Significant Biodiversity Assessment Report

New Beith Road, New Beith
Prepared for New Beith Pty Ltd
19 December 2022

Job No. 8905

Document control

Document: New Beith Road Significant Biodiversity Assessment Report (Issue C), prepared by Saunders Havill Group for New Beith Pty Ltd, dated 19th December 2022.

Document Issue

Issue	Date	Prepared By	Checked By
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Acronyms and abbreviations

Legislation and Government Departments

DAF	Department of Agriculture and Fisheries (Qld)
DES	Department of Environment and Science (Qld)
DLGRMA	Department of Local Government, Racing and Multicultural Affairs (Qld)
DoR	Department of Resources (Qld)
EDQ	Economic Development Queensland (Qld)
EPBC	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
LCC	Logan City Council
MSES	Matters of State Environmental Significance
NCA	*Nature Conservation Act 1992* (Qld)
NCAR	Nature Conservation (Animals) Regulation 2020 (Qld)
NCPR	Nature Conservation (Plants) Regulation 2020 (Qld)
PA	*Planning Act 2016* (Qld)
PR	Planning Regulation 2017 (Qld)
SARA	State Assessment Referral Agency (part of DLGRMA)
SPP	State Planning Policy 2017 (Qld)
VMA	*Vegetation Management Act 1999* (Qld)

Abbreviations

ASRIS	Australian Soil Resource Information System
DAMS	Development Assessment Mapping System (administered by SARA)
DBH	Diameter at Breast High
GBO	General Biosecurity Obligation
MCU	Material Change of Use
MLES	Matters of Local Environmental Significance
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
PDA	Priority Development Area
PMAV	Property Map of Assessable Vegetation
PMST	Protected Matters Search Tool
ROL	Reconfiguration of a Lot
RVMM	Regulated Vegetation Management Map
SDAP	State Development Assessment Provisions
SHG	Saunders Havill Group
SPRAT	Species Profile and Threats Database
SRI	Significant Residual Impact
SRZ	Structural Root Zone
SVMM	Supporting Vegetation Management Map
TPZ	Tree Protection Zone
WWBW	Waterway Barrier Works

1. Introduction

Saunders Havill Group (SHG) was engaged by New Beith Pty Ltd to update the Significant Biodiversity Assessment Report (SBAR) in response to Economic Development Queensland's (EDQ) *PDA Implementation Guideline No. 14 (Environmental values and sustainable resources* - IG14) and *PDA Implementation Guideline No.17 (Remnant Vegetation and Koala Habitat Obligations in Greater Flagstone and Yarrabilba PDAs)* (IG17*)* for a proposed master planned community located at New Beith Road, New Beith, described as Lot 50/SP293963, L8/S312737, L58/S312118, L1/RP43903, L1/SP250186, L2/SP250186 and L2/RP25922. Updates reflect more recent detailed site surveys undertaken for the EPBC Act assessment and support the Context Plan application.

As the site is located within the Greater Flagstone Priority Development Area (PDA) it is subject to assessment by EDQ as the administrative authority for development in PDAs. This SBAR provides a review of the site's ecological values in accordance with Commonwealth and State Government legislation and is intended to support the submission of a development application to EDQ.

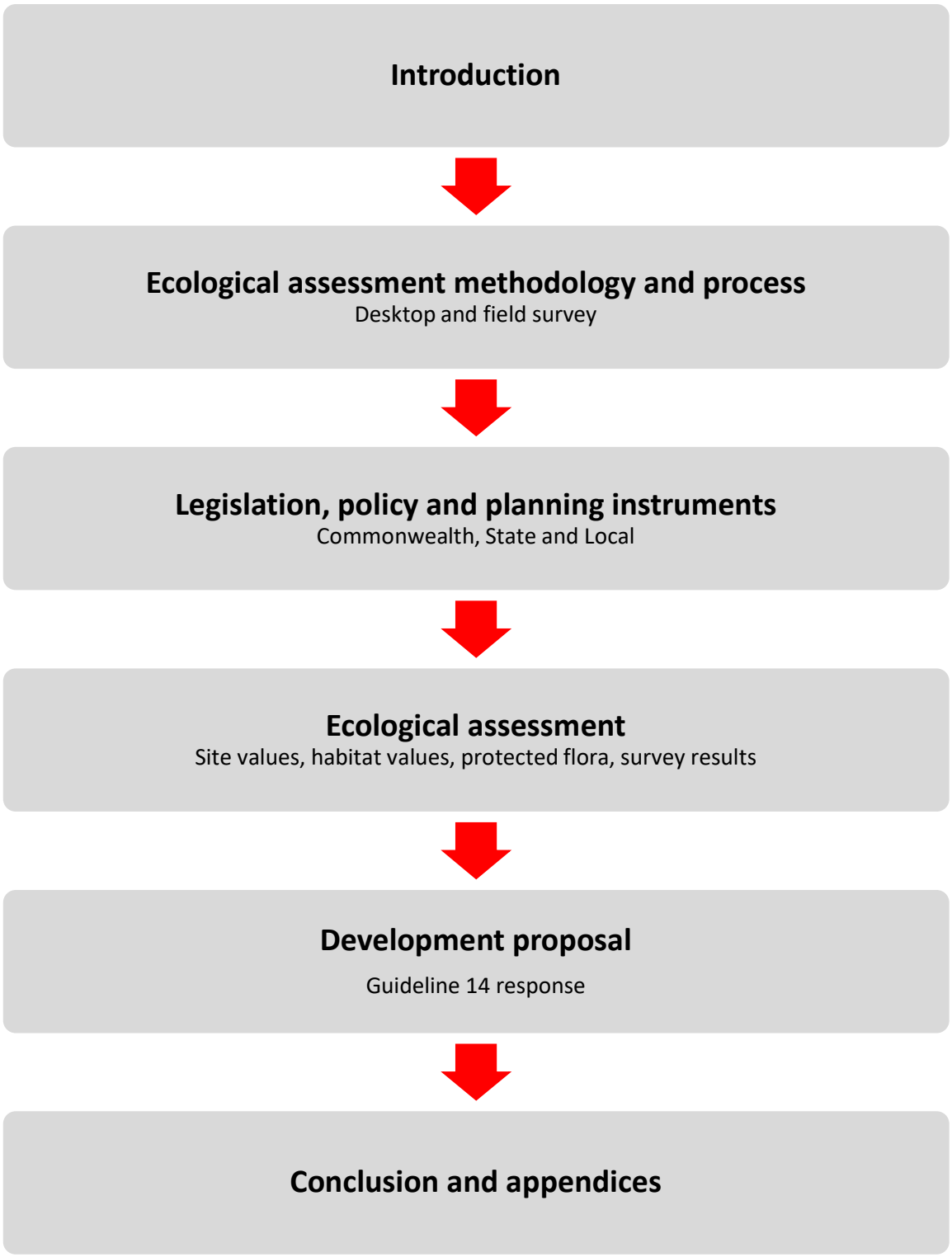
1.1. Property summary

Table 1: Property summary

Address	New Beith Road, New Beith
Referral Area	609.5 ha
VMA 1999	Category X (non-remnant), category B (endangered, of concern & least concern), essential habitat & watercourse
Fisheries 1994	Low and moderate risk waterways for waterway barrier works
State planning provisions	Biodiversity (MSES – Regulated Vegetation intersecting a watercourse, Wildlife Habitat, Regulated Vegetation Category B & C, Regulated Vegetation Essential Habitat)
Koala habitat	Outside SPRP Koala Assessable Development Area Low & Medium Value Bushland & Low & Medium Value Rehabilitation
LGA	Logan City Council
Planning scheme	Logan City Planning Scheme
Environmental overlays	Biodiversity Overlay (Biodiversity Corridor, MSES & MLES, Biodiversity Trigger Area, Primary & Secondary Vegetation Management Area) Waterway Corridors & Wetland Triggers (Waterway Corridor)
Greater Flagstone PDA	Zone – Urban Living Development Constraints – Waterway Natural Values – Vegetation, Waterway
Existing land use	Agriculture / Forestry
Proposed land use	Residential

1.2. Report structure

This SBAR adopts the following structure:



1.3. Context and background

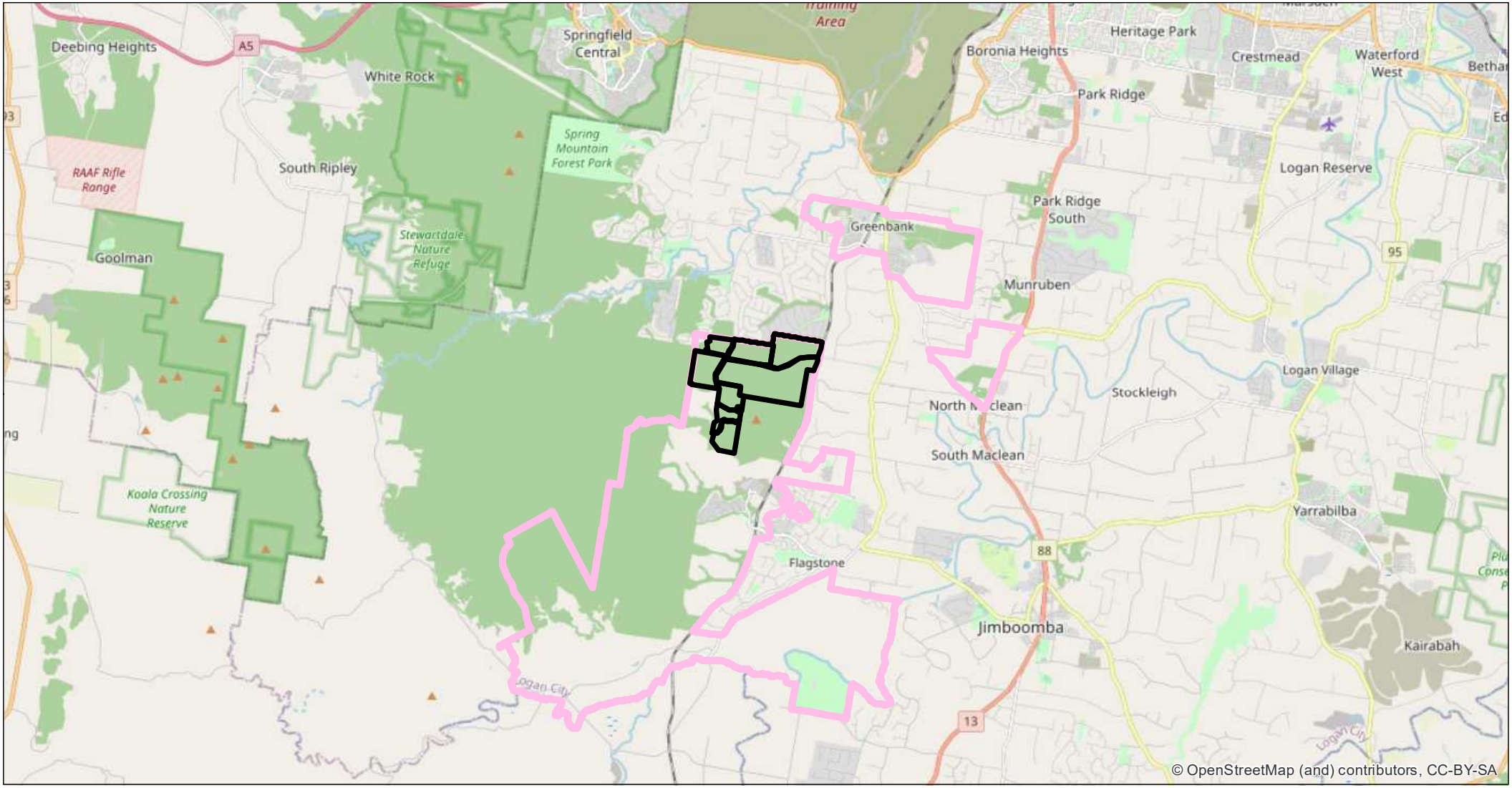
The subject site covers seven (7) lots (as described above), the subject site can be accessed off New Beith Road along the northern property boundary.

Contextually, the subject site forms part of the northern portion of the Greater Flagstone Priority Development Area (PDA). The northern boundary of the subject site adjoins the residential area of Teviot Downs Estate, while the future development land of Flagstone West is directly to the south/south-west. The Jimboomba Town Centre is located approximately 9 kilometres to the south-east and Springfield CBD approximately 10km north-west (refer **Figure 1** for site context and **Figure 2** for site aerial).

Topography of the subject site ranges from approximately 110 meters in elevation on the ridgeline in the south-west, to 40m in the gully lines to the east. The allotments include approximately 525 hectares (Ha) of remnant vegetation and approximately 84 Ha of non-remnant vegetation, including numerous mapped waterways. Flagstone Creek runs through the southern allotment within the subject site, and Abrade Creek flows centrally through the site, from north-west to south-east. Essential habitat mapping for the Koala occurs within the Of Concern composite RE's 12.3.11/12.3.7, RE 12.9-10.2/12.9-10.7, 12.9-10.19/12.9-10.2/12.9-10.7 and the RE 12.3.11. Overall, the subject site was found to be relatively intact, however was significantly disturbed by historical clearing, recreation including 4WD driving and motorbiking, and pastural uses. An active logging permit exists over the site. Adjoining allotments are included within the PDA and are either earmarked for or are under development (refer **Plan 1**). Many of these adjoining developments already possess determinations under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and approvals under the *Economic Development Act 2012*.

The site has been subject to flora and fauna assessments to address various approval requirements including targeted surveys carried out specifically for assessment against the EPBC Act and assessment against IG14 and IG17. The results of these assessments are summarised and presented in this report.

The project site will be developed in accordance with the proposed Context Plan (refer **Appendix A**). The development plan refines outcomes of the site in alignment with the *Greater Flagstone Priority Development Area Development Scheme* (Development Scheme), as implemented by EDQ.



Legend

- Project lots
- Greater Flagstone PDA

Figure 1 *Site Context*

0 1,000 2,000 4,000 6,000 *m*

N

Scale (A4): 1:150,000 *[GDA 1994 MGA Z56]*

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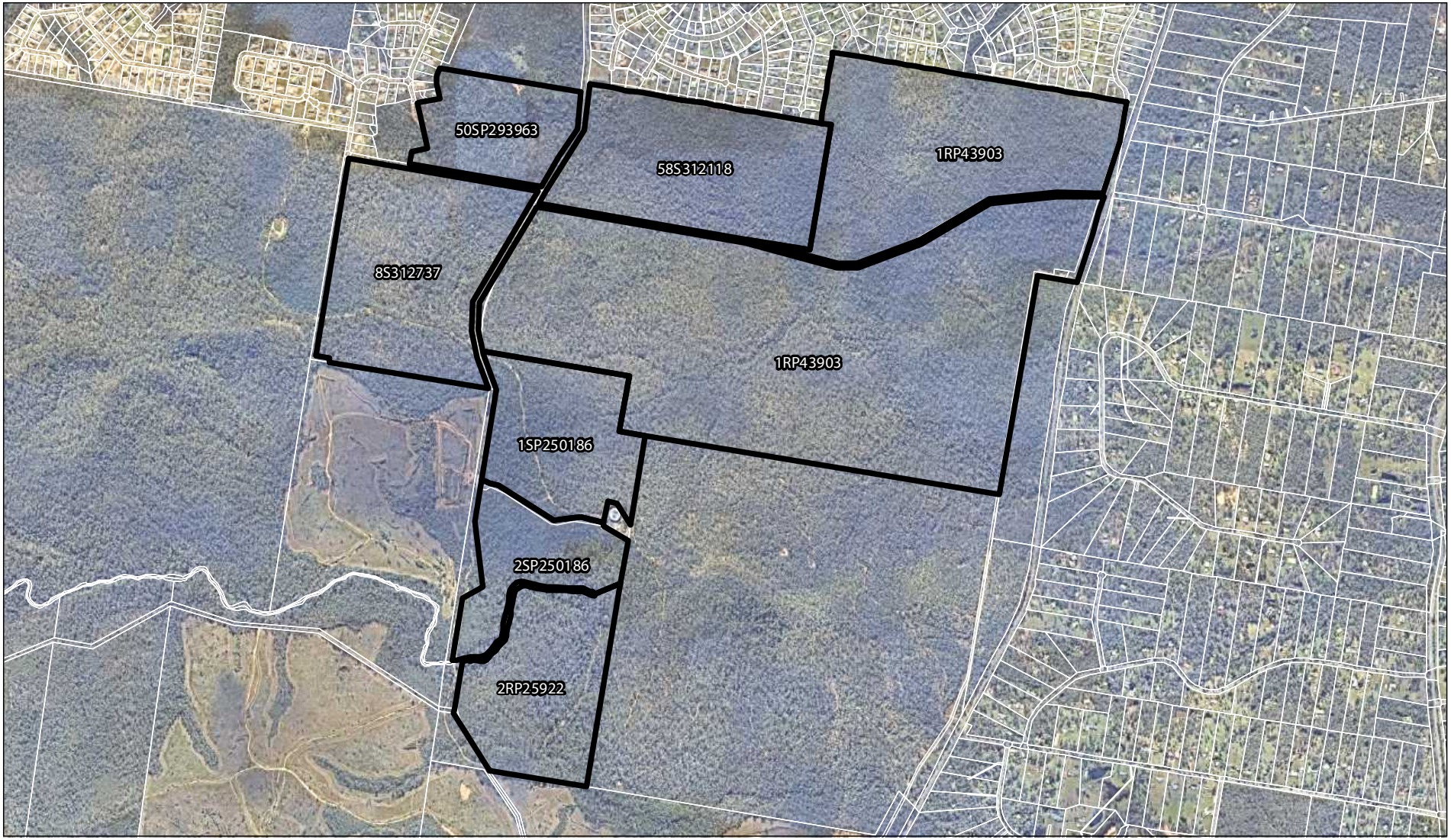
File ref.	8905 E Figure 1 Site Context B
Date	*14/07/2022*
Project	*New Beith Road, New Beith*



Legend

- Project lots
- Qld DCDB

Figure 2 *Site Aerial*

0 200 400 600 800 1,000 *m*

N

Scale (A4): 1:26,000 *[GDA 1994 MGA Z56]*

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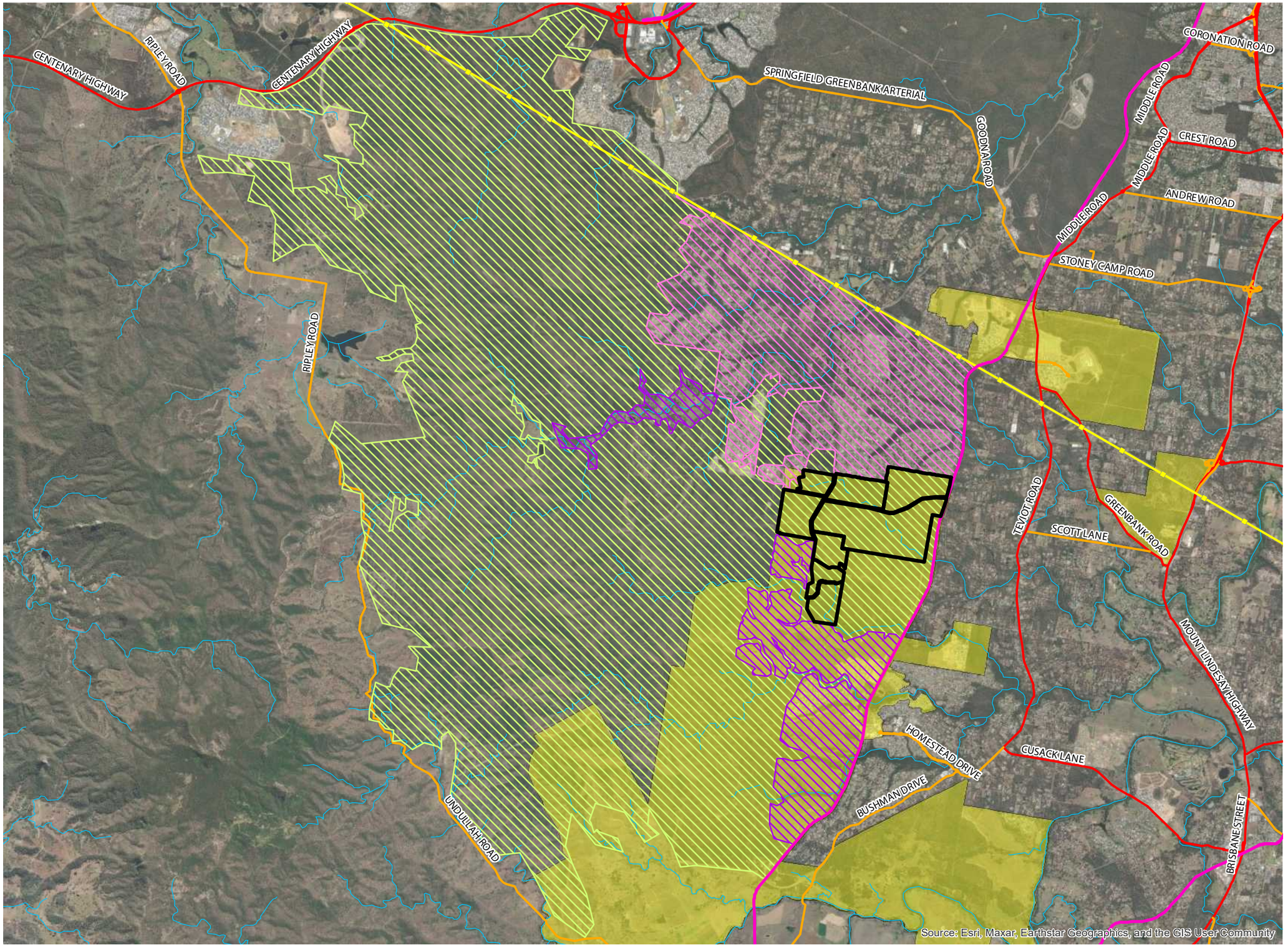
File ref.	8905 E Figure 2 Site Aerial B
Date	*14/07/2022*
Project	*New Beith Road, New Beith*

1. Fragmentation Analysis



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

Layer Sources
© State of Queensland (Department of Resources) 2022.
Updated data available at
http://qldspatial.information.qld.gov.au/catalogue/

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

Legend

- Project lots
- Greater Flagstone PDA
- Highways
- Major arterial road
- Rail network
- Powerline easement
- VM Watercourse (stream order >=3)
- Connectivity
- Cleared land
- Development

Issue	Date	Description	Drawn	Checked
B	20/07/2022	Preliminary	TC	AD

0 500 1,000 2,000 3,000 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:80,000 @ A3

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New Beith

2. Ecological assessment methodology and process

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

1. Desktop analysis,
2. Legislation and policy review,
3. Field survey,
4. Impact assessment and development analysis, and
5. Conclusion and recommendations.

Details of the methodology undertaken for each of the assessment phases is provided in the following sections.

2.1. Desktop analysis methodology

Prior to the commencement of field surveys, a desktop analysis was conducted of Commonwealth, State and Local environmental databases and overlay mapping including the following:

- Commonwealth Matters of National Environmental Significance protected under the *Environment Protection and Biodiversity Conservation Act 1999* on and around the site using the Protected Matters Search Tool;
- *Nature Conservation Act 1992* listed threatened species on and around the site using the Wildlife Online Database;
- Public environmental databases including Atlas of Living Australia;
- State Government environmental overlay mapping including:
    - Regulated vegetation maps under the *Vegetation Management Act 1999*
    - Flora survey trigger areas under the *Nature Conservation Act 1992*
    - Fish habitat under the *Fisheries Act 1994*
    - Watercourses under the *Water Act 2000*
    - Weeds under the *Biosecurity Act 2014*
    - Matters of State Environmental Significance under the state planning policy (i.e. wetland protection areas, Koala habitat etc.)
- Planning scheme documents and maps.

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

2.2. Field survey methodology

The site has been assessed by Senior Ecologists from the Saunders Havill Group as part of a detailed ecological assessment. Site assessments were undertaken on the following dates: 15th to 16th of February 2018, 28th February to 2nd March 2018, 3rd to the 6th April 2018, 22nd May and 5th and 6th June 2021 and 11th July to 11th August 2022. In the 2021 surveys, targeted MNES flora and fauna surveys were undertaken on 22 May 2021 and 5 and 6 June 2021, during relatively warm conditions with minimal recent rainfall within the New Beith locality. In 2022, surveys were undertaken from 11 July to 11 August 2022. This assessment involved recording ecological values within the application area in accordance with Commonwealth and State ecological survey guidelines, and developing environmental constraints to development. See **Plan 2** for updated Field Survey Effort.

A field survey utilising the following methods was conducted to describe site ecological value:

2.2.1 Observational survey for significant flora and fauna, habitat trees and biodiversity values

The application area was walked to ensure all species (flora and fauna) were recorded and identified. Particular attention was paid to any threatened species that were listed as possibly occurring on or within the vicinity of the application area and specific micro-assemblages which may support these threatened species. This included observations for vertebrate fauna present on or that may utilise the study area, including faunal lists and significance status of species under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) including the JAMBA, CAMBA, ROKAMBA and the Bonn Convention, and Queensland's *Nature Conservation Act 1992* (NCA).

The observational survey included identification of ecological features and values such as broad vegetation communities, fauna habitats, and ecological corridors. Identification and description of the fauna habitats present within the area included any habitat trees. Specific attention was paid to threatened flora and fauna species.

For the purposes of this report, a significant flora and fauna species has been defined as a species that is scheduled as 'critically endangered', 'endangered', 'vulnerable' or conservation dependent under the Commonwealth EPBC Act.

2.2.2 Ground-truthing of vegetation communities

Vegetation was ground-truthed and assessed again current *Vegetation Management Act 1999* (VMA) regional ecosystem (RE) mapping and pre-clear mapping. This included reviewing the accuracy and extent of mapped RE types in addition to the broad condition.

2.2.3 Diurnal active searches

Active searching primarily focusses on detecting reptiles and amphibians yet will also detect small terrestrial mammals and signs of other cryptic species.

This technique involved eight (8) days of scanning for active animals as well as turning rocks and logs, raking through leaf litter, looking under bark and in crevices and other suitable microhabitat for cryptic animals.

During these searches, other signs were also recorded (when observed) where they could confidently be attributed to species (e.g. tracks, scats, nests and feeding signs). During searches, habitat was reinstated, such as re-rolling logs and rocks back into place and avoiding the removal of whole sheets of exfoliating bark.

2.2.4 Koala habitat and SAT surveys

Tools for determining localised levels of use by *Phascolarctos cinereus* (Koala) included the Spot Assessment Technique (SAT), scat meanders, as well as direct observations for Koala and Koala activity throughout the survey period. Scat meanders were completed within areas that contained Koala habitat trees located amongst mapped watercourses and drainage features, and SAT surveys conducted when scats were identified. Additional general observations and habitat features across the site were also recorded.

Six (6) SAT surveys were undertaken on-site in 2018 and an additional five (5) in 2022 in accordance with the methodology developed by the Australian Koala Foundation (as per Phillips & Callaghan 2011) and specified in the EPBC Act Referral Guidelines for the Vulnerable Koala.

The SAT method is an assessment of Koala activity involving a search for any Koalas and signs of Koala usage. The SAT involves identifying a non-juvenile tree of any species within the site that is either observed to have a Koala or scats, or is known to be a food tree or otherwise important for Koalas, and recording any evidence of Koala usage of that tree including presence, identifiable scratches or scats. The nearest non-juvenile tree is then identified and the same data recorded. The next closest non-juvenile tree to the first tree is then assessed and so on until 30 trees have been surveyed. Assessment of each tree involves a systematic search for Koala scats beneath the tree within one metre radius of the trunk. After approximately two-person minutes of searching for scats, the base of the trunk is observed for scratches and the crown for Koala (refer Phillips & Callaghan 2011).

The number of trees showing evidence of Koala activity is expressed as a percentage of the total number of trees sampled to indicate the frequency of Koala usage. This is achieved by comparing the scores to known average activity levels and related measures of central tendency associated with habitat utilisation by Koalas from six areas in eastern Australia. This reference data has been compiled from sites which accurate reflect three major activity categories of Koalas and low and medium-high density populations across the tablelands, areas east of the Great Dividing Range, and areas further west (refer Phillips & Callaghan 2011, Table 1). When area and population density is known and results have been obtained, percentages can then be used to determine usage for the area based on known averages. These ratings are found in Table 2 of Phillips & Callaghan 2011. Low usage indicates the area is likely to contain transitionary individuals, whereas high ratings are interpreted as more sedentary populations. This technique is suitable for use in conjunction with stratified/random or systematic survey methodology and at a broader landscape-scale with grid-based sampling design.

2.2.5 Motion Sensor Cameras

Camera trapping involves setting up a fixed motion sensor camera to capture video of animals which pass in front of camera. It is a non-invasive technique ideally designed to detect medium to large sized animals as they pass, although it is possible to detect smaller animals with the right set-up. This set-up identifies fauna activity beyond the scope of direct observational studies and in the absence of potential observer impacts.

In the 2018 surveys, infrared sensing cameras with an infrared flash were deployed, which use motion to trigger. Ideally, cameras were attached 30-50cm from the ground on a tree or post, and directed towards the bait/bait cage which is placed about 1.5 -2m from camera. These cameras were left to record for as long as possible, which was approximately 2 weeks at this site. The programming was consistent across all cameras, and cameras were set up in a consistent manner to maintain similar detection probabilities. For inventory surveys, cameras were placed in the vicinity of an animal trail. Heavy vegetation was avoided as this can cause false triggering, and camera was aimed to avoid sun shining directly onto lens. The camera position was ideally towards an area away from other frequent survey activity.

In the 2021 surveys, four (4) cameras were installed across the site. The cameras were installed on 20 May 2021 and removed on 7 June 2021 for a total of 18 days.

In the most recent survey period completed in July/August 2022, a systematic grid-sampling deployment method of motion-triggered cameras was used. This included two rounds of seven (7) cameras deployed for 14 days which were baited with chicken necks. A total of four (4) weeks of sampling using fourteen (14) cameras was completed. The first round of seven (7) cameras were installed on 11 and collected on 25 July 2022. The second round of cameras were installed on 28 July and collected on 11 August 2022.

2.2.6 Flying-fox roost searches

This search was conducted via walking transects during the day within the survey area, watching for flying bats and listening for their distinctive calls. This search is not only for flying fox camps, but the presence of food plants to assess the potential importance of the survey area to the species. At night, spotlighting whilst walking transects surveyed for individuals using the site for foraging.

2.2.7 Targeted Bird surveys

Targeted bird surveys were completed in accordance with the *Survey Guidelines for Australia's Threatened Birds* to address survey requirements for identified MNES bird species with consideration to species-specific survey requirements.

This technique is a non-intrusive active area search that provides a direct census of bird species occurrence and abundance. Surveys involved walking slowly through woodland habitat with an emphasis on areas containing flowering eucalypts. Birds were identified either from direct observation or their calls. Inclement weather was avoided as this greatly reduces the detection of bird species.

Targeted surveys for the Regent Honeyeater and Swift Parrot were undertaken during winter of 2021 and 2022 during the winter foraging season, in accordance with the *Survey Guidelines for Australia's Threatened Birds*. Due to the large size of the site, bird surveys were targeted in areas of flowering eucalypt trees in accordance with the guideline. A survey to scope out and GPS locate areas of flowering eucalypt trees was completed on 11 July 2022 and throughout diurnal surveys during the survey period.

In 2022, a total of eight (8) crepuscular bird surveys were completed in July, and two (2) in early August over eight (8) days. This included four (4) dawn surveys occurring between 6:30 am and 9:00 am, and six (6) dusk surveys completed between 3:00 pm and 5:30 pm. Total survey effort was over 20 hours. In 2021, five (5) targeted dawn surveys were completed in May and June between 6:30 am and 9:00 am.

In 2021, targeted bird surveys were completed across the referral area over a period of five (5) days, on 20 and 21 May and 3, 4 and 7 June 2021. All bird species observed during the assessment period were recorded. Birds were also opportunistically surveyed across the referral area for the duration of the entire survey period. A total of eighty (80) person hours of survey works were completed over the study area.

2.2.8 Scats, tracks and other traces search

Surveys for scats, tracks and other fauna traces were conducted throughout the survey period during May and June 2021/2022. Both predator and non-predator scats were sought during all searches. Only those samples definitively identified were included in the survey results. Specific search efforts were made to locate the presence of Koalas or evidence of their occurrence on the subject lands and the local area. In addition, particular notice of potential dens, scats and tracks for invasive species was taken to identify predator-prey interactions and understand existing impacts within the referral area.

2.2.9 Modified Habitat Quality Assessment (MHQA)

The Modified Habitat Quality Assessment (MHQA) methodology was utilised to assess the referral area condition, site context and species stocking rate under the EPBC Act.

The referral area was broken into five (5) assessment units (AU) during the 2022 surveys to reflect the differing states of the vegetation within the referral area (refer **Table 2**). In order to determine the quantum and quality of the habitat suitable for Koala within the referral area, vegetation/habitat quality was derived from the Modified Habitat Quality Assessment tool. This assessment approach utilises the *Queensland BioCondition Assessment method* combined with site context and species stocking rate assessments to determine the habitat quality of the referral area under the EPBC Act.

Table 2: Referral Area Assessment Units

Assessment Unit	VMA Category	Vegetation Status	Regional Ecosystem	Area (ha)
AU1	Category B	Remnant	RE12.9-10.2	126.12
AU2	Category B	Remnant	RE12.9-10.7/12.9-10.2	232.28
AU3	Category B	Remnant	RE12.9-10.19/12.9-10.2/12.9-10.7	9.87
AU4	Category X	Non-remnant	RE12.9-10.19/12.9-10.2/12.9-10.7 (pre-clear)	60.24
AU5	Category X	Non-remnant	RE12.9-10.2/12.9-10.7a	31.13

2.2.10 Scientific Permits

Ecological field surveys were conducted on the subject site in the attempt to confirm presence of potential MNES. Fauna surveys were conducted under the following permits held by Saunders Havill Group:

- Scientific Purposes Permit **WA0022007** granted under Section 12(f) of Nature Conservation (Administration) Regulation 2017
- Department of Agriculture and Fisheries (DAF) Ethics clearance **CA 2020/02/1355**
- Scientific User Registration **SUR000451**

3. Legislation, policy and planning instruments

3.1. *Environment Protection and Biodiversity Conservation Act 1999*

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

A search using the Commonwealth's Protected Matters Search Tool (PMST) for the site was updated for this report. The search provides a list of wetlands of international significance, threatened ecological communities and threatened species which have the potential to be temporarily or permanently located within a 5 km radius from the central point of the site. **Table 3** lists a summary of these results relevant to the site. The complete results of this search are included in **Appendix B.**

Table 3: EPBC Act PMST search results

Wetlands of international importance		
Moreton Bay (20-30km upstream)		
Threatened ecological communities		
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and Southeast Queensland ecological community– Endangered (Community may occur within area) **Coastal Swamp Sclerophyll Forest of New South Wales and Southeast Queensland Endangered** – Endangered (Community likely to occur within area) **Grey box-grey gum wet forest of subtropical eastern Australia** – Endangered (Community likely to occur within area) **Lowland Rainforest of Subtropical Australia –** Critically Endangered (Community may occur within the area) **Poplar Box Grassy Woodland on Alluvial Plains** – Endangered (Community may occur within area) **Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and Southeast Queensland bioregions** – Endangered (Community likely to occur within area) **Swamp Tea-tree (Melaleuca irbyana) In buffer area only Forest of South-east Queensland** – Critically Endangered (Community likely to occur within area) **White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland** – Critically Endangered (Community likely to occur within area)		
Threatened species		
Scientific name	**Common name**	**Status**
Birds		
Anthochaera phrygia	Regent Honeyeater	Critically Endangered

Botaurus poiciloptilus	Australasian Bittern	Endangered
Calidris ferruginea	Curlew Sandpiper	Critically Endangered
Dasyornis brachypterus	Eastern Bristlebird	Endangered
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	Vulnerable
Charadrius leschenaultii	Greater Sand Plover	Vulnerable
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	Endangered
Erythrotriorchis radiatus	Red Goshawk	Vulnerable
Geophaps scripta scripta	Squatter Pigeon (southern)	Vulnerable
Falco hypoleucos	Grey Falcon	Vulnerable
Grantiella picta	Painted Honeyeater	Vulnerable
Hirundapus caudacutus	White-throated Needletail	Vulnerable
Lathamus discolor	Swift Parrot	Critically Endangered
Numenius madagascariensis	Eastern Curlew	Critically Endangered
Rostratula australis	Australian Painted Snipe	Endangered
Turnix melanogaster	Black-breasted Button-quail	Vulnerable
Fish		
Maccullochella mariensis	Mary River Cod	Endangered
Insects		
Argynnis hyperbius inconstans	Australian Fritillary	Critically Endangered
Mammals		
Chalinolobus dwyeri	Large-eared Pied Bat, Large Pied Bat	Vulnerable
Dasyurus maculatus maculatus	Spot-tailed Quoll	Endangered
Macroderma gigas	Ghost Bat	Vulnerable
Petauroides volans	Greater Glider	Endangered
Petaurus australis australis	Yellow-bellied Glider	Vulnerable
Petrogale penicillta	Brush-tailed Rock-Wallaby	Vulnerable
Phascolarctos cinereus	Koala	Endangered
Potorous tridactylus tridactylus	Long-nosed Potoroo	Vulnerable
Pteropus poliocephalus	Grey-headed Flying-Fox	Vulnerable
Plants		
Arthraxon hispidus	Hairy-joint Grass	Vulnerable
Bosistoa transversa	Three-leaved Bosistoa	Vulnerable
Cryptostylis hunteriana	Leafless Tongue-orchid	Vulnerable

Cupaniopsis shirleyana	Wedge-leaf Tuckeroo	Vulnerable
Cupaniopsis tomentella	Boonah Tuckeroo	Vulnerable
Dichanthium setosum	Bluegrass	Vulnerable
Fontainea venosa	-	Vulnerable
Macadamia integrifolia	Macadamia Nut	Vulnerable
Macadamia tetraphylla	Rough-shelled Bush Nut	Vulnerable
Notelaea ipsviciensis	Cooneana Olive	Critically Endangered
Notelaea lloydii	Lloyd's Olive	Vulnerable
Picris evae	Hawkweed	Vulnerable
Planchonella eerwah	Shiny-leaved Condoo	Endangered
Plectranthus habrophyllus	-	Endangered
Rhodamnia rubescens	Scrub Turpentine	Critically Endangered
Rhodomyrtus psidioides	Native Guava	Critically Endangered
Samadera bidwillii	Quassia	Vulnerable
Thesium australe	Austral Toadflax	Vulnerable
Reptiles		
Delma torquata	Collared Delma	Vulnerable
Furina dunmalli	Dunmall's Snake	Vulnerable
Saiphos reticulatus	Three-toed Snake-tooth Skink	Vulnerable

3.2. Nature Conservation Act 1992

The *Nature Conservation Act 1992 (*NCA) classifies and protects significant areas (Protected Areas) and protects Threatened plant and animal species. *The Nature Conservation (Animals) Regulation 2020 (the Animals Regulation)* and *Nature Conservation (Plants) Regulation 2020 (the Plants Regulation)* lists plant and animal species presumed extinct, endangered, vulnerable, near threatened, least concern, international or prohibited. The schedules of these regulations were considered in this assessment using a wildlife online database search with a 5 km search radius from the central point of the proposed site. Species listed under the NCA with the potential to occur around the subject site were updated and are shown in **Table 4**. Refer to **Appendix B** for full search results.

Table 4: NCA wildlife online search results

Scientific name	Common name	Queensland Status
Birds		
Calyptorhynchus lathami lathami	Glossy Black-Cockatoo	Vulnerable

Hirundapus caudacutus	White-throated needletail	Vulnerable
Ninox strenua	Powerful owl	Vulnerable
Amphibians		
Adelotis brevis	Tusked Frog	Vulnerable
Mammals		
Petrogale penicillata	Brush-tailed Rock-Wallaby	Vulnerable
Petaurus australis australis	Yellow-bellied glider	Vulnerable
Phascolarctos cinereus	Koala	Endangered
Petauroides armillatus	Central Greater Glider	Endangered
Plants		
Melaleuca irbyana	Swamp Tea Tree	Endangered

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

Under the amended NCA, a protected plant that is in the wild must not be 'taken', which includes being cleared, unless taking is under:

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

A search of the protected plants flora survey trigger map identified that the site includes portions of 'high risk' area for protected plants (refer to **Appendix C** - Environmental Searches). As such, an exemption to clear will need to be obtained where threatened pants do not occur. The clearing of threatened plants if recorded will require a permit.

3.3. Vegetation Management Act 1999

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

Regulated vegetation management mapping shows vegetation categories used to determine clearing requirements. While areas shown on the map as category X are not regulated under the VMA, those shown as category A, B, C or R are subject to clearing requirements. The latter vegetation categories can only be cleared

in accordance with an exemption, self-assessable vegetation clearing code, and area management plan or development approval. A supporting map defining regional ecosystems, wetlands, watercourses and essential habitat, is provided with the regulated vegetation management map.

A property search of the regulated vegetation management map identifies the site is mapped predominantly as category B (remnant) vegetation, with an area of category X (non-remnant) (refer to **Figure 3**). The supporting vegetation management map shows the subject site is mapped within Endangered, Of Concern, and Least Concern regional ecosystems, with some areas of remnant vegetation mapped as essential habitat for the Koala. Several VMA mapped watercourse traverse the site (refer **Figure 4). Table 5** provides descriptions of the mapped regional ecosystems on-site. These regional ecosystems have been locked in with a Property Map of Assessable Vegetation.

Of note, the provisions of the VMA do not apply within Priority Development Areas.

Table 5: Regional ecosystem descriptions

Status	Code	Description
Endangered	RE 12.9-10.12	*Corymbia intermedia, Angophora leiocarpa, Eucalyptus seeana +/- E. siderophloia, E. tereticornis, E. racemosa subsp. racemosa, C. citriodora subsp. variegata woodland to open forest. Lophostemon suaveolens is often present as a sub-canopy or understorey tree. Occasional Melaleuca quinquenervia on lower slopes. Does not include areas dominated by Eucalyptus racemosa subsp. racemosa. Occurs on Cainozoic and Mesozoic sediments. (BVG1M: 9g)*
Of Concern	RE 12.9-10.7	*Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora leiocarpa, E. melanophloia woodland. Occurs on Cainozoic and Mesozoic sediments. (BVG1M: 13c)* *Vegetation communities in this regional ecosystem include:* *12.9-10.7a: Eucalyptus siderophloia, Corymbia intermedia +/- E. tereticornis and Lophostemon confertus open forest. Occurs on Cainozoic and Mesozoic sediments in near coastal areas. (BVG1M: 12a)*
Of Concern	RE 12.9-10.3	*Eucalyptus moluccana open forest. Other canopy species include Eucalyptus siderophloia or E. crebra, E. tereticornis and Corymbia citriodora subsp. variegata. Understorey generally sparse but can become shrubby in absence of fire. Occurs on Cainozoic and Mesozoic sediments, especially shales. Prefers lower slopes. (BVG1M: 13d)*
Of Concern	RE 12.3.11	*Eucalyptus tereticornis +/- E. siderophloia and Corymbia intermedia open forest to woodland. Corymbia tessellaris, Lophostemon suaveolens and Melaleuca quinquenervia frequently occur and often form a low tree layer. Other species present in scattered patches or low densities include Angophora leiocarpa, E. exserta, E. grandis, C. trachyphloia, C. citriodora subsp. variegata, E. latisinensis, E. tindaliae, E. racemosa and Melaleuca sieberi. E. seeana may be present south of Landsborough and Livistona decora may occur in scattered patches or low densities in the Glenbar SF and Wongi SF areas. Occurs on Quaternary alluvial*

Status	Code	Description
		plains and drainage lines along coastal lowlands. Rainfall usually exceeds 1000mm/y. (BVG1M: 16c)
Least Concern	RE 12.3.7	*Narrow fringing woodland of Eucalyptus tereticornis, Casuarina cunninghamiana subsp. cunninghamiana +/- Melaleuca viminalis. Other species associated with this RE include Melaleuca bracteata, M. trichostachya, M. linariifolia. North of Brisbane Waterhousea floribunda commonly occurs and may at times dominate this RE. Melaleuca fluviatilis occurs in this RE in the north of the bioregion. Lomandra hystrix often present in stream beds. Occurs on fringing levees and banks of rivers and drainage lines of alluvial plains throughout the region. (BVG1M: 16a)*
Least Concern	RE 12.9-10.19	*Eucalyptus fibrosa subsp. fibrosa woodland +/- Corymbia citriodora subsp. variegata, E. acmenoides or E. portuensis, Angophora leiocarpa, E. major. Understorey often sparse. Localised occurrences of Eucalyptus sideroxylon. Occurs on Cainozoic and Mesozoic sediments. (BVG1M: 12a)* *Vegetation communities in this regional ecosystem include:* *12.9-10.19a: Corymbia henryi and/or Eucalyptus fibrosa subsp. fibrosa open forest. Other commonly associated species include, Corymbia citriodora subsp. variegata, E. carnea, E. siderophloia, E. crebra and E. major. Occurs in coastal areas on Cainozoic and Mesozoic sediments. (BVG1M: 10b)*
Least Concern	RE 12.9-10.2	*Corymbia citriodora subsp. variegata open forest 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. (BVG1M: 10b)*

3.4. Biosecurity Act 2014

The *Biosecurity Act 2014*, which commenced on 1 July 2016, establishes a framework to regulate and control invasive plants and animals. Under the act, land owners are responsible for taking all reasonable and practical steps to minimise the risks associated with invasive plants and animals under their control. This is known as the general biosecurity obligation (GBO).

