

Ecological Assessment Report

41-53 Courtney Drive, Upper Coomera, Queensland, 4209
Prepared for Norfolk Estates Pty Ltd
9 December 2024

Job 11694

saunders havill group

Document Control

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Acronyms and abbreviations

CGC	City of Gold Coast
DAF	Department of Agriculture and Fisheries
EAR	Ecological Assessment Report
EPBC	Environment Protection and Biodiversity Conservation Act 1999 (Cth)
EVNT	Endangered, Vulnerable or Near Threatened as listed under the NCA
KHA	Koala Habitat Area
MCU	Material Change of Use
MLES	Matters of Local Environmental Significance
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)
PMAV	Property Map of Assessable Vegetation
PMST	Protected Matters Search Tool
ROL	Reconfiguration of a Lot
SAT	Spot Assessment Technique
SHG	Saunders Havill Group
SPP	*State Planning Policy 2017* (Qld)
SRI	Significant Residual Impact
TEC	Threatened Ecological Community
VMA	*Vegetation Management Act 1999* (Qld)
VCFMP	Vegetation Clearing and Fauna Management Plan

1 Introduction

Saunders Havill Group was engaged by Norfolk Estates Pty Ltd to prepare an Ecological Assessment Report (EAR) for land located at Courtney Drive, Upper Coomera, described as Lot 183 on RP156422, Lot 185 on RP173727, Lot 186 on RP173728, Lot 56 on RP162858, Lot 57 on SP214370 and part of Lot 58 on SP191940. Notably, the area on Lot 58 is proposed as a land swap with the adjacent development. The report accompanies a development application to City of Gold Coast (CGC) and provides a review of the site ecological values with reference to Commonwealth, State and Local legislation.

Contextually, the site is located approximately 15.8 kilometres (km) north-east of Southport, in the suburb of Upper Coomera (refer **Figure 1** and **Figure 2**). Situated south of Courtney Drive and Baileys Mountain Road and north of Reserve Road, surrounding land uses consist of similarly sized rural residential lots, higher density residential developments and patches of vacant bushland. On-site values were typical of rural residential lots, being highly modified/cleared areas dominated by weeds and patches of native and exotic canopy species.

