Ecological Assessment Report

Springview – Villages 2 & 3
Springfield, Queensland 4300

Prepared for Stockland Development Pty Ltd
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Acronyms and abbreviations

AEC	Animal Ethics Committee
ADP	Area Development Plan
AHD	Australian Height Datum
AKF	Australian Koala Foundation
ASL	Above Sea Level
DAF	Department of Agriculture and Fisheries
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DBH	Diameter at Breast Height
EAR	Ecological Assessment Report
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EVNT	endangered, vulnerable or near threatened as listed under the NCA
FMP	Fauna Management Plan
ha	hectares
ICC	Ipswich City Council
km	kilometres
LRSA	Lowland Rainforest of Subtropical Australia
m	metres
mm	millimetres
MNES	Matters of National Environmental Significance
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)
PMR	Protected Matters Report
PMST	Protected Matters Search Tool
RE	Regional Ecosystem
RMP	Rehabilitation Management Plan
SAT	Spot Assessment Technique
SDAP	State Development Assessment Provisions
SHG	Saunders Havill Group
SPP	State Planning Policy
SRZ	Structural Root Zone
TEC	Threatened Ecological Community
TPZ	Tree Protection Zone
VC&MP	Vegetation Clearing and Management Plan
VMA	*Vegetation Management Act 1999* (Qld)

1. Introduction

Stockland Development Pty Ltd engaged Saunders Havill Group (SHG) to prepare this Ecological Assessment Report (EAR) for land located at Mur Boulevard, Springfield (refer to **Table 1** for subject site details). The subject land is earmarked for future residential development under the Springfield Structure Plan. This EAR provides an ecological assessment of values in and adjacent to the subject site to inform land use suitability presented in the proposed Precinct Plan provided by RPS (refer **Appendix A** for proposed Precinct Plan). An assessment of the ecological values has been undertaken with consideration to Commonwealth, State and Local environmental legislation.

Contextually, the subject site covers approximately 169 hectares (ha) and is located within the suburb of Springfield, approximately 15 kilometres (km) south-east of Ipswich City CBD (refer **Figure 1**). Neighbouring land uses include general residential development, education (The Springfield Anglican College), recreation and open space (*i.e.*, Brookwater Golf Course, reserves and parklands) (refer **Figure 2**). The Kalina Village 1 residential development bounds the site to the south-east (EPBC 2014/7306) and is close to completion. The proposed development is for a residential estate and will include mixed-size residential allotments, a new road network, stormwater management, local centre, local park/s, sports park, and retained natural areas.

The subject site is currently vacant and comprises mostly intact vegetation where some areas show evidence of historical logging and varying densities of weed invasion. Evidence of public access to the site to utilise as a walking path was noted during survey effort. The topography of the site ranges from approximately 90 m AHD at the central and southern portions, with elevations decreasing to 30 m AHD at the western and northern boundaries towards local waterways. The average slope across the site is 10 %.

Table 1 presents key site details relevant to the subject area.

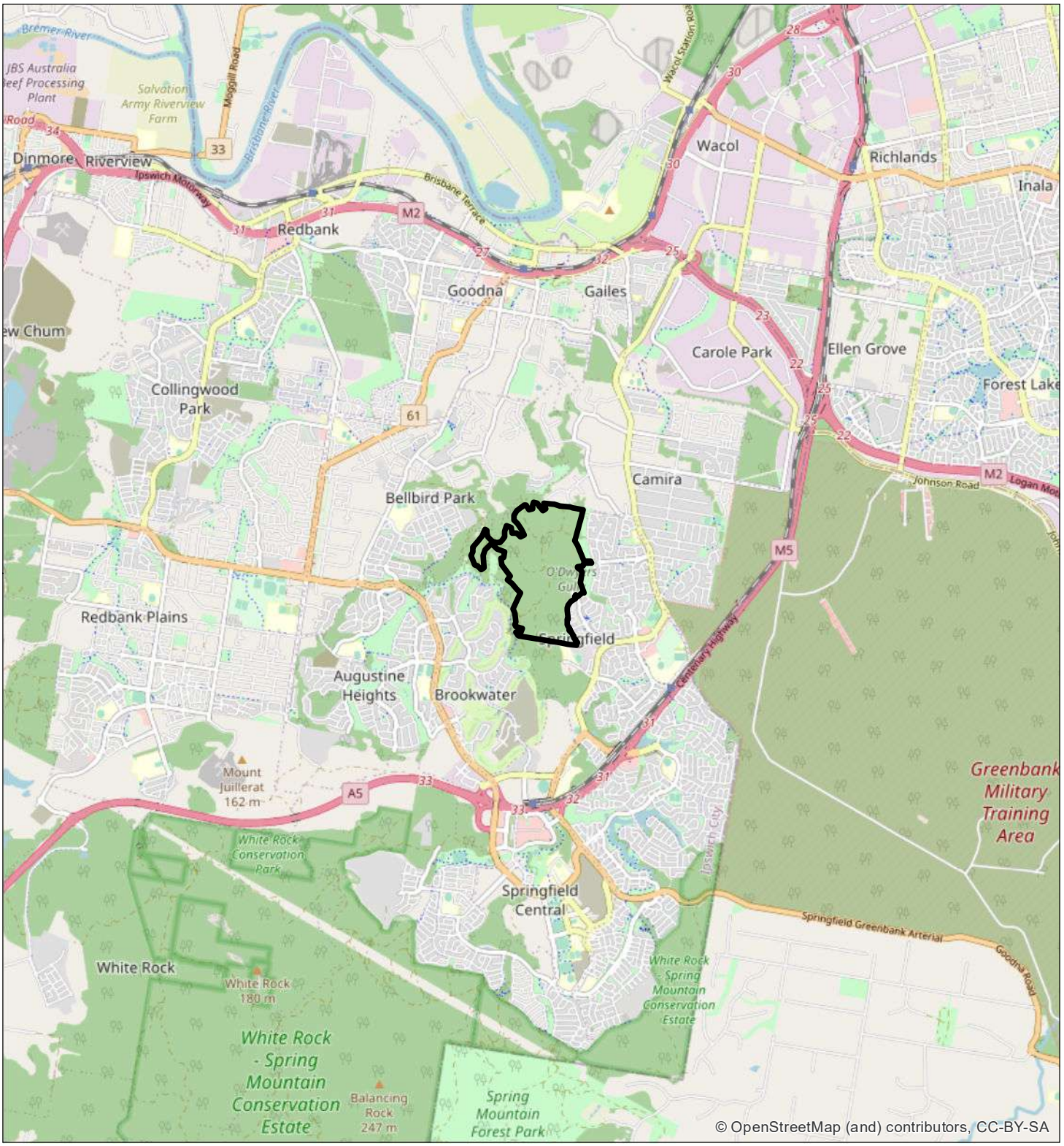
Table 1: Property summary

Address	7001 Mur Boulevard, Springfield, Ipswich City, QLD 4300
Lot/plan	Site extent includes part or all of the following lots: • Lot 44 on SP242290 • Lot 9002 on SP292760 • Lot 9004 on SP292760 • Lot 9995 on SP307769 • Lot 9997 on SP327517 • Lot 9998 on SP236942 • Lot 9999 on SP292760
Area	169 ha
Vegetation Management Act 1999	Category X (non-remnant) vegetation Category B (remnant) and Category C (high value regrowth) vegetation, including: • Of Concern composite RE12.9-10.2/12.9-10.7/12.9-10.19 (65/20/15)

	• Endangered RE12.3.16, RE12.9-10.15, and composite RE12.3.7/12.3.3 (80/20) • Least Concern RE12.9-10.17
Fisheries Act 1994	One *low risk* waterway for waterway barrier works intersecting a small portion of the site. Adjacent to the site, a *high risk* and a *major risk* waterway for waterway barrier works.
Koala habitat	Koala habitat area
Local government area	Ipswich City Council
Planning scheme and zoning	Ipswich Planning Scheme 2006 Springfield community residential designation and open space
Existing land use	Bushland
Proposed land use	Master planned residential development

1.1 Purpose of the report

The purpose of this EAR is to review the proposed Precinct Plan for the master planned residential development in the context of the planning and ecological requirements of the Springfield Structure Plan and assesses the potential for impacts on Federal, State and Local listed matters and ecological values. This report presents the outcomes of field surveys, identifies environmental site constraints and assesses the potential of the proposed development to impact on ground-truthed ecological features. This report was prepared with reference to the requirements of the Planning Scheme and Implementation Guideline No. 19 – Vegetation Retention.



Legend

Site DCDB

Figure 1

Site Context

CHERISH ENTERPRISES PTY LTD

File ref. 11426 E Figure 1 Precinct Site Context A
Date *5/09/2023*
Project *Springview Villages 2 & 3 Precinct*

0 0.5 1 2 *km*

N

Scale (A4): 1:75,000 [GDA 1994 MGA Z56]

Layer Source: © State of Queensland (Department of Natural Resources, Mines and Energy) 2023

Legend

Qld DCDB

Site DCDB

Figure 2

Site Aerial

CHERISH ENTERPRISES PTY LTD

File ref. 11426 E Figure 2 Precinct Site Aerial A
Date *5/09/2023*
Project *Springview Villages 2 & 3 Precinct*

0 50 100 200 300 400 *m*

Scale (A4): 1:11,000 [GDA 1994 MGA Z56]

N

Layer Source: © State of Queensland (Department of Resources) 2023, Aerial (Nearmap 2023)

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 herein.

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 (MNES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on and around the site using the Protected Matters Search Tool (PMST);
- *Nature Conservation Act 1992* (NCA) listed threatened species on and around the site using the Wildlife Online database;
- Publicly available information from environmental databases including Atlas of Living Australia;
- State Government environmental overlay mapping including:
    - Regulated Vegetation Management Maps under the *Vegetation Management Act 1999* (VMA);
    - Flora Survey Trigger Areas under the NCA;
    - fish habitat and passage under the *Fisheries Act 1994*;
    - watercourses under the *Water Act 2000*;
    - weeds under the *Biosecurity Act 2014*; and
    - Matters of State Environmental Significance (MSES) under the State Planning Policy (SPP) (i.e. wetland protection areas, Koala habitat etc);
- *ShapingSEQ 2017* (South East Queensland Regional Plan);
- Locally significant species (Ipswich region) as identified by Ipswich City Council;
- *Ipswich Planning Scheme 2006* documents and maps.

2.1.1 Likelihood of occurrence assessment – Local Priority Species

An assessment of the potential for species identified as Local Priority Species by ICC to occur on-site was completed utilising the criteria in **Table 2**. This assessment was based on publicly available species records and/or other information sources, such as field guides and web-based species profiles, surrounding habitat mapping and ground-truthing survey data.

Table 2: Likelihood of occurrence assessment criteria

Likelihood of occurrence	Assessment criteria
Unlikely	No previous records of the species within the locality and one or more of the following criteria is met: • Not previously recorded on the proposed development area and surrounds and the proposed development area is beyond the current known geographic range; or • Dependent on specific habitat types or resources that are not present on the proposed development area; or • Considered extinct in the wild.
Low	No previous records of the species within the locality and one or more of the following criteria is met: • Site and local connectivity contains marginal habitat excluding suitable/critical habitat attributes; • Lack of recent records exist in a regional context (use 1980 as a delineation); or • Potential for vagrant individual of the species to survive short-term.
Moderate	Species previously recorded within the locality and one or more of the following criteria is met: • Previously recorded in proximity to the proposed development area (*i.e.,* vagrant individuals); or • Potential habitat typologies or resources are present on the development area.
High	Species previously recorded within the locality and one or more of the following criteria is met: • Previously recorded on the proposed development area; • Dependent on habitats or habitat resources that are available on the proposed development area; or • Suitable habitats are available on the development area that are capable of supporting a resident population or individuals of the species.
Known	Flora species or ecological community positively identified during field surveys within the proposed development area. Fauna species positively recorded during field surveys within the development area or adjacent habitats.

2.2 Scientific permits

SHG holds the relevant permits that are required from Department of Agriculture and Fisheries (DAF) Animal Ethics and Animal Ethics Committee (AEC) to conduct fauna surveys for environmental consulting (CA 2020/06/1387).

Ecological field surveys were conducted on the subject site in the attempt to confirm presence of potential matters of ecological significance (MNES, MSES and Matters of Local Environmental Significance (MLES)). Surveys were conducted under the following permits held by SHG:

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

2.3. Field survey methodology

Detailed ecological surveys have been undertaken over the subject site to evaluate the current state of the environment. Methodologies utilised during the field survey to evaluate site ecological values and determine presence of specific flora and fauna species is discussed in the following subsections. All survey methods undertaken have been guided by best practice and where applicable, Commonwealth and State survey guidelines for threatened species. This includes methodologies from the following survey guidelines:

- *Terrestrial Vertebrate Fauna Survey Guidelines.*
- *Survey guidelines for Australia's Threatened Bats.*
- *Survey Guidelines for Australia's Threatened Mammals.*
- *Survey Guidelines for Australia's Threatened Birds.*

The field survey methodologies described in the following subsections were applied throughout the development site and formed part of a broader survey effort across the adjoining bushland areas. Refer to **Plan 1 to 4** for field survey effort.

2.3.1 Targeted and incidental 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 meander surveys with a focus on detection for Regent Honeyeater and Swift Parrot were undertaken during winter of 2020 during the winter foraging season, from 29 June to 3 July 2020, and again from 27 July to 31 July 2020, inclusive, in accordance with survey timeframes described in the *Survey Guidelines for Australia's Threatened Birds*. In addition to targeted surveys, incidental observations were also recorded during other survey activities including spotlighting and vegetation assessments.

2.3.2 Flying fox roost searches

Targeted surveys for Grey-headed Flying-fox were conducted on 11 and 13 March 2019 for the ultrasonic bat call detectors and 13 March 2019 flying-fox roost searches. The searches were completed in accordance with the accepted methodologies detailed in the *Survey guidelines for Australia's threatened bats*.

The flying fox roost search was conducted during the day within the survey area, watching for flying-foxes 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. This involved assessing tree canopies whilst completing meanders across the site. The search for flying-fox roosts was justified due to the proximity of the site to an active Flying-fox camp located at Camira, Barbara Street (140), approximately 1.3 km north-east of the site.

Additional opportunistic surveys were completed across the survey period and spotlighting was completed on 2, 8 and 10 August 2023 to detect any flying fox species utilising the site.

2.3.3 Ground-truthing of vegetation communities

Vegetation was ground-truthed and assessed against current 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 vegetation condition. Particular attention was made in identifying the presence and extents (where applicable) of threatened ecological communities (TECs) listed as having the potential to occur on or proximal to the site.

A comprehensive flora survey was undertaken using a methodology consistent with the established formats used by the Queensland Herbarium (Nelder *et al.,* 2020 and Hnatiuk *et al.,* 2009). Survey methodology comprised an initial visual audit, followed by quantitative assessment of vegetation associations and communities. Distinct vegetation community boundaries were delineated during field survey assessment.

Targeted surveys to assess vegetation communities on-site and on land adjacent to the subject site were completed on 11, 12 and 14 of March 2019, 7, 15 and 16 of August 2019, 17 September 2019 and 22 July 2020. Specific surveys to identify the presence and extent of the LRSA TEC were completed during vegetation survey effort. This involved assessing each vegetation structure at the location where the regional ecosystems indicative of the LRSA TEC were mapped. The characteristic flora species appendices associated with the listing advice on the LRSA TEC's SPRAT profile was referred to during the assessment process, along with the condition thresholds to delineate the boundaries of the regional ecosystem. Surveys were in accordance with the current listing advice and utilised available assessment material provided on the Departments SPRAT profile for LRSA TEC.

2.3.4 Koala habitat and SAT surveys

Tools for determining localised levels of use by *Phascolarctos cinereus* (Koala) included the Spot Assessment Technique (SAT) and opportunistic observations for Koala and Koala activity throughout the field survey effort. The SAT surveys were undertaken in accordance with methodology developed by the Australian Koala Foundation (AKF) and Phillips and Callaghan (2011) and specified in the *EPBC Act Referral Guidelines for the Vulnerable Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)*.

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 physical 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 a 1 m radius of the trunk. After approximately two minutes of searching for scats, the base of the trunk is observed for scratches and the crown for Koala. 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[Error! Bookmark not defined.].

A total of sixteen (16) SAT surveys have been completed across the project area. Of the SAT surveys completed, eight (8) were completed on 14 and 15 March 2019 (autumn), six (6) on 22 July 2020 (winter) and two (2) on 8 August 2023 (winter). The SAT surveys in 2020 were completed where vegetation assessment transects were conducted to support vegetation suitability assessment.

2.3.5 Observational survey for species and communities

The site area was walked to ensure all species (flora and fauna) were recorded and identified. Particular attention was paid to any MNES that were listed as possibly occurring on or within the vicinity of the site and specific micro-assemblages which may support these threatened species. This included observations of vertebrate fauna present on or proximal to the site and species listed as migratory under the EPBC Act.

The observational survey included identification of ecological features and values such as broad vegetation communities, fauna habitats and ecological corridors. Recording fauna habitat features within the project area included the identification of habitat trees.

2.3.6 Scats, tracks and other traces search

Surveys for scats, tracks and other traces were conducted throughout the survey period between 11 and 15 March 2019, 31 July to 2 August 2023 and 8 and 10 August 2023. 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 for invasive species, such as European Red Fox, was conducted to identify predator-prey interactions and understand existing impacts within the site.

2.3.7 Motion sensor camera trap

Camera trapping involves setting up a fixed digital camera to capture images or video of animals that pass in front of a camera with an infrared trigger. This survey technique identifies fauna activity beyond the scope of direct observational studies and with the absence of potential observer impacts. Cameras were attached 30-100 cm from the ground on a tree or post and directed towards landscape features. Camera traps were installed on 27 July 2023 and collected on 10 August 2023, for a period of 15 nights. The cameras were baited with chicken necks to target nocturnal carnivorous mammal species. Refer to **Photo 1** for an example of the camera set up.

Photo 1: Example of motion sensor camera set up.

2.3.8 Spotlighting and call playback

A combination of high-powered spotlights and head torches were used to detect nocturnal mammals, birds and reptiles within the referral area in accordance with the relevant Commonwealth and State survey guidelines. Spotlighting meander surveys were completed on foot by two observers and involved slowly walking through eucalypt woodland at an average pace of 10 minutes per 100 m. Observers took care to ensure areas already surveyed were not revisited during the same survey transect. It was also ensured that surveys were not completed during inclement weather such as strong winds or rain to limit the potential for reduced detectability.

Spotlighting surveys were completed in accordance with the prescribed spotlighting methodology for arboreal mammals and nocturnal bird species within the relevant survey guidelines including *Survey Guidelines for Australia's Threatened Mammals* and *Survey Guidelines for Australia's threatened birds*. A total of five (5) two-person spotlighting meander surveys have been completed over the project area including 11 and 13 March 2019 and the 2, 8 and 10 August 2023. Each spotlighting meander transect was completed over a period of approximately three or more hours between 16:00 and 21:30. Refer to **Plan 3** for spotlighting survey effort.

Spotlighting surveys were preceded by an assessment of potential habitat features or evidence within the referral area which included locating large, old growth trees, arboreal and terrestrial hollows. Refer to **Plan 4** for the location of recorded habitat features.

Each spotlighting meander in 2023 included broadcast surveys (also referred to as 'call playback') for Powerful Owl. Broadcast surveys provide a highly effective method for detecting a wide variety of birds, especially for nocturnal or visually cryptic species. Broadcast detection involves playing a recording of the vocalisations of the target species over a loudspeaker and detecting individuals of that species that respond to the call vocally, or are attracted by the call and observed as a result. Three to five broadcast surveys were completed during each spotlighting meander which included an initial scan of the chosen site, broadcasting the call via a speaker then waiting for approximately 30 seconds to hear a vocalisation or activity in response. This was repeated at least three times at each site.

2.3.9 Ultrasonic bat call detectors

Echolocation call detection was also completed. This method is an unobtrusive and non-invasive technique used to target areas of interest such as creeks, rocky outcrops and potential flyaways for microbats, and is particularly useful for detecting species in the Rhinolophidae and Hipposideridae families.

An ANABAT II ultrasonic bat call detection unit and associated ZCAIM interface module were also used to capture the calls of insectivorous bat species within representative habitat types on 11 and 13 March 2019. Refer to **Plan 3** for the location of Anabat surveys.

2.3.10 Waterway and drainage line ground-truthing

The VMA watercourse mapped in the north-western and south-eastern portion of the site was investigated with *in situ* values observed which involved recording the following details:

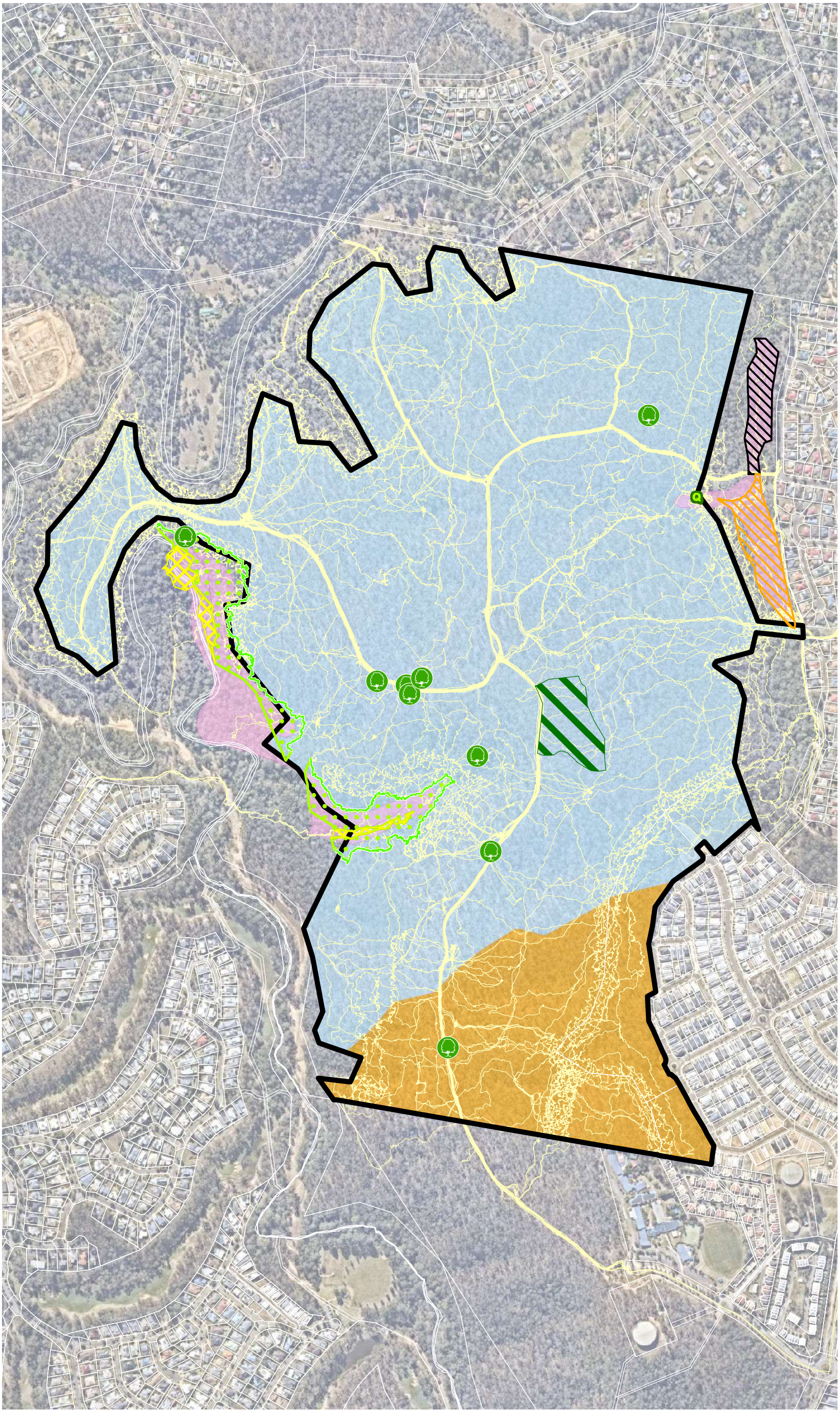
- General description and photos
- Vegetation quality and coverage (e.g. embankments, channel and overall corridor)
- Extent of invasive weed cover.

Key observations were also recorded at potential drainage lines present within the site recording the following details. Additionally, while located off-site, a ground-truthing assessment of the O'Dwyer's Gully waterway including the upstream tributary was also completed which included mapping the waterway centreline and western top of high bank using a handheld GPS. This was completed to provide greater certainty regarding waterway flow path locations and the quality of waterway values to inform setback requirements. This assessment is essential in providing the appropriate buffers to the waterway.

2.3.11 Frog surveys and call playback

Call playback targeting threatened frog species with the potential to occur on the site was completed at specific locations. Call playback is a detection technique used to target fauna species which may respond to mating or territorial calls from members of the same species. A pre-recorded call is played from a device for a specific period of time, then a period of quiet follows to detect any species-specific response. This call-playback technique is often repeated several times within suitable habitat for the target species. Seasonal and temporal timing may be critical to the likelihood of detecting some species due to timing of mating calls for frog species or weather response. The call playback was completed at several times at waterbodies containing potential habitat attributes to support the species (refer **Plan 2**).

1. Field Survey Effort - Vegetation



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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Legend

- Qld DCDB
- Site DCDB
- *Eucalyptus cloeziana* plantation
- Endangered RE mapping

Ground-truthed Endangered Vegetation

- Ground-truthed Edge of RE 12.9-10.15
- Ground-truthed RE 12.3.16 (LRSA TEC Indicator)
- Ground-truthed Endangered RE 12.3.3
- RE section not surveyed
- Ground-truthed edge of RE 12.9-10.5

Field Survey Effort

- GPS track logs
- Quaternary survey location
- *Leichhardtia coronata*

Ground-truthed Vegetation Communities

- *Eucalyptus fibrosa* and *Corymbia citriodora* dominated open woodland (RE12.9-10.19)
- *Eucalyptus moluccana* dominated area with *Eucalyptus fibrosa* and *Corymbia citriodora* (RE12.9-10.3)

Issue	Date	Description	Drawn	Checked
B	6/09/2023	Preliminary	TF	AW

0 25 50 100 150 200 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:8,000 @ A3

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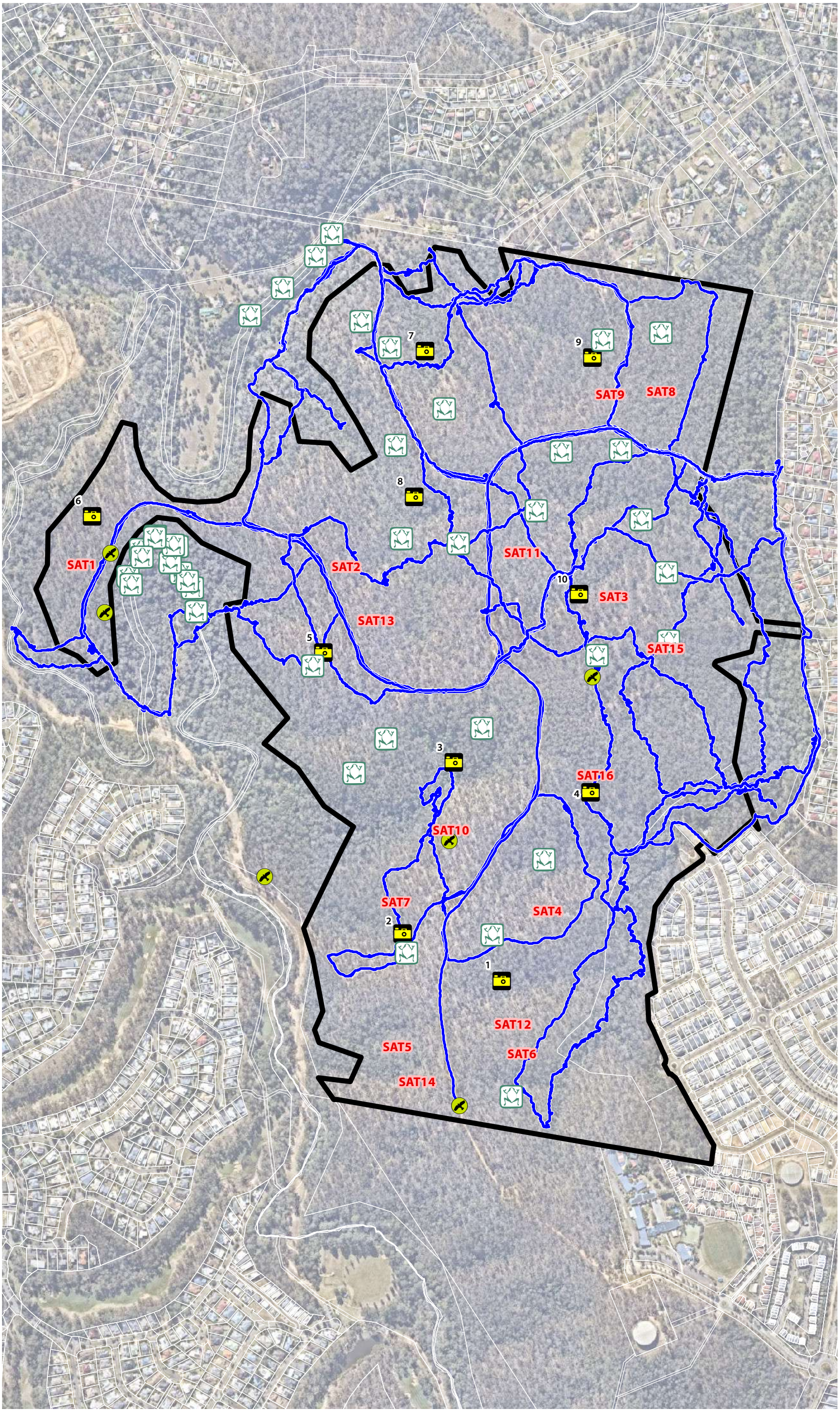
Springview Villages 2 & 3 Precinct

ADDRESS/RPD: Lot 9999 on SP292760 | 6/09/2023 | 11426 E01 Field Survey Vegetation A

2. Field Survey Effort - Diurnal Fauna Surveys



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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© Nearmap, 2023

Legend

- Qld DCDB
- Site DCDB

Field Survey Effort

- Bird surveys
- Bird survey location
- Camera trap location
- Frog survey location
- SAT survey location

Issue	Date	Description	Drawn	Checked
B	6/09/2023	Preliminary	TF	AW

0 25 50 100 150 200 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:8,000 @ A3

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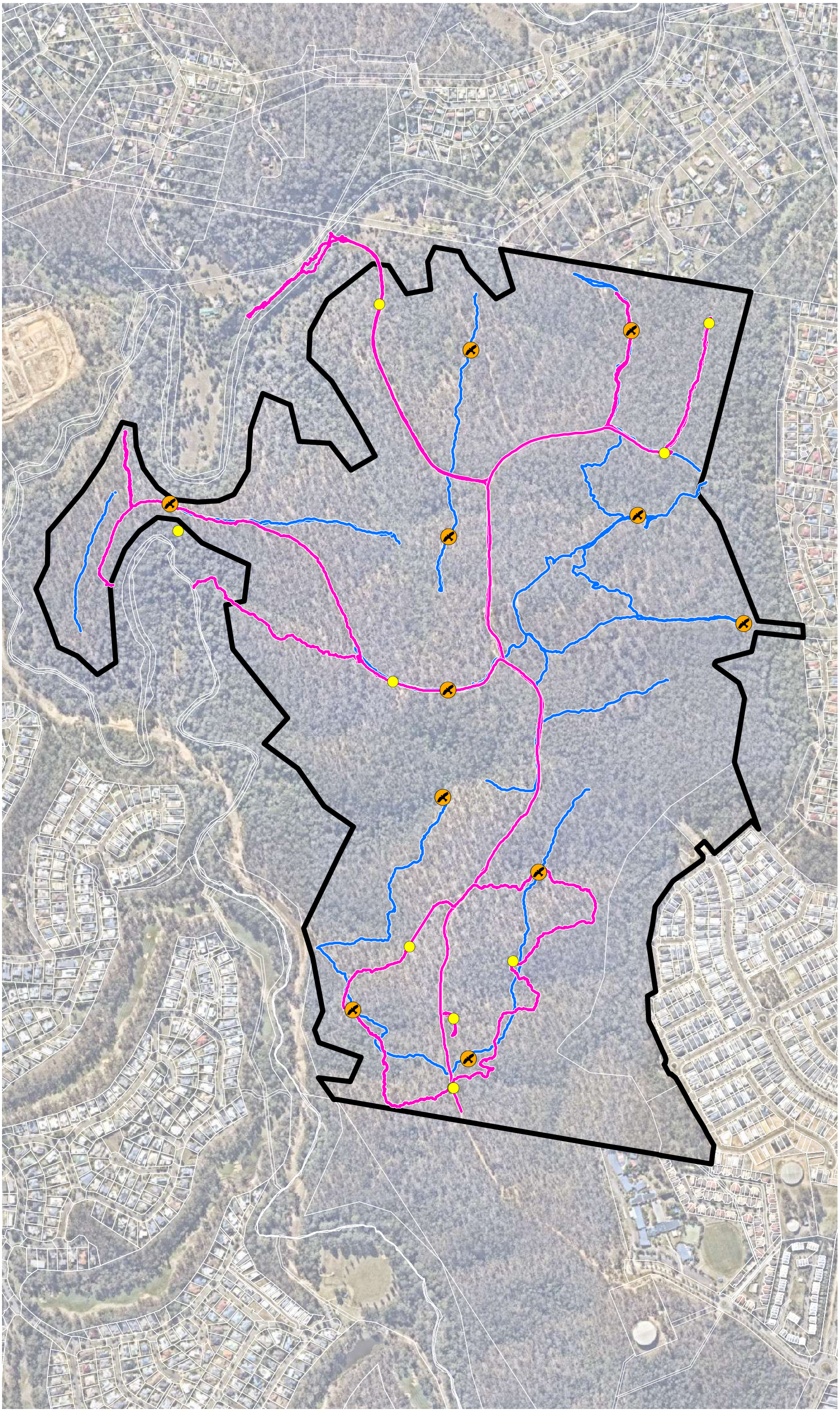
Springview Villages 2 & 3 Precinct