The act categorises restricted matter (restricted plants and animals) into the following:

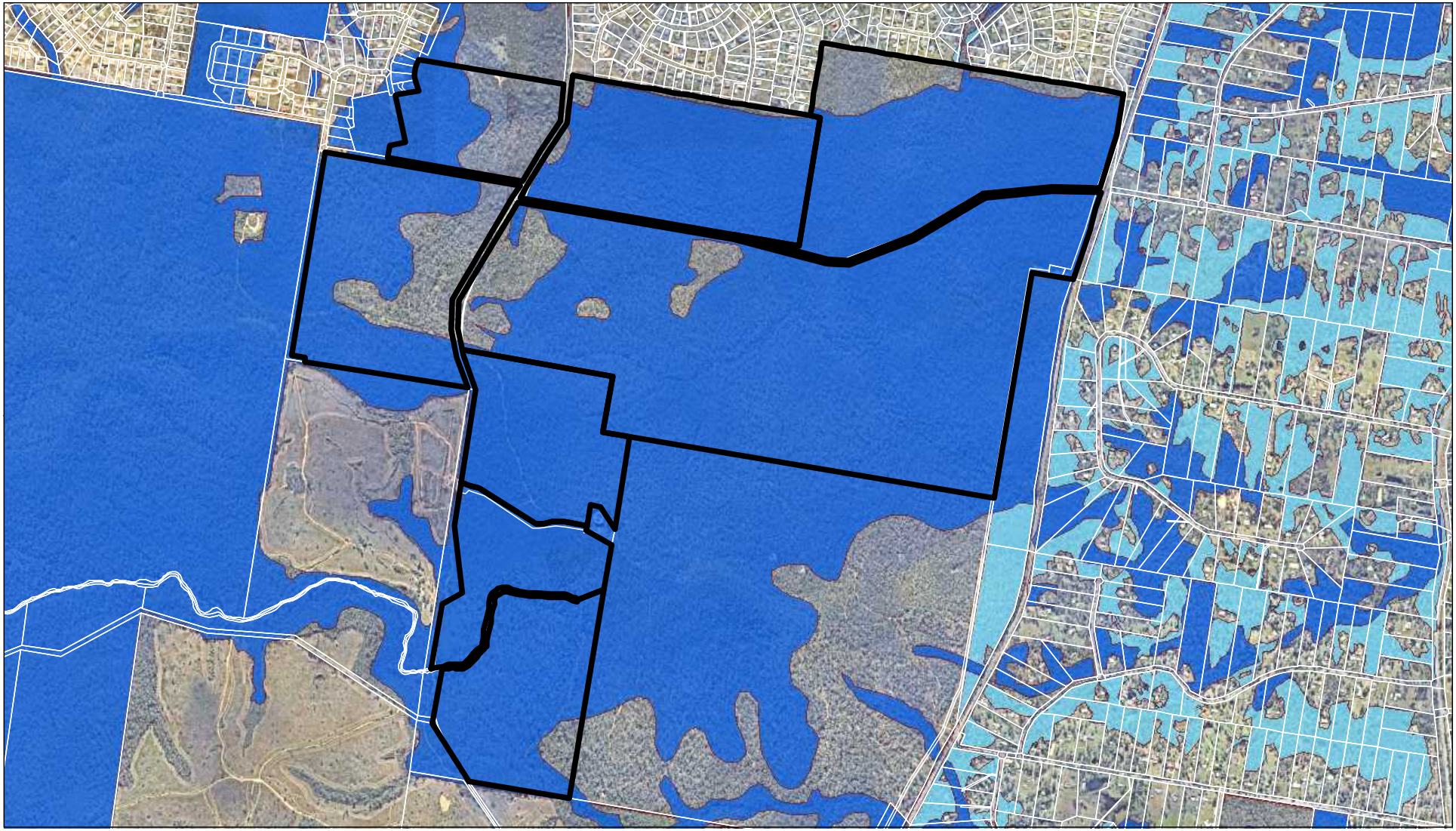
- Category 1: must be reported to an inspector within 24 hours (includes Red Imported Fire Ants, amongst others).
- Category 2: must be reported within 24 hours Biosecurity Queensland on 13 25 23.
- Category 3: must not be distributed either by sale or gift, or released into the environment.
- Category 4: must not be moved.
- Category 5: must not be kept.
- Category 6: must not be fed (animals).
- Category 7: Must be euthanised (animals).

Restricted matters observed in the site area discussed in Section 4

3.5. Fisheries Act 1994

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

The site is mapped as containing low and moderate risk waterways for waterway barrier works (WWBW) under SARA's Development Mapping Assessment System (DAMS) (refer **Figure 5**). Should any works be undertaken within the mapped waterways not meet the Accepted Development Requirements for Waterway Barrier Works, a response to State Code 18: Waterway Barrier Works may be required.



Legend

- Project lots
- Qld DCDB

Regulated Vegetation

- Category A area - *Vegetation Offset/Compliance notices/VDecs*
- Category B area - *Remnant vegetation*
- Category C area - *High value regrowth vegetation*
- Category R area - *Reef regrowth watercourse vegetation*
- Category X area - *Vegetation not regulated under the VMA*
- Water
- Area not categorised

Figure 3 *Regulated Vegetation Management Map*

0 100 200 400 600 800 1,000 *m*

N

Scale (A4): 1:25,000 *[GDA 1994 MGA Z56]*

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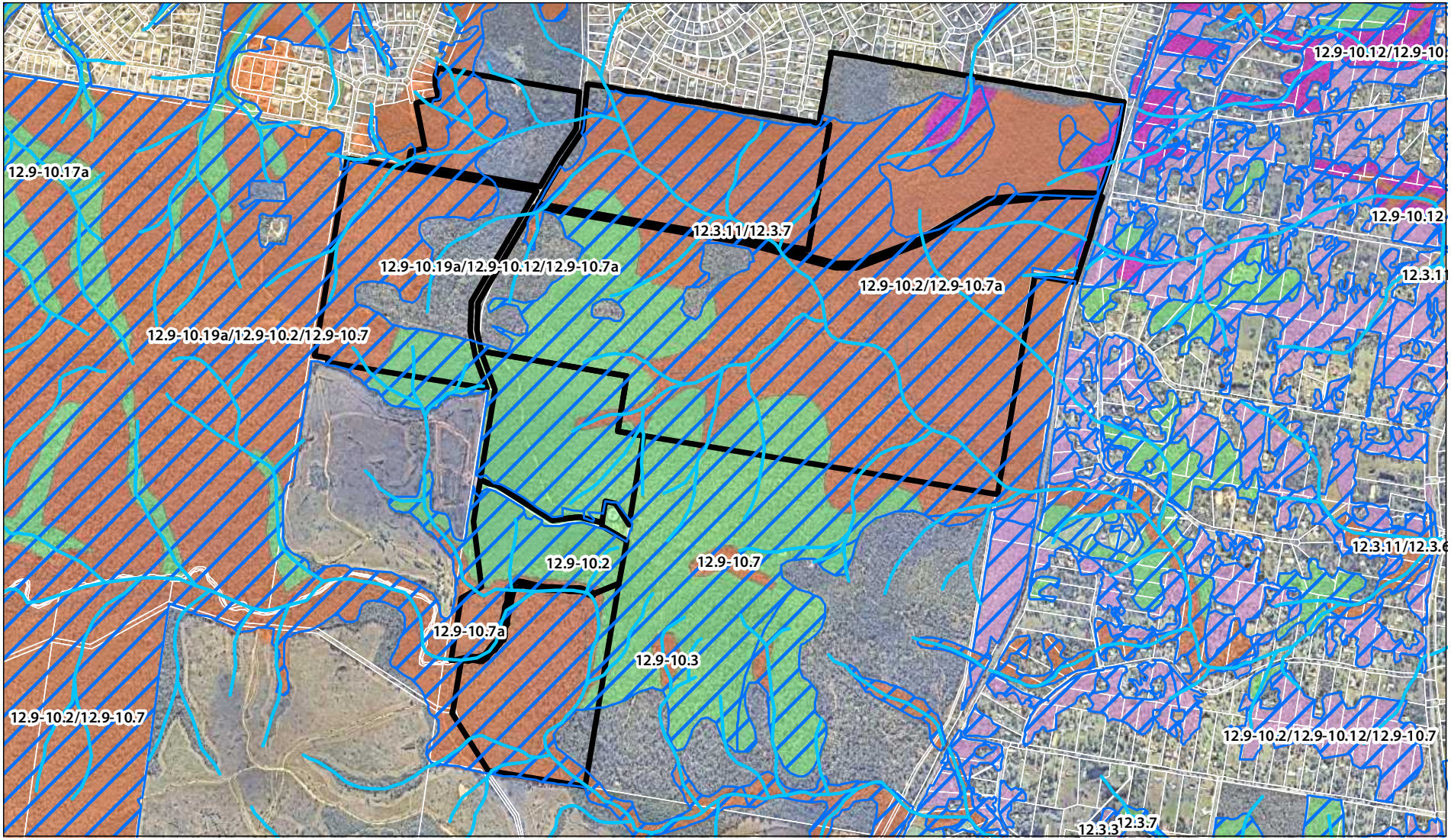
File ref. 8905 E Figure 3 RVMM B
Date *14/07/2022*
Project *New Beith Road, New Beith*



Legend

- Project lots
- Qld DCDB
- VM Watercourses
- VM Essential Habitat
- VM Wetland

Regional Ecosystems mapping

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

Figure 4 *Qld Regulated Vegetation Supporting Map*

0 200 400 600 800 1,000 *m*

N

Scale (A4): 1:26,000 *[GDA 1994 MGA Z56]*

NEW BEITH PTY LTD

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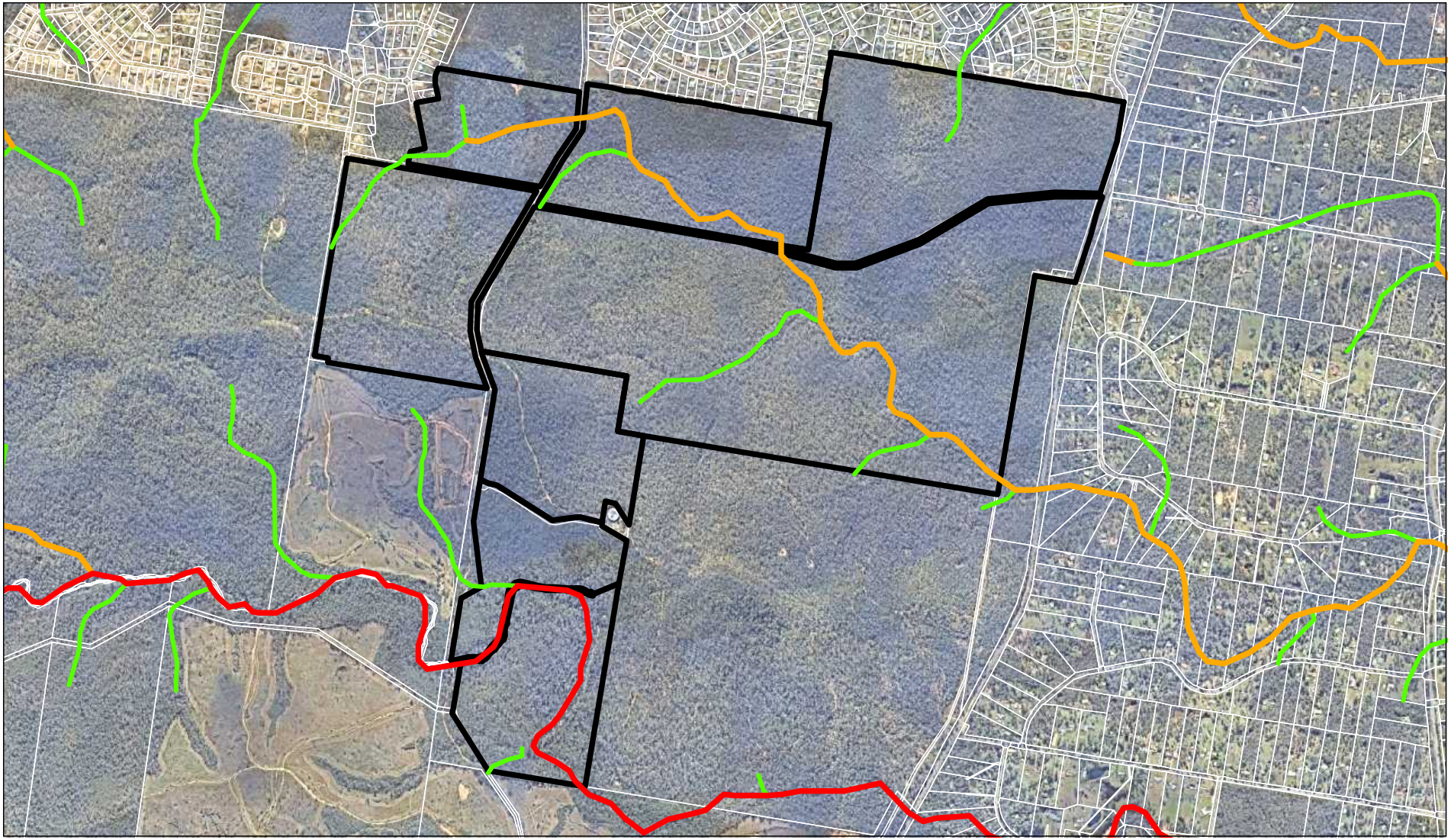
File ref. 8905 E Figure 4 RVSM B
Date *15/07/2022*
Project *New Beith Road, New Beith*



Legend

- Project lots
- Qld DCDB
- Waterways (QLD)
- Risk of Impact
  - 1 - Low
  - 2 - Moderate
  - 3 - High
  - 4 - Major

Figure 5 *Fisheries - Waterway for Waterway Barrier Works*

0 200 400 600 800 1,000 *m*

N

Scale (A4): 1:26,000 [GDA 1994 MGA Z56]

NEW BEITH PTY LTD

saunders havill group

File ref. 8905 E Figure 5 Fisheries B
Date *15/07/2022*
Project *New Beith Road, New Beith*

3.6. Other Queensland environmental legislation

Other Queensland environmental legislation has been reviewed in the context of the proposed development. **Table 5** lists other relevant Queensland legislation that is not triggered by the proposed development, the purpose of the legislation, and its relevance to the proposed development site.

Table 6: Site relevant to other Queensland environmental legislation

Legislation	Purpose	Relevance to Development Site
Coastal Protection and Management Act 1995	The act seeks to protect the coastal resources of the coastal zone.	The site does not contain any coastal areas. Therefore, a response to State Code 8 is not required.
State Planning Policy 2017 (SPP)	Provides interim development assessment requirements which ensures that state interests are considered by local government when assessing development applications where the local government planning scheme does not yet integrate the State interests in the SPP. Matters of State Environment Significance (MSES) include Biodiversity, Coastal Environment, and Water Quality.	The site is mapped as containing MSES – Wildlife Habitat, Regulated Vegetation Category B & C, Regulated Vegetation Essential Habitat and Regulated Vegetation Intersecting a Watercourse (refer **Appendix C**). These overlays have been incorporated into the Site layout where relevant.
Planning Regulation 2017	Addresses development within mapped Koala Habitat Areas by regulating the clearing of mapped Koala habitat and stipulating how it must be cleared. Schedule 10 Part 10 Division 1 of the Regulation outlines what is and is not prohibited development in a Koala habitat area. Schedule 11 of the Regulation sets the benchmarks for assessment in Koala Priorty Areas.	The site is located outside of any Koala Priority Area, but does maintain mapped Koala habitat (**Appendix C**). The provisions of the Koala framework do not apply in a PDA.

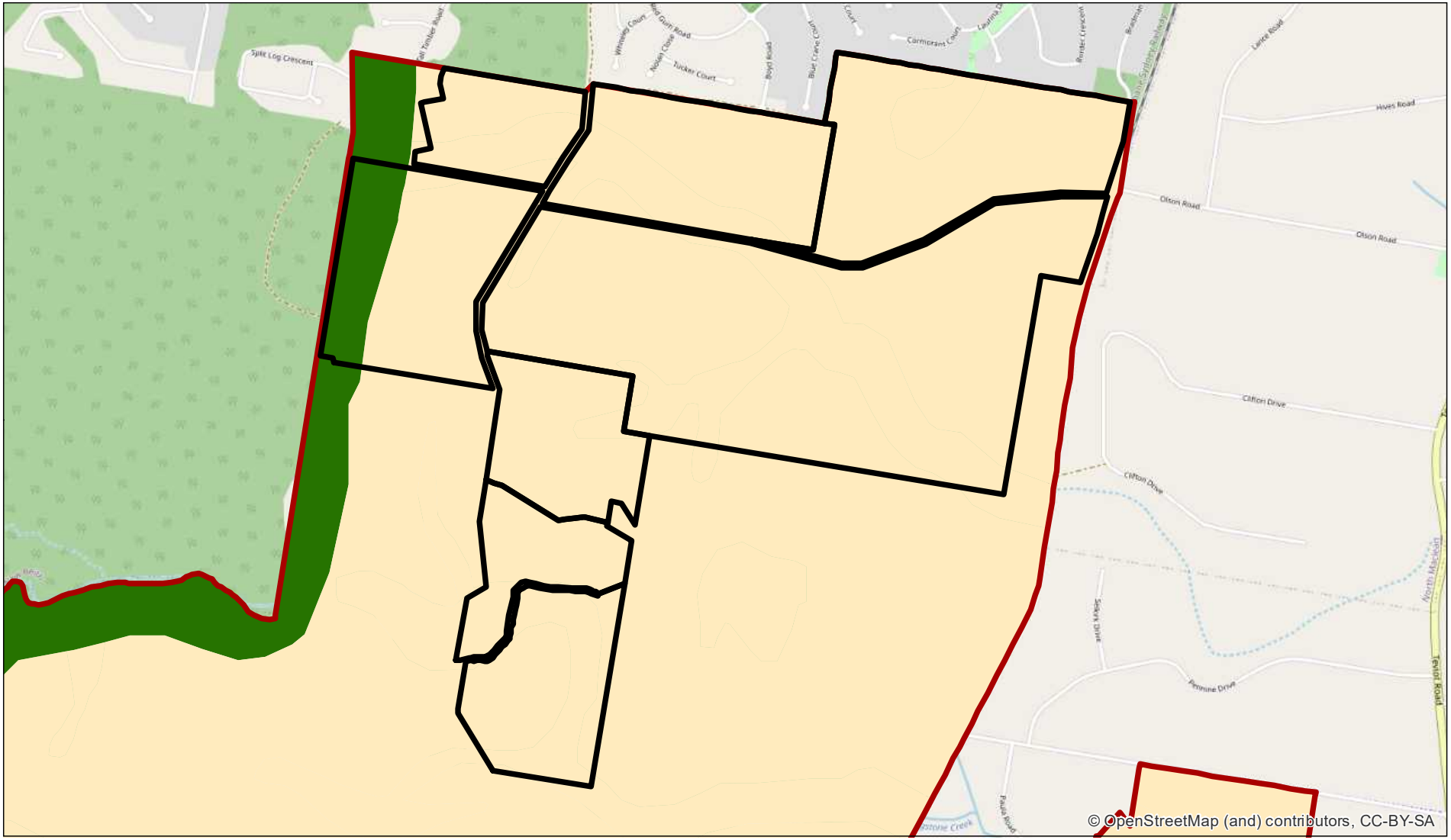
Refer to environmental searches in **Appendix C** for the location of the development site in regards to the above mapping layers.

3.7. Town planning instruments

The development proposal occurs within the Greater Flagstone Priority Development Area, declared under the *Urban Land Development Authority Act 2007,* now replaced by the *Economic Development Act 2012* (ED Act). This legislation supersedes the requirements of Local Government planning provisions (in this case, the Logan Planning Scheme) and selective other state legislation (e.g. *Planning Act 2017*, *Vegetation Management Act 1999*, and others).

On 8 October 2011, the Greater Flagstone PDA Development Scheme (Development Scheme) was approved by the State Government. The Development Scheme is the primary planning instrument which regulates development within the Greater Flagstone PDA. The Development Scheme zones the site predominantly as Urban Living, with a portion of Environmental protection zoning in the western extent of the site (refer **Figure 6**). It is noted that the two waterways, Flagstone Creek and Abrade Creek, are mapped as a Biodiversity Corridor under the Development Scheme (refer **Figure 7**). Potential Greenspace is also mapped in various areas across the site.

Development applications referred to EDQ for assessment against the Development Scheme will be assessed against the EDQ's Implementation Guidelines. Specifically, IG 14 and IG 17.



Legend

- Project lots
- Qld DCDB
- Greater Flagstone PDA
- Urban living
- Environmental protection

Figure 6 *EDQ Zoning*

0 200 400 600 800 1,000 *m*

N

Scale (A4): 1:26,000 *[GDA 1994 MGA Z56]*

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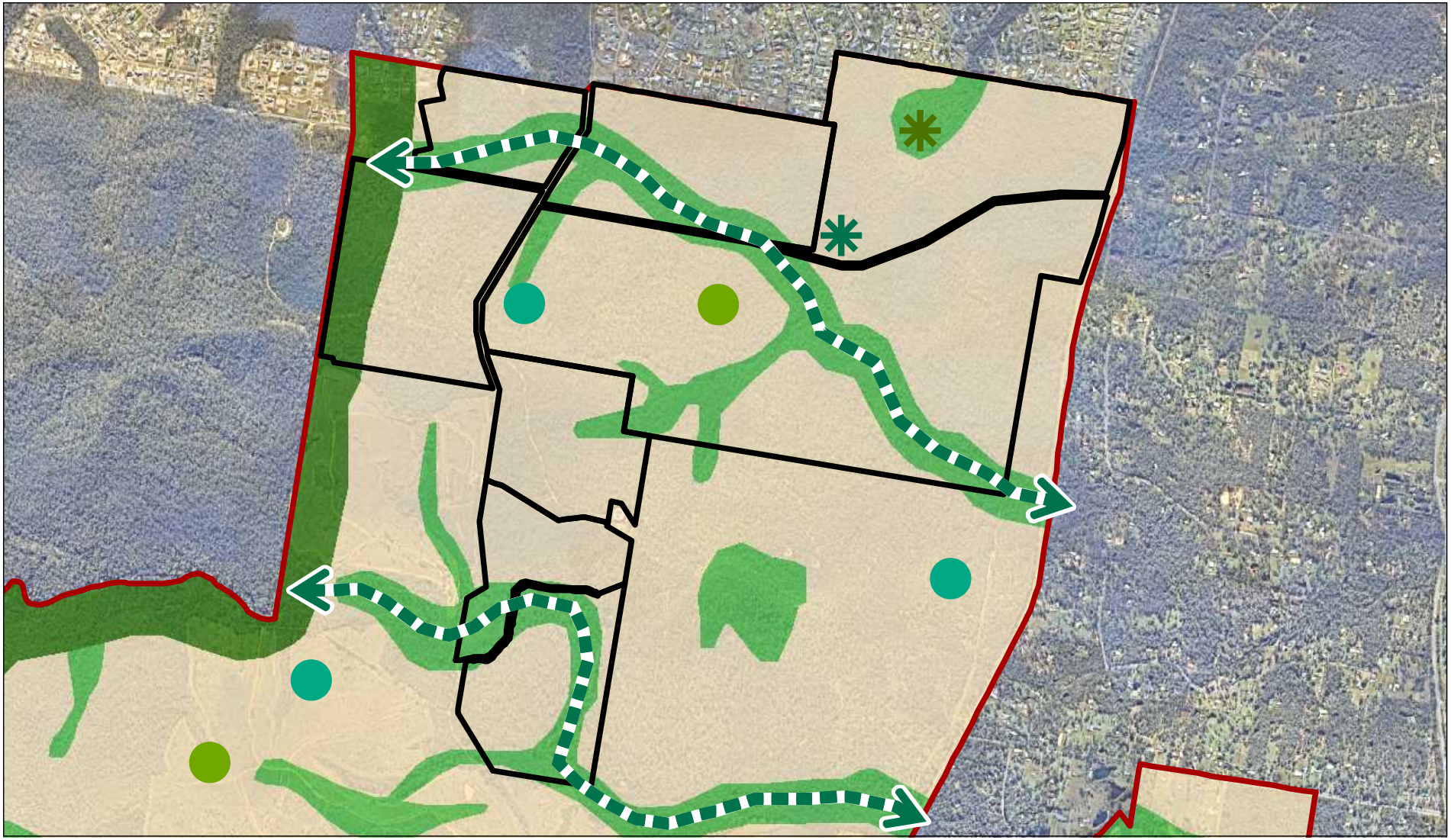
File ref.	8905 E Figure 6 EDQ Zoning B
Date	*15/07/2022*
Project	*New Beith Road, New Beith*



Legend

- Project Area
- Qld DCDB
- Greater Flagstone PDA
- Urban living
- Environmental protection
- Potential greenspace
- Biodiversity corridor
- Regional recreation park
- Regional sports park
- District recreation park
- District sports park

Figure 7 *Greater Flasgstone PDA Community Greenspace Network*

0 200 400 600 800 1,000 *m*

N

Scale (A4): 1:26,000 [GDA 1994 MGA Z56]

File ref.	8905 E Figure 7 EDQ Greenspace B
Date	*15/07/2022*
Project	*New Beith Road, New Beith*

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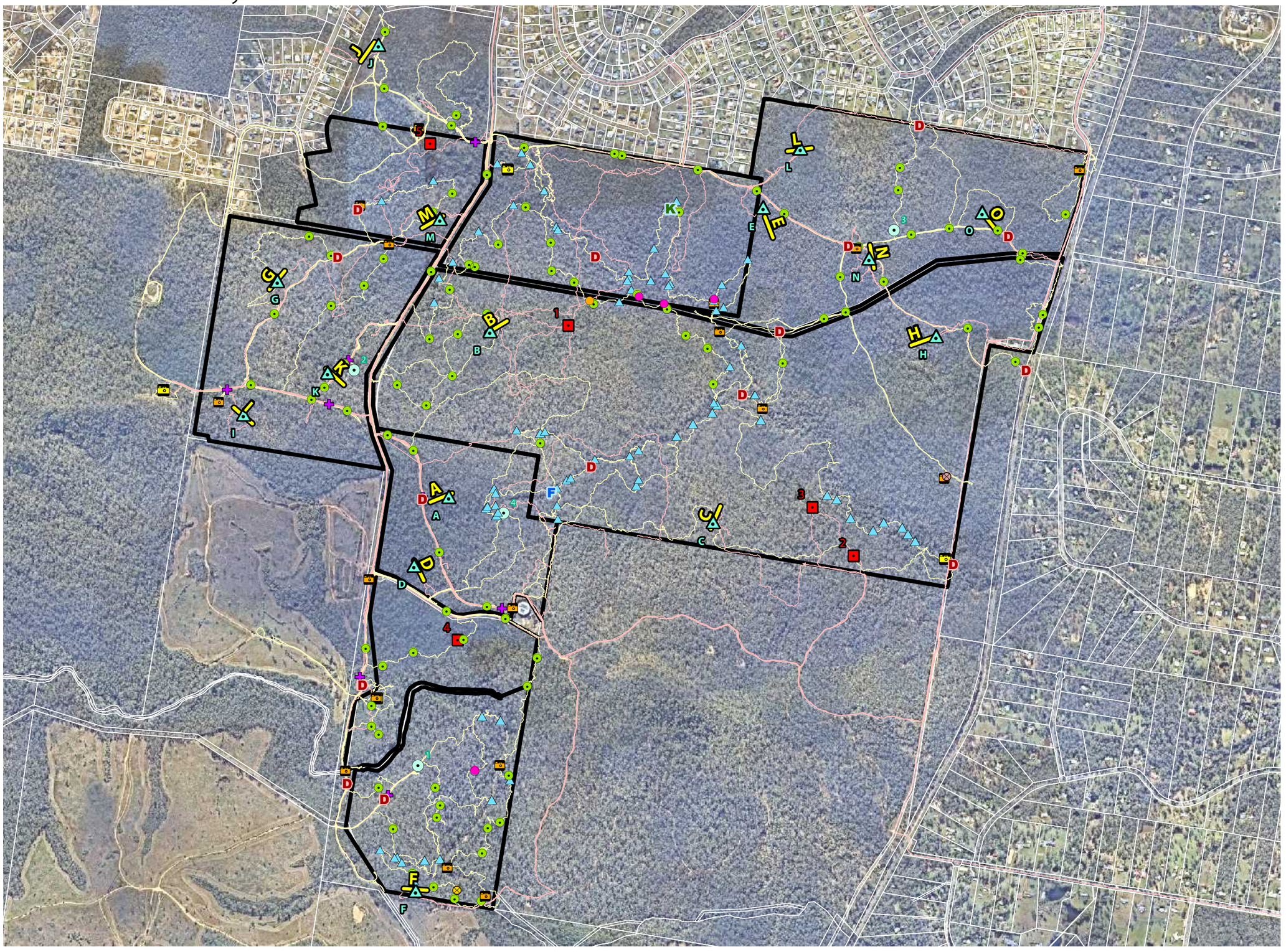
4. Ecological survey results

4.1. General site observations

- The subject site includes seven (7) lots, and totals approximately 609 hectares. The property is largely vegetated and is mapped as containing Category B vegetation that is primarily Least Concern and Of Concern regional ecosystem communities, with some minor areas of Endangered regional ecosystem communities (North- East incorrectly mapped). Category X vegetation is located in the west of the subject site, and a small patch central to the subject site. Evidence of historical land use including cattle yards and stock piling for logging practices occurred within the non-remnant areas was observed.
- The primary ecological features observed throughout the subject site are Flagstone and Abrade Creek. These portions of the creeks are mapped as containing Of Concern RE12.3.11/RE12.3.7, which contains essential habitat features for the *Phascolarctos cinereus* (Koala). Severe weed infestations were observed in both creeks, particularly within the ground and shrub layers however also recorded within the sub-canopy vegetative layers.
- Contextually, the subject site is located west of the Brisbane to Sydney Railway line, with New Beith Road intersecting the subject site in the western portion of the site. Contextually the site is amongst residential and rural residential lots to the north and east, and future development land to the south that has either been approved or is in the process of being approved.
- Dumping of rubbish and car bodies was observed in areas across the site, particularly in close proximity to 4WD access tracks that intersect the subject site. It is noted that a large portion of the subject site has been recently burnt due to a large bushfire stemming from the burning of a dumped car on site.
- Historical imagery shows widespread disturbance from historical logging practises and grazing. Logging evidence is present in the form of old felled logs and stumps. It is noted that dense native regrowth (namely *Acacia*) is prevalent, likely from the historical clearing that has taken place. Refer **Photos 1 to 4**.
- Field Survey Effort can be located on **Plan 2**
- A detailed likelihood of occurrence assessment is presented in **Appendix D**.

2. Field Survey Effort



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

Layer Sources
© State of Queensland (Department of Resources) 2022.
Updated data available at
http://qldspatial.information.qld.gov.au/catalogue/
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* This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

Legend

- Qld DCDB
- Project lots

PD Survey

- Camera
- SAT
- Observation Point
- Bird Survey
- GPS Track Log (PD Survey)

Referral Survey

- Bandicoot
- Camera
- Dog evidence
- Eastern Sedge Frog
- Fox evidence
- Koala
- Koala SAT
- Koala Scat
- Rocky outcrop
- Vegetation assessement/log
- Waterway assessment/log
- MQHA Transect
- GPS Track Log (Referral Survey)

Issue	Date	Description	Drawn	Checked
C	19/12/2022	Updated surveys	TC	AD

0 100 200 400 600 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:15,600 @A3

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New Beith




Photos 1-4: Disturbances on site (e.g access tracks, rubbish dumping, logging)

4.2. Flora assessment

The following flora observations have been made based on detailed field survey:

- The EPBC Act PMST listed eight (8) Threatened Ecological Communities (TECs) that may occur in, or relate to, the subject site (refer Section 3.1). These are described as the following:
    - The Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland Ecological community occurs in coastal catchments, mostly at elevations of less than 20 m above sea level that are typically found within 30 km of the coast however distance can vary by catchment. The canopy layer is dominated by *Casuarina glauca* (Swamp Oak) and in Queensland is represented by RE12.1.1 or RE12.3.20. None of these RE communities occur on site or within the immediate vicinity of the site.
    - The Coastal Swamp Sclerophyll Forest of New South Wales and Southeast Queensland TEC occurs in coastal catchments, typically within 20km of the coast and below 20m above seas level, on low lying coastal alluvial areas such as swamps, floodplain pockets, depressions, alluvial flats, back-barrier flats, fans, terraces and behind fore dunes. The canopy is dominated by Melaleuca spp. and / or Eucalyptus robusta, with other Eucalyptus species tolerant of

inundation present but not dominant. In Queensland this TEC is represented by RE12.2.7, RE12.3.4/12.3.4a, RE12.3.5, RE12.3.6, and RE 12.3.20. The pre-clear mapping indicates RE 12.5.2a occurred onsite before disturbances. None of these RE communities occur on site or within proximity of the site. Of note, the listing of this TEC post-dates the controlled action determination under the EPBC Act.

- The Grey Box – Grey Gum Wet Forest of Subtropical Eastern Australia is characterized by tall to very tall open canopy trees dominated by *Eucalyptus moluccana* (Gum-topped Box) and/or *Eucalyptus propinqua* (Small-fruited Grey Gum). It often includes *Araucaria cunninghamii* (Hoop Pine). In Queensland this TEC is often associated with RE 12.9-10.3 and RE12.8.14a. None of these RE communities occur on site or within proximity of the site.
- The Lowland Rainforest of Subtropical Australia TEC typically has high species richness. In Queensland, this TEC is part of a number of RE communities including 12.3.1, 12.5.13, 12.8.3, 12.8.4, 12.8.13, 12.11.1, 12.11.10, 12.12.1 and 12.12.16. None of these RE communities occur on site or within proximity of the site.
- Poplar Box Grassy Woodland on Alluvial Plains TEC is typically a grassy woodland with a canopy dominated by Eucalyptus populnea and understorey mostly of grasses and other herbs. The ecological community mostly occurs in gently undulating to flat landscapes and occasionally on gentle slopes on a wide range of soil types of alluvial and depositional origin. In Queensland, this TEC corresponds with 11.3.2, 11.3.17, 11.3.7, 11.4.12 and 12.3.10. None of these communities were observed on-site or within immediate vicinity of the development site.
- The Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions TEC. Canopy trees that characterise the ecological community include Angophora, Corymbia, Eucalyptus, Lophostemon and Syncarpia. In Queensland, this TEC is part of a number of RE communities including 12.3.3, 12.3.3a, 12.3.3d, 12.8.4, 12.3.19, 12.3.20, 12.3.10 and 12.3.18. None of these endangered RE communities occur on site or within the immediate vicinity of the site. Other REs that may represent this TEC will be retained within creek corridors on-site noting the listing of this TEC post-dates the controlled action determination under the EPBC Act.
- The Swamp Tea-tree (Melaleuca irbyana) Forest of South-east Queensland TEC usually comprises low open to closed forest, closed scrub or thickets dominated by Melaleuca irbyana (Swamp Tea-tree) with or without an emergent tree layer of scattered eucalypts, and occasionally as Eucalyptus woodland in which M. irbyana forms a distinct understorey stratum. In Queensland this TEC is represented by Regional Ecosystem 12.9-10.11. None of these RE communities occur on site or within the immediate vicinity of the site.
- The White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC is characterised by a species rich understorey of native tussock grasses, herbs and scattered shrubs and the dominance of White Box, Yellow Box or Blakely's Red Gum trees. This community is usually associated with regional ecosystems 11.8.2, 11.8.8, 11.9.9, 13.3.1, 13.11.8 and 13.12.9. These regional ecosystems occur mainly to the west of the Great Dividing Range.

  - No TECs, nor any conditions to support them, were observed on-site.

- The EPBC Act PMST listed eighteen (18) threatened flora species that may occur on the subject site (refer **Section 3.1**). None of these species were identified throughout the field survey.
- A search of the NCA Wildlife Online database listed one (1) threatened flora species as possibly occurring within the area, *Melaleuca irbyana*. This species was observed in some locations throughout the investigation area during the 2022 survey period.
- Vegetation Communities have been grouped in **Plan 3.**
- All flora species observed during field surveys are listed in **Table 8** and **Table 9**.

The majority of the site is mapped as remnant vegetation under the *Vegetation Management Act 1999* (VMA), comprising approximately 351.9 ha of the 609.5 ha referral area. It is noted that the site has been subject to a lock it in Property Map of Assessable Vegetation (PMAV) assessment which was certified by the then Queensland Department of Natural Resources, Mines and Energy (DNRME) (now Department of Resources, DOR) (PMAV 2018/001163) which provide rectification of mapped REs by on ground field survey.

The vegetation is dominated by Of Concern composite Regional Ecosystem 12.9-10.2/12.9-10.7 with the central waterway mapped as Of Concern composite RE12.3.11/12.3.7 (80/20%). Small pockets of composite RE 12.9-10.12/12.9-10.2 containing Endangered as absent from the impact area. A summary of the mapped Regional Ecosystems is provided in **Table** 7 **7**.

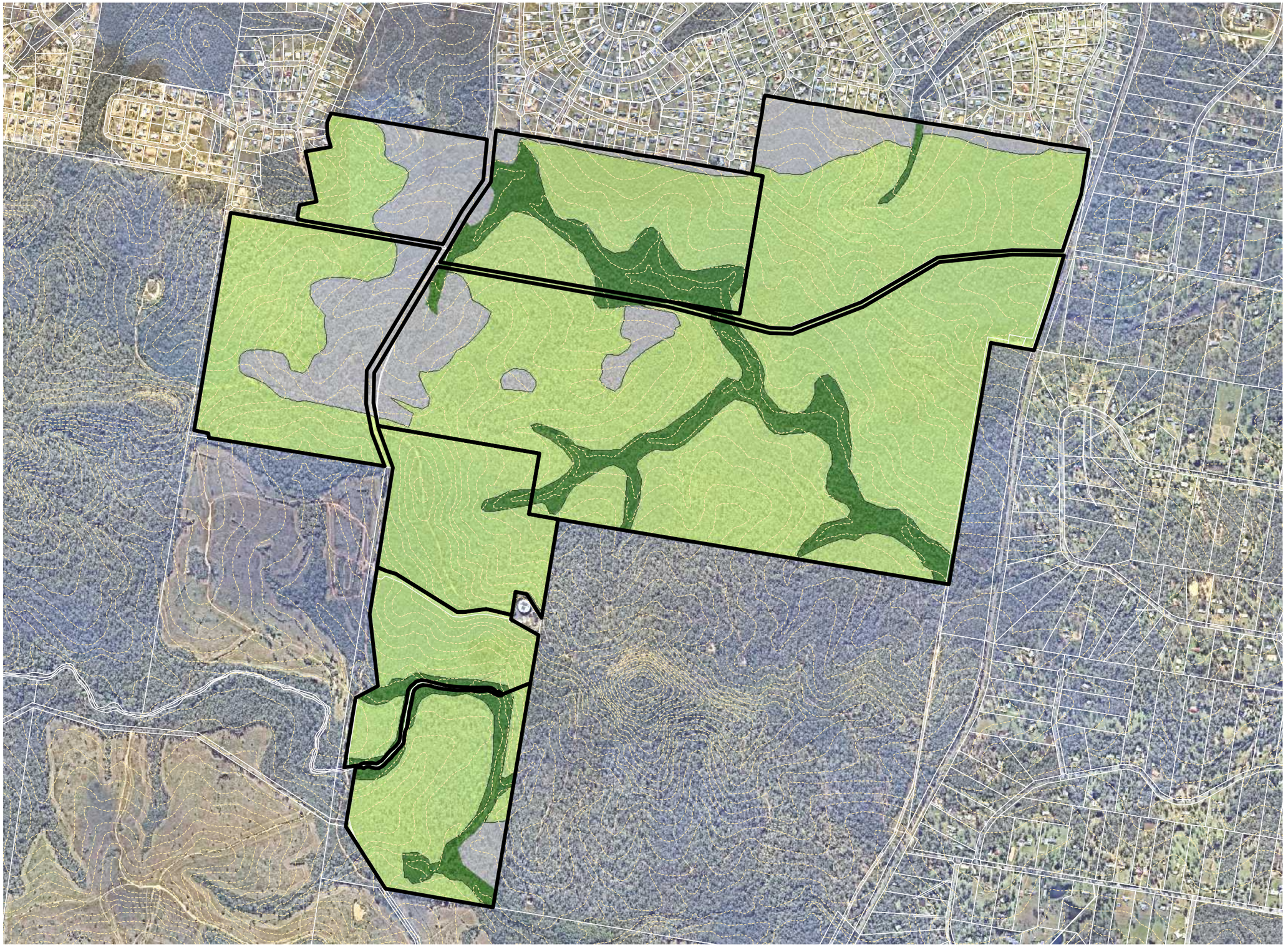
Table 7: PMAV – Regional Ecosystem Descriptions

Regional Ecosystem	VMA Status	Short Description
12.9-10.2 / 12.9-10.7	Of Concern	*Composite RE containing:* *RE12.9-10.2 Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks* *RE12.9-10.7 Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora spp., E. melanophloia woodland on sedimentary rocks*
12.9-10.2	Least Concern	*Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks*
12.3.11 / 12.3.7	Of Concern	*Composite RE containing:* *RE12.3.11 Eucalyptus tereticornis +/- Eucalyptus siderophloia, Corymbia intermedia open forest on alluvial plains usually near coast* *RE12.3.7 Eucalyptus tereticornis, Casuarina cunninghamiana subsp. cunninghamiana +/- Melaleuca spp. fringing woodland*
12.9-10.12* / 12.9-10.2	Endangered	*Composite RE containing:*

Regional Ecosystem	VMA Status	Short Description
		RE12.9-10.12 Mixed woodland usually containing Corymbia intermedia, Angophora leiocarpa and at least the presence of Eucalyptus seeana on sedimentary rocks *RE12.9-10.2 Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks*
12.9-10.19 / 12.9-10.2 / 12.9-10.7	Of Concern	*Composite RE containing:* *RE12.9-10.19 Eucalyptus fibrosa subsp. fibrosa woodland +/- Corymbia citriodora subsp. variegata, E. acmenoides or E. portuensis, Angophora leiocarpa, E. major. Understorey often sparse. Localised occurrences of Eucalyptus sideroxylon. Occurs on Cainozoic and Mesozoic sediments. (BVG1M: 12a)* *RE12.9-10.2 Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks* *RE12.9-10.7 Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora spp., E. melanophloia woodland on sedimentary rocks*
RE12.9-10.7a*	Of Concern	*Eucalyptus siderophloia, Corymbia intermedia +/- E. tereticornis and Lophostemon confertus open forest. Occurs on Cainozoic and Mesozoic sediments in near coastal areas. (BVG1M: 12a)*
Non-remnant	None	Non-remnant vegetation

**Not part of impact area.*

3. Vegetation Communities



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

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Legend

- Qld DCDB
- Project lots
- Contours (5m)

Vegetation Communities

- Non-remnant vegetation areas
- Remnant ridgelines and slopes
- Remnant riparian corridor areas

Issue	Date	Description	Drawn	Checked
B	20/07/2022	Preliminary	TC	AD

0 100 200 400 600 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:15,600 @ A3

saunders havill group

NEW BEITH PTY LTD

New Beith

ADDRESS/RPD: New Beith Road *20/07/2022* *8905 E 03 Veg Assessment Zones B*

4.2.1 Flora species lists

The following flora observations have been made based on a thorough assessment of the site during the recent 2019 and 2022 surveys:

- The total of one hundred and eighty-three (183) flora species were identified across the investigation area, of which one-hundred and four (104) species are native flora species and the remaining seventy-nine (79) are introduced or weed species (refer to **Table 8** for the native flora species list and **Table 9** for the introduced species list).
- Of the seventy-nine (79) introduced species recorded throughout the survey period, ten (10) are listed under Queensland's *Biosecurity Act 2014,* as 'Restricted Invasive Weed' during recent 2022 surveys.
    - Restricted matters must not be distributed, meaning it must not be given as a gift, sold, traded or released into the environment unless the distribution or disposal is authorised in a regulation or under a permit. Deliberate human distribution or disposal contrary to the legislation is a key source of spread into other areas of the state.
    - Introduced species were recorded throughout the majority of the investigation area, with greater abundance in close proximity to disturbances (access tracks, historically cleared areas, areas neighbouring the residential developments), and dense *Lantana camara* (Lantana) observed within the waterway corridors (see **Photos 5-6 below**).