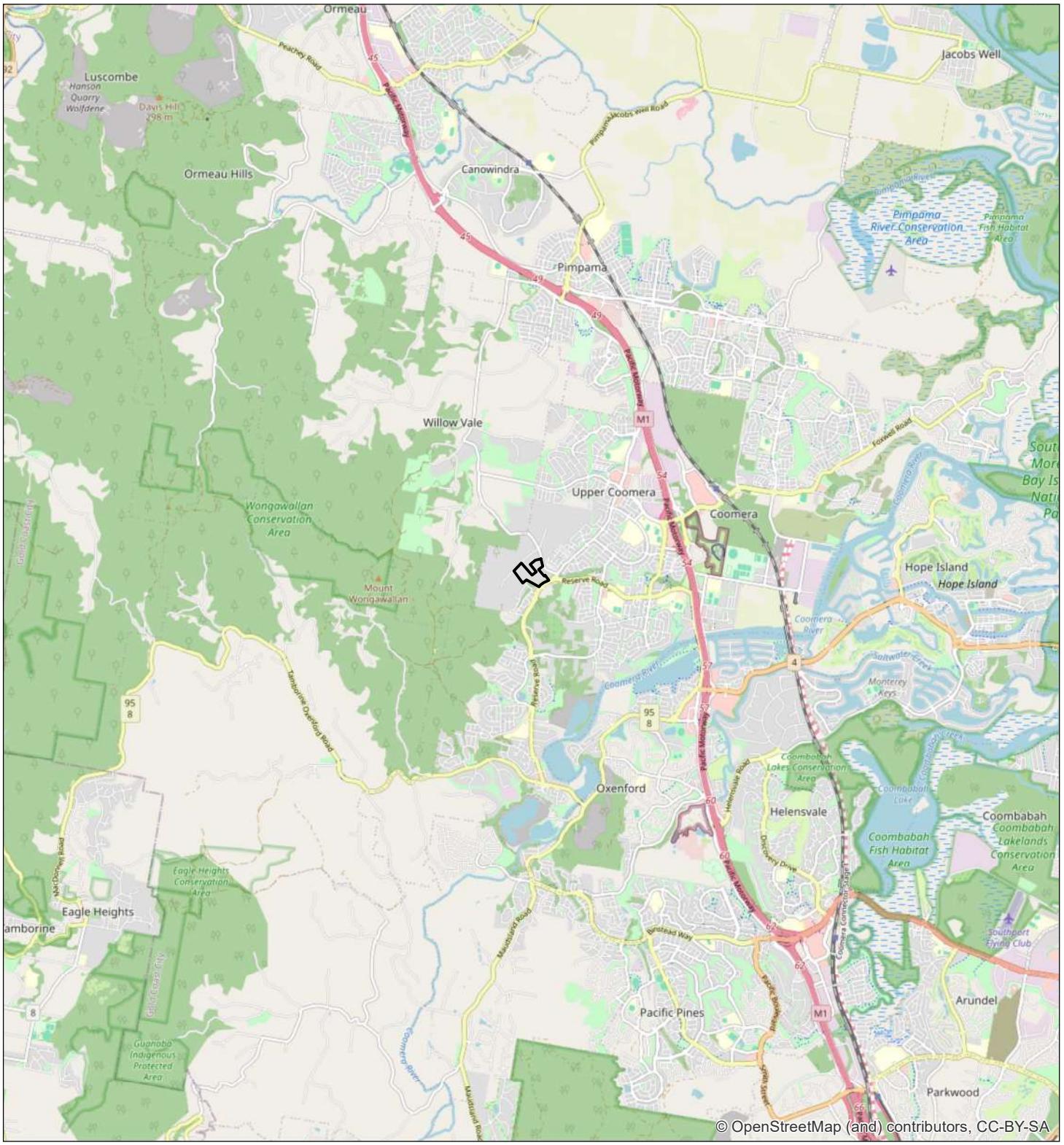
Table 1: Property summary

Address	Courtney Drive, Upper Coomera, Queensland, 4209
RPD	Lot 183 on RP156422 Lot 185 on RP173727 Lot 186 on RP173728 Lot 56 on RP162858 Lot 57 on SP214370 Part of Lot 58 on SP191940
Area	15.52 ha
Vegetation Management Act 1999	0.05 ha Category B (Remnant) Least Concern RE 12.11.24 0.25 ha Category B (Remnant) Least Concern RE 12.3.11 0.11ha Category C (High Value Regrowth) Least Concern RE 12.11.24 15.11 ha Category X (non-remnant) vegetation
Essential Habitat *(VMA 1999)*	*Phascolarctos cinereus* (Koala)
MSES	MSES – Wildlife habitat (endangered or vulnerable) MSES – Wildlife habitat (koala habitat areas – core) MSES – Regulated vegetation (category B) MSES – Regulated vegetation (essential habitat) MSES – Regulated vegetation (intersecting a watercourse)
Nature Conservation Act 1992	Partially within high-risk area for protected plants
Fisheries Act 1994	Queensland waterways for waterway barrier works • 2 x Low • 1 x Moderate
Koala Habitat Provision	Not within Koala Priority Area Contains Koala Habitat Area (core)

LGA	City of Gold Coast (CGC)
Planning Scheme / Local Plan	Gold Coast City Plan
Zone	Emerging Community – Upper Coomera Precinct
Environmental Overlays	Koala habitat areas State significant species Local significant species MSES – Regulated vegetation Vegetation management – medium priority vegetation Waterways + Buffer area
Existing Land Use	Rural residential
Proposed Land Use	Residential

1.1 Purpose of the report

The purpose of this EAR is to present the outcomes of field surveys, identify environmental site constraints, assess the potential of the project to impact on ecological features and respond to relevant planning scheme environmental performance objectives. This report was prepared with reference to the requirements of SC6.7 City Plan policy – Ecological site assessments.