ADDRESS/RPD: Lot 9999 on SP292760 *6/09/2023* *11426 E02 Field Survey Fauna DiurnalA*

3. Field Survey Effort - Nocturnal Fauna Surveys



Notes:
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Layer Sources
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© Nearmap, 2023

Legend

- Qld DCDB
- Site DCDB

Field Survey Effort

- Spotlighting 2019
- Spotlighting 2023
- Anabat survey locations
- Powerful Owl call playback locations

Issue	Date	Description	Drawn	Checked
B	5/09/2023	Preliminary	TF	AW

0 25 50 100 150 200 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:8,000 @ A3

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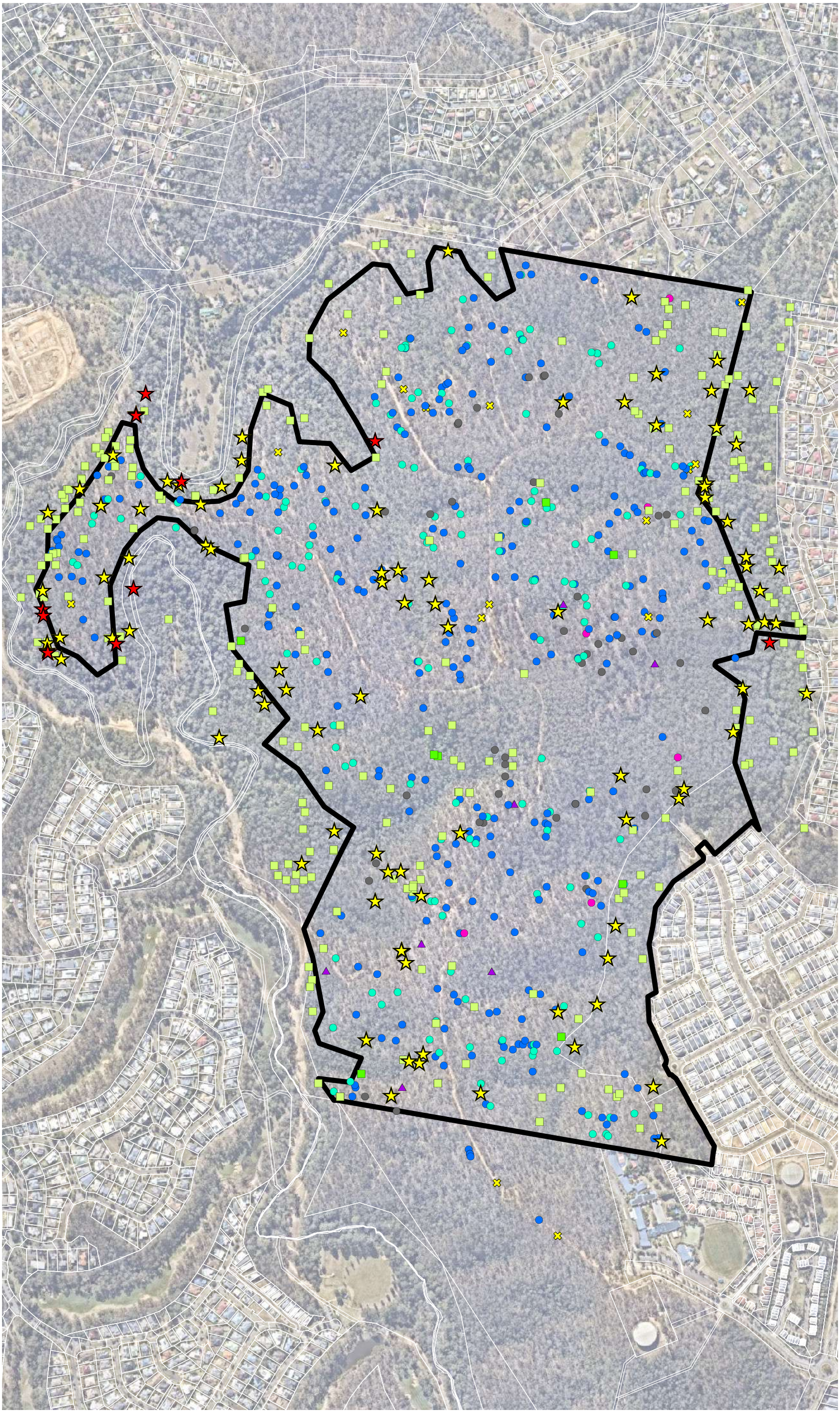
Springview Villages 2 & 3 Precinct

ADDRESS/RPD: Lot 9999 on SP292760 *5/09/2023* *11426 E 03 Field Survey Fauna Nocturnal A*

4. Habitat Features



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

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

Legend

- Qld DCDB
- Site DCDB

Habitat Features

- Artificial debris
- Hollow log
- Rocky outcrop
- Terrestrial termite mound (excavation)
- Terrestrial termite mound (no excavation)
- Woody debris
- Tree with arboreal termite mound
- Tree with stick nest
- Tree with hollows
- Potential habitat tree (>800 mm DBH)

Issue	Date	Description	Drawn	Checked
B	5/09/2023	Preliminary	TF	AW

0 25 50 100 150 200 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:8,000 @ A3

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Cherish Enterprises Pty Ltd

Springview Villages 2 & 3 Precinct

ADDRESS/RPD: Lot 9999 on SP292760 *5/09/2023* *11426 E 04 Habitat Features A*

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 EPBC Act which aims to protect and manage MNES which include nationally and internationally important flora, fauna, ecological communities and heritage places. The EPBC Act is administered by the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

A search using the PMST for the site was completed and produced a Protected Matters Report (PMR). 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 PMR is provided in **Appendix B**.

Table 3: Results of the Protected Matters Report

Threatened Ecological Communities		
Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community: Endangered – Community may occur within area **Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland:** Endangered – Community likely to occur within area **Grey Box-Grey Gum Wet Forest of Subtropical Eastern Australia:** Endangered – Community may occur within area **Lowland Rainforest of Subtropical Australia:** Critically Endangered – Community may occur within area **Poplar Box Grassy Woodland on Alluvial Plains:** Endangered – Community may occur within area **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 **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
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	Vulnerable
Charadrius leschenaultii	Greater Sand Plover	Vulnerable
Climacteris picumnus victoriae	Brown Treecreeper (south-eastern)	Vulnerable

Threatened species		
Scientific name	**Common name**	**Status**
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	Endangered
Diomedea antipodensis	Antipodean Albatross	Vulnerable
Diomedea antipodensis gibsoni	Gibson's Albatross	Vulnerable
Diomedea exulans	Wandering Albatross	Vulnerable
Erythrotriorchis radiatus	Red Goshawk	Vulnerable
Falco hypoleucos	Grey Falcon	Vulnerable
Geophaps scripta scripta	Squatter Pigeon (southern)	Vulnerable
Grantiella picta	Painted Honeyeater	Vulnerable
Hirundapus caudacutus	White-throated Needletail	Vulnerable
Lathamus discolor	Swift Parrot	Critically Endangered
Macronectes giganteus	Southern Giant-Petrel	Endangered
Macronectes halli	Northern Giant Petrel	Vulnerable
Neophema chrysostoma	Blue-winged Parrot	Vulnerable
Numenius madagascariensis	Eastern Curlew	Critically Endangered
Pachyptila turtur subantarctica	Fairy Prion (southern)	Vulnerable
Rostratula australis	Australian Painted Snipe	Endangered
Stagonopleura guttata	Diamond Firetail	Vulnerable
Sternula nereis nereis	Australian Fairy Tern	Vulnerable
Thalassarche cauta	Shy Albatross	Endangered
Thalassarche impavida	Campbell Albatross	Vulnerable
Thalassarche melanophris	Black-browed Albatross	Vulnerable
Thalassarche salvini	Salvin's Albatross	Vulnerable
Thalassarche steadi	White-capped Albatross	Vulnerable
Turnix melanogaster	Black-Breasted Button-quail	Vulnerable
FISH		
Epinephelus daemelii	Black Rockcod	Vulnerable
Thunnus maccoyii	Southern Bluefin Tuna	Conservation Dependent
FROGS		
Mixophyes fleayi	Fleay's Frog	Endangered
INSECTS		
Argynnis hyperbius inconstans	Australian Fritillary	Critically Endangered
MAMMALS		

Threatened species		
Scientific name	**Common name**	**Status**
Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable
Dasyurus hallucatus	Northern Quoll	Endangered
Dasyurus maculatus maculatus	Spot-tailed Quoll	Endangered
Macroderma gigas	Ghost Bat	Vulnerable
Petauroides volans	Greater Glider	Endangered
Petaurus australis australis	Yellow-bellied Glider (south-eastern)	Vulnerable
Petrogale penicillata	Brush-tailed Rock-wallaby	Vulnerable
Phascolarctos cinereus	Koala	Endangered
Potorous tridactylus tridactylus	Long-nosed Potoroo	Vulnerable
Pseudomys novaehollandiae	New Holland Mouse	Vulnerable
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable
PLANTS		
Arthraxon hispidus	Hairy-joint Grass	Vulnerable
Bosistoa transversa	Three-leaved Bosistoa	Vulnerable
Corchorus cunninghamii	Native Jute	Endangered
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 eerward	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		

Threatened species		
Scientific name	**Common name**	**Status**
Delma torquata	Adorned Delma	Vulnerable
Furina dunmalli	Dunmall's Snake	Vulnerable
Hemiaspis damelii	Grey Snake	Endangered

Note: species of turtle and shark were not included in this extracted summary due to the absence of suitable habitat on-site. Migratory species are included in **Appendix B**.

3.2 Nature Conservation Act 1992

The NCA classifies and protects significant areas (protected areas) and protects threatened plant and animal species. The *Nature Conservation (Plants) Regulation 2020* (NCPR) and *Nature Conservation (Animals) Regulation 2020* (NCAR) list plant and animal species presumed extinct, endangered, vulnerable, near threatened, least concern, international or prohibited. The schedules of these regulations were considered in this report using a Wildlife Online Database Search with a 5 km radius from the site. Species listed under the NCPR and NCAR with the potential to occur around the subject site are listed in **Table 3** (refer **Appendix C** for complete Wildlife Online extract). Field surveys included a focus on identifying if these species were present on-site.

Table 4: Wildlife Online search results

Scientific name	Common name	Status
AMPHIBIANS		
Adelotus brevis	Tusked Frog	Vulnerable
BIRDS		
Calyptorhynchus lathami lathami	Glossy Black-cockatoo (Eastern)	Vulnerable
Hirundapus caudacutus	White-throated Needletail	Vulnerable
Ninox strenua	Powerful Owl	Vulnerable
MAMMALS		
Phascolarctos cinereus	Koala	Endangered
Petauroides armillatus	Central Greater Glider	Endangered
PLANTS		
Coleus habrophyllus	-	Endangered
Eucalyptus curtisii	Plunkett Mallee	Near Threatened
Leichhardtia coronata	-	Vulnerable
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. The protected plant definition includes all presumed extinct, critically endangered, endangered, vulnerable and/or near threatened plant species listed

by name in Schedules 1 and 2 of the NCPR and least concern wildlife, not listed by name but identified as a plant indigenous to Australia in Schedule 6. Furthermore, the plant must be considered *in the wild* in order to be a protected plant.

The NCA identifies *in the wild* as 'in an independent state of natural liberty'. Several factors influence whether a protected plant is *in the wild*:

- the process by which the plant has become established, *i.e.*, either initiated through human intervention or naturally occurring;
- the natural range of the plant species; and/or
- the ecological situation in which the plant is found.

Typically, planted specimens are not considered *in the wild* and an authority or permission is not necessary for the taking of such specimens. The *Operational Policy Wildlife Management*[1] provides further information on this definition.

If a specimen is confirmed as *in the wild,* the plant must not be 'taken'—which includes being cleared—unless the 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 development site is located almost entirely within the 'high risk area' for protected plants (refer **Figure 3**). Consequently, a flora survey and liaison with the administering authority in accordance with the protected plants guidelines is required prior to the clearing of vegetation.

3.3 Vegetation Management Act 1999

The 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.

The Regulated Vegetation Management Map shows vegetation categories used to determine clearing requirements and/or constraints. While areas shown on the map as Category X are not regulated under the VMA, those shown as Category A, B, C or R may be subject to assessment under the act. The latter vegetation categories can only be cleared in accordance with an exemption, self-assessable vegetation clearing code, area management plan or development approval. The Vegetation Management Supporting Map details regional ecosystem types, wetlands, watercourses and essential habitat, and accompanies the Regulated

[1] Department of Environment and Heritage Protection 2015. *When a protected plant in Queensland is considered to be 'in the wild' Operational policy*.

Vegetation Management Map. If a development does not meet the criteria specified under the *Planning Regulation 2017* 'Schedule 21 Exempt clearing work', an approval for clearing native vegetation protected under the VMA is required under the *Planning Act 2016*.

A property search of the Regulated Vegetation Management Map identified the site is mapped almost entirely as Category B (remnant) vegetation, with small pockets of Category C (high value regrowth) vegetation and Category X (non-remnant) vegetation (refer to **Figure 4**). The Vegetation Management Supporting Map shows the site is predominantly mapped as Category B Of Concern composite RE12.9-10.2 / 12.9-10.7 / 12.9-10.19 (refer to **Figure 5**). Multiple polygons of mapped Category B Endangered regional ecosystems abut the western extent and enter parts of the site; being RE12.9-10.15 and RE12.3.16. Composite Endangered RE12.3.7/12.3.3 is mapped along the boundary of parts of the north-western site extent. Least Concern RE12.9-10.17d is mapped within a portion of the northern site extent.

Watercourses mapped under the VMA are situated adjacent to the eastern and western boundaries of the site. The watercourse abutting the eastern boundary is known as O'Dwyers Gully and the watercourse abutting the west is Opossum Creek and Woogaroo Creek. A VMA-mapped watercourse branches from Woogaroo Creek in a south-easterly direction into the site. The mapped remnant vegetation is also designated as essential habitat for the *Phascolarctos cinereus* (Koala), *Adelotus brevis* (Tusked Frog), *Ninox strenua* (Powerful Owl), *Coleus habrophyllus*, and *Leichhardtia coronata* (Slender Milkvine).

The Springfield Structure Plan is a Development Control Plan that addressed State interests relating to the VMA at the time of endorsement. Future development applications over land affected by the Development Control Plan do not trigger assessment under the VMA which includes Endangered vegetation.

3.4 Water Act 2000

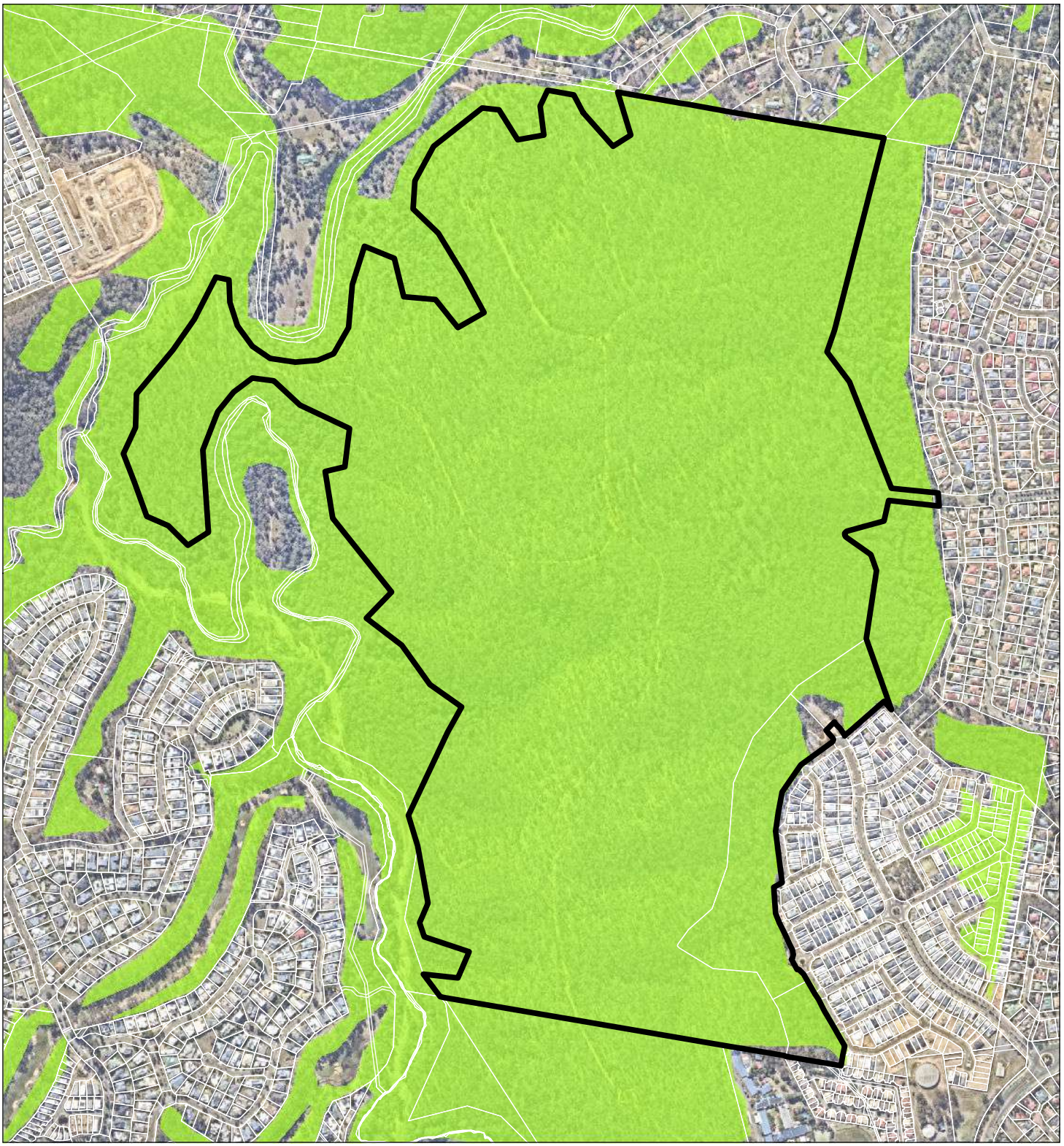
The *Water Act 2000* provides a framework for sustainable management of Queensland's water resources and quarry material. Under the *Water Act 2000*, a riverine protection permit is required to be obtained if works within a waterway result in filling or excavation unless these works meet an exemption.

A review of Queensland Globe indicates that undefined features and drainage features defined under the *Water Act 2000* exist on-site. No water features deemed as watercourses exist on-site, where Woogaroo Creek adjacent to the site has been deemed a watercourse under the *Water Act 2000*. Operational work within a watercourse as defined under the *Water Act 2000* may trigger the requirement for a riverine protection permit if exemption requirements cannot be met.

3.5 SEQ Koala Habitat Areas

On 7 February 2020, planning reforms to protect Koala habitat areas in South East Queensland came into effect through the *Nature Conservation and Other Legislation (Koala Protection) Amendment Regulation 2020*. The planning reforms include several possible exemptions for existing projects including those under a Development Control Plan. As such, the Springfield project area will be exempted development for Koala protections regardless of whether Koala habitat areas are mapped as present.

It is noted that the site is not mapped within a Koala Priority Area, although it is almost entirely mapped as a Koala Habitat Area. In accordance with the specific Exempted Development definition under Schedule 24 of the PR, *(c) development in the area of a development control plan that the old Act, section 857 applies to*, development within the site is exempt.



Legend

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

Figure 3

NCA - Protected Plants
Flora Survey Trigger

CHERISH ENTERPRISES PTY LTD

File ref. 11426 E Figure 3 Precinct NCA A
Date *5/09/2023*
Project *Springview Villages 2 & 3 Precinct*

0 50 100 200 300 400 *m*

Scale (A4): 1:11,000 [GDA 1994 MGA Z56]

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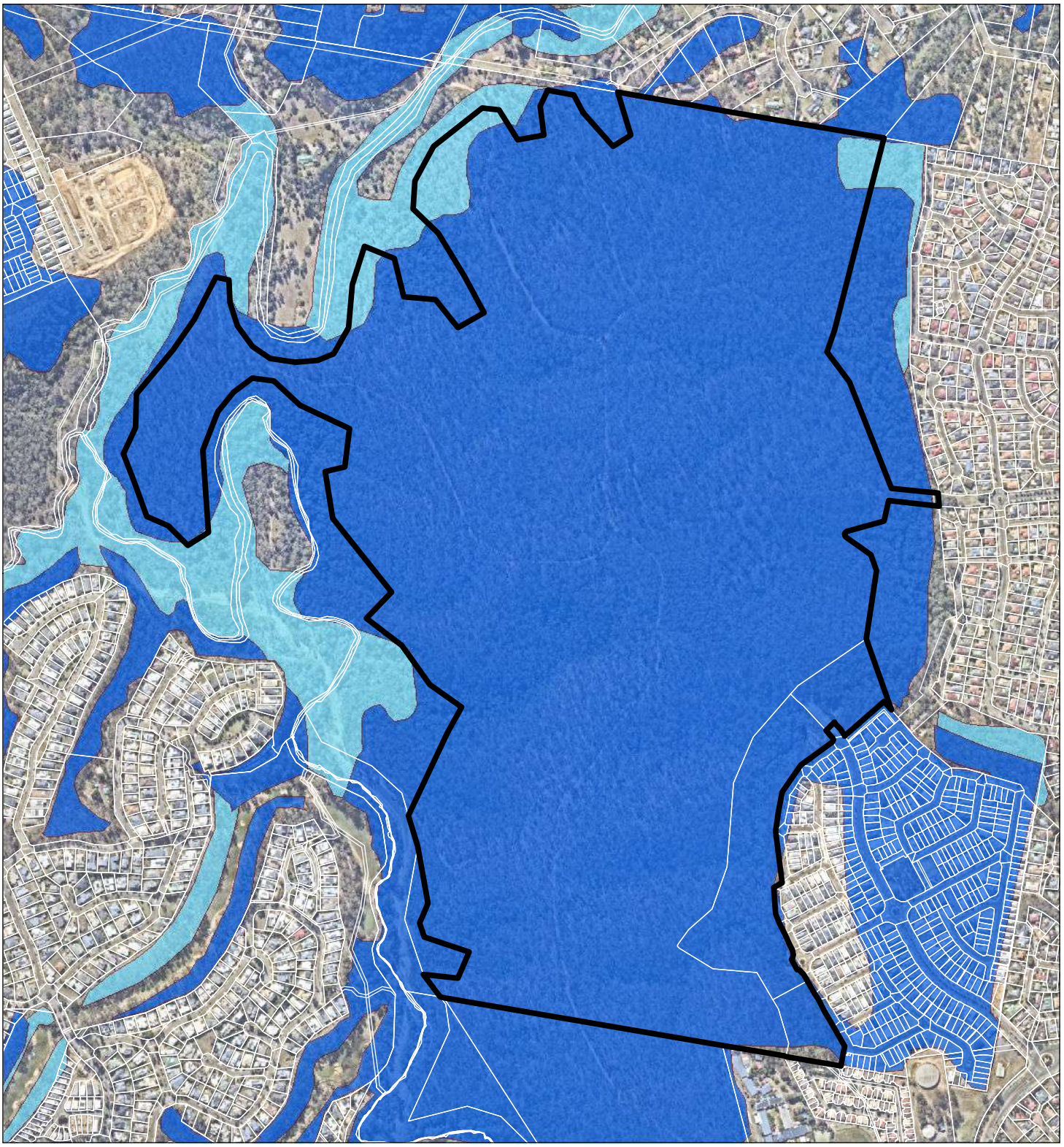
Layer Source: © State of Queensland (Department of Natural Resources, Mines and Energy) 2023, Aerial (Nearmap 2023)



Legend

- Qld DCDB
- Site DCDB

Regulated Vegetation

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

Figure 4

Regulated Vegetation Management Map

CHERISH ENTERPRISES PTY LTD

File ref. 11426 E Figure 4 Precinct RVMM A
Date *5/09/2023*
Project *Springview Villages 2 & 3 Precinct*

0 50 100 200 300 400 *m*

Scale (A4): 1:11,000 [GDA 1994 MGA Z56]

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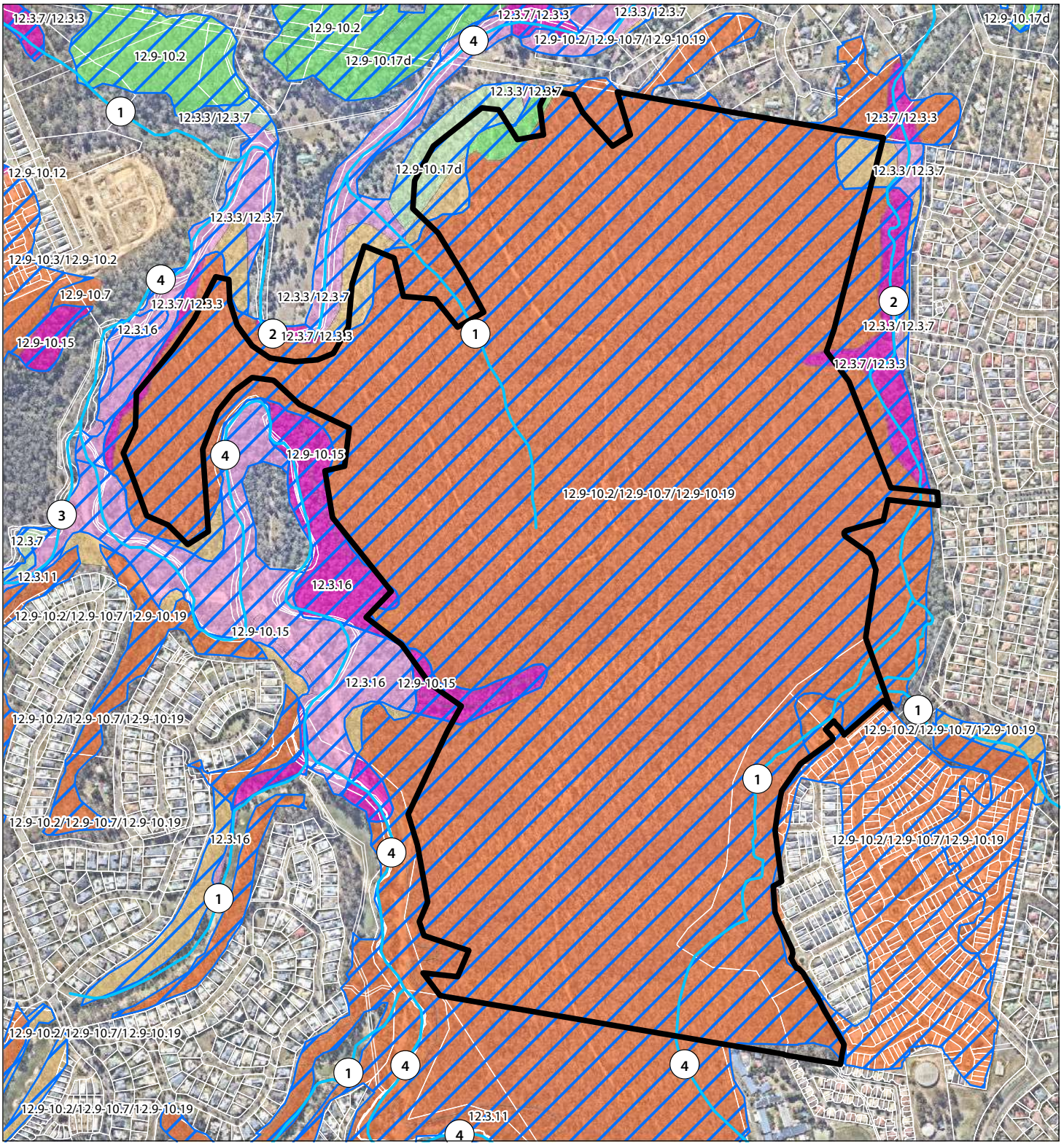
Layer Source: © State of Queensland (Department of Natural Resources, Mines and Energy) 2023, Aerial (Nearmap 2023)



Legend

- Qld DCDB
- Site DCDB
- VM Watercourses (with stream order)
- 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 5

Regulated Vegetation Supporting Map

File ref. 11426 E Figure 5 Precinct RVSM A
Date *5/09/2023*
Project *Springview Villages 2 & 3 Precinct*

0 50 100 200 300 400 *m*

Scale (A4): 1:11,000 [GDA 1994 MGA Z56]

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CHERISH ENTERPRISES PTY LTD

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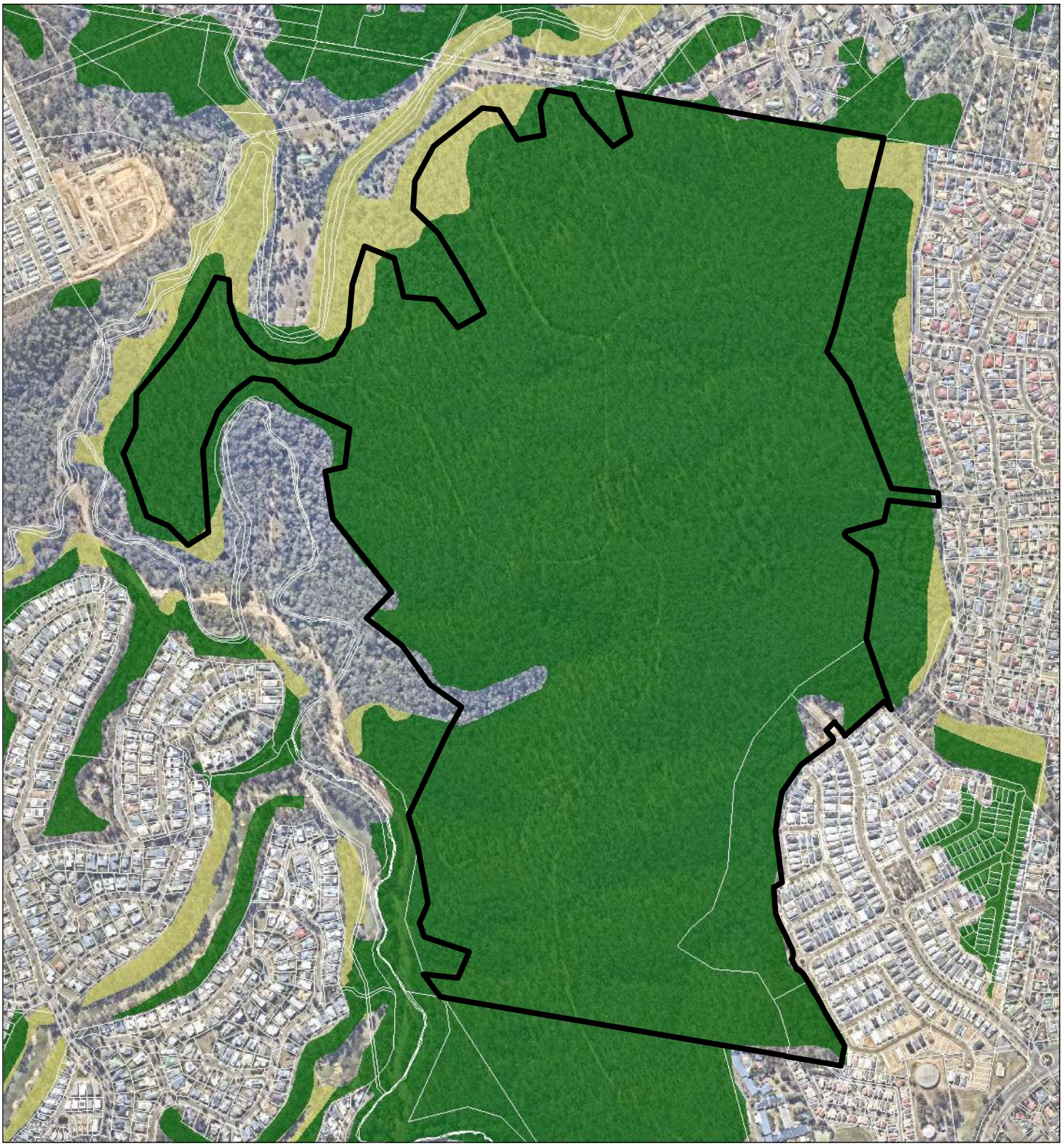
Layer Source: © State of Queensland (Department of Natural Resources, Mines and Energy) 2023, Aerial (Nearmap 2023)



Legend

- Qld DCDB
- Site DCDB

Koala Habitat Areas

- Core Remnant Koala Habitat Areas
- Core Regrowth Koala Habitat Areas
- Locally Refined Koala Habitat Areas
- Koala Priority Areas

Figure 6

Koala Priority Areas and Koala Habitat Areas

File ref. 11426 E Figure 6 Precinct KHA A
Date *5/09/2023*
Project *Springview Villages 2 & 3 Precinct*

0 50 100 200 300 400 *m*

Scale (A4): 1:11,000 [GDA 1994 MGA Z56]

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Layer Source: © State of Queensland (Department of Resources) 2023, Aerial (Nearmap 2023)

3.6. 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 DAF.

