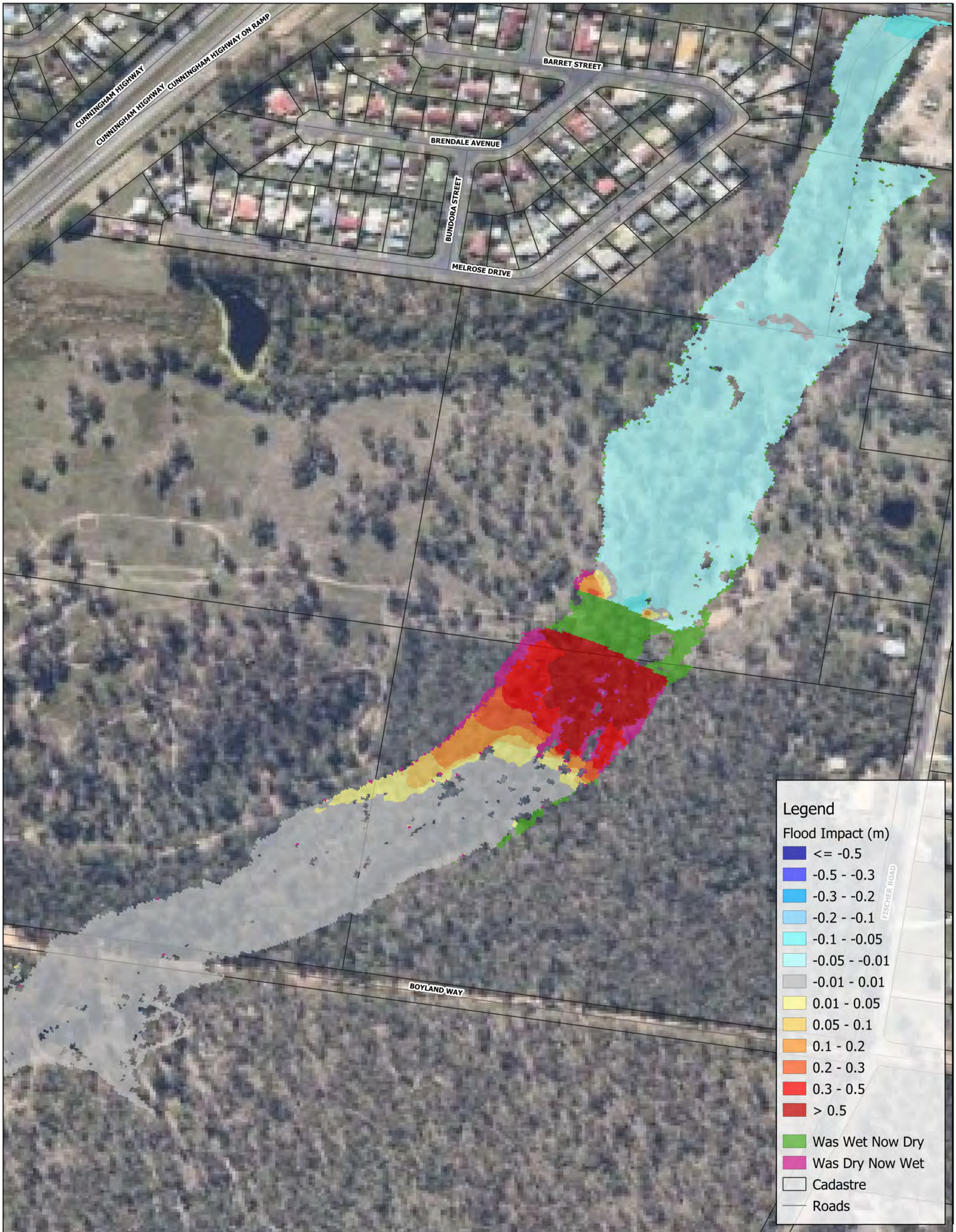
Scale in metres (1:2000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:2 AEP Flood Impact
Local Flood Impact Assessment

Job Number: M64000_004
Revision: 0
Drawn: SW
Checked: KM
Date: 20/11/2019



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WATER MANAGEMENT

0 50 100 150 m

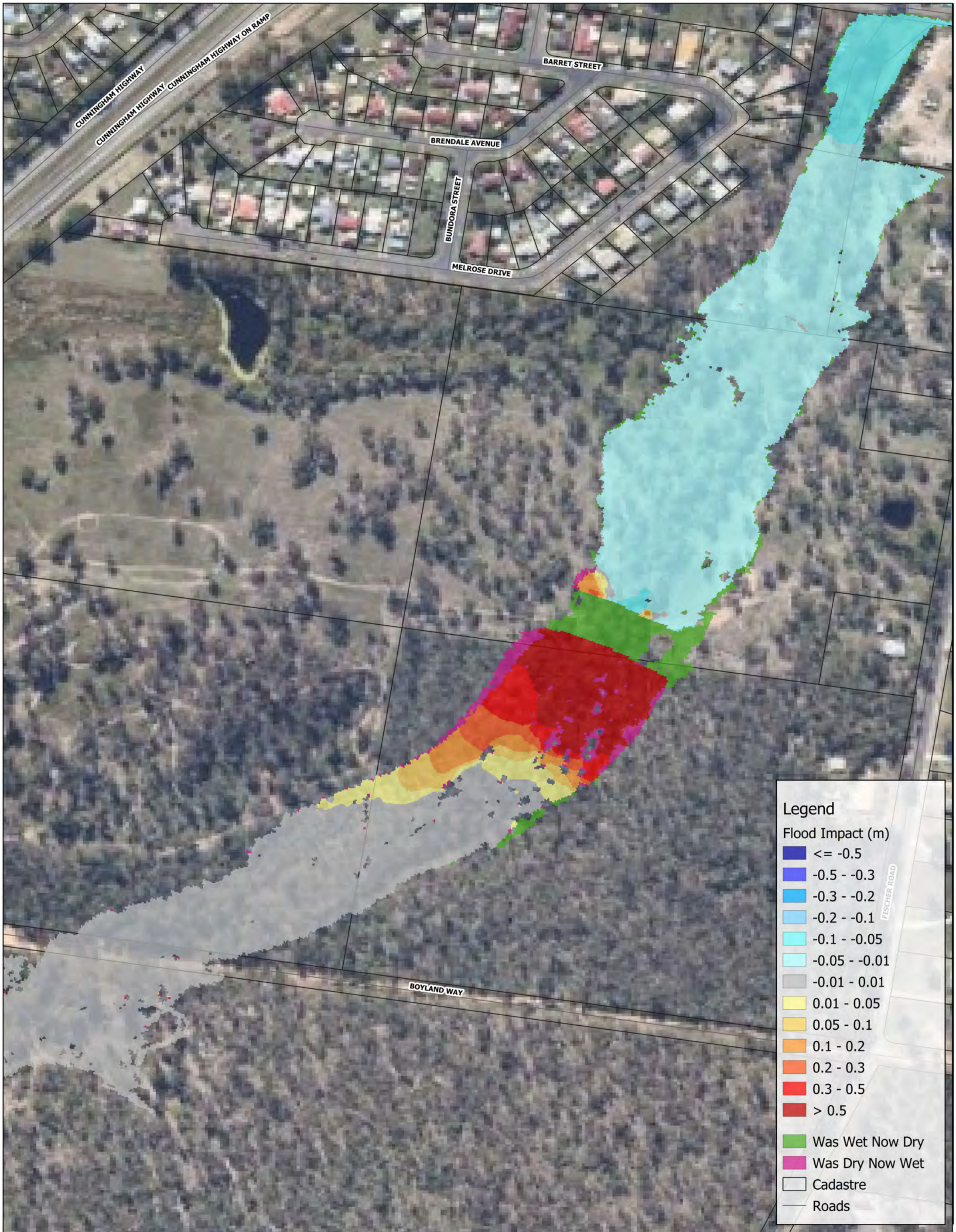
Scale in metres (1:2000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:5 AEP Flood Impact
Local Flood Impact Assessment

Job Number: M64000_004
Revision: 0
Drawn: SW
Checked: KM
Date: 20/11/2019



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ENGENY
WATER MANAGEMENT

0 50 100 150 m

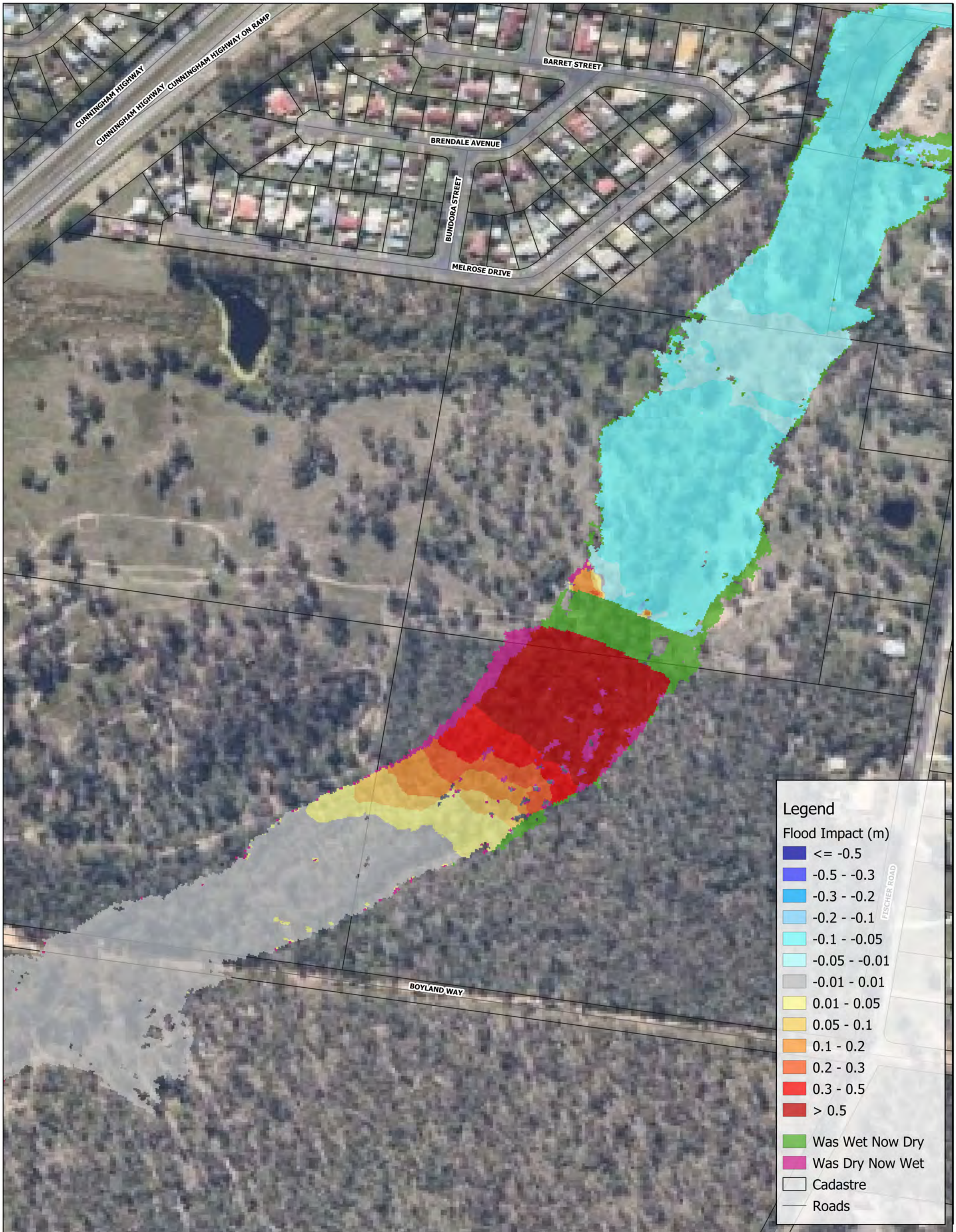
Scale in metres (1:2000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:10 AEP Flood Impact
Local Flood Impact Assessment

Job Number: M64000_004
Revision: 0
Drawn: SW
Checked: KM
Date: 20/11/2019



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ENGENY
WATER MANAGEMENT

0 50 100 150 m

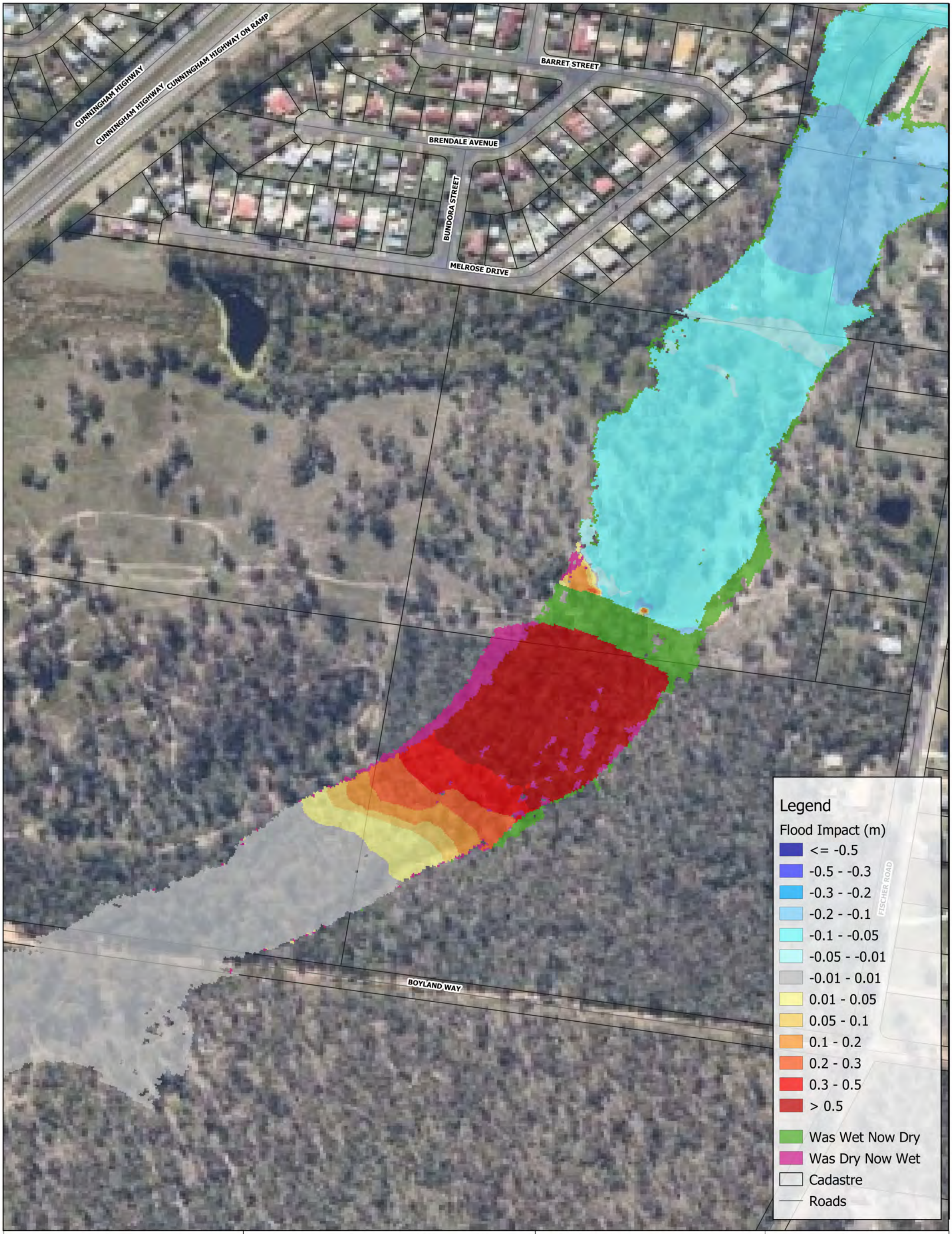
Scale in metres (1:2000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:20 AEP Flood Impact
Local Flood Impact Assessment