Legend

Project boundary

Figure 1

Site Context

Norfolk Estates Pty Ltd

File ref. 11694 E Figure 1 Site Context A
Date 9/12/2024
Project Courtney Drive, Upper Coomera

0 1 2 3 4 km

N

Scale (A4): 1:100,000 [GDA 2020 MGA Z56]

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Legend

- Project boundary
- Qld DCDB

Figure 2

Site Aerial

Norfolk Estates Pty Ltd

File ref. 11694 E Figure 2 Site Aerial A
Date 9/12/2024
Project Courtney Drive, Upper Coomera

0 20 40 60 80 100 m

Scale (A4): 1:4,000 [GDA 2020 MGA Z56]

N

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2 Ecological Assessment Methodology and Process

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

1. Desktop Analysis,
2. Legislation and Policy Review,
3. Field Survey,
4. Impact Assessment and Development Analysis, and
5. Conclusion and Recommendations.

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

2.1 Desktop Analysis Methodology

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

- Commonwealth Matters of National Environmental Significance (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);
- Threatened species listed under the *Biodiversity Conservation Act 2016* (BCA) on and around the site using the threatened biodiversity profile search database;
- Public Environmental Databases including Atlas of Living Australia (ALA);
- State Government Environmental Overlay Mapping including:
    - State Environmental Planning Policies (SEPP) – SEPP Coastal Management, SEPP Koala Habitat Protection and SEPP (vegetation in non-rural areas).
    - *Native Vegetation Act 2003*.
- Local Planning Scheme Documents and Maps including:
    - *Gold Coast City Plan*
        - 8.2.6 Environmental significance overlay code and associated overlay
        - 9.4.14 Vegetation management code and associated overlay

To supplement the above analysis, a review of historical aerial imagery was undertaken to assist with the broad delineation of vegetation communities and identify historical patterns to local vegetation communities.

2.2 Field Survey Methodology

Field surveys were conducted by two (2) Ecologists on 6, 7 and 14 July 2023 and 11 October 2024 utilising the following methods to describe *in situ* ecological features and functionality. The entire site was traversed multiple times 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.

2.2.1 Observational Survey for Significant Flora and Fauna, Habitat Trees and Biodiversity Values

The site was walked to ensure all flora and fauna species were identified and recorded. This included observations of vertebrate fauna present within or proximal to the study area, including faunal lists and status of species significance under the Commonwealth's EPBC Act (using JAMBA, CAMBA, ROKAMBA and the Bonn Convention) and Queensland's NCA.

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 site included identification of habitat trees present. Specific attention was paid to flora and fauna species listed as significant under legislation.

2.2.2 Ground-truthing of vegetation communities

Vegetation was ground-truthed and assessed against current VMA regional ecosystem mapping and pre-clear mapping. Surveys were undertaken in accordance with the requirements of CGC.

A comprehensive flora survey was undertaken using a methodology consistent with the established formats used by the Queensland Herbarium (Neldner et al. [2005]; Hnatiuk et al. [2009]). Survey methodology comprised an initial visual audit, followed by quantitative assessment of vegetation associations and communities.

2.2.3 Waterway delineation

Following update state waterway mapping in December 2023, discrepancies between local and state mapping were present which called for mapping the true extent of waterways on-site. This involved determining the 'top of bank' and 'low flow channel' which is indicated by changes in vegetation, topography and flow.

2.2.4 Scat Meander (Koala)

Two scat meanders were carried out in the south-eastern extent of the site where koala habitat is mapped. Meanders involve walking a winding transect and checking under all trees meeting specifications encountered. Detailed records of each tree are not recorded unless scats are detected. The location of the meander is recorded.

2.2.5 GPS tree plot

A tree survey was conducted across the site to locate and describe the vegetation values, namely the native mature tree specimens. A handheld GPS device (Trimble) is used to record sub metre accurate locations (in

some cases use survey accurate locations), and the following parameters of each tree specimen were recorded:

- tree species, via a combination of observations of the gum nuts, buds, leaves, bark and growth form;
- diameter of the trunk of the tree is measured using the standard method of Diameter at Breast Height (DBH);
- height of the tree is measured using a laser rangefinder with three-point measurement capability (inclinometer);
- canopy spread;
- health assessment (canopy, trunk); and
- habitat values (for example, presence and/or number of hollows, nests, termites, scratches, scats).