Photos 5-6 Areas within waterway corridors containing Lantana infestations

Table 8: Native flora species list

Scientific name	Common name	2019	2022
Acacia concurrens	Black Wattle	Y	
Acacia disparrima	Hickory Wattle	Y	Y
Acacia fimbriata	Fringed Wattle		Y
Acacia leiocalyx	Early Flowering Black Wattle	Y	Y
Acacia podalyriifolia	Silver Wattle	Y	Y
Acacia salicina	Sally Wattle		Y
Adiantum atroviride	Maidenhair Fern		Y
Adiantum hispidulum	Rough Maidenhair Fern		Y
Allocasuarina littoralis	Black She Oak	Y	Y
Alphitonia excelsa	Soap Tree	Y	Y
Angophora leiocarpa	Smooth-barked Apple	Y	
Angophora subvelutina	Broad-leaved Apple	Y	Y
Banksia integrifolia	Coastal Banksia	Y	Y
Breynia oblongifolia	Coffee Bush	Y	Y
Bursaria spinosa	Black Thorn	Y	Y
Casuarina cunninghamiana	River Oak	Y	Y
Cheilanthes distans	Bristle Cloak Fern	Y	Y
Chrysocephalum apiculatum	Yellow Buttons	Y	Y
Corymbia intermedia	Pink Bloodwood	Y	Y
Corymbia ptychocarpa	Swamp Bloodwood	Y	
Corymbia tessellaris	Moreton Bay Ash	Y	Y
Cupaniopsis anacardoides	Tuckeroo	Y	Y
Cymbopogon refractus	Barbed Wire Grass	Y	Y
Cyperus haspan	A Flat Sedge		Y
Cyperus polystachyos	Bunchy Sedge	Y	
Dianella caerulea	Blue Flax Lily	Y	Y
Dodonaea viscosa	Hop Bush		Y
Drosera peltata	Tall Sundew	Y	
Drosera spatulata	Spoon-leaved Sundew		Y
Eleocharis equisetina	Spike Rush		Y
Eremophila deblis	Winter Apple		Y
Endiandra sieberi	Corkwood	Y	
Eucalyptus microcorys	Tallowwood	Y	
Eucalyptus moluccana	Gum Topped Box	Y	Y
Eucalyptus seeana	Narrow-leaved Red Gum	Y	
Eucalyptus siderophloia	Grey Ironbark	Y	Y

Scientific name	Common name	2019	2022
Eucalyptus tereticornis	Forest Red Gum	Y	Y
Eustrephus latifolius	Wombat Berry	Y	Y
Exocarpos cupressiformis	Native Cherry		Y
Ficus coronata	Creek Sandpaper Fig	Y	Y
Ficus macrophylla	Moreton Bay Fig		Y
Ficus rubiginosa	Port Jackson Fig	Y	Y
Ficus virens	White Fig	Y	
Fimbristylis ferruginea	A Fringe Rush	Y	Y
Gahnia aspera	Sword Sedge	Y	Y
Geitonoplesium cymosum	Scrambling Lily	Y	Y
Geodorum densiflorum	Pink Knodding Orchid		Y
Glochidion sumatranum	Large-leaved Cheese Tree	Y	Y
Goodenia rotundifolia	Goodenia	Y	Y
Grevillea banksii	Red Silky Oak		Y
Grevillea robusta	Silky Oak	Y	Y
Grewia latifolia	Dog's Balls	Y	Y
Haemodorum austroqueenslandicum	Blood Root		Y
Haemodorum tenuifolium	Blood Root	Y	
Hardenbergia violacea	Native Sarsaparilla	Y	Y
Heteropogon contortus	Blackspear Grass	Y	Y
Hybanthus stellarioides	Spade Flower	Y	Y
Hydrocotyle tripartita	Small-leaved Pennywort		Y
Imperata cylindrica	Blady Grass	Y	Y
Jacksonia scoparia	Dogwood	Y	
Jagera pseudorhus	Foambark	Y	Y
Juncus usitatus	Common Rush	Y	Y
Leersia hexandra	Swamp Ricegrass	Y	Y
Lepironia articulata	Grey Rush		Y
Lepidosperma laterale	Variable Sword Sedge		Y
Leptospermum brachyandrum	Weeping Tea-tree	Y	
Lobelia purpurascens	White Root	Y	Y
Lomandra hystrix	Creek Mat Rush	Y	Y
Lomandra longifolia	Mat Rush	Y	Y
Lomandra multiflora	Many-flowered Mat Rush	Y	Y
Lophostemon confertus	Brush Box	Y	Y
Lophostemon suaveolens	Swamp Box	Y	Y
Ludwigia octovalvis	Native Willow Primrose		Y

Scientific name	Common name	2019	2022
Lygodium microphyllum	Climbing Maidenhair Fern		Y
Macaranga tanarius	Macaranga	Y	Y
Mallotus philippensis	Red Kamala	Y	Y
Melaleuca irbyana	Swamp Tea Tree		Y
Melaleuca linarifolia	Snow in Summer	Y	Y
Melaleuca quinquenervia	Broad-leaved Paperbark	Y	Y
Melaleuca saligna	Willow Bottlebrush		Y
Melaleuca viminalis	Weeping Bottlelbrush	Y	Y
Melia azedarach	White Cedar	Y	Y
Murdannia graminea	Slug Herb		Y
Nymphoides indica	Water Snowflakes		Y
Oplismenus aemulus	Creeping Beard Grass	Y	Y
Panicum decompositum	Native Millet		Y
Parsonsia straminea	Monkey Rope Vine	Y	Y
Patersonia sericea	Native Iris	Y	Y
Petalostigma pubescens	Quinine Bush	Y	Y
Phyllanthus virgatus	Phyllanthus		Y
Poa labillardieri	Tussock Grass	Y	
Pomax umbellata	Pomax	Y	Y
Pteridium esculentum	Bracken	Y	Y
Rhynchosia minima	Rhynchosia		Y
Schizaea bifida	Forked Comb Fern		Y
Smilax australis	Barbed Wire Vine	Y	Y
Stephania japonica	Tape Vine	Y	Y
Themeda triandra	Kangaroo Grass	Y	Y
Trema tomentosa	Poison Peach	Y	Y
Triglochin procerum	Water Ribbins		Y
Vigna vexillata	Wild Cowpea	Y	
Viola banksii	Ivy-leaf Violet		Y
Wahlenbergia gracilis	Small-flowered Bluebell	Y	Y
Xanthorrhoea johnsonii	Johnson's Grass Tree	Y	Y

Table 9: Introduced species list

Scientific name	Common name	Biosecurity Act listed species	2019	2022
Ageratina riparia	Mistflower		Y	
Ageratum conyzoides	Billygoat Weed			Y
Ageratum houstonianum	Blue Billygoat Weed		Y	Y
Alloteropsis semialata	Cockatoo Grass		Y	Y
Ambrosia artemisiifolia	Annual Ragweed	Restricted Invasive Plant	Y	Y
Andropogon virginicus	Whisky Grass		Y	Y
Asclepias curassavica	Red-head Cotton Bush			Y
Asparagus africanus	Climbing Asparagus	Restricted Invasive Plant	Y	
Asparagus aethiopicus	Ground Asparagus Fern			Y
Baccharis halimifolia	Groundsel Bush	Restricted Invasive Plant	Y	Y
Bidens pilosa	Cobbler's Pegs		Y	Y
Calyptocarpus vialis	Creeping Cinderella Weed		Y	Y
Cassytha glabella	Devil's Twine		Y	Y
Cenchrus setaceus	African Fountain Grass			Y
Celtis sinensis	Chinese Elm	Restricted Invasive Plant		Y
Centella asiatica	Pennywort		Y	Y
Chloris gayana	Rhodes Grass		Y	Y
Chloris virgate	Feathertop Rhodes Grass		Y	
Cirsium vulgare	Spear Thistle			Y
Cinnamomum camphora	Camphor Laurel	Restricted Invasive Plant		Y
Commelina diffusa	Wandering Jew		Y	Y
Conyza bonariensis	Flaxleaf Fleabane		Y	Y
Conyza sumatrensis	Tall Fleabane			Y
Corymbia torelliana	Cadaghi			Y
Crassocephalum crepidioides	Thickhead			Y
Cynodon dactylon	Couch			Y
Cyperus polystachyos	Bunchy Sedge			Y
Cyperus rotundus	Nutgrass			Y
Desmodium intortum	Greenleaf Desmodium			Y
Desmodium rhytidophyllum	Hairy Trefoil		Y	Y
Dyschoriste depressa	Dyschoriste			Y
Emilia sonchifolia	Emilia			Y
Eragrostis curvula	African Lovegrass		Y	
Eremophila debilis	Winter Apple		Y	
Gomphocarpus physocarpus	Balloon Cotton Bush		Y	Y
Gompholobium foliolosum	Fer-leaved Wedge Pea		Y	

Scientific name	Common name	Biosecurity Act listed species	2019	2022
Gomphrena celosioides	Gomphrena			Y
Heliotropium amplexicaule	Blue Heliotrope		Y	Y
Jacaranda mimosifolia	Jacaranda			Y
Lantana camara	Lantana	Restricted Invasive Plant	Y	Y
Lantana montevidensis	Creeping Lantana	Restricted Invasive Plant		Y
Leucaena leucocephala	Leucaena			Y
Ludwigia peploides	Water Primrose			Y
Megathyrsus maximus	Guinea Grass			Y
Melinis repens	Red Natal Grass		Y	Y
Morus alba	Mulberry		Y	
Murraya paniculata	Mock Orange		Y	Y
Neonotonia wightii	Glycine		Y	Y
Nephrolepis cordifolia	Fishbone Fern			Y
Nymphaea caerulea	Blue Water Lily			Y
Ochna serrulata	Ochna		Y	Y
Opuntia tomentosa	Prickly Pear	Restricted Invasive Plant	Y	Y
Oxalis corniculata	Yellow Wood-sorrel			Y
Ozothamnus diosmifolius	Sago Flower		Y	Y
Paspalum dilatatum	Paspalum			Y
Passiflora suberosa	Corky Passion Vine		Y	Y
Pennisetum alopecuroides	Foxtail Grass			Y
Persicaria decipiens	Slender Knotweed		Y	Y
Philydrum lanuginosum	Woolly Frogmouth			Y
Pinus elliotii	Slash Pine		Y	Y
Psidium guajava	Guava			Y
Schinus terebinthifolia	Broadleaved Pepper	Restricted Invasive Plant	Y	Y
Senecio madagascariensis	Fireweed	Restricted Invasive Plant	Y	Y
Senna pendula	Easter Cassia		Y	Y
Setaria sphacelata	South African Pigeon Grass			Y
Sida cordifolia	Flannel Weed		Y	Y
Solanum chrysotrichum	Giant Devil's Fig			Y
Solanum mauritianum	Wild Tobacco Tree		Y	Y
Solanum nigrum	Blackberry Nightshade		Y	Y
Solanum seaforthianum	Brazilian Nightshade		Y	Y
Solanum torvum	Devil's Fig			Y
Sporobolus jacquemontii	American Rats Tail Grass	Restricted Invasive Plant	Y	Y
Stenotaphrum secundatum	Buffalo Grass			Y

Scientific name	Common name	Biosecurity Act listed species	2019	2022
Syagrus romanzoffiana	Cocos Palm		Y	Y
Tagetes minuta	Stinking Roger			Y
Typha orientalis	Typha		Y	Y
Urena lobata	Urena Burr			Y
Vallisnersia nana	Ribbon Weed			Y
Xanthium pungens	Noogoora Burr			Y

4.3. Watercourse observations

- Two (2) major Fisheries mapped waterways were located over the site. Abrade Creek transects the northern portion of the site, generally running in a north-westerly to south-easterly direction. Flagstone Creek winds through the southern extent of the subject site, running in a similar direction to Abrade Creek. A minor waterway line is mapped in the north-east of the subject site, beginning on site and running north into the residential area to the north.
- The minor waterway that is mapped was observed as a drainage feature, with limited bed and bank features and a very small dam that appeared to be of a constructed nature (Refer Photos 7-8). The dam was stagnant at the time of survey. Where the mapped waterway intersects the site boundary, the drainage line was in the form of a drainage depression and smothered by introduced grasses and weeds. There were no riparian features observed across this drainage feature.
- Flagstone Creek and Abrade Creek contain defined bed and bank features along much of their length on site. These creeks are best described as pools connected by small flowing riffles, with channel widths varying between approximately 45 cm to 3 metres (refer **Photos 7-8**). Minor flow were observed at the time of assessment, however evidence of flood debris was observed throughout the flood plain. A number of overland flow channels feed into the main creeks.
- The vegetation fringing the creeks included a mix of riparian and wetland species, with wetland dependent flora most abundant around the pooled areas, and some areas containing very limited riparian and wetland dependent species. The riparian/wetland species included species such as *Rhynchospora corymbosa* (Matamat), *Lomandra hystrix* (Green Mat-Rush), *Persicaria sp., Melaleuca viminalis* (Weeping Bottlebrush), and *Casuarina cunninghamiana* (River She-Oak). The trailing vegetation is generally consistent with the Of Concern RE 12.3.11/12.3.7, and dominated by *Eucalyptus tereticornis, Melaleuca quinquenervia, Corymbia intermedia* and *Lophostemon suaveolens*.
- A small patch of *Pinus elliottii* was observed along Flagstone Creek, where the flow path crosses the southern boundary. *Lantana camara* was observed in greatest density towards the creek banks. Evidence of forestry was less pronounced along the waterways.
- Instream habitat was observed in areas within Abrade and Flagstone Creeks, which included overhanging banks and logs/woody debris, deposited gravel and sand, and some exposed rock in channel and on banks. Approximately 65-80% shading was observed.

- Limited aquatic fauna was observed throughout the assessment, but included an Eastern Sedge Frog (*Litoria fallax*), and an Eastern Water Dragon (*Physignathus lesueurii*).


Photos 7-8: Minor mapped waterway in north-east of subject site




Photos 9-12: Flagstone Creek and tributaries on site

Photos 13-16: Abrade Creek and tributaries on site

4.4. Fauna assessment

The following observations were made during site surveys regarding fauna:

- The EPBC Act PMST listed twenty-six (26) threatened fauna species and nine (9) listed NCA species that may occur on the subject site (refer **Section 3.1**).
- A total of one-hundred and four (104) fauna species were recorded across the 2018, 2021 and 2022 survey periods, including seventy-five (75) birds, sixteen (16) mammals, nine (9) reptiles and four (4) amphibian species (refer **Table 10**). This included species that were either heard or observed within the subject site (including evidence of their existence on site, ie. scats), or observed as fly-overs. Of the observed fauna species, six (6) MNES species were recorded including the listed Vulnerable (now Endangered) *Phascolarctos cinereus* (Koala), Vulnerable *Pteropus poliocephalus* (Grey-headed Flying-fox), Marine *Cacomantis flabelliformis* (Fan-tailed Cuckoo), *Scythrops novaehollandiae* (Channel-billed Cuckoo), *Merops ornatus* (Rainbow Bee-eater) and Migratory *Rhipidura rufifrons* (Rufous Fantail).
- The avian species included a variety of common avi-fauna, which are likely to be utilising the site as part of a broader home range. The majority of fauna species identified on site are relatively common and to be expected on a site of this nature, and containing creek corridors.

- Habitat features identified during field survey included numerous hollow logs, with many associated with logging, and a rocky outcrop in the east of the site. Other habitat features such as large mature trees with hollows were limited.
- Pest species such as the fox and brown hare were identified on site. Evidence of wild and/or domestic dogs were recorded across the site, in the form of prints and camera footage during 2018 and recent 2021-2022 survey periods (refer **Photos 17-22**).

4.4.1 Camera Traps

total of seven (7) infrared sensing cameras with an infrared flash were deployed, which are triggered by motion. Cameras were set up in areas assessed as most likely to detect fauna (refer **Plan 2**). Specifically, for this site, cameras were located in watercourses, areas of exposed rock and at a dam. Cameras were attached 30-50cm (2018) and 30-100cm (2021-2022) from the ground on a tree, and directed towards an area likely to be used by fauna. Cameras were left to record for 12 days over the period from 15th February 2018 – 2nd March 2018. In the 2021 surveys, four (4) cameras were installed across the site. The cameras were installed on 20 May 2021 and removed on 7 June 2021 for a total of 18 days. In the most recent survey period completed in July/August 2022, a systematic grid-sampling deployment method of motion-triggered cameras was used. This included two rounds of seven (7) cameras deployed for 14 days which were baited with chicken necks The cameras were either set to capture a multi-burst of photos, a short video, or video and photos when triggered. The variation in set up was to increase the redundancy of data collection and reduce the risk of data collection failure that can result from false triggering and battery depletion.

Camera traps recorded a diverse suite of fauna from across the site. Four (4) of the seven (7) camera traps recorded fauna over the 2018 survey period. The fauna recorded by each camera during survey periods 2018-2022 is presented in Table 10, and examples of the fauna recorded are provided in **Photos 17-22**.

Table 10: Fauna species list

Species Name	Common Name	Introduced/ Native	EPBC Act	Detection Technique	2018	2021	2022
Birds							
Acanthiza pusilla	Brown Thornbill	Native	Least Concern	Direct sighting or call			Y
Acanthiza reguloides	Buff-rumped Thornbill	Native	Least Concern	Direct sighting or call			Y
Alectura lathami	Australian Brush-turkey	Native	Least Concern	Direct sighting or call, camera	Y		Y
Alisterus scapularis	Australian King Parrot	Native	Least Concern	Direct sighting or call	Y		
Aquila audax	Wedge-tailed Eagle	Native	Least Concern	Direct sighting or call	Y		Y
Cacatua galerita	Sulphur-crested Cockatoo	Native	Least Concern	Direct sighting or call		Y	Y

Species Name	Common Name	Introduced/ Native	EPBC Act	Detection Technique	2018	2021	2022
Cacomantis flabelliformis	Fan-tailed Cuckoo	Native	Marine	Direct sighting or call			Y
Cacomantis variolosus	Brush Cuckoo	Native	Least Concern	Direct sighting or call			Y
Centropus phasianinus	Pheasant Coucal	Native	Least Concern	Direct sighting or call	Y	Y	Y
Chenonetta jubata	Australian Wood Duck	Native	Least Concern	Direct sighting or call	Y	Y	
Climacteris picumnus	Brown Treecreeper	Native	Least Concern	Direct sighting or call	Y		Y
Columba leucomela	White-headed Pigeon	Native	Least Concern	Direct sighting or call		Y	
Coracina novaehollandiae	Black-faced Cuckoo-shrike	Native	Least Concern	Direct sighting or call	Y		Y
Corvus orru	Torresian Crow	Native	Least Concern	Direct sighting or call, camera	Y	Y	Y
Coturnix ypsilophora	Brown Quail	Native	Least Concern	Direct sighting	Y	Y	
Cracticus nigrogularis	Pied Butcherbird	Native	Least Concern	Direct sighting or call	Y		
Cracticus torquatus	Grey Butcherbird	Native	Least Concern	Direct sighting or call			Y
Dacelo novaeguineae	Laughing Kookaburra	Native	Least Concern	Direct sighting or call, camera			Y
Dendrocygna eytonii	Plumed Whistling Duck	Native	Least Concern	Direct sighting	Y		
Dicrurus bracteatus	Spangled Drongo	Native	Least Concern	Direct sighting	Y	Y	
Elanus axillaris	Black-shouldered Kite	Native	Least Concern	Direct sighting	Y		
Entomyzon cyanotis	Blue-faced Honeyeater	Native	Least Concern	Direct sighting or call		Y	Y
Eolophus roseicapilla	Galah	Native	Least Concern	Direct sighting or call		Y	Y
Eopsaltria australis	Eastern Yellow Robin	Native	Least Concern	Direct sighting or call			Y
Eurostopodus mystacalis	White-throated Nightjar	Native	Least Concern	Direct sighting or call			Y
Falco cenchroides	Nankeen Kestrel	Native	Least Concern	Direct sighting or call		Y	
Geopelia humeralis	Bar-shouldered Dove	Native	Least Concern	Direct sighting or call		Y	

Species Name	Common Name	Introduced/ Native	EPBC Act	Detection Technique	2018	2021	2022
Geopelia cuneata	Diamond Dove	Native	Least Concern	Direct sighting or call	Y		
Geopelia placida	Peaceful Dove	Native	Least Concern	Direct sighting or call		Y	Y
Glossopsitta pusilla	Little Lorikeet	Native	Least Concern	Direct sighting or call			Y
Grallina cyanoleuca	Magpie-lark	Native	Least Concern	Direct sighting or call	Y		Y
Gymnorhina tibicen	Australian Magpie	Native	Least Concern	Direct sighting or call, camera	Y	Y	Y
Hirundo neoxena	Welcome Swallow	Native	Least Concern	Direct sighting or call		Y	Y
Lichenostomus chrysops	Yellow-faced honeyeater	Native	Least Concern	Direct sighting or call		Y	Y
Lichmera indistincta	Brown Honeyeater	Native	Least Concern	Direct sighting or call			Y
Macropygia amboinensis	Brown Cuckoo-Dove	Native	Least Concern	Direct sighting or call	Y		Y
Malurus cyaneus	Superb Fairywren	Native	Least Concern	Direct sighting or call	Y	Y	
Malurus lamberti	Variegated Fairy-wren	Native	Least Concern	Direct sighting or call			Y
Malurus melanocephalus	Red-backed Fairy-Wren	Native	Least Concern	Direct sighting or call	Y		Y
Manorina melanophala	Noisy Miner	Native	Least Concern	Direct sighting or call	Y	Y	Y
Meliphaga lewinii	Lewin's Honeyeater	Native	Least Concern	Direct sighting or call	Y	Y	Y
Melithreptus albogularis	White-throated Honeyeater	Marine	Least Concern	Direct sighting or call		Y	
Merops ornatus	Rainbow Bee-eater	Native	Least Concern	Direct sighting or call	Y		Y
Myzomela sanguinolenta	Scarlet Honeyeater	Native	Least Concern	Direct sighting or call	Y		Y
Neochmia temporalis	Red-browed Finch	Native	Least Concern	Direct sighting or call		Y	
Ninox boobook	Southern Boobook	Native	Least Concern	Direct sighting or call			Y
Ocyphaps lophotes	Crested Pigeon	Native	Least Concern	Direct sighting or call	Y	Y	Y
Oriolus sagittatus	Olive-backed Oriole	Native	Least Concern	Direct sighting or call			Y
Pachycephala pectoralis	Golden Whistler	Native	Least Concern	Direct sighting or call			Y
Pachycephala rufiventris	Rufous Whistler	Native	Least Concern	Direct sighting or call			Y
Pardalotus punctatus	Spotted Paradalote	Native	Least Concern	Direct sighting or call			Y

Species Name	Common Name	Introduced/ Native	EPBC Act	Detection Technique	2018	2021	2022
Pardalotus striatus	Striated Pardalote	Native	Least Concern	Direct sighting or call	Y	Y	Y
Parvipsitta pusilla	Little Lorikeet	Native	Least Concern	Direct sighting or call		Y	Y
Petrochelidon ariel	Fairy Martin	Native	Least Concern	Direct sighting or call			Y
Petroica rosea	Rose Robin	Native	Least Concern	Call	Y		Y
Phaps chalcoptera	Common Bronzewing	Native	Least Concern	Direct sighting or call		Y	Y
Philemon corniculatus	Noisy Friarbird	Native	Least Concern	Direct sighting or call, camera	Y	Y	Y
Platycercus adscitus	Pale-headed Rosella	Native	Least Concern	Direct sighting or call	Y	Y	Y
Podargus strigoides	Tawny Frogmouth	Native	Least Concern	Direct sighting or call, camera	Y		Y
Psophodes olivaceus	Eastern Whipbird	Native	Least Concern	Direct sighting or call	Y	Y	Y
Rhipidura fuliginosa	Grey Fantail	Native	Least Concern	Direct sighting or call, camera	Y		Y
Rhipidura leucophrys	Willie Wagtail	Native	Least Concern	Direct sighting or call	Y	Y	Y
Rhipidura rufifrons	Rufous Fantail	Native	Migratory	Direct sighting or call		Y	Y
Scythrops novaehollandiae	Channel-billed Cuckoo	Native	Marine	Direct sighting or call	Y	Y	
Spilopelia chinensis	Spotted Dove	Native	Least Concern	Direct sighting or call		Y	
Strepera graculina	Pied Currawong	Native	Least Concern	Direct sighting or call, camera	Y	Y	Y
Taeniopygia bichenovii	Doubled-barred Finch	Native	Least Concern	Direct sighting or call	Y	Y	
Threskiornis molucca	Australian White Ibis	Native	Least Concern	Direct sighting or call	Y	Y	
Todiramphus macleayii	Forest Kingfisher	Native	Least Concern	Direct sighting or call	Y		Y
Todiramphus sanctus	Sacred Kingfisher	Native	Least Concern	Direct sighting or call			Y
Trichoglossus chlorolepidotus	Scaly-breasted Lorikeet	Native	Least Concern	Direct sighting or call		Y	Y
Trichoglossus haematodus	Rainbow Lorikeet	Native	Least Concern	Direct sighting or call	Y	Y	Y
Vanellus miles	Masked Lapwing	Native	Least Concern	Direct sighting or call	Y		Y

Species Name	Common Name	Introduced/ Native	EPBC Act	Detection Technique	2018	2021	2022
Zosterpos lateralis	Silvereye	Native	Least Concern	Direct sighting or call			Y
Mammals							
Aepyprymnus rufescens	Rufous Bettong	Native	Least Concern	Camera			Y
Canis familaris	Wild Dog	Introduced	-	Camera, tracks	Y		Y
Isoodon macrourus	Northern Brown Bandicoot	Native	Least Concern	Direct sighting	Y		
Lepus capensis	Brown Hare	Introduced	-	Camera	Y		
Macropus giganteus	Eastern Grey Kangaroo	Native	Least Concern	Direct sighting, camera		Y	Y
Notamacropus rufogriseus	Red-necked Wallaby	Native	Least Concern	Camera, tracks, camera		Y	Y
Phascogale tapoatafa	Brush-tailed Phascogale	Native	Least Concern	Camera			Y
Phascolarctos cinereus	Koala	Native	Endangered	Direct sighting, scats, camera	Y		Y
Pseudocheirius peregrinus	Common Ringtail Possum	Native	Least Concern	Camera			Y
Pteropus alecto	Black Flying Fox	Native	Least Concern	Call			Y
Pteropus poliocephalus	Grey-headed Flying-fox	Native	Endangered	Direct sighting, call			Y
Rattus sp.	Black Rat	Introduced	-	Camera		Y	Y
Tachyglossus aculeatus	Short-beaked Echidna	Native	Least Concern	Camera			Y
Trichosurus vulpecula	Common Brushtail Possum	Native	Least Concern	Direct sighting	Y		Y
Vulpes vulpes	European Red Fox	Introduced	-	Camera	Y	Y	Y
Wallabia bicolor	Swamp Wallaby	Native	Least Concern	Direct sighting or call, camera	Y	Y	Y
Reptiles							
Delma plebeia	Common Delma	Native	Least Concern	Direct sighting			Y
Demansia psammophis	Yellow-face Whip Snake	Native	Least Concern	Direct sighting	Y		
Diporiphora australis	Tommy Roundhead	Native	Least Concern	Direct sighting	Y		Y
Lampropholis delicata	Grass Skink	Native	Least Concern	Direct sighting	Y		
Morelia spilota variegata	Carpet Python	Native	Least Concern	Direct sighting			Y

Species Name	Common Name	Introduced/ Native	EPBC Act	Detection Technique	2018	2021	2022
Physignathus lesueurii	Eastern Water Dragon	Native	Least Concern	Direct sighting	Y		
Pogona barbata	Common Bearded Dragon	Native	Least Concern	Camera	Y		Y
Pseudechis porphyiacus	Red-bellied Black Snake	Native	Least Concern	Direct sighting	Y		
Varanus varius	Lace Monitor	Native	Least Concern	Camera			Y
Amphibians							
Crinia parsignifera	Beeping froglet	Native	Least Concern	Call			Y
Litoria fallax	Eastern Sedgefrog	Native	Least Concern	Call	Y		
Pseudophryne raveni	Copper-backed Brood Frog	Native	Least Concern	Call			Y
Rhinella marina	Cane Toad	Introduced	-	Direct sighting or call	Y		Y

Photos 17-18: A single Koala and scats observed on site during 2018 surveys


Photos 19-20: Domestic dog and Wedge tailed Eagle during 2018 surveys

Photos 21-22: European Red Fox (left) and Wild Dog (right) detected in 2022.

4.4.2 Koala (*Phascolarctos cinereus*)

Spot Assessment Technique

The Spot Assessment Technique (SAT) developed by the Australian Koala Foundation and Phillips and Callaghan (2011) was applied to search the site for the potential presence of the Koala. The Spot Assessment Technique method is an assessment of Koala activity involving a search for any Koalas and signs of Koala usage *i.e.,* scats and scratch marks. The SAT involves identifying a focal tree where a Koala or scats are found. The next closest habitat tree to the first tree is then assessed and so on until the 30 closest trees to the original focal tree have been recorded. The number of trees showing evidence of Koalas is expressed as a percentage of the total number of trees sampled to indicate the frequency of Koala usage. Assessment of each tree involves a systematic search for Koala scats beneath the tree within a 1 m radius of the trunk. After approximately 2-minutes of searching for scats, the base of the trunk is observed for scratches and the crown for potential Koala presence.

A total of fifteen (15) contemporary Koala SAT surveys have been completed during the 2022 surveys. **Table 11** presents the Koala usage scores for the 15 contemporary SAT surveys completed (refer **Appendix E**).

Table 11: Summary of 2022 SAT Results

SAT Site Number	SAT Score	Evidence of Koala Use (%)	Mean usage per AU	Koala Use (High/Medium/Low)
AU1				
A	8/30	26.67%	15.83%	Low
B	2/30	6.67%		
C	9/30	30%		
D	0/30	0%		
AU2				
E	1/30	3.33%	8.40%	Low
F	0/30	0%		
G	8/30	26.67%		
H	1/30	3.33%		
AU3				
I	2/30	6.67%	3.33%	Low
J	0/30	0%		
AU4				
K	3/30	10%	4.44%	Low
L	0/30	0%		
M	1/30	3.33%		
AU5				
N	4/30	13.33%	6.67%	Low
O	0/30	0%		

Koala activity categories are taken from the Australian Koala Foundation Koala activity level classification table by Phillips and Callaghan (2011) (refer **Table 12**). The Australian Koala Foundation Koala activity level classification table provides an estimate of Koala utilisation based on defined Population Categories (East Coast (low), East Coast (med-high) and Western (med-high)).

Categories are assigned as follows:

- Sites considered to be suitable or have high suitability for Koalas are assigned the East Coast (med-high) category;

- Sites considered to have low suitability are assigned the East Coast (low) category; and
- The Western category does not apply to South East Queensland local government areas.

It is considered that the site aligns with the East Coast (med-high) population category due to the location of the site within the 'Koala Coast' which includes the Moreton Bay Regional Council, Noosa Shire Council, Ipswich City Council, Brisbane City Council, Redland City Council, Logan City Council and Gold Coast City Council, and the presence of habitat types and conditions that are considered favourable to Koalas (Rhodes *et al.,* 2015, Phillips and Callaghan, 2011). Population density is understood to be highly variable throughout the Koala Coast ranging from 0 to 6.54 Koalas per hectare (Rhodes *et al.,* 2015), with local variability in density attributed to variables such as climatic conditions, vegetation types and soil fertility (Rhodes et al. 2015). Preferred habitat features are present on-site which may indicate a higher expected density of Koalas. This includes the presence of a substantial riparian corridor and alluvial (fertile) soils and dominance of preferred forage tree *Eucalyptus tereticornis* (Forest Red Gum).

In accordance with the East Coast (med-high) population category, all Assessment Units achieved 'low' Koala use.

Table 12: Koala Activity Level Classification (Phillips and Callaghan 2011)

Activity	East Coast (low)	East Coast (med-high)	Western (med-high)
Low	<3.33%	<22.5%	<35.8
Moderate	3.33-12.6%	22.5-32.8%	35.8-46.7
High	>12.6%	>32.8	>46.7

Spotlighting

In accordance with the *Survey Guidelines for Australia's Threatened Mammals*, spotlighting searches were undertaken to detect Koala in the July 2022 surveys. Spotlighting is a recommended method for detection of arboreal mammals.

A total of six (6) contemporary spotlighting surveys were completed on the following dates: 19 July, 20 July, 21 July, 25 July, 2 August and 3 August 2022. Each survey comprised a 2 km survey transect over a period of approximately three (3) hours from 5:30 pm to 8:30 pm.

During the surveys, three (3) Koala individuals were detected on-site. Refer to **Plan 2** for locations and **Photo set 23** for photo evidence.

Photo set 23: Koala individuals observed on-site during 2022 spotlighting surveys**.**

4.4.3 Fauna movement and biodiversity corridors

Biodiversity and fauna movement corridors can be defined as contiguous or semi-contiguous patches of vegetation or wildlife habitat (of any shape or size) that provide a conduit of movement and dispersal for species, particularly threatened species between relatively large vegetated areas. Corridor functionality and effectiveness is determined by their role in (DEHP 2015):

- facilitating seasonal movement;
- facilitating movement through highly modified landscapes and access to unexploited habitat;
- improving dispersal success;
- increasing the effective size of meta-populations by allowing for the exchange of genes between subpopulations;
- allowing colonisation of empty patches and prevent and reverse local extinction;
- providing habitat for resident populations; and
- maintaining landscape scale ecological and evolutionary processes along geological, hydrological, altitudinal and climate gradients and provide ecological responses to climate change.

Terrestrial corridors, in conjunction with large tracts of remnant vegetation, maintain ecological and evolutionary processes by ensuring large-scale seasonal/migratory species processes and movement of fauna is maintained, connectivity between large tracts/patches of remnant vegetation is maximised and key areas for rehabilitation and offsets are identified and recognised. The location of biodiversity corridors is crucial in achieving effective corridor functionality and ensuring the conservation of threatened species. DEHP (2015) have identified the following five (5) principles that should assist in determining the location of a biodiversity corridor:

- complement riparian landscape corridors;
- follow major watershed/catchment and/or coastal boundaries;
- incorporate major altitudinal/geological/climatic gradients;

- include and maximise connectivity between large tracts/patches of remnant vegetation; and
- include and maximise connectivity between remnant vegetation in good condition.

In addition to the above definitions and characteristics, the Economic Development Queensland's PDA Guideline no. 14 further defines significant terrestrial biodiversity values which include (although are not limited to):

- land mapped in the applicable PDA development scheme as having significant biodiversity values;
- mapped biodiversity corridors identified in the applicable PDA development scheme;
- other areas of significance identified in the applicable PDA development scheme;
- viable areas of remnant vegetation containing endangered regional ecosystems; and
- listed threatened species habitat.

Biodiversity values which reflect these characteristics are referred throughout the Guideline as 'Priority Vegetation Patches' and 'Strategic Fauna Corridors' which have been adopted throughout this report. Field-based visual assessment methodology to support the identification of these values are outlined in section 2.2.

The site is adjacent to a state regional terrestrial corridor, which integrates into further state corridors to the west. The Flinders Peak/Karawatha bioregional corridor lies to the west of the Greater Flagstone PDA. However, the Flagstone PDA maps Flagstone and Abrade Creek as local strategic biodiversity corridors. These creek corridors would provide habitat and movement for a range of common species, and will offer greenspace that is of recreational and amenity value for the proposed development.

Ecological field surveys conducted by SHG indicate that the subject site holds historically disturbed remnant and non-remnant bushland, while possessing very few other unique habitat features (rocky outcrops/escarpments, dens, caves and lowland subtropical rainforest). With the exception of the linear corridor function (east-west) in the northern and southern extent of the site, the site as a whole provides limited long-term core habitat and connectivity value, due largely to historical disturbances and the current and future planned land-use for residential housing in the PDA. More significant connectivity corridors linking core habitat in South East Queensland are present further to the east and west, including the Flinders-Karawatha and Beenleigh-Springbrook state corridors, and the regional corridors that lie in between Jimboomba town centre and the Beenleigh-Springbrook corridor. Additionally, beyond the site to the west, the area contains large portion of intact remnant vegetation and forms part of an SEQ Regional Biodiversity Corridor, forming better core habitat, and also contains a mapped riparian corridor along Oxley Creek. Traversing to the east is a diffuse matrix of vegetation and riparian corridors which lead to state mapped riparian corridor of the Logan River. These corridors allow for fauna movement and are large areas likely to support higher numbers of Koalas and other significant species, and are less exposed to anthropogenic threats. They contain a greater diversity of foraging resources and refugia, more readily facilitate dispersal, and promote genetic exchange.

By rehabilitating these existing strategic corridors on site, fauna movement potential increases through the site to greater corridors and large amounts of intact remnant core habitat. This is to be achieved by providing weed removal to encourage access throughout an enhanced riparian corridor, soft matrix interfaces between the corridors and development, and increases in habitat value via vegetation plantings and nest box

installation. Additionally, fauna safety increases where possible with fencing, fauna safe road crossings and cautionary signage.

5. Impact Assessment and Development Analysis

5.1. Proposed Development

The development proposal is for a master-planned community comprised of 27 stages. Several community facilities such as a town square, regional and district sports parks, regional and district parks, district centre, education facility, and mixed-use railway are proposed. The development also includes infrastructure such as a new road network and a pump station. The site is predominantly zoned as Urban Living under the Greater Flagstone PDA Development Scheme. The site currently has an existing approval (DEV2013/455). Refer to **Appendix A** for proposed Context Plan.

The context layout has been heavily guided by physical constraints and ecological values informed by specialist consultant reports, including this SBAR. As such, the proposed site design is considered to be in-line with on-ground values and the planning intent of the area.

The proposed development will result in the removal of vegetation across the site, including mapped Endangered (though confirmed incorrect on-ground), Of Concern, and Least Concern Regional Ecosystems and mapped Category X (non-remnant) vegetation. While the proposal will result in encroachment within the mapped Least Concern vegetation, it is noted that the *Vegetation Management Act 1999* does not apply within the PDA.

In recent 2022 field surveys, six (6) MNES species were recorded including the listed Vulnerable (now endangered *Phascolarctos cinereus* (Koala), Vulnerable *Pteropus poliocephalus* (Grey-headed Flying-fox), Marine *Cacomantis flabelliformis* (Fan-tailed Cuckoo), *Scythrops novaehollandiae* (Channel-billed Cuckoo), *Merops ornatus* (Rainbow Bee-eater) and Migratory *Rhipidura rufifrons* (Rufous Fantail). While listed Marine species were observed, the site is not considered to provide significant habitat or values for either of these species therefore will not have a substantial adverse effect. Evidence of the Koala was observed on-site, in the form of sightings and scats. The abundance of scat suggests the overall usage of the site is "low" based on the classifications of Philips and Callaghan (2011). Whilst the proposed action is considered to have the potential to have a significant impact on the Koala, adverse impacts will be mitigated through retention and rehabilitation of Koala habitat on-site, and the preparation and implementation of fauna management controls (refer **Section 5.4**).

Abrade and Flagstone Creeks and will be retained and rehabilitated through the development. A minimum buffer of 50 metres has been applied to the Centreline of both creeks, which extends out to 100 metres in some areas. Impacts to waterway buffers during construction will be subject to rehabilitation, as will rehabilitation to the retained areas of vegetation in the corridor. The development retains 143.1ha of vegetation over the referral area, generally associated with the waterway corridors and identified conservation area along the western boundary. Retention and rehabilitation of these features through weed

management and natural regeneration will ensure natural hydrological functions are maintained and east-west biodiversity, within and external to the site, is maintained and enhanced as a result of the proposal.

The proposed development is not considered to have an impact on significant or unique ecological features located on the site. As previously outlined the Abrade and Flagstone Creek corridors, identified as the areas of highest ecological significance on-site, will be retained and rehabilitated through development. These areas are also identified as a Biodiversity Corridor and Potential Greenspace under the Development Scheme. Retention of these areas ensures continued connectivity through the Flagstone PDA and the wider region. Further, given the designation of the site as Urban Living within the PDA development of the site is considered to be in-line with the planning intent for the area.

5.2. Potential Impacts

The following are considered key potential ecological impacts associated with the development proposal:

5.2.1 Vegetation clearing

Clearing of vegetation to support the development will reduce vegetation cover and habitat for flora and fauna dependent on those ecosystems. The total amount of remnant vegetation to be cleared 392ha, and a total of 459.6ha of Koala habitat. The impacts to clearing this vegetation will be managed and mitigated through a range of management measures, outlined in **Section 5.4**, and the retention and rehabilitation of 143ha of biodiversity corridors through the development. Retention of these corridors ensures continued connectivity through the site and the wider region. Further, offsets will be provided under the *EPBC Act*.

5.2.2 Weeds

Increased vehicle movement during the construction phase has the potential to increase the spread of weeds in the area, particularly during the vegetation clearing phase. With implementation of standard mitigation measures, the project is likely to result in a negligible impact to ecological values due to the potential introduction/spread of weeds.

5.2.3 Vehicle movements

During construction, a large number of vehicles will be required on the subject site. Direct impacts from vehicle movements on threatened species and vegetation communities include:

- damage or destruction of vegetation or fauna habitat by vehicles traversing these areas; and
- fauna strike.

Indirect impacts from vehicle movements include:

- interference of fauna through visual and noise impacts. This in turn can affect feeding, roosting, breeding or nesting behaviour;
- introducing and/or spreading weeds or feral animals carried on or in vehicles, resulting in deterioration or loss of vegetation and important fauna habitat; and
- damage or destruction of vegetation and fauna habitat through smothering by dust generated by vehicles traversing the project area.

With implementation of standard mitigation measures detailed in a Construction Environmental Management Plan, the project is likely to result in a temporary and minor impact to ecological values due to vehicular movements.