A section of a *low risk* waterway for waterway barrier works (WWBW), named O'Dwyers Gully, intersects a relatively small point of the site (refer **Figure 7**). No other waterways mapped under the *Fisheries Act 1994* enter the site bounds. Woogaroo Creek adjacent to the north-western boundary is a *major risk* waterway for WWBW. Opossum Creek adjacent to the western boundary is a *high risk* waterway for WWBW. Any operational work to be undertaken within a Fisheries mapped waterway that does not meet Accepted Development Requirements will require State approval and a response to SDAP *State Code 18: Waterway Barrier Works*.

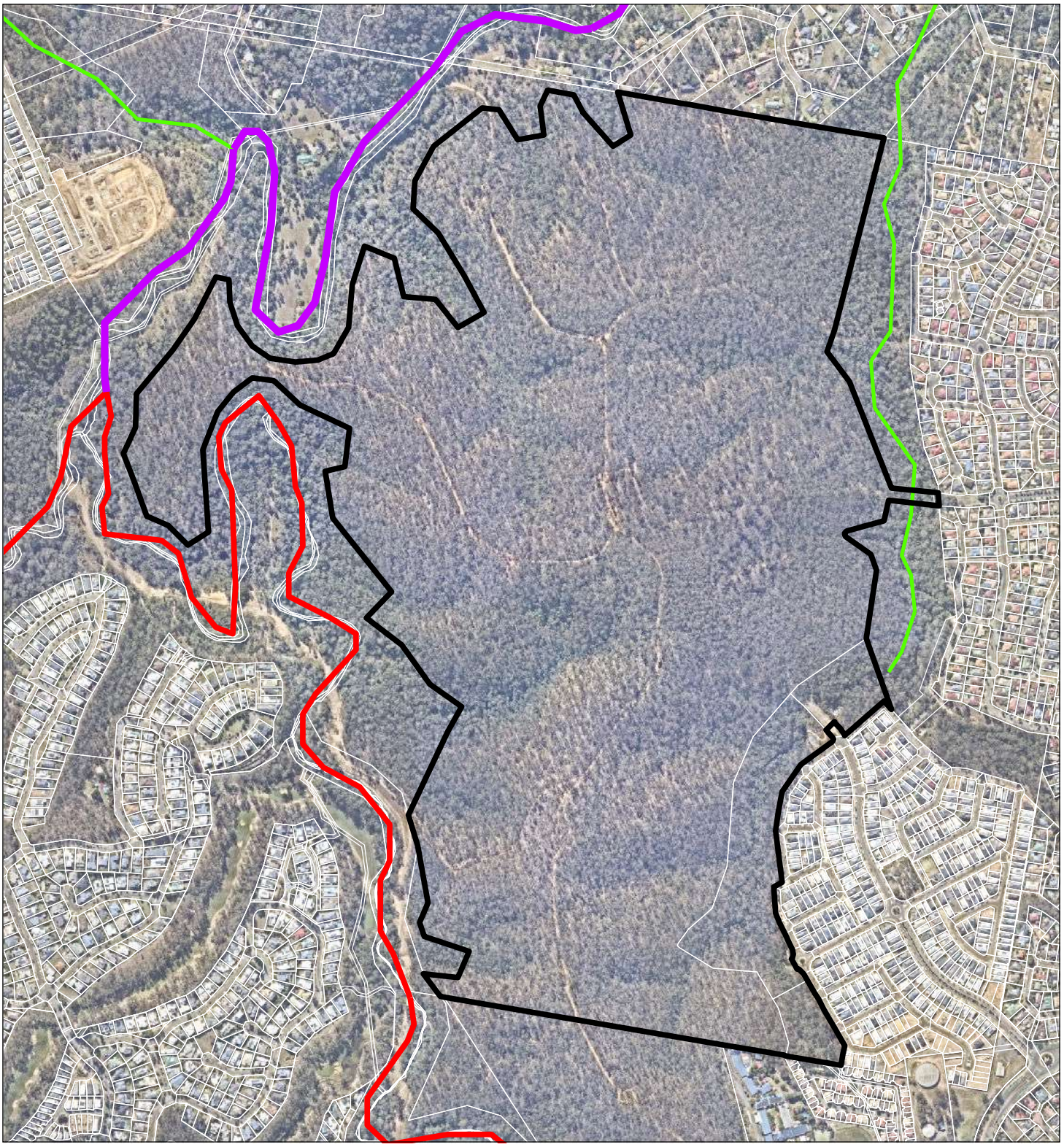
3.7 Biosecurity Act 2014

The *Biosecurity Act 2014* commenced on 1 July 2016 and 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. These steps are 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 listed in **Section 4**.



Legend

- Qld DCDB
- Site DCDB
- Tidal waterway
- Fish habitat area

Waterways

Risk of Impact

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

Figure 7

Fisheries - Waterways for Waterway Barrier Works

File ref. 11426 E Figure 7 Precinct Fisheries A
Date *5/09/2023*
Project *Springview Villages 2 & 3 Precinct*

0 50 100 200 300 400 *m*

Scale (A4): 1:11,000 [GDA 1994 MGA Z56]

N

CHERISH ENTERPRISES PTY LTD

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Layer Source: © State of Queensland (Department of Resources) 2023, Aerial (Nearmap 2023)

3.8 Other Queensland environmental legislation

Other Queensland environmental legislation has been reviewed in the context of the proposed development and is presented in **Table 5**.

Table 5: Summary of other Queensland environmental legislation

Legislation/ policy	Purpose	Relevance to proposed development
Coastal Protection and Management Act 1995	Seeks to protect the coastal resources of the coastal zone.	The site does not contain any coastal areas and therefore the proposed development does not trigger an assessment against the relevant state provision — *State code 8: Coastal development and tidal works*.
State Planning Policy 2017	The 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 planning scheme. MSES are categorised under Biodiversity, Coastal Environment or Water Quality.	The site is mapped as containing MSES –Wildlife Habitat (endangered or vulnerable, special least concern, and Koala habitat areas - core), MSES – Regulated Vegetation (Category B & Essential Habitat) and MSES – Regulated Vegetation intersecting a Watercourse. Council may have regard to these values when assessing an application against the Vegetation Management Code under the planning scheme.

3.9 Town planning instruments

The site is located within the jurisdiction of Ipswich City Council and is located within the Springfield Structure Plan area.

3.9.1 Springfield Structure Plan

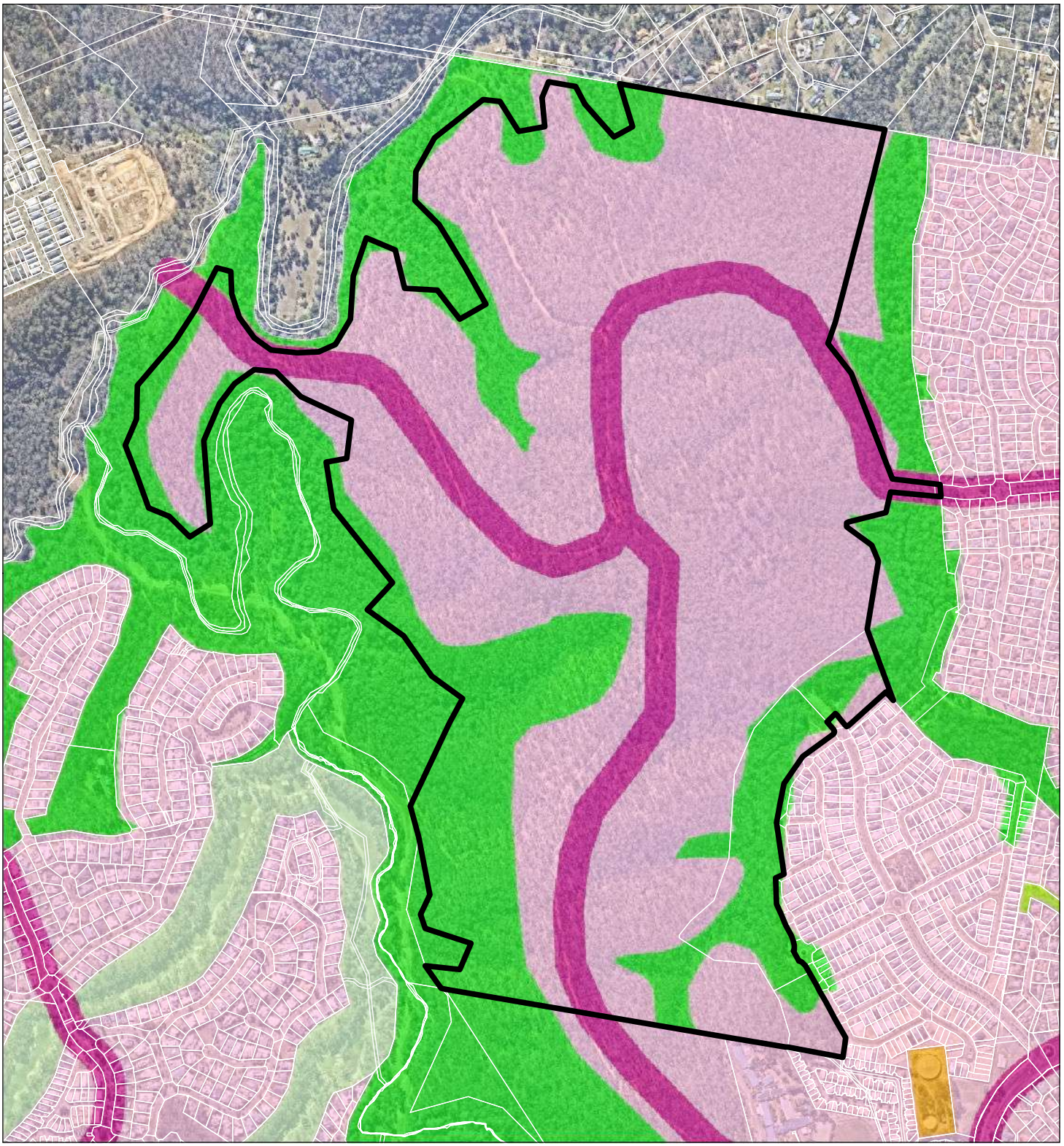
The Precinct Plan area is subject to the planning provisions of the Springfield Structure Plan. Under the Springfield Structure Plan, the subject site is zoned mostly as community residential with smaller areas zoned as creekline open space extending into the boundary of the Precinct Plan area (refer to **Figure 8**). There are no ecologically relevant overlays mapped on-site under the ICC planning scheme with ecological requirements addressed under the Springfield Structure Plan. However, a response to ICC's Vegetation Management Code may be required as part of any future development application.

3.9.2 Significant Local Species

In addition to threatened or near threatened species listed under Commonwealth and State legislation, there are a number of such species significant to the Ipswich region. Ipswich City council has determined a list of criteria for species considered locally significant, including:

- Local abundance: number of occurrence records in the Ipswich area
- Local decline: at risk of extinction in the South East Queensland region
- Non-local decline: decline in NSW
- Distribution limits: limit of geographic or altitudinal range in the region
- Restricted/low population: limited in geographic range or uncommon in the region
- Disjunct population: widely separated populations across a geographic range
- Cultural/iconic species: cultural values or iconic to local community
- Ecologically important species: important ecological role in local ecosystems.

The 38 locally significant species identified by ICC and an assessment of the potential of the Precinct Plan area to support these species using desktop and field survey information is provided in **Sections 4.2.7 and 4.4.6.**



Legend

- Qld DCDB
- Site DCDB

Springfield Structure Plan

- Community Residential
- Creek Line Open Space
- Private Open Space
- Special Use
- Major Transporation Network Locations

Figure 8

Ipswich City Council
Springfield Structure Plan

CHERISH ENTERPRISES PTY LTD

File ref. 11426 E Figure 8 Precinct Springfield SP A
Date *5/09/2023*
Project *Springview Villages 2 & 3 Precinct*

0 50 100 200 300 400 *m*

Scale (A4): 1:11,000 [GDA 1994 MGA Z56]

N

saunders havill group

Layer Source: © State of Queensland (Department of Resources) 2023, Ipswich City Council 2023, Aerial (Nearmap 2023)

4. Ecological survey results

The subject site has been assessed on numerous occasions by Ecologists from Saunders Havill Group between 2019 and 2023 and other consultant groups prior to 2019. A summary of the ecological field surveys conducted and the prevailing weather conditions are provided in **Table 6**. The entire site was traversed multiple times using multiple survey methodologies to ensure vegetation communities and species were observed. Particular attention was afforded to any threatened flora and habitat for threatened fauna species that were listed as possibly occurring on or within the vicinity of the project area, and specific micro assemblage which may support these threatened species.

Table 6: Field Survey Methods Summary

Survey date	Weather Conditions	Methods
11 March 2019	20.7°C min – 37.9°C max 0 mm rainfall	Spotlighting, ultrasonic bat call detection
12 March 2019	20.5°C min – 40.9°C max 0.2 mm rainfall	Waterway and drainage feature ground-truthing, general flora and fauna surveys
13 March 2019	18.1°C min – 36.4°C max 0 mm rainfall	Spotlighting, ultrasonic bat call detection
14 March 2019	22.0°C min – 31.9°C max 0 mm rainfall	Spot Assessment Technique Koala Surveys, flora and fauna assessments
15 March 2019	18.0°C min – 34.6°C max No rainfall data	Spot Assessment Technique Koala Surveys, flora and fauna assessments
7 August 2019	6.8°C min – 23.1°C max 0 mm rainfall	Endangered Regional Ecosystem and Threatened ecological community ground truthing, waterway interface tree plot
15 August 2019	2.9°C min – 24.3°C max 0.6 mm rainfall	Endangered Regional Ecosystem and Threatened ecological community ground truthing, waterway interface tree plot
16 August 2019	5.7°C min – 26.0°C max 0 mm rainfall	Endangered Regional Ecosystem and Threatened ecological community ground truthing, waterway interface tree plot
17 August 2019	9.7°C min – 30.9°C max 0 mm rainfall	Endangered Regional Ecosystem and Threatened ecological community ground truthing, waterway interface tree plot
29 June 2020	5.2°C min – 22.0°C max 0.4 mm rainfall	Crepuscular bird meander surveys – dawn and dusk
30 June 2020	4.7°C min – 21.7°C max 0.2 mm rainfall	Crepuscular bird meander surveys – dawn and dusk
2 July 2020	6.5°C min – 23.8°C max 0 mm rainfall	Crepuscular bird meander surveys – dawn and dusk
3 July 2020	8.2°C min – 25.2°C max 0 mm rainfall	Crepuscular bird meander survey – dawn

Survey date	Weather Conditions	Methods
22 July 2020	10.3°C min – 19.2°C max 0 mm rainfall	Habitat quality assessment transects, Spot Assessment Technique Koala Surveys
27 July 2020	10.9°C min – 19.1°C max 1.4 mm rainfall	Crepuscular bird meander surveys – dawn and dusk
28 July 2020	8.3°C min – 21.6°C max 0 mm rainfall	Crepuscular bird meander surveys – dawn and dusk
29 July 2020	2.7°C min – 23.2°C max 0 mm rainfall	Crepuscular bird meander surveys – dawn and dusk
30 July 2020	4.5°C min – 23.4°C max 0 mm rainfall	Crepuscular bird meander surveys – dawn and dusk
31 July 2020	5.3°C min – 22.4°C max 0 mm rainfall	Crepuscular bird meander surveys – dawn and dusk
23 November 2022	14.0°C min – 28.0°C max 0 mm rainfall	Stem density assessment plots – foraging habitat assessment for threatened bird species
24 November 2022	11.4°C min – 29.9°C max 0 mm rainfall	Stem density assessment plots – foraging habitat assessment for threatened bird species
27 July 2023	5.5°C min – 22.3°C max 0 mm rainfall	Install baited motion sensor camera traps
31 July 2023	7.4°C min – 27.9°C max 0 mm rainfall	GPS locate habitat features and significant habitat trees
1 August 2023	7.5°C min – 27.2°C max 0 mm rainfall	GPS locate habitat features and significant habitat trees
2 August 2023	10.9°C min – 24.4°C max 0 mm rainfall	GPS locate habitat features and significant habitat trees, Spotlighting
4 August 2023	10.4°C min – 23.4°C max 0.2 mm rainfall	Waterway and top of high bank ground-truthing survey
8 August 2023	6.0°C min – 21.5°C max 2.0 mm rainfall	Supplementary Spot Assessment Technique Koala Surveys, spotlighting
10 August 2023	3.4°C min – 23.9°C max 0.2 mm rainfall	Collect motion sensor camera traps, spotlighting

Source: Bureau of Meteorology (BoM) – Station 140009 Greenbank (Defence).

4.1. General site observations

The following observations have been made based on detailed field survey.

- The site is surrounded by a highly modified environment, consisting of an education facility to the south, residential development to the south-east, a golf course to the west, and patches of intact vegetation to the north, west and south. The site is predominantly vegetated with eucalypt woodland of remnant status (refer **Section 4.2.3** for details). Areas of the site have weed species present at varying densities and there is evidence of historical logging and forestry practices. Patches of planted *Eucalyptus cloeziana* (Gympie Messmate) which are not representative of the mapped regional ecosystems are present throughout the site.
- A stream order 1 watercourse is mapped in the north-western portion of the site and connects downstream with Woogaroo Creek. The mapped flow path was assessed during field survey with the upstream extent intersecting the site noted to reflect features consistent with an overland flow path, therefore not protected under State legislation. Features characteristic of a waterway, such as channelization, defined bed and bank, aquatic flora and water pooling, were not observed to be associated with the mapped feature within the site bounds. The mapped watercourse where present in the mapped downstream extent to the north-west of the site bounds was observed to host typical watercourse features such as a defined channel and bed and bank features. An ecotonal shift in vegetation was also observed with vegetation shifting from open woodland associated with land zone 9-10 to dry rainforest in association with land zone 3.
- Several minor and undefined drainage features intersect the site. The minor drainage features were ground-truthed and were identified to be ephemeral and lacking features indicative of a watercourse or waterway as defined under the *Water Act 2000* and *Fisheries Act 1994*. Some rocky habitat was recorded in association with the watercourse and drainage features on-site, providing potential habitat for reptiles and small mammals (refer **Photo set 2** and **Photo 3**). Internal access tracks exist across the site and heavy rainfall events have resulted in erosion and scouring in several locations.
- The subject site is mapped mostly as remnant vegetation (Category B) with smaller areas of non-remnant vegetation (Category X) and high value regrowth (Category C) vegetation. The site is dominated by small to moderate sized trees ranging from less than 100 mm DBH to 300 mm DBH and is a result of historical forestry practices. Dominant canopy species across the site include *Eucalyptus fibrosa* (Broad-leaved Red Ironbark), *Eucalyptus crebra* (Narrow-leaved Ironbark), *Eucalyptus moluccana* (Gum-topped Box) and *Corymbia citriodora* (Spotted Gum) (refer **Photo set 4**). Other scattered species included *Eucalyptus propinqua* (Grey Gum), *Lophostemon confertus* (Brush Box) and *Acacia disparrima* (Hickory Wattle) and. Relatively isolated *Lantana camara* (Lantana) patches were observed throughout the site, generally located within drainage lines and mapped watercourses (refer **Photo 5**). The shrub layer was largely sparse with regenerating *Acacia* sp. present.
- Flora characteristics reflective of the Commonwealth Lowland Rainforest of Subtropical Australia (LRSA) TEC were recorded in two areas within and adjoining the site. One area is adjacent to north-western boundary of the site, and the other is to the south of the first area and extends slightly into the western portion of the site (refer **Plan 5**). Field survey findings are discussed in detail in **Section 4.2.1**).

- The topography of the site ranges from 30 m above sea level (ASL) associated with the O'Dwyer's Gully watercourse adjoining the site to the east to 80 m ASL within the western extent of the site.
- Evidence of Koala in the form of scats was recorded during the completion of SAT surveys, however, no physical observation of Koala was made during the total survey effort. SAT survey results (refer **Section 4.4.3**) indicate a low Koala usage utilising the 'East Coast med-high' population category outlined in methodology developed by Phillips and Callaghan (2011)**Error! Bookmark not defined.** (refer **Appendix D** for full results).
- A total of 122 flora species were recorded on-site, consisting of 96 native species and 26 introduced species.

Photo set 2: Characteristics of drainage lines throughout the site.

Photo 3: Rocky terrain providing potential habitat for small reptile species.


Photo set 4: ***Acacia*** **sp. regrowth (left) and vegetation characteristic of the composite Of Concern RE (right).**

Photo 5: **Vegetation characteristics within remnant vegetation on-site, with Lantana patches present.**

4.2. Flora Survey Results

The results of the flora survey are described in the following subsections. This includes details on ground-truthing of Threatened Ecological Communities, threatened flora and observed native and introduced flora.

4.2.1 Threatened Ecological Communities (Cwth)

The EPBC Act PMR listed seven TECs considered to have potential to be found on or proximal to the site (refer to **Section 3.1**). These are described as the following:

- **Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland Ecological Community.** This TEC 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 *C. glauca* (Swamp Oak) and in Queensland is represented by RE12.1.1 or RE12.3.20. No Swamp Oak specimens were identified on-site, nor are these RE's present on or within the immediate vicinity.
- **Lowland Rainforest of Subtropical Australia (LRSA).** This TEC typically has high species richness. In Queensland, this TEC is part of a number of RE's, including RE12.3.16 (previously RE12.3.1), RE12.5.13, RE12.8.3, RE12.8.4, RE12.8.13, RE12.11.1, RE12.11.10, RE12.12.1 and RE12.12.16. Endangered RE12.3.16 is mapped in two locations; around the central area along the western boundary of the site extending to the west.
- **The Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland TEC** occurs in coastal catchments, typically within 20 km 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. These REs are not present on-site nor within the immediate vicinity.
- **Grey box-grey gum wet forest of subtropical eastern Australia.** This TEC limited to the New South Wales north coast and south eastern Queensland IBRA Bioregions from near Coffs Harbour in NSW to the southern areas of south-east Queensland. At maturity typically has a tall to very tall open canopy dominated by its characteristic *Eucalyptus* species with or without *Araucaria cunninghammii* (Hoop Pine). It can have a simple to structurally complex understorey which typically includes flora with drier vine-forest (rainforest) affliations, with vines often prominent. The canopy of this TEC always contains *Eucalyptus moluccana* (Gum-topped Box) and/ or a grey gum species (*E. propinqua* (Small-fruited Grey Gum) and/or less commonly *E. punctata* (Grey Gum)). Other canopy species often present include *E. siderophloia* (Grey Ironbark) and/or *Araucaria cunninghammii* (Hoop Pine). In Queensland, a trigger for this TEC is the presence of RE12.9-10.3 and RE12.8.14a. While some elements of RE12.9-10.3 are present on-site, elements of this TEC are not present.
- **Poplar Box Grassy Woodland on Alluvial Plains.** In Queensland, this TEC occurs in the Brigalow Belt bioregion extending into the South Eastern Queensland bioregion. Vegetation components vary from a grassy woodland to grassy open woodland structure but may occasionally exhibit an open forest structure with an overstorey dominated by *Eucalyptus populnea* (Poplar Box) and an understorey predominantly composed of perennial forbs and C_4 grasses. This community can consist of RE11.3.2,

RE11.3.17, RE11.4.7, RE11.4.12 and RE12.3.10. These REs are not present on-site nor within the immediate vicinity.

- **Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions.** In Queensland, this TEC corresponds with at least 17 Regional Ecosystems. Components of this TEC are recognised within 12.3.2, 12.3.2a, 12.3.3, 12.3.3a, 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 and 12.3.19. These REs are not present on-site nor within the immediate vicinity.
- **White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.** This 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 RE11.8.2a, RE11.8.8, RE11.9.9a, RE13.3.1, RE13.11.8, and RE13.12.9. It can also be a small component of RE11.3.23, RE12.8.16, RE13.3.4, RE13.11.3 and RE13.11.4. These REs are not present on-site nor within the immediate vicinity.

Lowland Rainforest of Subtropical Australia

Endangered RE12.3.16 is recognised as a regional ecosystem containing vegetation characteristics associated with the LRSA TEC. RE12.3.16 is mapped in two locations adjoining the central-western boundary area within the Opossum Creek gully, a portion of which extends into the site. This RE contains flora species that overlaps with the defined attributes of the LRSA TEC as per the Conservation Advice.

Ground-truthing assessment confirmed the presence of flora and vegetation characteristics representative of the LRSA TEC are present within Opossum Creek, generally in line with the RE mapping (refer **Photo set 7**). While the RE mapping provides a general indication of the potential for presence of a TEC and spatial extent, however, ground-truthing exercises were completed to define the extent of the TEC.

The RE12.3.16 polygon shown on the Regulated Vegetation Management Map (refer **Figure 5**) was ground-truthed during ecological surveys to refine the boundary of the RE and consequently of the TEC. This involved mapping the extent of the RE on-ground based on changes in observed vegetation and land zone attributes. It is noted that Endangered RE12.9-10.15 which is not a trigger for the LRSA TEC is also mapped as adjoining the mapped RE12.3.16 in the western portion of the site (refer **Figure 5**), the extent of which was also ground-truthed. The refined extent of RE12.3.16 and RE12.9-10.15 is shown on **Plan 5**.

During ground-truthing surveys, evidence of revegetation works was observed within areas of the Endangered RE12.3.16 to the west of the site, proximal to Opossum Creek. A portion of the RE within Opossum Creek was also noted to contain mature *Cinnamomum camphora* (Camphor Laurel). As Camphor Laurel are typically indicative of a modified environment, the location of this species was used as part of the TEC refinement process. The refined LRSA TEC mapping located on-site is situated within the lowest section of the adjoining gully line. **Plan 5** provides the refined extent of RE12.3.16 and RE12.9-10.15. RE12.3.16 was found to be restricted to a relatively narrow extent along a portion of the gully line (refer **Plan 5**).

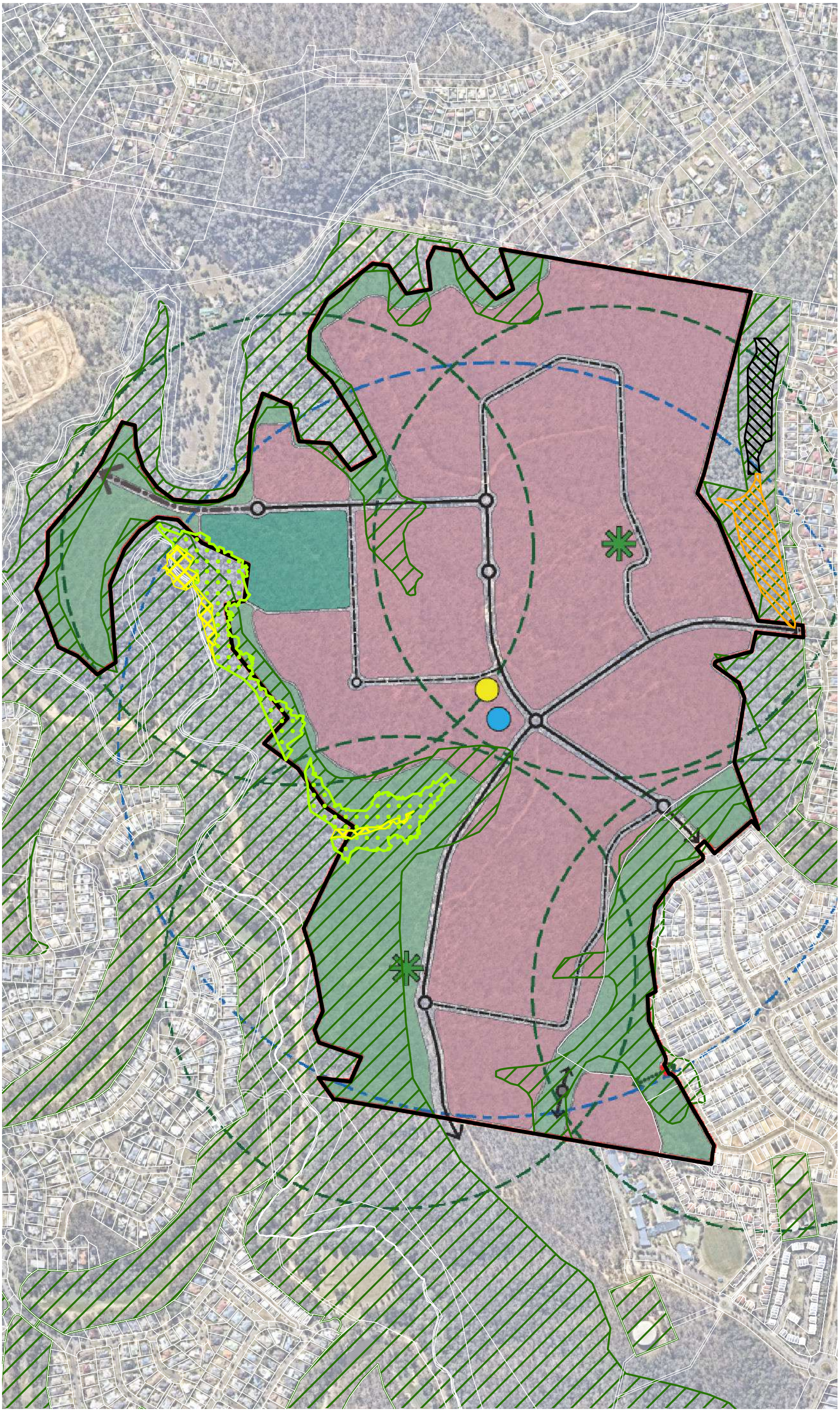
Field survey identified the edge of the southernmost portion of the polygon (*i.e.*, RE12.9-10.15) is larger than what is mapped within the current RE mapping and continues north along Opossum Creek (refer **Plan 5**). This

area is located mostly outside of the proposed development. The species which represent this Endangered RE are largely representative within the sub-canopy layer with and canopy dominated by *Eucalyptus siderophloia* (Grey Ironbark) (refer **Photo set 6**).

Photo set 7: Vegetation consistent with LRSA TEC on-site.

Photo set 6: Vegetation characteristic of Endangered RE 12.9-10.15 within the western site extent.

5. Ground-truthed Endangered Regional Ecosystem



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) 2023. Updated data available at http://qldspatial.information.qld.gov.au/catalogue/
© Nearmap, 2023

Legend

- Qld DCDB
- Site DCDB
- Springfield Structure Plan Open Space

RPS Structure Plan

- Residential allotments
- Existing vegetation to be retained
- Local sports park
- Existing local recreation park

Ground-truthed Endangered Vegetation

- Ground-truthed Edge of RE 12.9-10.15
- Ground-truthed RE 12.3.16 (LRSA TEC Indicator)
- Ground-truthed RE 12.3.3
- RE Section not surveyed

Issue	Date	Description	Drawn	Checked
B	11/09/2023	Preliminary	TF	AW

0 25 50 100 150 200 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:8,000 @ A3

saunders havill group

Cherish Enterprises Pty Ltd

Springview Villages 2 & 3 Precinct

ADDRESS/RPD: Lot 9999 on SP292760 *11/09/2023* *11426 E 05 GT Endangered REs A*

4.2.2 State Least Concern and Of Concern remnant vegetation areas

Regional ecosystem mapping shows the site is mapped mostly as Category B (remnant) composite RE12.9-10.2/12.9-10.7/12.9-10.19 (60/20/15%). Small portions of Least Concern RE12.9-10.17, and Endangered RE12.3.16, RE12.9-10.15 and composite RE12.3.7/12.3.3 (80/20) overlap sections of the northern, eastern and western site boundary. Small portions were recognised as Category C (high value regrowth) vegetation. Vegetation on-site is mostly reflective of this mapping (refer **Plan 1**), where Endangered RE12.3.16 (regional ecosystem reflective of LRSA TEC) and Endangered RE12.9-10.15 were ground-truthed with extents on-ground refined to reflect vegetation and land zone attributes (refer **Section 4.2.1** and **Plan 5** for ground-truthed extents).

Vegetation on-site is largely dominated by *Eucalyptus fibrosa* (Broad-leaved Ironbark), *Corymbia citriodora* (Spotted Gum) with *Eucalyptus crebra* (Narrow-leaved Ironbark), *Eucalyptus siderophloia* (Northern Grey Ironbark), *Eucalyptus propinqua* (Grey Gum) and *Eucalyptus tereticornis* (Forest Red Gum) and patches dominated by *Eucalyptus moluccana* (Box-topped Gum). Although the sub-canopy and shrub layer across the site was largely lacking, where present, species composition included *Lophostemon confertus* (Swamp Box), *Acacia leiocalyx* (Early Flowering Wattle), *Alphitonia excelsa* (Soap Tree) and *Acacia fimbriata* (Fringing Wattle). Refer to **Photo set 8.**

Across the site, the presence of large trees (*i.e.*, greater than 400 mm DBH) was lacking which is likely a consequence of historical logging and forestry practices. Introduced species were observed to be concentrated within and proximal to the gully lines mapped on-site and in isolated patches. Species included *Lantana camara* (Lantana), *Opuntia tomentosa* (Velvety Prickly Pear), *Asparagus aethiopicus* (Asparagus Fern), *Asparagus africanus* (Climbing Asparagus Fern) and *Solanum nigrum* (Blackberry Nightshade).