Job Number: M64000_004
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Date: 20/11/2019



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ENGENY
WATER MANAGEMENT

0 50 100 150 m

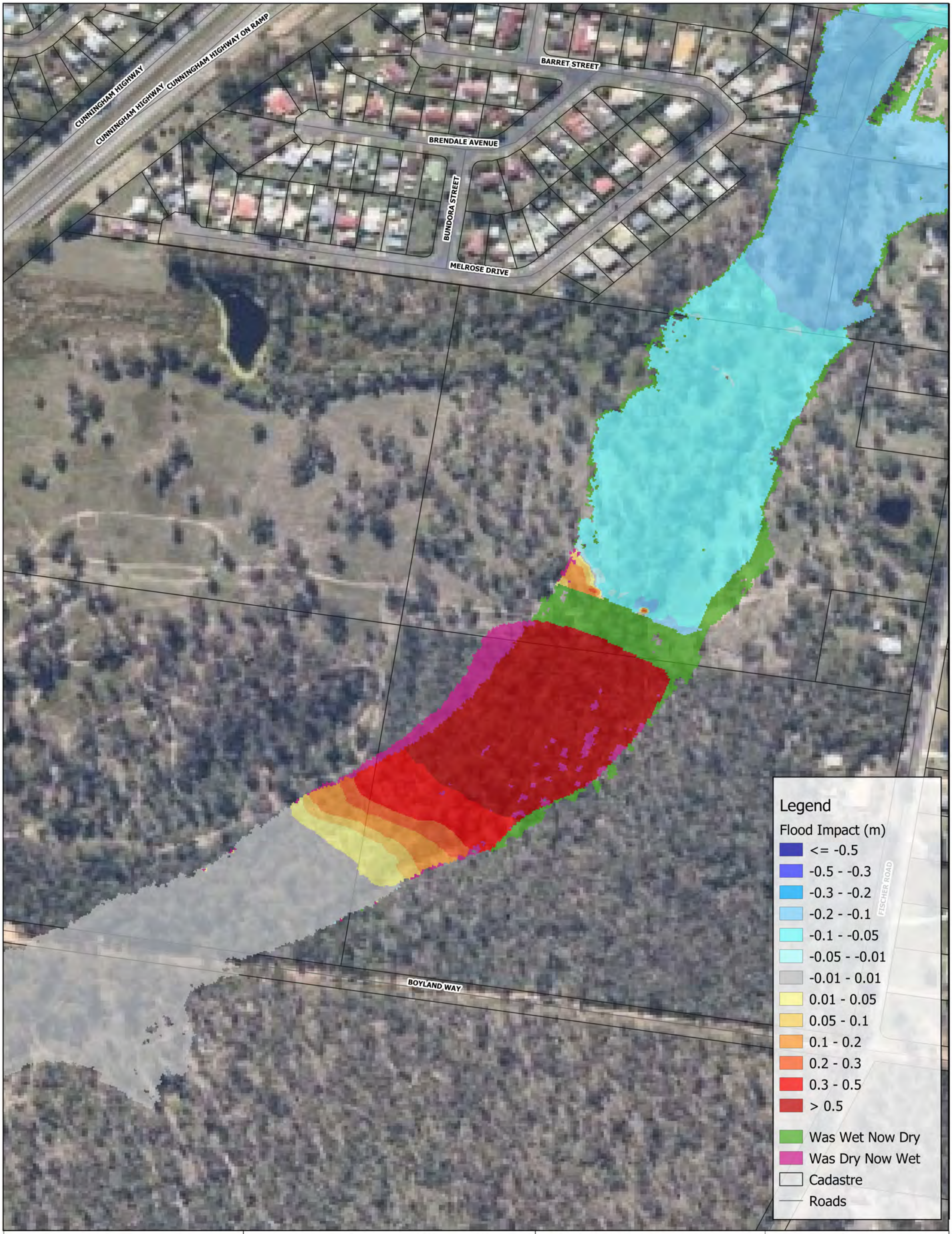
Scale in metres (1:2000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:50 AEP Flood Impact
Local Flood Impact Assessment

Job Number: M64000_004
Revision: 0
Drawn: SW
Checked: KM
Date: 20/11/2019



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WATER MANAGEMENT

0 50 100 150 m

Scale in metres (1:2000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

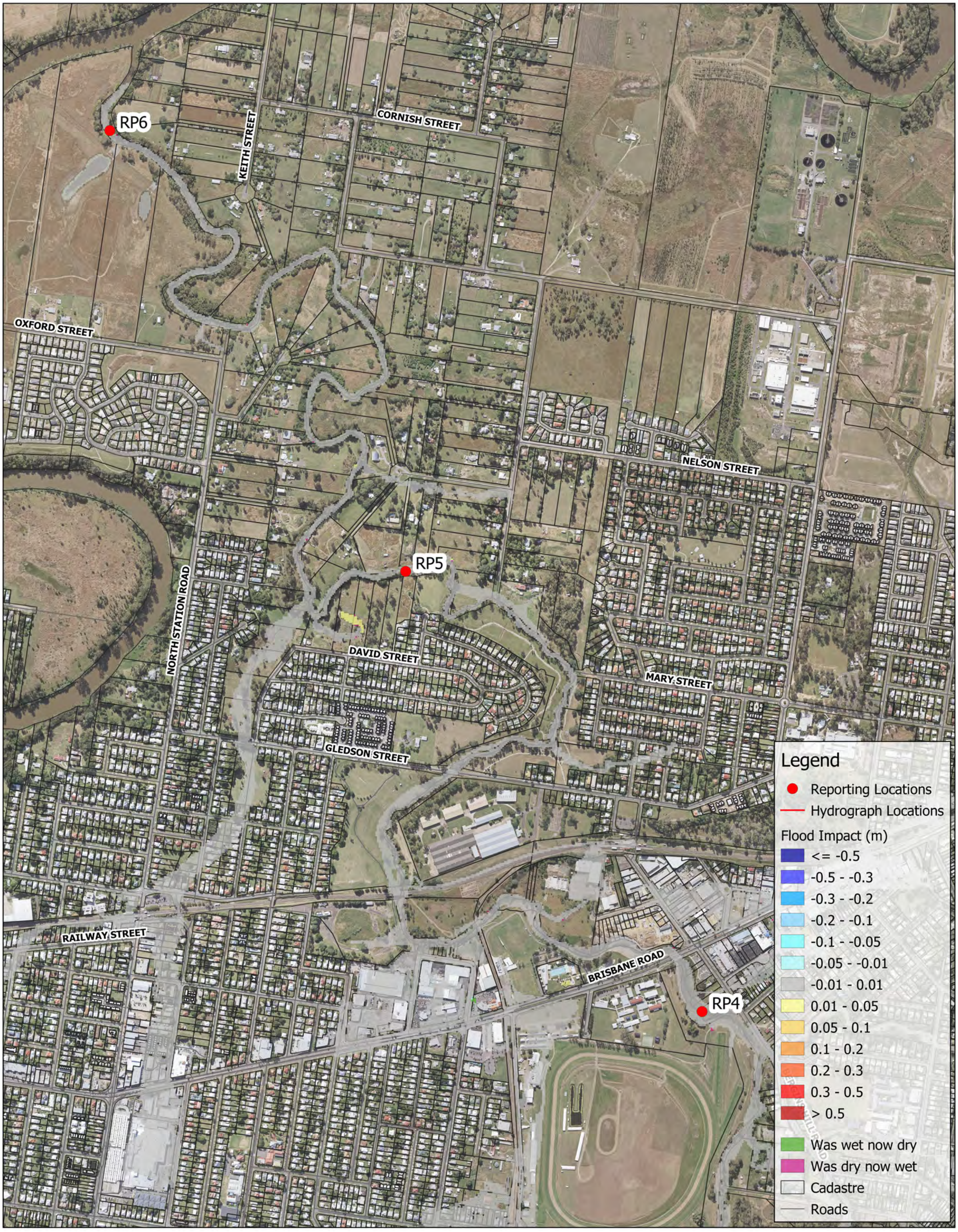
Ripley View Estate

1:100 AEP Flood Impact
Local Flood Impact Assessment

Job Number: M64000_004
Revision: 0
Drawn: SW
Checked: KM
Date: 20/11/2019

APPENDIX D

Regional Flood Impact Assessment Mapping



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ENGENY WATER MANAGEMENT

0 100 200 300 400 500 m

Scale in metres (1:10000 @ A3)

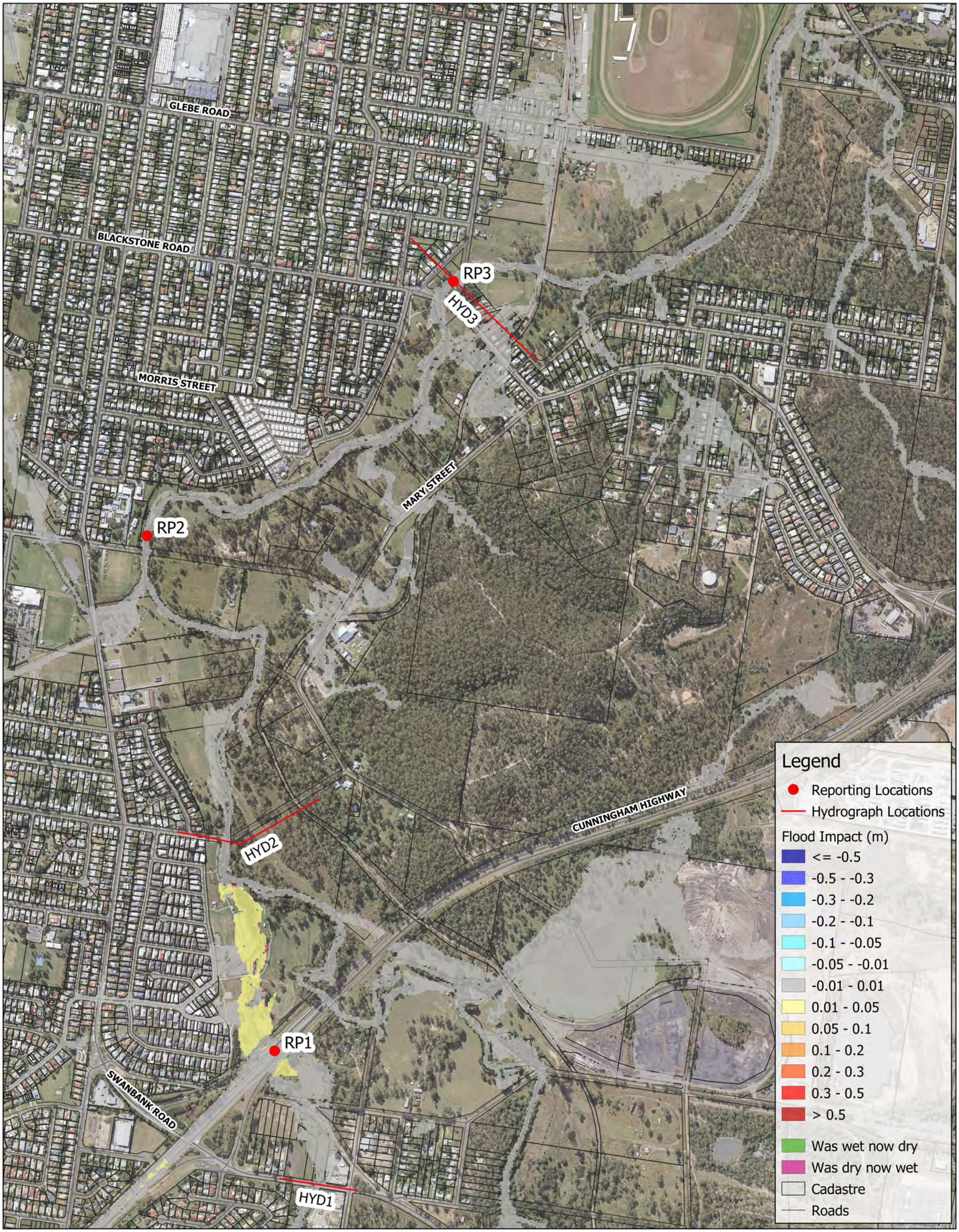
Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:1 AEP Flood Impact - North
Regional Flood Impact Assessment

Engeny does not give any warranty nor accept any liability in relation to the completeness or accuracy of the maps, which may be inherently reliant upon the completeness and accuracy of the input data and the agreed scope of works.

Job Number: M64000_004
Revision: 0
Drawn: SW
Date: 29/11/2019



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ENGENY
WATER MANAGEMENT

0 100 200 300 400 500 m

Scale in metres (1:10000 @ A3)

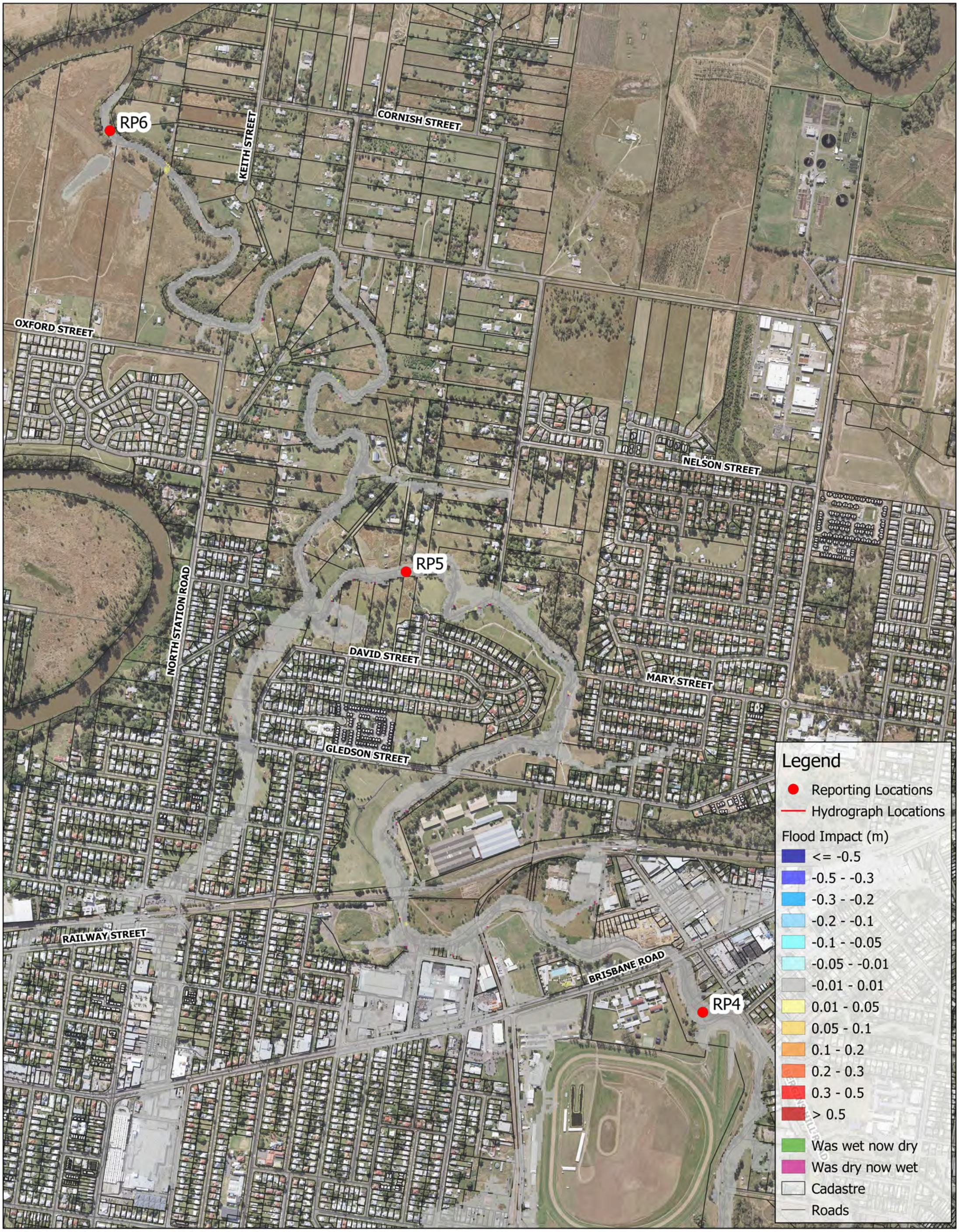
Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:1 AEP Flood Impact - South
Regional Flood Impact Assessment