The Tree Protection Zone (TPZ) of the tree was calculated using the formula outlined in *Australian Standard AS4970-2009 – Protection of Trees on Development Sites* (TPZ = DBH x 12). In accordance with AS4970-2009, a TPZ should not be less than 2 metres and no greater than 15 metres (except where crown protection is required.) The Structural Root Zone (SRZ) was calculated using the measured DBH and the following formula: SRZ radius = (DBH x 50)0.42 x 0.64.

3 Desktop analysis results

3.1 Environment Protection and Biodiversity Conservation Act 1999

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

An EPBC Act Protected Matters Report (PMR) was obtained using the Commonwealth's PMST. The search provides a list of wetlands of international significance, threatened ecological communities (TECs), threatened species and other MNES which have the potential to be temporarily or permanently located within a 5 km search radius from the central point of the development site. A summary of the PMR results relevant to the assessment area is provided in **Table 2**, and the complete results of the PMR are included in **Appendix A**. As the site is not within proximity of a major river or ocean marine species; Sharks, Turtles, Whales, Albatross, etc., have been excluded from **Table 2** however can be found within **Appendix A**.

Table 2: EPBC Act PMST Search Results

Wetlands of International Importance		
Moreton Bay – within Ramsar site		
Threatened Ecological Communities		
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community (Endangered) – Community likely to occur within area.		
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland (Endangered) – Community likely to occur within area		
Lowland Rainforest of Subtropical Australia (Critically Endangered) – Community likely to occur within area.		
Subtropical and Temperate Coastal Saltmarsh (Vulnerable) – Community likely to 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 ecological community (Critically Endangered) – Community may occur within area.		
Threatened Species		
Scientific Name	**Common Name**	**Status**
Birds		
Anthochaera phrygia	Regent Honeyeater	Critically Endangered
Botaurus poiciloptilus	Australasian Bittern	Endangered
Botaurus poiciloptilus	Australasian Bittern	Endangered
Calidris acuminata	Sharp-tailed Sandpiper	Vulnerable
Calidris canutus	Red Knot	Endangered
Calidris ferruginea	Curlew Sandpiper	Critically Endangered

Threatened Species		
Scientific Name	**Common Name**	**Status**
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	Vulnerable
Charadrius leschenaultii	Greater Sand Plover	Vulnerable
Climacteris picumnus victoriae	Brown Treecreeper	Vulnerable
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	Endangered
Dasyornis brachypterus	Eastern Bristlebird	Endangered
Diomedea antipodensis	Antipodean Albatross	Vulnerable
Diomedea antipodensis gibsoni	Gibson's Albatross	Vulnerable
Diomedea exulans	Wandering Albatross	Vulnerable
Erythrotriorchis radiatus	Red Goshawk	Endangered
Falco hypoleucos	Grey Falcon	Vulnerable
Gallinago hardwickii	Latham's Snipe	Vulnerable
Geophaps scripta scripta	Squatter Pigeon	Vulnerable
Grantiella picta	Painted Honeyeater	Vulnerable
Hirundapus caudacutus	White-throated Needletail	Vulnerable
Lathamus discolor	Swift Parrot	Critically Endangered
Limosa lapponica baueri	Nunivak Bar-tailed Godwit	Vulnerable
Macronectes giganteus	Southern Giant-Petrel	Endangered
Macronectes halli	Northern Giant Petrel	Vulnerable
Numenius madagascariensis	Eastern Curlew	Critically Endangered
Pachyptila turtur subantarctica	Fairy Prion	Vulnerable
Rostratula australis	Australian Painted Snipe	Endangered
Stagonopleura guttata	Daimond 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
Tringa nebularia	Common Greenshank	Endangered
Turnix melanogaster	Black-breasted Button-quail	Vulnerable
Fish		
Epinephelus daemelii	Black Cod	Vulnerable