Vegetation within and proximal to the mapped water features within the western extent of the site typically included *Mallotus phillipensis* (Red Kamala) and *Lomandra hystrix* (Green Mat Rush), where *Celtis sinensis* (Chinese Elm) and *Cinnamomum camphora* (Camphor Laurel) were commonly observed along the banks. Varying intensities of Lantana infestation were observed proximal to the centreline of drainage features, with higher densities occurring on the lower banks adjacent to rehabilitated areas. Other species included *Lomandra multiflora* (Mat Rush), *Phyllanthus microcladus* (Small-leaved Phyllanthus) and *Adiantum hispidulum* (Rough Maiden Hair Fern). Water features along the western boundary contained woody debris although there was a lack of pooled water. Water features mapped along the eastern extent of the site were observed to be dry and highly eroded – anticipated to be a result of high-flow periods. Woogaroo and Opossum Creeks situated outside of the proposed development were observed to have water pooling and aquatic fauna habitat features (*e.g.* submerged woody debris, overhanging and submerged vegetation, undercut banks).

Photo set 8: Vegetation and topography characteristic of a large portion of the subject site.

4.2.3 State Endangered RE12.3.7/12.3.3 polygon (eastern property boundary)

Category B (remnant) vegetation containing a composite RE with 80% Of Concern RE12.3.7 and 20% Endangered RE12.3.3 is mapped within O'Dwyer's Gully to the east. A small area partially overlaps the eastern site boundary. An area of Category C (high value regrowth) of the same composite RE overlaps the site boundary in the north-eastern portion of the site (refer **Figure 4** and **Figure 5**). This composite RE community is associated with creekline vegetation areas within Woogaroo Creek and O'Dwyers Gully.

As part of ground-truthing surveys, the extent of the Category B Endangered RE polygon within O'Dwyer's Gully was interrogated and refined based on the extent of flora and land zone characteristics. The portion of the Endangered composite RE12.3.3/12.3.7 overlapping the eastern site boundary was found to coincide with a shift in topography reflecting a change from land zone 3 to land zone 9-10. The portion of Endangered composite RE overlapping the site boundary represents flora and land zone characteristics consistent with RE community containing 65% Least Concern RE12.9-10.2, 20% Of Concern RE12.9-10.7 and 15% Least Concern RE12.9-10.19. Due to the slope and topography within the area assessed, the land zone changes were relatively distinct, with confirmation also through species composition and vegetation structure. Alluvium is defined as sediment mass deposited from channelled stream flow or over-bank stream flow[2]. It is these characteristics that have contributed to the refined mapping within this portion of the site and accurately delineate between the elements that form the Endangered RE as well as those characteristics which form the adjacent Of Concern communities on land zone 9-10. As a result, the extent of the Endangered composite RE was found to be limited to the creek corridor and not overlapping the site boundary (refer **Plan 5**).

The following elements were recorded during field survey, relevant to the site:

- The mapped DAF waterway (adjacent to the eastern boundary – O'Dwyers Gully) coinciding with mapped Endangered RE contains a canopy dominated by *Eucalyptus tereticornis* (Forest Red Gum) and *Angophora floribunda* (Rough-barked Apple) with the flow path containing scattered patches of *Casuarina cunninghamiana* (River She Oak), *Lophostemon suaveolens* (Swamp Box) and *Melaleuca*

[2] Speight, J.G. and Isbell, R.F. 2009, "Substrate", in *Australian soil and land survey field handbook (3rd edn)*, CSIRO Publishing, Melbourne.

quinquenervia (Broad-leaved Paperbark) (refer **Photo set 9** and **Photo 10**). These elements are confined to the immediate surrounds of O'Dwyers Gully, east of the site (refer **Plan 5**). Other species recorded within the canopy of the Endangered RE include *Eucalyptus moluccana* (Gum Topped Box), *Celtis sinensis* (Chinese Elm) and *Cinnamomum camphora* (Camphor Laurel). The western portion of the mapped polygon associated with O'Dwyers Gully does not contain elements of the Endangered RE where it is dominated by *Eucalyptus siderophloia* (Grey Ironbark) (refer **Photo set 11**). Although characteristics including deposited material were identified along the actual flow path, the adjacent embankments form part of the adjacent land zone 9-10 and include flora species representing the Of Concern RE12.9-10.7. Very few canopy species were located within the area containing elements of land zone 3 within the western portion of the current mapped polygon.

- The proposed changes to the boundary of the Endangered RE associated with O'Dwyers Gully are a result of the dominance of *Eucalyptus tereticornis* (Forest Red Gum) located on land zone 3, and are presented in **Plan 5**.

Photo set 9: Vegetation associated with O'Dwyer's Gully.

Photo 10: **Vegetation characteristics within Endangered regional ecosystem polygon.**

Photo set 11: **Vegetation dominated by *Eucalyptus siderophloia* (Grey Ironbark) currently within the mapped Endangered regional ecosystem.**

4.2.4 Observed native flora

During the field survey, 122 flora species were recorded across the site, with 96 considered native species (refer to **Table 7** for the detailed native flora species list).

Table 7: Native flora species list

Scientific Name	Common Name
Acacia concurrens	Black Wattle
Acacia disparrima	Hickory Wattle
Acacia fimbriata	Fringed Wattle
Acacia leiocalyx	Early-flowering Black Wattle
Acacia maidenii	Maiden's Wattle
Acacia podalyriifolia	Silver Wattle
Adiantum hispidulum	Rough Maidenhair Fern
Alchornea ilicifolia	Native Holly
Allocasuarina littoralis	Black Sheoak
Alphitonia excelsa	Red Ash
Alyxia ruscifolia	Chain Fruit
Angophora leiocarpa	Smooth-barked Apple
Aphananthe philippinensis	Rough-leaved Elm
Araucaria cunninghamii	Hoop Pine
Brachychiton acerifolis	Illawarra Flame Tree
Brachychiton discolor	Lace Bark Tree
Breynia oblongifolia	Coffee Bush
Callitris glaucophylla	White Cypress-pine
Casuarina cunninghamiana	River Sheoak
Cayratia cleatidea	Slender Grape
Clematicissus opaca	Forest Grape
Cordyline rubra	Cordyline
Corymbia citriodora	Spotted Gum
Corymbia intermedia	Pink Bloodwood
Corymbia tessellaris	Moreton Bay Ash
Cupaniopsis anarcoides	Tuckeroo
Cymbopogon refractus	Barbwire Grass

Scientific Name	Common Name
Cyperus polystachyos	Bunchy Sedge
Desmodium rhytidophyllum	Hairy Trefoil
Dianella caerulea	Bluberry Lilly
Drypetes deplanchei	Yellow Tulip
Entolasia stricta	Wiry Panic
Erythrina vespertilio	Bat Wing Coral Tree
Eucalyptus acmenoides	White Mahogany
Eucalyptus carnea	Broad-leaved White Mahogany
Eucalyptus cloeziana	Gympie Messmate
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus fibrosa	Red Ironbark
Eucalyptus grandis	Flooded Gum
Eucalyptus major	Grey Gum
Eucalyptus microcorys	Tallowwood
Eucalyptus moluccana	Gum-topped Box
Eucalyptus propinqua	Grey Gum
Eucalyptus saligna	Sydney Blue Gum
Eucalyptus seeana	Narrow-leaved Red Gum
Eucalyptus siderophloia	Northern Grey Ironbark
Eucalyptus tereticornis	Forest Red Gum
Eustrephus larifolius	Wombat Berry
Ficus fraseri	Sandpaper Fig
Ficus obliqua	Small-leaved Fig
Flindersia australis	Crows Ash
Gahnia aspera	Rough Saw-sedge
Geitonoplesium cymosum	Scrambling Lilly
Glochidion fernandii	Cheese Tree
Goodenia rotundifolia	Star Goodenia
Grevillea robusta	Silky Oak
Heteropogon contortus	Black Speargrass
Imperata cylindrica	Blady Grass

Scientific Name	Common Name
Jagera pseudorhus	Foam Bark
Juncus usitatus	Common Rush
Leichhardtia coronata	-
Lomandra hystrix	Green Mat-rush
Lomandra longifolia	Matrush
Lomandra multiflora	Many-headed Mat Rush
Lophostemon confertus	Brush Box
Lophostemon suaveolens	Swamp Box
Lygodium microphyllum	Climbing Maidenhairs Fern
Macadamia integrifolia	Macadamia Nut
Maclura cochinchinesis	Cockspur Thorn
Mallotus mollissinus	Soft kamala
Mallotus phillipensis	Red Kamala
Melaleuca irbyana	Swamp Tea-tree
Melaleuca quinquenervia	Broad-leaved Paperbark
Melaleuca saligna	White Bottlebrush
Melia azederach	White Cedar
Melichrus procumbens	Jam Tarts
Ottochloa gracillima	Graceful Grass
Oxalis corniculata	Creeping Woodsorrel
Panicum effusum	Hairy Panic
Parsonsia straminea	Monkey Rope Vine
Pellaea nana	Sickle Fern
Petalostigma pubescens	Quinine Bush
Phyllanthus microcladus	Small-leaved Phyllanthus
Plectranthus habrophyllus	Plectranthus
Podocarpus elatus	Brown Pine
Pomax umbellata	Pomax
Pteridium esculentum	Bracken Fern
Pultenaea villosa	Hairy Pea Bush
Sarcopetalum harveyanum	Pearl Vine

Scientific Name	Common Name
Smilax australis	Barbwire Vine
Syzygium leuhmannii	Small-leafed Lilly Pilly
Themeda triandra	Kangaroo Grass
Toona ciliata	Red Cedar
Trema tomentosa	Poison Peach
Waterhousia floribunda	Weeping Lilly Pilly
Xanthorrhoea latifolia	Grass Tree

4.2.5 Observed introduced flora

During the field survey, 122 flora species were recorded across the site, with 26 considered introduced species (refer to **Table 8** for the detailed introduced flora species list). It should be noted that eight of these species are listed as restricted matters under the *Biosecurity Act 2014* (discussed in **Section 3.7**). Management of restricted invasive plants under the *Biosecurity Act 2014* are to be managed at the Local Government level through a biosecurity plan that covers invasive plants and animals in its area.

Table 8: Introduced species list

Scientific name	Common name	Restricted under *Biosecurity Act 2014*
Ageratum houstonianum	Blue Billygoat Weed	
Asparagus aethiopicus	Asparagus Fern	3
Asparagus africanus	Climbing Asparagus Fern	3
Bidens pilosa	Cobblers Peg	
Celtis sinensis	Chinese Celtis	3
Chloris virgata	Rhodes Grass	
Cinnamomum camphora	Camphor Laurel	3
Cyperus polystachyos	Bunchy Sedge	
Erythrina vespertilio	Bat Wing Coral Tree	
Ipomoea indica	Mile-A-Minute	
Lantana camara	Lantana	3
Lantana monteviredensis	Creeping Lantana	3
Macroptilium atropurpureum	Siratro	
Megathyrsus maximus	Guinea Grass	
Ochna serrulata	Ochna	
Opuntia tomentosa	Velvety Prickly Pear	3

Scientific name	Common name	Restricted under *Biosecurity Act 2014*
Passiflora suberosa	Corky Passionflower	
Passiflora subpeltata	White Passion Flower	
Pteridium esculentum	Bracken Fern	
Schinus terebinthifolius	Broad Leaved Pepper	3
Solanum mauritianum	Wild Tobacco	
Solanum nigrum	Blackberry Nightshade	
Solanum seaforthianum	Brazilian Nightshade	
Solanum torvum	Devils Fig	
Ulmus parvifolia	Chinese Elm	
Urochloa decumbens	Signal Grass	

4.2.6 Threatened flora

For the purposes of this report, a significant flora species has been defined as a species that is:

- scheduled as Critically Endangered, Endangered, Vulnerable or Conservation Dependent under the Commonwealth EPBC Act; and/or
- scheduled as Critically Endangered, Endangered, Vulnerable, or Near Threatened under the Queensland NCA; and/or
- identified by ICC as a locally significant species in Ipswich Planning Scheme.

The EPBC Act PMR listed 17 threatened native flora species considered to have potential to occur on-site or within a 5 km radius of a central point within the site (refer **Section 3.1** for summarised list). Two of these flora species, *Coleus habrophyllus* (formerly known as *Plectranthus habrophyllus*) (refer **Photo set 12**) and *Macadamia integrifolia* (Macadamia Nut) (refer **Photo 13**) were observed in areas adjoining the site.

In addition, a search of the NCA Wildlife Online database listed four (4) threatened flora species as possibly occurring on or proximal to the site (refer **Section 3.2**). Three species listed as threatened under the NCA were recorded on-site, being *Coleus habrophyllus*, *Leichhardtia coronate,* and *Melaleuca irbyana* (Swamp Tea-tree). As discussed above, *Coleus habrophyllus* was observed to be off-site, adjacent to the south-western corner of the site. *Leichhardtia coronata* was identified across the site by multiple field survey efforts and consultant groups. The location of the *Leichhardtia coronata* are provided on **Plan 6** and **Photo 14**. In addition, one *Melaleuca irbyana* was recorded proximal to the western boundary (refer **Plan 6** and **Photo 15**).

Coleus habrophyllus specimens were not observed within the area to be impacted by development, being situated off-site adjacent to the south-western corner (refer to **Plan 6**). Three small patches were observed in this location measuring approximately 1 m^2. One individual *Macadamia integrifolia* specimen was recorded outside of the development impact extent within the ground-truthed rehabilitated LRSA TEC. It is unclear whether the Macadamia Nut specimen has been planted as part of the rehabilitation efforts, or if it is naturally occurring. Despite search efforts, no additional Macadamia Nut specimens were identified within the bounds

of the site or proposed impact area. No threatened flora species listed under the EPBC Act were identified within the area to be impacted as part of the proposed development.

Photo set 12: ***Coleus habrophyllus*** **specimens observed off-site, adjacent to the south-western boundary.**

Photo 13: ***Macadamia integrifolia*** **(Macadamia Nut) observed off-site, adjacent to western boundary.**

Photo 14: ***Leichhardtia coronata*** **(Slender Milkvine) recorded at various locations across the site.**

Photo 15: ***Melaleuca irbyana*** **(Swamp Tea-tree) located on western boundary.**

Across all survey efforts within the site, including assessments completed by Cardno in 2014, three (3) State significant flora species have been recorded on-site being *Leichhardtia coronata* (Slender Milkvine), *Melaleuca irbyana* (Swamp Tea-tree) and *Streblus pendulinus* (Axe-Handle Wood). *Leichhardtia coronata* and *Melaleuca irbyana* are listed as vulnerable and endangered under the NCA, respectively, and *Streblus pendulinus* is listed as endangered under the EPBC Act. It is noted *Coleus habrophyllus* specimens and a *Macadamia integrifolia* specimen were recorded during survey effort, however, *Coleus habrophyllus* were identified off-site near the

south-western boundary and will not be impacted by the proposed development. One (1) *Macadamia integrifolia* specimen was recorded within the area identified to contain indicators of LRSA TEC to the west of the site (refer **Plan 5** for location) and will not be impacted by the proposed development. Further detail on *Leichhardtia coronata, Melaleuca irbyana* and *Streblus pendulinus* are provided below.

Leichhardtia coronata (Slender Milkvine)

Leichhardtia coronata is most commonly found in open eucalypt forest and woodland communities on hillslopes and ridge tops at altitudes of 40–780 m above sea level. The soils are generally well drained, shallow, vary in texture from sandy, gravelly sand, loam to clay loam and are derived from sandstone or acid volcanic rocks. It has also been found on rocky outcrops along cliff lines. It is most commonly found in vegetation communities containing *Eucalyptus fibrosa*, *Eucalyptus carnea*, *Corymbia citriodora*, *Corymbia henryi*, *Eucalyptus acmenoides* and *Eucalyptus propinqua*.

A total of nine (9) locations across the site were recorded as containing potential *Leichhardtia coronata* specimens (refer **Plan 6**). It is unlikely that these specimens were planted, and hence it is anticipated that the *Leichhardtia coronata* specimens are naturally occurring and meet the *in the wild* definition confirming their protected plant status (as outlined in **Section 3.2**). Clearing of this specimen if unavoidable will require a protected plants clearing permit under the NCA via the State's assessment process.

Melaleuca irbyana (Swamp Tea-tree)

Melaleuca irbyana typically grows on poorly draining, heavy clay soils in flat areas that are periodically waterlogged in eucalypt forest, mixed forest, and Melaleuca woodland with a sparse and grassy understorey. This species is described as growing in tea-tree clay soils (seasonal cracking clay soils) that drain slowly after heavy rains, become waterlogged and form temporary ponds. Also occurring on perched water tables in location where runoff flows overland rather than in distinct drainage lines. Considered as having a deep root system, suggesting that *Melaleuca irbyana* has some reliance on groundwater supplies.

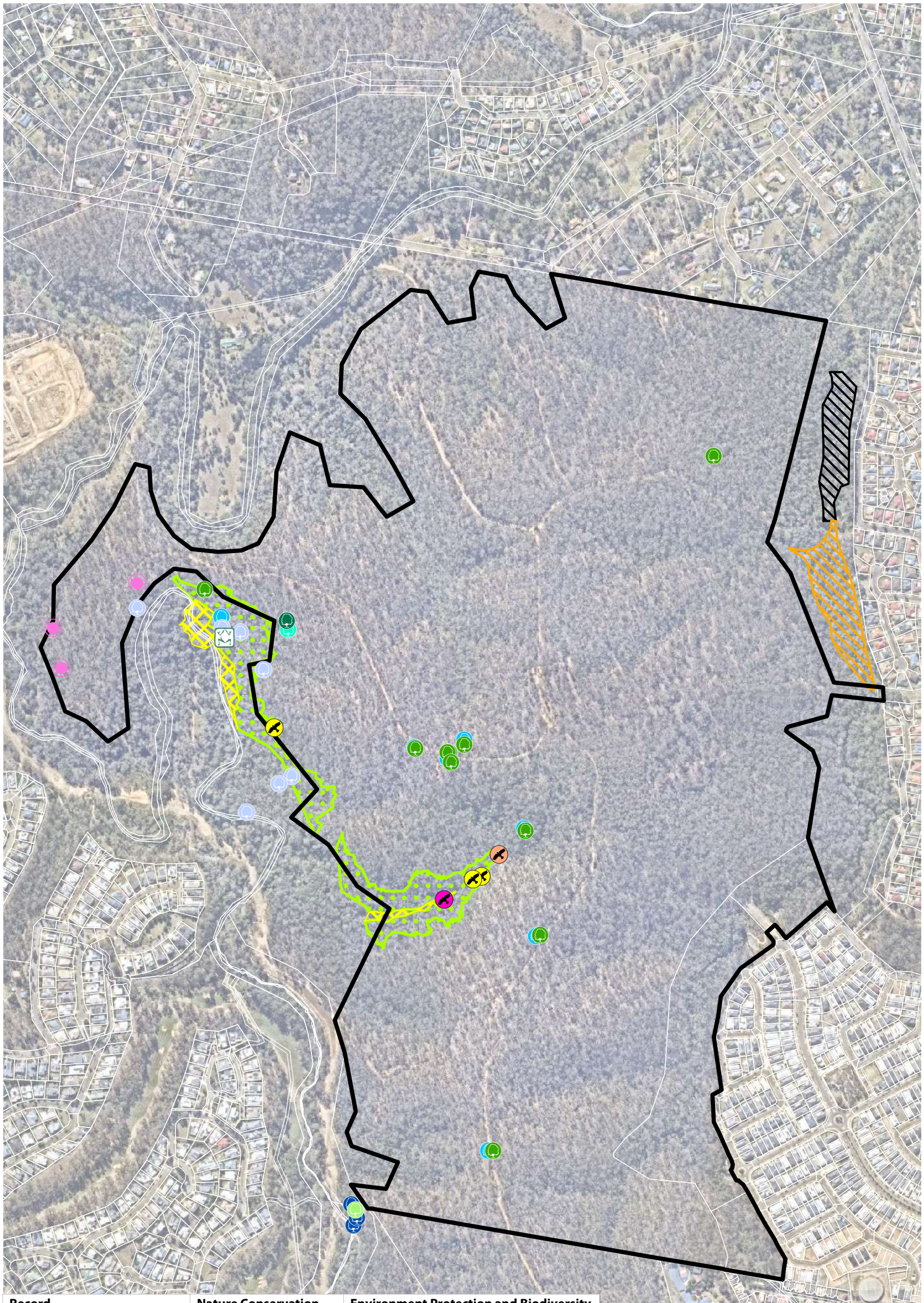
One (1) specimen was recorded within the western extent of the site, adjacent to the western boundary (refer **Plan 6**). No other specimens were observed across the site, nor in proximity to the site boundary. It is unclear whether the specimen was planted or naturally occurring. Using the precautionary principle, the *Melaleuca irbyana* is likely to meet the *in the wild* definition, confirming the protected plant status (as outlined in **Section 3.2**). Clearing of this specimen if unavoidable will require a protected plants clearing permit under the NCA via the State's assessment process.

Streblus pendulinus (Axe-Handle Wood)

This species is a Norfolk Island endemic and consists of a population of 187 mature individuals. *Streblus pendulinus* was identified by Cardno in 2014 along the south-western boundary of the site and within the adjoining Opossum Creek corridor (refer **Plan 6**).

Given the known distribution and population of the species being confined to Norfolk Island, it is likely that this species was misidentified. Additionally, the species was not recorded as part of SHG surveys.

6. Threatened Species Records



Record	Nature Conservation Act 1992 (NCA) Status	Environment Protection and Biodiversity Conservation Act 1999 (EPBC) Status
Phascolarctos cinereus (Koala)	Endangered	Endangered
Ninox strenua (Powerful Owl)	Vulnerable	-
Rhipidura rufifrons (Rufous Fantail)	Special Least Concern	Migratory/Marine
Coleus habrophyllus (Coleus)	Endangered	Endangered
Melaleuca irbyana (Swamp Tea Tree)	Endangered	-
Leichhardtia coronata (Slender Milkvine)	Vulnerable	-
Streblus pendulinus (Axe-Handle Wood)	-	Endangered

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

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

Legend

Qld DCDB

Site DCDB

Threatened Species Records

Koala scat

Fauna sighting - Powerful Owl

Fauna sighting - Rufous Fantail

Leichhardtia coronata

Coleus habrophyllus

Melaleuca irbyana

Adelotus brevis (Cardno, 2014)

Ninox strenua (Cardno, 2014)

Leichhardtia coronata (Cardno, 2014)

Melaleuca irbyana (Cardno, 2014)

Plectranthus habrophyllus (Cardno, 2014)

Streblus pendulinus (Cardno, 2014)

Ground-truthed Endangered Vegetation

Ground-truthed Edge of RE 12.9-10.15

Ground-truthed RE 12.3.16 (LRSA TEC Indicator)

Ground-truthed RE 12.3.3

RE Section not surveyed

Issue	Date	Description	Drawn	Checked
B	6/09/2023	Preliminary	TF	AW

0 25 50 100 150 200 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:8,000 @ A3

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Cherish Enterprises Pty Ltd

Springview Villages 2 & 3 Precinct

ADDRESS/RPD: Lot 9999 on SP292760 | 6/09/2023 | 11426 E 06 Threatened Species A

4.2.7 Locally significant and priority flora species

There are two (2) flora species identified as a priority for protection for Ipswich planning activities under the *Ipswich Nature Conservation Strategy 2015*. Additionally, there are fifteen (15) flora species identified as locally significant by ICC within the Ipswich region. These species are listed in **Table 9** and **Table 10** below, with an assessment of their potential presence on-site, drawing on records of the species within the locality and field survey data. None of the priority or locally significant flora species were recorded within the site with a variety of microhabitat requirements lacking to support most of these species.

Table 9: Assessment of priority significant flora species within the Ipswich region

Scientific name	Common name	General habitat	Assessment of values and potential occurrence
Eucalyptus curtisii	Plunkett mallee	Plunkett mallee is a multi-stemmed eucalypt which occurs in only a few small scattered populations throughout South East Queensland. Within Ipswich, natural populations occur in Dinmore, Collingwood Park and the White Rock area. The species suffers increased pressure as a result of clearing, grazing and inappropriate fire regimes. Plunkett mallee is Ipswich's floral emblem.	Wildlife Online shows 4 records within 5km of site. Species was not recorded on-site and not within proximity to a known population.
Notelaea ipsviciensis	Cooneana olive	To date, the Cooneana olive has only been recorded as occurring in Ipswich, found within three closely clustered sub-populations (17 individual specimens in total). Protection of the species will require a coordinated effort, including mitigation of imminent threats and implementation of a recovery program.	Wildlife Online shows no records within 5km of site. The site is not located proximal to a known population and was not recorded on-site.

Table 10: Assessment of locally significant flora species within the Ipswich region

Scientific name	Common name	General habitat	Assessment of values and potential occurrence
Acacia obtusifolia	Blunt leaf wattle	Grows in dry and wet sclerophyll forest, margins of rainforest, woodland and heath, in sandy and loam soils, mostly on sandstone but also basalt and other substrates.	Wildlife Online shows no records within 5km of site. Potential habitat to support this species on-site, however, species not recorded.
Asplenium paleaceum	Scaly asplenium	Commonly found amongst boulders and rocks in rainforest.	Wildlife Online shows no records within 5km of site. Rainforest habitat absent and species not recorded.

Scientific name	Common name	General habitat	Assessment of values and potential occurrence
Atalaya hemiglauca	Whitewood	Common on dark deep cracking soils, often associated with brigalow scrubs and poplar box woodlands.	Wildlife Online shows no records within 5km of site. Deep cracking soils and species associations absent; species not recorded.
Citrus australasica	Australian finger lime	Shrub in dry rainforest and sub tropical rainforest and common in regrowth.	Wildlife Online shows no records within 5km of site. Some dry rainforest attributes located on-site; however, species was not recorded.
Corymbia henryi	Large-leaved spotted gum	Found in open forest on stony, shallow soil.	Wildlife Online shows no records within 5km of site. Site does not contain *Corymbia henryi* nor the regional ecosystems associated with this species.
Elattostachys bidwillii	Northern white tamarind	Small tree in dry rainforest and vine thickets.	Wildlife Online shows no records within 5km of site. Some dry rainforest and vine thicket attributes located on-site, however, species was not recorded.
Eleocharis dulcis	Chinese water chestnut	Grows in permanent, more or less still fresh water.	Wildlife Online shows no records within 5km of site. No permanent waterbodies located on-site and species not recorded.
Ficus rubiginosa forma rubiginosa	Small leaved fig	Commonly scattered in rocky sites on dry hills in open forest or in dry, littoral or rarely subtropical rainforest.	Wildlife Online shows no records within 5km of site. Potential to occur on-site due to presence of open woodland habitat, species was not recorded on-site.
Grahamia australiana	Grahamia	Chiefly found in arid shrubland, usually in skeletal soils on rocky hillsides and plains. Often on exposed western rock outcrops.	Wildlife Online shows no records within 5km of site. Arid shrubland habitat not present. Species not recorded on-site in rocky outcrops.
Indigofera baileyi	Bailey's indigo	Grows in open woodlands on granite or basalt soils.	Wildlife Online show 2 records within 5km of site. Potential to occur on-site. Suitable habitat located on-site; however, the species was not recorded.
Melaleuca comboynensis	Cliff bottlebrush	Grows mostly on rock outcrops and crevices above 550 m altitude; coastal ranges.	Wildlife Online shows no records within 5km of site. Site not located at altitude to support this species.
Melaleuca quinquenervia	Broad-leaved paperbark	Widespread in coastal swamps and around lake margins.	Species is commonly observed within land Zone 3 regional ecosystems which are present in adjoining gully

Scientific name	Common name	General habitat	Assessment of values and potential occurrence
			lines and will be buffered and protected.
Stephania renifolia	Kidney leaved snake vine	Found growing in softwood scrub, dry rainforest and vine thickets.	Wildlife Online shows no records within 5km of site. Some dry rainforest habitat present on-site. Species was not identified.
Tephrosia juncea	Rush leaved tephrosia	Locally common in northern eucalypt woodlands.	Wildlife Online shows no records within 5km of site.
Zornia floribunda	Narrow leaved zornia	Grows in grassland in dry sclerophyll forest.	Wildlife Online shows no records within 5km of site.

4.3 Waterway and top of high bank ground-truthing

There are several undefined drainage features under the *Water Act 2000* mapped across the site which is typical of sloping topography. In addition, two stream order 1 watercourses mapped under the VMA are mapped including one (1) intersecting the north-western portion of the site and the second located in the south-eastern portion of the site within area which will form part of the creekline open space areas under the Precinct Plan. Under the mapping, the north-western watercourse starts in the north-western portion of the site and continues downstream to the north-west, connecting to stream order 4 watercourse Woogaroo Creek (refer **Figure 5**). It is notable that the stream order 1 watercourse mapped on-site is mapped as a drainage feature under the *Water Act 2000* which is not protected under the Act.

A ground-truthing assessment of the mapped watercourses and drainage features was conducted to confirm the extent of the mapping and on-ground values. This also included mapping the flow path and western top of high bank of the south-eastern watercourse and O'Dwyer's Gully adjoining the development site to the east. Ground-truthing and waterway assessment locations are shown on **Plan 7**.

4.3.1 North-western stream order 1 watercourse

The north-western stream order 1 watercourse was ground-truthed from the most upstream extent located on-site, following the extent downstream, continuing partially off-site to document any changes in watercourse characteristics and values. Ground-truthing surveys indicated that the upstream extent of the mapped watercourse located on-site reflected an overland flow path rather than a defined watercourse. This assessment was made based on the observed vegetation and land form features which notably included a lack of defined bed and bank features, absence of channelization and aquatic flora, steep rocky terrain and dominance of vegetation characteristics reflective of land zone 9-10 (refer **Photo 17**).

The overland flow path was found to transition to a more defined drainage channel north-west of the site boundary with some channelization present indicative of an ephemeral flow path (refer **Plan 7**). Vegetation associated with the mapped watercourse extent is described as dry rainforest which was restricted to land zone 9-10 (refer **Photo 16** and **Photo 18**).

Photo 17: Overland flow path and vegetation reflective of the upstream extent of the stream order 1 watercourse on-site (land zone 9-10).

Photo 16: Characteristics within the downstream extent of stream order 1 watercourse off-site, facing downstream away from the site boundary (north).

Photo 18: Characteristics within the downstream extent of stream order 1 watercourse off-site, facing upstream towards the site boundary (south).

4.3.2 South-eastern stream order 1 watercourse and O'Dwyer's Gully

A stream order 1 watercourse mapped under the VMA is shown to meander across the south-eastern portion of the site (refer **Figure 5**). It is noted that the most upstream portion of the watercourse is located south of the site. The watercourse intersecting the site is located within the an area proposed as creekline open space under the Precinct Plan therefore will ultimately be retained, buffered and rehabilitated.

The watercourse flows downstream to the north-east connecting with O'Dwyer's Gully off-site. The flow path centreline and top of high bank of the on-site watercourse and O'Dwyer's Gully were ground-truthed. The primary purpose of the ground-truthing assessment of this watercourse was to confirm the location of the watercourse flow path and top of high bank to confirm the location of these values and inform waterway setbacks.

The flow path centreline and top of high bank of the south-eastern watercourse are shown on **Photo 20** and **Photo 19**. While not within the site, downstream watercourse values including the flow path centreline and top of high bank were also ground-truthed within O'Dwyer's Gully (refer **Photo 22** and **Photo 21**).