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Job Number: M64000_004
Revision: 0
Drawn: SW
Date: 29/11/2019



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ENGENY
WATER MANAGEMENT

0 100 200 300 400 500 m

Scale in metres (1:10000 @ A3)

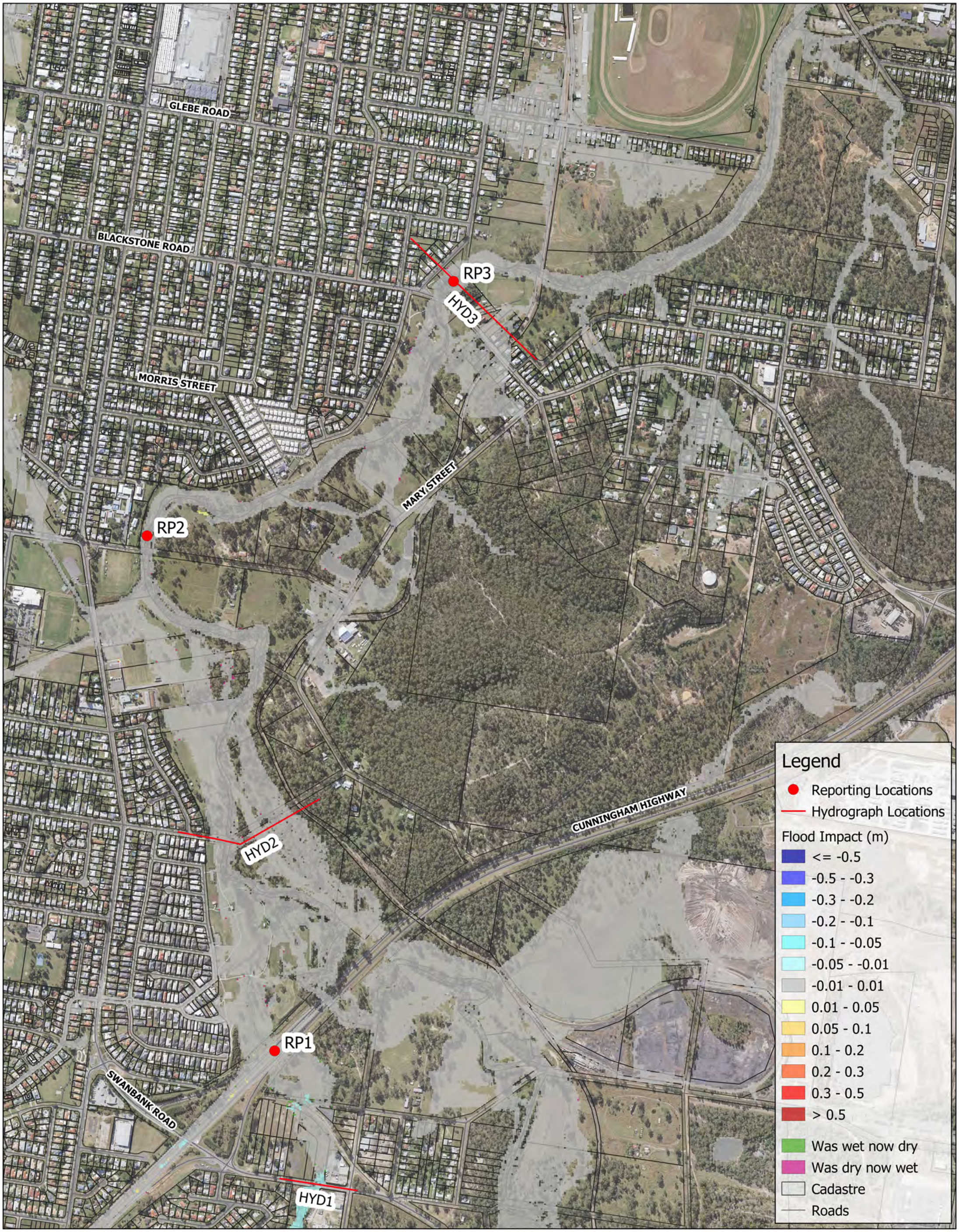
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Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:2 AEP Flood Impact - North
Regional Flood Impact Assessment

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Job Number:
M64000_004
Revision: 0
Drawn: SW
Date: 29/11/2019



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ENGENY
WATER MANAGEMENT

0 100 200 300 400 500 m

Scale in metres (1:10000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:2 AEP Flood Impact - South
Regional Flood Impact Assessment

Engeny does not give any warranty nor accept any liability in relation to the completeness or accuracy of the maps, which may be inherently reliant upon the completeness and accuracy of the input data and the agreed scope of works.

Job Number: M64000_004
Revision: 0
Drawn: SW
Date: 29/11/2019

RP6
KEITH STREET
CORNISH STREET
OXFORD STREET
RP5
NORTH STATION ROAD
DAVID STREET
MARY STREET
GLEDSON STREET
NELSON STREET
RAILWAY STREET
BRISBANE ROAD
RP4

Legend

- Reporting Locations
- Hydrograph Locations

Flood Impact (m)

- <= -0.5
- -0.5 - -0.3
- -0.3 - -0.2
- -0.2 - -0.1
- -0.1 - -0.05
- -0.05 - -0.01
- -0.01 - 0.01
- 0.01 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.5
- > 0.5
- Was wet now dry
- Was dry now wet
- Cadastre
- Roads

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ENGENY WATER MANAGEMENT

0 100 200 300 400 500 m

Scale in metres (1:10000 @ A3)

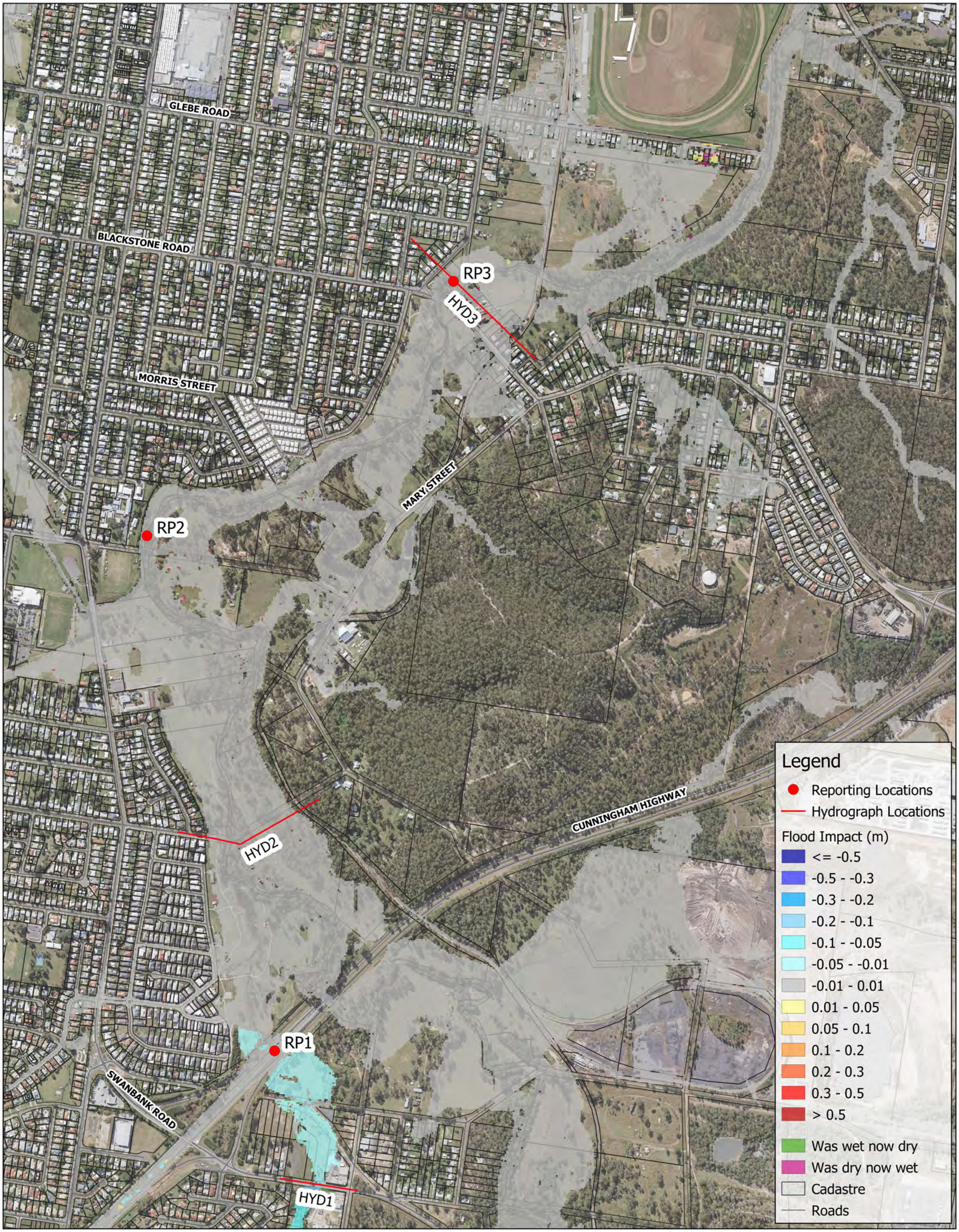
Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:5 AEP Flood Impact - North
Regional Flood Impact Assessment

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Revision: 0
Drawn: SW
Date: 29/11/2019



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ENGENY WATER MANAGEMENT

0 100 200 300 400 500 m

Scale in metres (1:10000 @ A3)

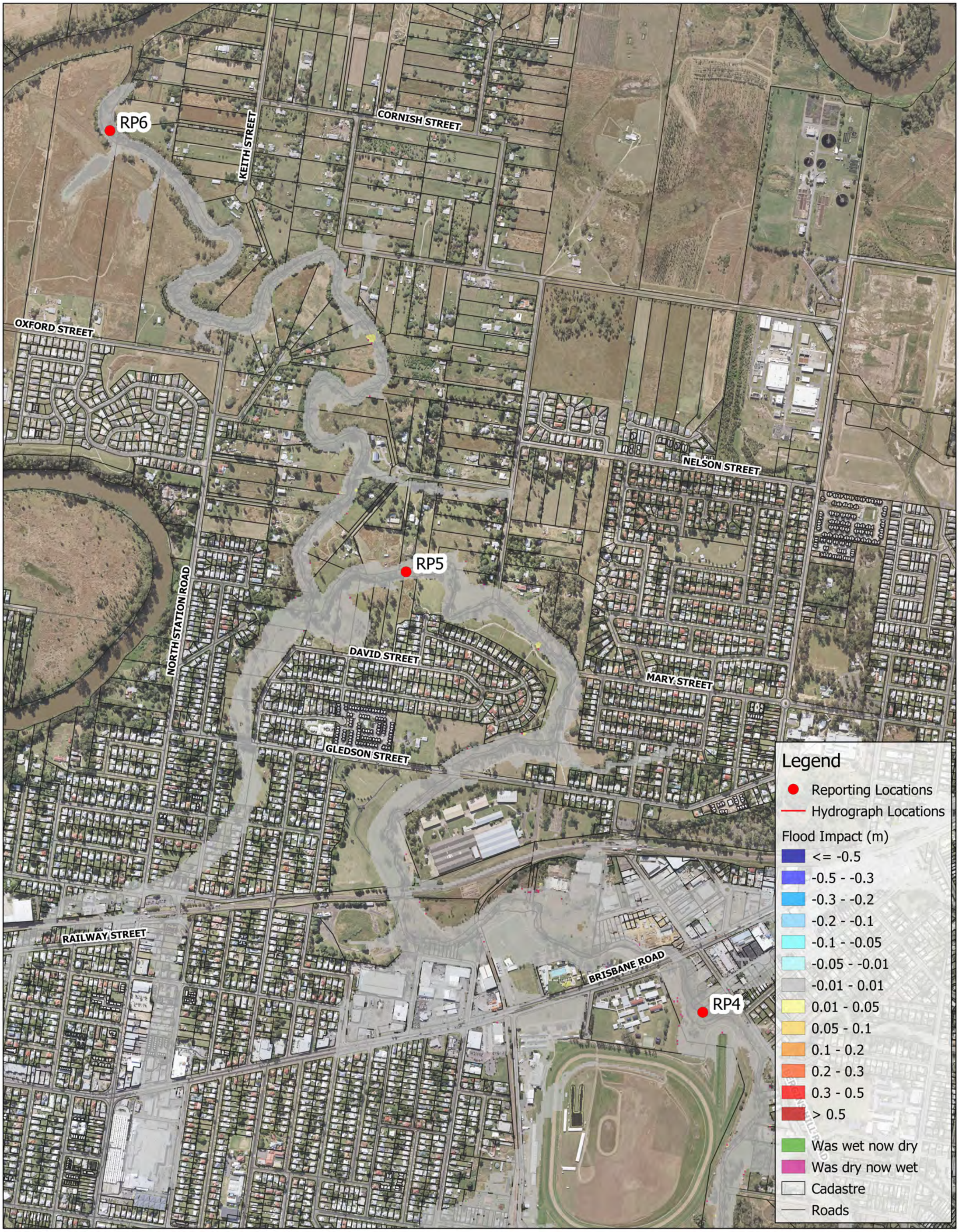
Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:5 AEP Flood Impact - South
Regional Flood Impact Assessment

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Job Number: M64000_004
Revision: 0
Drawn: SW
Date: 29/11/2019



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ENGENY
WATER MANAGEMENT

0 100 200 300 400 500 m

Scale in metres (1:10000 @ A3)