5.2.4 Earthworks

Construction activities have the potential to generate dust emissions. Dust emissions during construction will be temporary. The main sources of dust will be generated via:

- wheel-generated dust from the haul roads created for the construction phase;
- dust lift-off from exposed surfaces (e.g. construction roads and pads);
- earthworks, including construction of the embankments, and moving, dumping and shaping material; and
- vegetation and soil clearing of the land.

Excessive deposition of dust on leaves of plants can suppress the growth and photosynthesis, resulting in reduced habitat quality for fauna. High levels of airborne dust can irritate the respiratory systems of fauna and potentially result in ingestion of dust-coated seeds and other foods. Excessive deposition of dust on open water bodies may also degrade water quality and overall habitat quality for fauna. With implementation of standard mitigation measures, the project is likely to result in a temporary and minor impact to ecological values due to the generation of dust.

5.2.5 Light emissions during construction

Artificial light can affect both nocturnal and diurnal animals by disrupting behavioural patterns, with quality of light (e.g. wavelength, colour), intensity and duration potentially evoking different faunal responses. Impacts from increased light levels include disorientation from, or attraction toward, artificial sources of light; mortality from collisions with structures; and effects on light-sensitive cycles of species (e.g. breeding and migration for fauna and flowering in plants). An artificial increase in lighting can also affect abundance of predators.

Presence and intensity of artificial light in the project area will temporarily increase during the construction phase; however, night works will not be common. Lighting will be directed to construction areas within the project area. Some light spillage will be inevitable and is likely to be contained. Potential impacts associated with light emissions will be temporary and unlikely to be significant.

With implementation of standard mitigation measures, the project is likely to result in a negligible impact to ecological values due to the use of light pollution during construction.

5.2.6 Noise and vibration

Noise levels greater than existing ambient noise levels are expected during the construction within the project area. Sources of noise are likely to consist of noise in short, intense pulses from mobile plant equipment, and

more prolonged noise, with consistent vibration, pitch and volume from generators, excavators and pumps, in addition from noise from vehicles.

Both steady continuous and single noise events have the potential to lead to ecological impacts. Construction noise is expected to elicit some avoidance response from fauna using the surrounding vegetation though, with consideration of the extent of habitat available in the study area, this is likely to be a temporary and negligible to minor impact.

5.2.7 Waste disposal

Inappropriate disposal of non-hazardous wastes can attract vermin and other wildlife to site. This may exacerbate potential impacts (e.g. road mortality). Litter may also enter surrounding environments. With implementation of standard mitigation measures, the project is likely to result in a negligible impact to ecological values due to the generation and handling of waste.

5.2.8 Hazardous and dangerous goods

Spills and leaks from transfers (e.g. fuel and/or chemicals) and inadequate storage of dangerous goods and hazardous wastes could result in point-source contamination of surrounding land. Direct adverse impacts could include toxic impacts on vegetation (resulting in degradation or loss of vegetation and habitats), direct toxic impacts on fauna (from contact, inhalation or ingestion) or indirect impacts on threatened and migratory species from habitat loss. Direct adverse impacts on surface and groundwater quality are also possible.

With the application of standard mitigation and management measures, impacts from liquid and solid waste disposal will be avoided or localised and small in scale. Further to this, the likelihood of significant spillages is considered low. Therefore, the project is likely to result in a negligible impact to ecological values due to potential spills and leaks.

5.2.9 Increased human presence

Increased human activity during construction has the potential to disturb fauna within adjacent habitat areas. Resulting impacts to fauna include heightened vigilance and predator avoidance, which can disrupt foraging and roosting efficiency or deter wildlife from using particular areas. Impacts essentially represent a reduction in core habitat due to edge effects. The project is likely to result in a temporary and minor impact to ecological values due to increased human presence on-site during the construction period.

5.3. Ongoing disturbances

After completion of construction, the ongoing presence of infrastructure and increased human activity can continue to have adverse direct and indirect impacts. The key continuing risks to ecological values include:

- weed incursion;
- vehicle movements;
- noise and light pollution; and
- increased human presence.

Each potential impact associated with ongoing use of the site is described in detail in the following sections.

5.3.1 Weed incursion

Landscaped gardens will introduce a variety of new and exotic species to the area. Vegetation common in garden landscapes have the potential to be introduced into adjacent bushland areas through dispersal vectors such as birds, wind and runoff. Weed incursion will be ongoing and can be difficult to prevent. However, the problem is often mostly constrained to edges of bushland that abut gardens and riparian zones of urban waterways.

With implementation of standard mitigation measures, the project is likely to result in minor impacts to ecological values due to the introduction and spread of weed species.

5.3.2 Vehicle strike

Upon completion of the development, vehicle traffic will increase significantly (compared to baseline conditions), increasing the likelihood of fauna strike. The probability of fauna strike is reduced due to the fact that most fauna will generally avoid urban areas. Notwithstanding, a low number of macropods, as well as reptiles (i.e. snakes and lizards attracted to heated bitumen roads) may occasionally enter the area and be at risk of vehicular strike. However, given the lack of evidence of macropods both on-site and on adjoining allotments, the risk of vehicle strike is considered to be negligible.

5.3.3 Noise and light

Noise levels are likely to increase once the extension is operational as there will be increased vehicular and pedestrian traffic. Road noise will be the primary source of noise impact. The establishment and use of garden paths through landscaped areas will also provide a source of noise and light due to pedestrian traffic. However, this is expected to be minor.

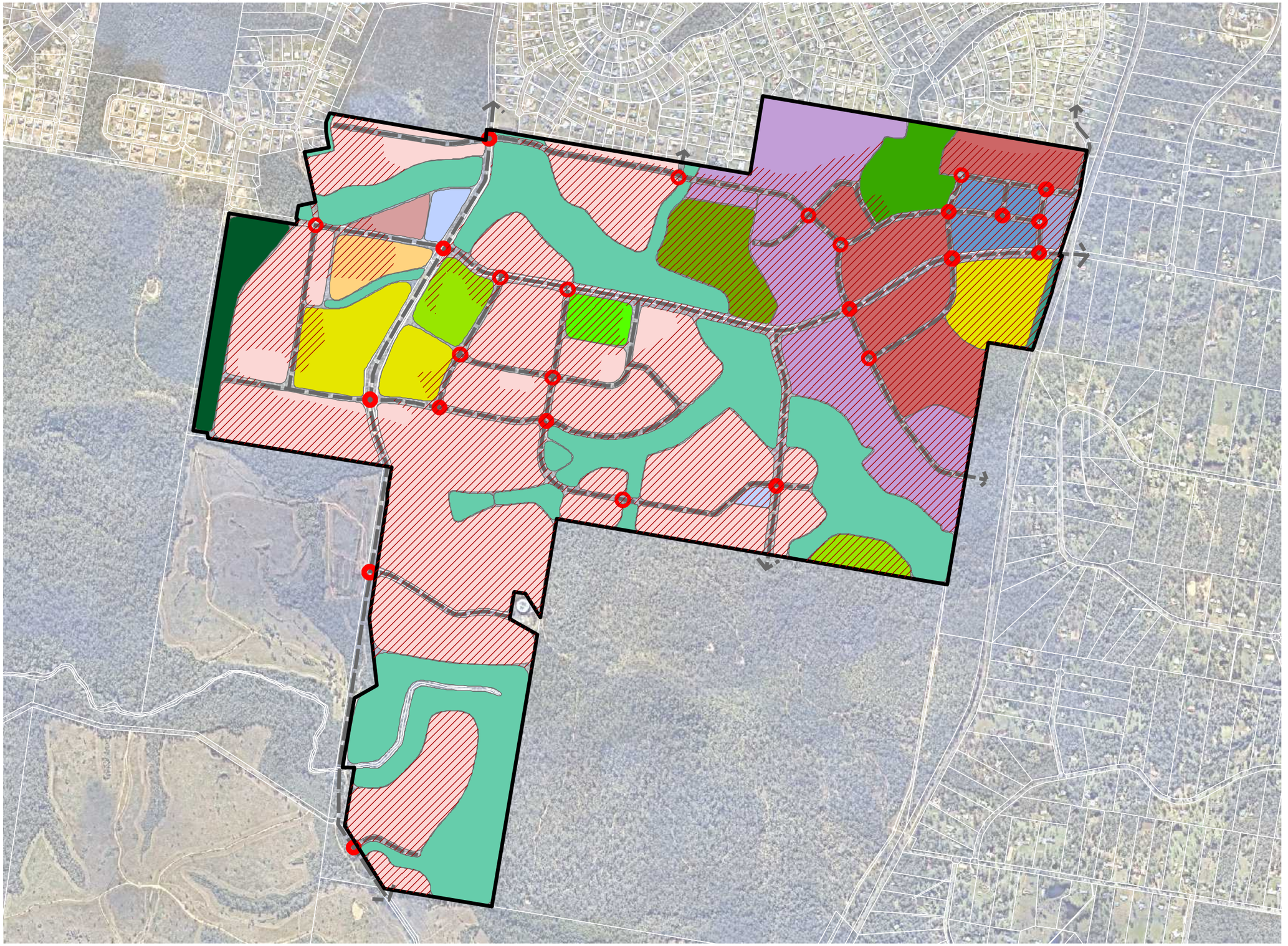
Artificial light from residences may affect nocturnal and diurnal animals by disrupting patterns, with quality of light (e.g. wave length and colour), intensity and duration potentially evoking different responses. Impacts from increased light levels include disorientation from or attraction toward artificial sources of light; mortality from collisions with structures; and effects on light-sensitive cycles of species (e.g. breeding and migration for fauna and flowering in plants). The presence and intensity of artificial light will have the most impact at the edge of adjacent vegetation communities. Furthermore, the project is likely to result in a negligible impact to wildlife due to light spillage.

5.3.4 Increased human presence

Increased human activity associated with land uses within the development has the potential to disturb fauna that exist within the broader area. Examples of impacts included heightened vigilance and predator avoidance, which can disrupt foraging and roosting efficiency, or deter wildlife from using particular areas.

Increased human presence is expected to have a minor to moderate impact to wildlife and vegetation.

4. Preliminary Context Plan



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

Layer Sources
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Updated data available at
http://qldspatial.information.qld.gov.au/catalogue/
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Legend

- Qld DCDB
- Project boundary
- Remnant vegetation to remove (394 Ha)

Concept Plan

- Road Centreline
- Controlled Intersection
- Urban Residential
- Mixed Residential
- Medium Density
- High Density Residential
- Active Living Retirement
- District Centre
- Neighbourhood Centre
- Mixed Use Railway
- Education Facility
- Regional Recreation Park
- Regional Sports Park
- District Recreation Park
- District Sports Park
- Linear Park
- Environmental management
- Railway Corridor

Issue	Date	Description	Drawn	Checked
A	14/03/2019	Preliminary	AL	AH
C	20/07/2022	Preliminary	TC	AD

0 100 200 400 600 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:1 5,600 @ A3

saunders havill group

NEW BEITH PTY LTD

New Beith

ADDRESS/RPD: New Beith Road *20/07/2022* *8905 E 04 Development Assessment C*

5.4. Management and compensatory measures

A number of management and compensatory measures are proposed to minimise and offset impacts associated with the development. These measures are discussed within the following subsections. These measures have further been discussed in the Natural Environment Site Strategy (NESS).

5.4.1 Vegetation Management Plan

A Vegetation Management Plan (VMP) forms part of the broader management document submitted as part of the development application for the project site. The VMP covers clearing of all vegetation listed in this report and include details on:

- trees marked for removal;
- all civil works likely to impact existing vegetation;
- temporary and permanent exclusion and protection fencing;
- roles and responsibilities for site contractors, the developer and the consultant group;
- stockpiling and site access locations;
- a clearing sequence plan showing the commencement of clearing and direction of removal (this should be in conjunction with the Fauna Management Plan (FMP) to allow for the appropriate flushing of fauna towards safe havens and/or the application of an appropriate relocation program);
- links to weed management and revegetation proposals; and
- stock piling and reuse of cleared vegetation.

5.4.2 Fauna Management Plan

A Fauna Management Plan (FMP) has been prepared for potential impacts of the construction phase covering the loss of vegetated areas, isolated trees and likely barriers and impediments to local dispersal.

The FMP links closely with the VCFMP and includes details on:

- species surveyed utilising the site, focusing on those most likely impacted by development works;
- a list of relevant State and Commonwealth legislation constraints and controls for fauna potentially affected by development works;
- a plan showing existing habitat opportunities and locations;
- details of the threats to existing fauna species;
- the clearing sequence plan from the VCFMP;
- management and mitigation measures – i.e. temporary use of fauna exclusion fencing;
- description of fauna spotter role, contacts and certification; and
- specific fauna management procedures for potential or known habitat trees.

5.4.3 Rehabilitation Plan

A Rehabilitation Plan should form part of the broader management document submitted as part of the operational works drawings for the project site, and will generally include information on:

- Rehabilitation approaches in accordance with SEQ Ecological Restoration Guidelines (SEQRF)
- Existing and proposed contours
- Locations of services, earthworks
- Existing vegetation to be retained, removed
- Location of waterways and waterbodies
- Major weed infestations and proposed treatments
- Trail and path systems

6. Summary

An assessment of ecological values was completed across the subject site to determine the anticipated impacts to matters protected under the various pieces of legislation highlighted in **Section 3.** Ecological field surveys were completed in February, March and April 2018, May and June 2021 and July and August 2022 by tertiary-qualified and suitably experienced Ecologists and Environmental Scientists that targeted listed flora and fauna species. The survey effort was designed to provide ample information to assess the likelihood of occurrence and impact on species listed under the EPBC & NCA Acts.

The following is a summary of the results of this investigation of ecological values:

- The application area consists of rural allotments that have been historically disturbed by heavy logging practises, pastoral activities, 4WD access tracks, and dumping of car bodies and rubbish. As a result, the subject site now contains both remnant and non-remnant vegetation areas, and dense regrowth is prevalent throughout.
- Surrounding land uses include rural residential, low density residential, cleared development land, and vacant land. In addition to being within the Greater Flagstone Priority Development Area, the subject site is outside any of the recognised regional biodiversity corridors mapped under the *ShapingSEQ* regional plan. This recognises the site's development potential to cater for the growing SEQ population.
- The flora species identified throughout the survey were generally consistent with the regional ecosystem communities mapped on site, with a distinct remnant vegetation community within the gullylines/riparian corridors (RE 12.3.11/12.3.7), and the balance of the site containing a mix of RE 12.9-10.2, and RE 12.9-10.7. It is however noted that the Endangered regional ecosystem polygons in the north-east of the subject site were found to be incorrectly mapped, with a different species mix observed to that typical of RE12.9-10.12.
- Two major waterways were observed on site in a general west to east direction, Flagstone and Abrade Creeks. These are both mapped by Fisheries, and provide riparian habitat and function in terms of water conveyance and linear connectivity. The waterway line in the north-east corner of the site was observed as a very small dam and drainage feature that begins on site and would only retain water in heavy rainfall.
- Significant habitat features were lacking across the site, including potential den sites and habitat trees containing hollows. The vast majority of the fauna recorded across the site are considered common to the area and typically encountered throughout urban and peri urban environments. In addition, pests with the potential to impact on native fauna were identified via prints, scats and motion cameras, ie. foxes and wild/domestic dogs.
- In recent 2022 field surveys, six (6) MNES species were recorded including the *Phascolarctos cinereus* (Koala), *Pteropus poliocephalus* (Grey-headed Flying-fox), *Cacomantis flabelliformis* (Fan-tailed Cuckoo), *Scythrops novaehollandiae* (Channel-billed Cuckoo), *Merops ornatus* (Rainbow Bee-eater) and *Rhipidura rufifrons* (Rufous Fantail). While listed Marine and Migratory species were observed, the site is not

considered to provide significant habitat or values for either of these species therefore will not have a substantial adverse effect.

- Targeted surveys for the Koala were conducted across the site. One (1) live sighting of the Koala was recorded during the 2018 and three (3) sightings during the recent 2022 surveys, and SAT surveys detected predominantly 'low usage' across all SAT surveys across all survey periods. (**Appendix D**).

7. Conclusions

This SBAR was prepared by SHG on behalf of New Beith Pty. Ltd. in response to Economic Development Queensland's (EDQ) PDA Implementation Guideline No. 14 (Environmental values and sustainable resources) and PDA Implementation Guideline No.17 (Remnant Vegetation and Koala Habitat Obligations in Greater Flagstone and Yarrabilba PDAs) for a proposed residential development located at New Beith Road, New Beith, described as Lot 50/SP293963, L8/S312737, L58/S312118, L1/RP43903, L1/SP250186, L2/SP250186 and L2/RP25922.

- A search using the PMST for MNES under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), identified the potential for eight (8) TECs, eighteen (18) flora species and thirty (30) threatened fauna species to occur on-site.
    - No TECs were confirmed on-site.
    - One (1) threatened flora species, *Melaleuca irbyana* was recorded on site during the recent 2022 survey periods.
    - Of the listed fauna species, only evidence of Koala utilisation was recorded in the form of scats and a positive sighting during 2018 and 2022 surveys. Koala SAT surveys undertaken over the site indicated a "low" overall usage of this site, suggesting that whilst the site is utilised by Koalas it is relatively poor habitat for the species.
    - The site is also considered to contain suitable habitat for Koala and potential foraging habitat for Grey-headed Flying-fox; two listed species known to occur in the area and sighted during 2022 survey periods. However, given significant disturbance of the site and surrounding threats (e.g. rail, road and dogs), the quality of habitat on the site is considered low in context to the broader area.
- A search of the NCA Wildlife Online database listed one (1) threatened flora species as possibly occurring within the area, *Melaleuca irbyana*. This species was observed in some locations in the investigation area.
- Regional ecosystem mapping shows the site as containing both remnant and non-remnant vegetation. Remnant vegetation along the creek corridors/main gully lines is mapped as essential habitat for the Koala and contains species typical of alluvial river and creek flats (Landzone 3). The balance of the site is Landzone 9 and 10, which contains species representative of undulating country and sandstone ranges, with only a small portion of this (in the west and south) mapped as essential habitat for the Koala. The portion of the site extending from New Beith Road and smaller areas across

the site contain non-remnant vegetation that is also consistent with Landzone 9 and 10. **Table 6** provides a summary of the vegetation communities across the subject site.

- Generally, the flora species identified throughout the survey were consistent with the regional ecosystem communities mapped on site. However, it is noted that the Endangered regional ecosystem polygons in the north-east of the subject site were found to be incorrectly mapped, with a different species mix observed to that typical of RE12.9-10.12.
- The project area contains a diverse array of flora species typically found within a pastoral landscape. A total of one hundred and eighty-three (183) flora species were identified across the investigation area, of which one-hundred and four (104) species are native flora species and the remaining seventy-nine (79) are introduced or weed species. Ten (10) species are listed as restricted plants under the *Biosecurity Act 2014* and will require specific levels of management.
- Fauna recorded across the site included common mammals, small reptiles and avifauna, which are likely to utilise the application area as part of a much broader home range. These species are considered common to the area and are typically encountered throughout urban areas within the Greater Flagstone PDA
- Fisheries mapped waterways were located over the site. Abrade Creek transects the northern portion of the site, generally running in a north-westerly to south-easterly direction. Flagstone Creek winds through the southern extent of the subject site, running in a similar direction to Abrade Creek. A minor waterway line is mapped in the north-east of the subject site, beginning on site and running north into the residential area to the north.
- The minor waterway that is mapped was observed as a drainage feature, with limited bed and bank features and a very small dam that appeared to be of a constructed nature. The dam was stagnant at the time of survey. Where the mapped waterway intersects the site boundary, the drainage line was in the form of a drainage depression and smothered by introduced grasses and weeds. There were no riparian features observed across this drainage feature.
- Flagstone Creek and Abrade Creek contain defined bed and bank features along much of their length on site. These creeks are best described as pools connected by small flowing riffles, with channel widths varying between approximately 45cm to 3 metres. Minor flows were observed at the time of assessment; however, evidence of flood debris was observed throughout the flood plain. A number of overland flow channels feed into the main creeks.

In conclusion, as outlined above the proposed development footprint areas allow retention of the Flagstone and Abrade Creek corridors and associated riparian vegetation, with a suitable buffer provided. As stated throughout this report, while this review and the scientific evidence indicates that there is the potential for the proposed action to have a Significant Impact on the Koala and this will be resolved under the EPBC Act assessment. A response to IG17 for koala offsets is therefore unwarranted. It is not expected to have a significant impact on any other MNES or NCA species This advice has been prepared at the request of, and based on the briefing from **New Beith Pty. Ltd.**

7.1. Guideline 14 – Environmental Values and Sustainable Resource Use

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

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

A response to Guideline 14, with respect to the project site, is presented below:

Ecological Processes and Systems

Values	Strategies	Comments
1. Significant terrestrial biodiversity values Areas of significant biodiversity value may include: ▪ Land mapped in the applicable PDA development scheme as having significant biodiversity values ▪ Mapped biodiversity corridors identified in the applicable PDA development scheme ▪ Other areas of significance identified in the applicable PDA development scheme ▪ Viable areas of remnant vegetation containing endangered regional ecosystems as defined in Appendix 1 ▪ Listed threated species habitat	Identify significant terrestrial biodiversity values within and adjoining the development area by undertaking: ▪ Robust field surveys ▪ Desktop assessments using local, state and commonwealth environment databases and mapping searches Demonstrate how the development minimises impacts on significant biodiversity values by minimising vegetation clearing generally within the area and by specifically: ▪ Retaining and enhancing areas of viable remnant vegetation containing endangered regional ecosystems as defined in Appendix 1 ▪ Avoiding, minimising or off-setting the clearing of non-viable remnant vegetation containing endangered regional ecosystems as defined in Appendix 1 ▪ Minimising the clearing of remnant and regulated regrowth vegetation within the area ▪ Providing adequate buffers between development and any identified significant biodiversity value within or adjoining the development site	The project site and surrounding area has been subject to both desktop and on ground ecological assessments by SHG to identify existing ecological values at the site. The results of which have been presented in this SBAR. Desktop reporting was undertaken to inform on ground ecological surveys which included ground truthing flora, fauna, habitat and waterway field assessments over the entire project extent. Ecological surveys were undertaken in accordance with Commonwealth and State survey guidelines and best practice methods. Target flora and fauna surveys were undertaken specifically to identify the potential presence of listed threatened species and locate ecologically significant areas. The results have been used to describe various on-site habitat and vegetation characteristics. As discussed in this SBAR, Abrade Creek transects the northern portion of the site, generally running in a north-westerly to south-easterly direction. Flagstone Creek winds through the southern extent of the subject site, running in a similar direction to Abrade Creek these are considered is considered to be an areas of significant biodiversity value. These creek corridors

Values	Strategies	Comments
	▪ Providing management plans to reduce and control clearing and manage other development and construction impacts in the area.	are mapped as Biodiversity Corridors under the Greater Flagstone PDA Development Scheme. The entire developable portion of the project site, and immediate surrounding area within the PDA is zoned as Urban Living. This zone has been strategically identified as containing areas suitable for urban development as to minimise impacts on landscape scale significant biodiversity values. Mapping constraints on the site include Green Space and Environmental Protection. No other areas besides the two major waterways were deemed to be ecologically significant on the project area. General vegetation quality is poor due to the historic logging practices. The project site is mapped predominantly as Category B Least Concern and of Concern vegetation, with an area of Endangered vegetation in the northern extent which is protect within the Green Space overlay. All other mapped endangered vegetation has been deemed not consistent with the RE classification and considered non-viable and incorrectly mapped. Only viable Endangered Remnant Vegetation is identified as significant under IG 14. The site is mapped as containing areas of habitat for Koalas. This mapping appears to be based the Mapped REs. However, as described within this SBAR, ecological field survey determined that the site contains relatively poor habitat for the Koala, and generally low levels of Koala usage were observed.

Values	Strategies	Comments
		Removal of remnant vegetation is required to facilitate a practical development footprint in accordance with Development Scheme intent and density requirements. No significant biodiversity values will be impacted by clearing. Importantly, the proposal retains and rehabilitates areas of highest ecological significance on-site, being the Flagstone Creek corridor and Abrade Creek Corridor to ensure east-west connectivity is maintained across the site. Further, the proposal provides sufficient buffers between the development and these areas to ensure edge effects associated with the development are minimised.
2. Ecological connectivity	▪ Identify priority vegetation patches, fauna habitat features and fauna movement corridors in and beyond the application-site through detailed site assessments completed in accordance with the relevant local government authority guidelines or planning scheme policies for ecological assessment ▪ Retain vegetation connections between priority vegetation patches, fauna habitat features and fauna linkages to ensure ecological connectivity is maintained or enhanced ▪ Minimise locating major infrastructure through identified corridor linkages	Ecological assessments completed by SHG in accordance with Guideline 14 requirements did not identify any priority vegetation patches, habitat features or strategic fauna corridors within the proposed Development Area. Surveys confirmed the waterways, Flagstone Creek & Abrade Creek, provides the most valuable ecological feature on the site and in their current form, provides east-west connectivity for fauna to move across the project area. Connectivity to the south is to impeded by future residential development. The Flagstone & Abrade Creek corridors will be retained in an environmental corridor and rehabilitated as part of the development to ensure fauna movement opportunities are not only maintained but enhanced as a result of the proposal.

Values	Strategies	Comments
	▪ Undertake strategic rehabilitation of degraded land where required to improve or create functioning corridors.	Further, the proposed development provides a sufficient buffer (up to 100+ m) to this waterway to ensure edge effects from the development are minimised. The preliminary context plan has been informed by detailed ecological assessment, as outlined within this SBAR. As a result, the creek corridors and mapped Endangered REs are protected and retained through development. Given the planning intent of the area, more development is anticipated to be approved surrounding the subject site. As such, retention and rehabilitation of the Abrade and Flagstone Creek corridors is considered appropriate to mitigate environmental impacts of clearing and development in the context of the PDA.
3. Sustainable landscaping practices	▪ Incorporate biodiversity friendly landscape principles and practices such as retaining habitat trees in road reserves and opens space areas ▪ Maximise use of locally occurring native species in landscaping ▪ Identified opportunities for revegetation and rehabilitation along waterways and biodiversity corridors	Sustainable landscape principles and practices will be incorporated within the development area under the proposal. These will include plantings from a localised native species pallet and the retention of trees within several biodiversity corridor areas and the mapped Abrade and Flagstone Creek corridors.
4. Bushfire risk management	▪ Ensure significant biodiversity values are protected from exempt clearing by ensuring new built infrastructure is adequately set back from identified biodiversity areas	A Bushfire Management Plan is addressed separately. Due to the proposed development and post development vegetation settings bushfire is not considered to pose a risk to the retained vegetation on the site or the proposed development

Values	Strategies	Comments
	▪ Where a firebreak is required to protect new infrastructure ensure clearing associated with the firebreaks is located external to significant biodiversity areas.	

Waterways and Wetlands

Values	Strategies	Comments
1. Wetlands	▪ Identify and accurately map the extent of, and describe the values for, any identified wetlands of high ecological significance and referrable wetlands ▪ Provide adequate buffers between development and wetlands that are in and adjacent to the PDA (where feasible incorporate biodiversity corridor, storm water treatment or fauna corridors within wetland buffers) ▪ Where a wetland of high ecological significance occurs, a minimum buffer of 50 metres between the development proposal and the wetland is recommended	SARA Wetland Protection Area mapping and SPP MSES mapping does not identify protected wetlands within or adjacent to the proposal area. Surveys by SHG confirmed that no natural wetland values were identified across the site.
2. Waterways	▪ Identify and accurately map waterways in accordance with DES' stream order hierarchy (1-5). ▪ Determine existing and proposed waterway values of site stream orders (eg. Intact remnant vegetation, riparian values, fauna	One high and one moderate value waterway for waterway barrier works is mapped as traversing the southern and northern portions of the subject site, known as Flagstone Creek and Abrade Creek, respectively. Flagstone and Abrade Creeks were ground-truthed through an ecological assessment and were found to be accurately mapped. Several low

Values	Strategies	Comments
	connectivity, natural water quality function, watercourse stability) ▪ Retain waterways in their undisturbed condition by minimising disturbance to natural drainage. Where this is not proposed provide a detailed waterway assessment report justifying encroachment or removal of waterway areas. ▪ Provide adequate buffers between development and retained waterways to provide waterway protection including temperature, bank stability, light, aquatic habitat, terrestrial habitat. ▪ Where waterways have been designated or identified to provide dual use (fauna corridor, biodiversity corridor connection, stormwater conveyance) provide additional buffer setback.	value waterways were also mapped as traversing the site and are captured in open space. The proposed development provides a substantial buffer of up to 100m from the centerline to Flagstone Creek and Abrade Creek. The Creeks will be buffered by an ecological corridor. Stormwater Management and Erosion and Sediment Control Plans will be prepared as part of this application and will manage and minimise potential impacts on the mapped waterways.
3. Water Quality	▪ Water discharge to on-site and adjacent water systems (freshwater, estuarine and marine) must meet water quality standards under current Queensland legislation. ▪ Soil disturbance must be managed to avoid associated contaminants entering adjacent water systems. ▪ Identify nutrient hazard areas and appropriately manage soil and groundwater disturbance to avoid or minimise nutrient mobilisation that may increase the risk of coastal algal blooms.	Stormwater Management and Erosion and Sediment Control Plans will be prepared as part of this application and will manage and minimise potential impacts on mapped waterways.

Values	Strategies	Comments
	▪ Avoid or minimise waste water discharge from the site in accordance with a waste water management plan prepared by a suitably qualified person. ▪ Avoid areas with highly permeable soils or a high water table when locating waste disposal activities or facilities. ▪ Provide adequate buffers for water quality between development and retained waterways.	

7.2. Guideline 17 – Koala Habitat Obligations

Impacts on Koala habitat values will be managed through the measures outlined in the Implementation Guidelines via the EPBC Act assessment, and where impacts occur, offsets will be triggered.

The development, management and offset of site values will be governed through an approval from the Commonwealth Department of Climate Change, Energy, the Environment and Water which is likely to be principally interested in achieving the same outcomes for the site.

8. Appendices

Appendix A

Proposed Context Plan

Appendix B

PMST and NCA Searches

Appendix C

Other Environmental Searches

Appendix D

Likelihood of Occurrence

Appendix E

SAT Survey Results

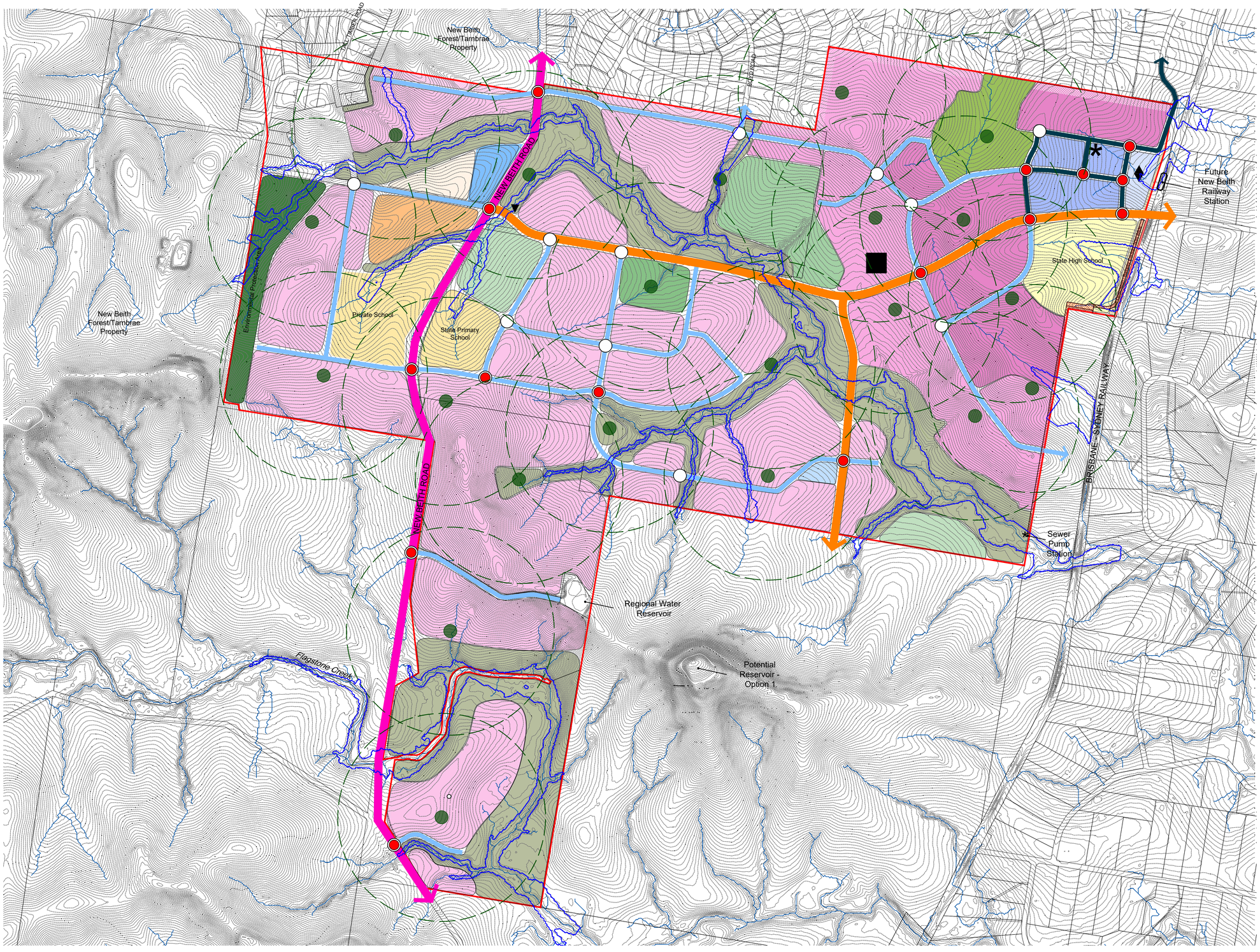
Appendix F

Curricula Vitae – Key Personnel

Appendix A

Proposed Context Plan

PRELIMINARY CONTEXT PLAN



NOT TO BE USED FOR ENGINEERING DESIGN OR CONSTRUCTION

NOTES

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

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

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

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

Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.

LEGEND

- Land within PDA Boundary
- Major Contour (1.0m interval)
- Education - 35.65 ha
  - State Primary School - Minimum 7.0 ha
  - State High School - Minimum 12.0 ha
  - Private School - 12.0 ha
- District Centre - 7.86 ha
- Neighbourhood Centre - 3.69 ha
- Mixed Use/Railway Station - 2.19 ha
- High Density Residential Neighbourhood - 40.73 ha
- Mixed Residential Neighbourhood - 53.14 ha
- Urban Residential Neighbourhood - 229.2 ha
- Active Living / Retirement Precinct - 7.31 ha
- Medium Density Precinct - 3.39 ha
- Open Space 133.4 ha
- Regional Recreation Park - Minimum 10.0 ha
- District Recreation Park - Minimum 5.0 ha
- Regional Sports Park - Minimum 15.0 ha
- District Sports Park - Minimum 7.5 ha
- Land Dedication - Railway Corridor 30m Wide
- Environmental Protection Area in accordance with Endorsed Natural Environment Overarching Site Strategy
- Controlled Intersection - Possible Signalised Intersection
- Controlled Intersection - Possible Roundabout
- Urban Arterial Multi Modal Dual Carriageway - in accordance with the Endorsed Movement IMP
- Trunk Connector - in accordance with the Endorsed Movement IMP
- Centre Access Street - in accordance with the Endorsed Movement IMP
- Neighbourhood Connector - in accordance with the Endorsed Movement IMP
- Future Railway Station
- Fire and Rescue Station
- Indicative Location of Civic Park
- Potential Park & Ride Facility
- Potential State Pr1mary School
- Interface Lots
- Interface Zone
- Neighbourhood Recreation Parks and 400m Catchment Offset
- Easement for Sewer Purposed
- Easement for Access (Sewer)
- Access Road frontage to School
- AEP 1%

SCALE @A1 1:7500 @A3 1:15000 - LENGTHS ARE IN METRES

100 0 100 200 300 400 500 600 700 800 900

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Appendix B

PMST and NCA Searches

Australian Government

Department of Climate Change, Energy, the Environment and Water

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. Please see the caveat for interpretation of information provided here.

Report created: 16-Dec-2022

Summary

Matters of National Environment 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 (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	8
Listed Threatened Species:	48
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 https://www.dcceew.gov.au/parks-heritage/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 Lands:	2
Commonwealth Heritage Places:	1
Listed Marine Species:	21
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	29
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

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

Ramsar Site Name	Proximity	Buffer Status
Moreton bay	20 - 30km upstream from Ramsar site	In feature area

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.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area	In buffer area only
Grey box-grey gum wet forest of subtropical eastern Australia	Endangered	Community likely to occur within area	In feature area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area	In feature area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community may occur within area	In feature area
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	Community likely to occur within area	In feature area
Swamp Tea-tree (Melaleuca irbyana) Forest of South-east Queensland	Critically Endangered	Community likely to occur within area	In buffer area only
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In feature area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area	In feature area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lathamus discolor			
Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Turnix melanogaster			
Black-breasted Button-quail [923]	Vulnerable	Species or species habitat known to occur within area	In feature area
FISH			
Maccullochella mariensis			
Mary River Cod [83806]	Endangered	Translocated population known to occur within area	In buffer area only
INSECT			
Argynnis hyperbius inconstans			
Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
Macroderma gigas			
Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Petrogale penicillata			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature 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]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus			
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
PLANT			
Arthraxon hispidus			
Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Bosistoa transversa			
Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cryptostylis hunteriana			
Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cupaniopsis shirleyana			
Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cupaniopsis tomentella			
Boonah Tuckeroo [3322]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dichanthium setosum			
bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Fontainea venosa			
[24040]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat may occur within area	In feature area
Notelaea ipsviciensis Cooneana Olive [81858]	Critically Endangered	Species or species habitat may occur within area	In feature area
Notelaea lloydii Lloyd's Olive [15002]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Picris evae Hawkweed [10839]	Vulnerable	Species or species habitat may occur within area	In feature area
Planchonella eerwah Shiny-leaved Condoo, Black Plum, Wild Apple [17340]	Endangered	Species or species habitat likely to occur within area	In feature area
Plectranthus habrophyllus [64589]	Endangered	Species or species habitat known to occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat may occur within area	In feature area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Coeranoscincus reticulatus Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In feature area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area	In feature area
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
[Symposiachrus trivirgatus as Monarcha trivirgatus](#) Spectacled Monarch [83946]		Species or species habitat likely to occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area	In feature area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [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.

Commonwealth Land Name	State	Buffer Status
Defence		
Defence - GREENBANK TRAINING AREA [31010]	QLD	In buffer area only
Defence - GREENBANK TRAINING AREA [31009]	QLD	In buffer area only

Commonwealth Heritage Places [Resource Information]

Name	State	Status	Buffer Status
Natural			
Greenbank Military Training Area (part)	QLD	Listed place	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Anseranas semipalmata			
Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area overfly marine area	In feature area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
[Lathamus discolor](#) Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus			
Spectacled Monarch [83946]		Species or species habitat likely to occur within area overfly marine area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
A and T Koala Billabong	Nature Refuge	QLD	In buffer area only
Koolena	Nature Refuge	QLD	In buffer area only

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Greenbank Army Training Area C	QLD	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Proposed Industrial Development at North Maclean	2022/09304		Assessment	In buffer area only
Controlled action				
130 Tully Road New Beith Residential Development v2	2021/8904	Controlled Action	Assessment Approach	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Bushman Drive Residential Development, Jimboomba, Qld	2018/8376	Controlled Action	Further Information Request	In buffer area only
Casino Ipswich Pipeline	2007/3877	Controlled Action	Completed	In buffer area only
Cedar Grove Connector Pipeline	2011/6013	Controlled Action	Completed	In buffer area only
Crowson Lane Road Upgrade	2021/9084	Controlled Action	Assessment Approach	In buffer area only
Defence Training Facilities at the Greenbank Training Area	2011/5896	Controlled Action	Post-Approval	In buffer area only
Flagstone West Urban Development Project, QLD	2014/7206	Controlled Action	Post-Approval	In feature area
Greater Flagstone master planned residential development, Undullah, Qld	2015/7530	Controlled Action	Post-Approval	In buffer area only
Industrial Development in the Greater Flagstone Urban Development Area 4499-4651 Mount Lindesay Hwy,	2013/6941	Controlled Action	Post-Approval	In buffer area only
Mirvac Greater Flagstone Project - Master Planned Development, Greenbank, Qld	2016/7817	Controlled Action	Post-Approval	In buffer area only
Residential Development, Lot 4 RP45728, New Beith, Qld	2019/8398	Controlled Action	Further Information Request	In feature area
Residential development, Lots 3, 200 and 1, approx 6.5km SW Undullah, Qld	2016/7772	Controlled Action	Further Information Request	In buffer area only
Residential development, Teviot Road, north Beaudesert, Qld	2016/7724	Controlled Action	Post-Approval	In buffer area only
Residential Development (Lot30, SP309195) Mountain Ridge Rd, South Maclean, Qld	2019/8408	Controlled Action	Post-Approval	In buffer area only
Southern Regional Water Pipeline	2006/2593	Controlled Action	Post-Approval	In buffer area only
Tarnbrae Greater Flagstone Residential Development, New Beith, QLD	2019/8412	Controlled Action	Further Information Request	In feature area
Teviot Downs Residential Estate, Greenbank	2011/6106	Controlled Action	Post-Approval	In buffer area only
Not controlled action				

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Construction and upgrade of approximately 7km of external road corridor, Flagstone, Qld	2014/7319	Not Controlled Action	Completed	In buffer area only
Flagstone Central to Cedar Grove WWTP Conveyance Pipeline	2018/8190	Not Controlled Action	Completed	In buffer area only
Greenbank to Flagstone Central Conveyance Pipeline Project, Qld	2018/8344	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
South West Pipeline and Wyaralong Tanks Project, Qld	2018/8320	Not Controlled Action	Completed	In buffer area only
South West Transport Corridor	2006/2547	Not Controlled Action	Completed	In buffer area only
Spring Mountain Park rural residential estate, stages 15-18, Greenbank/New Beith, Qld	2013/7030	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Construction & Operation 275/330kV Transmission Line	2006/2820	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Residential subdivision 348-434 Cusack Lane, Jimboomba, Qld	2015/7617	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
130 Tully Road, New Beith, Residential Development	2020/8848	Referral Decision	Referral Publication	In feature area
Kagaru to Acacia Ridge and Bromelton Inland Rail Project	2021/8927	Referral Decision	Referral Publication	In feature area

Bioregional Assessments			
SubRegion	BioRegion	Website	Buffer Status
Clarence-Moreton	Clarence-Moreton	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and 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

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

Where little information is available for a 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 detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

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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Canberra ACT 2601 Australia
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Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: Native
Queensland status: Rare and threatened species
Records: Confirmed
Date: Since 1980
Latitude: -27.7696
Longitude: 152.9523
Distance: 5
Email: lisafry@saundershavill.com
Date submitted: Friday 16 Dec 2022 10:43:14
Date extracted: Friday 16 Dec 2022 10:50:02

The number of records retrieved = 9

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Limnodynastidae	*Adelotus brevis*	tusked frog		V		1
animals	birds	Apodidae	*Hirundapus caudacutus*	white-throated needletail		V	V	1
animals	birds	Cacatuidae	*Calyptorhynchus lathami lathami*	glossy black-cockatoo (eastern)		V	V	1
animals	birds	Strigidae	*Ninox strenua*	powerful owl		V		2
animals	mammals	Macropodidae	*Petrogale penicillata*	brush-tailed rock-wallaby		V	V	1
animals	mammals	Petauridae	*Petaurus australis australis*	yellow-bellied glider (southern subspecies)		V	V	2
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		E	E	45
animals	mammals	Pseudocheiridae	*Petauroides armillatus*	central greater glider		E	E	1/1
plants	land plants	Myrtaceae	*Melaleuca irbyana*			E		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 (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

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

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).
This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Appendix C

Other Environmental Searches

saunders havill group

Environmental searches

New Beith Road, New Beith
Queensland, 4124
New Beith Pty Ltd
19 December 2022

8905

Property attributes			**19 December 2022**
Address	New Beith Road, New Beith		
Lot/plan(s)	Lot 50 on SP293963	Lot 8 on S312737	
	Lot 58 on S312118	Lot 2 on SP250186	
	Lot 1 on SP318791	Lot 2 on RP25922	
	Lot 1 on SP250186		
Area (ha)	609 ha		
Local government area	Logan City Council		

1. Federal Matters of National Environmental Significance

A Protected Matters Report was generated from the environment.gov.au website and returned the following results. These matters may occur within a 5 km radius of the site and are protected under the *Environment Protection and Biodiversity Conservation Act 1999*.