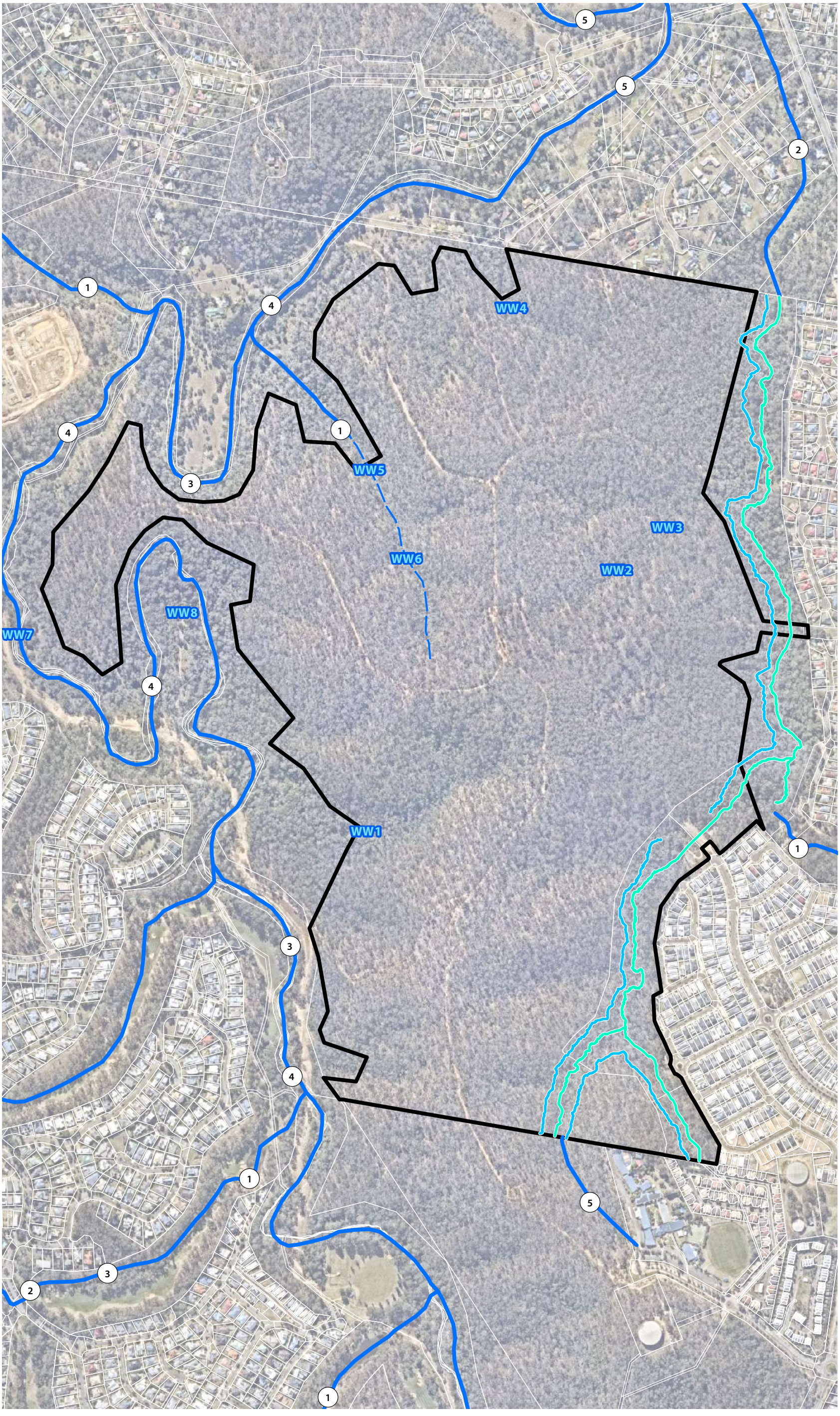
Photo 20: **South-western stream order 1 watercourse (centreline).**

Photo 19: **South-western stream order 1 watercourse (top of high bank).**

Photo 22: **O'Dwyer's Gully waterway centreline.**

Photo 21: **O'Dwyer's Gully waterway top of high bank.**

7. Watercourse and top of high bank ground-truthing



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Layer Sources
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© Nearmap, 2023

Legend

- Qld DCDB
- Site DCDB
- VM Watercourses (with stream order)

Ground-truthed Waterways

- Ground-truthed waterway centreline
- Ground-truthed top of high bank
- Ground-truthed overland flow path
- Waterway Assessment Locations

Issue	Date	Description	Drawn	Checked
B	6/09/2023	Preliminary	TF	AW

0 25 50 100 150 200 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:8,000 @ A3

saunders havill group

Cherish Enterprises Pty Ltd

Springview Villages 2 & 3 Precinct

ADDRESS/RPD: Lot 9999 on SP292760 *6/09/2023* *11426 E08 GT Waterways A*

4.4 Fauna survey results

4.4.1 Targeted species and survey guidelines

A detailed fauna assessment has been conducted across the site to identify and describe on-ground habitat features (e.g. habitat trees, fallen logs, termite mounds, roosting sites etc.), signs of fauna activity (e.g. scats, tracks, scratch marks on trees, nests etc.) and observations of species present within the area. Consideration was also given to the ecological significance of the site in the context of the local area and the broader region.

A summary of the methodologies employed by SHG (detailed in **Section 2.3**) and the targeted species are summarised in **Table 11**. It is noted that the ecological values of the site and surrounding areas have been assessed by multiple consultants over several years and the species targeted represent those species considered to have potential to occur within the proposed development site.

Table 11: Summary of fauna survey techniques

Scientific Name	Common Name	Survey Guidelines and Techniques Implemented
Phascolarctos cinereus	Koala	• Spot Assessment Technique (Phillips and Callaghan, 2011) • Spotlighting • Assessment of foraging and breeding values (habitat suitability) • Camera trapping
Pteropus poliocephalus	Grey-headed Flying-fox	• Daytime roost/camp searches • Spotlighting • Assessment of foraging values and habitat suitability
Petauroides volans	Greater Glider	• Spotlighting • Assessment of breeding habitat (hollows) and foraging values
Ninox strenua	Powerful Owl	• Spotlighting • Broadcast surveys • Assessment of breeding habitat (hollows) and foraging values
Dasyurus maculatus maculatus	Spotted-tailed Quoll	• Camera trapping • Incidental search for scats • Daytime searches for denning habitat
Anthochaera phrygia	Regent Honeyeater	• Winter diurnal meander surveys • Assessment of foraging values (winter flowering eucalypts)
Lathamus discolor	Swift Parrot	• Winter diurnal meander surveys • Assessment of foraging values (winter flowering eucalypts)

4.4.2 General fauna and habitat observations

The following observations were made based on the field survey:

- A total of 79 fauna species were observed on-site or as fly over species over the total combined survey effort completed by SHG (refer **Table 12**). The fauna species consisted of 59 bird, six (6) mammal, four (4) reptile and one (1) amphibian species.
- Detailed surveys to record potential habitat features were undertaken across the site. This included burrows, terrestrial termite mounds, arboreal termite mounds, hollow-bearing trees and rocky outcrops. A summary of Habitat features recorded and GPS located across the site is detailed in **Section 4.4.3**.
- A number of the species observed are common to the local area and typically found in urbanised environments. One species, the Cane Toad (*Rhinella marina*), listed as invasive under the EPBC Act was observed during field survey and European Red Fox (*Vulpes vulpes*) has been observed on multiple occasions within the site. Species of significance were observed within the site including the Rufous Fantail (*Rhipidura rufifrons*), Rainbow Bee-eater (*Merops ornatus*), Powerful Owl (*Ninox strenua*) and Grey-headed Flying-fox (*Pteropus poliocephalus)*. The Rufous Fantail and Rainbow Bee-eater are listed under the EPBC Act as migratory and marine, where a number of individuals were recorded across the site and are considered relatively abundant within the area. Details of threatened species observations and habitat assessments are provided in **Section 4.4.5**.
- A total of 16 SAT surveys have been undertaken across the site to understand Koala usage. All SAT surveys recorded Koala faecal pellets, where all indicated a low usage level utilising the East Coast medium-high classification**Error! Bookmark not defined.** except for SAT 1 which indicated a *high* usage level (raw data is provided in **Appendix D**). Only indirect evidence of Koala was recorded during field survey, where no physical observations of Koala were recorded. Koala SAT survey results are detailed in **Section 4.4.5**.
- Spotlighting meanders completed in August 2023 detected multiple species including Southern Boobook Owl (*Ninox boobook*), Tawny Frogmouth (*Podargus strigoides*), Common Brushtail Possum (*Trichosurus vulpecula*), Microbat (Microchiroptera sp.) and the Grey-headed Flying-fox (*Pteropus poliocephalus*) which was recorded as a fly-over species.

Table 12: Observed fauna species list

Scientific name	Common name	Significance status	Detection method
Birds			
Acanthiza pusilla	Brown Thornbill		Direct observation
Acanthorhynchus tenuirostris	Eastern Spinebill		Direct observation
Alectura lathami	Australian Brush-Turkey		Direct observation
Alisterus scapularis	Australian King Parrot		Direct observation
Artamus leucorynchus	White-Breasted Woodswallow		Direct observation

Scientific name	Common name	Significance status	Detection method
Cacatua galerita	Sulphur-Crested Cockatoo		Direct observation
Caligavis chrysops	Yellow-Faced Honeyeater		Direct observation
Climacteris picumnus	Brown Treecreeper		Camera, direct observation
Coracina novaehollandiae	Black-Faced Cuckoo-Shrike		Direct observation
Cormobates leucophaea	White-Throated Treecreeper		Direct observation
Corvus orru	Torresian Crow		Direct observation
Cracticus nigrogularis	Pied Butcherbird		Direct observation
Cracticus tibicen	Australian Magpie		Direct observation
Cracticus torquatus	Grey Butcherbird		Direct observation
Dacelo novaeguineae	Laughing Kookaburra		Camera, direct observation
Dicrurus bracteatus	Spangled Drongo		Direct observation
Entomyzon cyanotis	Blue-Faced Honeyeater		Direct observation
Eolophus roseicapilla	Galah		Direct observation
Eopsaltria australis	Eastern Yellow Robin		Direct observation
Geopelia humeralis	Bar-Shouldered Dove		Call
Geopelia striata	Peaceful Dove		Call
Grallina cyanoleuca	Magpie-Lark		Direct observation
Gymnorhina tibicen	Australian Magpie		Camera, direct observation
Hirundo neoxena	Welcome Swallow		Direct observation
Lichenostomus chrysops	Yellow-Faced Honeyeater		Direct observation
Lichenostomus fuscus	Fuscous Honeyeater		Direct observation
Lichmera indistincta	Brown Honeyeater		Direct observation
Macropygia phasianella	Brown Cuckoo-dove		Direct observation
Malurus cyaneus	Superb Fairy-Wren		Direct observation
Malurus lamberti	Variegated Fairy Wren		Direct observation
Malurus melanocephalus	Red-Backed Fairy Wren		Direct observation
Manorina melanocephala	Noisy Miner		Direct observation
Meliphaga lewinii	Lewins Honeyeater		Direct observation
Melithreptus albogularis	White-Throated Honeyeater		Direct observation
Merops ornatus	Rainbow Bee-Eater	EPBC Act – Migratory / Marine	Direct observation
Milvus migrans	Black Kite		Direct observation
Myzomela sanguinolenta	Scarlet Honeyeater		Direct observation

Scientific name	Common name	Significance status	Detection method
Neochmia temporalis	Red-Browed Finch		Direct observation
Ninox boobook	Southern Boobook		Direct observation
Ninox strenua	Powerful Owl	NCA – vulnerable	Direct observation
Pachycephala rufiventris	Rufous Whistler		Direct observation
Pardalotus striatus	Striated Pardalote		Direct observation
Petroica rosea	Rose Robin		Direct observation
Phaps chalcoptera	Common Bronzewing		Direct observation
Philemon corniculatus	Noisy Friarbird		Direct observation
Podargus srigoides	Tawny Frogmouth		Direct observation
Psophodes olivaceus	Eastern Whipbird		Direct observation
Rhipidura fuliginosa	Grey Fantail		Direct observation
Rhipidura leucophrys	Willie Wagtail		Direct observation
Rhipidura rufifrons	Rufous Fantail	EPBC Act – Migratory / Marine	Direct observation
Sericornis frontalis	White Browed Scrub Wren		Direct observation
Strepera graculina	Pied Currawong		Direct observation
Taeniopygia bichenovii	Double-Barred Finch		Direct observation
Todiramhus macleayii	Forest Kingfisher		Direct observation
Trichoglossus chlorolepidotus	Scaly-Breasted Lorikeet		Direct observation
Trichoglossus haematodus	Rainbow Lorikeet		Direct observation
Turnix varius	Painted Button Quail		Direct observation
Vanellus miles	Masked Lapwing		Direct observation
Zanda funerea	Yellow-tailed Black cockatoo		Direct observation
Zosterops lateralis	Silvereye		Direct observation
Reptiles			
Calia vivax	Lively Rainbow Skink		Direct observation
Chlamydosaurus kingii	Australian Frilled Lizard		Direct observation
Intellagama lesueurii	Australian Water Dragon		Direct observation
Lampropholis guichenoti	Common Garden Skink		Direct observation
Pogona barbata	Eastern Bearded Dragon		Camera
Varanus varius	Lace Monitor		Direct observation
Amphibians			

Scientific name	Common name	Significance status	Detection method
Rhinella marina	Cane Toad	Invasive	Direct observation
Mammals			
Chalinolobus gouldii	Gould's Wattled Bat		Anabat
Macropus giganteus	Eastern Grey Kangaroo		Camera
Macropus rufogriseus	Red-necked Wallaby		Camera
Miniopteris australis	Little Bent-Wing Bat		Anabat
Mormopterus norfolkensis	East-Coast Free-Tailed Bat		Anabat
Phascogale tapoatafa	Brush-tailed Phascogale		Camera
Pteropus poliocephalus	Grey-Headed Flying-Fox (fly-over only)	EPBC Act - vulnerable	Direct observation
Rattus fuscipes	Bush Rat		Camera
Tachyglossus aculeatus	Short-beaked Echidna	NCA – Special Least Concern	Camera
Trichosurus vulpecula	Common Brushtail Possum		Camera
Vulpes vulpes	European Red Fox	Invasive	Camera, direct observation
Wallabia bicolor	Swamp Wallaby		Camera

4.4.3 Camera survey results

A total of 10 baited motion-triggered camera traps were installed across the site for 15 nights in August 2023 to increase the potential for observations of cryptic or nocturnal species. The camera traps were baited with chicken necks to target native carnivorous mammals including the Spotted-tailed Quoll. Several native species were recorded including species that were not previously recorded as part of previous survey efforts. The species recorded and detection dates are summarised in **Table 13**.

Table 13: Motion sensor camera survey results 2023

ID	Date	Scientific Name	Common Name	Taxa	Native/ Introduced
1	28/07/2023	*Wallabia bicolor*	Swamp Wallaby	Mammal	Native
	30/07/2023	*Macropus rufogriseus*	Red-necked Wallaby	Mammal	Native
	5/08/2023				
	1/08/2023	*Macropus giganteus*	Eastern Grey Kangaroo	Mammal	Native
2	-	-	-	-	-
3	2/08/2023	*Ratus fuscipes*	Bush Rat	Mammal	Native
	2/08/2023	*Climacteris picumnus*	Brown Treecreeper	Bird	Native
4	27/07/2023	*Phascogale tapoatafa*	Brush-tailed Phascogale	Mammal	Native
	28/07/2023	*Gymnorhina tibicen*	Australian Magpie	Bird	Native
	29/07/2023				
	30/07/2023				

ID	Date	Scientific Name	Common Name	Taxa	Native/ Introduced
	30/07/2023	*Macropus giganteus*	Eastern Grey Kangaroo	Mammal	Native
	31/07/2023	*Macropus rufogriseus*	Red-necked Wallaby	Mammal	Native
	3/08/2023	*Trichosurus vulpecula*	Common Brushtail Possum	Mammal	Native
	5/08/2023	*Dacelo novaeguineae*	Laughing Kookaburra	Bird	Native
	8/08/2023	*Vulpes vulpes*	European Red Fox	Mammal	Introduced
	10/08/2023				
5	27/07/2023	*Macropus rufogriseus*	Red-necked Wallaby	Mammal	Native
	10/08/2023				
6	27/07/2023	*Trichosurus vulpecula*	Common Brushtail Possum	Mammal	Native
	4/08/2023				
	9/08/2023				
	10/08/2023				
	28/07/2023	*Pogona barbata*	Eastern Bearded Dragon	Reptile	Native
	5/08/2023				
	31/07/2023	*Vulpes vulpes*	European Red Fox	Mammal	Introduced
	3/08/2023				
	31/07/2023	*Macropus giganteus*	Eastern Grey Kangaroo	Mammal	Native
	1/08/2023				
	2/08/2023				
	6/08/2023				
	31/07/2023	*Tachyglossus aculeatus*	Short-beaked Echidna	Mammal	Native
7	1/08/2023	*Macropus rufogriseus*	Red-necked Wallaby	Mammal	Native
	3/08/2023				
	7/08/2023				
	8/08/2023				
	28/07/2023	*Wallabia bicolor*	Swamp Wallaby	Mammal	Native
	6/08/2023				
	30/07/2023	*Macropus giganteus*	Eastern Grey Kangaroo	Mammal	Native
	8/08/2023				
	9/08/2023				
	31/07/2023	*Vulpes vulpes*	European Red Fox	Mammal	Introduced
	1/08/2023				
	2/08/2023				
	7/08/2023				
	3/08/2023	*Tachyglossus aculeatus*	Short-beaked Echidna	Mammal	Native
8	29/07/2023	*Macropus rufogriseus*	Red-necked Wallaby	Mammal	Native
	1/08/2023				
	6/08/2023				
	8/08/2023				
	30/07/2023	*Macropus giganteus*	Eastern Grey Kangaroo	Mammal	Native
	3/08/2023	*Wallabia bicolor*	Swamp Wallaby	Mammal	Native
	4/08/2023				

ID	Date	Scientific Name	Common Name	Taxa	Native/ Introduced
	7/08/2023	*Vulpes vulpes*	European Red Fox	Mammal	Introduced
	7/08/2023	*Tachyglossus aculeatus*	Short-beaked Echidna	Mammal	Native
9	27/07/2023	*Macropus rufogriseus*	Red-necked Wallaby	Mammal	Native
	30/07/2023				
	31/07/2023				
	4/08/2023				
	6/08/2023				
	7/08/2023				
	4/08/2023	*Trichosurus vulpecula*	Common Brushtail Possum	Mammal	Native
	4/08/2023	*Macropus giganteus*	Eastern Grey Kangaroo	Mammal	Native
	10/08/2023				
	4/08/2023	*Tachyglossus aculeatus*	Short-beaked Echidna	Mammal	Native
	5/08/2023	*Vulpes vulpes*	European Red Fox	Mammal	Introduced
10	31/07/2023	*Macropus giganteus*	Eastern Grey Kangaroo	Mammal	Native
	7/08/2023				
	7/08/2023	*Vulpes vulpes*	European Red Fox	Mammal	Introduced

4.4.4 Habitat features

A comprehensive inventory of habitat features was completed across the site. This included a GPS location for all terrestrial habitat features including termite mounds noting whether or not an excavation was present, hollow bearing logs and rocky outcrops (refer **Table 14**). Trees containing arboreal habitat features such as naturally formed trunk hollows, arboreal termitaria or stick nests were recorded and any trees of a significant size with potential to contain habitat value *i.e.,* ≥800 mm DBH. The locations of all recorded habitat features are shown on **Plan 4**.

Table 14: Examples of habitat features recorded

Habitat feature	Photo	
Terrestrial termitaria with excavates		
Hollow-bearing log		
Arboreal termite mound		
Rocky outcrop (no dens)		

4.4.5 Threatened fauna species assessment

Species-specific searches were undertaken for threatened fauna identified as having the potential to occur on-site or utilise areas proximal to site. This included field survey for several threatened species including Koala (*Phascolarctos cinereus*), Grey-headed Flying-fox (*Pteropus poliocephalus*), Greater Glider (*Petauroides volans*), Spotted-tailed Quoll (*Dasyurus maculatus*) and Powerful Owl (*Ninox strenua*). It is noted that ecological assessments of the site were completed by Cardno in 2014 with results detailed in the report titled '*Ecological Assessment – Existing Environment, Springview Ecology, prepared for Cherish Enterprises Pty Ltd, August 2014*'. Combined records of significant fauna sightings recorded by SHG and Cardno are shown on **Plan 6**.

Four (4) fauna species listed as threatened, marine and / or migratory under the EPBC Act or NCA were directly observed on-site or as a fly-over. The Powerful Owl (*Ninox strenua*) listed as vulnerable under the NCA was recorded on separate occasions within the western gully vegetation by Cardno in 2014 and SHG in 2019. The Grey-headed Flying-fox (*Pteropus poliocephalus*), listed as vulnerable under the EPBC Act was recorded flying over the site in 2019 and 2023. The Rainbow Bee-eater (*Merops ornatus*) and Rufous Fantail (*Rhipidura rufifrons*) listed as migratory/marine under the EPBC Act have been observed on multiple occasions within the site. Evidence of Koala (*Phascolarctos cinereus*) in the form of scats has also been recorded on the site, however direct observations of the Koala on-site have not recorded despite several targeted searches by multiple consultants over multiple years (refer **Table 12** for significance status). The results of the surveys and an assessment of site suitability for these species is detailed in the sub-sections below.

<u>Koala (*Phascolarctos cinereus*)</u>

The site contains remnant eucalypt woodland that provides potential foraging habitat for the Koala. Field surveys targeting Koala have been completed over the site utilising multiple survey methods including the SAT method, spotlighting and general meander surveys. Evidence of Koala in the form of faecal pellets have been recorded within the site, although not consistently across assessment areas.

A total of 16 SAT surveys have been completed within the site across multiple survey efforts (refer **Plan 2** for location of surveys). SAT survey results are interpreted using the broad population categories provided in the Australian Koala Foundation Koala activity level classification table. These categories being 'East Coast (low)', 'East Coast (med-high)' and 'Western (med-high)' are shown in **Table 15** and are used to estimate Koala activity within a given area. Depending on the population category applied, Koala activity is described as 'low', 'moderate', or 'high'. Population 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 (med-high)' category does not apply to South East Queensland local government areas.

Table 15: 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

It is considered that the site is most accurately described by 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 presence of preferred forage tree *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus propinqua* (Grey Gum), particularly within adjoining watercourses.

Refer to **Table 16** for summary of results and **Appendix D** for detailed results. Overall, the surveys produced a low Koala activity score utilising the East Coast med-high classification, except for SAT Survey 1 located in the western portion of the site indicating a high activity level (refer **Photo set 22**). Notably, no physical observations of Koala were recorded on or proximal to the site.

Photo set 23: Koala scat and vegetation characteristics where faecal pellets were recorded.

Table 16: SAT survey summary

SAT survey ID	Year completed	Number of trees with scats	Evidence of Koala activity (%)	Koala use (east coast med-high)
1	2019	11	36.67 %	High
2	2019	3	10.00 %	Low
3	2019	2	6.67 %	Low
4	2019	2	6.67 %	Low
5	2019	5	16.67 %	Low
6	2019	3	10.00 %	Low
7	2019	2	6.67 %	Low
8	2019	3	10.00 %	Low
9	2020	0	0.00 %	Low
10	2020	1	3.33 %	Low
11	2020	2	6.67 %	Low
12	2020	0	0.00 %	Low
13	2020	2	6.67 %	Low
14	2020	5	16.67 %	Low
15	2023	0	0.00 %	Low
16	2023	0	0.00 %	Low

In addition to activity surveys, survey effort for direct evidence of Koala was completed in accordance with the *Survey Guidelines for Australia's Threatened Mammals* in the form of spotlighting searches undertaken in 2019 and 2023. Spotlighting is a recommended method for detection of arboreal mammals. The Koala was not observed during any spotlighting meanders.

Grey-headed Flying-fox (*Pteropus poliocephalus*)

Grey-headed Flying-fox requires foraging resources and roosting sites to persist. The species is known to use a wide variety of habitats including subtropical and temperate rainforests, tall sclerophyll forest and woodlands, heaths, swamps and also urban and agricultural areas where food trees have been cultivated. The species is highly adaptive with its diverse native diet, which it can supplement with introduced species. It is known to forage within a variety of habitat areas as each resource does not produce food throughout the entire year. South East Queensland has a permanent and abundant population of Grey-headed Flying-fox and available habitat is spread throughout the region given the high prevalence of eucalypt dominated Regional Ecosystems.

Targeted surveys for Grey-headed Flying-fox were completed in accordance with the *Guidelines for Australia's Threatened Bats*. Surveys for Grey-headed Flying-fox include an assessment of flying fox camps on or near the project area, daytime field surveys for camps, surveys for vegetation communities and food plants and

nocturnal spotlighting surveys for presence of species. Desktop and field survey confirmed there are no Grey-headed Flying-fox camps located on or in the vicinity of the site.

The Grey-headed Flying-fox was confirmed as flying over the site during field surveys in 2020 and 2023.

Greater Glider (*Petauroides volans*)

The Greater Glider, identified as *Petauroides volans* or the synonym *Petauroides armillatus* in Queensland, is an arboreal nocturnal marsupial, largely restricted to eucalypt forest and woodlands. It is primarily folivorous with a diet mostly comprising of eucalypt leaves and occasionally flowers. It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. The species favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species.

During the day it shelters in tree hollows, with a particular preference for large hollows in large, old growth trees (Smith *et al.,* 2007). The species is considered to be particularly sensitive to forest clearance and intensive logging practices (Kavanagh and Wheeler, 2004). Consequently, Greater Gliders have relatively low persistence in small forest fragments and disperse poorly across vegetation that is not native forest. Modelling suggest that they require native forest patches of at least 160 km^2 to maintain viable populations (Eyre, 2002).

The majority of Wildlife Online records for the species are made along the eastern coastline, or inland along the Great Dividing Range. There are several records of the species located within 5 km radius of the site indicated on Wildlife Online and Atlas of Living Australia, however, these are all dated in the 1990s within what are now urban neighbourhoods. Significant contraction of forested areas has occurred within the Springfield locality. There are no sightings recorded for the species within 5 km of the site. It is noted that two records of Greater Glider were recently recorded in 2023 within the contiguous vegetation areas of the White Rock Conservation Park approximately 6.3 km south-west of the site. There is not considered to be any connectivity with this vegetation due to the broad clearing and urban development that has occurred between the site and White Rock Conservation Park.

While the site and surrounding areas to the north and west are dominated by eucalypt woodland, field surveys indicate that large, old growth and hollow-bearing trees are limited across the site and adjoining bushland areas. This is attributed to the historical logging practices that have occurred over the site. Additionally, the adjoining landscape to the east has been fragmented by residential communities.

Spotlighting surveys targeting Greater Glider were completed in accordance with the prescribed spotlighting methodology for arboreal mammals within the *Survey Guidelines for Australia's Threatened Mammals* and guided by the Victorian Department of Environment, Land, Water and Planning methodology for Greater Glider noted in the *Guidance Note: Reporting detections of Greater Gliders*. Three (3) spotlighting meanders were completed over the site and surrounding bushland area to the north and west (refer **Plan 3**). The Greater Glider was not detected during these surveys.

Spotted-tailed Quoll (*Dasyurus maculatus*)

The Spotted-tailed Quoll occurs predominantly in eucalypt forest and woodland and requires the presence of suitable denning habitat for shelter and breeding requirements which may include hollow logs, tree hollows, rocky outcrops or caves. This species is predominantly found in unlogged forest or forest that has been

minimally disturbed due to wide breeding ranges. This species is predominantly nocturnal and the species rests during the day in dens. Individuals require an abundance of food such as birds and small mammals, and large areas of relatively intact vegetation through which to forage. Suitable denning habitat is largely absent. Some small stags, rocky outcrops and fallen logs are present, however, preferred denning habitat in the form of large rocky outcrops and caves are not present.

Wildlife Online data does not identify any records of the Spotted-tailed Quoll within 5 km of the site. One unconfirmed record of the species on Atlas of Living Australia is located approximately 4.8 km east of the site at Centenary Highway, Carole Park. In general, there is limited evidence of Spotted-tailed Quoll occurring within the locality. Records of the species are predominantly located within conservation areas within the Logan LGA several kilometres to the south of the site.

Suitable detection techniques listed in the *Survey Guidelines for Australia's Threatened Mammals* include motion-triggered camera detection, diurnal meander surveys, spotlighting and searches for potential denning habitat, tracks and scats. The probability of recording a Spotted-tailed Quoll through camera detection is increased with longer deployment time with the minimum or standard deployment time for sufficient survey effort being 15 nights (McLean *et al.,* 2015).

Targeted field surveys completed in 2023 utilising systematic motion triggered cameras for 15 nights (refer **Plan 2**), spotlighting and diurnal scat and track searches completed since 2019 did not detect the species. No evidence of the species was detected during the camera survey period, spotlighting or diurnal searches.

Powerful Owl (*Ninox strenua*)

The Powerful Owl is Australia's largest owl species and is found in open forests and woodlands, as well as along sheltered gullies in wet forests with dense understoreys, especially along watercourses. It can sometimes be found in fragmented landscapes near forests such as farmland, parks and suburban areas, as well as in remnant bushland patches, however, requires old growth trees to nest. Due to the large size of the bird, large hollows (at least 0.5 m deep) are required to support the Powerful Owl. The Powerful Owl is endemic to eastern and south-eastern Australia and predominantly occurs on the eastern side of the Great Dividing Range, from south-eastern Queensland to Victoria. Powerful Owls breed and forage in open to closed forest habitats and primarily roost in dense vegetation.

It is noted that the Powerful Owl has been previously recorded within the past 10 years during ecological surveys that have occurred within the adjoining bushland and creekline habitat areas. Sightings of the species have been limited to Woogaroo Creek located to the north-west of the site.

In accordance with the *Survey Guidelines for Australia's threatened birds*, broadcast surveys were completed during spotlighting meanders targeting Powerful Owl detection in the most recent survey effort completed in August 2023 (refer **Plan 3** for location of broadcast surveys). No calls or visual detection of the species was detected as a result of broadcast surveys.

The site being comprised of eucalypt dominated woodland provides potential foraging habitat for the Powerful Owl. The lack of large trees or trees with hollows of a suitable size to support the Powerful Owl indicates the site does not provide the necessary breeding habitat to the support the species. It is more likely

that habitat requirements are met within the adjoining creek habitat areas associated with Opossum Creek and Woogaroo Creek to the west and north-west of the site.

4.4.6 Locally significant and priority fauna species

There are three (3) fauna species identified as a priority for protection for Ipswich planning activities under the *Ipswich Nature Conservation Strategy 2015*. Additionally, there are twenty-two (22) fauna species identified as locally significant by ICC within the Ipswich region. An assessment of the potential for these species to occur on-site utilising the criteria in **Table 2** is provided in **Table 17** and **Table 18**, drawing on records of the species within the locality and field survey data.