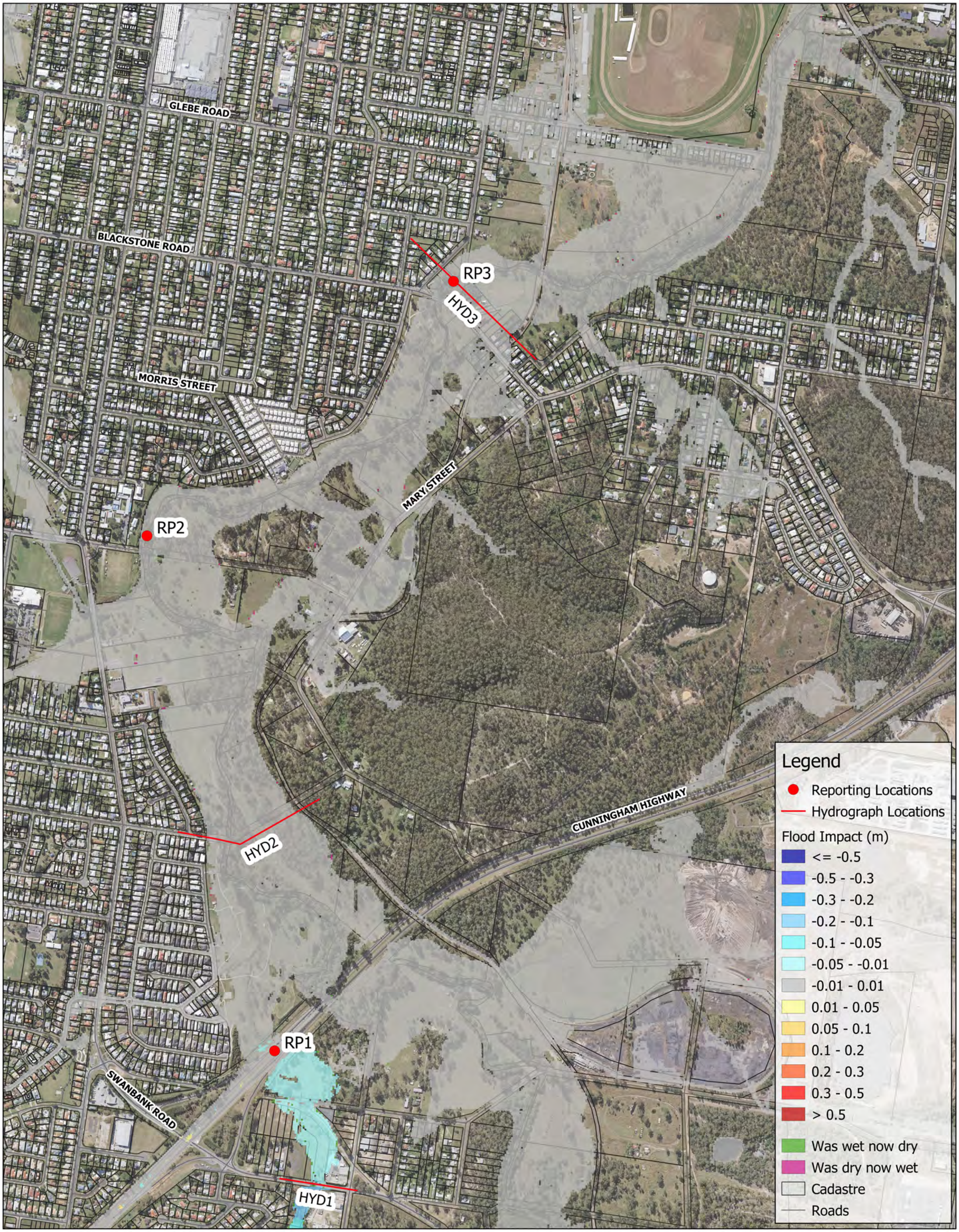
Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:10 AEP Flood Impact - North
Regional Flood Impact Assessment

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Revision: 0
Drawn: SW
Date: 29/11/2019



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ENGENY WATER MANAGEMENT

0 100 200 300 400 500 m

Scale in metres (1:10000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:10 AEP Flood Impact - South
Regional Flood Impact Assessment

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Job Number: M64000_004
Revision: 0
Drawn: SW
Date: 29/11/2019

RP6
RP5
RP4
KEITH STREET
CORNISH STREET
OXFORD STREET
NELSON STREET
NORTH STATION ROAD
DAVID STREET
MARY STREET
GLEDSON STREET
RAILWAY STREET
BRISBANE ROAD

Legend

- Reporting Locations
- Hydrograph Locations

Flood Impact (m)

- <= -0.5
- -0.5 - -0.3
- -0.3 - -0.2
- -0.2 - -0.1
- -0.1 - -0.05
- -0.05 - -0.01
- -0.01 - 0.01
- 0.01 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.5
- > 0.5
- Was wet now dry
- Was dry now wet
- Cadastre
- Roads

Level 7, 500 Queen Street, Brisbane
PO Box 10183 Brisbane QLD 4000

www.engeny.com.au

P: 07 3221 7174
F: 07 3236 2399

E: admin@engeny.com.au

ENGENY WATER MANAGEMENT

0 100 200 300 400 500 m

Scale in metres (1:10000 @ A3)

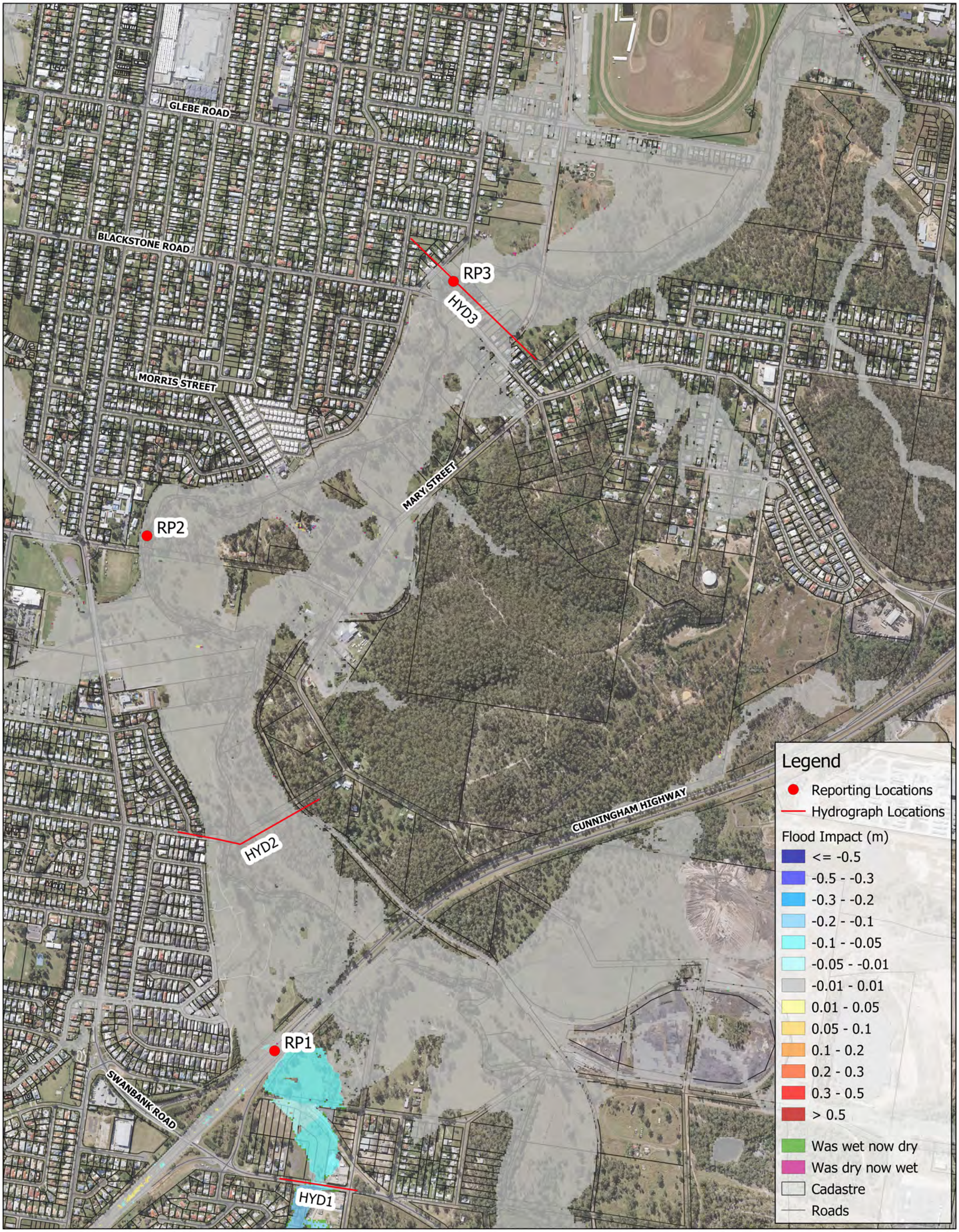
Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:20 AEP Flood Impact - North
Regional Flood Impact Assessment

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0 100 200 300 400 500 m

Scale in metres (1:10000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:20 AEP Flood Impact - South
Regional Flood Impact Assessment

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Job Number: M64000_004
Revision: 0
Drawn: SW
Date: 29/11/2019

RP6
RP5
RP4
CORNISH STREET
KEITH STREET
OXFORD STREET
NELSON STREET
NORTH STATION ROAD
DAVID STREET
MARY STREET
GLEDSON STREET
RAILWAY STREET
BRISBANE ROAD

Legend

- Reporting Locations
- Hydrograph Locations

Flood Impact (m)

- <= -0.5
- -0.5 - -0.3
- -0.3 - -0.2
- -0.2 - -0.1
- -0.1 - -0.05
- -0.05 - -0.01
- -0.01 - 0.01
- 0.01 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.5
- > 0.5
- Was wet now dry
- Was dry now wet
- Cadastre
- Roads

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Scale in metres (1:10000 @ A3)

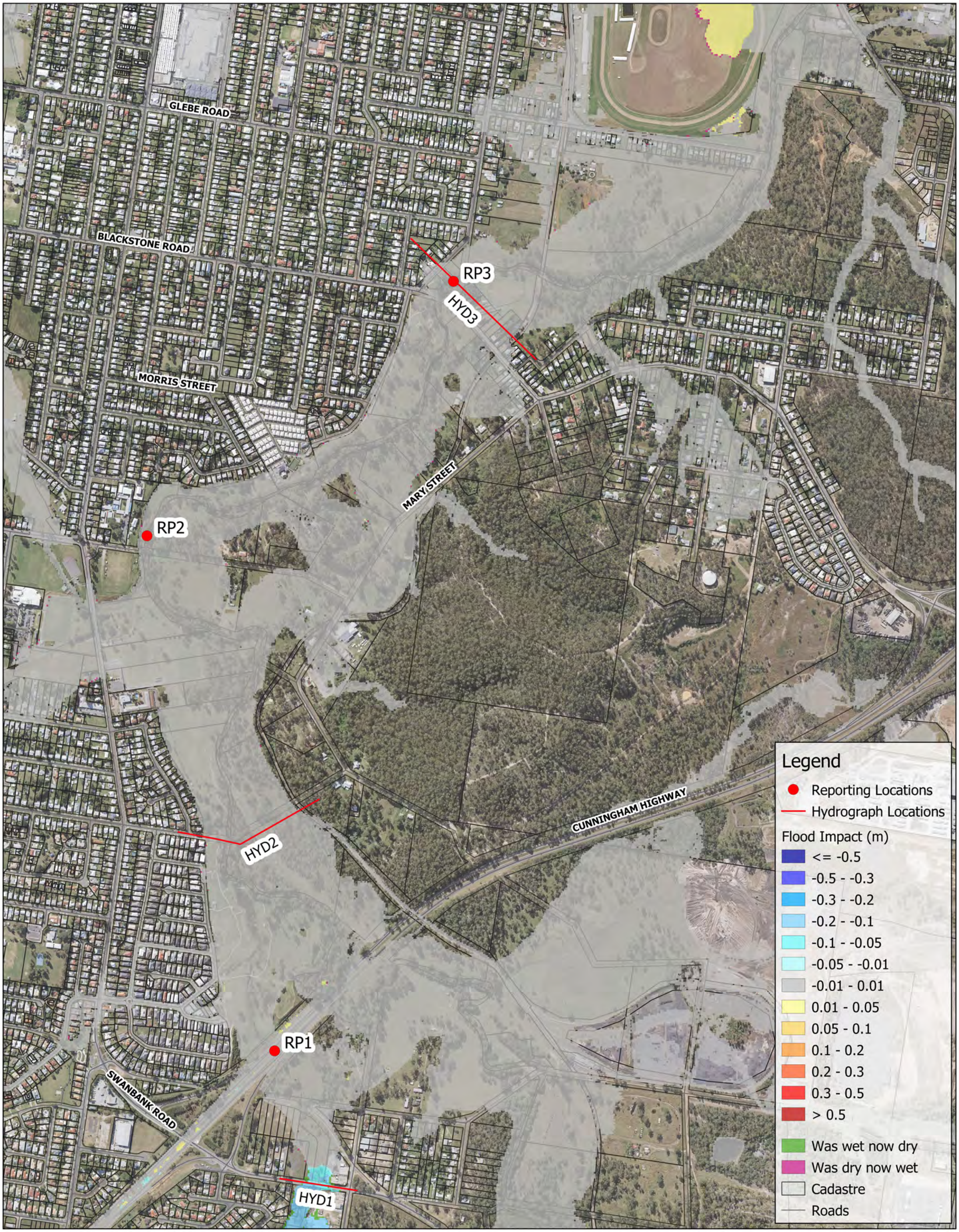
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Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:50 AEP Flood Impact - North
Regional Flood Impact Assessment

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Scale in metres (1:10000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:50 AEP Flood Impact - South
Regional Flood Impact Assessment

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Job Number: M64000_004
Revision: 0
Drawn: SW
Date: 29/11/2019

RP6
KEITH STREET
CORNISH STREET
OXFORD STREET
NELSON STREET
RP5
NORTH STATION ROAD
DAVID STREET
MARY STREET
GLEDSON STREET
RAILWAY STREET
BRISBANE ROAD
RP4

Legend

- Reporting Locations
- Hydrograph Locations

Flood Impact (m)