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:	8	
Community	***Status***	***RE Mapped***
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	No
Coastal Swamp Sclerophyll Forest of New South Wales and South Eat Queensland	Endangered	No
Grey box-grey gum wet forest of subtropical eastern Australia	Endangered	No
Lowland Rainforest of Subtropical Australia	Critically Endangered	No

Poplar Box Grassy Woodland on Alluvial Plains	Endangered	No
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	No
Swamp Tea-tree (Melaleuca irbyana) Forest of South-east Queensland	Critically Endangered	No
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	No
Listed Threatened Species:	48	
Listed Migratory Species:	16	

2. State Matters

2.1 Nature Conservation Act 1992 and subordinate legislation

Protected Plants Flora Survey Trigger Map	Partially within high risk area

2.2 Vegetation Management Act 1999 and subordinate legislation

Regulated Vegetation Management Map and Vegetation Management Supporting Map

Regional Ecosystem	VMA status	Category	Area (ha)
12.3.11	Of Concern	B	53.32
12.3.7	Least Concern	B	13.09
12.9-10.12	Endangered	B	5.88
12.9-10.12	Endangered	C	0.05
12.9-10.19	Least Concern	B	10.6
12.9-10.19	Least Concern	C	0.07
12.9-10.2	Least Concern	B	332.24
12.9-10.7	Of Concern	B	107.62
12.9-10.7	Of Concern	C	0.07
12.9-10.17	Of Concern	B	6.39
Non-remnant	None	X	79.6
			Total = **608.93 ha**

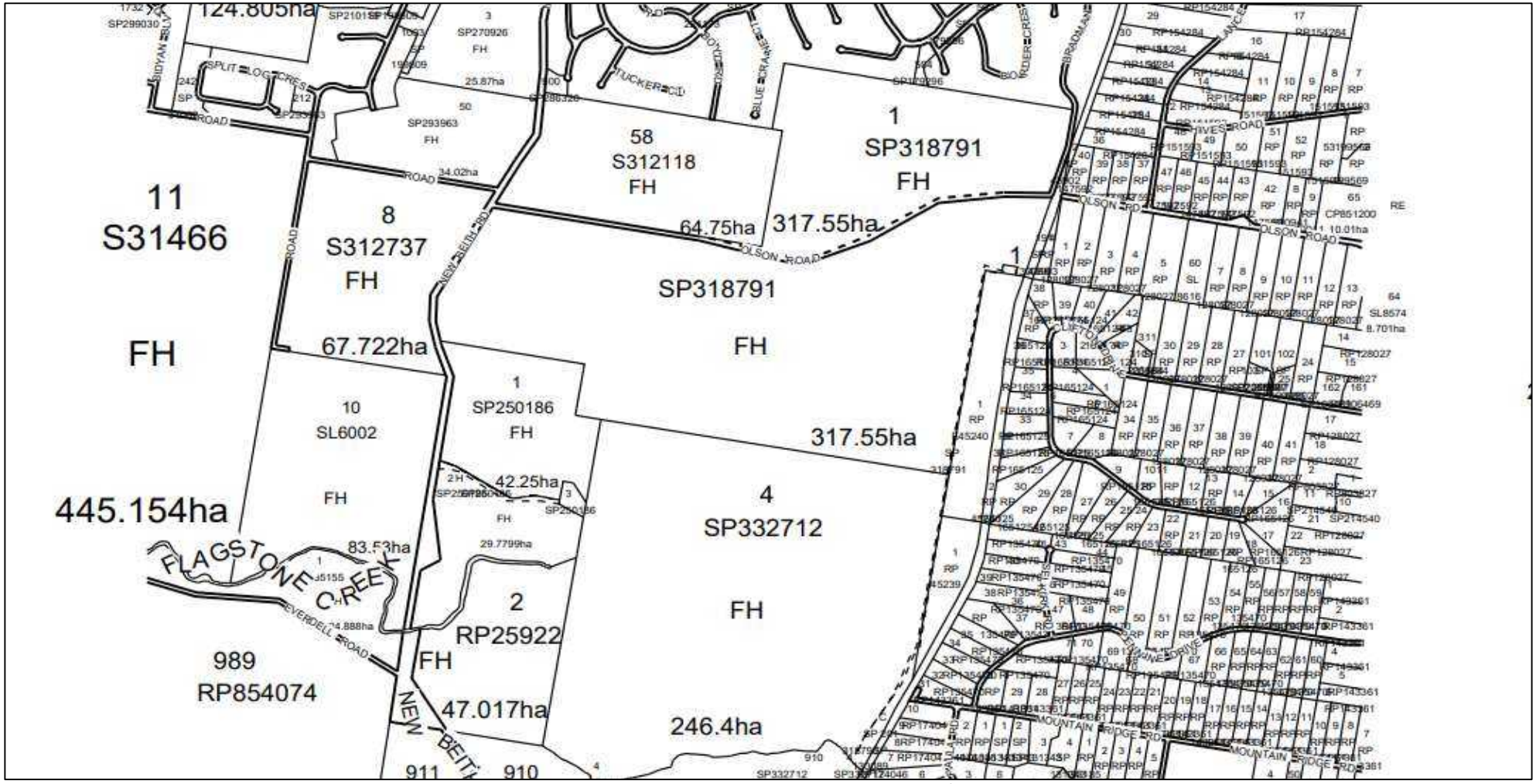
Essential Habitat	*Phascolarctos cinereus* (Koala)
Wetland/s	Present
Bioregion	Coastal bioregions and sub-regions

2.3 Koala priority area and koala habitat areas	
Koala Priority Area (KPA)	Not within KPA
Koala Habitat Area	Koala Habitat Area (core) Koala Habitat Area (locally refined) Identified Koala Broad Hectare Koala Habitat Area not present
2.4 State Planning Policy Interactive Mapping System (selected environmental matters)	
SPP — Biodiversity	MSES – Wildlife habitat (endangered or vulnerable) MSES – Wildlife habitat (special least concern animal) MSES – Wildlife habitat (koala habitat areas – core) MSES – Regulated vegetation (category B) MSES – Regulated vegetation (category C) MSES – Regulated vegetation (essential habitat) MSES – Regulated vegetation (intersecting a watercourse)
SPP — Coastal Environment	Not within coastal management district
SPP — Water Quality	Does not apply
SPP — Natural Hazards Risk and Resilience	Flood hazard area - Local Government flood mapping area Bushfire prone area Very High Potential Bushfire Intensity High Potential Bushfire Intensity Medium Potential Bushfire Intensity Potential Impact Buffer
2.5 Development Assessment Mapping System	
DAMS — Coastal Protection	Does not apply
DAMS — Fish Habitat Areas	Queensland waterways for waterway barrier works • 1 – Low • 2 – Moderate • 3 – High Tidal waterways

3. Local matters — Logan City Council	
Zoning	Priority Development Area – Urban Living
Priority Development Area	Greater Flagstone
Neighbourhood Plan	Does not apply

Overlay — Acid sulphate soils	Does not apply
Overlay — Biodiversity Areas Trigger	Biodiversity Area
Overlay — Vegetation Management Areas	Primary vegetation management area Secondary vegetation management area
Overlay — Biodiversity Corridors	Biodiversity Corridors
Overlay — Locally Significant Vegetation	Does not apply
Overlay — Matters of State and Local Significance	Matters of both State and Local environmental significance Matters of Local environmental significance
Overlay — Ecological Significance	>12 and <=22
Overlay — Bushfire Hazard	Very high potential High potential Medium potential Potential Impact Buffer
Overlay — Landslide Hazard	Steep slope area
Overlay — Flood Hazard	Flood hazard inundation area
Overlay — Heritage	Does not apply
Overlay — Waterway Corridors and Wetlands Trigger	Waterway corridor Minor waterway Medium waterway

Map 1 — Lot/plan(s)



Source: SmartMap QLD Globe, Department of Natural Resources, Mines and Energy (captured: 16/12/2022)

Map 2 — Aerial image (current)

Source: Qld Globe 2022 (captured: 16/12/2022)

Map 3 — Aerial image (historical)

Source: Qld Globe 2022 (captured: 01/06/1987)

Map 4 — Locality

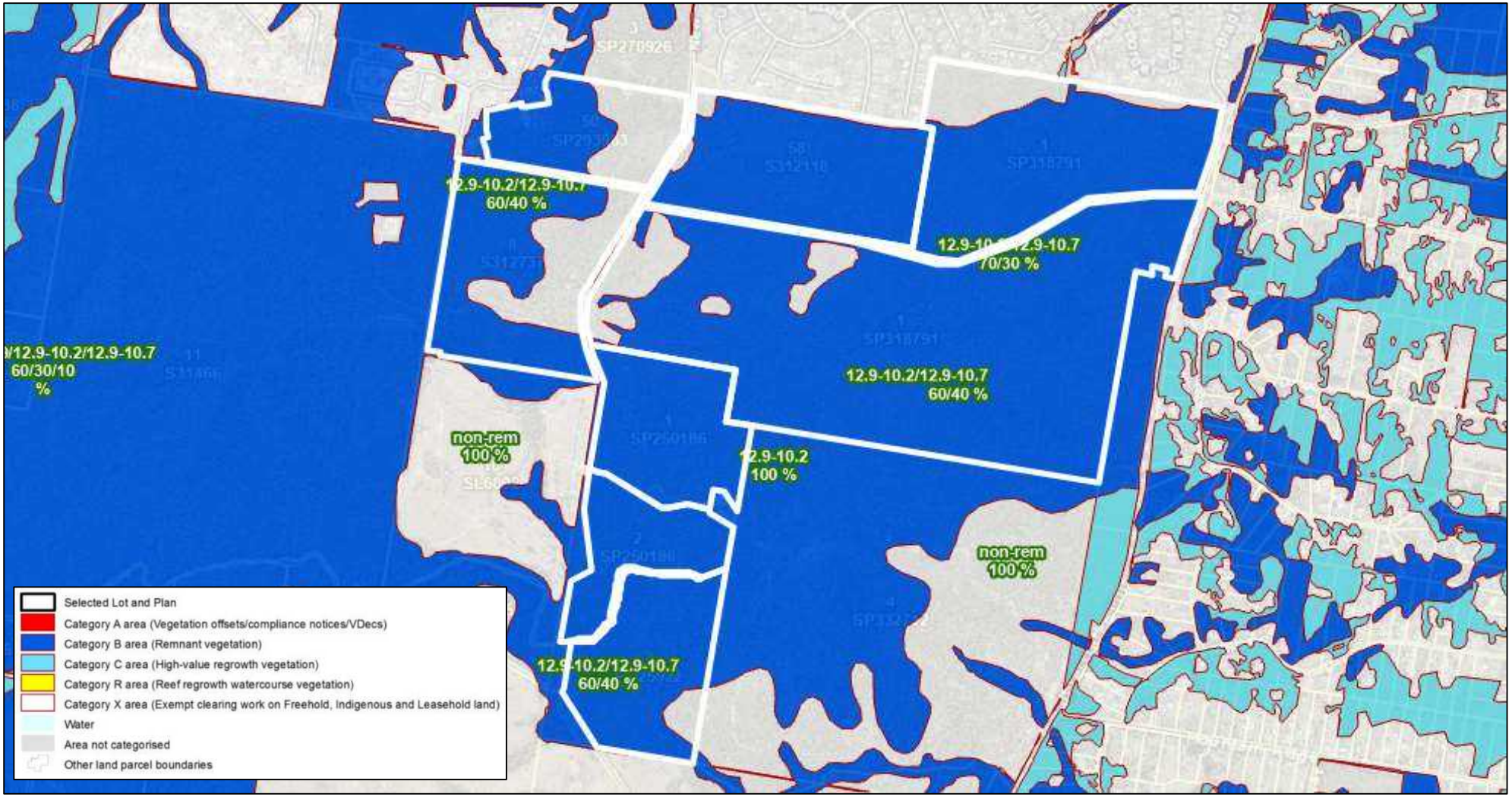
Source: Qld Globe 2022 (captured: 16/12/2022)

State matters

Map 5 — Protected Plants Flora Survey Trigger Map

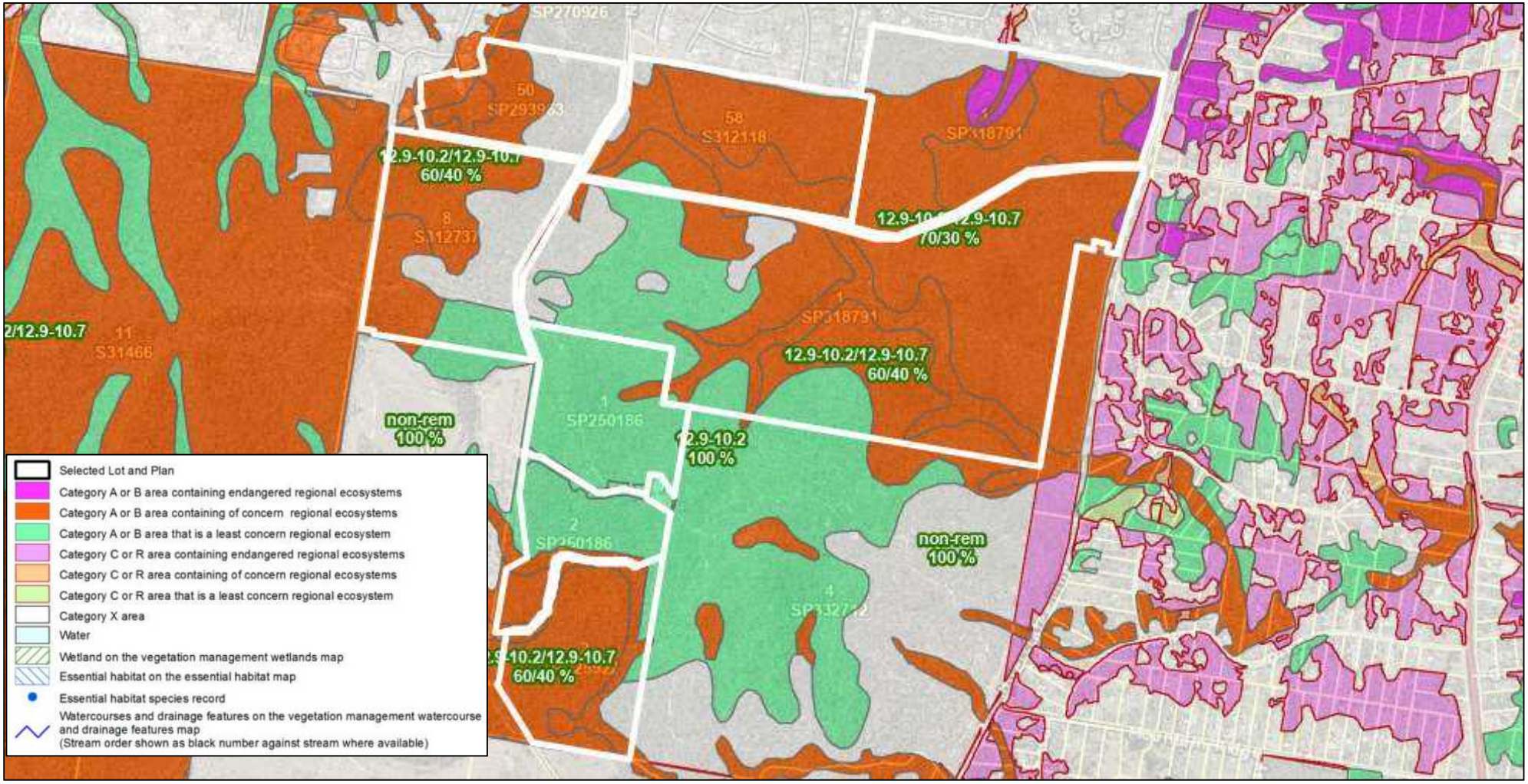
Source: Queensland Government (Department of Environment and Science) 2022 (captured: 16/12/2022)

Map 6 — Regulated Vegetation Management Map



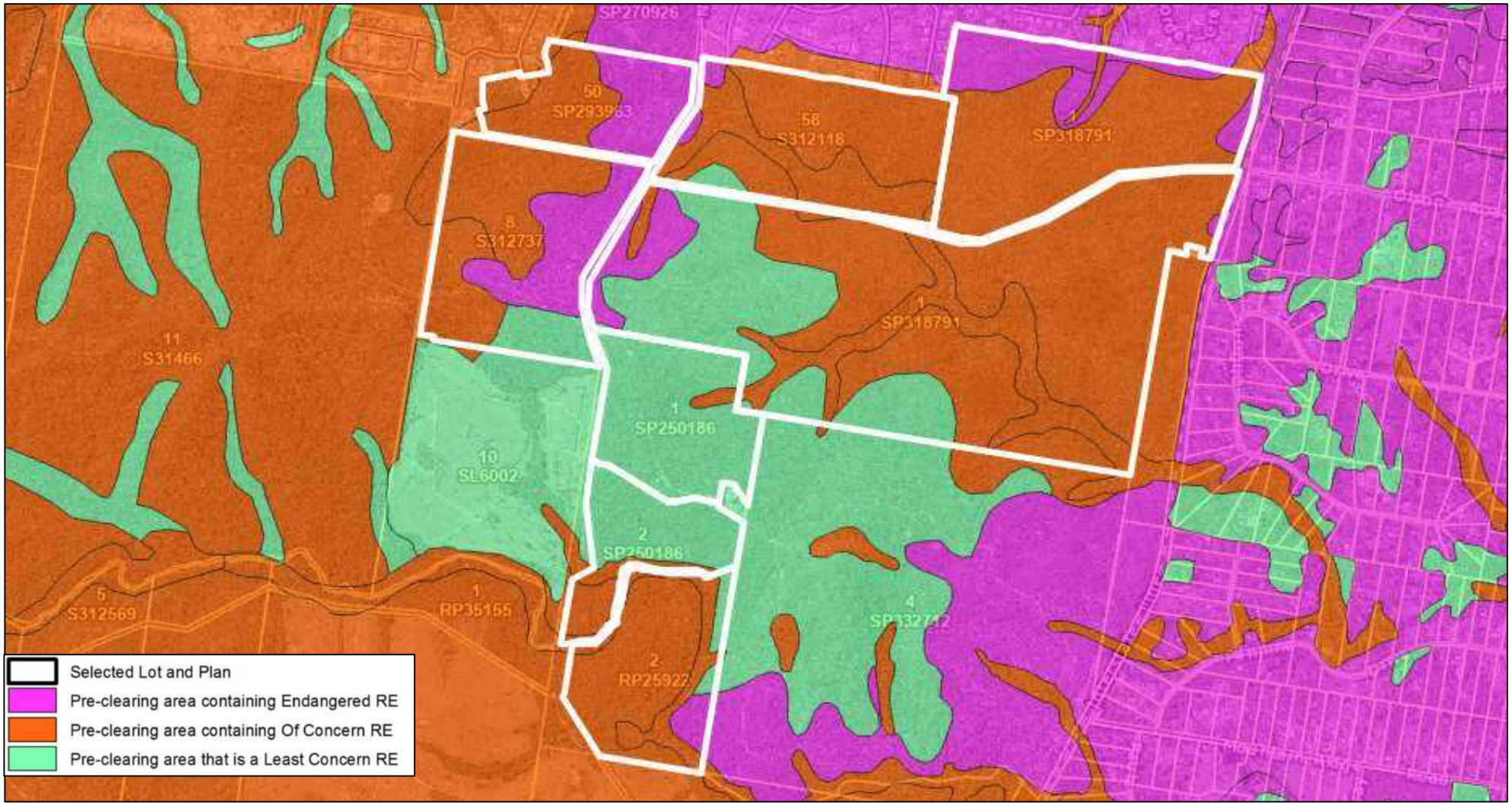
Source: Queensland Government (Department of Environment and Science) 2022 (captured: 16/12/2022)

Map 7 — Vegetation Management Supporting Map



Source: Queensland Government (Department of Environment and Science) 2022 (captured: 16/12/2022)

Map 8 — Preclear Regional Ecosystem

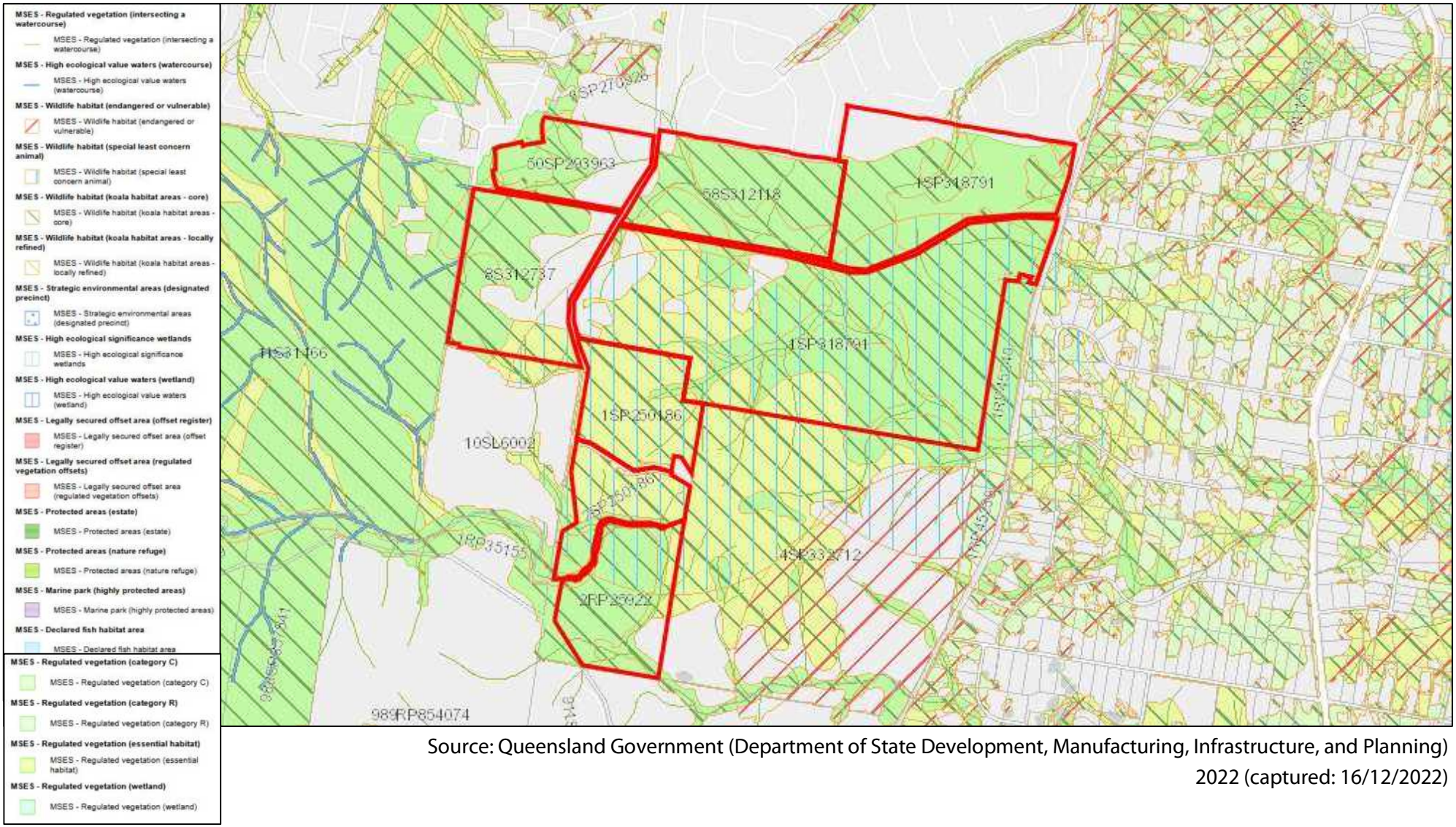


Source: Queensland Government (Department of Environment and Science) 2022 (captured: 16/12/2022)

Map 9 — Koala priority area and koala habitat areas

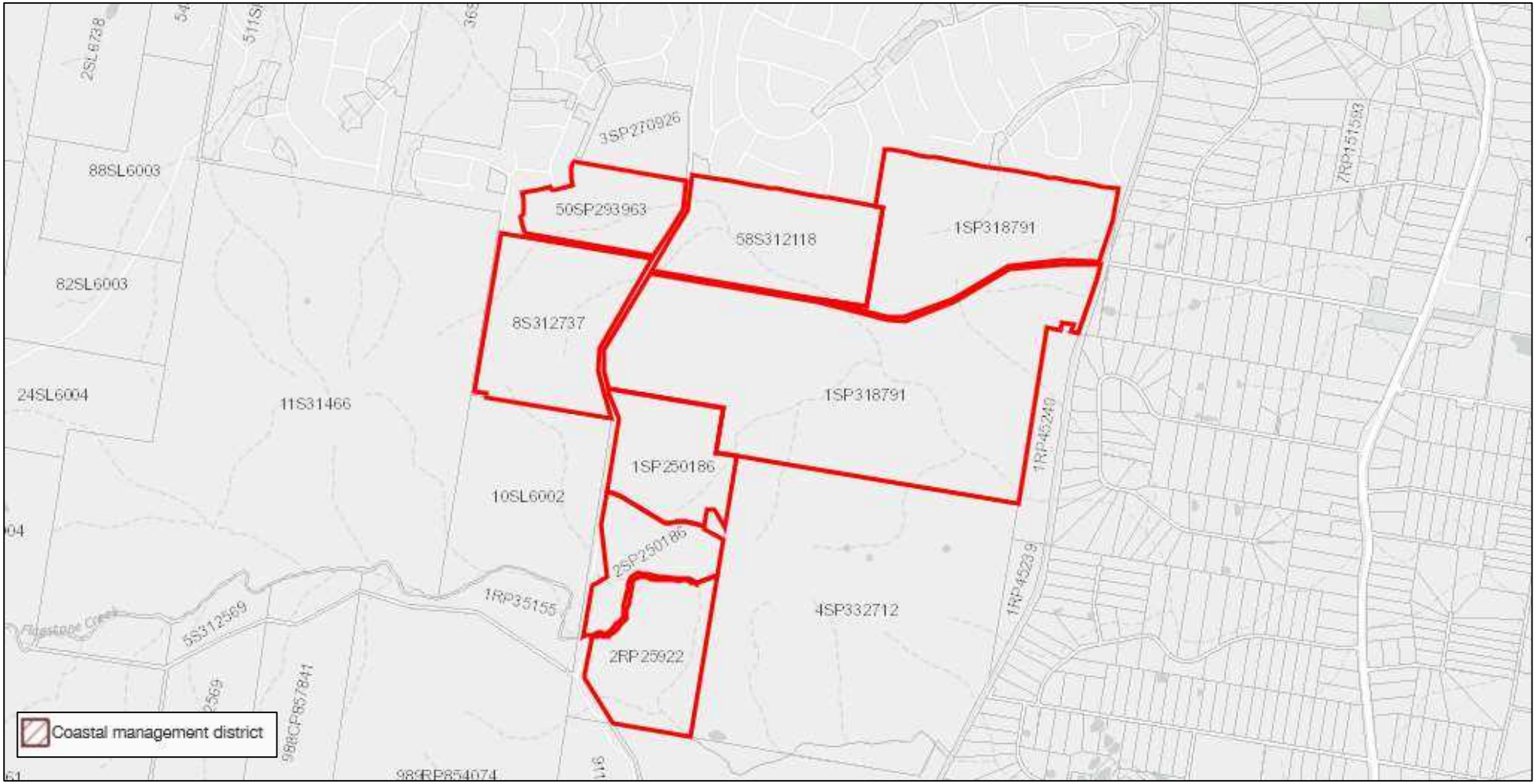
Source: Queensland Government (Department of Environment and Science) 2022 (captured: 16/12/2022)

Map 10 — SPP — Biodiversity



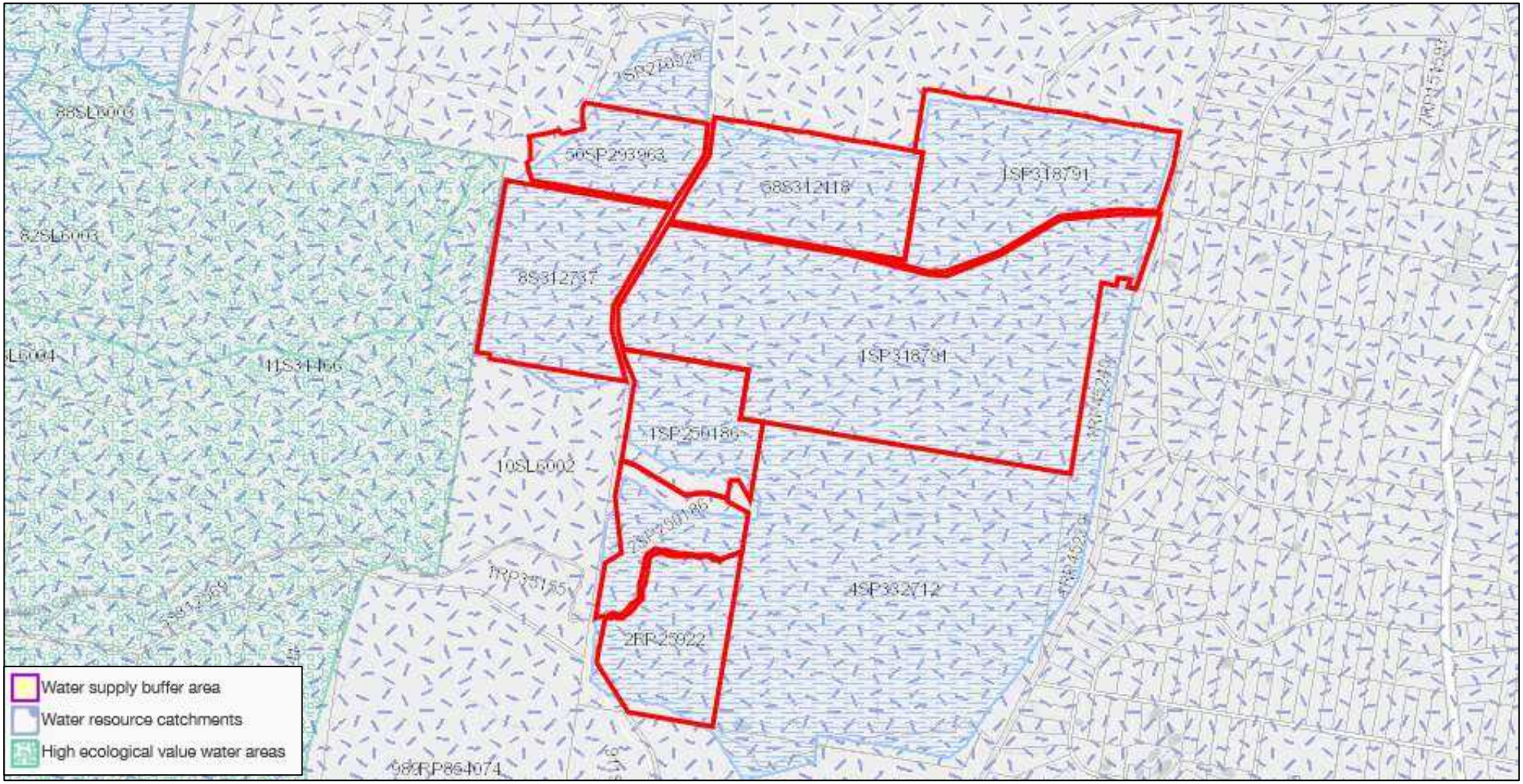
Source: Queensland Government (Department of State Development, Manufacturing, Infrastructure, and Planning) 2022 (captured: 16/12/2022)

Map 11 — SPP — Coastal Environment



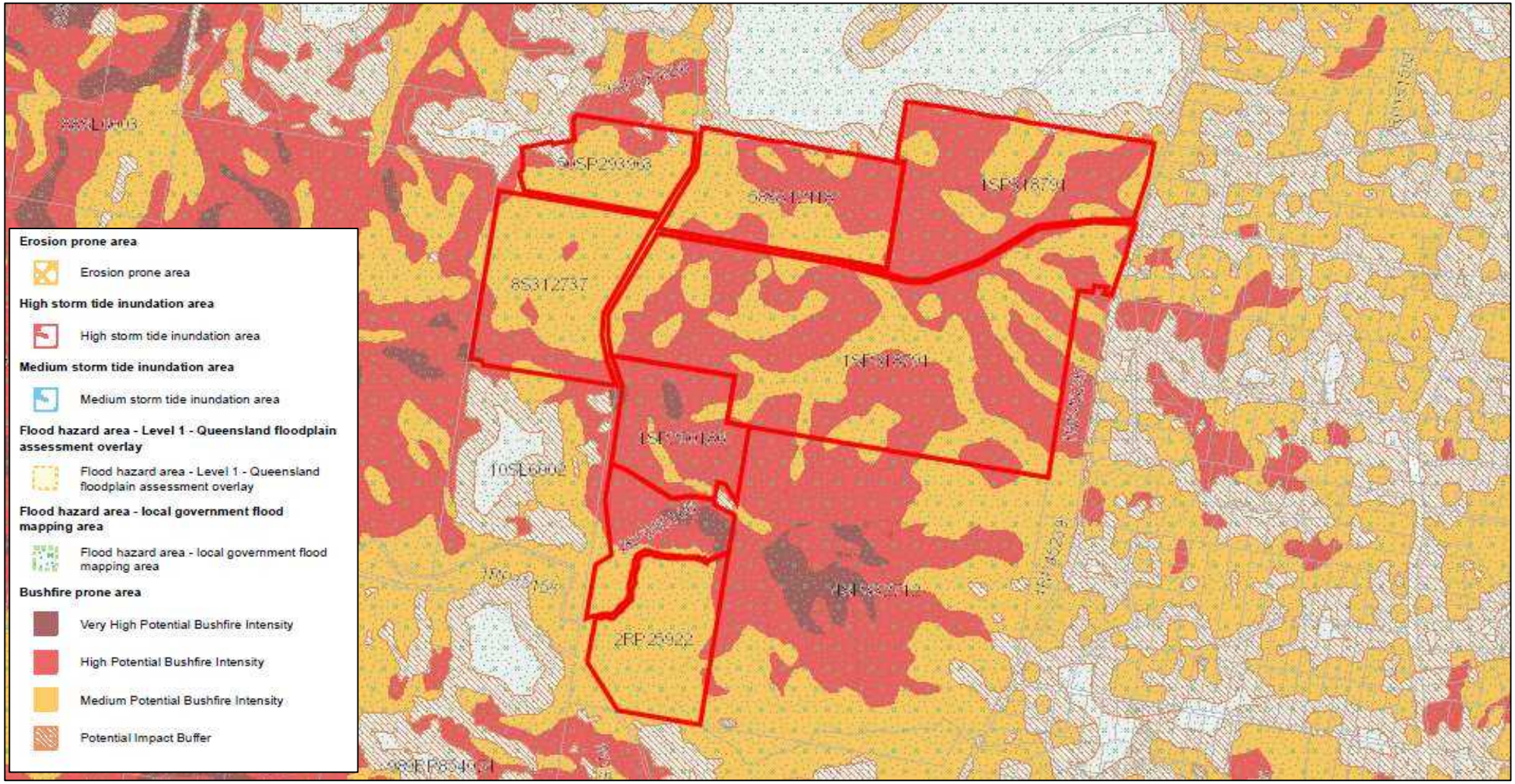
Source: Queensland Government (Department of State Development, Manufacturing, Infrastructure, and Planning) 2022 (captured: 16/12/2022)

Map 12 — SPP — Water Quality



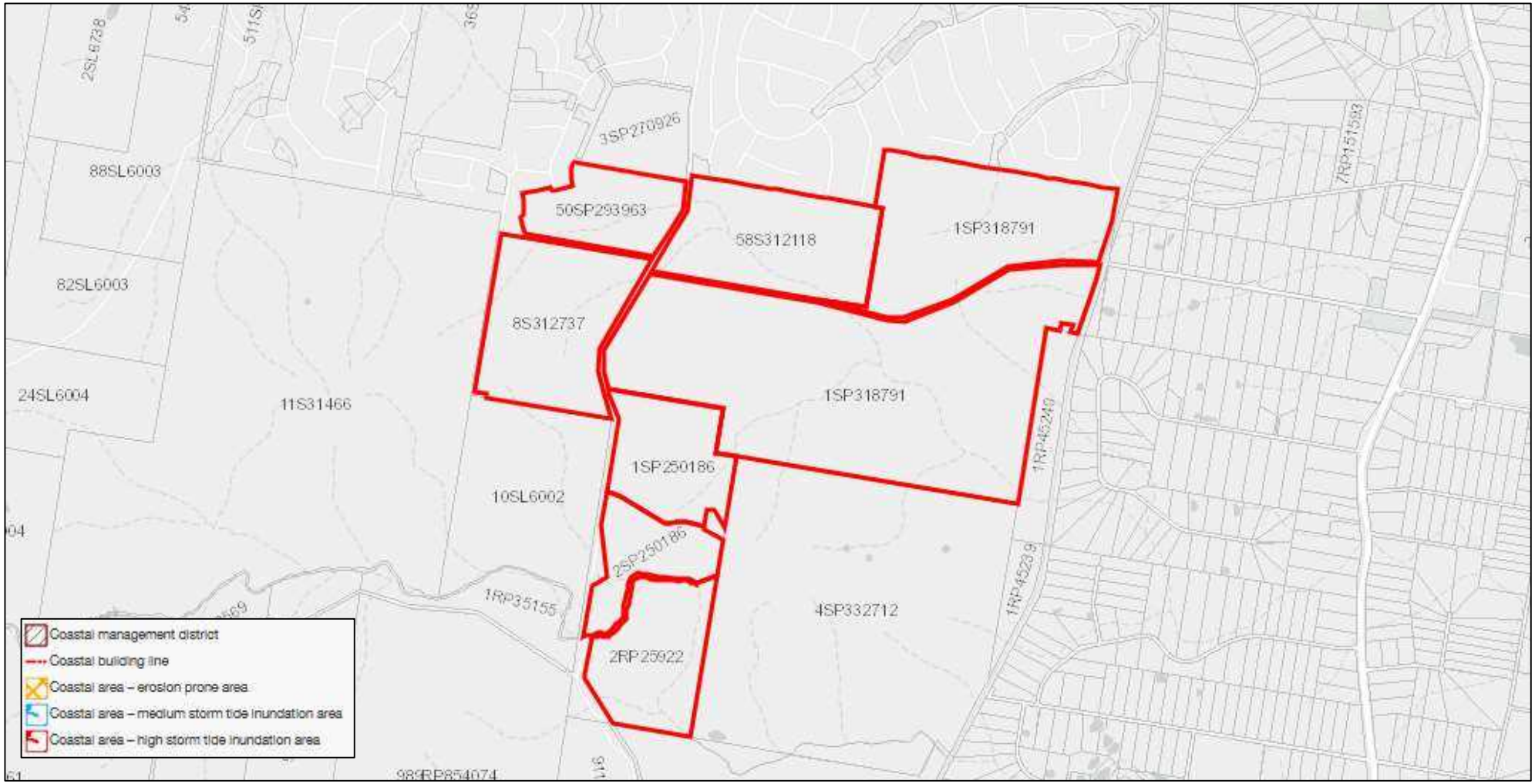
Source: Queensland Government (Department of State Development, Manufacturing, Infrastructure, and Planning) 2022 (captured: 16/12/2022)

Map 13 — SPP — Natural Hazards Risk and Resilience



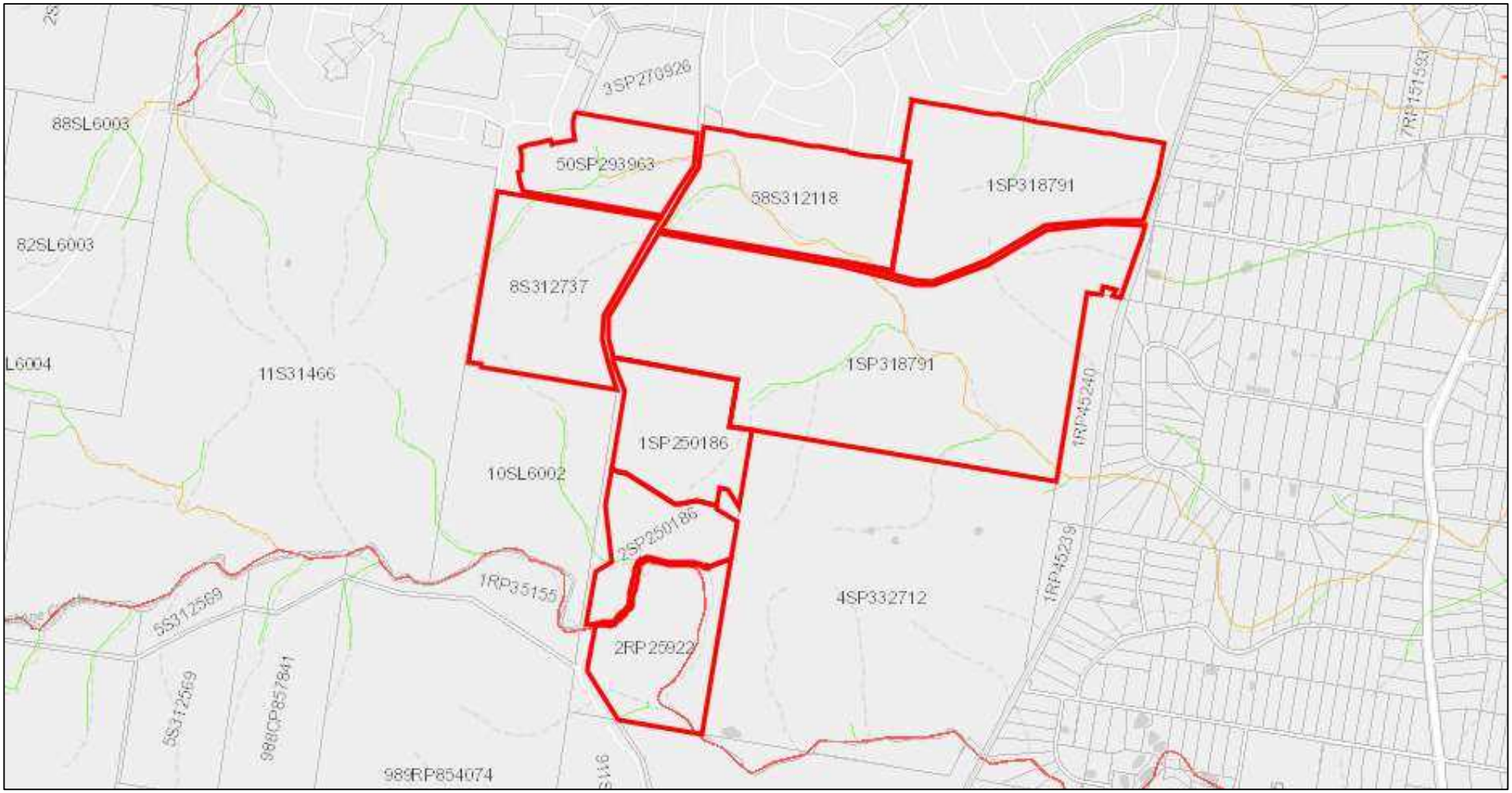
Source: Queensland Government (Department of State Development, Manufacturing, Infrastructure, and Planning) 2022 (captured: 16/12/2022)