Table 17: Assessment of priority fauna species within the Ipswich region

Scientific name	Common name	General habitat	Assessment of values and potential occurrence	Likelihood of occurrence
Petrogale penicillata	Brush-tailed rock wallaby	Brush-tailed rock wallabies have specialised habitat requirements. Within complex rocky habitats, colonies occur in those that contain caves, crevices, steep gullies and ledges and suitable cliff faces usually having a northerly aspect.	Wildlife Online shows no records of Brush-tailed rock wallaby within 5 km of the site. Site lacks steep cliff faces and caves to support this species. Species is typically associated with large areas of intact habitat such as those within White Rock Conservation Park.	Unlikely
Phascolarctos cinereus	Koala	The Koala is found in a range of habitats, from coastal islands and tall eucalypt forests to low woodlands inland.	Wildlife Online shows 224 records of Koala within 5 km of the site and is known to occur within the locality. Indirect evidence in the form of scats has been recorded on-site, however, suggest predominantly low usage. No direct observations have been made on or immediately adjoining the site.	High likelihood
Ornithorhynchus anatinus	Platypus	Platypus are known to occupy diverse freshwater habitats. They are present in shallow still waters including lakes and dams where water depths are less than five meters, allowing platypus to forage effectively. Platypus also occupy a wide diversity of creeks, streams and rivers from primary headwater streams to major rivers. Studies from Tasmania indicate that platypus are most commonly found in mid to medium sized streams. The headwaters of catchments are thought to have fewer individuals and present marginal habitat, largely due to competition for limited resources and space.	Wildlife Online shows 1 record of Platypus within 5 km of the site. There are multiple records of the species within the downstream extent of Woogaroo Creek (stream order 4). Suitable riverine habitat to support species are absent from site therefore direct impacts on Playtpus are unlikely. Downstream impacts of the development will be managed.	Unlikely

Table 18: Assessment of locally significant fauna species within the Ipswich region

Scientific name	Common name	General habitat	Assessment of values and potential occurrence	Likelihood of occurrence
Aepyprymnus rufescens	Rufous bettong	Coastal eucalypt forest, tall wet sclerophyll forest and dry open woodlands with sparse or grassy understorey.	Wildlife Online shows no records within 5 km of site. Habitat attributes to support this species are present on-site.	Moderate
Biziura lobata	Musk duck	Deep freshwater lakes, lagoons and swamp with dense reed beds and open waters, also estuaries.	Wildlife Online shows no records within 5 km of site. Open waterbodies to support the species absent from site.	Unlikely
Carcharhinus leucas	Bull shark	Inhabit a wide range of salinities and turbid water, and often swimming far upstream into freshwater for extended periods.	No estuary habitat present to support species. Wildlife Online shows no records within 5km of site.	Unlikely
Chalinolobus picatus	Little pied bat	Dry forest, woodland and mallee.	Wildlife Online shows no records within 5 km of site. Potential to occur on-site and adjoining site in dry eucalypt forest.	Low
Cyclorana alboguttata	Green stripe frog	Temporarily inundated grasslands and open woodland.	Wildlife Online shows no records within 5 km of site. Ephemerally inundated grassland and woodland habitat absent.	Low
Cyclorana brevipes	Superb collared frog	Open grassland and dry woodland /open forest on black soil plains and semi-desert areas.	Wildlife Online shows no records within 5 km of site. Preferred soil types and arid habitat absent.	Low
Eroticoscincus graciloides	Elf skink	Moist leaf litter in rainforests, vine thickets, wet sclerophyll forests and damp depressions in drier sclerophyll forests.	Wildlife Online shows no records within 5 km of site. Moist microhabitat to support species generally absent from site. Some potential to occur in adjoining gully lines off-site.	Low
Hoplocephalus bitorquatus	Pale headed snake	Lives mainly in dry eucalypt forests and woodlands, also occasionally in rainforest and wet eucalypt forest.	Wildlife Online shows no records within 5 km of site. Potential to occur on-site within eucalypt woodland.	Moderate

Scientific name	Common name	General habitat	Assessment of values and potential occurrence	Likelihood of occurrence
Kuhlia rupestris	Jungle perch	Inhabit fast flowing freshwater streams and rivers usually in rainforest areas	Wildlife Online shows no records within 5 km of site. Overland flow paths and drainage features on-site do not contain habitat attributes to support species. Also unlikely to occur within stream order 1 and 2 watercourses.	Unlikely
Limnodynastes salmini	Salmon striped frog	Found in a variety of habitats including lowland flooded grassland and swamps.	Wildlife Online shows no records within 5 km of site. Lacks ephemerally inundated habitat types to support this species.	Unlikely
Litoria brevipalmata	Green thighed frog	Most commonly found in ephemeral or semi-permanent water bodies within rainforest and wetter sclerophyll forests.	Wildlife Online shows 10 records within 5 km of site. Potential to occur on-site within and within adjoining rainforest habitat types. Species has not been detected on-site as part of previous survey efforts across multiple consultants.	Moderate
Litoria tyleri	Tyler's tree frog	Wet and dry sclerophyll forests, especially near wetlands.	Wildlife Online shows no records within 5 km of site. Some potential habitat attributes within eucalypt forest but lacks wetland habitat.	Low
Melithreptus gularis	Black chinned honeyeater	Highly mobile; open eucalypt forests and woodlands dominated by eucalypts and wattles, often along waterways	Wildlife Online shows 6 records within 5 km of site. Potential to occur within eucalypt habitat on-site, however, was not observed.	High
Mugil cephalus	Sea mullet	Tolerates a wide salinity range and often moves into lagoons, lakes and the upper reaches of estuaries	No estuary or lake habitats present to support this species. Wildlife Online shows no records within 5 km of site.	Unlikely
Macropus dorsalis	Black striped wallaby	Eucalypt and acacia forests with a dense understorey, often in areas infested with lantana.	Wildlife Online shows no records within 5 km of site. The majority of the site lacks the dense understorey preferred by this species. Potential for occurrence in adjoining gully areas and not observed on-site.	Low
Oxyura australis	Blue billed duck	Large, deep open freshwater dams and lakes	Wildlife Online shows no records within 5 km of site. No open waterbodies present to support this species.	Unlikely

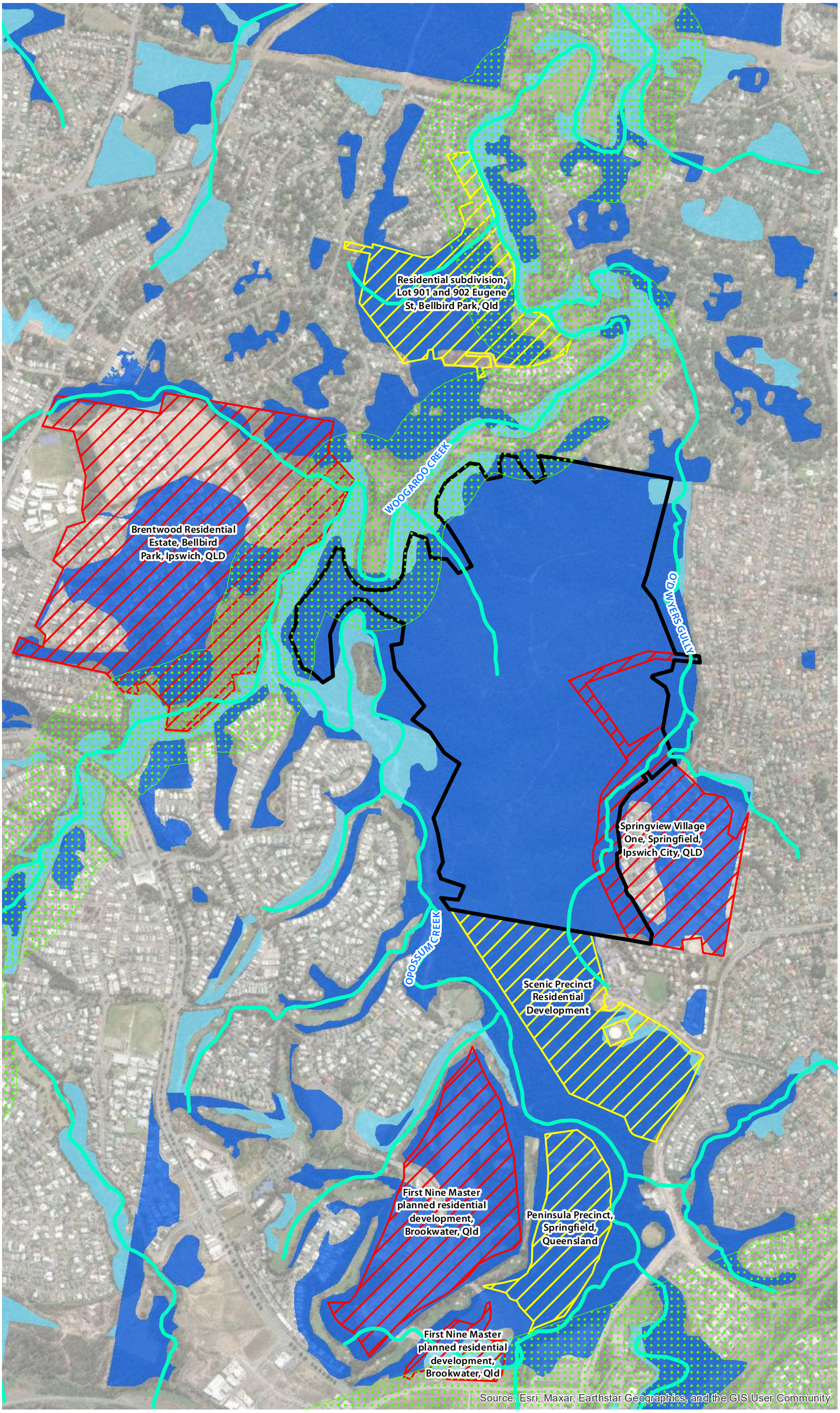
Scientific name	Common name	General habitat	Assessment of values and potential occurrence	Likelihood of occurrence
Petaurus australis	Yellow bellied glider	Tall open eucalypt forest (most generally wet forest).	Wildlife Online shows no records within 5 km of site. Site lacks large hollows to support the species.	Low
Petaurus norfolcensis	Squirrel glider	Dry eucalypt forests and woodlands, also parks and gardens.	Wildlife Online shows 3 records within 5 km of site. Common species which may occur within small hollows located on or adjoining the site.	High
Phascogale tapoatafa	Brush tailed phascogale	Drier forest and woodlands with hollow-bearing trees and sparse ground cover. Also rainforest.	Wildlife Online shows no records within 5 km of site. Commonly occurs within eucalypt woodland with small hollows required. Species recorded on-site by SHG during camera monitoring (August 2023).	Known
Pomatostomus temporalis	Grey crowned babbler	Dry open forests and woodlands, favouring inland plains with open shrub layer, little ground cover and plenty of fallen timber and leaf litter.	Wildlife Online shows 2 records within 5 km of site. Potential for the species to occur on-site due to presence of woodland habitat and fallen logs.	High
Rhadinocentrus ornatus	Ornate rainbow fish	Creeks, backwaters of larger streams, ponds and dune lakes, usually in sandy coastal lowland "wallum" and rainforest.	Wildlife Online shows no records within 5 km of site. No riverine habitat to support this species. Potential for creek habitat in adjoining gully lines.	Unlikely
Trachystoma petard	Pinkeye mullet	Inhabit deep, gently flowing sections of rivers, as well as estuaries and coastal seas during spawning events.	Wildlife Online shows no records within 5 km of site. No riverine habitat on-site to support this species.	Unlikely

4.5 Landscape connectivity analysis

The site is located within a large remaining pocket of remnant vegetation which is earmarked for urban development under the Springfield Structure Plan. The site is located outside of any State mapped ecological corridors under the *ShapingSEQ 2017* (refer **Plan 8**). Local connectivity values are present in the form of the adjoining creek corridors including O'Dwyer's Gully to the east within Council owned land, and Opossum Creek and Woogaroo Creek to the west and north-west of the site. These riparian corridors are to be retained and will have a buffer of retained bushland area between the creekline vegetation areas and the development. The buffer areas that will be delivered will range from approximately 40 to 80 m exceeding minimum requirements of the Springfield Structure Plan. It is noted that the adjoining creek corridors located outside of the subject site were originally part of the landholder's area which was previously handed over to ICC to manage.

The site maintains connectivity to the north and west utilising the adjoining waterway corridors, however, the site is broadly disconnected from the contiguous conservation areas within the locality including the White Rock Conservation Park, attributed to the location of urban areas and Centenary Highway to the south-east of the site. Outside of adjoining waterway corridors, the broader landscape is dominated by residential areas reflective of the urban intent of the Springfield Structure Plan.

8. Landscape Context Analysis



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Legend

- Site DCDB

EPBC Referrals

- EPBC Referrals (Decision Made)
- EPBC Referrals (Decision Pending)

SEQ Regional Plan 2017

- Regional Corridor
- State Corridor

Vegetation Management Act 1999

- Category B area - *Remnant vegetation*
- Category C area - *High value regrowth vegetation*
- VMA Watercourses

Issue	Date	Description	Drawn	Checked
B	5/09/2023	Preliminary	TF	AW

0 50 100 200 300 400 500 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:15,000 @ A3

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Springview Villages 2 & 3 Precinct

ADDRESS/RPD: Lot 9999 on SP292760 *5/09/2023* *11426 E07 Context Analysis A*

5. Preliminary impact assessment and development analysis

5.1 Proposed development

The proposed Precinct Plan presented in **Appendix A** is for a master planned residential development which includes mixed-size residential allotments, open space areas, recreation and sports facilities, pedestrian connections, and new internal road network subject to approval from ICC. Under the Springfield Structure Plan, the site is largely zoned as community residential, with pockets of creekline open space (refer **Figure 8**). Overall, the proposed development generally meets the planning intent of the Springfield Structure Plan which was endorsed by the State and is anticipated to deliver a liveable community. The proposed Precinct Plan area is surrounded by extensive areas residential development.

5.1.1 Summary of ecological values

Flora and fauna species listed as threatened under the NCA and / or EPBC Act were recorded during ecological field surveys. Many of these records were identified proximal to Woogaroo Creek or Opossum Creek, with several recorded along the western development interface within areas to be retained (refer **Plan 6**). Vegetation across the subject site is described as modified eucalypt woodland, mostly reflecting mapped remnant values of RE12.9-10.19, RE12.9-10.2 and RE12.9-10.3. Areas of higher ecological value across the site and proximal to boundaries were identified as those ground-truthed as containing endangered vegetation values, containing indicator species of the LRSA TEC, and vegetation associated with watercourses on land zone 3 (*i.e.,* dry rainforest).

5.2 Waterway setback and creekline habitat impact assessment

5.2.1 Dry rainforest vegetation associated with stream order 1 watercourse

As discussed in **Sections 4.1** and **4.2.3**, the upstream extent of the stream order 1 watercourse which is mapped in the north-western portion of the site was ground-truthed to confirm the presence of watercourse features. Ground-truthing surveys confirmed the watercourse values to start off-site in the downstream mapped extent with the upstream portion located on-site reflecting an overland flow path. This was determined based on the lack of channelization in the upstream extent, riparian vegetation and land zone characteristics reflecting land zone 9-10. Ground-truthing results are displayed on **Plan 7**. As a result, the proposed development will not result in the removal of valued environmental features associated with the watercourse as the mapped upstream extent was observed to be inaccurately mapped as a watercourse. Best of practice management measures will be implemented to reduce the potential for development adjacent to the dry rainforest area to be impacted indirectly by development (e.g. sediment fencing to limit potential for runoff into the waterway).

5.2.2 O'Dwyers Gully and south-western tributary (stream order 1)

Under the Springfield Structure Plan, the development area is zoned mostly as community residential with an area of creekline open space zoning roughly aligning with the site's creekline values located in the south-eastern portion of the site (refer **Figure 8**). In accordance with this zoning, the south-eastern portion of the

Precinct Plan area is proposed as vegetation to be retained and includes the site's watercourses and significant drainage lines as confirmed via ground-truthing ecological surveys.

In accordance with Section 7.3.3 of the Springfield Structure Plan, habitat values associated with the south-western tributary of O'Dwyer's Gully and the south-western tributary are proposed to be protected and buffered utilising a 40 m setback from the flow path centreline. As a result, these vegetation retention areas under the proposed RPS Precinct Plan generally align with the Springfield Structure Plan zoning, noting that some minor massaging of the edges has occurred to more accurately reflect on-ground values (refer **Plan 9**). In addition, ground-truthing surveys verifying the location of the top of high bank indicate that the site's watercourses and drainage lines will be located outside of these areas. It is noted while the waterway buffer maintains a setback of at least 40 m from the development boundary, there are areas along the extent where the buffer reaches up to 80 m, particularly along the primary waterway of O'Dwyer's Gully, therefore affording additional protection to creekline values beyond what is required under the Springfield Structure Plan.

It is noted that some minor encroachment within adjoining retention areas will be required subject to detailed design for the construction of essential infrastructure including stormwater drainage outlets, road and drainage infrastructure and sewer connection works to existing trunk sewers.

5.3 Vegetation community impact assessment

5.3.1 State Endangered vegetation values

Three areas of mapped endangered vegetation were ground-truthed during field surveys including RE12.3.3 abutting the eastern bounds within O'Dwyer's Gully and RE12.9-10.15 and RE12.3.16 along the western site boundary. Discussion around the potential impacts of development on RE12.3.16 is provided in **Section 4.2.1**. Core habitat values associated with RE12.9-10.15 are to be retained as a result of the proposed development. Some minor encroachment on the ground-truthed extent of RE12.9-10.15 is proposed to occur adjoining the proposed local sports park. Some minor encroachment may be required at the Mur Boulevard road crossing to facilitate construction of the access road and drainage infrastructure. Rehabilitation of Endangered regional ecosystem areas will occur as part of broad rehabilitation efforts post-works to remove weed species and enhance associated ecosystem processes. It is noted that the Vegetation Management Act does not apply within the Springfield Structure Plan, therefore specific applications for impacts on State Endangered vegetation are not required. Notwithstanding this, any impacts are proposed to be limited and will be mitigated through broadscale rehabilitation efforts.

5.3.2 Lowland Rainforest of Subtropical Australia Threatened Ecological Community

The LRSA TEC patches delineated to the west of the impact area are to be retained and avoided in their entirety (refer **Plan 5**). These areas identified as LSRA TEC indicator communities are restricted to relatively steep gully lines associated with land zone 3. As the LRSA TEC is listed as critically endangered under the EPBC Act, a 50 m buffer between works areas and the ground-truthed vegetation is to be achieved as required by the EPBC Act conservation listing advice for the TEC. A 50 m buffer between residential and earthworks footprint and the edge of the ground-truthed LRSA TEC indicator species is to be maintained as part of the development. The assessment of the impact of development on the LRSA TEC is being assessed under the EPBC Act (ref 2019/8575). The 50 m buffer is demonstrated on **Plan 10**. It is noted that some minor encroachment on the 50 m buffer is proposed in one location, however, this is only indicative with setbacks to be properly

determined as part of detailed design at the Area Development Plan (ADP) stage. Any works intruding in this buffer will be temporary and will not impact on the TEC. In addition, no development is proposed between the patches and Opossum Creek, allowing continued connectivity and facilitating dispersal by fauna and flora.

Overall, the development will not result in clearing of any part of the LRSA TEC polygons (Endangered RE12.3.16). Rehabilitation efforts involving the removal of environmental weeds and invasive flora and fauna species will occur to achieve an overall benefit in ecosystem function of the LRSA TEC polygons.

5.4 Significant habitat features

Significant habitat features recorded, including Endangered vegetation communities, indicative of the LRSA TEC, and established drainage and waterway features (*i.e.,* O'Dwyers Gully, Woogaroo Creek, Opossum Creek) and associated vegetation, are not proposed to be directly impacted by the proposed development. As detailed within **Section 4.4.3**, significant habitat features within the site are limited, particularly large, old growth and hollow-bearing trees due to past land uses resulting in the modification of natural vegetation features. Habitat features are present, however, are mostly in the form of terrestrial termite mounds (refer **Plan 4**).

Plan 11 shows the location of significant habitat features in the context of the Precinct Plan within and adjoining the site. Significant habitat features considered are trees with hollows, large trees (≥800 mm DBH), trees with stick nests and trees with arboreal termite mounds. There will be some unavoidable clearing of significant habitat features to deliver residential land uses under the Precinct Plan, however, a high number of the recorded habitat values will be retained within the areas set to be retained within creek line open space areas. A total of 104 hollow-bearing trees were recorded of which, it is indicated that a total of 35 will be removed. Similarly, trees 275 trees with arboreal termite mounds were recorded of which 91 are required for removal to deliver residential land uses.

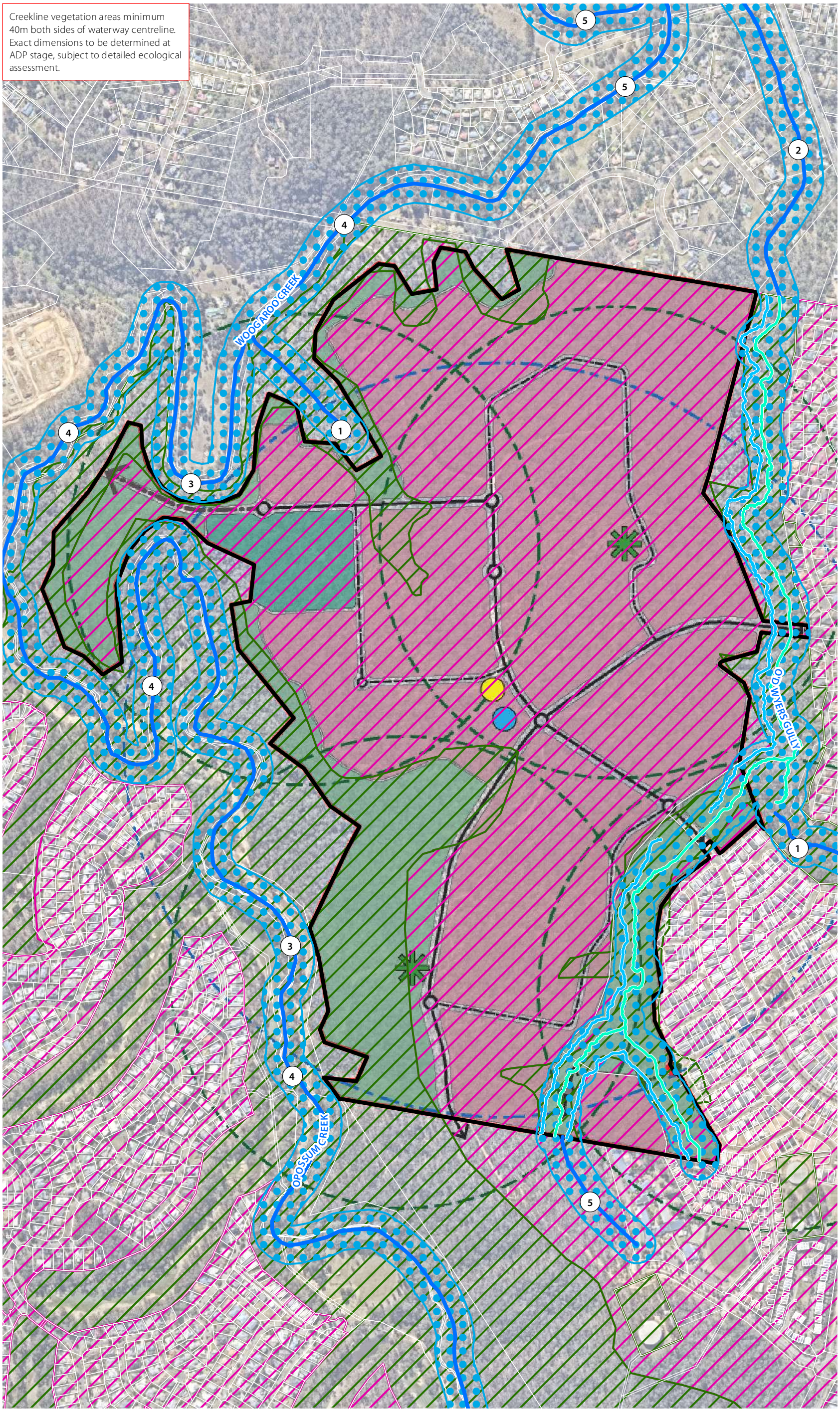
There is considered to be limited potential for the site to form key habitat for threatened fauna species including the Greater Glider, Powerful Owl and Spotted-tailed Quoll, partially due to the context of the site within an urban landscape and historical modification. Breeding and roosting values for Powerful Owl are more likely to occur within the adjoining gully lines which is consistent with previous records of the species. There is considered potential for the site to provide value for Koala and Grey-headed Flying-fox which is supported by records within the locality and the presence of suitable foraging habitat on-site and within adjoining creekline corridors. The proposed area to be developed for residential purposes is designed to avoid impacts to areas of significant environmental value where possible.

5.5 Locally significant tree impact assessment

At this preliminary stage, the detailed modelling of earthworks, change to ground level requirements and overall final footprint has not been determined. This occurs as part of the ADP and Operational Works phases of development. It is expected that as part of navigating these approval pathways, a tree plot identifying significant habitat trees and significant aesthetic trees will be provided to Council to demonstrate avoidance of impacts to such trees, wherever practicable.

9. Development Assessment - Springfield Structure Plan and Waterway Setbacks

Creekline vegetation areas minimum 40m both sides of waterway centreline. Exact dimensions to be determined at ADP stage, subject to detailed ecological assessment.



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Legend

- Qld DCDB
- Site DCDB
- VM Watercourse Centrelines (with stream order)

Ground-truthed Waterways

- Ground-truthed waterway centreline
- Ground-truthed top of high bank
- Ground-truthed overland flow path
- 40m waterway centreline buffers

Layout Detail

- Residential allotments
- Existing vegetation to be retained
- Local sports park
- Existing local recreation park
- Indicative collector roads
- Childcare
- Local centre
- Local recreation park

Springfield Structure Plan

- Urban Zones
- Conservation/Open Space

Issue	Date	Description	Drawn	Checked
B	11/09/2023	Preliminary	TF	AW

0 25 50 100 150 200 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:8,000 @ A3

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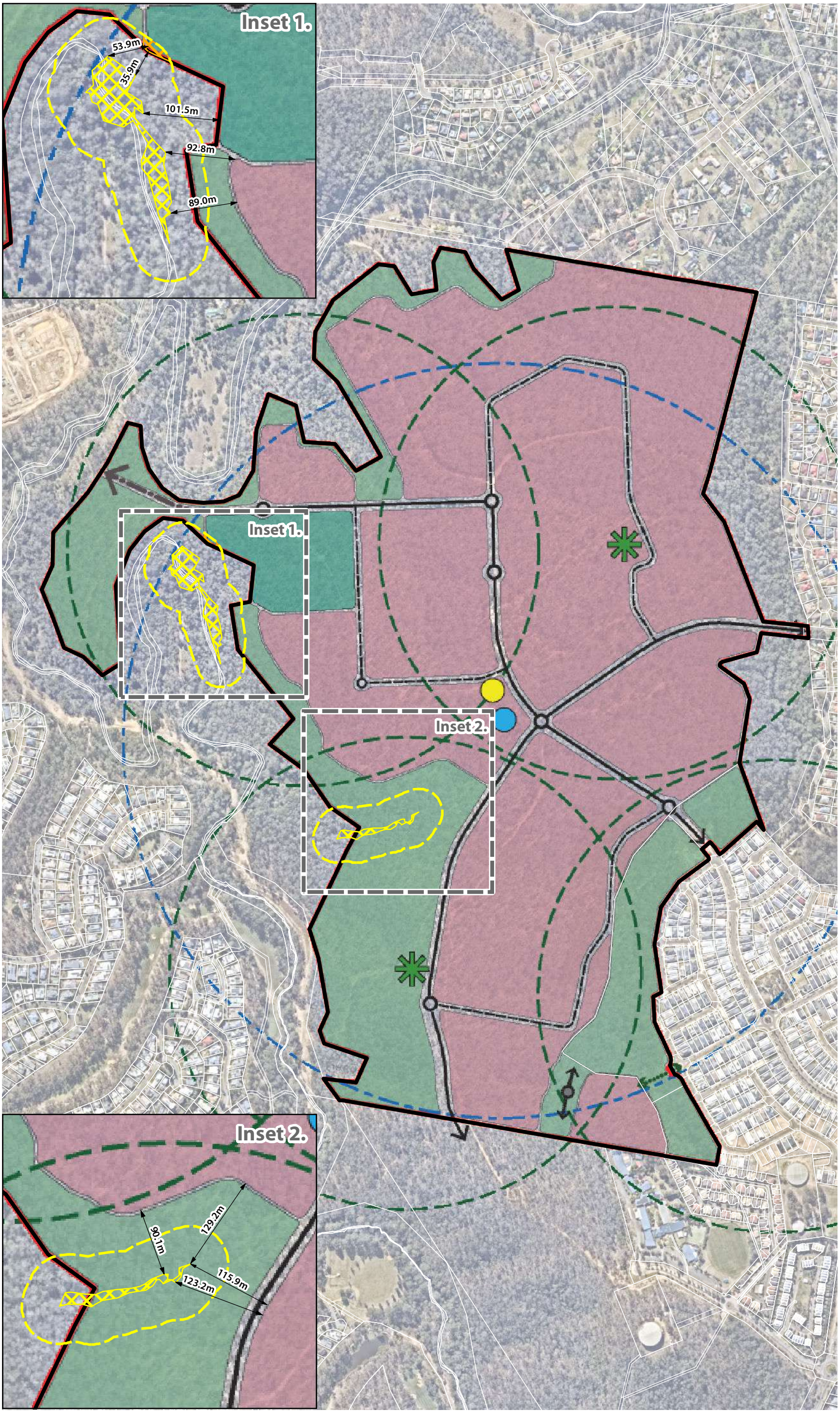
Springview Villages 2 & 3 Precinct

ADDRESS/RPD: Lot 9999 on SP292760 | 11/09/2023 | 11426 E09 DA SP and Waterways A

10. Development Assessment - TEC Buffer Analysis



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Legend

- Qld DCDB
- Site DCDB

Layout Detail

- Residential allotments
- Existing vegetation to be retained
- Local sports park
- Existing local recreation park
- Indicative collector roads
- Childcare
- Local centre
- Local recreation park

TEC Assessment

- Ground-truthed RE 12.3.16 (LRSA TEC Indicator)
- Ground-truthed RE 12.3.16 (LRSA TEC Indicator) 50m buffer
- Ground-truthed RE 12.3.16 (LRSA TEC Indicator) layout intrusion [475 m ^{2}]

Issue	Date	Description	Drawn	Checked
B	11/09/2023	Preliminary	TF	AW

0 25 50 100 150 200 m

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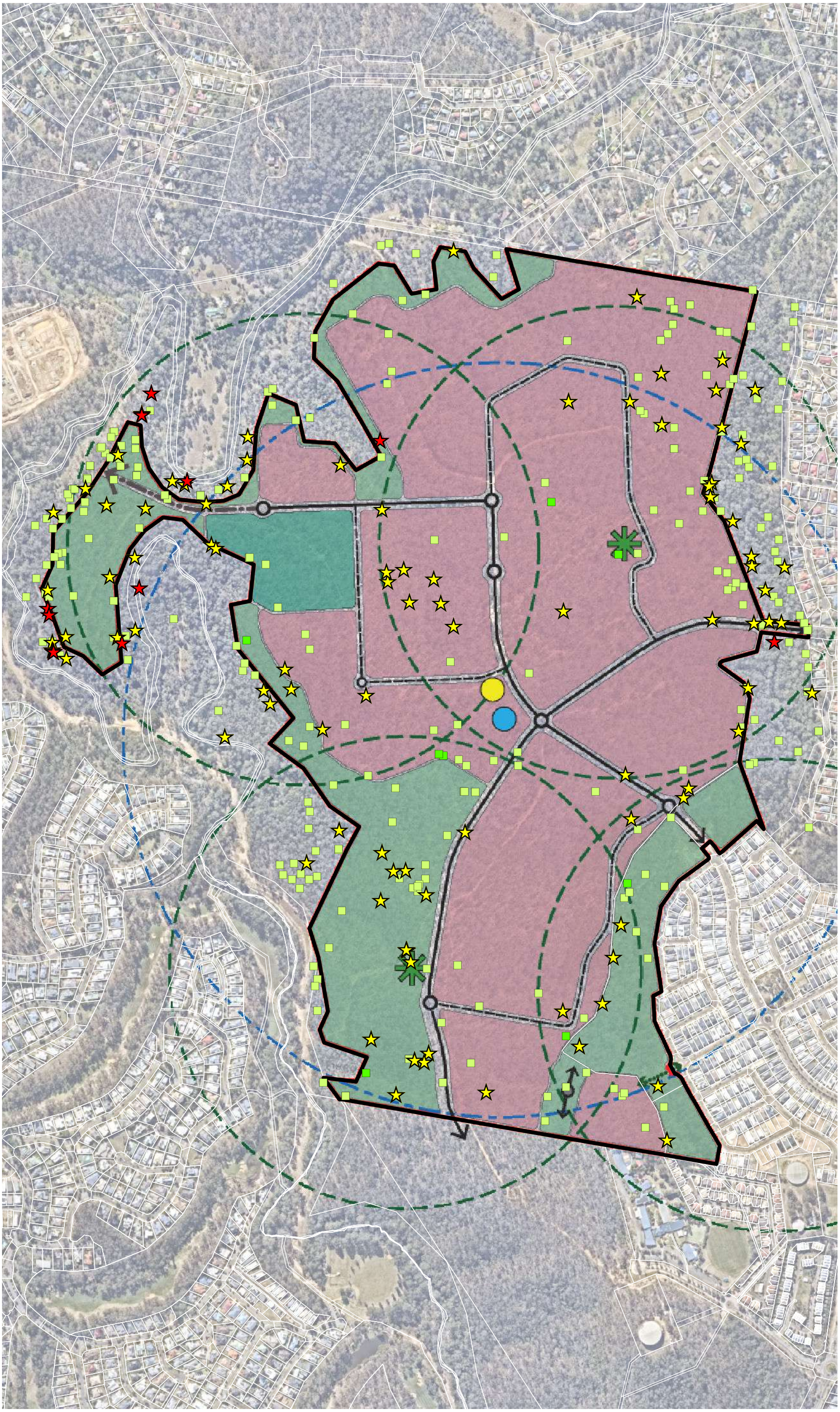
Springview Villages 2 & 3 Precinct

ADDRESS/RPD: Lot 9999 on SP292760 *11/09/2023* *11426 E 10 DA TEC Buffer A*

11. Development Assessment - Significant Habitat Features



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Legend

- Qld DCDB
- Site DCDB

Habitat Features

- Tree with arboreal termite mound
- Tree with stick nest
- Tree with hollows
- Potential habitat tree (>800 mm DBH)

Layout Detail

- Residential allotments
- Existing vegetation to be retained
- Local sports park
- Existing local recreation park
- Indicative collector roads
- Childcare
- Local centre
- Local recreation park

Issue	Date	Description	Drawn	Checked
B	11/09/2023	Preliminary	TF	AW

0 25 50 100 150 200 m

Transverse Mercator | GDA 1994 | Zone 56 | 1:8,000 @ A3

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Springview Villages 2 & 3 Precinct

ADDRESS/RPD: Lot 9999 on SP292760 *11/09/2023* *11426 E 11 DA Habitat Features A*

5.6 Potential impacts

The key potential ecological impacts associated with the development proposal are described herein.

5.6.1 Vegetation clearing

Clearing of vegetation to establish the residential areas and access roads will reduce vegetation cover and habitat for flora and fauna dependent on those ecosystems. However, as previously discussed, connectivity within the area is generally associated with adjoining creekline areas within O'Dwyer's Gully to the east and Opossum Creek and Woogaroo Creek to the west and north-west. Outside of these linkages, connectivity is generally restricted as the broader landscape is dominated by residential areas reflective of the urban intent of the Springfield Structure Plan. A residential development is mostly completed to the south-east of the site with an approved, planned road linkage intersecting the site connecting to Mur Boulevard. Areas of higher ecological value including endangered vegetation and creekline vegetation areas are to be avoided, buffered and rehabilitated. Sequential clearing will ensure fauna are protected and have opportunity to escape into neighbouring habitat refuges.

5.6.2 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 and improvement measures as part of the development, a reduction of weeds throughout the residential and open space land is reasonably anticipated.

It is noted that the subject site has been subject to historical modification due to historical logging practices and as a result the majority of the site lacks large, old-growth trees, sub canopy and shrub layer. Edge effects are observable in association with gully lines, tracks, creeks and isolated areas over the site in the form of weed presence. Within areas to be retained as creekline open space, vegetation will be rehabilitated post-development to mitigate on-going impacts (refer to **Section 5.8.6** for details of proposed rehabilitation measures).

5.6.3 Vehicle movements

During construction, a large number of vehicles will be required on the site. Direct impact 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 include:

- Interference of fauna through visual and noise impacts. This may 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 site.

With implementation of standard mitigation measures, the development is likely to result in a temporary and minor impact to ecological values due to vehicular movements.

5.6.4 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 development is likely to result in a temporary and minor impact to ecological values due to the generation of dust.

5.6.5 Stormwater

Some minor encroachment within adjoining retention areas is required for the construction of essential infrastructure including stormwater drainage outlets and sewer connection works to existing trunk sewers.

The stormwater drainage design proposed for the Precinct Plan has been designed with consideration to the geomorphic characteristics of the site to ensure the ongoing protection and stability of adjoining creekline areas. The locations of stormwater outfalls and discharges to unlined gullies and waterways from the development need to be carefully considered to avoid local scour of the bank and bed of adjoining waterways. The design and installation locations of new stormwater outlets along both the creeks and gullies will be informed by the following factors:

- Where stormwater outlets are within gullies, flow should be dissipated with appropriate stabilisation measures. This includes implementation of appropriate flow diversion and energy dissipation measures in accordance with Queensland Urban Drainage Manual (IPWEA, 2016).
- Discharge pipes should be aligned as close as feasibly possible to the direction of flow. This will minimise scour of the bed and adjacent bank.
- Where possible, pipes should outlet into the waterway just above the channel invert. Consideration of mobile bed depths should be considered to ensure pipes remain as low as possible while remaining free from blockage due to natural sedimentation and variations in bed level.
- Appropriate rock protection and/or rock chute provided at the stormwater outfall to provide protection against modelled stream powers. Where possible, discharge to exposed bedrock locations in gullies.