- <= -0.5
- -0.5 - -0.3
- -0.3 - -0.2
- -0.2 - -0.1
- -0.1 - -0.05
- -0.05 - -0.01
- -0.01 - 0.01
- 0.01 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.5
- > 0.5
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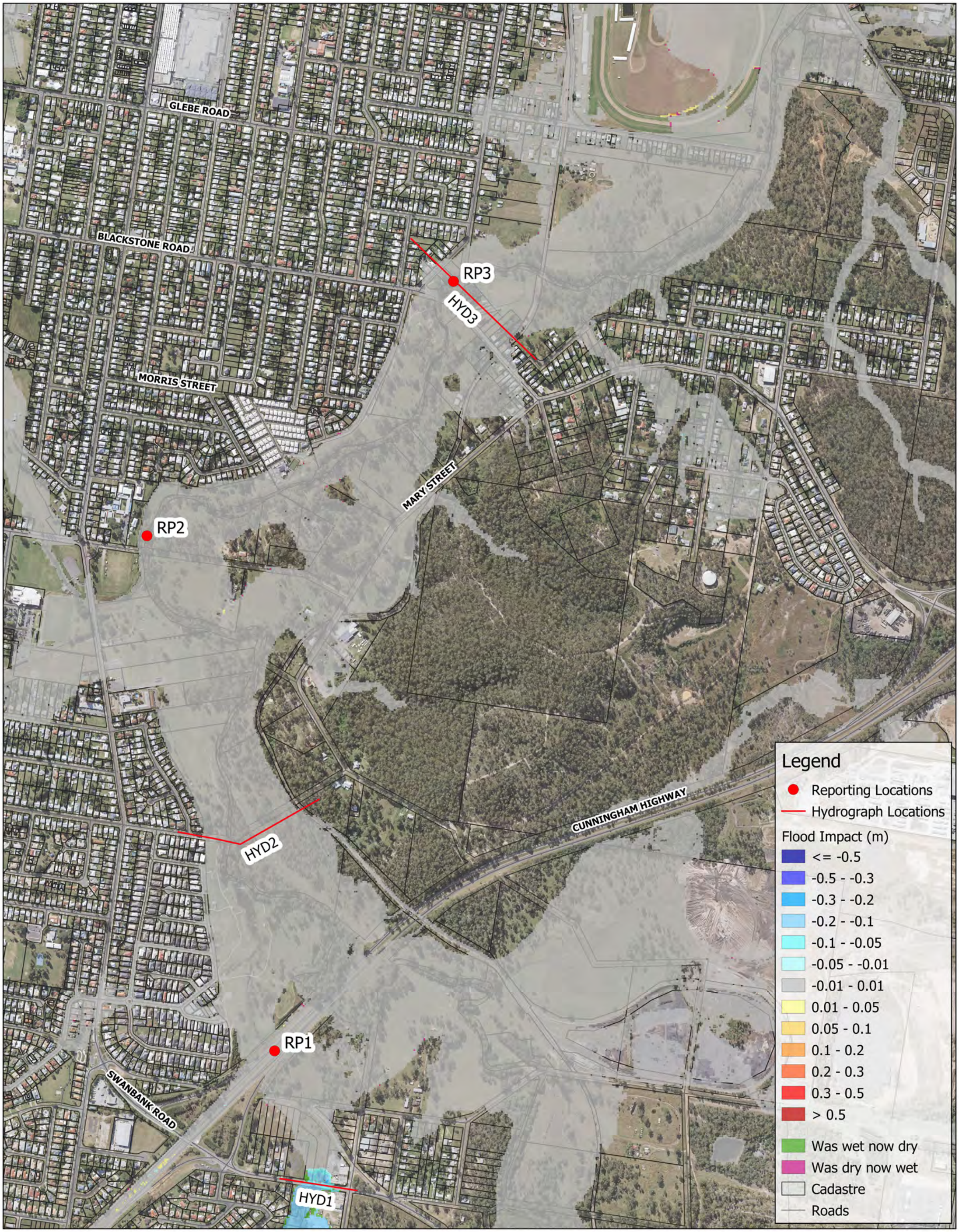
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Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:100 AEP Flood Impact - North
Regional Flood Impact Assessment

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ENGENY
WATER MANAGEMENT

0 100 200 300 400 500 m

Scale in metres (1:10000 @ A3)

Map Projection: Tranverse Mercator
Horizontal Datum: Australia Geodetic Datum
Vertical Datum: Australia Geodetic Datum
Grid: Australian Map Grid, Zone 56

Ripley View Estate

1:100 AEP Flood Impact - South
Regional Flood Impact Assessment

Engeny does not give any warranty nor accept any liability in relation to the completeness or accuracy of the maps, which may be inherently reliant upon the completeness and accuracy of the input data and the agreed scope of works.

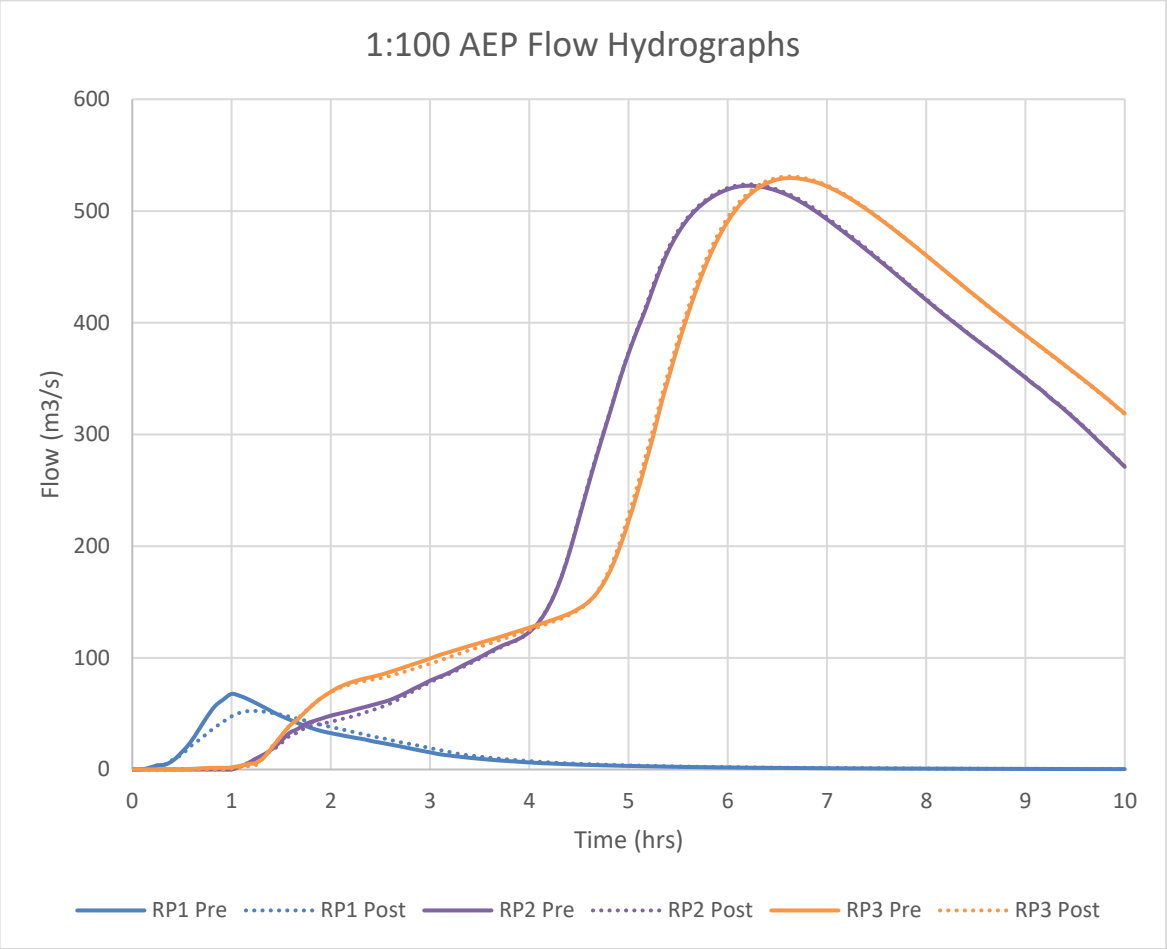
Job Number: M64000_004
Revision: 0
Drawn: SW
Date: 29/11/2019

APPENDIX E

Regional Flood Impact Assessment Hydrographs

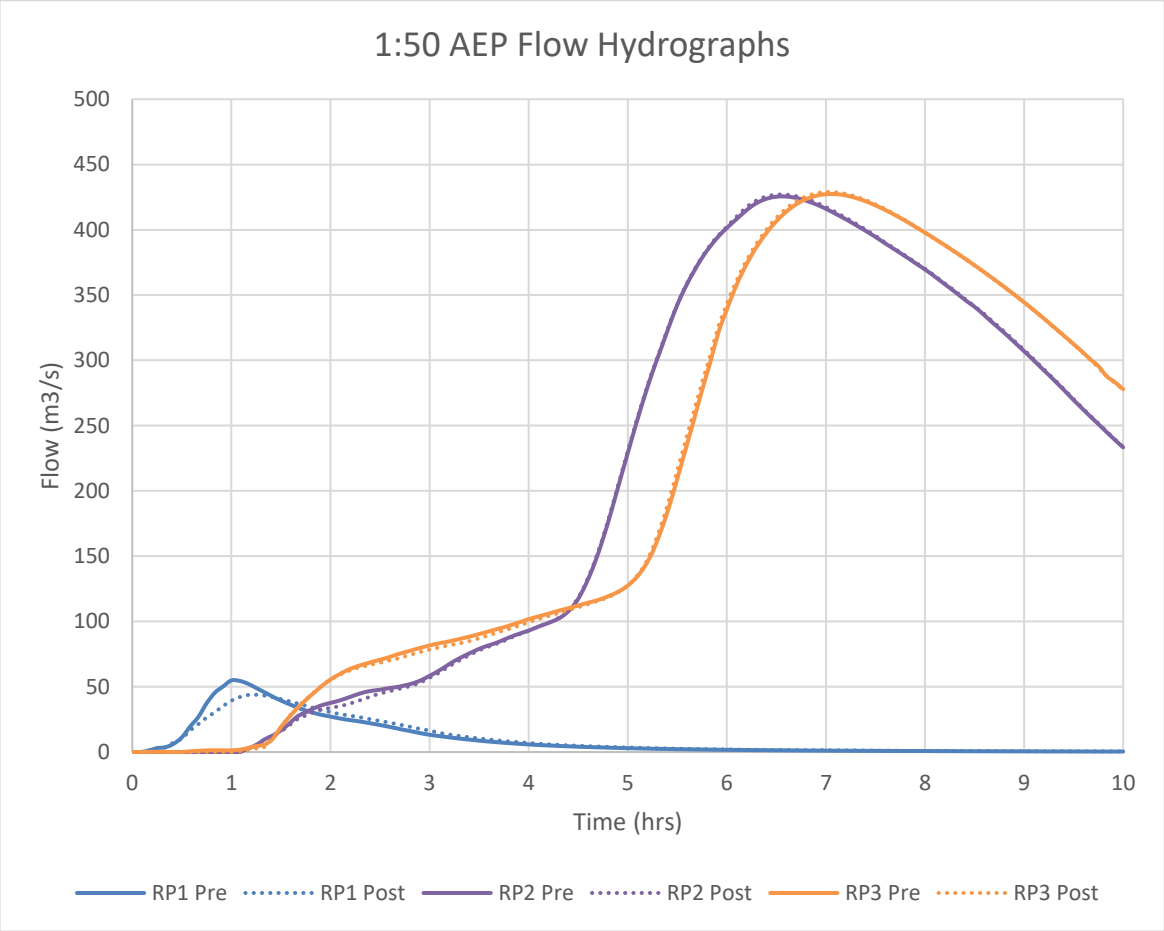
1:100 AEP

Reporting Location	Pre-Development Peak Flow (m^3/s)	Post-Development Peak Flow (m^3/s)	Diff (%)
RP1	67.6	52.4	-23%
RP2	522.5	523.8	0%
RP3	529.4	530.7	0%



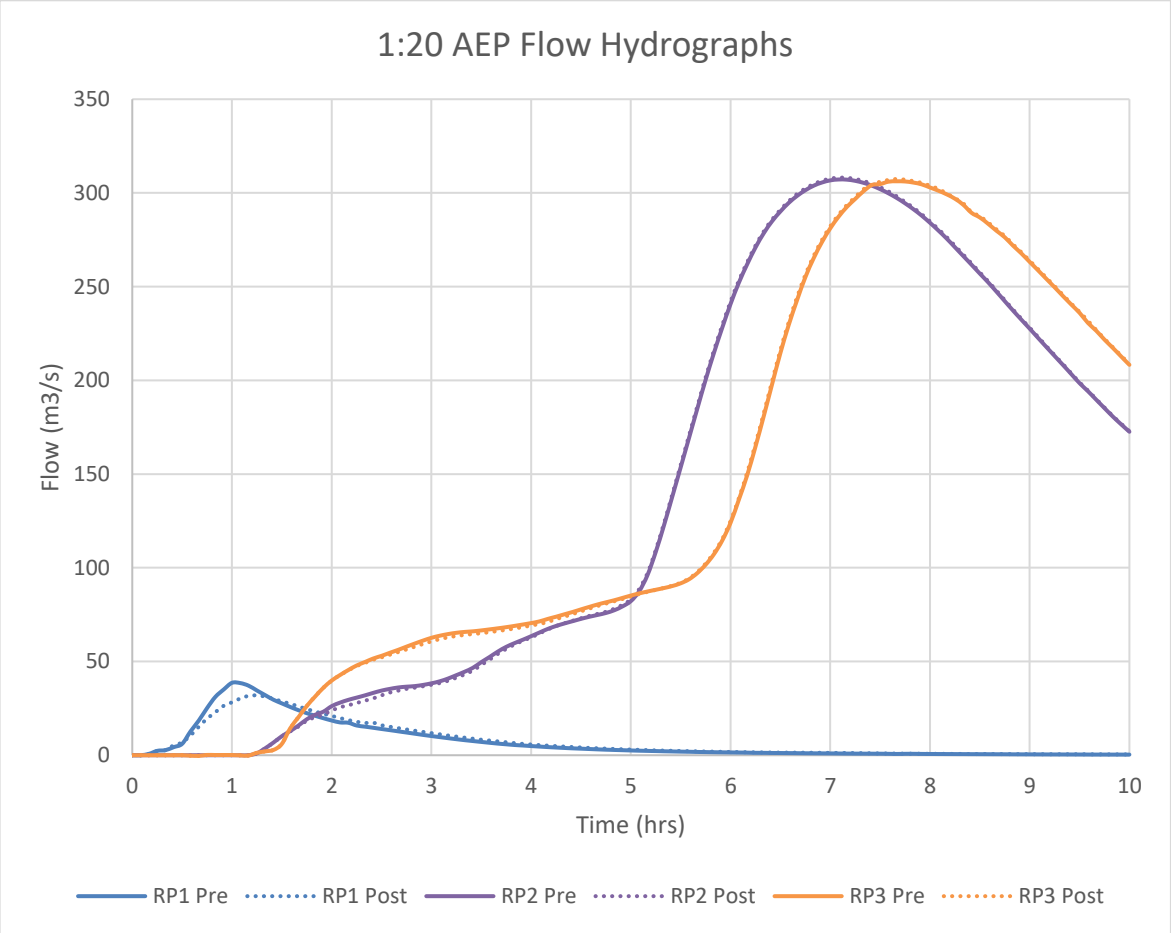
1:50 AEP

Reporting Location	Pre-Development Peak Flow (m^3/s)	Post-Development Peak Flow (m^3/s)	Diff (%)
RP1	54.8	43.8	-20%
RP2	425.6	427.0	0%
RP3	427.4	428.9	0%