Map 14 — DAMS — Coastal Protection



Source: Queensland Government (Department of State Development, Manufacturing, Infrastructure, and Planning) 2022 (captured: 16/12/2022)

Map 15 — DAMS — Fish Habitat Areas



Source: Queensland Government (Department of State Development, Manufacturing, Infrastructure, and Planning) 2022 (captured: 16/12/2022)

Map 16 — Water Act 2000 – Watercourse Identification

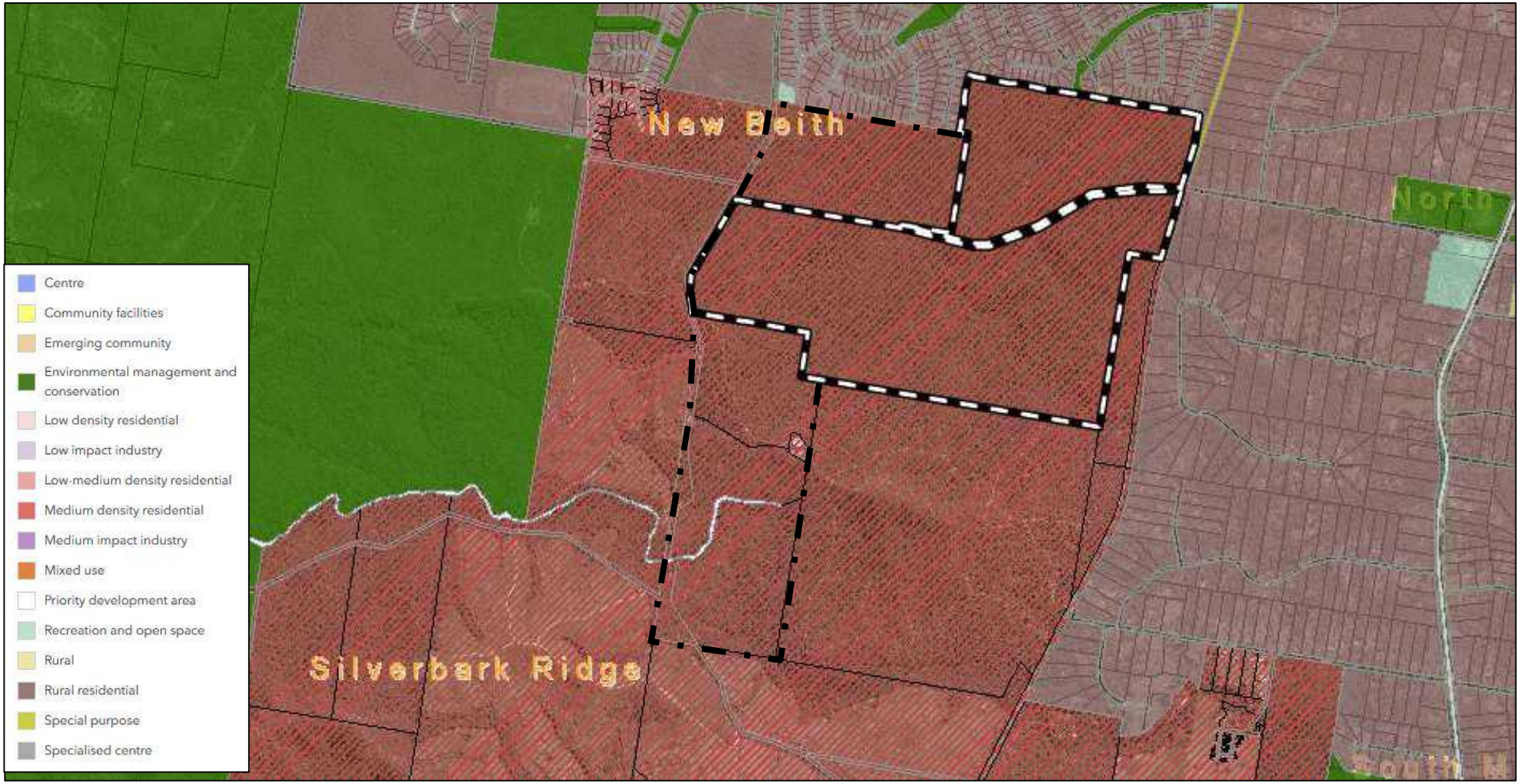
Source: Qld Globe (captured: 16/12/2022)

Map 17 — Highest Astronomical Tide

Source: Qld Globe (captured: 16/12/2022)

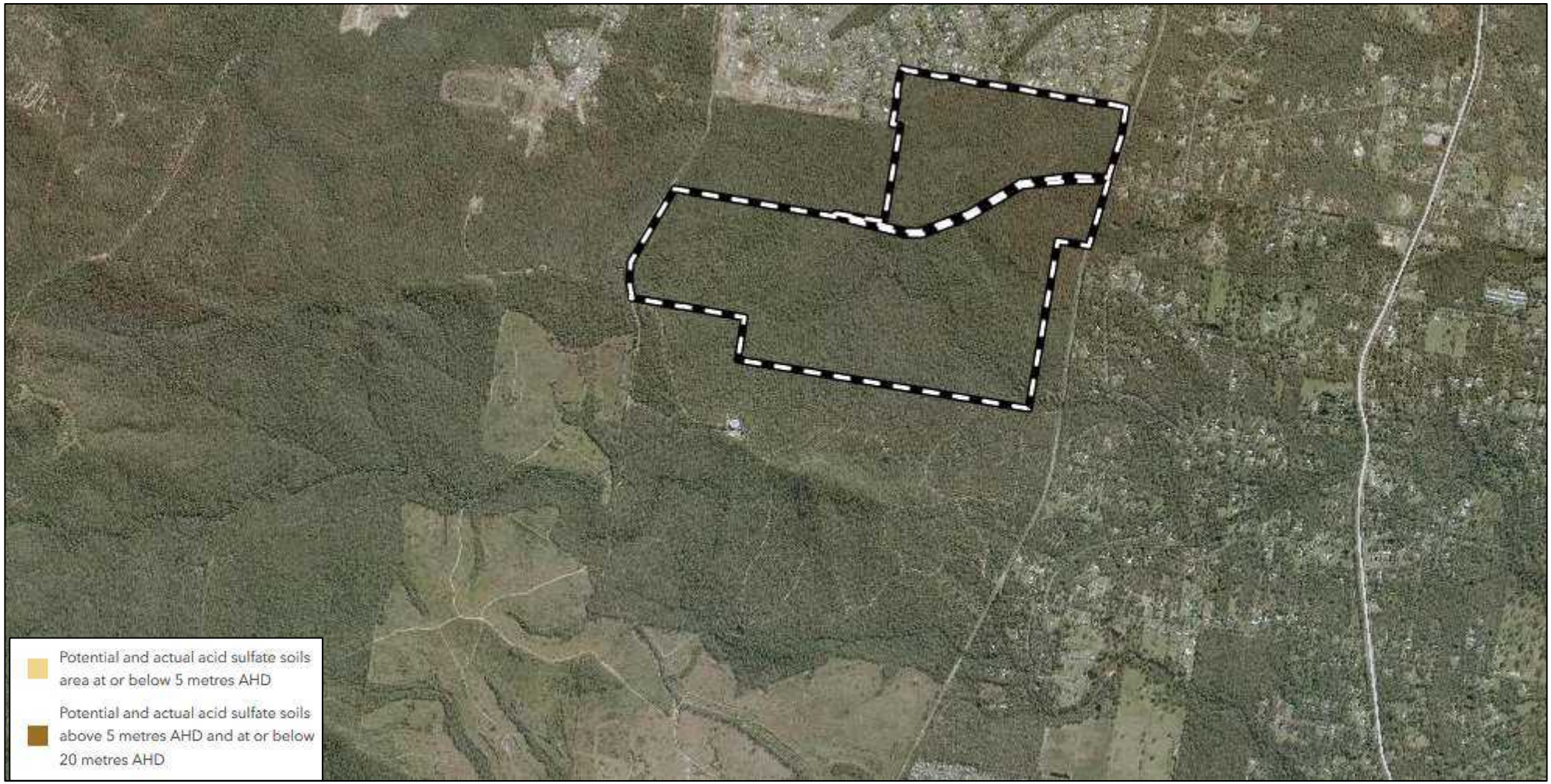
Local matters — Logan City Council

Map 18 — Zoning



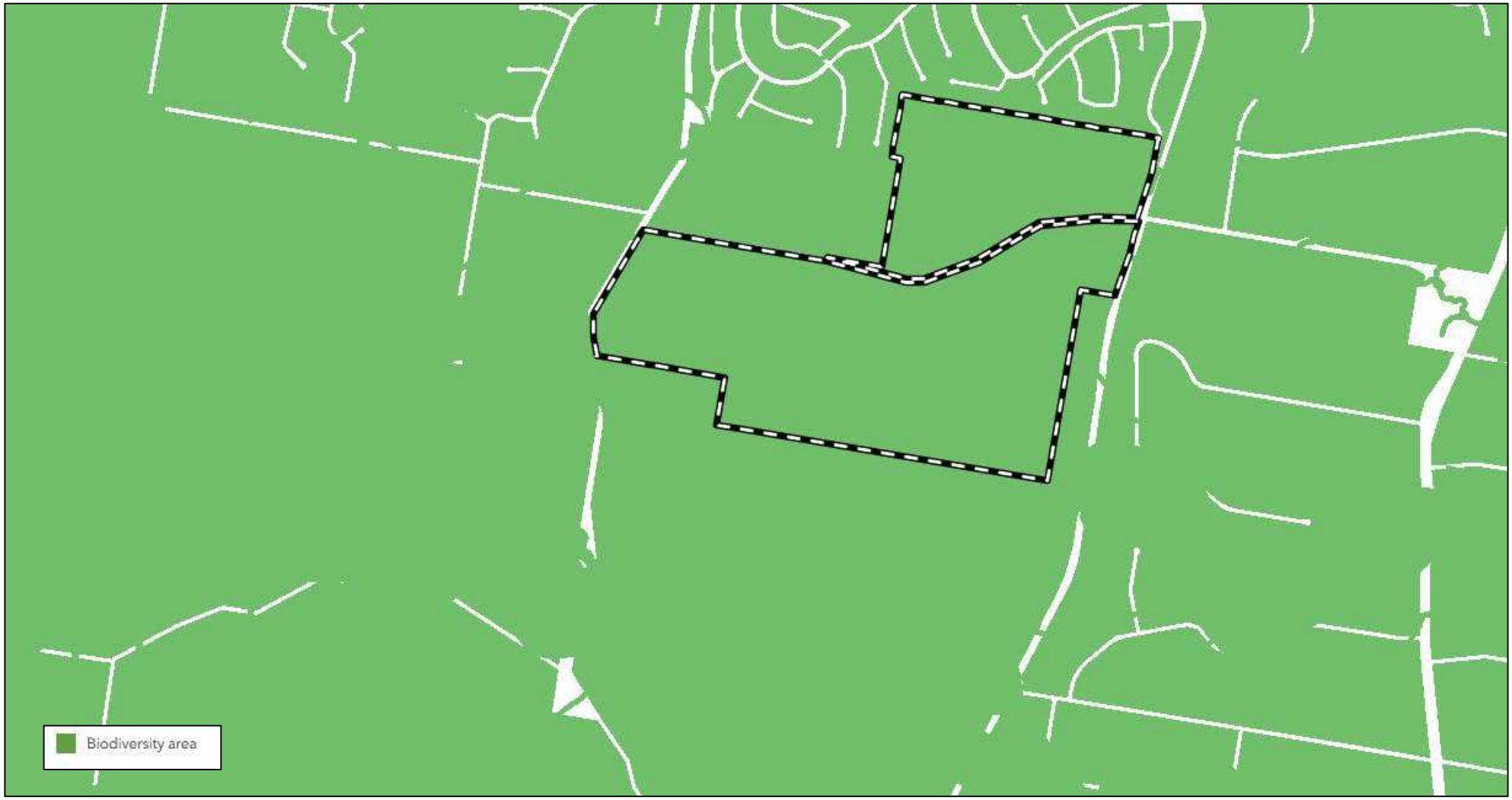
Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Map 19 - Overlay — Acid sulfate soils



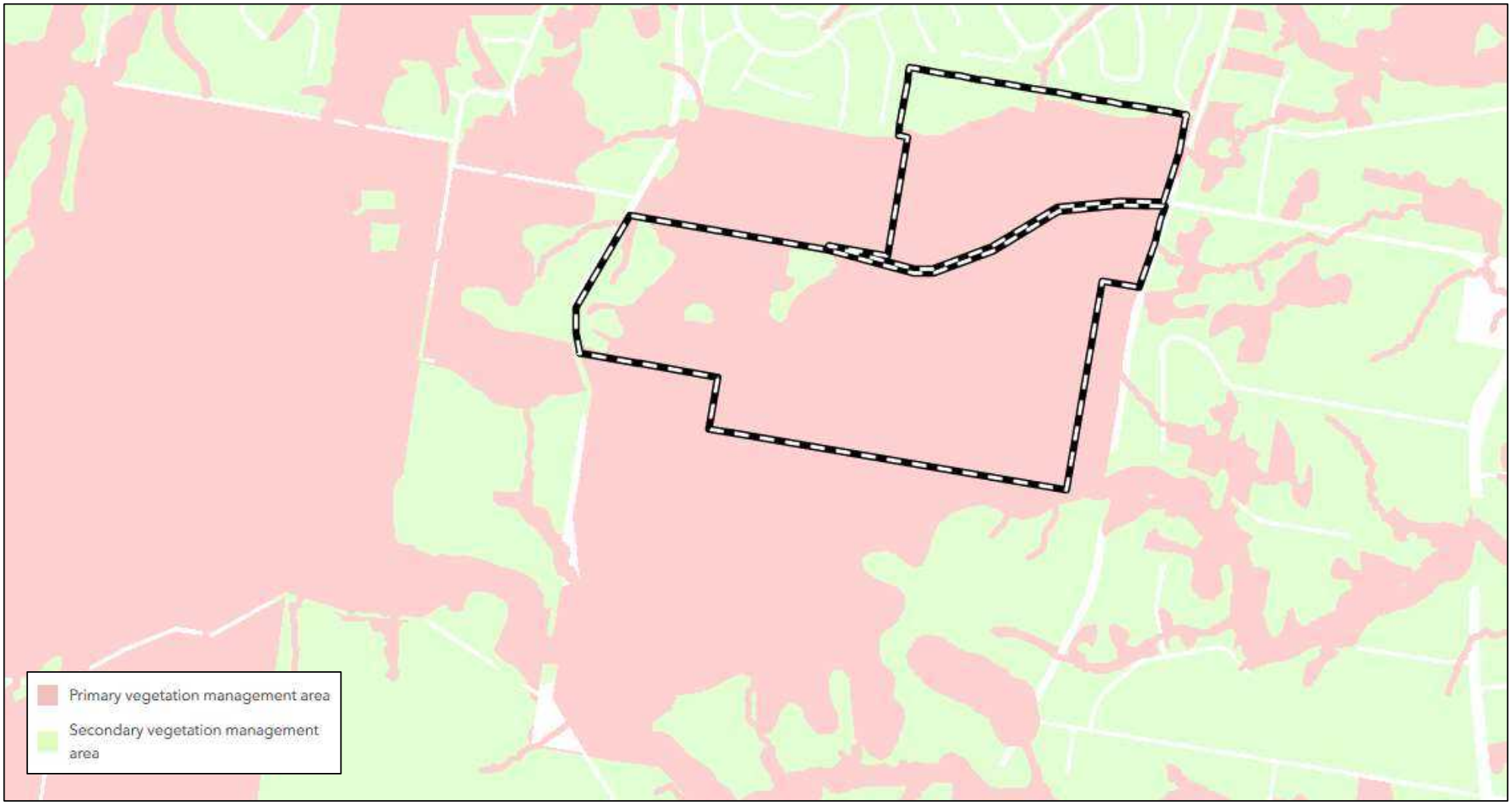
Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Map 20 - Overlay — Biodiversity Areas Trigger



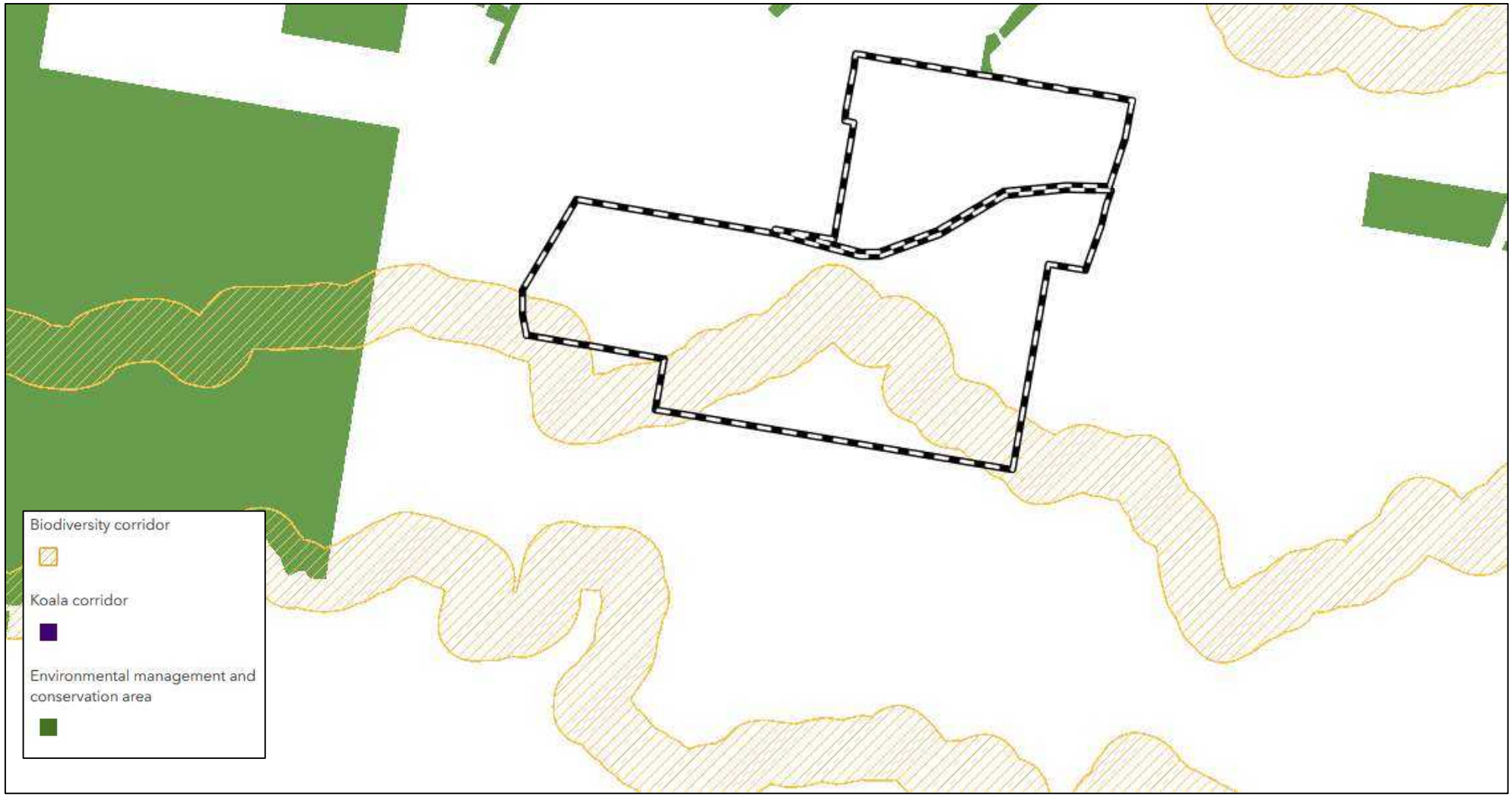
Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Map 21 - Overlay — Vegetation Management Areas



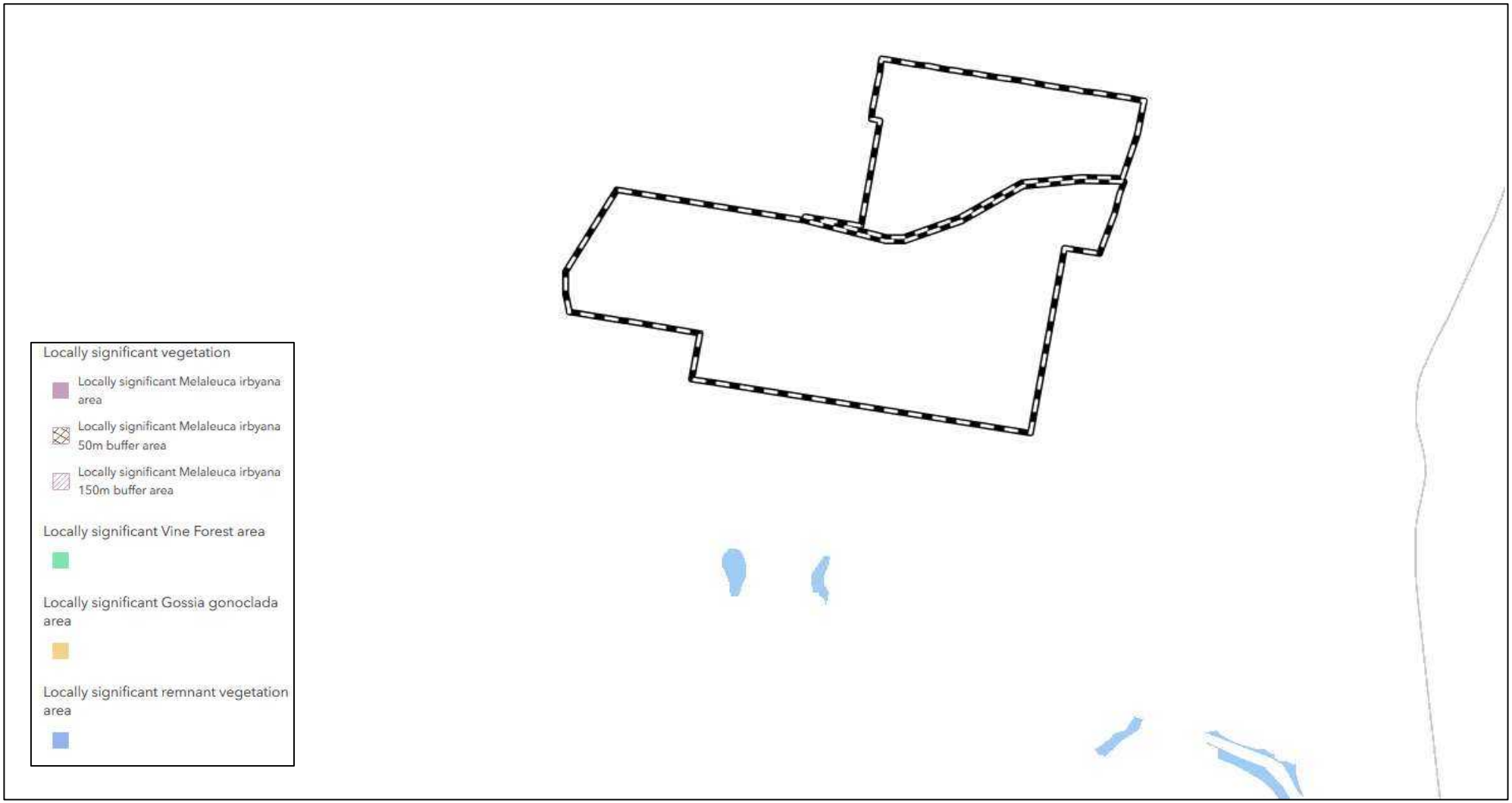
Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Map 22 - Overlay — Biodiversity Corridors



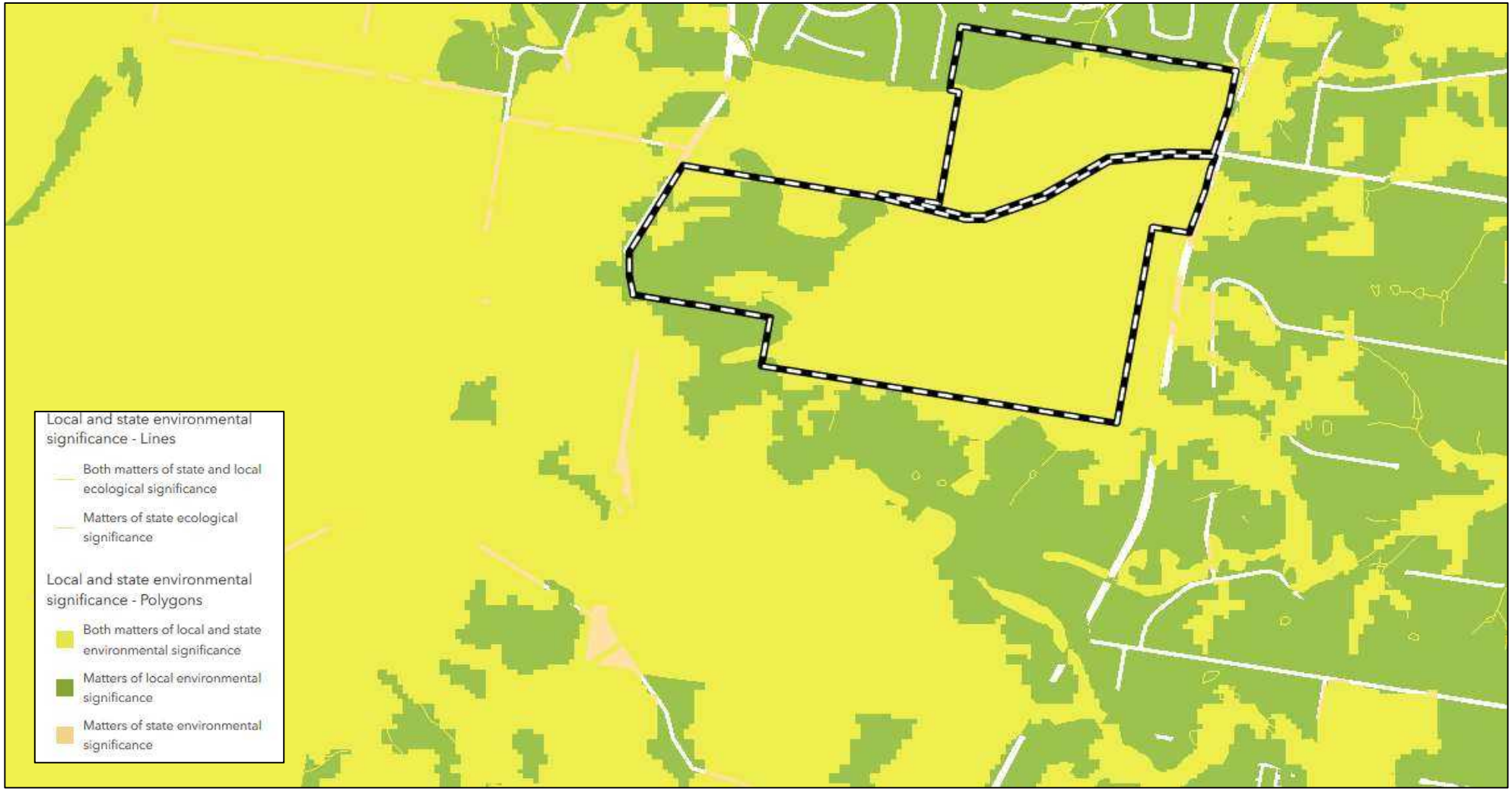
Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Map 23 - Overlay — Locally Significant Vegetation



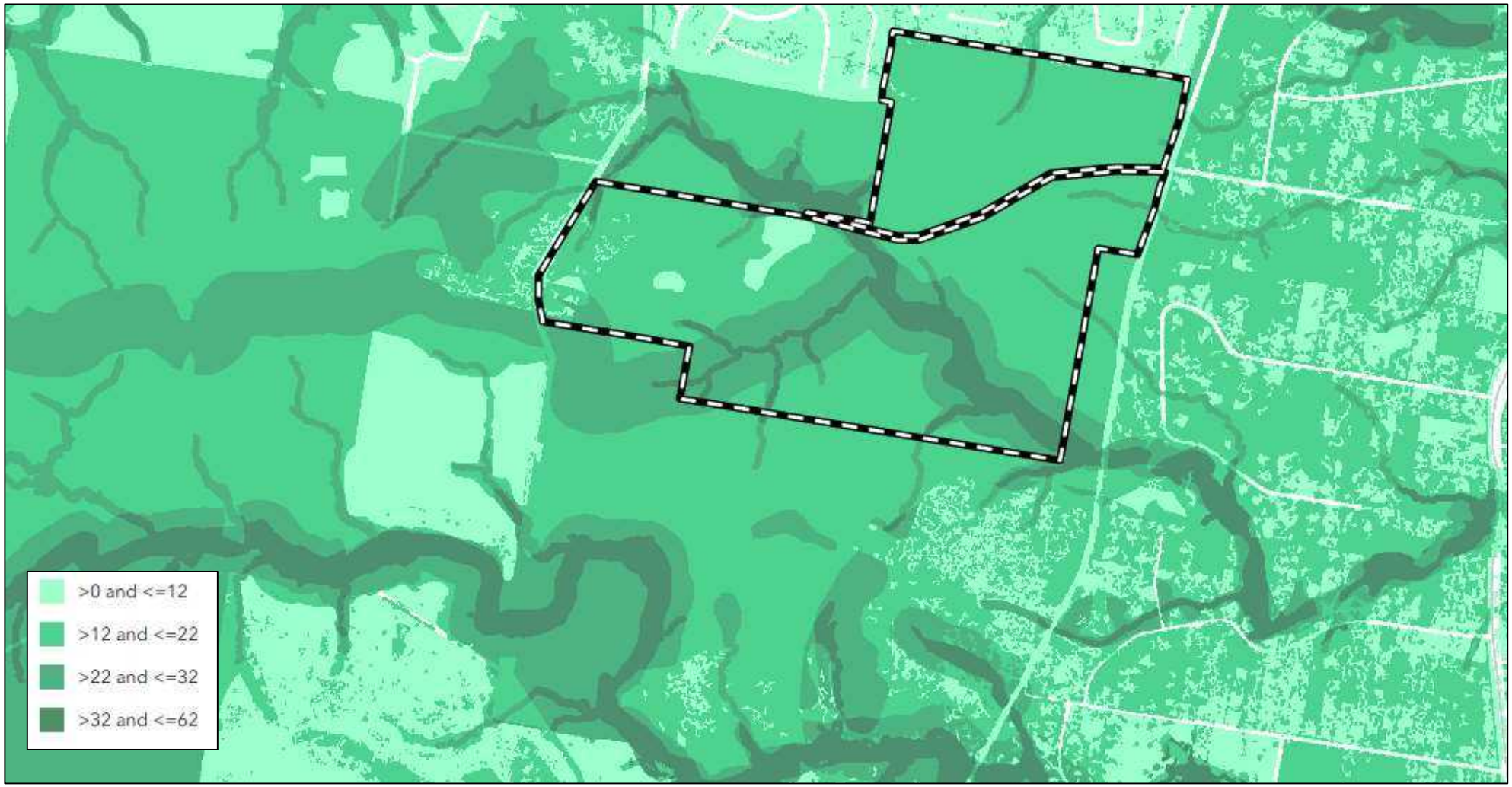
Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Map 24 - Overlay — Matters of State and Local Significance



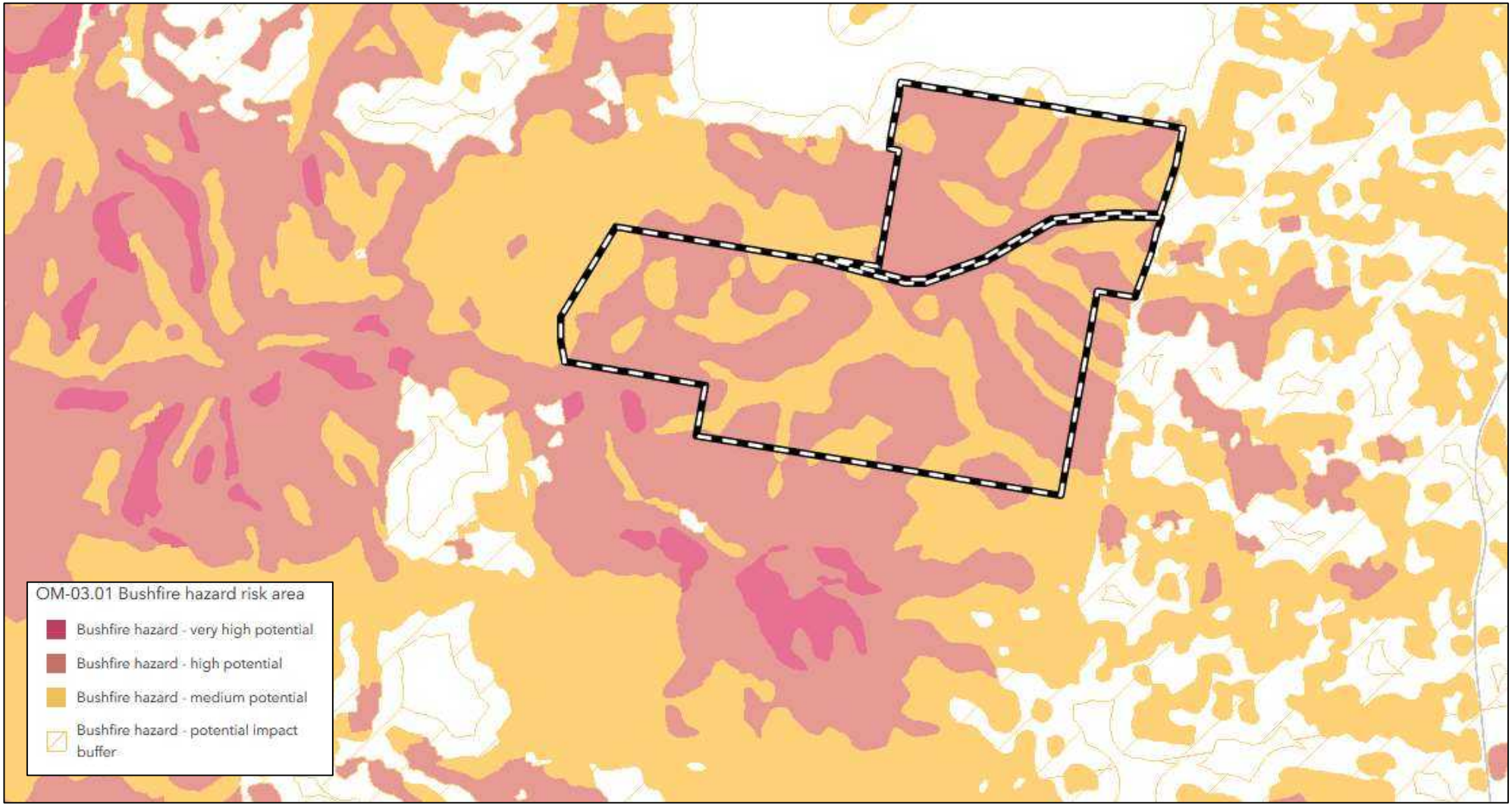
Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Map 25 - Overlay — Ecological Significance



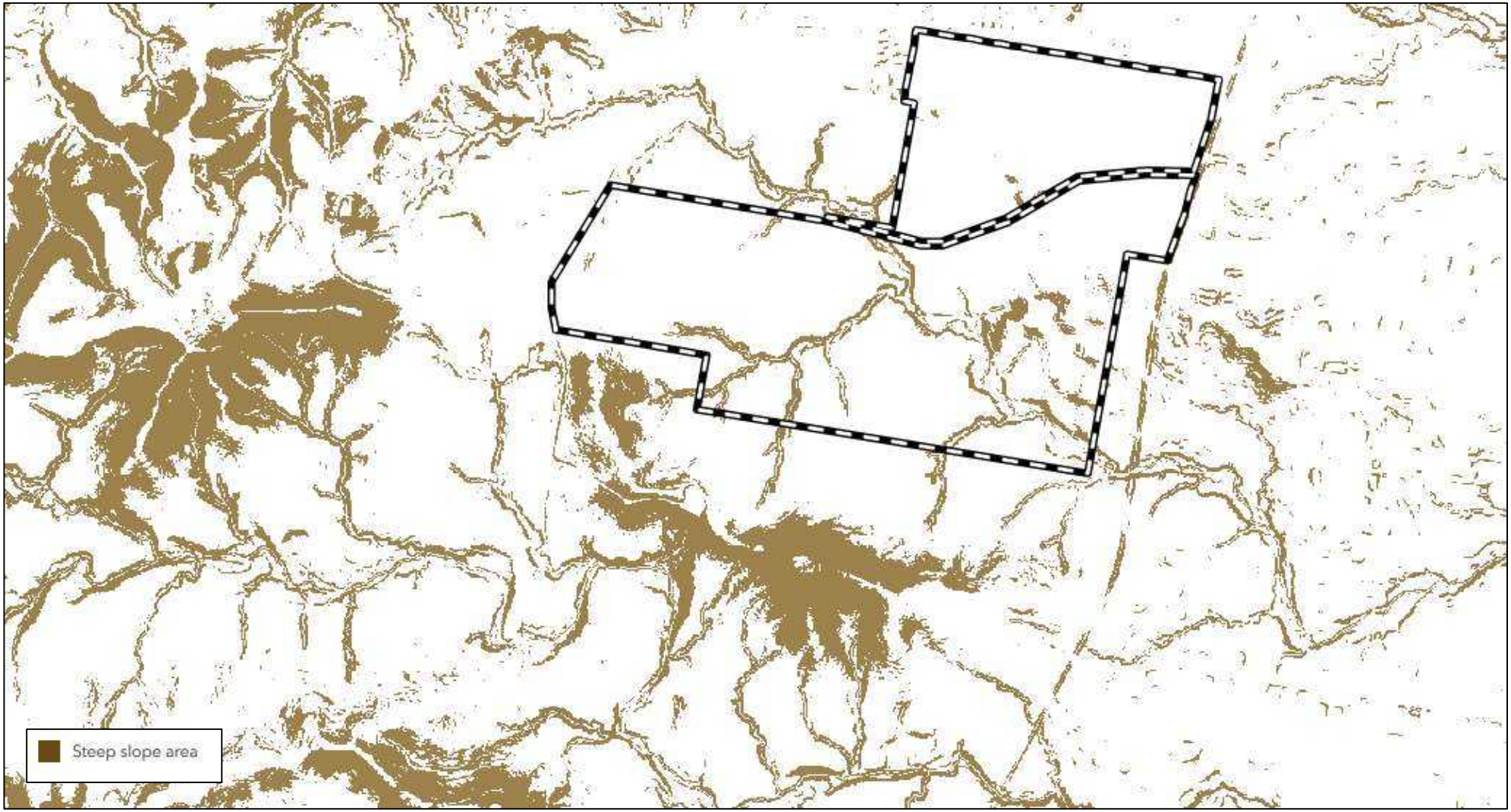
Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Map 26 – Overlay — Bushfire Hazard



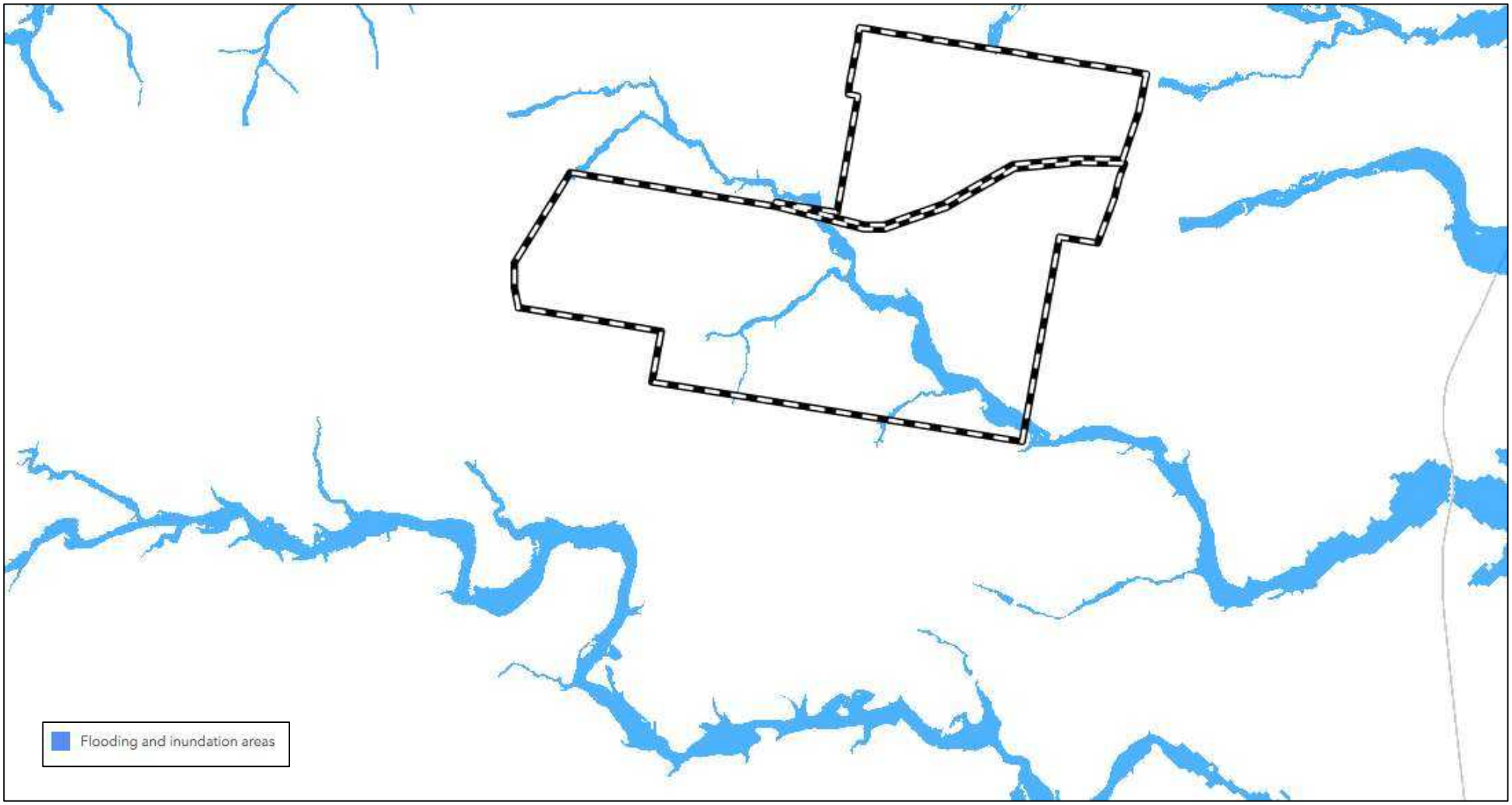
Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Map 27 - Overlay — Landslide Hazard



Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Map 28 - Overlay — Flood Hazard