- Co-locate the stormwater outfalls within existing tributaries or scour points in the waterway. This means the stabilisation of these tributaries and the stormwater outfalls can be provided in a single location (dual use of rock protection).

Stormwater drainage design also considers locating stormwater outlets at the lower extent of gullies where longitudinal gradients are flatter, and in stable areas such as bedrock outcroppings. In addition, the provision of a minimum 40 m setback from the waterway centrelines within Opossum Creek, O'Dwyer's Gully and Woogaroo Creek will ensure the ongoing protection of top of bank riparian vegetation which will allow for stability of creek and gully banks.

5.6.6 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 development area will temporarily increase during the construction phase; however, night works will not be common. Lighting will be directed to construction areas within the site. 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, particularly considering the existing sources of light that will already exist as a result of the existing residential development to the west of the site.

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

5.6.7 Noise and vibration

Noise levels greater than existing ambient noise levels are expected during the construction within the development 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 development area, this is likely to be a temporary and negligible to minor impact.

5.6.8 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.

5.6.9 Hazardous and dangerous goods

Spills and leaks from transfers (fuel, 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 development is likely to result in a negligible impact to ecological values due to potential spills and leaks.

5.6.10 Increased human presence

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

5.7 Ongoing disturbances

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

- Weed incursion;
- Vehicle movements;
- Noise and light; and
- Increased human presence.

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

5.7.1 Weed incursion

Residential gardens and landscaping of common areas will introduce a variety of new and exotic species to the area. Garden escapes have the potential to be introduced into adjacent bushland areas through vectors such as birds, wind and runoff. Weed incursion will be an ongoing and can be difficult to prevent. Nonetheless, the problem is often mostly constrained to edges of bushland that abut gardens and along urban waterways.

With implementation of standard mitigation measures, the development is likely to result in a minor impact to ecological values due the introduction and spread of weeds. It is also noted that significance incursion of weeds and garden escapes is present throughout the site due to its existing residential dwellings.

5.7.2 Vehicle strike

Upon completion of the development, there will be some significant increase of vehicle traffic (compared to baseline conditions) on the site and this will increase 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 this, this site is already surrounded by residential development, so the risk of vehicle strike for fauna that enter this urban area (i.e. snakes and lizards attracted to heat on roads) is already present. Further, the area is already subject to increasing vehicular traffic due to surrounding land uses.

5.7.3 Noise and Light

Noise levels are likely to increase once the development occurs as there will be increased vehicular and pedestrian traffic. Road noise will be the primary source of noise impact.

Artificial light from lighting may affect nocturnal and diurnal animals by disrupting patterns, with quality of light (e.g. wavelength, 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 most impact at the edges of adjacent vegetation. However, due to the already highly disturbed urban environment, and close proximity to existing residential dwellings, the proposed development is likely to result in a negligible impact to wildlife due to light spillage.

5.7.4 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.

Acknowledging that a large area of vegetation is required to be cleared to facilitate residential development increased human presence is expected to have a minor to moderate impact on wildlife and vegetation. However, it is considered that the dominance of urban land uses places the site firmly within the urban context whereby local fauna are already exposed to a level of disruption from human presence. The retention of vegetated areas within the site and creation of creekline open will mitigate any potential impacts associated with increased human presence.

5.8 Avoidance and mitigation measures

A number of avoidance and mitigation measures are proposed to reduce and mitigate impacts associated with the development. These include:

- Vegetation retention and provision of creekline open space;
- Site Based Management Plan;
- Preparation of Vegetation Clearing and Management Plans (VC&MP);
- Preparation of Fauna Management Plans (FMP);
- Preparation of Environmental Pre-clearance Prestart Packages;

- On-site prestart meeting;
- Engagement of a DES registered fauna spotter catcher;
- Implementation of fauna friendly road design and signage where necessary;
- Landscape species selection to reduce attraction to urban areas; and
- Education and awareness programs for future residents.

Information on these mitigation measures it provided in the following subsections.

5.8.1 Vegetation retention and provision of creekline open space

The western, south-western and south-eastern portion of the Precinct Plan will be dedicated as vegetation to be retained in line with creekline vegetation areas identified under the Springfield Structure Plan. These areas will provide habitat and fauna connectivity with the adjoining O'Dwyer's Gully, Opossum Creek and Woogaroo Creek. Notably, while zoned as community residential under the Springfield Structure Plan, the western portion of the site is proposed as vegetation to be retained in the interest of reducing edge impacts with the adjoining waterway corridor and consolidating creekline open space areas.

It is noted that historically, the landholdings of the site encompassed adjoining creekline areas within O'Dwyer's Gully, Opossum Creek and Woogaroo Creek. These areas were previously handed over to Council. Therefore, the extent and volume of area that will ultimately be retained as part of the proposal is much larger than that displayed as part of this application.

5.8.2 Site Based Management Plan

In addition to mitigation outcomes incorporated in the design process, a number of management measures are proposed to ensure impacts are avoided and or minimised through the construction and operational phases.

To avoid and mitigate the direct and indirect impact from the proposed action, a project specific Site Based Management Plan (SBMP) will be prepared. The SBMP will act as the Environmental Management Plan for the project.

Key outcomes within the SBMP may include:

- Koalas and Grey-headed Flying-fox are protected on-site, where they are present.
- The abilities for Koalas and Grey-headed Flying-fox to move into, within and out of the site is maintained.
- Potential risks to Koalas and Grey-headed Flying-fox (e.g. vehicle strike, entanglement, fragmentation of habitat / becoming stranded, noise / light pollution, etc.) are identified and appropriately managed.
- All persons involved in construction and operation of the development are aware of the site values, their potential to impact on Koalas and Grey-headed Flying-fox and their habitats, and their responsibilities in regard to procedures and strategies with the SBMP.

The SBMP will outline construction measures to manage and mitigate impacts on native flora, and fauna, specifically the Koala and Grey-headed Flying-fox and will include details on:

- Project description, site design and identification of conservation areas.
- Ecological values of the project area, including:
    - existing flora and fauna values on the subject site and in surrounding areas; and
    - key results from survey data, including Koala and Grey-headed Flying-fox occurrence, and the availability and quality of habitat.
- Environmental management, including:
    - SBMP objectives.
    - Identification of key personnel.
    - Roles and responsibilities.
    - Environmental awareness and compliance training for all contractors and sub-contractors.
    - Adaptive management.
    - Statutory requirements.
- Pre-clearance requirements – fauna management, including:
    - Vegetation management (clearing and protection), including:
        - Objectives.
        - Management strategy.
        - Performance indicators.
        - Environmental outcomes.
        - Monitoring and adaptive management.
    - Protection of focal threatened species (*i.e.,* Koala and Grey-headed Flying-fox) and native wildlife, including:
        - Objectives.
        - Management strategy.
        - Performance indicators.
        - Environmental outcomes.
        - Monitoring and adaptive management.
        - Requirements of the DES approved Fauna Spotter / Catcher and adoption of the *Code of Practice for the Welfare of Animals Affected by Land Clearing and Other Habitat Impacts* in pre-clearance surveys, reporting and monitoring.
        - Sequential clearing plan and clearing restrictions.
        - Specifications and requirements for fauna exclusion fencing.

- Maintenance of safe wildlife movement opportunities (during construction) including:
    - Objectives.
    - Management strategy.
    - Performance indicators.
    - Environmental outcomes.
    - Details of temporary fencing.
    - Hours of operation.
    - Details of fauna awareness signage.
    - Details of vehicle movement controls.
- Fauna habitat rehabilitation, outlining:
    - Planting and rehabilitation.
    - Wildlife crossings, where required.
    - Reporting and monitoring.
- Education and Awareness, including distribution of Lifestyle Guidelines.

5.8.3 Vegetation Clearing and Management Plan

A Vegetation Clearing and Management Plan (VC&MP) should form part of the broader management documents required to manage clearing on the site. This will include establishment of tree protection fencing and 'no-go' areas to protect those areas to be retained. Additionally, impacts are not to occur within Opossum Creek, Woogaroo Creek or O'Dwyer's Gully.

The VC&MP should cover clearing of all vegetation listed in this report and include details on:

- Clearly show trees to be removed.
- All civil works likely to impact on 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.
- The stock piling and reuse of cleared vegetation.

5.8.4 Fauna Management Plan

The FMP should link closely with the VC&MP and include details on:

- Species surveyed as using the site with a focus on those most likely impacted by development works.
- A list of relevant State and Commonwealth legislation constraints and controls for the above listed fauna.
- A plan showing the locations of existing habitat opportunities.
- Details of the threats to existing fauna species.
- Clearing sequence plan from the VC&MP.
- Management and mitigation measures *i.e.,* temporary use of fauna exclusion fencing.
- Fauna spotter role, contacts and certification – Fauna Spotter Catcher appointed to have DES rehabilitation permit and specific experience with Koala.
- Specific fauna management procedures for potential or known habitat trees.

5.8.5 Fauna Management Protocols

Under Queensland's *Nature Conservation Act 1992*, all native fauna are protected and as such the following activities are required to ensure that vegetation removal and construction does not adversely affect native fauna species:

- Immediately prior to the commencement of clearing of native vegetation, a daily visual inspection of the area must be carried out;
- In the event of an animal being located, an area of 5 metres radius should be established around the tree, excluding machinery from this area until the animal has relocated (usually overnight); or
- If an animal requires relocating, this must be undertaken by a suitable qualified fauna expert (e.g. fauna spotter-catcher) recognised by the Queensland Parks and Wildlife Service.
- Any native fauna orphaned or injured by the development process must be reported to the Queensland Parks and Wildlife Service.
- The site supervisor is responsible for the safe management of site fauna and implementation of these specific fauna requirements.

5.8.6 Rehabilitation Management Plan

Rehabilitation actions will occur where weed species are present, typically in association with gully lines in the area to be retained. In addition, revegetation of stormwater basins and park areas across the site are proposed to occur following construction. Rehabilitation is proposed to improve *in situ* ecological values and function as a fauna movement corridor, whilst enhancing flora structure and diversity. Rehabilitation works will involve the removal of introduced flora species from retained areas on-site.

The Rehabilitation Management Plan (RMP) will form part of the broader management document submitted as part of the operational works drawings for the project site. The RMP will be subject to approval and will be prepared in accordance with the SEQ Ecological Restoration Guidelines. The RMP will generally include information on:

- Rehabilitation details of species' specific habitat.

- Details of proposed rehabilitation works including proposed species and planting palette.
- Planting modules to demonstrate planting densities.
- All weeding works required, including a full list of known weeds on site and how each weed can adequately be managed.
- The required ongoing management / maintenance regimes, including:
    - Plans indicating maintenance areas / zones.
    - Schedules of works including frequency and tasks.
    - Allocation of labour and resources to perform tasks.
    - Nomination of key performance indications / criteria for monitoring purposes (e.g., all revegetation areas, minimum 90% weed free etc.).
    - Time allocated to performance various tasks (e.g., top up mulch, pruning, topdressing etc).
    - Defects liability for materials such as replacement of dead plant species of equivalent species and vigour.
    - Coordination of services such as irrigation repair or civil infrastructure maintenance (such as stormwater) that may impact on the landscape establishment and maintenance periods.
    - Management of bushfire hazard (where approved).
    - Management of domestic farm / feral animals (if appropriate).
    - Management of public access and / or restricted access areas.
    - Tree management procedures.
    - Management and maintenance of regimes for sediment and erosion control devices, and irrigation.
    - Proposed future need for infrastructure, including public facilities.
    - Management and control of declared plants and recognised environmental weeds.

5.8.7 Fauna Friendly Road Design and Crossings

At the detailed design phase, tweaking of road locations, setbacks and earthworks will occur to ensure the environmental values are protected and enhanced. Should fauna crossings be identified as necessary proximal to the retained open space areas, design specifications for the crossing structures will be refined largely based on localised site ecological assessment identifying potentially impacted environmental matters and target species.

Any infrastructure that crosses the open space area will include fauna friendly crossings designed in accordance with the *Fauna Sensitive Road Design Manual Volume 1 and 2* prepared by the Queensland Department of Transport and Main Roads (DTMR) and the Queensland Government Koala Sensitive Design Guidelines, or equivalent. Fauna friendly crossings must include the following:

- Minimum fauna culvert sizes to suit a full suite of species onsite;

- Incorporate the use of fauna furniture;
- Provide crossing opportunities for arboreal animals via the use of retained canopy cover, rope bridges, glider poles, koala poles etc.;
- Demonstrate that the type and dimension of the fauna crossing ensures that during low flow events, one dry culvert exists to facilitate fauna movement;
- Where necessary, incorporate the installation of slow traffic areas and/ or safe fauna crossing areas, including but not limited to, appropriate fauna signage, maximum 50km/hr, speed humps and fauna fencing; and
- Ensure fauna crossing details are determined in consultation with a hydraulic engineer.

Safe Passage Road Fauna Movement Solutions

Road design where roads intersect retained Koala habitat corridors across the site will be completed in accordance with the Queensland DTMR Fauna Sensitive Road Design Manual Volumes 1 and 2. Safe passage fauna movement solutions will be incorporated where required around the construction of entry roads from Mur Boulevard in the east and Panorama Drive in the south. Specific fauna movement solutions may include structures that are specifically selected, designed, and sized to cater for the movement of native fauna anticipated to utilise the corridors. The safe crossing movement solutions will be supported by directional fauna exclusion fencing to ensure animals are funnelled away from vehicle conflicts and into the safe passage areas.

Road Signage

On a smaller scale, should the proposed development entail esplanade roads running adjacent to the open space area, the design will adopt traffic calming and reduced speed signage to control vehicles adjoining sensitive areas. The project will adopt the *Draft Technical Note Wildlife Signage Guidelines* development by DTMR to ensure best practice fauna management is incorporated into the design of wildlife movement solutions (where considered appropriate) or slow down points.

5.8.8 Landscaping

A non-Koala tree landscape mix to be used in estate landscaping. Ensure street and park trees while being planted out with non-invasive native trees don't specifically include any primary or secondary Koala food trees. The goal of this approach is to minimise the attraction for Koalas to enter the development area.

The retained open space area will retain koala habitat trees. General maintenance management in the form of weed removal and litter removal will occur within the retained areas on-site and across the planned parks. The riparian corridor adjacent to the referral area to the west is to be managed ongoing by ICC.

5.8.9 Education and Awareness

The distribution of "Lifestyle Guidelines" has the purpose of instilling stewardship of the issue amongst residents, encouraging them to actively protect native wildlife and making them aware of the types of fauna that could disperse onto roads and how to appropriately manage domestic pets. Topics included within the education documents include:

- Appropriate plant selection on allotments.

- Inappropriate planting species (known local or declared weed species).
- Management of household scale run off.
- Protection of native animals and the types of native animals residents could expect to see.
- Understanding storm water devices.
- Education on responsible domestic animal ownership within the referral area, including management of domestic animals, and providing key local and state phone numbers to contact if distressed fauna is located.
- Key local and state phone numbers to contact if distressed or orphaned fauna is located.

A copy of the lifestyle guidelines will be issued to new residents upon the purchase of an allotment within the development.

6. Conclusions

This EAR was prepared on behalf of Stockland Development Pty Ltd who seek to develop land at Mur Boulevard, Springfield, to facilitate the construction of a residential community. The development is to be delivered as Village 2 and Village 3. This EAR provides a contemporary review of the ecological values across the site in accordance with Commonwealth, State and Local Government Legislation.

Based on the work completed, the following conclusions can be made:

- The development site is presently vacant and predominantly vegetated, consisting of historically modified eucalypt woodland. Residential developments surround the site, where a residential estate located to the south-east is almost complete.
- Under the Springfield Structure Plan, the site is predominantly zoned as community residential with areas of creekline open space. There are no ecologically relevant overlays mapped under the ICC Planning Scheme. The proposed master planned residential development generally aligns with local planning intent.
- Regional Ecosystem mapping shows most of the site as Category B (remnant) composite RE12.9-10.2/12.9-10.7/12.9-10.19. Field survey generally confirmed the mapping of regional ecosystem values across the site with the prevailing dominant vegetation community being RE12.9-10.19 and RE12.9-10.2 supported by the dominance of *Eucalyptus fibrosa* and *Corymbia citriodora*. Areas of endangered vegetation ground-truthed were observed to show slight discrepancies in mapping accuracy and are to be wholly captured by the creekline open space retention areas and adjoining Council corridors.
- Substantial avoidance and mitigation measures are proposed as part of the Precinct Plan development. The western, south-western and south-eastern portion of the site will be retained rehabilitated and will form part of creekline open space areas. Notably, the western portion of the site is historically earmarked for residential land uses under the Springfield Structure Plan, however, is proposed as vegetation to be retained in the interest of reducing edge impacts with the adjoining waterway corridor and consolidating creekline open space areas. Notably, a setback of between 40 and 80 m will be provided between the eastern development boundary and the O'Dwyer's Gully.
- Evidence and/or direct sightings of Commonwealth and State listed threatened species were recorded within the site. The Grey-headed Flying-fox (*Pteropus poliocephalus*), listed as vulnerable under the EPBC Act was observed as flying over the site during surveys and the Rufous Fantail (*Rhipidura rufifrons*) and Rainbow Bee-eater (*Merops ornatus*) which are listed as marine and / or migratory under the EPBC Act, were observed multiple times during field survey and are considered relatively abundant within the area. Powerful Owl (*Ninox strenua*), listed as vulnerable under the NCA, have been previously observed within the western gully areas, of which will be retained under the proposal. Evidence of Koala (*Phascolarctos cinereus*) in the form of scats has been detected on-site, however, no direct observations have been recorded despite years of surveys completed by multiple consultants, suggesting relatively low usage of the vegetation on-site. It is noted that impacts on MNES will be managed through the EPBC Preliminary Documentation process under EPBC 2019/8575.

- The potential for the site to support threatened species Spotted-tailed Quoll (*Dasyurus maculatus*) and Greater Glider (*Petauroides volans*) is considered highly reduced, attributed to historical logging practices removing niche habitat features to support these species and the significant contraction of intact vegetation that has occurred in the surrounding areas to deliver urban development. No evidence of these species was detected on-site during targeted surveys.
- State listed threatened flora species *Leichhardtia coronata* (Slender Milkvine) and *Melaleuca irbyana* (Swamp Tea-tree) listed as vulnerable and endangered under the NCA, respectively, were recorded by SHG within the site. Clearing of these specimens, if unavoidable, will require the submission of a protected plants clearing permit under the NCA.
- Development will avoid and buffer ground-truthed areas of LRSA TEC which is listed as Critically Endangered under the EPBC Act. A 50 m buffer will be provided between the edge of the TEC and proposed works areas.
- The entirety of the site is mapped as State Koala habitat area, although is wholly located outside of a KPA. As the site is located within the Springfield Structure Plan area, impacts to Koala habitat area are exempted development under the PR Schedule 10 Part 10.
- Fisheries mapped waterways for WWBW are mapped adjoining the site which includes Woogaroo and Opossum Creeks and O'Dwyer's Gully. L*ow risk* waterway for WWBW (O'Dwyers Gully) is mapped as adjoining the eastern boundary of the site and a proposed road crossing proposes to intersect it at Mur Boulevard. While development is not proposing to impact waterways mapped under the *Fisheries Act 1994,* an assessment against the State Development Assessment Provisions State Code 18 may be required where the Accepted Development Requirements cannot be met for self-assessment.

7. References

Callaghan, J. and Rhodes, J. 2005. Koala Beach Estate Monitoring Program. Prepared for the Ray Group by the Australian Koala Foundation.

Eyre T. J. 2004. Distribution and conservation status of the possums and gliders of southern Queensland. In 'The Biology of Australian Possums and Gliders'. (Eds R. L. Goldingay and S. M. Jackson.) pp. 1–25.

Eyre, T. J. 2002. Habitat preferences and management of large gliding possums in southern Queensland. Ph.D. thesis, Southern Cross University, Lismore.

Hnatiuk, R.J., Thackway, R. and Walker, J. 2009. 'Vegetation', in National Committee on Soil and Terrain, Australian Soil and Land Survey Field Handbook, 3rd edition, CSIRO publishing, Melbourne, pp. 73–127.

Kavanagh, R.P., and Wheeler, R.J. 2004. Home range of the greater glider *Petauroides volans* in tall montane forest of southeastern New South Wales, and changes following logging. In The Biology of Australian Possums and Gliders (eds R. L. Goldingay & S. M. Jackson), pp. 413-425. Surrey Beatty and Sons, Sydney.

McLean, C., Varhammar, A. and Mikac, K. 2015. Use of motion-activated remote cameras to detect the endangered spotted-tailed quoll (*Dasyurus maculatus*): results from a pilot study. Australian Mammalogy, 37(1):113-115.

Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S., Butler, D.W., McDonald, W.J.F, Addicott, E.P. and Appelman, C.N. (2020) Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland. Version 5.1. Updated March 2020. Queensland Herbarium, Queensland Department of Environment and Science, Brisbane.

Phillips, S. and Callaghan, J. 2011, "The Spot Assessment Technique: a tools for determining localised levels of habitat use by Koala Phascolarctos cinereus", Australian Zoologist, 35:3.

Rhodes, J.R., Beyer, H., Preece, H., and McAlpine, C. 2015. South East Queensland Koala Population Modelling Study. Brisbane, Australia: UniQuest.

Rhodes, J.R., Chooi, F.N., deVilliers, D.L., Preece, H.J., McAlpine, C.A. and Possingham, H.P. 2011. Using integrated population modelling to quantify the implications of multiple threatening processes for a rapidly declining population. Biological Conservation 144 (3): 1081-1088.

Smith, G.C., Mathieson, M., Hogan, L. 2007. Home range and habitat use of a low-density population of greater gliders, *Petauroides volans* (Pseudocheiridae: Marsupialia), in a hollow-limiting environment. *Wildlife Research* 34, 472-483.

8. Appendices

Appendix A

RPS Structure Plan

Appendix B

Environment Protection and Biodiversity Conservation Act 1999

Protected Matters Search Tool Results

Appendix B

Nature Conservation Act 1992

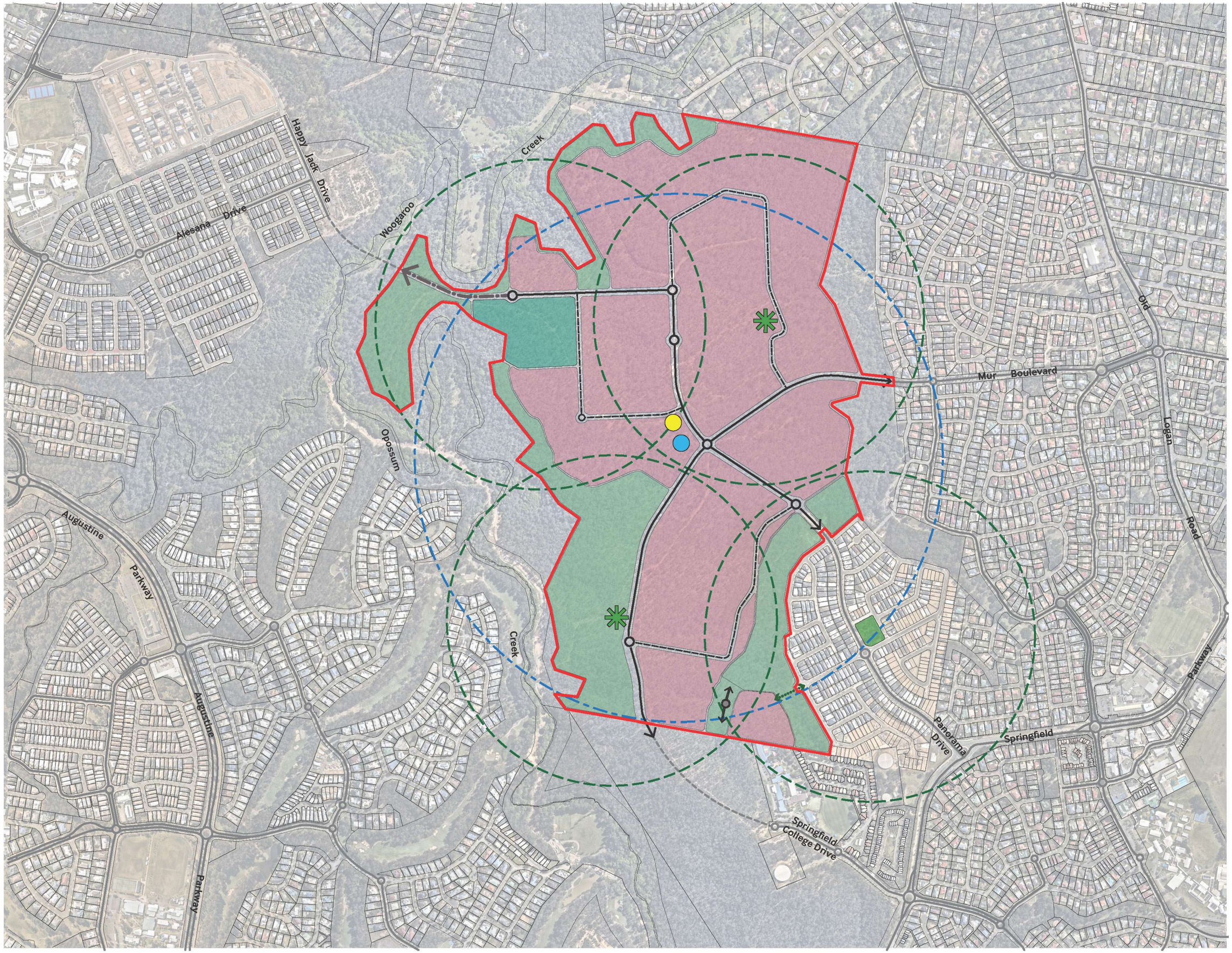
Wildlife Online Search Results

Appendix C

Koala Spot Assessment Technique survey results

Appendix A

RPS Structure Plan



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SPRINGVIEW

STRUCTURE PLAN VILLAGE 2 & 3

PLAN REF:	148947
DATE:	September 2023
CLIENT:	CHERISH
DRAWN BY:	PP
CHECKED BY:	WNW

LEGEND

- Site Boundary
- Residential Allotments
- Existing Vegetation to be retained
- Local Sports Park
- Existing Local Recreation Park
- Local Recreation Park
- 23m wide access major collector
- 17m wide collector
- Woogaroo Crossing (By others as per SIA)
- Local Centre
- Childcare
- 500m walking catchment from Active Open Space
- 800m walking catchment to Local Centre
- Location of Road Crossing subject to detailed design
- Potential Road / Emergency Crossing

DISCLAIMER

The contents of this plan are conceptual and for discussion purposes only. All areas and dimensions are approximate and subject to relevant studies, survey, engineering and Council approval.

The information used in this plan is drawn from the following sources:

Aerial: Nearmap
Site Boundaries: Registered Survey Plan
Cadastre: DCDB
Contours: QSpatial Lidar

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Appendix B

Environment Protection and Biodiversity Conservation Act 1999

Protected Matters Search Tool Results

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 19-Jun-2023

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

Caveat
Acknowledgements

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:	6
Listed Threatened Species:	74
Listed Migratory Species:	37

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:	5
Commonwealth Heritage Places:	1
Listed Marine Species:	43
Whales and Other Cetaceans:	1
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:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	28
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
Grey box-grey gum wet forest of subtropical eastern Australia	Endangered	Community may occur within area	In buffer area only
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
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
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may 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 likely 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
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area	In feature area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Critically Endangered	Species or species habitat may occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely 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
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Stagonopleura guttata](#) Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In feature area
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Thalassarche cauta](#) Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
[Thalassarche impavida](#) Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Thalassarche melanophris](#) Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Thalassarche salvini](#) Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Thalassarche steadi](#) White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Turnix melanogaster](#) Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area	In feature area
FISH			
[Epinephelus daemelii](#) Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Thunnus maccoyii](#) Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only
FROG			
[Mixophyes fleayi](#) Fleay's Frog [25960]	Endangered	Species or species habitat may occur within area	In buffer area only
INSECT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[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 hallucatus](#) Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	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 known to occur within area	In feature area
[Petaurus australis australis](#) Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Petrogale penicillata](#) Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[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 feature area
[Pseudomys novaehollandiae](#) New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[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
[Corchorus cunninghamii](#) Native Jute [14659]	Endangered	Species or species habitat may occur within area	In buffer area only
[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 feature area
[Cupaniopsis tomentella](#) Boonah Tuckeroo [3322]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
[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
[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

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 buffer area only
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			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
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
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat known to occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
SHARK			
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only

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
Ardenna grisea Sooty Shearwater [82651]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Marine Species			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Lepidochelys olivacea](#) Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat known to occur within area	In buffer area only
[Mobula alfredi as Manta alfredi](#) Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
[Mobula birostris as Manta birostris](#) Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area	In buffer area only
Migratory Terrestrial Species			
[Cuculus optatus](#) Oriental Cuckoo, Horsfield's Cuckoo [86651]		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	In feature area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[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
[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 known to occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat known 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 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
[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 likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Pandion haliaetus](#)			
Osprey [952]		Species or species habitat known to occur within area	In buffer area only
[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 [31007]	QLD	In buffer area only
Defence - GREENBANK TRAINING AREA [31006]	QLD	In buffer area only
Defence - GREENBANK TRAINING AREA [31015]	QLD	In buffer area only
Defence - GREENBANK TRAINING AREA [31011]	QLD	In buffer area only
Defence - GREENBANK TRAINING AREA [31008]	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 known to 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]		Species or species habitat may occur within area	In buffer area only
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 known 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
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to 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
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
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
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In buffer area only
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Pterodroma cervicalis White-necked Petrel [59642]		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 known to occur within area overfly marine area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Tringa nebularia			
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area	In feature area
Reptile			
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eretmochelys imbricata			
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Lepidochelys olivacea			
Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat known to occur within area	In buffer area only
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
White Rock	Conservation Park	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
Bellbird Park Primary School Development Project	2022/09296		Completed	In buffer area only
Controlled action				
Brentwood Residential Estate, Bellbird Park, Ipswich, QLD	2013/7074	Controlled Action	Post-Approval	In buffer area only
Casino Ipswich Pipeline	2007/3877	Controlled Action	Completed	In buffer area only
Defence Training Facilities at the Greenbank Training Area	2011/5896	Controlled Action	Post-Approval	In buffer area only
First Nine Master planned residential development, Brookwater, Qld	2016/7676	Controlled Action	Post-Approval	In buffer area only
Peninsula Precinct, Springfield, Queensland	2020/8629	Controlled Action	Further Information Request	In buffer area only
Residential Development, Collingwood Park, Ipswich, Qld	2019/8516	Controlled Action	Post-Approval	In buffer area only
Residential subdivision, Lot 901 and 902 Eugene St, Bellbird Park, Qld	2018/8350	Controlled Action	Assessment Approach	In buffer area only
Scenic Precinct Residential Development	2020/8651	Controlled Action	Further Information Request	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Springfield Residential Development	2019/8575	Controlled Action	Further Information Request	In feature area
Spring Mountain mixed use master planned community development, Springfield, Qld	2013/7057	Controlled Action	Post-Approval	In buffer area only
Springview Village One, Springfield, Ipswich City, QLD	2014/7306	Controlled Action	Post-Approval	In feature area
Vedanta Masterplanned Community, Springfield Lakes	2020/8802	Controlled Action	Further Information Request	In buffer area only
Woodlink Residential Community, 246-326 Collingwood Drive, Collingwood Park	2013/6866	Controlled Action	Post-Approval	In buffer area only
Woody Weed Removal at Woogaroo Creek	2007/3760	Controlled Action	Completed	In buffer area only
Woogaroo Heights master planned residential development, Springfield, Qld	2017/7875	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Bellbird Park State High School development, Redbank Plains, Qld	2014/7323	Not Controlled Action	Completed	In buffer area only
Goodna and Bundamba Sewage Treatment Plant Upgrades	2010/5612	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Logan Enhancement Project, Qld	2016/7683	Not Controlled Action	Completed	In buffer area only
New motorway alignment called the Goodna Bypass	2007/3648	Not Controlled Action	Completed	In buffer area only
Removal of Grey-headed Flying-fox Habitat	2005/2284	Not Controlled Action	Completed	In buffer area only
Roma to Brisbane Gas Transmission Pipeline Metropolitan Loop	2012/6660	Not Controlled Action	Completed	In buffer area only
South West Transport Corridor	2006/2547	Not Controlled Action	Completed	In feature area
Streambank Rehabilitation - Removal of woody weeds	2006/2658	Not Controlled Action	Completed	In buffer area only
Western Corridor Recycled Water Project/Bundamba 1B AWTP and	2006/3163	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Oxley-Bundamba Pipeline				
Not controlled action (particular manner)				
Construction & Operation 275/330kV Transmission Line	2006/2820	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Springfield Transport Corridor Project	2007/3214	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

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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Appendix B

Nature Conservation Act 1992

Wildlife Online Search Results

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: -27.6455
Longitude: 152.9041
Distance: 5
Email: amywestman@saundershavill.com
Date submitted: Monday 19 Jun 2023 09:56:55
Date extracted: Monday 19 Jun 2023 10:00:03

The number of records retrieved = 10

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Limnodynastidae	*Adelotus brevis*	tusked frog		V		7
animals	birds	Apodidae	*Hirundapus caudacutus*	white-throated needletail		V	V	2
animals	birds	Cacatuidae	*Calyptorhynchus lathami lathami*	glossy black-cockatoo (eastern)		V	V	2
animals	birds	Strigidae	*Ninox strenua*	powerful owl		V		70
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		E	E	224
animals	mammals	Pseudocheiridae	*Petauroides armillatus*	central greater glider		E	E	1
plants	land plants	Apocynaceae	*Leichhardtia coronata*			V		4/4
plants	land plants	Lamiaceae	*Coleus habrophyllus*			E	E	10/10
plants	land plants	Myrtaceae	*Eucalyptus curtisii*	Plunkett mallee		NT		4/4
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