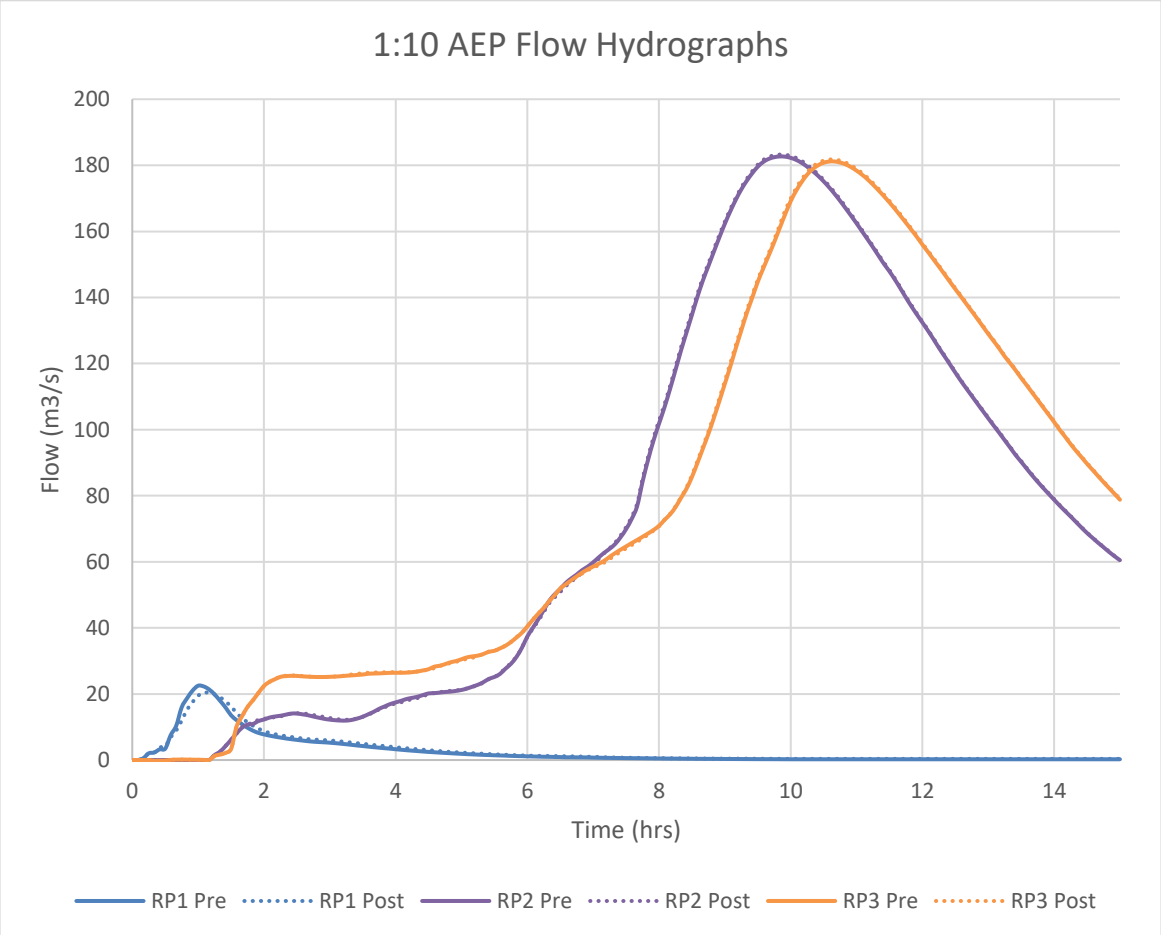
1:20 AEP

Reporting Location	Pre-Development Peak Flow (m^3/s)	Post-Development Peak Flow (m^3/s)	Diff (%)
RP1	38.6	31.9	-17%
RP2	307.2	308.1	0%
RP3	306.2	307.5	0%



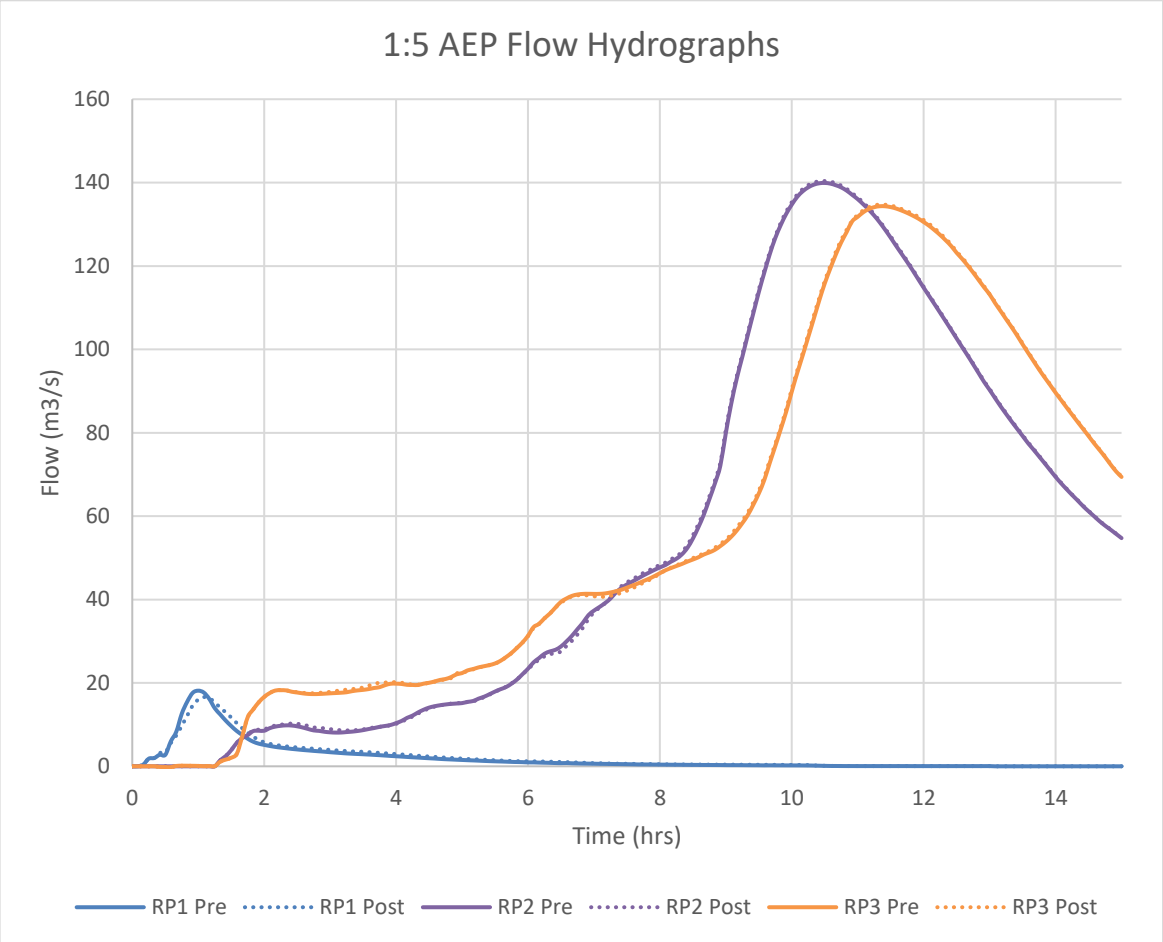
1:10 AEP

Reporting Location	Pre-Development Peak Flow (m^3/s)	Post-Development Peak Flow (m^3/s)	Diff (%)
RP1	22.5	20.4	-9%
RP2	182.7	183.3	0%
RP3	181.2	181.8	0%



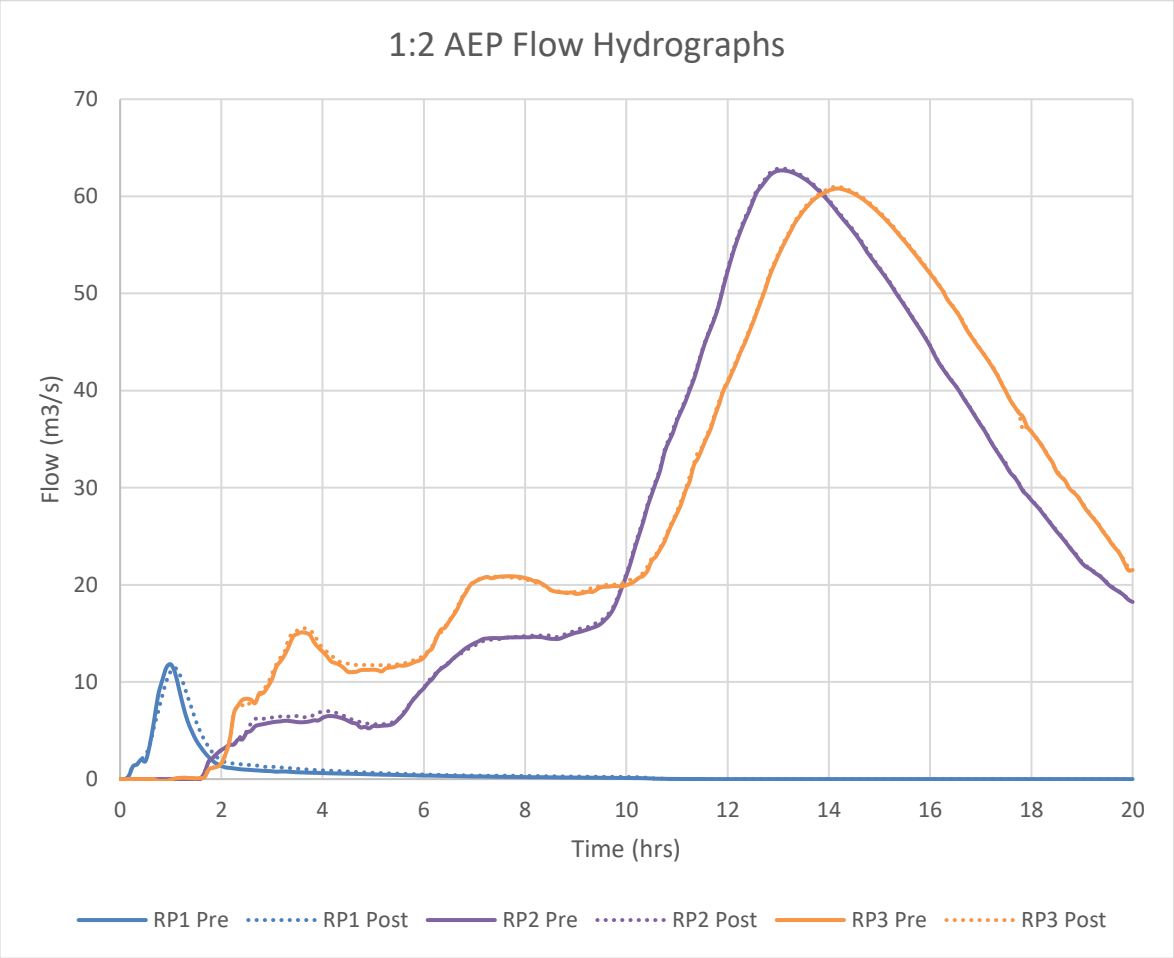
1:5 AEP

Reporting Location	Pre-Development Peak Flow (m^3/s)	Post-Development Peak Flow (m^3/s)	Diff (%)
RP1	18.1	16.6	-8%
RP2	139.9	140.4	0%
RP3	134.3	134.7	0%



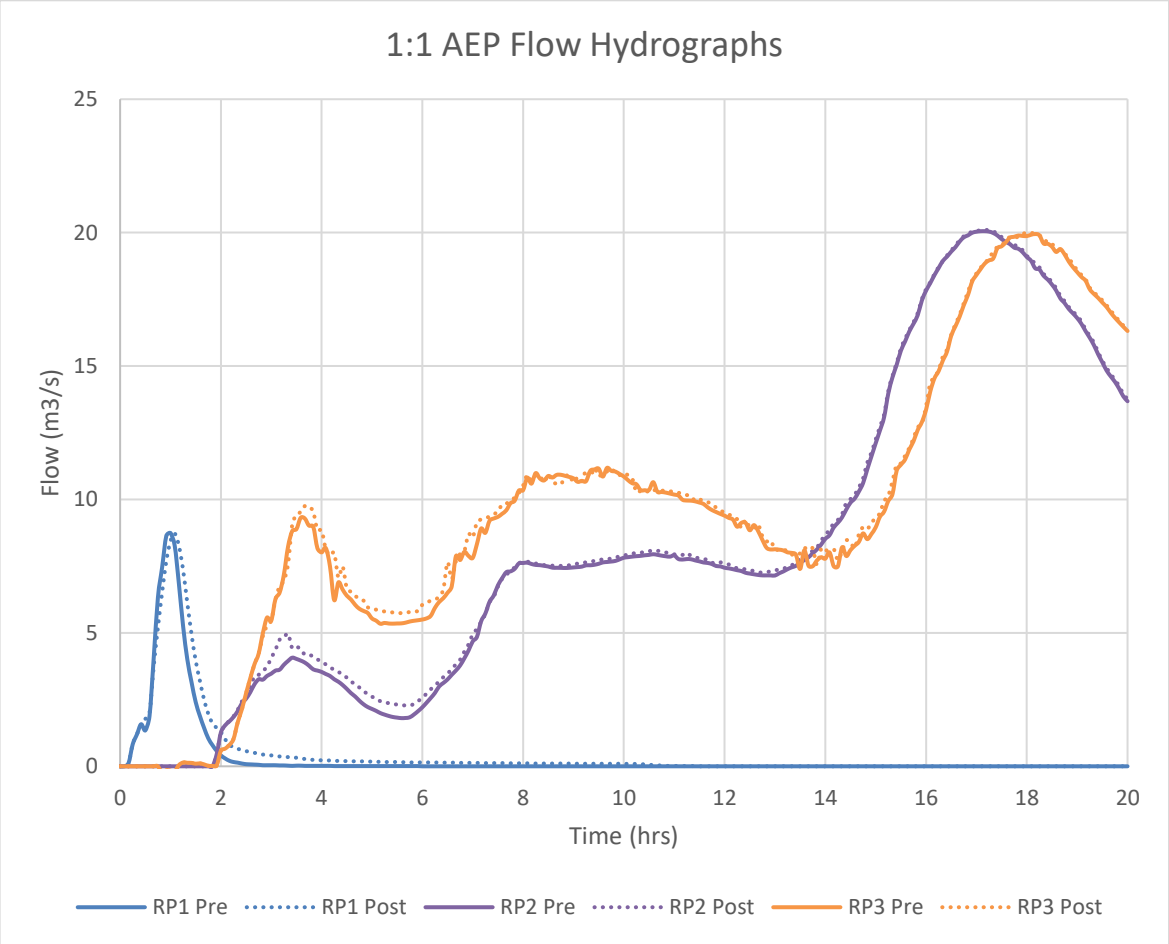
1:2 AEP

Reporting Location	Pre-Development Peak Flow (m^3/s)	Post-Development Peak Flow (m^3/s)	Diff (%)
RP1	11.8	11.5	-3%
RP2	62.7	62.9	0%
RP3	60.8	61.0	0%



1:1 AEP

Reporting Location	Pre-Development Peak Flow (m^3/s)	Post-Development Peak Flow (m^3/s)	Diff (%)
RP1	8.7	8.7	0%
RP2	20.1	20.1	0%
RP3	19.9	20.0	0%



28ºS
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Attachment 15

Attachment 15 – Proposed Environmental Outcomes

Table 1: Koala

Proposed Environmental Outcomes	Proposed Method of Achievement	Milestones for implementation	Measure of success
Outcome 1 – Configure the design of the proposed development in a way that facilitates koala refuge, foraging and movement.	Potential impacts to the ecological function of the Site, and specifically native fauna such as the koala, have been a key consideration in design of the Proposed Action. This is exemplified by the retention of vegetation along the riparian corridor and mapped as Endangered RE 12.3.3. It is expected that this corridor will be preferentially used for movement, and as a refuge, by koalas and other fauna species within the wider landscape. Additional design elements that will benefit fauna, including the koala, is the use of native vegetation (preferentially koala habitat trees) in landscaping design across the Site. Advanced compensatory planting and staged clearing will help to achieve this outcome.	For planning purposes, this outcome has been achieved during the design of the Proposed Action. Delivery of the Proposed Action will involve the physical delineation of key movement corridors through ensuring the retention and further rehabilitation of the Open Space and Conservation Precinct. Post-construction, the extent and function of native vegetation within these precincts must be equivalent to, or greater than, the current state.	This outcome has been achieved during the design of the Proposed Action, however monitoring habitat utilisation along the riparian corridor throughout the construction and operational phases of the Proposed Action will provide insight into the health, function and effectiveness of the corridor.