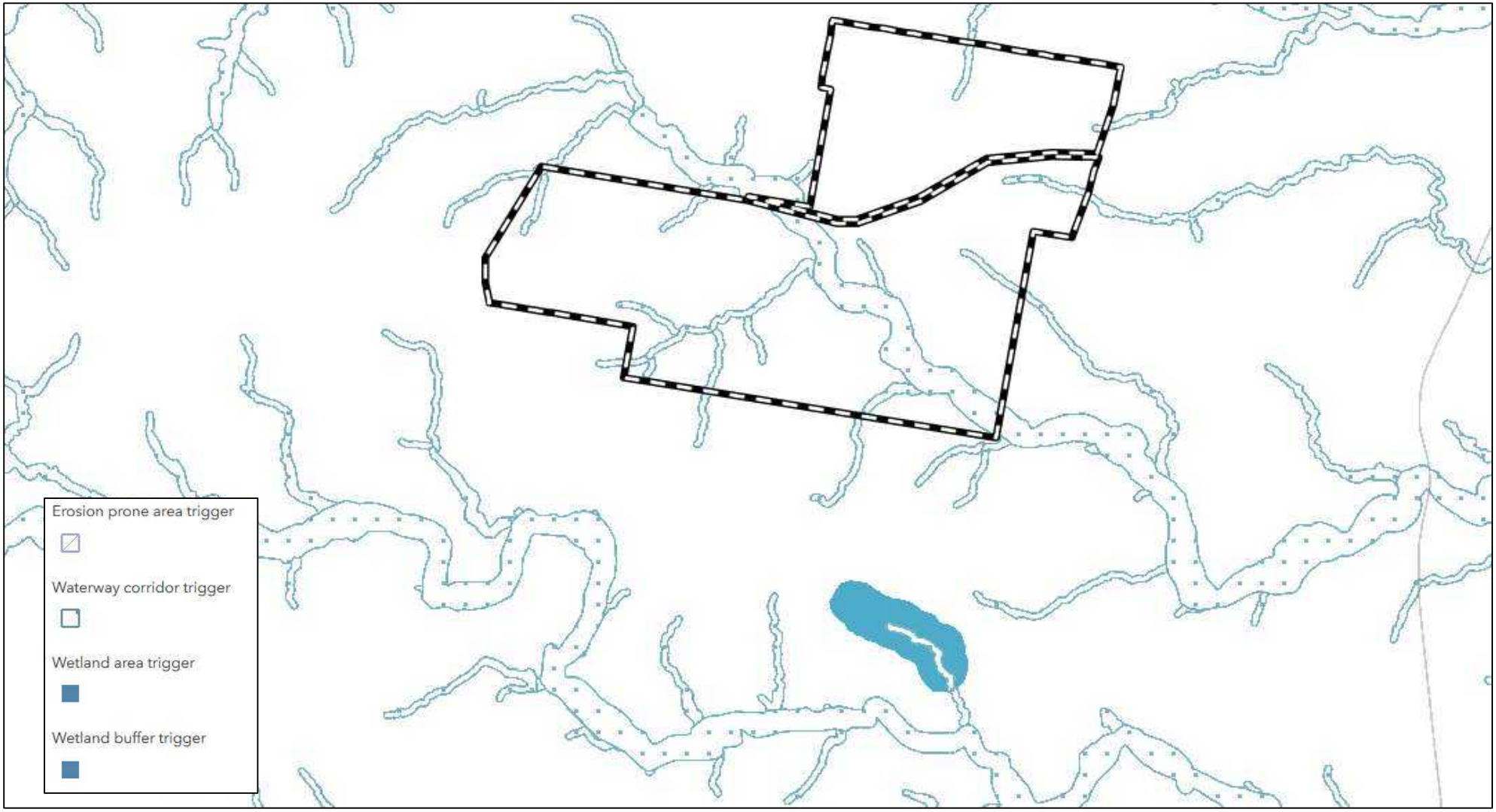


Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Map 29 - Overlay — Heritage

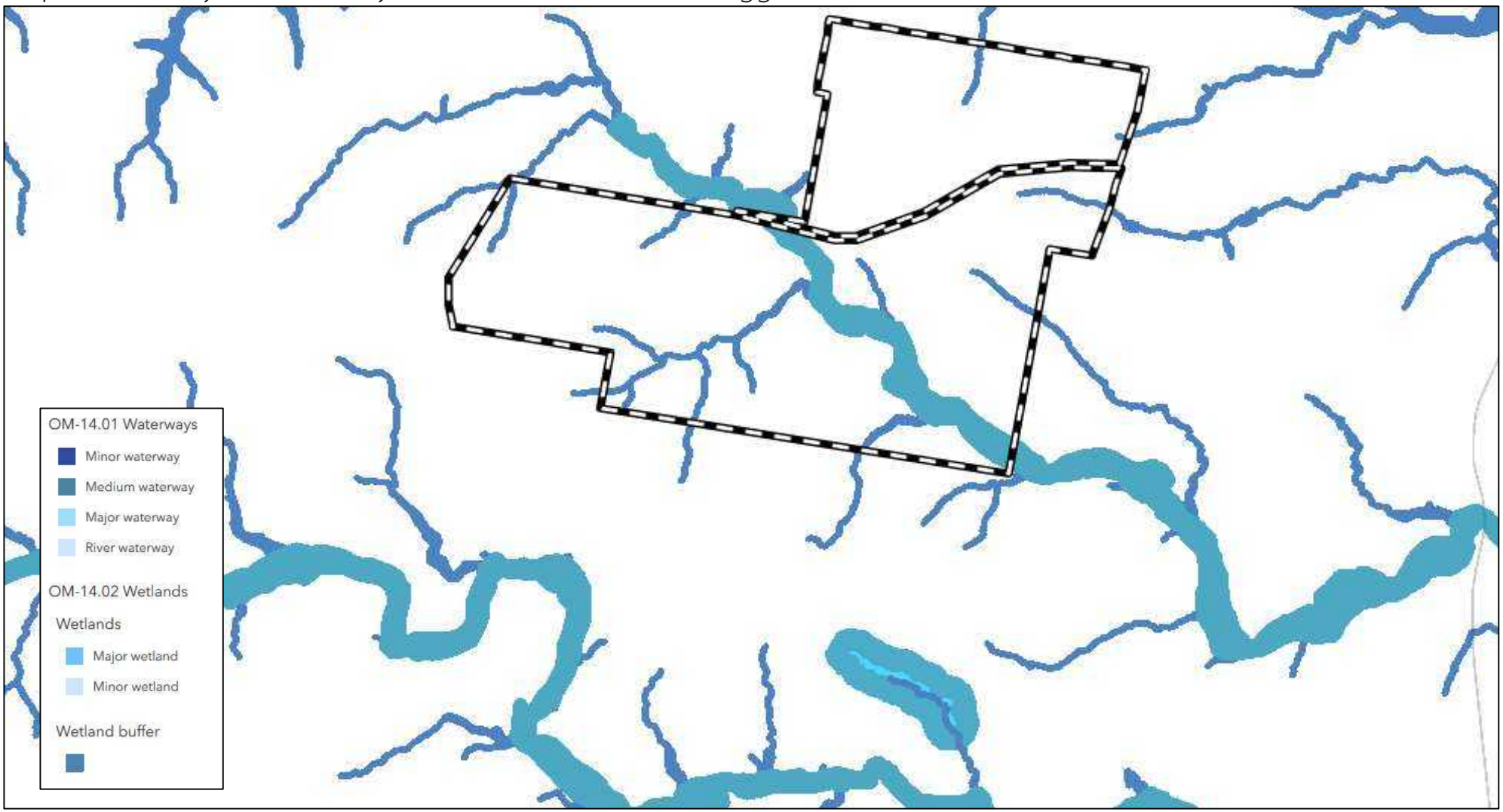
Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Map 30 - Overlay — Waterway Corridors and Wetlands Trigger



Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Map 31 - Overlay — Waterway Corridors and Wetlands Trigger cont.



Source: Logan Planning Scheme 2015 (captured: 16/12/2022)

Appendix D

Likelihood of Occurrence

HABITAT ASSESSMENT FOR LISTED EPBC SPECIES - 5km Search						
Matters of National Environmental Significance						
Name		**Status**	**Proximity**	**Description of Community**	**Likelihood of Occurrence**	**Likelihood**
Wetlands of International Importance	Moreton Bay	RAMSAR Listed	20 - 30 kilometers upstream	The site is located approximately 40 kilometres inland of Moreton Bay.	There will be no measurable effect on Moreton Bay.	**Unlikely**
Listed Threatened Ecological Communities						
Name		**Status**	**Type of Presence**	**Description of Community**	**Likelihood of Occurrence**	**Likelihood**
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community.		Endangered	This Threatened Ecological Community is listed as a community that may occur within the area.	In Queensland, this ecological community coincides with two regional ecosystem communities including Of Concern RE12.1.1 (Casuarina glauca +/- mangroves woodland) as well as areas where the canopy is dominated by Casuarina glauca within 12.3.20 (Melaleuca quinquenervia, Casuarina glauca +/- Eucalyptus tereticornis, Eucalyptus siderophloia open forest on low coastal alluvial plains).	Casuarina glauca was not identified throughout the survey area, nor regional ecosystem communities associated with this TEC.	**Unlikely**
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland		Endangered	This Threatened Ecological Community is listed as a community that is likely to occur within the area.	This threatened ecological community occurs in coastal catchments, typically within 20km of the coast and below 20m above seas level, on low lying coastal alluvial areas such as swamps, floodplain pockets, depressions, alluvial flats, back-barrier flats, fans, terraces and behind fore dunes. The canopy is dominated by Melaleuca sp. and / or Eucalyptus robusta, with other Eucalyptus species tolerant of inundation present but not dominant. In Queensland this TEC is represented by RE12.2.7, RE12.3.4/12.3.4a, RE12.3.5, RE12.3.6, and RE 12.3.20.	Desktop analysis and field surveys confirmed that regional ecosystem RE12.2.7, RE12.3.4/12.3.4a, RE12.3.5, RE12.3.6, and RE 12.3.20 do not occur on-site. The majority of the investigation area contains regional ecosystem communities associated with land zone 9-10, which is not suitable to this threatened ecological community.	**Unlikely**
Grey box-grey gum wet forest of subtropical eastern Australia		Endangered	This Threatened Ecological Community is listed as a community that is likely to occur within the area.	Grey box-grey gum wet forest of subtropical eastern Australia is described as a forest where the canopy dominated by its characteristic Eucalyptus species (being Eucalyptus moluccana or Eucalyptus propinqua less commonly Eucalyptus punctata) with or without Araucaria cunninghamii (hoop pine) and with an understorey that typically includes significant cover of species with drier vine-forest (rainforest) affiliations. In Queensland REs likely to represent or contain the ecological community includes RE 12.9-10.3 and 12.8.14a.	Araucaria cunninghamii was not identified throughout the survey area, nor regional ecosystem communities associated with this TEC.	**Unlikely**
Lowland rainforest of Subtropical Australia		Critically Endangered	This Threatened Ecological Community is listed as a community that may occur within the area.	Typically there is a relatively low abundance of species from the genera *Eucalyptus, Melaleuca* and *Casuarina.* Buttresses are common as is an abundance and diversity of vines. This community is usually associated Regional Ecosystems 12.3.1, 12.5.13, 12.8.3, 12.8.4, 12.8.13, 12.11.1, 12.11.10, 12.12.1, and 12.12.16.	No species representing these characteristics or vegetation communities were observed within the assessment area. The majority of the investigation area contains regional ecosystem communities associated with land zone 9-10, which is not suitable to this threatened ecological community, and the RE 12.3.11 and 12.3.7 along the waterways are not typically associated with this TEC.	**Unlikely**

Poplar Box Grassy Woodland on Alluvial Plains	Endangered	This Threatened Ecological Community is listed as a community that may occur within the area.	The Poplar Box Grassy Woodland on Alluvial Plains ecological community is typically a grassy woodland with a canopy dominated by *Eucalyptus populnea* and understorey mostly of grasses and other herbs. The ecological community mostly occurs in gently undulating to flat landscapes and occasionally on gentle slopes on a wide range of soil types of alluvial and depositional origin. In Queensland, this TEC corresponds with 11.3.2, 11.3.17, 11.3.7, 11.4.12 and 12.3.10.	No species representing these characteristics or vegetation communities were observed within the assessment area. The majority of the investigation area contains regional ecosystem communities associated with land zone 9-10, which is not suitable to this threatened ecological community.	**Unlikely**
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	This Threatened Ecological Community is listed as a community that is likely to occur within the area.	This ecological community is found on alluvial landforms, including floodplains, the riparian zones of parent rivers and other order tributaries, alluvial flats, floodplain/alluvial terraces and periodically flooded depressions. The structure of this TEC varies from tall open forest to woodland. The canopy is dominated by eucalypts and/or other myrtaceous trees, (specifically from Angophora, Corymbia, Lophostemon and Syncarpia genera). A mid-layer or sub-canopy of small trees may be present – with scattered to dense shrubs. For example, Melaleuca, Leptospermum and related genera may form dense thickets beneath the main canopy, or in gaps between canopy trees. Typical examples of tree species include Corymbia intermedia (Pink Bloodwood), Eucalyptus bancroftii (Bancroft's Red Gum), E. moluccana (Grey Box), E. grandis (Flooded Gum), E. siderophloia (Grey Ironbark), and E. tereticornis (Forest Red Gum). In Queensland Syncarpia glomulifera (Turpentine) may also dominate, or co-dominate. Regional Ecosystems generally associated with this TEC where key diagnostic characteristics are met include RE 12.3.2, 12.3.2a, 12.3.3, 12.3.3a, 12.3.3b, 12.3.3d, 12.3.4a, 12.3.7, 12.3.7c, 12.3.7d, 12.3.10, 12.3.11, 12.3.11a, 12.3.11b, 12.3.12, 12.3.14a, 12.3.15, 12.3.19. Low open forest dominated by dense thickets of Swamp Teatree, usually growing to about 8-12 m high. In south-east Queensland, Swamp Tea-tree occurs in monotypic stands uniquely linked to Tea Tree Clay soils which drain slowly after heavy rains, becoming waterlogged and forming temporary ponds. This ecological community comprises Queensland regional ecosystems 12.9-10.11 (Land Zone 9-10) and 12.3.3c (Land Zone 3) which are listed as endangered under the VMA.	No species representing these characteristics or vegetation communities were observed within the assessment area. The majority of the investigation area contains regional ecosystem communities associated with land zone 9-10, which is not suitable to this threatened ecological community	**Unlikely**

Swamp Tea-tree (Melaleuca irbyana) Forest of South East Queensland.	Critically Endangered	This Threatened Ecological Community is listed as a community that is likely to occur within the area.	The Swamp Tea-tree forest also is listed as Endangered regional ecosystems 12.9-10.11 and 12.3.3c under Queenslands Vegetation Management Act. Melaleuca irbyana is the domiant species recorded within this vegetation community.	*Melaleuca irbyana* species has been identified contextually to the site and it was identified throughout the investigation area during 2022 surveys.	**Known**
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	This Threatened Ecological Community is listed as a community that is likely to occur within the area.	This threatened community is characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs and the dominance of White Box, Yellow Box, or Blakely's Red gum trees. This community is usually associated with Regional Ecosystem 11.8.2a, 11.8.8, 11.9.9a, 13.3.1, 13.11.8, and 13.12.9. It can also be a small component of Regional Ecosystem 11.3.23, 12.8.16, 13.3.4, 13.11.3 and 13.11.4.	No species representing these characteristics or vegetation communities were observed within the assessment area. The majority of vegetation on-site is mapped as land zone 9-10, and within Bioregion 12, which is generally not suitable for this threatened ecological community.	**Unlikely**

Birds						
Name	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Likelihood**
Anthochaera phrygia	Regent Honeyeater	Endangered	82338	Regent Honeyeaters mostly occur in dry Box-Ironbark Eucalypt woodland and dry sclerophyll forest associations in areas of low to moderate relief, wherein they prefer moister, more fertile sites. These areas are generally associated with creek flats and river valleys and foothills. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. They are a generalist forager, which mainly feed on nectar from a wide range of eucalypts and mistletoes.	The site is covered in both remnant and regrowth vegetation communities dominated by eucalypt and Corymbia species, particularly Corymbia citriodora (Spotted Gum), however riparian areas are highly disturbed from cattle grazing, tree removal and weed invasion. The site is not dominated by box and ironbark species, and this species relies on vegetation with a diversity of species and abundance of mistletoe for food resources throughout the year, which is generally absent on site.	**Unlikely**
Botaurus poiciloptilus	Australasian Bittern	Endangered	1001	The Australasian Bittern occurs in terrestrial wetlands and, rarely, estuarine habitats, mainly in the temperate southeast and southwest. It favours wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water. It favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and / or reeds or cutting grass growing over muddy or peaty substrate. The Australasian Bittern occurs in the far South-East of Queensland; it has been reported North to Baralaba and West to Wyandra, although in most years it is probably confined to a few coastal swamps. It is rarely recorded in Queensland, and possibly survives only in protected areas such as the Cooloola and Fraser regions.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Calidris ferruginea	Curlew Sandpiper	Critically Endangered	856	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas such as estuaries, bays, inlets and lagoons, and also aroundnon-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. Though less often, they are also recorded inland, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges or mud or sand.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Calyptorhynchus lathami lathami	Glossy Black-cockatoo	Vulnerable	67036	This species prefers woodland areas dominated by she-oak Allocasuarina, or open sclerophyll forests and woodlands with a stratum of Allocasuarina beneath Eucalyptus, Corymbia or Angophora. Glossy black-cockatoos have also been observed in mixed Allocasaurina, Casuarina, cypress Callitris and brigalow *Acacia harpophylla* woodland assemblages. In SEQ west of the Great Dividing Range, they have been observed feeding in remnant belah Casuarina cristata and bulloak *Allocasuarina luehmannii* forests. This species is also known to utilise appropriate remnant woodlands, and individual or small pockets of Allocasuarina and Casuarina feed trees in urban areas.	Preferred vegetation composition dominated by *Allocasuarina* or *Casuarina* absent from site. It is unlikely this species would utilise the vegetation on-site. No species was observed during the 2021-2022 surveys.	**Unlikely**

Birds						
Name	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Likelihood**
Charadrius leschenaultii	Greater Sand Plover	Vulnerable	877	In the non-breeding grounds in Australasia, the Greater Sand Plover is almost entirely coastal, inhabiting littoral and estuarine habitats. They mainly occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons. They seldom occur at shallow freshwater wetlands.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Cyclopsitta diophthalma coxeni	Coxen's Fig Parrot	Endangered	597114	The Coxen's Fig Parrot occurs in rainforest habitats including subtropical rainforest, dry rainforest, littoral and developing littoral rainforest, and vine forest. Food is mainly taken from figs however other species fruit have been recorded in their diet including Elaeocarpus grandis, Syzygium corynanthum, Litsea reticulata and Grevillea robusta.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Erythrotriorchis radiatus	Red Goshawk	Vulnerable	942	A wide ranging and highly mobile species generally observed over eucalypt habitats. This species prefers forest and woodland with a mosaic of vegetation types, large prey populations (birds) and permanent water. The vegetation types include eucalypt woodland, open forest, tall open forest, gallery rainforest, swamp sclerophyll forest and rainforest margins. Habitat has to be open enough for fast attack and manoeuvring in flight, but provide cover for ambushing of prey.	Due to a lack of records within the local area, it is unlikely that this species will occur. However, possible foraging habitat occurs throughout the mapped remnant areas within and adjacent to the referral area. There is no evidence of permanent residence on site and very few areas containing permanent water.	**Unlikely**
Falco hypoleucos	Grey Falcon	Vulnerable	929	The Grey Falcon is a medium-sized, compact, pale falcon with a heavy, thick-set, deep-chested appearance. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey. Preys primarily on birds, especially parrots and pigeons, using high-speed chases and stoops; reptiles and mammals are also taken. Like other falcons it utilises old nests of other birds of prey and ravens, usually high in a living eucalypt near water or a watercourse; peak laying season is in late winter and early spring; two or three eggs are laid. The nests chosen are usually in the tallest trees along watercourses, particularly River Red Gum (*Eucalyptus camaldulensis*) and Coolibah (*E. coolabah*).	While shrubland, grassland and wooded watercourses are likely to occur onsite, desktop analysis confirmed that species associated with Coolibah – Black Box Woodlands do not occur on-site. No evidence was detected on-site and there are no records of the species within 5 km of the site. Targeted winter bird surveys completed in July 2021 and 2022 did not detect presence of this species on-site.	**Unlikely**
Geophaps scripta scripta	Squatter Pigeon (southern)	Vulnerable	64440	This species inhabits open grasslands and woodlands typically with a native understorey although may occur in artificial pasture.	No confirmed local records, and this species is very rarely observed in southern Queensland.	**Unlikely**

Birds						
Name	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Likelihood**
Grantiella picta	Painted Honeyeater	Vulnerable	470	The species inhabits mistletoes in eucalypt forests/woodlands, riparian woodlands of black box and river red gum, box-ironbark-yellow gum woodlands, acacia-dominated woodlands, paperbarks, casuarinas, callitris, and trees on farmland or gardens. The species prefers woodlands which contain a higher number of mature trees, as these host more mistletoes. It is more common in wider blocks of remnant woodland than in narrower strips	Due to the lack of mistletoe observed on site, and lack of records within the local area and south east Queensland, it is highly unlikely that this species will occur. However, vegetation communities typical of this species preferred habitat is observed throughout the investigation area.	**Unlikely**
Hirundapus caudacutus	White-throated Needletail	Vulnerable	682	Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps.	Open forest and rainforest vegetation occurs on-site. Targeted winter bird surveys completed in July 2021 and 2022 did not detect presence of this species on-site. It is considered unlikely that the Swift Parrot would rely upon the vegetation on-site and the species was not recorded despite targeted surveys.	**Unlikely**
Lathamus discolour	Swift Parrot	Endangered	744	Swift Parrots breed in Tasmania during spring to early summer. During autumn and winter the species migrates to the mainland where it follows a nomadic existence linked to the availability and timing of flowering of trees in various locations. While the species is very uncommon in south-east Queensland, its occurrence cannot be completely discounted. There are suitable winter flowing species present on the site which may attract birds during flowing (e.g. E. tereticornis).	The site contains remnant and non-remnant vegetation communities which are dominated by eucalypt species. The site is mostly vegetated and is dominated by winter flowering eucalypts including *Corymbia citriodora* (Spotted Gum), *Eucalyptus tereticornis* (Forest Red Gum), *E. siderophloia* (Grey Ironbark) and *E. crebra* (Narrow-leaved Ironbark). Due to previous disturbance over the site in the form of historical clearing and logging practices, large diameter eucalypt specimens that are preferred foraging resources due to their higher resource productivity, are relatively limited across the site. There are no nearby records of the Swift Parrot on Atlas of Living Australia recording the closest spatially confirmed record 10.35 km north-north-west of the site in Springfield Lakes in 2019. Targeted winter bird surveys completed in July 2021 and 2022 did not detect presence of this species on-site. It is considered unlikely that the Swift Parrot would rely upon the vegetation on-site and the species was not recorded despite targeted surveys.	**Unlikely**

Birds						
Name	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Likelihood**
Numenius madagascariensis	Eastern Curlew	Critically Endangered	847	The Eastern Curlew is found on sheltered coasts, mangrove swamps, bays, harbours and lagoons that contain mudflats and sandflats, often with beds of seagrass. At high tide they often move to saltpans, sand dunes and other open areas where they roost above the high water.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Rostratula australis	Australian Painted Snipe	Endangered	77037	The Australian Painted Snipe is usually found in shallow inland wetlands, either freshwater or brackish, that are either permanently or temporarily filled. The species has a scattered distribution throughout many parts of Australia, with a single record from Tasmania.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Turnix melanogaster	Black-breasted Button-quail	Vulnerable	923	Typical habitat occurs in dry rainforest and vegetation immediately adjacent to rainforest. However the species has also been recorded in a variety of low coastal heathlands around Frazer Island and nearby mainland. Deep leaf litter in which the species can forage appears to be particularly favoured.	Rainforest habitats do not exist on or adjacent to the site, and habitats on the site are highly disturbed due to prior logging regimes, weed invasion and past grazing activities. Although this species is known to favour areas with a dense shrub layer, including thick Lantana camara patches, no evidence (i.e.: platelets) has been observed on site.	**Unlikely**

Fish						
Species	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Likelihood**
Maccullochella mariensis	Mary River Cod	Endangered	83806	The Mary River Cod occurs mainly in pools within relatively undisturbed tributaries. They prefer relatively large and deep shaded pools with abundant, slowly flowing water.	No suitable habitat to support this species was observed throughout the assessment area. The lack of abundant slowly flowing water and deep shaded pools was apparent from the traverse of the waterways associated with the site.	**Unlikely**
Frogs						
Species	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Likelihood**
Mixophyes fleayi	Fleay's Frog	Endangered	25960	Fleay's Frog is associated with montane rainforest and open forest communities adjoining rainforest. The species occurs along stream habitats from first to third order streams (i.e. small streams close to their origin through to permanent streams with grades of 1 in 50) and is not found in ponds or ephemeral pools. Adults may be found in leaf litter and along watercourses in rainforest and adjoining wet sclerophyll forests.	No suitable habitat to support this species was observed throughout the assessment area. The lack of rainforest within or adjacent to riparian habitats was apparent from the traverse of the waterways associated with the site.	**Unlikely**
Insects						
Species	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Likelihood**
Argynnis hyperbiius inconstans	Australian Fritillary	Critically Endangered	88056	The Australian Fritillary is restricted to SEQ and Northern NSW in open swampy coastal areas where the larval food plant Viola betonicifolia (Arrowhead Violet) occurs.	*Viola betonicifolia* (Arrowhead Violet) was not identified throughout the investigation area and therefore it is unlikely that this species would occur.	**Unlikely**
Mammals						
Species	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Likelihood**
Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	183	The Large-eared Pied Bat roosts on sandstone cliffs and fertile woodland valley habitat within close proximity of each other. However in South-east Queensland habitat includes rainforest and moist eucalypt forest habitats at high elevations.	No typical roost habitat was identified in the assessment area, with no records of caves, mines, rock overhangs or crevices. There are no confirmed local records of this uncommon species, with the closest sighting over 40km to the south in Lamington National Park. Although the site contains riparian corridors, these are not high elevation, moist forest habitats.	**Unlikely**

Dasyurus maculatus maculatus	Spot-tailed Quoll	Endangered	75184	The Spot-tailed Quoll occurs in south-east Queensland: coastally from Bundaberg to the border and inland to Monto and Stanthorpe. Occurrences from five broad geographic areas are known: four from coastal ranges and the Great Dividing Range from the NSW border to Gladstone. The fifth is centred on the eastern Darling Downs-Inglewood Sandstone provinces of the Brigalow Belt South Bioregion. The Spot-tailed Quoll is recorded from a wide range of habitats, but has preference for mature wet forest habitat. Unlogged forest or forest that has been less disturbed by timber harvesting is also preferable. This predominantly nocturnal species rests during the day in dens. Habitat requirements include suitable den sites such as hollow logs, tree hollows, rock outcrops or caves. Individuals require an abundance of food such as birds and small mammals, and large areas of relatively intact vegetation through which to forage. Latrines of the Spot-tailed Quoll are sites where groups of individuals repeatedly urinate and defecate over long periods of time, resulting in the bleaching of the soil substrate and an accumulation of scats. For a highly cryptic species such as the Spot-tailed Quoll, these sites provide focal points for studies into distribution, diet, habitat, population structure, and management. Latrines are typically found in rocky creek beds, at the bases of cliffs, and on roads. The mean home range for males is 992 ± 276 ha, and 244 ± 72 ha for females.	An analysis of Wildlife Online data and Atlas of Living Australia records indicate the species been historically observed within the locality, predominantly within the surrounding suburbs of Munruben, North Maclean and Greenbank, located between 4 and 10 km north and north-east of the site. Records date from 2003 to most recently in 2011. Wildlife Online indicates multiple sightings approximately 9 km to the south-east towards Jimboomba. Targeted field surveys utilising systematic motion triggered cameras, spotlighting and diurnal scat and track searches completed in 2021 and 2022 did not detect the species. Detailed field surveys including motion sensor cameras were also conducted in 2018. Refer to *'8905 E New Beith Road MNES Technical Ecological Report, prepared by Saunders Havill Group for New Beith Pty Ltd, dated March 2019'*. Limited potential denning sites were observed throughout the referral area in the form of rocky outcrops. A rocky outcrop was observed near the south-western boundary of the referral area, however, motion sensor footage in this location did not detect presence of this species. It is possible that the species could use the vegetation within the site for connectivity purposes, particularly along the riparian corridors, however, the site is unlikely to provide ideal breeding and foraging habitat due to the lack of suitable den sites. Historical clearing practices have degraded portions of the site and surrounds and are likely to have resulted in reduced prey abundance with greater predator incursion such as wild dogs and foxes and changed fire regimes. It is noted that predation from Red Foxes, Wild Dogs and Domestic Dogs are primary threats to quolls, and evidence of wild or domestic dogs in particular have been observed on site. The species is considered unlikely to utilise the site.	**Unlikely**

Macroderma gigas	Ghost Bat	Vulnerable	174	Ghost bats are known to inhabit large complex caves and old mineshafts.	No suitable habitat was observed throughout the assessment area.	**Unlikely**

Petauriodes volans	Greater Glider	Endangered	254	The Greater Glider is restricted to eastern Australia, occurring from the Windsor Tableland in north Queensland through to central Victoria (Wombat State Forest), with topography ranging from sea level to 1200 m above sea level. An isolated inland subpopulation occurs in the Gregory Range west, and another in the Einasleigh Uplands. The Greater Glider is found in highest abundance typically in taller, montane, moist eucalypt forests. During the day it shelters in tree hollows, with a particular selection for large hollows in large, old trees. In southern Queensland, greater gliders require at least 2–4 live den trees for every 2 ha of suitable forest habitat. It is primarily folivorous, with a diet mostly comprising eucalypt leaves, and occasionally flowers. The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species. Home ranges are typically relatively small (1–4 ha), but are larger in lower productivity forests and more open woodlands (up to 16 ha).	The site is dominated by eucalypt woodland which includes remnant and non-remnant vegetation communities. Hollow-bearing trees appear to be the most important factor determining habitat selection in southern Queensland. Although greater gliders have a relatively small home range they are reported to be absent from forests with fewer than six habitat trees per hectare. The majority of the investigation area has historically undergone heavy logging practices and very few old growth trees were observed that contained hollows suitable for the species. The referral area contains an abundance of eucalypts; however, the referral area does not contain taller, montane, moist eucalypt forest that this species prefers, with the vegetation communities consisting of either non-remnant scattered eucalypts or remnant eucalypt woodland. The site retains connectivity to the west with the Flinders-Karawatha Bioregional Corridor which may provide opportunities for the species to use the site. There are no recent records of Greater Glider proximal to the site with nine (9) surrounding records recorded in 1993 and 1994. According to Atlas of Living Australia and the Queensland BioMaps search tool, the closest recent record is located 7.7 km south-west of the site in 2020 within the Flinders-Karawatha Bioregional Corridor. The next closest sighting, recorded in 2021 is located 8.8 km east of the site within the suburb of South Maclean, however, significant barriers exist between the site and this record in the form of the Brisbane-Sydney Railway, Logan River and the Mount Lindesay Highway. Targeted spotlighting surveys completed in 2022 did not detect the species. There is a 'low' likelihood that the Greater Glider would occur on-site as the general lack of live, hollow-bearing trees greatly reduces the overall suitability of the site for the species.	**Unlikely**

Petaurus australis australis	Yellow-bellied Glider	Vulnerable	87600	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. Den, often in family groups, in hollows of large trees. Very mobile and occupy large home ranges between 20 to 85 ha to encompass dispersed and seasonally variable food resources.	Eucalypt forest covers a large portion of the site. This species has the potential to contain large trees for nesting and denning. The majority of the investigation area has historically undergone heavy logging practices and very few old growth trees were observed that contained hollows suitable for the species. The referral area contains an abundance of eucalypts; however, the referral area does not contain moist coastal gullies and creek flats that this species prefers, with the vegetation communities consisting of either non-remnant scattered eucalypts or remnant eucalypt woodland. Targeted spotlighting surveys completed in 2022 did not detect the species.	**Unlikely**
Petrogale penicillata	Brush-tailed Rock-wallaby	Vulnerable	225	Brush-tailed Rock-wallaby habitat includes refuge habitat, feeding habitat, and routes in between. Refuge habitat includes rock faces or outcrops with large tumbled boulders, ledges and caves (often with vegetation cover) that provide shelter and some protection from predators. Rock refuges are usually on a steep slope (e.g. cliff lines, river banks, gorges, outcrops from hillsides, plateau edges). Most populations have been found on north facing slopes but have been recorded on south facing slopes. This species browses on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. Habitat critical to survival of the species includes rocky refuge habitat, foraging habitat and commuting routes between the two. Prior to European settlement, the Brush-tailed Rock-wallaby may have also occurred in non-rocky forests and woodlands, especially those on steep slopes and with cover in the form of dense vegetation and large fallen logs or trees. The apparent restriction of Brushtailed Rock-wallabies to rocky habitats may be relatively recent, and is probably a consequence of threatening processes operating on the species.	According to Wildlife Online sightings data, the closest sighting of this species occurs over 10km to the west, in the rocky habitat areas of Undullah and Mt Elliot. Opportunistic searches and incidental surveys were conducted throughout the entire survey period across the referral area. No evidence of Petrogale penicillata (Brush-tailed Rock Wallaby) was observed throughout all site assessments. Although some foraging resources may be present on site, refuge habitat is lacking, that is, rocky habitat on steep slopes.	**Unlikely**

Phascolarctos cinereus	Koala	Endangered	85104	They are found in a range of habitats, from coastal islands and tall eucalypt forests to low woodlands inland. The species is known from the surrounding area and evidence has been recorded on-site.	The site contains a mix of remnant and non-remnant eucalypt vegetation and most of the site contains habitat suitable for the Koala. Portions of the site are disturbed through past vegetation clearing, ongoing logging and grazing purposes and severe infestations of *Lantana camara* have reduced the quality of habitat for this species. Koalas were sighted during the multiple days of field survey in 2018 and 2022 survey periods. SAT surveys were conducted across the site following the identification of a Koala scat, and all of these surveys showed 'Low' Koala usage (10% or less scat evidence).	**Known**
Potorous tridactylus tridactylus	Long-nosed Potoroo (SE Mainland)	Vulnerable	66645	The Long-nosed Potoroo inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, fernr or heath, or of low chrub of tea-trees or melaleucas. A sandy loam soil is also a common feature.	No suitable habitat was observed throughout the assessment area, with limited dense vegetation for shelter.	**Unlikely**
Pteropus poliocephalus	Grey-headed Flying Fox	Vulnerable	186	Species generally roosts in camps in trees adjacent to larger permanent watercourse. The Grey-headed flying fox requires foraging resources and roosting sites. It is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. It also feed son commercial fruit crops. The primary food source is blossom from Eucalyptus and related genera.	No camps were observed throughout the assessment area, with the nearest camp over 4km to the south-east (Homestead Drive, Undullah). Although individuals were recorded on site, via direct sightings or calls. It is considered that this species is likely to occur when the Eucalypts are in flower.	**Known**
Plants						
Species	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Likelihood**
Arthraxon hispidus	Hairy-joint Grass	Vulnerable	9338	Hairy-joint grass is found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps, as well as woodland.	No suitable habitat was observed throughout the assessment area.	**Unlikely**

Bosistoa transversa	Three-leaved Bosistoa	Vulnerable	16091	The Three-leaved Bosistoa is conserved within Mt Warning National Park, Numbinbah Nature Reserve, Limpinwood Nature Reserve and Whian Whian State Forest. While population information is unavailable, it is thought to be common in its range. It generally grows in wet sclerophyll forest, dry sclerophyll forest and rainforest up to 3oo meters in altitude. It is commonly associated with Argyrodendron trifoliolatum, Syzygium hodgkinsoniae, Endiandra pubens, Dendrocnide photinophylla, Acmena ingens, Diploglottis australis and Diospyros mabacea.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Cryptostylis hunteriana	Leafless Tongue-orchid	Vulnerable	19533	*Corynocarpus rupestris* subsp. *arborescens* is found in Araucarian notophyll vineforest often on red basaltic slopes. The distribution of this subspecies is not known to overlap with any EPBC Act-listed threatened ecological communities.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Cupaniopsis shirleyana	Wedge-leaf Tuckeroo	Vulnerable	3205	The Wedge-leaf Tuckeroo occurs in a variety of dry rainforest vegetation types, including vine thicket communities on hillsides, stream beds and along riverbanks at altitudes up to 550 m above sea level. This species is also likely to occur on the margins of native vegetation in scrubby urbanised areas. Predominately found on dark brown sandy loams and sandy clay loams (pH 5-7.5) and rocky scree slopes. Generally, these soils have formed from volcanic parent materials (mainly granites and granodiorites, basalt and andesitic flows, and pyroclastics).	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Cupaniopsis tomentella	Boonah Tuckeroo	Vulnerable	3322	Boonah Tuckeroo is known only from an area between Boonah and Ipswich in south-eastern Queensland. It grows in vine thickets on fertile clay soils.	No regional ecosystems representative of vine thickets or suitable habitat was observed throughout the assessment area.	**Unlikely**
Dichanthium setosum	Bluegrass	Vulnerable	14159	Bluegrass is associated with heavy basaltic black soils and re-brown loams with clay subsoil. Associated species include Eucalyptus albens, Eucalyptus melanophloia, Eucalyptus melliodora, and Eucalyptus viminalis. It is often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture.	No suitable habitat was observed throughout the assessment area.	**Unlikely**

Fontainea venosa	-	Vulnerable	24040	Occurs in notophyll vine forest and vine thicket with a mean annual rainfall of 1000-1100 mm on soils derived from and containing abundant andesitic rocks, often on rocky outcrops or along creeks.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Macadamia integrifolia	Macadamia Nut	Vulnerable	7326	Macadamia integrifolia grows in remnant rainforest, preferring partially open areas such as rainforest edges.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Macadamia tetraphylla	Rough-shelled Bush Nut	Vulnerable	6581	Rough shelled bush nut generally occurs in subtropical rainforest and complex notophyll vineforest, at the margins of these forests and in mixed sclerophyll forest. It usually grow son moderate to steep hillslopes on alluvial soils at well-drained sites.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Notelaea ipsviciensis	Cooneana Olive	Critically Endangered	81858	The Cooneana Olive survives as an understorey plant in degraded, eucalypt dominated dry sclerophyll vegetation communities. Soils are of low fertility and sandstone based.	This is regarded as one of the rarest plants in Australia with the extent of occurrence less than 2km^2 in the Ipswich area (3 sub-populations). This species is unlikely to occur on site.	**Unlikely**
Notelaea lloydii	Lloyd's Olive	Vulnerable	15002	This species occurs on undulating to hilly terrain either in moist gullies or on gentle to steep dry slopes, but is rarely found on rocky outcrops. It is generally found in the ecotone between eucalypt forests and vine thickets.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Picris evae	Hawkweed	Vulnerable	10839	This species occurs in Eucalyptus open woodland with a grassy understorey composed of Dichanthium spp. Upper stratum species include Eucalyptus melliodora, E. crebra, E. populnea, E. albens, Angophora subvelutina, Allocasuarina torulosa, and Casuarina cunninghamiana. Collections s have been made along roadsides and in cultivated areas, such as paddocks, on black, dark grey or red-brown soils, reddish clay-loam or medium clay soils.	No suitable habitat was observed throughout the assessment area.	**Unlikely**

Planchonella eerwah	Shiny-leaved Condoo	Endangered	17340	Populations within the Ipswich-Beaudesert areas occur in small remnants of notophyll vine forests with emergent on rocky slopes and drainage lines. These forest types are generally dominated by Flindersia species with occasional emergent Hoop Pine and Harpullia pendula (Tulipwood).	No species representing these characteristics or vegetation communities were observed within the assessment area. This species has been identified further west of this site within the Flinders Conservation area.	**Unlikely**
Plectranthus habrophyllus	Plectranthus	Endangered	64589	Plectranthus is restricted to SEQ near Ipswich and Ormeau and is known from six locations including Oxley Creek, Greenbank; Opposum Creek, Springfield, Woogaroo Creek, Goodna; three populations within White Rock Conservation Park incorporating Six Mile Creek Conservation Park; and near Ormeau, south of Beenleigh. Specific habitat characteristics have the plant growing on chert or sandstone outcrops in open woodlands often in shaded situations near vine forest.	Limited habitat was observed throughout the investigation area, with the most suitable areas located within rock outcrops throughout riparian areas and the occasional and isolated small rock outcrop. The referral area is highly disturbed, further limiting suitable habitat for this species.	**Unlikely**
Rhodamnia rubescens	Scrub Turpentine	Critically Endangered	15763	Known to occur from coastal districts of NSW north from Batemans Bay to Bundaberg in Queensland. The distribution occasionally extends inland onto the escarpment up to 600 m ASL in areas with rainfall of 1000-1600 mm. Commonly occurs in all rain forest subforms except cool temperate rainforest. Species occupies a range of volcanically derived and sedimentary soils and is a common pioneer species in Eucalypt forests. Often found in wet sclerophyll associations in rainforest transition zones and Creekside riparian associations. Flowers from late winter through spring, with a peak in October and fruits appear in December in the Sydney region. Habitat is likely to include subtropical rainforests, northern warm temperate rainforests, littoral rainforest, for example.	This species is often found in wet sclerophyll associations in rainforest transition zones and Creekside riparian associations, which are absent from the site and thus is unlikely to be present on site.	**Unlikely**
Rhodomyrtus psidioides	Native Guava	Critically Endangered	19162	Known to occur from coastal districts of NSW north from Gosford to Maryborough in Queensland. Occurrence records are typically restricted to coastal and sub-coastal areas of low elevation however the species does occur up to c. 120 km inland in the Hunter and Clarence River catchments and along the Border Ranges. The species flowers in late spring to early summer, producing fruits in summer. Habitat is likely to include subtropical rainforests, warm temperate rainforests, littoral rainforest, and wet sclerophyll forests.	No species representing these characteristics or vegetation communities were observed within the assessment area.	**Unlikely**
Samadera bidwillii	Quassia	Vulnerable	29708	Quassia commonly occurs in lowland rainforest or on rainforest margins, but has also been founnd in other forest types such as open forest and woodland. Common ly found in areas adjacent to both temporary and permanent watercoarses.	This species favours lowland rainforest or rainforest margins which are absent from the site, and no local records exist, and thus Quassia is unlikely to be present on site.	**Unlikely**

Thesium australe	Austral Toadflax	Vulnerable	15202	Austral toadflax is semi-parasitic on roots of a range of grass species, most notably, Themeda triandra (Kangaroo Grass). It occurs in subtropical, temperate and subalpine climates over a wide range of altitudes. It occurs on soils derived from sedimentary, igneous and metamorphic geology on a range of soils including black clay loams to yellow podzolics and peaty loams. The Austral Toadflax occurs in shrubland, grassland or woodland, often on damp sites. Vegetation types include open grassy heath dominated by Swamp Myrtle (Leptospermum myrtifolium), Small-fruit Hakea (Hakea microcarpa), Alpine Bottlebrush (Callistemon sieberi), Woolly Grevillea (Grevillea lanigera), Coral Heath (Epacris microphylla) and Poa spp.; Kangaroo Grass grassland surrounded by Eucalyptus woodland; and grassland dominated by Barbed-wire Grass (Cymbopogon refractus).	Wildlife Online sightings data does not identify a record of this species in the local region, with the closest sighting over 45km to the south-west in Boonah. A large number of sightings are concentrated in the west towards Toowoomba. Native grasses such as Kangaroo Grass and Barbed Wire Grass were present on site, however given the location of sightings data, absence of native grasslands and a sparse grassy understorey on site, and the relative lack of damp areas which are favoured, the likelihood of this species occurring on site is considered unlikely.	**Unlikely**
Reptiles						
Species	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Likelihood**
Saiphos reticulatus	Three-toed Snake-tooth Skink	Vulnerable	59628	Found mostly in closed forest and possibly open layered Eucalyptus forest. Generally recorded in moist layered forest on loamy basaltic soils, but also found in closed forest overlying silica sand dunes at Cooloola. Within forests, this species is found in well-mulched, loose, friable rainforest soil in leaf litter, often immediately adjacent to fallen tree trunks. Much of the lowland closed forest within its range has been cleared for agriculture and grazing, pasture improvement, crop production, tropical fruit production, and native forest logging. Suitable habitat has generally been reduced to patches, especially in lowland areas.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Delma torquata	Collared Delma	Vulnerable	1656	In general, the species occurs on rocky hillsides on basalt and lateritic soils supporting open eucalypt and Acacia woodland with a sparse understorey of shrubs and tussocks or semi-evergreen vine thicket.	The site is covered in both remnant and regrowth vegetation communities dominated by Eucalypt and Corymbia species. A large portion of the site is currently utilised for logging practices, which is unsuitable for this species. The provisions of suitable canopy species are present within the referral area, however, a lack of microhabitat (rocky outcrops), and the presence of Lantana and introduced grasses in the understorey means there is lack of suitable habitat for the Collared Delma.	**Unlikely**