Koala Spot Assessment Technique survey results

SAT Survey 1

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus fibrosa*	Broad-leaved Ironbark	450	Y
2	*Eucalyptus fibrosa*	Broad-leaved Ironbark	300	N
3	*Eucalyptus siderophloia*	Northern Grey Ironbark	350	N
4	*Eucalyptus fibrosa*	Broad-leaved Ironbark	380	N
5	*Eucalyptus fibrosa*	Broad-leaved Ironbark	130	Y
6	*Eucalyptus fibrosa*	Broad-leaved Ironbark	400	N
7	*Eucalyptus fibrosa*	Broad-leaved Ironbark	210	N
8	*Eucalyptus fibrosa*	Broad-leaved Ironbark	800	Y
9	*Eucalyptus fibrosa*	Broad-leaved Ironbark	150	N
10	*Eucalyptus fibrosa*	Broad-leaved Ironbark	350	Y
11	*Eucalyptus fibrosa*	Broad-leaved Ironbark	300	N
12	*Eucalyptus fibrosa*	Broad-leaved Ironbark	100	N
13	*Eucalyptus fibrosa*	Broad-leaved Ironbark	200	N
14	*Eucalyptus siderophloia*	Northern Grey Ironbark	100	Y
15	*Eucalyptus fibrosa*	Broad-leaved Ironbark	230	N
16	*Eucalyptus fibrosa*	Broad-leaved Ironbark	280	N
17	*Eucalyptus fibrosa*	Broad-leaved Ironbark	200	N
18	*Eucalyptus fibrosa*	Broad-leaved Ironbark	230	Y
19	*Eucalyptus fibrosa*	Broad-leaved Ironbark	160	N
20	*Eucalyptus fibrosa*	Broad-leaved Ironbark	180	N
21	*Eucalyptus fibrosa*	Broad-leaved Ironbark	240	Y
22	*Eucalyptus siderophloia*	Northern Grey Ironbark	550	N
23	*Eucalyptus fibrosa*	Broad-leaved Ironbark	420	N
24	*Eucalyptus fibrosa*	Broad-leaved Ironbark	180	Y
25	*Eucalyptus fibrosa*	Broad-leaved Ironbark	200	N
26	*Eucalyptus fibrosa*	Broad-leaved Ironbark	150	Y
27	*Eucalyptus fibrosa*	Broad-leaved Ironbark	250	Y
28	*Eucalyptus fibrosa*	Broad-leaved Ironbark	250	N
29	*Eucalyptus fibrosa*	Broad-leaved Ironbark	210	Y
30	*Eucalyptus fibrosa*	Broad-leaved Ironbark	250	N
	Total scat			**11**
	Total percentage			**36.67 %**

SAT Survey 2

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Corymbia citriodora*	Spotted Gum	150	N
2	*Eucalyptus fibrosa*	Broad-leaved Ironbark	230	N
3	*Eucalyptus moluccana*	Gum-topped Box	180	N
4	*Eucalyptus fibrosa*	Broad-leaved Ironbark	150	N
5	*Eucalyptus fibrosa*	Broad-leaved Ironbark	120	N
6	*Eucalyptus fibrosa*	Broad-leaved Ironbark	130	N
7	*Eucalyptus fibrosa*	Broad-leaved Ironbark	180	N
8	*Eucalyptus fibrosa*	Broad-leaved Ironbark	280	N
9	*Eucalyptus fibrosa*	Broad-leaved Ironbark	400	N
10	*Eucalyptus fibrosa*	Broad-leaved Ironbark	130	N
11	*Eucalyptus moluccana*	Gum-topped Box	120	N
12	*Eucalyptus fibrosa*	Broad-leaved Ironbark	420	N
13	*Eucalyptus fibrosa*	Broad-leaved Ironbark	390	N
14	*Eucalyptus moluccana*	Gum-topped Box	150	N
15	*Eucalyptus fibrosa*	Broad-leaved Ironbark	500	N
16	*Eucalyptus fibrosa*	Broad-leaved Ironbark	130	N
17	*Eucalyptus moluccana*	Gum-topped Box	180	N
18	*Eucalyptus moluccana*	Gum-topped Box	230	N
19	*Eucalyptus fibrosa*	Broad-leaved Ironbark	110	N
20	*Eucalyptus fibrosa*	Broad-leaved Ironbark	110	Y
21	*Eucalyptus moluccana*	Gum-topped Box	230	N
22	*Eucalyptus fibrosa*	Broad-leaved Ironbark	500	N
23	*Corymbia citriodora*	Spotted Gum	100	Y
24	*Eucalyptus fibrosa*	Broad-leaved Ironbark	100	N
25	*Eucalyptus fibrosa*	Broad-leaved Ironbark	200	N
26	*Eucalyptus fibrosa*	Broad-leaved Ironbark	270	N
27	*Eucalyptus fibrosa*	Broad-leaved Ironbark	170	Y
28	*Eucalyptus fibrosa*	Broad-leaved Ironbark	250	N
29	*Eucalyptus fibrosa*	Broad-leaved Ironbark	150	N
30	*Eucalyptus fibrosa*	Broad-leaved Ironbark	130	N
		Total scat		**3**
		Total percentage		**10.00 %**

SAT Survey 3

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus fibrosa*	Broad-leaved Ironbark	140	N
2	*Eucalyptus fibrosa*	Broad-leaved Ironbark	370	N
3	*Eucalyptus fibrosa*	Broad-leaved Ironbark	470	N
4	*Eucalyptus fibrosa*	Broad-leaved Ironbark	260	N
5	*Eucalyptus fibrosa*	Broad-leaved Ironbark	200	N
6	*Eucalyptus fibrosa*	Broad-leaved Ironbark	240	N
7	*Eucalyptus fibrosa*	Broad-leaved Ironbark	160	N
8	*Eucalyptus fibrosa*	Broad-leaved Ironbark	100	N
9	*Eucalyptus fibrosa*	Broad-leaved Ironbark	410	N
10	*Eucalyptus fibrosa*	Broad-leaved Ironbark	150	N
11	*Eucalyptus crebra*	Narrow-leaved Ironbark	260	N
12	*Eucalyptus fibrosa*	Broad-leaved Ironbark	240	N
13	*Eucalyptus moluccana*	Gum-topped Box	130	N
14	*Eucalyptus moluccana*	Gum-topped Box	100	N
15	*Eucalyptus fibrosa*	Broad-leaved Ironbark	360	N
16	*Eucalyptus fibrosa*	Broad-leaved Ironbark	380	N
17	*Eucalyptus moluccana*	Gum-topped Box	110	N
18	*Eucalyptus fibrosa*	Broad-leaved Ironbark	330	N
19	*Corymbia citriodora*	Spotted Gum	130	N
20	*Corymbia citriodora*	Spotted Gum	110	N
21	*Eucalyptus fibrosa*	Broad-leaved Ironbark	170	N
22	*Eucalyptus fibrosa*	Broad-leaved Ironbark	180	N
23	*Eucalyptus fibrosa*	Broad-leaved Ironbark	300	N
24	*Eucalyptus fibrosa*	Broad-leaved Ironbark	140	N
25	*Corymbia citriodora*	Spotted Gum	100	N
26	*Eucalyptus fibrosa*	Broad-leaved Ironbark	100	N
27	*Eucalyptus fibrosa*	Broad-leaved Ironbark	400	N
28	*Eucalyptus fibrosa*	Broad-leaved Ironbark	110	N
29	*Eucalyptus fibrosa*	Broad-leaved Ironbark	300	Y
30	*Eucalyptus moluccana*	Gum-topped Box	200	Y
	Total scat			**2**
	Total percentage			**6.67 %**

SAT Survey 4

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus moluccana*	Gum-topped Box	380	Y
2	*Eucalyptus moluccana*	Gum-topped Box	150	N
3	*Eucalyptus moluccana*	Gum-topped Box	160	N
4	*Eucalyptus fibrosa*	Broad-leaved Ironbark	400	N
5	*Corymbia citriodora*	Spotted Gum	110	N
6	*Eucalyptus moluccana*	Gum-topped Box	110	N
7	*Corymbia citriodora*	Spotted Gum	120	N
8	*Eucalyptus fibrosa*	Broad-leaved Ironbark	130	N
9	*Eucalyptus fibrosa*	Broad-leaved Ironbark	150	N
10	*Eucalyptus moluccana*	Gum-topped Box	180	N
11	*Eucalyptus moluccana*	Gum-topped Box	100	N
12	*Eucalyptus fibrosa*	Broad-leaved Ironbark	450	Y
13	*Eucalyptus moluccana*	Gum-topped Box	230	N
14	*Eucalyptus fibrosa*	Broad-leaved Ironbark	510	N
15	*Eucalyptus moluccana*	Gum-topped Box	200	N
16	*Corymbia citriodora*	Spotted Gum	130	N
17	*Eucalyptus moluccana*	Gum-topped Box	230	N
18	*Eucalyptus moluccana*	Gum-topped Box	210	N
19	*Eucalyptus moluccana*	Gum-topped Box	170	N
20	*Corymbia citriodora*	Spotted Gum	170	N
21	*Eucalyptus moluccana*	Gum-topped Box	350	N
22	*Eucalyptus moluccana*	Gum-topped Box	130	N
23	*Eucalyptus moluccana*	Gum-topped Box	390	N
24	*Eucalyptus moluccana*	Gum-topped Box	100	N
25	*Eucalyptus moluccana*	Gum-topped Box	120	N
26	*Corymbia citriodora*	Spotted Gum	100	N
27	*Corymbia citriodora*	Spotted Gum	150	N
28	*Eucalyptus fibrosa*	Broad-leaved Ironbark	280	N
29	*Eucalyptus moluccana*	Gum-topped Box	300	N
30	*Eucalyptus moluccana*	Gum-topped Box	280	N
	Total scat			**2**
	Total percentage			**6.67 %**

SAT Survey 5

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus moluccana*	Gum-topped Box	260	N
2	*Eucalyptus moluccana*	Gum-topped Box	250	N
3	*Eucalyptus moluccana*	Gum-topped Box	270	N
4	*Eucalyptus siderophloia*	Northern Grey Ironbark	150	N
5	*Corymbia citriodora*	Spotted Gum	120	N
6	*Corymbia intermedia*	Pink Bloodwood	180	N
7	*Corymbia citriodora*	Spotted Gum	110	N
8	*Eucalyptus moluccana*	Gum-topped Box	190	N
9	*Eucalyptus siderophloia*	Northern Grey Ironbark	210	N
10	*Eucalyptus siderophloia*	Northern Grey Ironbark	250	Y
11	*Angophora leiocarpa*	Smooth-barked Apple	310	Y
12	*Corymbia citriodora*	Spotted Gum	100	N
13	*Corymbia intermedia*	Pink Bloodwood	150	N
14	*Corymbia citriodora*	Spotted Gum	140	Y
15	*Eucalyptus siderophloia*	Northern Grey Ironbark	350	N
16	*Corymbia citriodora*	Spotted Gum	280	Y
17	*Corymbia citriodora*	Spotted Gum	200	N
18	*Eucalyptus siderophloia*	Northern Grey Ironbark	310	N
19	*Eucalyptus siderophloia*	Northern Grey Ironbark	420	Y
20	*Eucalyptus siderophloia*	Northern Grey Ironbark	250	N
21	*Corymbia citriodora*	Spotted Gum	150	N
22	*Corymbia citriodora*	Spotted Gum	110	N
23	*Corymbia citriodora*	Spotted Gum	150	N
24	*Eucalyptus moluccana*	Gum-topped Box	300	N
25	*Corymbia citriodora*	Spotted Gum	140	N
26	*Eucalyptus moluccana*	Gum-topped Box	210	N
27	*Corymbia intermedia*	Pink Bloodwood	130	N
28	*Corymbia citriodora*	Spotted Gum	210	N
29	*Corymbia citriodora*	Spotted Gum	310	N
30	*Corymbia intermedia*	Pink Bloodwood	100	N
	Total scat			**5**
	Total percentage			**16.67 %**

SAT Survey 6

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus fibrosa*	Broad-leaved Ironbark	220	Y
2	*Eucalyptus siderophloia*	Northern Grey Ironbark	250	N
3	*Eucalyptus fibrosa*	Broad-leaved Ironbark	170	Y
4	*Corymbia citriodora*	Spotted Gum	190	N
5	*Corymbia citriodora*	Spotted Gum	100	N
6	*Eucalyptus fibrosa*	Broad-leaved Ironbark	120	N
7	*Corymbia citriodora*	Spotted Gum	110	N
8	*Eucalyptus moluccana*	Gum-topped Box	190	N
9	*Eucalyptus siderophloia*	Northern Grey Ironbark	200	N
10	*Corymbia citriodora*	Spotted Gum	200	N
11	*Eucalyptus moluccana*	Gum-topped Box	190	N
12	*Eucalyptus moluccana*	Gum-topped Box	180	N
13	*Eucalyptus siderophloia*	Northern Grey Ironbark	100	N
14	*Eucalyptus moluccana*	Gum-topped Box	110	N
15	*Corymbia citriodora*	Spotted Gum	110	N
16	*Eucalyptus siderophloia*	Northern Grey Ironbark	260	N
17	*Eucalyptus siderophloia*	Northern Grey Ironbark	250	N
18	*Eucalyptus siderophloia*	Northern Grey Ironbark	270	Y
19	*Corymbia citriodora*	Spotted Gum	250	N
20	*Eucalyptus siderophloia*	Northern Grey Ironbark	120	N
21	*Eucalyptus siderophloia*	Northern Grey Ironbark	380	N
22	*Corymbia citriodora*	Spotted Gum	200	N
23	*Corymbia citriodora*	Spotted Gum	100	N
24	*Eucalyptus siderophloia*	Northern Grey Ironbark	100	N
25	*Eucalyptus moluccana*	Gum-topped Box	200	N
26	*Eucalyptus moluccana*	Gum-topped Box	120	N
27	*Eucalyptus moluccana*	Gum-topped Box	110	N
28	*Corymbia citriodora*	Spotted Gum	120	N
29	*Eucalyptus moluccana*	Gum-topped Box	110	N
30	*Eucalyptus siderophloia*	Northern Grey Ironbark	100	N
		Total scat		**3**
		Total percentage		**10.00 %**

SAT Survey 7

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus moluccana*	Gum-topped Box	160	N
2	*Eucalyptus moluccana*	Gum-topped Box	200	N
3	*Eucalyptus moluccana*	Gum-topped Box	200	N
4	*Eucalyptus moluccana*	Gum-topped Box	210	N
5	*Eucalyptus fibrosa*	Broad-leaved Ironbark	110	N
6	*Eucalyptus moluccana*	Gum-topped Box	200	N
7	*Eucalyptus moluccana*	Gum-topped Box	140	N
8	*Eucalyptus fibrosa*	Broad-leaved Ironbark	120	N
9	*Eucalyptus moluccana*	Gum-topped Box	130	N
10	*Eucalyptus fibrosa*	Broad-leaved Ironbark	120	N
11	*Eucalyptus fibrosa*	Broad-leaved Ironbark	280	N
12	*Eucalyptus moluccana*	Gum-topped Box	130	N
13	*Eucalyptus moluccana*	Gum-topped Box	130	N
14	*Eucalyptus moluccana*	Gum-topped Box	380	N
15	*Eucalyptus moluccana*	Gum-topped Box	100	N
16	*Eucalyptus fibrosa*	Broad-leaved Ironbark	200	N
17	*Eucalyptus moluccana*	Gum-topped Box	250	N
18	*Eucalyptus moluccana*	Gum-topped Box	120	N
19	*Eucalyptus moluccana*	Gum-topped Box	250	N
20	*Eucalyptus fibrosa*	Broad-leaved Ironbark	170	N
21	*Eucalyptus fibrosa*	Broad-leaved Ironbark	180	N
22	*Eucalyptus fibrosa*	Broad-leaved Ironbark	100	Y
23	*Eucalyptus fibrosa*	Broad-leaved Ironbark	200	N
24	*Eucalyptus moluccana*	Gum-topped Box	100	N
25	*Eucalyptus fibrosa*	Broad-leaved Ironbark	210	N
26	*Eucalyptus moluccana*	Gum-topped Box	180	N
27	*Eucalyptus moluccana*	Gum-topped Box	300	Y
28	*Eucalyptus moluccana*	Gum-topped Box	280	N
29	*Eucalyptus moluccana*	Gum-topped Box	250	N
30	*Eucalyptus fibrosa*	Broad-leaved Ironbark	120	N
		Total scat		**2**
		Total percentage		**6.67 %**

SAT Survey 8

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus siderophloia*	Northern Grey Ironbark	200	N
2	*Corymbia intermedia*	Pink Bloodwood	100	N
3	*Eucalyptus siderophloia*	Northern Grey Ironbark	220	Y
4	*Eucalyptus propinqua*	Grey Gum	210	N
5	*Eucalyptus propinqua*	Grey Gum	200	N
6	*Eucalyptus propinqua*	Grey Gum	100	N
7	*Eucalyptus propinqua*	Grey Gum	170	N
8	*Eucalyptus propinqua*	Grey Gum	170	N
9	*Eucalyptus propinqua*	Grey Gum	250	Y
10	*Eucalyptus tereticornis*	Forest Red Gum	100	N
11	*Eucalyptus tereticornis*	Forest Red Gum	180	N
12	*Eucalyptus tereticornis*	Forest Red Gum	160	N
13	*Corymbia intermedia*	Pink Bloodwood	150	N
14	*Corymbia intermedia*	Pink Bloodwood	190	N
15	*Eucalyptus propinqua*	Grey Gum	130	N
16	*Eucalyptus siderophloia*	Northern Grey Ironbark	220	N
17	*Eucalyptus seeana*	Narrow-leaved Red Gum	310	Y
18	*Corymbia intermedia*	Pink Bloodwood	100	N
19	*Corymbia intermedia*	Pink Bloodwood	100	N
20	*Eucalyptus siderophloia*	Northern Grey Ironbark	310	N
21	*Eucalyptus propinqua*	Grey Gum	150	N
22	*Corymbia intermedia*	Pink Bloodwood	120	N
23	*Eucalyptus seeana*	Narrow-leaved Red Gum	160	N
24	*Eucalyptus seeana*	Narrow-leaved Red Gum	450	N
25	*Eucalyptus propinqua*	Grey Gum	150	N
26	*Eucalyptus seeana*	Narrow-leaved Red Gum	180	N
27	*Eucalyptus siderophloia*	Northern Grey Ironbark	290	N
28	*Corymbia intermedia*	Pink Bloodwood	230	N
29	*Corymbia intermedia*	Pink Bloodwood	170	N
30	*Corymbia intermedia*	Pink Bloodwood	180	N
	Total scat			**3**
	Total percentage			**10.00 %**

SAT 9

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	220	N
2	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	190	N
3	*Eucalyptus moluccana*	Gum-topped Box	290	N
4	*Eucalyptus moluccana*	Gum-topped Box	440	N
5	*Eucalyptus moluccana*	Gum-topped Box	280	N
6	*Eucalyptus moluccana*	Gum-topped Box	320	N
7	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	220	N
8	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	370	N
9	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	280	N
10	*Corymbia citriodora*	Spotted Gum	280	N
11	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	180	N
12	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	190	N
13	*Eucalyptus moluccana*	Gum-topped Box	360	N
14	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	170	N
15	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	270	N
16	*Eucalyptus moluccana*	Gum-topped Box	200	N
17	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	140	N
18	*Eucalyptus moluccana*	Gum-topped Box	210	N
19	*Eucalyptus moluccana*	Gum-topped Box	150	N
20	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	270	N
21	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	450	N
22	*Corymbia citriodora*	Spotted Gum	310	N
23	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	220	N
24	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	130	N
25	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	240	N
26	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	160	N
27	*Eucalyptus moluccana*	Gum-topped Box	150	N
28	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	140	N
29	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	220	N
30	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	330	N
		Total scat		**0**
		Total percentage		**0.00 %**

SAT 10

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus sideroploia*	Grey Ironbark	260	N
2	*Eucalyptus moluccana*	Gum-topped Box	350	N
3	*Corymbia citriodora*	Spotted Gum	160	N
4	*Eucalyptus siderophloia*	Grey Ironbark	220	N
5	*Eucalyptus moluccana*	Gum-topped Box	210	N
6	*Eucalyptus moluccana*	Gum-topped Box	310	N
7	*Eucalyptus siderophloia*	Grey Ironbark	180	N
8	*Eucalyptus moluccana*	Gum-topped Box	120	N
9	*Corymbia citriodora*	Spotted Gum	170	N
10	*Eucalyptus moluccana*	Gum-topped Box	220	N
11	*Eucalyptus moluccana*	Gum-topped Box	160	N
12	*Eucalyptus siderophloia*	Grey Ironbark	280	N
13	*Corymbia citriodora*	Spotted Gum	150	N
14	*Eucalyptus moluccana*	Gum-topped Box	300	N
15	*Eucalyptus moluccana*	Gum-topped Box	320	N
16	*Eucalyptus siderophloia*	Grey Ironbark	290	N
17	*Eucalyptus moluccana*	Gum-topped Box	270	N
18	*Corymbia citriodora*	Spotted Gum	180	N
19	*Eucalyptus siderophloia*	Grey Ironbark	350	N
20	*Eucalyptus siderophloia*	Grey Ironbark	200	N
21	*Eucalyptus moluccana*	Gum-topped Box	330	N
22	*Eucalyptus siderophloia*	Grey Ironbark	320	N
23	*Eucalyptus tereticornis*	Forest Red Gum	120	N
24	*Eucalyptus moluccana*	Gum-topped Box	190	N
25	*Eucalyptus siderophloia*	Grey Ironbark	240	N
26	*Eucalyptus moluccana*	Gum-topped Box	140	N
27	*Eucalyptus siderophloia*	Grey Ironbark	240	N
28	*Eucalyptus siderophloia*	Grey Ironbark	140	N
29	*Eucalyptus siderophloia*	Grey Ironbark	280	N
30	*Eucalyptus siderophloia*	Grey Ironbark	220	Y
	Total scat			**1**
	Total percentage			**3.33 %**

SAT 11

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Corymbia citriodora*	Spotted Gum	300	N
2	*Corymbia citriodora*	Spotted Gum	400	N
3	*Eucalyptus molucanna*	Gum-topped Box	270	N
4	*Eucalyptus molucanna*	Gum-topped Box	250	N
5	*Eucalyptus molucanna*	Gum-topped Box	200	N
6	*Corymbia citriodora*	Spotted Gum	350	N
7	*Eucalyptus molucanna*	Gum-topped Box	360	N
8	*Corymbia citriodora*	Spotted Gum	140	N
9	*Eucalyptus molucanna*	Gum-topped Box	150	N
10	*Eucalyptus molucanna*	Gum-topped Box	420	N
11	*Eucalyptus molucanna*	Gum-topped Box	310	N
12	*Eucalyptus molucanna*	Gum-topped Box	180	N
13	*Corymbia citriodora*	Spotted Gum	330	N
14	*Eucalyptus molucanna*	Gum-topped Box	270	N
15	*Eucalyptus siderophloia*	Grey Ironbark	210	N
16	*Corymbia citriodora*	Spotted Gum	220	Y
17	*Eucalyptus molucanna*	Gum-topped Box	280	N
18	*Eucalyptus molucanna*	Gum-topped Box	290	N
19	*Eucalyptus molucanna*	Gum-topped Box	420	N
20	*Corymbia citriodora*	Spotted Gum	220	N
21	*Corymbia citriodora*	Spotted Gum	140	N
22	*Corymbia citriodora*	Spotted Gum	180	N
23	*Corymbia citriodora*	Spotted Gum	200	N
24	*Eucalyptus molucanna*	Gum-topped Box	230	N
25	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	630	N
26	*Eucalyptus molucanna*	Gum-topped Box	170	N
27	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	600	N
28	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	530	Y
29	*Eucalyptus molucanna*	Gum-topped Box	200	N
30	*Eucalyptus molucanna*	Gum-topped Box	200	N
	Total scat			**2**
	Total percentage			**6.67 %**

SAT 12

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	390	N
2	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	330	N
3	*Eucalyptus propinqua*	Grey Gum	180	N
4	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	100	N
5	*Corymbia intermedia*	Pink Bloodwood	110	N
6	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	230	N
7	*Corymbia citriodora*	Spotted Gum	140	N
8	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	320	N
9	*Eucalyptus propinqua*	Grey Gum	180	N
10	*Corymbia intermedia*	Pink Bloodwood	120	N
11	*Eucalyptus siderophloia*	Grey Ironbark	300	N
12	*Eucalyptus sideroploia*	Grey Ironbark	300	N
13	*Angophora leiocarpa*	Smooth-barked Apple	150	N
14	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	140	N
15	*Corymbia intermedia*	Pink Bloodwood	170	N
16	*Corymbia intermedia*	Pink Bloodwood	150	N
17	*Corymbia intermedia*	Pink Bloodwood	110	N
18	*Corymbia intermedia*	Pink Bloodwood	130	N
19	*Corymbia intermedia*	Pink Bloodwood	170	N
20	*Corymbia citriodora*	Spotted Gum	130	N
21	*Corymbia intermedia*	Pink Bloodwood	170	N
22	*Corymbia intermedia*	Pink Bloodwood	170	N
23	*Corymbia intermedia*	Pink Bloodwood	130	N
24	*Eucalyptus propinqua*	Grey Gum	200	N
25	*Eucalyptus siderophloia*	Grey Ironbark	290	N
26	*Corymbia intermedia*	Pink Bloodwood	100	N
27	*Corymbia intermedia*	Pink Bloodwood	150	N
28	*Eucalyptus propinqua*	Grey Gum	100	N
29	*Angophora leiocarpa*	Smooth-barked Apple	200	N
30	*Corymbia intermedia*	Pink Bloodwood	120	N
	Total scat			**0**
	Total percentage			**0.00 %**

SAT 13

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	310	N
2	*Eucalyptus propinqua*	Grey Gum	100	N
3	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	160	N
4	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	180	N
5	*Corymbia intermedia*	Pink Bloodwood	100	N
6	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	220	N
7	*Corymbia citriodora*	Spotted Gum	220	N
8	*Eucalyptus moluccana*	Gum-topped Box	140	N
9	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	300	N
10	*Corymbia citriodora*	Spotted Gum	120	N
11	*Corymbia citriodora*	Spotted Gum	120	N
12	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	220	N
13	*Eucalyptus propinqua*	Grey Gum	140	N
14	*Corymbia citriodora*	Spotted Gum	160	N
15	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	170	N
16	*Eucalyptus propinqua*	Grey Gum	170	N
17	*Eucalyptus propinqua*	Grey Gum	180	N
18	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	220	**Y**
19	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	180	N
20	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	270	N
21	*Eucalyptus propinqua*	Grey Gum	130	N
22	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	170	N
23	*Corymbia citriodora*	Spotted Gum	140	N
24	*Corymbia citriodora*	Spotted Gum	170	**Y**
25	*Corymbia citriodora*	Spotted Gum	170	N
26	*Corymbia citriodora*	Spotted Gum	220	N
27	*Corymbia intermedia*	Pink Bloodwood	150	N
28	*Eucalyptus moluccana*	Gum-topped Box	220	N
29	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	200	N
30	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	200	N
		Total scat		**2**
		Total percentage		**6.67 %**

SAT 14

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	240	**Y**
2	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	220	**Y**
3	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	140	N
4	*Eucalyptus moluccana*	Gum-topped Box	240	**Y**
5	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	160	**Y**
6	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	100	N
7	*Corymbia citriodora*	Spotted Gum	150	N
8	*Eucalyptus moluccana*	Gum-topped Box	260	N
9	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	360	N
10	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	100	N
11	*Corymbia citriodora*	Spotted Gum	130	N
12	*Eucalyptus moluccana*	Gum-topped Box	100	N
13	*Eucalyptus moluccana*	Gum-topped Box	100	N
14	*Eucalyptus moluccana*	Gum-topped Box	100	N
15	*Eucalyptus moluccana*	Gum-topped Box	260	**Y**
16	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	110	N
17	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	260	N
18	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	160	N
19	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	250	N
20	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	120	N
21	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	100	N
22	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	110	N
23	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	100	N
24	*Corymbia citriodora*	Spotted Gum	210	N
25	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	250	N
26	*Corymbia citriodora*	Spotted Gum	200	N
27	*Corymbia citriodora*	Spotted Gum	200	N
28	*Eucalyptus moluccana*	Gum-topped Box	250	N
29	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	230	N
30	*Eucalyptus fibrosa*	Broad-leaved Red Ironbark	130	N
		Total scat		**5**
		Total percentage		**16.67 %**

SAT 15

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus fibrosa*	Broad-leaved Ironbark	400	N
2	*Angophora leiocarpa*	Smooth-barked Apple	180	N
3	*Eucalyptus fibrosa*	Broad-leaved Ironbark	550	N
4	*Angophora leiocarpa*	Smooth-barked Apple	150	N
5	*Eucalyptus fibrosa*	Broad-leaved Ironbark	250	250N
6	*Corymbia intermedia*	Pink Bloodwood	230	N
7	*Corymbia intermedia*	Pink Bloodwood	280	N
8	*Corymbia intermedia*	Pink Bloodwood	170	N
9	*Corymbia intermedia*	Pink Bloodwood	160	N
10	*Eucalyptus seeana*	Narrow-leaved Red Gum	100	N
11	*Lophostemon suaveolens*	Swamp Box	100	N
12	*Corymbia intermedia*	Pink Bloodwood	190	N
13	*Corymbia intermedia*	Pink Bloodwood	100	N
14	*Lophostemon suaveolens*	Swamp Box	100	N
15	*Eucalyptus seeana*	Narrow-leaved Red Gum	190	N
16	*Eucalyptus fibrosa*	Broad-leaved Ironbark	380	N
17	*Corymbia intermedia*	Pink Bloodwood	150	N
18	*Corymbia intermedia*	Pink Bloodwood	100	N
19	*Corymbia intermedia*	Pink Bloodwood	160	N
20	*Eucalyptus fibrosa*	Broad-leaved Ironbark	350	N
21	*Corymbia intermedia*	Pink Bloodwood	260	N
22	*Eucalyptus propinqua*	Grey Gum	130	N
23	*Eucalyptus fibrosa*	Broad-leaved Ironbark	220	N
24	*Eucalyptus fibrosa*	Broad-leaved Ironbark	100	N
25	*Eucalyptus fibrosa*	Broad-leaved Ironbark	340	N
26	*Eucalyptus fibrosa*	Broad-leaved Ironbark	440	N
27	*Eucalyptus fibrosa*	Broad-leaved Ironbark	370	N
28	*Eucalyptus fibrosa*	Broad-leaved Ironbark	160	N
29	*Eucalyptus fibrosa*	Broad-leaved Ironbark	240	N
30	*Eucalyptus fibrosa*	Broad-leaved Ironbark	300	N
		Total scat		**0**
		Total percentage		**0.00 %**

SAT 16

Number of trees	Botanical name	Common name	DBH	Scat present (Y / N)
1	*Eucalyptus fibrosa*	Broad-leaved Ironbark	500	N
2	*Eucalyptus fibrosa*	Broad-leaved Ironbark	220	N
3	*Angophora leiocarpa*	Smooth-barked Apple	180	N
4	*Angophora leiocarpa*	Smooth-barked Apple	130	N
5	*Corymbia citriodora*	Spotted Gum	200	250N
6	*Corymbia citriodora*	Spotted Gum	100	N
7	*Corymbia citriodora*	Spotted Gum	150	N
8	*Eucalyptus fibrosa*	Broad-leaved Ironbark	220	N
9	*Angophora leiocarpa*	Smooth-barked Apple	280	N
10	*Lophostemon suaveolens*	Swamp Box	120	N
11	*Lophostemon suaveolens*	Swamp Box	140	N
12	*Eucalyptus fibrosa*	Broad-leaved Ironbark	170	N
13	*Eucalyptus propinqua*	Grey Gum	100	N
14	*Eucalyptus tereticornis*	Forest Red Gum	130	N
15	*Eucalyptus tereticornis*	Forest Red Gum	100	N
16	*Eucalyptus tereticornis*	Forest Red Gum	220	N
17	*Eucalyptus propinqua*	Grey Gum	150	150N
18	*Corymbia citriodora*	Spotted Gum	100	N
19	*Eucalyptus tereticornis*	Forest Red Gum	120	170N
20	*Angophora leiocarpa*	Smooth-barked Apple	200	N
21	*Corymbia citriodora*	Spotted Gum	390	N
22	*Corymbia citriodora*	Spotted Gum	140	N
23	*Angophora leiocarpa*	Smooth-barked Apple	300	N
24	*Eucalyptus fibrosa*	Broad-leaved Ironbark	280	N
25	*Eucalyptus fibrosa*	Broad-leaved Ironbark	250	N
26	*Eucalyptus fibrosa*	Broad-leaved Ironbark	300	N
27	*Eucalyptus fibrosa*	Broad-leaved Ironbark	320	N
28	*Eucalyptus fibrosa*	Broad-leaved Ironbark	350	N
29	*Eucalyptus fibrosa*	Broad-leaved Ironbark	160	N
30	*Eucalyptus fibrosa*	Broad-leaved Ironbark	100	N
		Total scat		**0**
		Total percentage		**0.00 %**