Proposed Environmental Outcomes	Proposed Method of Achievement	Milestones for implementation	Measure of success
Outcome 2 – Reduce the occurrence of weeds within the Site.	Weed management plans will be developed and scheduled as a part of the Site's broader revegetation and restoration strategy. Near-term weed management will reduce potential for the spread of weed propagules to the areas of remnant vegetation communities that represent habitat for koalas. Weed control will focus on species such as lantana (*Lantana camara**) that can restrict the movement of koalas and other fauna species.	Weed management will commence within three (3) months of the Proposed Action's approval.	The description of vegetation communities can be used as a baseline to gauge the success of future weed management (i.e. over time, there is a reduction in the extent, vigour and diversity of weeds at the Site).
Outcome 3 – Koala mortality related to dog attacks within the Site is equivalent to that in surrounding residential areas.	Dog-proof fencing (or other agreed buffer/barrier) design will be utilised along the perimeter of the Open Space and Conservation Precinct to restrict access by wild and domestic dogs to retained koala habitat.	Fencing (or other agreed buffer/barrier) will be constructed as a part of each phase of the development, resulting in the entirety of the retained vegetation within the Open Space and Conservation Precinct being protected by a barrier once the Proposed Action is complete.	Evidence of dog-related koala mortality within the Site is reflective of that found in nearby residential areas. This information would be gathered through an ongoing monitoring program within the Site and through engagement with other environmental groups and local wildlife/koala rescue operations.

Proposed Environmental Outcomes	Proposed Method of Achievement	Milestones for implementation	Measure of success
Outcome 4 – Koala vehicle strike within the Site is lower than the surrounding areas	Koala signage and speed control devices will be implemented to inform and limit the speed of traffic within the Site, particularly in proximity to retained koala habitat.	Once approval for the Proposed Action is obtained, traffic control measures will be implemented prior to the commencement of any activity related to the Proposed Action. This will continue through to operation, where permanent traffic control measures will supersede temporary ones.	Evidence of koala mortality relating to vehicle strike within the Site is notably less than surrounding areas. To be determined through wildlife data records.
Outcome 5 - Minimise mortality or injury of koalas resulting from clearing and construction activities.	Clearing will be undertaken in accordance with Hanger and Nottidge (2009). This includes a suitably qualified fauna spotter catcher being present to oversee clearing activities throughout the Site.	Timing will be directly correlated to the commencement of clearing and construction activities associated with the Proposed Action.	No mortality or injury of koalas during clearing or construction activities. To be determined through active monitoring during the construction phase.
Outcome 6 – Facilitate movement of koalas through areas of retained koala habitat.	A koala underpass will be constructed to facilitate koala movement across the new collector road within the Site. Additional options are being considered to facilitate koala movement in and around the retained habitat, particularly options that limit a koala's need to go to ground.	Once artificial barriers such as roads or fences are constructed within proximity to areas of retained koala habitat, koala furniture will be strategically constructed to facilitate movement where practical and safe to do so. The koala underpass will be constructed at the time that the	Ongoing monitoring of koala activity throughout areas of retained koala habitat observes no disruption to usage patterns within proximity to fences or other artificial barriers.

Proposed Environmental Outcomes	Proposed Method of Achievement	Milestones for implementation	Measure of success
		new collector road is constructed.	
Outcome 7 – Clearing on site is limited to the development footprint.	Site clearing footprints are to be demarcated prior to construction activities.	Audits of clearing extent within each staged release of the Proposed Action.	Audits determine that no unauthorised clearing outside of the development footprint within the Site.

Table 2: Grey-headed flying-fox

Proposed Environmental Outcomes	Proposed Method of Achievement	Milestones for implementation	Measure of success
Outcome 1 – Maintain the availability of foraging habitat for the grey-headed flying-fox.	The riparian corridor is considered the primary source of foraging resources for the grey-headed flying-fox within the Site, and this area will be retained as Open Space and Conservation Precinct. Winter flowering food trees will be planted as part of the landscaping design to provide additional foraging resources.	The function of the habitat retained along the riparian corridor will be assessed upon completion of adjacent development activities.	No reduction in grey-headed flying-fox foraging habitat (food trees) within the riparian corridor. The successful retention and/or propagation of grey-headed flying-fox foraging habitat species throughout the Site.
Outcome 2 – No mortality or injury to grey-headed flying-fox resulting from barbed wire fences within the Site.	New fencing within the Site will not contain a barbed wire as the top strand, and any existing fences to be retained in the medium to long term will be modified to remove any top strands of barbed wire.	Removal of barbed wire will commence within six (6) months of approval.	No records of grey-headed flying-fox injury or mortality resulting from barbed wire within the Site for the life of the development.
Outcome 3 - Minimise mortality or injury to grey-headed flying-fox resulting from powerlines within the Site.	No above-ground power infrastructure to be installed as part of the Proposed Action.	Throughout design of the Proposed Action and during construction of services within the Site.	No overhead powerline infrastructure constructed within the Site for the life of the development.

Table 3: Other MNES fauna

Proposed Environmental Outcomes	Proposed Method of Achievement	Milestones for implementation	Measure of success
Outcome 1 - Facilitate the potential resettlement of any MNES flora fauna historically known from the area.	The retention of vegetation along the riparian corridor will provide wildlife refugia and movement opportunities for the life of the development. Although not observed to be utilised at present by other MNES, over time this area may provide future foraging and nesting habitat for additional MNES fauna species such as greater glider (*Petauroides volans*) and swift parrot (*Lathamus discolor*).	The function of the habitat retained along the riparian corridor will be assessed upon completion of adjacent development activities.	The retention of the vegetation in riparian corridor will be the first measure of the success of this action. The function of this habitat will be maintained or improved, with this being assessed during periodic surveys.
Outcome 2 - Minimise mortality or injury of fauna, including MNES, resulting from clearing and construction activities.	Clearing will be undertaken in accordance with Hanger and Nottidge (2009). This includes a suitably qualified fauna spotter catcher being present to oversee clearing activities throughout the Site.	Timing will be directly correlated to the commencement of clearing and construction activities associated with the Proposed Action.	No mortality or injury of MNES species during clearing or construction activities.

28ºS
ENVIRONMENTAL

Attachment 16

Attachment 16 – References

List of references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference	Reliability	Uncertainties
28 South Environmental (2019), *Ecological Assessment Report – Proposed Ripley Gateway North Residential Development at Flinders View*, CLAG Pty Ltd, Brisbane, Qld	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Accad, A. and Neldner, V.J. (2015). Remnant Regional Ecosystem Vegetation in Queensland, Analysis 1997-2013. (Queensland Department of Science, Information Technology and Innovation: Brisbane).	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Atlas of Living Australia (2017). Spatial Data Portal. http://spatial.ala.org.au/ [Accessed 2 December 2019].	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Auld, B. A. and Medd, W. (2002). Weeds: An illustrated botanical guide to the weeds of Australia. Inkata Press, Melbourne.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Burnett, S. (2001). The ecology and conservation status of the northern Spot-tailed Quoll Dasyurus maculatus with reference to the future of Australia's marsupial carnivores. Ph.D. Thesis. Townsville, Queensland: James Cook University.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Cogger, H. G. (2000). Reptiles and amphibians of Australia. Reed New Holland: Sydney	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties

Reference	Reliability	Uncertainties
Cropper, S. C. (1993). Management of endangered plants. CSIRO Publishing, Collingwood, Victoria.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Department of Environment & Energy (DoEE) (2017), Draft Recovery Plan for the Grey-headed Flying-fox (*Pteropus poliocephalus*), DoEE, available: http://www.environment.gov.au/system/files/resources/78d5e396-7475-4fc0-8a64-48c86a1cb2b6/files/draft-recovery-plan-grey-headed-flying-fox.pdf	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Department of the Environment (2013). Matters of National Environmental Significance-Significant Impact Guidelines 1.1. Australian Government.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Department of the Environment (2016). *Petauroides volans* (greater glider) consultation available from: https://www.environment.gov.au/system/files/pages/0f0c5cbd-9dbb-4d5e-bcc3-d855ee087232/files/consultation-document-greaterglider.pdf	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Department of the Environment (2016).Species Profile and Threats Database, Department of the Environment, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed 2 December 2109. Utilised for the following species; *Apus pacificus, Ardea ibis, Ardea modesta, Calidris ferruginea, Cyclopsitta diophthalma coxeni, Dasyornis brachypterus, Dasyurus hallucatus, Delma torquata, Erythrotriorchis radiatus, Furina dunmalli, Grantiella picta, Geophaps scripta scripta, Hirundapus caudacutus, Poephila cincta cincta, Potorous tridactylus tridactylus, Gallinago hardwickii, Rostratula australis, Merops ornatus, Monarcha melanopsis, Neoceratodus forsteri, Rhipidura rufifrons, Saiphos reticulatus, Tringa nebularia* and *Turnix melanogaster*.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties

Reference	Reliability	Uncertainties
Department of Infrastructure, Local Government and Planning (2017). ShapingSEQ – South East Queensland Regional Plan 2017. Queensland Government, Brisbane.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Department of the Environment and Energy, (2019). EPBC Act Protected Matters Search Tool. Department of the Environment, Australian Government, Canberra.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
EHP, (2007). Biodiversity Planning Assessment - Southeast Queensland Version 3.5. Department of Environment and Heritage Protection, Queensland Government, Brisbane.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
EHP, (2014a). Guide to determining terrestrial habitat quality - A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy. Department of Environment and Heritage Protection, Queensland Government, Brisbane. http://www.ehp.qld.gov.au/assets/documents/pollution/management/offsets/habitat-quality-assessment-guide.pdf	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
EHP, (2014b). Flora Survey Guidelines - Protected Plants Nature Conservation Act 1992. Department of Environment and Heritage Protection, Queensland Government, Brisbane.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Eyre, T. J. (2002). Habitat preferences and management of large gliding possums in southern Queensland. Ph.D. thesis, Southern Cross University, Lismore	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Eyre, T. J., Kelly, A. L., and Neldner, V. J. (2011). Biocondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland, Assessment Manual, Version 2.1. Department of Environment and Resource Management, Queensland Government, Brisbane.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties

Reference	Reliability	Uncertainties
Gibbons, P & Lindenmayer, D (2002), Tree Hollows and Wildlife Conservation in Australia, CSIRO.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Hanger, J. & Nottidge, B (2009). *Queensland Code of Practice for the welfare of wild animals affected by land-clearing and other habitat impacts and wildlife spotter/catchers*. Australian Wildlife Hospital.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Ipswich City Council, n.d., Koala Conservation and Habitat Management Plan.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Long, K.I. & J.L. Nelson (2004). (Draft) Recovery Plan for Dasyurus maculatus (Spotted-tailed Quoll) 2005-2009. Canberra: Department of the Environment and Heritage.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Mann, R.M., Bidwell, J.R and Tyler, M.J (2003). Toxicity of herbicide formulations to frogs and the implications for product registration: A case study from Western Australia. In *Applied Herpetology* 1(1): 13-22.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Menkhorst P (1997). Regent Honeyeater Recovery Plan 1994-1998. Department of Conservation and Natural Resources in conjunction with the Regent Honeyeater Recovery Team.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Menkhorst, P., Schedvin, N., Geering, D (1999) Regent Honeyeater Recovery Plan 1999-2003: Parks Flora and Fauna Division- Department of Natural Resources and Environment	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Meyer, E., Hines, H. and Hero, J-M. (2001). 'Wet forest frogs of south-east Queensland'. Griffith University: Queensland.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties

Reference	Reliability	Uncertainties
Neldner, V. J., Wilson, B. A., Thompson, E. J., and Dillewaard, H.A. (2012). Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland, Version 3.2. Department of Science, Information Technology, Innovation and the Arts, Queensland Government, Brisbane. http://www.qld.gov.au/environment/assets/documents/plants-animals/herbarium/herbarium-mapping-methodology.pdf.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
NRM, (2011). Geological Survey of Queensland. Department of Natural Resources and Mines, Queensland Government, Brisbane.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
NRME, (2019). Vegetation Management Report for Lot 208 Plan SL11067. Current as at 14 October 2019. Department of Natural Resources, Mines and Energy, Queensland Government, Brisbane.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Phillips, S and Callaghan, J. (2011). The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas (Phascolarctos cinereus): Australian Zoologist: 35(3)	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Pizzey, F. and Knight, G. (2012). The Field Guide to Birds of Australia. 9th Ed. HarperCollins, Melbourne.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Richards, S. J., McDonald, K. R. and Alford, R. A. (1993). Declines in populations of Australia's endemic tropical rainforest frogs. Pacific Conservation Biology 1: 66-77.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Saunders DL and Tzaros CL (2010). Draft National Recovery Plan for the Swift Parrot Lathamus discolor. New South Wales Department of Environment and Climate Change, Queanbeyan, and Birds Australia, Melbourne.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties

Reference	Reliability	Uncertainties
Saunders, D.L and Heinsohn, R (2008) Winter habitat use by the endangered, migratory swift parrot (Lathamus discolor) in New South Wales.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Walker, J. and Hopkins, M. S. (1990). Vegetation, Australian Soil and Land Survey Field Handbook. Inkata Press, Melbourne.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Whittaker, R. H. (1975). Communities and ecosystems, Current concepts in biology. Macmillan Publishing, New York, USA.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties
Wilson, P. R. and Taylor, P. M., (2012). Land Zones of Queensland. Queensland Herbarium, Queensland Department of Science, Information Technology, Innovation and the Arts, Queensland Government, Brisbane.	Information is reliable and current for the purposes of the Ecological Assessment	NIL Uncertainties

28ºS
ENVIRONMENTAL

Appendix 1.2

Request for Information

6 August 2020

Australian Government
Department of Agriculture, Water and the Environment

EPBC Ref: 2020/8615

Mr Chris Hall
Director
CLAG Pty Ltd
Unit 11a/32 Swann Road
TARINGA QLD 4068

Dear Mr Hall

Additional information required for preliminary documentation
Ripley View Residential Subdivision, Flinders View, Ipswich, Queensland
(EPBC 2020/8615)

I am writing to you in relation to your proposal to construct a residential development over five lots: Lot 208 on SL11067, Lot 209 on SL11067, Lot 210 on SL9238, Lot 211 on RP906067 and Lot 2 on RP906067 in Flinders View, Ipswich, Queensland.

On 2 June 2020, a delegate of the Minister decided that the proposed action is a controlled action and that it will be assessed by preliminary documentation. Further information will be required to be able to assess the relevant impacts of the proposed action.

Details outlining the further information required are at Attachment A. Details outlining the information requirements for offset proposals required under the EPBC Environmental Offsets Policy are at Attachment B.

Details on the assessment process and the responsibilities of the proponent are set out in the enclosed fact sheet. Further information is available from the Department's website at http://www.environment.gov.au/epbc.

If you have any questions about the assessment process or the further information required, please contact Kerenza Brown, by email to Kerenza.Brown@awe.gov.au or telephone 02 6275 9456 and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

Andrew McNee
Assistant Secretary
Assessments and Governance Branch
6 August 2020

Australian Government

Department of Agriculture, Water and the Environment

ATTACHMENT A
REQUEST FOR ADDITIONAL INFORMATION REQUIRED FOR ASSESSMENT BY PRELIMINARY DOCUMENTATION

Ripley View Residential Subdivision, Flinders View, Ipswich, Queensland (EPBC 2020/8615)

1. General

The preliminary documentation must:

1.1	Include: a) The information contained in your original referral b) All additional information submitted to the Department in support of the referral c) The further information you provide on the impacts of the proposed action and the strategies you propose to avoid, mitigate, and/or offset those impacts (as described below), and d) Other relevant information on the matters protected by the EPBC Act.
1.2	Follow the structure of this information request.
1.3	Include a reference table indicating where to find the information fulfilling this request.
1.4	Contain sufficient information to allow the Minister (or delegate) to make an informed decision on whether or not to approve, under Part 9 of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), the undertaking of the action for the purposes of each controlling provision. *Please note that the Department may require further information, in addition to the information required below, should new information come to light during the assessment stage (e.g. an additional species has been identified onsite).*
1.5	Ensure all work and conclusions: a) Are evidence based and the evidence is provided; b) Use scientifically robust methodologies appropriate to the purpose, detail why the methodology/s was selected, and are described and referenced; c) Consider and state any limitations in the chosen approach; d) Are supported by peer reviewed literature, with references provided, or expert opinion; e) Are presented clearly, unambiguously and objectively;

	f) Demonstrate consideration of relevant Approved Listing Advice(s), Approved Conservation Advice(s), Recovery Plan(s), Threat Abatement Plan(s) or comparable policy guidelines, information contained in relevant databases (such as the Species Profile and Threats (SPRAT) database), and consistency with approved Commonwealth survey methods, or if these are not available, relevant State or other published, peer reviewed survey methods..