Furina dunmalli	Dunmall's Snake	Vulnerable	59254	Dunmall's Snake has been found in a broad range of habitats, including forests and woodlands on black alluvial cracking clay and clay loams dominated by Brigalow other Wattles, native Cypress or Bull-oak, and various Blue Spotted Gum, Ironbark, White Cypress Pine and Bull oak open forest and woodland associations on sandstone derived soils. Dunmall's Snake occurs primarily in the Brigalow Belt region in the South-eastern interior of Queensland. Records indicate sites at elevations between 200–500 m above sea level. The snake is very rare or secretive with limited records existing. It has been recorded at Archokoora, Oakey, Miles, Glenmorgan, Wallaville, Gladstone, Lake Broadwater, Mount Archer, Exhibition Range National Park, roadside reserves between Inglewood and Texas, Rosedale, Yeppoon and Lake Broadwater Conservation Park.	Due to a lack of records within the local area, it is highly unlikely that this species will occur. Further, the referral area sits at an elevation below 200-500m ASL, which is preferred by the species.	**Unlikely**
Hemiaspis damelii	Grey Snake	Endangered	1179	The grey snake is a relatively small, venomous, front-fanged (proteroglyphous) snake. In Queensland, grey snake habitat is Brigalow *Acacia harpophylla* and Belah *Casuarina cristata* woodlands on heavy, dark brown to black cracking clay soils, particularly in association with water bodies, areas with small gullies and ditches, and floodplain environments where the species shelters beneath logs, rocks and soil cracks.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Listed Migratory Species						
Migratory Marine Birds						
Species	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Risk**
Apus pacificus	Fork-tailed Swift	Migratory	678	This species is almost exclusively aerial and mostly occur over inland palins but sometimes above foothills or in coastal areas.	Possible as a fly over species however no impact to this species is likely to occur.	**Unlikely**
Migratory Terrestrial Species						
Species	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Likelihood**
Cuculus optatus	Oriental Cuckoo	Migratory	86651	Non-breeding habitat only: monsoonal rainforest, vine thickets, wet sclerophyll forest or open Casuarina, Acacia or Eucalyptus woodlands. Frequently at edges or ecotones between habitat types	Site contains possible non-breeding habitat, however it is not ideal for this species.	**Unlikely**

Hirundapus caudacutus	White-throated Needle tail	Migratory	682	The White-throated needle tail is almost exclusively aerial. This species has been recorded roosting in trees in forests and woodlands, both among dense foliage in the canopy or in hollows. The species breeds in wooded lowlands and sparsely vegetated hills, as well as mountains covered with coniferous forests.	Low potential to occur on site within roosting periods.	**Unlikely**
Monarcha melanopsis	Black-faced Monarch	Migratory	609	The Black-faced Monarch mainly occurs in rainforest ecosystems, including semi-deciduous vine thickets, complex notophyll vine forests, tropical (mesophyll) rainforest, subtropical (notophyll) rainforest, mesophyll (broadleaf) thicket/shrubland, warm temperate rainforest, dry (monsoon) rainforest and occasionally cool temperate rainforest.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Monarcha trivirgatus	Spectacled Monarch	Migratory	610	The Spectacled Monarchs natural habitats are subtropical or tropical moist lowland forests, subtropical or tropical mangrove forests, and subtropical or tropical moist montane forests. Its preference is for thick understorey areas.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Myiagra cyanoleuca	Satin Flycatcher	Migratory	612	Satin Flycatchers inhabit heavily vegetated gullies in eucalypt dominated forests and taller woodlands, and on migration occur in coastal forests, woodlands, mangroves and drier woodlands and open forests.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Motacilla flava	Yellow Wagtail	Migratory	644	This insectivorous bird inhabits mostly well-watered open grasslands and the fringes of wetlands Roosts in mangroves and other dense vegetation. Listed as an extremely uncommon migrant to Australia under the draft referral guideline for 14 birds listed as a migratory species under the EPBC Act.	Observations of this species have been primarily from NSW. No suitable habitat was observed throughout the assessment area.	**Unlikely**
Rhipidura rufifrons	Rufous Fantail	Migratory	592	The Rufous fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by Eucalypts such as Eucalyptus microcorys, Eucalyptus pilularis, Eucalyptus resiniferia and a number of other Eucalyptus species.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Migratory Wetland Species						
Species	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Likelihood**
Actitis hypoleucos	Common Sandpiper	Migratory	59309	This species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity and is mostly found around muddy margins or rocky shores and rarely on mudflats.	No suitable habitat was observed throughout the assessment area.	**Unlikely**

Calidris acuminata	Sharp-tailed Sandpiper	Migratory	874	The sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline salt lakes inland.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Calidris melanotos	Pectral Sandpiper	Migratory	858	The Pectoral Sandpiper prefers shallow fresh to saline wetlands. This species is found in coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. This species is usually found in coastal or near coastal habitat but occasionally found further inland.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Pandion haliaetus	Osprey	Migratory	952	Eastern Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Gallinago hardwickii	Latham's Snipe	Migratory	863	Latham's Snipe occurs in permanent and ephemeral wetlands. They usually inhabit open, freshwater wetlands with low, dense vegetation.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Tringa nebularia	Common Greenshank	Migratory	832	The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. The species is known to forage at the edges of wetlands in soft mud or mudflats.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Other Matters Protected by the EPBC Act						
Listed Marine Species (others not listed above)						
Species	**Common Name**	**Status**	**EPBC Code**	**Description of Community / Habitat**	**Likelihood of Occurrence**	**Likelihood**
Anseranas semipalmata	Magpie Goose	Migratory	978	The magpie goose is mainly found in shallow wetlands with dense growth or rushes or sedges.	No suitable habitat was observed throughout the assessment area.	**Unlikely**
Ardea alba	Great Egret	Migratory	59541	The Great Egret has been recorded in a wide range of wetland habitats including inland and coastal, freshwater and saline, permanent and ephemeral, open and vegetated, large and small, natural and artificial.	Although a number of small dams were observed upstream of the assessment area, no wetland area suiable for this species were observed on site.	**Unlikely**
Ardea ibis	Cattle Egret	Migratory	59542	The Cattle egret occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands. It often forages away from water on low lying grasslands, improved pastures and croplands and is commonly found in cattle fields and other farm areas that contain livestock.	Due to residential development replacing rural development, and lack of grasslands and livestock over the site, this common species is unlikely to be found on site.	**Unlikely**
Haliaeetus leucogaster	White-bellied Sea-Eagle	Migratory	943	The White-bellied Sea-eagle is found in coastal habitats and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. The habitats are characterised by the presence of large areas of open water.	May be recorded as a fly over in local area, however unlikely to be found on site.	**Unlikely**

Merops ornatus	Rainbow Bee-eater	Migratory	670	The Rainbow bee-eater occurs mainly in open forests and woodlands, shrub lands, and in various cleared or semi-cleared habitats, including farmland and areas of human habitation.	Habitat available on site and species recorded throughout field survey.	**Known**
Rostratula benghalensis	Painted Snipe	Endangered/ Migratory	889	The Australian Painted Snipe generally inhabits shallow terrestrial freshwater wetlands, including temporary and permanent lakes, swamps and clay pans. The also utilise inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains.	No suitable habitat was observed throughout the assessment area.	**Unlikely**

Appendix E

SAT Survey Results

SAT Survey A (21.05.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Eucalyptus tereticornis*	Forest Red Gum	220	Scats
2	*Corymbia citriodora*	Spotted Gum	115	Scats
3	*Corymbia citriodora*	Spotted Gum	480	Scats
4	*Eucalyptus crebra*	Narrow Leaf Ironbark	115	Nil
5	*Eucalyptus crebra*	Narrow Leaf Ironbark	220	Scats
6	*Corymbia citriodora*	Spotted Gum	285	Nil
7	*Corymbia citriodora*	Spotted Gum	420	Nil
8	*Corymbia citriodora*	Spotted Gum	460	Nil
9	*Eucalyptus crebra*	Narrow Leaf Ironbark	205	Scats
10	*Angophora leiocarpa*	Smooth Bark Apple	100	Nil
11	*Alphitonia excelsa*	Soap Tree	100	Nil
12	*Angophora leiocarpa*	Smooth Bark Apple	130	Scats
13	*Allocasuarina littoralis*	Black She Oak	120	Nil
14	*Corymbia citriodora*	Spotted Gum	180	Scats
15	*Corymbia citriodora*	Spotted Gum	440	Nil
16	*Corymbia citriodora*	Spotted Gum	120	Nil
17	*Angophora leiocarpa*	Smooth Bark Apple	210	Scats
18	*Angophora leiocarpa*	Smooth Bark Apple	100	Nil
19	*Corymbia citriodora*	Spotted Gum	660	Nil
20	*Corymbia citriodora*	Spotted Gum	130	Nil
21	*Petelostigma peubescens*	Quinine Bush	130	Nil
22	*Allocasuarina littoralis*	Black She Oak	110	Nil
23	*Angophora leiocarpa*	Smooth Bark Apple	110	Nil
24	*Corymbia citriodora*	Spotted Gum	680	Nil
25	*Corymbia citriodora*	Spotted Gum	145	Nil
26	*Corymbia citriodora*	Spotted Gum	580	Nil
27	*Acacia disparrima*	Hickory Wattle	120	Nil
28	*Corymbia citriodora*	Spotted Gum	600	Nil
29	*Corymbia citriodora*	Spotted Gum	100	Nil
30	*Angophora leiocarpa*	Smooth Bark Apple	180	Nil
Total Number of Trees with Scats				8
Percentage of Trees with Scats				26.67
Koala Use (Based on East Coast Med-High)				Medium

SAT Survey B (07.06.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia intermedia*	Pink Bloodwood	320	Nil
2	*Petelostigma pubescens*	Quinine Bush	180	Nil
3	*Corymbia citriodora*	Spotted Gum	290	Nil
4	*Corymbia citriodora*	Spotted Gum	100	Nil
5	*Corymbia citriodora*	Spotted Gum	250	Nil
6	*Eucalyptus tereticornis*	Forest Red Gum	170	Nil
7	*Eucalyptus tereticornis*	Forest Red Gum	200	Nil
8	*Eucalyptus tereticornis*	Forest Red Gum	200	Nil
9	*Petelostigma pubescens*	Quinine Bush	220	Nil
10	*Eucalyptus tereticornis*	Forest Red Gum	280	Scats
11	*Corymbia citriodora*	Spotted Gum	180	Nil
12	*Acacia leiocalyx*	Early Flowering Black Wattle	100	Nil
13	*Eucalyptus tereticornis*	Forest Red Gum	280	Nil
14	*Corymbia intermedia*	Pink Bloodwood	280	Nil
15	*Eucalyptus tereticornis*	Forest Red Gum	170	Scats
16	*Corymbia tessellaris*	Moreton Bay Ash	200	Nil
17	*Eucalyptus tereticornis*	Forest Red Gum	380	Nil
18	*Corymbia tessellaris*	Moreton Bay Ash	700	Nil
19	*Eucalyptus tereticornis*	Forest Red Gum	140	Nil
20	*Corymbia tessellaris*	Moreton Bay Ash	140	Nil
21	*Acacia leiocalyx*	Early Flowering Black Wattle	160	Nil
22	*Acacia leiocalyx*	Early Flowering Black Wattle	120	Nil
23	*Corymbia tessellaris*	Moreton Bay Ash	190	Nil
24	*Corymbia tessellaris*	Moreton Bay Ash	140	Nil
25	*Acacia leiocalyx*	Early Flowering Black Wattle	120	Nil
26	*Corymbia tessellaris*	Moreton Bay Ash	110	Nil
27	*Corymbia tessellaris*	Moreton Bay Ash	110	Nil
28	*Corymbia citriodora*	Spotted Gum	140	Nil
29	*Corymbia tessellaris*	Moreton Bay Ash	130	Nil
30	*Acacia leiocalyx*	Early Flowering Black Wattle	140	Nil
Total Number of Trees with Scats				2
Percentage of Trees with Scats				6.67
Koala Use (Based on East Coast Med-High)				Low

SAT Survey C (04.06.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Eucalyptus tereticornis*	Forest Red Gum	520	Scats
2	*Corymbia intermedia*	Pink Bloodwood	310	Scats
3	*Acacia leiocalyx*	Early Flowering Black Wattle	105	Nil
4	*Corymbia citriodora*	Spotted Gum	195	Scats
5	*Acacia leiocalyx*	Early Flowering Black Wattle	145	Nil
6	*Acacia leiocalyx*	Early Flowering Black Wattle	100	Nil
7	*Corymbia intermedia*	Pink Bloodwood	300	Scats
8	*Eucalyptus tereticornis*	Forest Red Gum	560	Scats
9	*Acacia leiocalyx*	Early Flowering Black Wattle	100	Nil
10	*Acacia leiocalyx*	Early Flowering Black Wattle	130	Nil
11	*Corymbia intermedia*	Pink Bloodwood	230	Scats
12	*Eucalyptus tereticornis*	Forest Red Gum	390	Scats
13	*Acacia leiocalyx*	Early Flowering Black Wattle	130	Nil
14	*Acacia disparrima*	Hickory Wattle	140	Nil
15	*Alphitonia excelsa*	Soap Tree	100	Nil
16	*Eucalyptus tereticornis*	Forest Red Gum	420	Nil
17	*Lophostemon suaveolens*	Swamp Box	135	Nil
18	*Acacia leiocalyx*	Early Flowering Black Wattle	140	Nil
19	*Corymbia intermedia*	Pink Bloodwood	260	Nil
20	*Corymbia intermedia*	Pink Bloodwood	255	Scats
21	*Corymbia intermedia*	Pink Bloodwood	290	Nil
22	*Acacia leiocalyx*	Early Flowering Black Wattle	120	Nil
23	*Acacia leiocalyx*	Early Flowering Black Wattle	130	Nil
24	*Acacia leiocalyx*	Early Flowering Black Wattle	130	Nil
25	*Corymbia intermedia*	Pink Bloodwood	140	Scats
26	*Acacia leiocalyx*	Early Flowering Black Wattle	120	Nil
27	*Acacia leiocalyx*	Early Flowering Black Wattle	140	Nil
28	*Petalostigma pubescens*	Quinine Bush	100	Nil
29	*Acacia leiocalyx*	Early Flowering Black Wattle	110	Nil
30	*Acacia leiocalyx*	Early Flowering Black Wattle	120	Nil
Total Number of Trees with Scats				9
Percentage of Trees with Scats				30.00
Koala Use (Based on East Coast Med-High)				Medium

SAT Survey D (07.06.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia intermedia*	Pink Bloodwood	300	Nil
2	*Corymbia intermedia*	Pink Bloodwood	140	Nil
3	*Acacia leiocalyx*	Early Flowering Black Wattle	130	Nil
4	*Corymbia intermedia*	Pink Bloodwood	130	Nil
5	*Corymbia intermedia*	Pink Bloodwood	360	Nil
6	*Eucalyptus tereticornis*	Forest Red Gum	370	Nil
7	*Alphitonia excelsa*	Soap Tree	100	Nil
8	*Acacia leiocalyx*	Early Flowering Black Wattle	160	Nil
9	*Eucalyptus tereticornis*	Forest Red Gum	480	Scats
10	*Lophostemon suaveolens*	Swamp Box	180	Nil
11	*Lophostemon suaveolens*	Swamp Box	100	Nil
12	*Corymbia intermedia*	Pink Bloodwood	100	Nil
13	*Eucalyptus tereticornis*	Forest Red Gum	500	Nil
14	*Corymbia intermedia*	Pink Bloodwood	450	Nil
15	*Acacia leiocalyx*	Early Flowering Black Wattle	140	Nil
16	*Eucalyptus siderophloia*	Grey Ironbark	200	Nil
17	*Lophostemon suaveolens*	Swamp Box	160	Nil
18	*Eucalyptus tereticornis*	Forest Red Gum	350	Nil
19	*Lophostemon suaveolens*	Swamp Box	150	Nil
20	*Corymbia intermedia*	Pink Bloodwood	210	Scats
21	*Eucalyptus tereticornis*	Forest Red Gum	350	Nil
22	*Corymbia intermedia*	Pink Bloodwood	550	Nil
23	*Corymbia intermedia*	Pink Bloodwood	290	Nil
24	*Eucalyptus tereticornis*	Forest Red Gum	600	Nil
25	*Lophostemon suaveolens*	Swamp Box	140	Nil
26	*Lophostemon suaveolens*	Swamp Box	120	Nil
27	*Corymbia intermedia*	Pink Bloodwood	200	Scats
28	*Lophostemon suaveolens*	Swamp Box	150	Scats
29	*Acacia leiocalyx*	Early Flowering Black Wattle	160	Nil
30	*Alphitonia excelsa*	Soap Tree	100	Nil
Total Number of Trees with Scats				4
Percentage of Trees with Scats				13.33
Koala Use (Based on East Coast Med-High)				Low

SAT Survey E (21.05.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia intermedia*	Pink Bloodwood	510	Nil
2	*Alphitonia excelsa*	Soap Tree	200	Nil
3	*Acacia disparrima*	Hickory Wattle	190	Nil
4	*Acacia disparrima*	Hickory Wattle	190	Nil
5	*Corymbia intermedia*	Pink Bloodwood	490	Nil
6	*Corymbia intermedia*	Pink Bloodwood	400	Nil
7	*Acacia leiocalyx*	Early Flowering Black Wattle	120	Nil
8	*Acacia leiocalyx*	Early Flowering Black Wattle	130	Nil
9	*Alphitonia excelsa*	Soap Tree	140	Nil
10	*Acacia disparrima*	Hickory Wattle	100	Nil
11	*Acacia disparrima*	Hickory Wattle	140	Nil
12	*Eucalyptus tereticornis*	Forest Red Gum	100	Nil
13	*Acacia disparrima*	Hickory Wattle	160	Nil
14	*Acacia leiocalyx*	Early Flowering Black Wattle	160	Nil
15	*Eucalyptus tereticornis*	Forest Red Gum	150	Nil
16	*Acacia leiocalyx*	Early Flowering Black Wattle	140	Nil
17	*Corymbia intermedia*	Pink Bloodwood	150	Nil
18	*Corymbia intermedia*	Pink Bloodwood	100	Nil
19	*Acacia disparrima*	Hickory Wattle	200	Nil
20	*Acacia leiocalyx*	Early Flowering Black Wattle	120	Nil
21	*Acacia disparrima*	Hickory Wattle	120	Nil
22	*Corymbia citriodora*	Spotted Gum	240	Nil
23	*Angophora leiocarpa*	Smooth Bark Apple	180	Nil
24	*Corymbia intermedia*	Pink Bloodwood	240	Nil
25	*Eucalyptus tereticornis*	Forest Red Gum	210	Scats
26	*Eucalyptus tereticornis*	Forest Red Gum	140	Nil
27	*Acacia leiocalyx*	Early Flowering Black Wattle	160	Nil
28	*Acacia leiocalyx*	Early Flowering Black Wattle	150	Nil
29	*Acacia leiocalyx*	Early Flowering Black Wattle	100	Nil
30	*Acacia leiocalyx*	Early Flowering Black Wattle	130	Nil
Total Number of Trees with Scats				1
Percentage of Trees with Scats				3.33
Koala Use (Based on East Coast Med-High)				Low

SAT Survey F (04.06.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Eucalyptus tereticornis*	Forest Red Gum	300	Nil
2	*Corymbia citriodora*	Spotted Gum	320	Nil
3	*Corymbia citriodora*	Spotted Gum	420	Nil
4	*Corymbia citriodora*	Spotted Gum	220	Nil
5	*Corymbia citriodora*	Spotted Gum	365	Nil
6	*Corymbia citriodora*	Spotted Gum	140	Nil
7	*Corymbia citriodora*	Spotted Gum	400	Nil
8	*Lophostemon suaveolens*	Swamp Box	105	Nil
9	*Acacia disparrima*	Hickory Wattle	140	Nil
10	*Eucalyptus siderophloia*	Grey Ironbark	140	Nil
11	*Corymbia citriodora*	Spotted Gum	330	Nil
12	*Corymbia citriodora*	Spotted Gum	420	Nil
13	*Corymbia citriodora*	Spotted Gum	400	Nil
14	*Corymbia citriodora*	Spotted Gum	230	Nil
15	*Corymbia citriodora*	Spotted Gum	430	Nil
16	*Corymbia citriodora*	Spotted Gum	235	Nil
17	*Corymbia citriodora*	Spotted Gum	380	Nil
18	*Corymbia citriodora*	Spotted Gum	235	Nil
19	*Corymbia citriodora*	Spotted Gum	460	Nil
20	*Corymbia citriodora*	Spotted Gum	300	Nil
21	*Corymbia citriodora*	Spotted Gum	260	Nil
22	*Corymbia citriodora*	Spotted Gum	180	Nil
23	*Corymbia citriodora*	Spotted Gum	320	Nil
24	*Eucalyptus siderophloia*	Grey Ironbark	300	Nil
25	*Corymbia citriodora*	Spotted Gum	180	Nil
26	*Eucalyptus siderophloia*	Grey Ironbark	260	Nil
27	*Corymbia citriodora*	Spotted Gum	405	Nil
28	*Corymbia citriodora*	Spotted Gum	280	Nil
29	*Corymbia citriodora*	Spotted Gum	380	Nil
30	*Acacia disparrima*	Hickory Wattle	160	Nil
Total Number of Trees with Scats				0
Percentage of Trees with Scats				0.00
Koala Use (Based on East Coast Med-High)				Nil

SAT Survey G (03.06.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Eucalyptus siderophloia*	Grey Ironbark	360	Nil
2	*Eucalyptus siderophloia*	Grey Ironbark	240	Nil
3	*Corymbia citriodora*	Spotted Gum	270	Nil
4	*Corymbia citriodora*	Spotted Gum	300	Nil
5	*Corymbia citriodora*	Spotted Gum	200	Nil
6	*Eucalyptus tereticornis*	Forest Red Gum	190	Scats
7	*Eucalyptus siderophloia*	Grey Ironbark	660	Scats
8	*Corymbia citriodora*	Spotted Gum	370	Nil
9	*Corymbia citriodora*	Spotted Gum	280	Nil
10	*Corymbia citriodora*	Spotted Gum	200	Scats
11	*Corymbia citriodora*	Spotted Gum	610	Scats
12	*Corymbia citriodora*	Spotted Gum	300	Nil
13	*Corymbia citriodora*	Spotted Gum	250	Nil
14	*Eucalyptus siderophloia*	Grey Ironbark	220	Nil
15	*Corymbia citriodora*	Spotted Gum	280	Scats
16	*Corymbia citriodora*	Spotted Gum	290	Scats
17	*Corymbia citriodora*	Spotted Gum	300	Nil
18	*Eucalyptus siderophloia*	Grey Ironbark	160	Nil
19	*Eucalyptus siderophloia*	Grey Ironbark	390	Nil
20	*Corymbia citriodora*	Spotted Gum	185	Nil
21	*Corymbia citriodora*	Spotted Gum	390	Scats
22	*Corymbia citriodora*	Spotted Gum	300	Scats
23	*Corymbia citriodora*	Spotted Gum	280	Nil
24	*Corymbia citriodora*	Spotted Gum	250	Nil
25	*Lophostemon confertus*	Brush Box	140	Nil
26	*Corymbia citriodora*	Spotted Gum	280	Nil
27	*Corymbia citriodora*	Spotted Gum	100	Nil
28	*Corymbia citriodora*	Spotted Gum	100	Nil
29	*Corymbia citriodora*	Spotted Gum	320	Nil
30	*Corymbia citriodora*	Spotted Gum	360	Nil
Total Number of Trees with Scats				8
Percentage of Trees with Scats				26.67
Koala Use (Based on East Coast Med-High)				Low

SAT Survey H (07.06.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia citriodora*	Spotted Gum	320	Nil
2	*Alphitonia excelsa*	Soap Tree	110	Nil
3	*Corymbia citriodora*	Spotted Gum	340	Nil
4	*Eucalyptus crebra*	Narrow Leaf Ironbark	100	Nil
5	*Eucalyptus crebra*	Narrow Leaf Ironbark	130	Nil
6	*Corymbia citriodora*	Spotted Gum	120	Nil
7	*Corymbia citriodora*	Spotted Gum	150	Nil
8	*Acacia disparrima*	Hickory Wattle	130	Nil
9	*Eucalyptus tereticornis*	Forest Red Gum	400	Nil
10	*Alphitonia excelsa*	Soap Tree	140	Nil
11	*Corymbia citriodora*	Spotted Gum	420	Nil
12	*Acacia leiocalyx*	Early Flowering Black Wattle	140	Nil
13	*Corymbia citriodora*	Spotted Gum	395	Nil
14	*Alphitonia excelsa*	Soap Tree	100	Nil
15	*Alphitonia excelsa*	Soap Tree	100	Nil
16	*Corymbia citriodora*	Spotted Gum	310	Nil
17	*Corymbia citriodora*	Spotted Gum	460	Scats
18	*Corymbia citriodora*	Spotted Gum	400	Nil
19	*Corymbia citriodora*	Spotted Gum	160	Nil
20	*Corymbia citriodora*	Spotted Gum	130	Nil
21	*Eucalyptus crebra*	Narrow Leaf Ironbark	180	Nil
22	*Acacia disparrima*	Hickory Wattle	110	Nil
23	*Acacia disparrima*	Hickory Wattle	100	Nil
24	*Acacia disparrima*	Hickory Wattle	100	Nil
25	*Corymbia citriodora*	Spotted Gum	330	Nil
26	*Eucalyptus crebra*	Narrow Leaf Ironbark	220	Nil
27	*Corymbia citriodora*	Spotted Gum	140	Nil
28	*Corymbia citriodora*	Spotted Gum	150	Nil
29	*Acacia disparrima*	Hickory Wattle	120	Nil
30	*Acacia disparrima*	Hickory Wattle	140	Nil
Total Number of Trees with Scats				1
Percentage of Trees with Scats				3.33
Koala Use (Based on East Coast Med-High)				Nil

SAT Survey I (03.06.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Eucalyptus tereticornis*	Forest Red Gum	400	Scats
2	*Alphitonia excelsa*	Soap Tree	110	Nil
3	*Acacia disparrima*	Hickory Wattle	130	Nil
4	*Lophostemon suaveolens*	Swamp Box	120	Nil
5	*Lophostemon suaveolens*	Swamp Box	130	Nil
6	*Corymbia intermedia*	Pink Bloodwood	380	Nil
7	*Acacia disparrima*	Hickory Wattle	185	Nil
8	*Alphitonia excelsa*	Soap Tree	140	Nil
9	*Alphitonia excelsa*	Soap Tree	130	Nil
10	*Eucalyptus tereticornis*	Forest Red Gum	310	Nil
11	*Acacia leiocalyx*	Early Flowering Black Wattle	130	Nil
12	*Acacia leiocalyx*	Early Flowering Black Wattle	140	Nil
13	*Acacia leiocalyx*	Early Flowering Black Wattle	140	Nil
14	*Acacia disparrima*	Hickory Wattle	145	Nil
15	*Corymbia intermedia*	Pink Bloodwood	300	Nil
16	*Corymbia intermedia*	Pink Bloodwood	270	Nil
17	*Allocasuarina littoralis*	Black She Oak	160	Nil
18	*Corymbia intermedia*	Pink Bloodwood	300	Nil
19	*Corymbia intermedia*	Pink Bloodwood	300	Nil
20	*Alphitonia excelsa*	Soap Tree	140	Nil
21	*Alphitonia excelsa*	Soap Tree	160	Nil
22	*Alphitonia excelsa*	Soap Tree	150	Nil
23	*Alphitonia excelsa*	Soap Tree	170	Nil
24	*Eucalyptus seeana*	Narrow Leaf Red Gum	160	Nil
25	*Allocasuarina littoralis*	Black She Oak	115	Nil
26	*Allocasuarina littoralis*	Black She Oak	130	Nil
27	*Corymbia intermedia*	Pink Bloodwood	250	Nil
28	*Eucalyptus tereticornis*	Forest Red Gum	420	Scats
29	*Corymbia intermedia*	Pink Bloodwood	300	Nil
30	*Acacia disparrima*	Hickory Wattle	140	Nil
Total Number of Trees with Scats				2
Percentage of Trees with Scats				6.67
Koala Use (Based on East Coast Med-High)				Low

SAT Survey J (03.06.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia intermedia*	Pink Bloodwood	290	Nil
2	*Eucalyptus fibrosa*	Broad Leaf Ironbark	230	Nil
3	*Corymbia citriodora*	Spotted Gum	420	Nil
4	*Corymbia citriodora*	Spotted Gum	360	Nil
5	*Eucalyptus seeana*	Narrow Leaf Red Gum	160	Nil
6	*Acacia disparrima*	Hickory Wattle	110	Nil
7	*Eucalyptus acmenoides*	White Mahogany	160	Nil
8	*Corymbia citriodora*	Spotted Gum	520	Nil
9	*Eucalyptus fibrosa*	Broad Leaf Ironbark	100	Nil
10	*Eucalyptus fibrosa*	Broad Leaf Ironbark	100	Nil
11	*Corymbia citriodora*	Spotted Gum	210	Nil
12	*Eucalyptus fibrosa*	Broad Leaf Ironbark	220	Nil
13	*Corymbia intermedia*	Pink Bloodwood	240	Nil
14	*Eucalyptus fibrosa*	Broad Leaf Ironbark	250	Nil
15	*Eucalyptus seeana*	Narrow Leaf Red Gum	155	Nil
16	*Eucalyptus seeana*	Narrow Leaf Red Gum	130	Nil
17	*Corymbia citriodora*	Spotted Gum	430	Nil
18	*Corymbia citriodora*	Spotted Gum	150	Nil
19	*Corymbia citriodora*	Spotted Gum	420	Nil
20	*Corymbia citriodora*	Spotted Gum	440	Nil
21	*Corymbia citriodora*	Spotted Gum	460	Nil
22	*Acacia disparrima*	Hickory Wattle	180	Nil
23	*Eucalyptus fibrosa*	Broad Leaf Ironbark	420	Nil
24	*Eucalyptus fibrosa*	Broad Leaf Ironbark	480	Nil
25	*Acacia leiocalyx*	Early Flowering Black Wattle	120	Nil
26	*Corymbia citriodora*	Spotted Gum	335	Nil
27	*Angophora leiocarpa*	Smooth Bark Apple	100	Nil
28	*Eucalyptus siderophloia*	Grey Ironbark	120	Nil
29	*Acacia leiocalyx*	Early Flowering Black Wattle	120	Nil
30	*Acacia leiocalyx*	Early Flowering Black Wattle	140	Nil
Total Number of Trees with Scats				0
Percentage of Trees with Scats				0.00
Koala Use (Based on East Coast Med-High)				Nil

SAT Survey K (21.05.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Eucalyptus tereticornis*	Forest Red Gum	680	Scats
2	*Acacia leiocalyx*	Early Flowering Black Wattle	140	Nil
3	*Acacia leiocalyx*	Early Flowering Black Wattle	130	Nil
4	*Acacia leiocalyx*	Early Flowering Black Wattle	120	Nil
5	*Corymbia intermedia*	Pink Bloodwood	285	Nil
6	*Eucalyptus tereticornis*	Forest Red Gum	290	Nil
7	*Lophostemon suaveolens*	Swamp Box	120	Nil
8	*Corymbia intermedia*	Pink Bloodwood	245	Nil
9	*Acacia disparrima*	Hickory Wattle	140	Nil
10	*Acacia disparrima*	Hickory Wattle	160	Nil
11	*Corymbia intermedia*	Pink Bloodwood	510	Nil
12	*Eucalyptus tereticornis*	Forest Red Gum	240	Nil
13	*Acacia leiocalyx*	Early Flowering Black Wattle	105	Nil
14	*Acacia disparrima*	Hickory Wattle	210	Nil
15	*Acacia disparrima*	Hickory Wattle	190	Nil
16	*Eucalyptus tereticornis*	Forest Red Gum	110	Nil
17	*Lophostemon suaveolens*	Swamp Box	125	Nil
18	*Acacia leiocalyx*	Early Flowering Black Wattle	110	Nil
19	*Corymbia intermedia*	Pink Bloodwood	160	Nil
20	*Corymbia intermedia*	Pink Bloodwood	200	Nil
21	*Corymbia intermedia*	Pink Bloodwood	260	Nil
22	*Corymbia intermedia*	Pink Bloodwood	230	Nil
23	*Acacia leiocalyx*	Early Flowering Black Wattle	110	Nil
24	*Eucalyptus tereticornis*	Forest Red Gum	180	Scats
25	*Eucalyptus tereticornis*	Forest Red Gum	160	Scats
26	*Corymbia intermedia*	Pink Bloodwood	190	Nil
27	*Acacia leiocalyx*	Early Flowering Black Wattle	120	Nil
28	*Eucalyptus tereticornis*	Forest Red Gum	115	Nil
29	*Corymbia intermedia*	Pink Bloodwood	100	Nil
30	*Acacia disparrima*	Hickory Wattle	140	Nil
Total Number of Trees with Scats				3
Percentage of Trees with Scats				10.00
Koala Use (Based on East Coast Med-High)				Low

SAT Survey L (21.05.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia citriodora*	Spotted Gum	230	Nil
2	*Allocasuarina littoralis*	Black She Oak	160	Nil
3	*Eucalyptus tereticornis*	Forest Red Gum	130	Nil
4	*Corymbia citriodora*	Spotted Gum	120	Nil
5	*Corymbia citriodora*	Spotted Gum	130	Nil
6	*Acacia leiocalyx*	Early Flowering Black Wattle	120	Nil
7	*Corymbia citriodora*	Spotted Gum	220	Nil
8	*Corymbia citriodora*	Spotted Gum	240	Nil
9	*Corymbia citriodora*	Spotted Gum	160	Nil
10	*Petalostigma pubescens*	Quinine Bush	100	Nil
11	*Corymbia citriodora*	Spotted Gum	220	Nil
12	*Eucalyptus tereticornis*	Forest Red Gum	140	Nil
13	*Corymbia citriodora*	Spotted Gum	120	Nil
14	*Corymbia citriodora*	Spotted Gum	140	Nil
15	*Corymbia citriodora*	Spotted Gum	190	Nil
16	*Acacia leiocalyx*	Early Flowering Black Wattle	100	Nil
17	*Eucalyptus tereticornis*	Forest Red Gum	130	Nil
18	*Corymbia citriodora*	Spotted Gum	130	Nil
19	*Corymbia citriodora*	Spotted Gum	140	Nil
20	*Corymbia citriodora*	Spotted Gum	220	Nil
21	*Corymbia intermedia*	Pink Bloodwood	170	Nil
22	*Corymbia intermedia*	Pink Bloodwood	170	Nil
23	*Corymbia intermedia*	Pink Bloodwood	420	Nil
24	*Corymbia citriodora*	Spotted Gum	170	Nil
25	*Corymbia intermedia*	Pink Bloodwood	180	Nil
26	*Corymbia intermedia*	Pink Bloodwood	170	Nil
27	*Eucalyptus tereticornis*	Forest Red Gum	110	Nil
28	*Corymbia citriodora*	Spotted Gum	140	Nil
29	*Corymbia citriodora*	Spotted Gum	250	Nil
30	*Corymbia citriodora*	Spotted Gum	270	Nil
Total Number of Trees with Scats				0
Percentage of Trees with Scats				0.00
Koala Use (Based on East Coast Med-High)				Nil

SAT Survey M (07.06.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia citriodora*	Spotted Gum	360	Nil
2	*Corymbia citriodora*	Spotted Gum	130	Nil
3	*Angophora leiocarpa*	Smooth Bark Apple	240	Nil
4	*Corymbia citriodora*	Spotted Gum	150	Nil
5	*Corymbia citriodora*	Spotted Gum	100	Nil
6	*Corymbia citriodora*	Spotted Gum	600	Nil
7	*Corymbia intermedia*	Pink Bloodwood	230	Nil
8	*Corymbia citriodora*	Spotted Gum	490	Nil
9	*Corymbia citriodora*	Spotted Gum	130	Nil
10	*Acacia disparrima*	Hickory Wattle	110	Nil
11	*Acacia disparrima*	Hickory Wattle	130	Nil
12	*Corymbia citriodora*	Spotted Gum	250	Nil
13	*Corymbia intermedia*	Pink Bloodwood	420	Nil
14	*Eucalyptus siderophloia*	Grey Ironbark	130	Nil
15	*Eucalyptus siderophloia*	Grey Ironbark	140	Nil
16	*Corymbia citriodora*	Spotted Gum	130	Nil
17	*Acacia leiocalyx*	Early Flowering Black Wattle	140	Nil
18	*Corymbia citriodora*	Spotted Gum	110	Nil
19	*Corymbia intermedia*	Pink Bloodwood	260	Nil
20	*Corymbia citriodora*	Spotted Gum	460	Nil
21	*Eucalyptus siderophloia*	Grey Ironbark	110	Nil
22	*Acacia leiocalyx*	Early Flowering Black Wattle	120	Nil
23	*Alphitonia excelsa*	Soap Tree	100	Nil
24	*Corymbia citriodora*	Spotted Gum	110	Nil
25	*Corymbia citriodora*	Spotted Gum	100	Nil
26	*Corymbia citriodora*	Spotted Gum	390	Nil
27	*Corymbia intermedia*	Pink Bloodwood	110	Nil
28	*Eucalyptus tereticornis*	Forest Red Gum	360	Scats
29	*Corymbia intermedia*	Pink Bloodwood	110	Nil
30	*Eucalyptus tereticornis*	Forest Red Gum	360	Nil
Total Number of Trees with Scats				1
Percentage of Trees with Scats				3.33
Koala Use (Based on East Coast Med-High)				Low

SAT Survey N (21.05.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia citriodora*	Spotted Gum	330	Scats
2	*Corymbia citriodora*	Spotted Gum	130	Nil
3	*Corymbia citriodora*	Spotted Gum	120	Nil
4	*Eucalyptus tereticornis*	Forest Red Gum	100	Nil
5	*Eucalyptus crebra*	Narrow Leaf Ironbark	190	Scats
6	*Corymbia citriodora*	Spotted Gum	110	Scats
7	*Corymbia citriodora*	Spotted Gum	100	Nil
8	*Eucalyptus tereticornis*	Forest Red Gum	120	Nil
9	*Corymbia citriodora*	Spotted Gum	210	Scats
10	*Corymbia citriodora*	Spotted Gum	100	Nil
11	*Acacia disparrima*	Hickory Wattle	130	Nil
12	*Corymbia citriodora*	Spotted Gum	120	Nil
13	*Eucalyptus crebra*	Narrow Leaf Ironbark	410	Nil
14	*Corymbia citriodora*	Spotted Gum	100	Nil
15	*Corymbia citriodora*	Spotted Gum	120	Nil
16	*Corymbia citriodora*	Spotted Gum	110	Nil
17	*Corymbia citriodora*	Spotted Gum	100	Nil
18	*Corymbia citriodora*	Spotted Gum	120	Nil
19	*Corymbia citriodora*	Spotted Gum	150	Nil
20	*Acacia disparrima*	Hickory Wattle	100	Nil
21	*Corymbia citriodora*	Spotted Gum	120	Nil
22	*Corymbia citriodora*	Spotted Gum	100	Nil
23	*Eucalyptus crebra*	Narrow Leaf Ironbark	110	Nil
24	*Eucalyptus crebra*	Narrow Leaf Ironbark	160	Nil
25	*Corymbia citriodora*	Spotted Gum	160	Nil
26	*Corymbia citriodora*	Spotted Gum	140	Nil
27	*Corymbia citriodora*	Spotted Gum	190	Nil
28	*Corymbia citriodora*	Spotted Gum	100	Nil
29	*Corymbia citriodora*	Spotted Gum	110	Nil
30	*Corymbia citriodora*	Spotted Gum	120	Nil
Total Number of Trees with Scats				4
Percentage of Trees with Scats				13.33
Koala Use (Based on East Coast Med-High)				Low

SAT Survey O (21.05.2021)				
Tree Number	***Species***	**Common Name**	**DBH (mm)**	**Scats**
1	*Corymbia intermedia*	Pink Bloodwood	270	Nil
2	*Corymbia intermedia*	Pink Bloodwood	280	Nil
3	*Angophora leiocarpa*	Smooth Bark Apple	270	Nil
4	*Corymbia citriodora*	Spotted Gum	290	Nil
5	*Corymbia citriodora*	Spotted Gum	260	Nil
6	*Angophora leiocarpa*	Smooth Bark Apple	160	Nil
7	*Corymbia intermedia*	Pink Bloodwood	150	Nil
8	*Corymbia intermedia*	Pink Bloodwood	140	Nil
9	*Angophora leiocarpa*	Smooth Bark Apple	260	Nil
10	*Angophora leiocarpa*	Smooth Bark Apple	220	Nil
11	*Corymbia intermedia*	Pink Bloodwood	100	Nil
12	*Corymbia tessellaris*	Moreton Bay Ash	120	Nil
13	*Corymbia intermedia*	Pink Bloodwood	110	Nil
14	*Corymbia intermedia*	Pink Bloodwood	140	Nil
15	*Corymbia intermedia*	Pink Bloodwood	280	Nil
16	*Corymbia intermedia*	Pink Bloodwood	360	Nil
17	*Corymbia citriodora*	Spotted Gum	210	Nil
18	*Corymbia citriodora*	Spotted Gum	150	Nil
19	*Corymbia citriodora*	Spotted Gum	160	Nil
20	*Corymbia citriodora*	Spotted Gum	100	Nil
21	*Corymbia intermedia*	Pink Bloodwood	160	Nil
22	*Corymbia intermedia*	Pink Bloodwood	460	Nil
23	*Corymbia citriodora*	Spotted Gum	160	Nil
24	*Corymbia citriodora*	Spotted Gum	150	Nil
25	*Corymbia citriodora*	Spotted Gum	220	Nil
26	*Corymbia citriodora*	Spotted Gum	180	Nil
27	*Corymbia citriodora*	Spotted Gum	110	Nil
28	*Acacia leiocalyx*	Early Flowering Black Wattle	100	Nil
29	*Acacia leiocalyx*	Early Flowering Black Wattle	100	Nil
30	*Acacia leiocalyx*	Early Flowering Black Wattle	100	Nil
Total Number of Trees with Scats				0
Percentage of Trees with Scats				0.00
Koala Use (Based on East Coast Med-High)				Nil

Appendix F

Curricula Vitae – Key Personnel

Senior Ecologist – David Havill

David Havill has significant practical experience in the areas of ecological site assessments (flora and fauna), weed management programs, large scale revegetation projects, wetland rehabilitation and waterway restoration.

He has a strong understanding of the intricate workings of the *Vegetation Management Act 1999, Nature Conservation Act 1992* and *Environment Protection and Biodiversity Conservation Act 1999* and the complex codes and policies which influence site vegetation constraints.

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

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

Qualifications

Bachelor of Applied Science (Natural Systems and Wildlife Management), The University of Queensland (1998).

Senior Environmental Scientist – Andrew Ridley

Andrew has extensive field experience gained while working as an ecological research scientist with the Department of Agriculture and Fisheries. Andrew comes to Saunders Havill Group with documented expertise in data acquisition, analysis and project delivery having published scientific articles in peer reviewed journal and presented at international conferences.

At Saunders Havill Group, Andrew uses his ecological expertise to assess sites against a variety of biodiversity overlays. He has a strong understanding of the science driving assessment methodologies and knowledge of Queensland flora and fauna.

Andrew's experience within the academic area provides him with the 'know how' to maintain data integrity through the project flow path.

His skills are applicable across the entire spectrum of project requirements at SHG, from instigation and formulation through development and production to client delivery.

Qualifications

Doctor of Philosophy, The University of Queensland (2006)
Bachelor of Science (Honours), The University of Queensland (1999)
Bachelor of Science The University of Queensland (1998)