2. Description of the action

The preliminary documentation must include a description of the action:

2.1	Including: a) The location, boundaries, and size (in hectares) of the disturbance footprint, and of adjoining areas and vegetation, which may be indirectly impacted by the proposal. b) A description of all components of the proposed action, including the anticipated timing and duration, (including start and completion dates) of each component of the proposed action. This should include a detailed outline of the expected timing of all components of the proposed action and any staged clearing over the construction period. c) A description of the construction and operation of the residential development and associated works (i.e. activities that comprise its operation). d) Information and clarification on whether the proposed action is related to other proposals nearby and/or if it is a component of a larger action. Further details on 'split referrals' and components of a larger action can found at https://www.environment.gov.au/resource/epbc-act-policy-statement-staged-developments-split-referrals-section-74a-epbc-act.

3. Description of the environment and Matters of National Environmental Significance

Listed threatened species and ecological communities

From the information provided to date, the Department considers that the matters that may or are likely to be significantly impacted by the proposed action include, but are not limited to:

- Koala (*Phascolarctos cinereus* – combined populations of Qld, NSW and the ACT) – vulnerable
- Grey-headed Flying-fox (*Pterpus poliocephalus*) – vulnerable.

The Department also considers that there is a real chance or possibility that significant impacts may arise in relation to the following:

- Swift Parrot (*Lathamus discolour*) – critically endangered

Note that this may not be a complete list and it is your responsibility, as the proponent, to ensure that any species or ecological communities listed under the EPBC Act at the time of the controlled action decision, which will or are likely to be significantly impacted by the proposed action, are assessed for the Minister's consideration. Any listing events (i.e. new listing or up-listing of a species or ecological community, e.g. from vulnerable to endangered category) that occur after the controlled action decision was made do not affect the approval process decision, as set out in s158A of the EPBC Act.

Furthermore, it is also the responsibility of the proponent to maintain awareness of any changes to species distributions. Please ensure that a recent Protected Matters Search Tool report has been generated and used during the assessment stage before finalising the draft preliminary documentation.

Habitat quality

In accordance with the Koala habitat assessment tool in the EPBC Act referral Guidelines for the listed Koala, the referral notes that the site contains habitat critical to the survival of the Koala with a score of 6. The Department disagrees with this score and considers that a score of 8 is more appropriate for the following reasons:

a. Koala occurrence (+2) – Field surveys conducted over four days between 9 October 2018 and 5 July 2019 identified indirect evidence of Koala usage across the site.

b. Vegetation composition (+2) – the site contains a mix of remnant and regrowth open forest containing two or more known Koala food tree species, including *Eucalyptus tereticornis* (Queensland blue gum), *Angophora leiocarpa* (smooth-barked apple), *Corymbia intermedia* (pink bloodwood), Spotted Gum (*Corymbia citriodora*) and Narrow-leaved Ironbark (*Eucalyptus crebra*).

c. Habitat connectivity (+2) – the proposed site is connected to a contiguous landscape of greater than 500 ha.

d. Key existing threats (+1) – there is limited direct evidence indicating Koala mortality associated with vehicle strikes or dog attack.

e. Recovery value (+1) – the Department notes the proponent has stated in their referral that there is uncertainty around the importance of the habitat for Koala recovery objectives. Therefore, in accordance with the EPBC Act referral Guidelines for the Listed Koala a recovery value of +1 is the appropriate score.

The preliminary documentation must provide a description of the environment affected by and surrounding the proposed action area, over both the short and long term. Specific matters this section must address include, but are not limited to:

3.1	A description of any potential Matters of National Environmental Significance (MNES) (including but not limited to those listed above) that occur in the project area and adjacent areas.
3.2	A description of the current land use, land topography, surface and ground water bodies, waterways and vegetation communities (habitat types as they relate to the above listed threatened species) on the proposed action site and adjoining areas.
3.3	For listed threatened species and ecological communities that have the potential, or are likely, to be present at and in the vicinity of the project site, including but not limited to those listed above, this section must provide the following: a) Information on the abundance, distribution, ecology and habitat preference of the species or communities. b) Quantification of the extent of habitat and (if known) the number of individuals present or historical patterns of use on and surrounding the development footprint (including maps identifying known or potential habitat). c) Assessment of the quality and importance of known or potential habitat for the species or communities within the proposed action site and surrounding areas. d) Information detailing known populations or records within at least five kilometres of the development footprint and (if known) the size of these populations. e) An assessment of the adequacy of any surveys undertaken (including survey effort and timing). In particular, the extent to which these surveys were appropriate for the species and undertaken in accordance with relevant survey guidelines.
3.4	Information about the methods, data and scientific literature used to identify and assess the environmental values on the proposed action site and surrounding areas, including survey data and historical records. Survey data for the proposed action site must be provided for the above listed threatened species, should be as recent as possible, and must not have been collected more than five years before the date of this letter.

4. Quantification of impacts

Based on the information provided in the referral and additional information provided in support of the referral, the Department considers that:

- The proposed action directly impacts 38.86 ha of habitat critical to the survival of the Koala, and potentially indirectly impacts 8.64 ha of habitat along the riparian corridor proposed to be retained and rehabilitated on-site. Indirect impact may result from:

  - Isolation/fragmentation of habitat within the riparian corridor
  - Mortality or injury to Koala from increased traffic
  - Predation from domestic dogs.

- Due to the presence of key foraging resources and the proximity of the proposed site to a nationally significant Grey-headed Flying-fox camp, there is a real chance or possibility that the proposed action may significant impact on habitat critical to the survival of the Grey-headed Flying-fox.
- Further information regarding the presence of habitat and potential impacts are required to determine whether or not the proposed action is likely to have a significant impact on the Swift Parrot.

To clarify the extent and nature of impact on listed threatened species and ecological communities as a result of the proposed action, the preliminary documentation must:

4.1	Provide a description of the intended land uses proposed as part of the completed development, including of the proposed open space and conservation areas and associated ongoing activities, and details of the intended party that would be responsible for future management activities.
4.2	Include current maps and coordinates/shapefiles of the proposed impact area and areas of Koala and Grey-headed Flying-fox habitat to be retained. Maps must clearly identify development footprints, buffer zones, and any conservation areas where impacts will be avoided, and areas of adjacent habitat that would be subject to indirect impacts.
4.3	Confirm the area of habitat that will be directly and indirectly impacted by the proposed action, including areas where: a) Connectivity to surrounding habitat will be retained or removed. b) Adjacent habitat will be subject to intensification of ongoing impacts (for example, through increased levels of dust or polluted runoff).
4.4	Confirm the quality of habitat to be impacted within the development footprint.
4.5	Provide an assessment of the direct, indirect, consequential and cumulative impacts, including: a) The nature of impacts, including timing and whether the impact is temporary or permanent. b) Details of any policy guidelines, relevant studies, surveys or consultations with species experts/field specialists, which were not included in the referral or additional information provided in support of the referral.

	c) A local and regional scale analysis of likely impacts, with reference to the project's potential contribution to cumulative impacts in the context of development patterns in the locality and region. d) A risk assessment of potential impacts from the action that are likely to be unpredictable, severe, or irreversible.

5. Avoidance and mitigation

5.1	Provide a consolidated description of all proposed measures to avoid and mitigate impacts, including those provided in the referral and any additional to those described in the referral. This should include: a) Details about pre-clearance and clearance procedures to ensure that species are detected and managed to minimise mortality, stress, injury, or introduction of disease. b) A description (including maps and imagery) of the location, boundaries and size of buffer areas or proposed exclusion zones, and details on how these areas will be enhanced, protected and maintained. Also include a description of any fences or barriers which may be installed around areas where impacts will be avoided. c) Details of any rehabilitation measures to be implemented for disturbed areas, including rehabilitation objectives, target species, timing of rehabilitation stages, methodology, maintenance measures, schedules, and monitoring. d) Details of any ongoing mitigation and management measures during the operation of the facility, including (but not limited) installation of Koala exclusion fencing, safe fauna movement solutions, local traffic management measures, and/or wildlife signage guidelines.
5.2	For each measure proposed, indicate the: a) Responsible party b) Environmental outcomes to be achieved c) Millstones / performance/ completion criteria d) Proposed monitoring and evaluation program.
5.3	Provide an assessment of the predicted effectiveness of each proposed avoidance or mitigation measure, noting that the effectiveness of a particular measure is a reflection of confidence in the ability of the measure to reduce the risk of a threat. The assessment of effectiveness should be evidence based and include examples of demonstrated success of a particular measure to achieve the desired avoidance/mitigation outcome.

6. Proposed offsets

Based on the referral information and additional information submitted in support of the referral, the Department considers that the proposed action is likely to have a residual significant impact on the Koala and potentially the Grey-headed Flying-fox.

Where residual significant impacts remain after consideration of avoidance and mitigation measures, an environmental offset will be required to compensate for the impacts in accordance with the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*.

Offsets must be specific to the species or ecological community being impacted and must improve or maintain the viability of the species.

If a residual significant impact is identified, the preliminary documentation must include an offset proposal, which must:

6.1	Demonstrate how the offset proposal: a) Meets the principles outlined in the *Environmental Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*. b) Directly contributes to the ongoing viability of the EPBC listed species or ecological community and will deliver an overall conservation outcome that improves or maintains the viability of the protected matter in the region, as compared to what is likely to have occurred under the status quo, i.e. if neither the action nor the offset had taken place. c) Compensates for the impact over the entire duration of the impact (i.e. should impacts be in perpetuity, the offsets must also be delivered in perpetuity). Note: while the offsets do not need to be secured before the decision on whether to approve the proposed action, should the proposed action be approved, conditions of an approval are likely to require that offsets are secured, and management measures are in place, before commencement of the proposed action.
6.2	For further details regarding offset requirements refer to section 6 of the *Environmental Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* and see Attachment B.

Habitat quality assessment methodology

The Department notes that a suitable methodology must be used to determine habitat quality at the offset site for input into the EPBC Act Offsets Assessment Guide (i.e. the 'calculator').

In the past, the Koala habitat assessment tool at Table 4 (p. 27) of the *EPBC Act referral guidelines for the listed Koala* has been used by proponents to assess habitat quality for that

species at proposed offset sites, however the Department notes that this methodology may not accurately account for potential habitat quality improvements as a result of management measures over time.

The Department notes that:

- The methodology chosen to assess habitat quality must be evidence-based, quantitative, robust and repeatable.
- The same methodology to assess habitat quality must be used at both impact and offset sites for input into the EPBC Act Offsets Assessment Guide.
- The quality score for an area of habitat must relate directly to habitat requirements of the species (e.g. number of Koala feed trees). Note that this may inform outcome-based conditions if the Minister decides to approve the proposed action.
- There are three components that need to be considered when calculating habit quality: site condition, site context, and species stocking rates.

The Department encourages all proponents to initially consult the Department on an appropriate methodology to calculate a habitat quality score, before conducting their assessment.

7. Economic and social matters

The preliminary documentation must:

7.1	Provide details on the social and economic costs and/or benefits of undertaking the proposed action, including the basis for any estimations of costs and/or benefits. Where possible, please include the total economic capital investment and economic ongoing value of the project.
7.2	Identify if economic benefits and employment opportunities are in addition to what would have been expected if the action were not to take place.
7.3	Provide details of any public stakeholder consultation activities, including the outcomes of those consultations.
7.4	Provide details of any consultation with Indigenous stakeholders.

8. Ecologically sustainable development

The preliminary documentation must:

8.1	Provide a description of how the proposed action meets the principles of ecologically sustainable development, as defined in section 3A of the EPBC Act.

ATTACHMENT B
INFORMATION REQUIREMENTS FOR EPBC ACT OFFSET PROPOSALS

The offset proposal must include, but not be limited to, the following:

Details in relation to the proposed offset package, including:

a) A description of the proposed offset site(s) including location, size, condition, and relevant ecological/species habitat features, landscape context and cadastre boundaries of the offset site(s) (supported by mapping).

b) Evidence of the presence of, or usage by, relevant protected matter(s) on, or adjacent to the proposed offset site(s), and the presence and quality of habitat for protected matter(s) on the proposed offset site.

c) Current and likely future tenure of the proposed offset site and details of how the offset site will be legally secured for the full duration of the impact.

Details and justification demonstrating how the proposed offset package will maintain or improve the viability of the protected matter(s) consistent with the EPBC Environmental Offsets Policy and *EPBC Act Offsets Assessment Guide*. This includes:

a) Offset completion criteria (i.e. environmental outcomes) to be achieved, and reasoning for these in reference to relevant statutory recovery plans, conservation advices, and threat abatement plans (e.g. within 15 years of commencement of the action, 85 per cent of the offset site contains X number of Koala habitat trees).

b) Milestones to demonstrate adequate progress towards achieving the offset completion criteria (e.g. within 10 years of commencement of the action the proponent must increase, by at least 20 per cent, the number of available Koala food trees at the offset site).

c) Specific environmental management activities and mitigation that will attain and maintain the completion criteria, including the management of threats to relevant species and the timing of actions (e.g. complete the planting, and ensure a survival rate of 90 per cent, of at least 15, 000 seed, sapling, or tube stock (or equivalent) Koala food tree species within five years following commencement of the action; reduce the invasive weed coverage on the offset site to 5 per cent within five years following commencement of the action implement an annual non-native feral pest control program over a 10 year period).

d) Baseline survey information to determine the presence of relevant protected matters and the extent and quality of the respective habitat(s) at the proposed offset site(s) in accordance with the relevant survey guidelines or using a scientifically robust and repeatable methodology.

e) A monitoring and corrective action program to measure the success of the environmental outcomes, which must include performance indicators, milestone outcomes, monitoring requirements, trigger values, corrective measures, and

identified roles and responsibilities in accordance with the requirements in section 3 of the Departments Environmental Management Plan Guidelines:

https://www.environment.gov.au/epbc/publications/environmental-management-plan%ADguidelines

f) Evidence of how the proposed offset completion criteria for the offset will be maintained over the duration of the offset.

g) Justification of how the offset package meets the *EPBC Act Offsets Assessment Guide*, in particular:

- Evidence of the likely effectiveness of any proposed management actions (i.e. rehabilitation / restoration / re-creation of habitat) to support quality improvement and/or maintenance of the proposed offset site(s) for the relevant protected matter(s).
- The time over which management actions will deliver the proposed improvement or maintenance of habitat quality for the relevant protected matter(s).
- The risk of damage, degradation or destruction to any proposed offset site(s), in the absence of any formal protection and/or management, over a foreseeable time period (20 years). This information is important in determining the comparative benefit of a proposed offset.
- Evidence to support 'confidence in results' for averted loss and quality scores.

Note: where increases in habitat quality of the offset site are being proposed by the proponent to meet the direct offset requirements, the Department will require specific details of site condition, site context or stocking rate measures to be implemented commensurate to the expected level of habitat improvement.