Threatened Species		
Scientific Name	**Common Name**	**Status**
Frogs		
Litoria olongburensis	Wallum Sedge Frog	Vulnerable
Mixophyes fleayi	Fleay's Frog	Endangered
Mixophyes iteratus	Giant Barred Frog	Vulnerable
Insects		
Argynnis hyperbius inconstans	Australian Fritillary	Critically Endangered
Phyllodes imperialis smithersi	Pink Underwing Moth	Endangered
Mammals		
Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable
Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed Quoll	Endangered
Macroderma gigas	Ghost Bat	Vulnerable
Notamacropus parma	Parma Wallaby	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 (combined populations of Queensland, New South Wales and the Australian Capital Territory)	Endangered
Potorous tridactylus tridactylus	Long-nosed Potoroo (SE mainland)	Vulnerable
Pseudomys novaehollandiae	New Holland Mouse	Vulnerable
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable
Xeromys myoides	Water Mouse	Vulnerable
Plants		
Acacia attenuata	-	Vulnerable
Acronychia littoralis	Scented Acronychia	Endangered
Arthraxon hispidus	Hairy-joint Grass	Vulnerable
Baloghia marmorata	Marbled Balogia	Vulnerable
Bosistoa transversa	Three-leaved Bosistoa	Vulnerable
Brachychiton sp. Ormeau (L.H.Bird AQ435851)	Ormeau Bottle Tree	Critically Endangered
Clematis fawcettii	Stream Clematis	Vulnerable
Corchorus cunninghamii	Native Jute	Endangered

Threatened Species		
Scientific Name	**Common Name**	**Status**
Croton mamillatus	Bahrs Scrub Croton	Critically Endangered
Cryptocarya foetida	Stinking Cryptocarya	Vulnerable
Cryptostylis hunteriana	Leafless Tongue-orchid	Vulnerable
Cupaniopsis shirleyana	Wedge-leaf Tuckeroo	Vulnerable
Diploglottis campbellii	Small-leaved Tamarind	Endangered
Endiandra floydii	Floyd's Walnut	Endangered
Endiandra hayesii	Rusty Rose Walnut	Vulnerable
Fontainea venosa	-	Vulnerable
Leichhardtia longiloba listed as *Marsdenia longiloba*	Clear Milkvine	Vulnerable
Lepidium peregrinum	Wandering Pepper-cress	Endangered
Macadamia integrifolia	Macadamia Nut	Vulnerable
Macadamia tetraphylla	Rough-shelled Bush Nut	Vulnerable
Notelaea lloydii	Lloyd's Olive	Vulnerable
Owenia cepiodora	Onionwood	Vulnerable
Persicaria elatior	Knotweed	Vulnerable
Phaius australis	Lesser Swamp-orchid	Endangered
Planchonella eerwah	Shiny-leaved Condoo	Endangered
Plectranthus habrophyllus	-	Endangered
Plectranthus nitidus	Nightcap Plectranthus	Endangered
Randia moorei	Spiny Gardenia	Endangered
Rhodamnia rubescens	Scrub Turpentine	Critically Endangered
Rhodomyrtus psidioides	Native Guava	Critically Endangered
Samadera bidwillii	Quassia	Vulnerable
Sophora fraseri	-	Vulnerable
Thesium australe	Austral Toadflax	Vulnerable
Vincetoxicum woollsii	-	Endangered (listed as *Tylophora woollsii*)
Zieria collina	-	Vulnerable
Reptiles		
Hemiaspis damelii	Grey Snake	Endangered

**Marine species, including turtles, sharks, whales, were not included due to absent marine habitat.*

3.2 *Nature Conservation Act 1992*

The NCA classifies and protects significant areas (Protected Areas) and protects Queensland's native 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, critically endangered, endangered, vulnerable, near threatened, least concern, international or prohibited. The schedules of this regulation were considered in this assessment using a wildlife online database extract with a 5 km radius from the central point of the subject site. The list of threatened species under the NCPR and NCAR with the potential to occur on or near the project are presented in **Table 3**. Refer to **Appendix B** for original search results.

Table 3: NCA Wildlife Online Search Results

Scientific Name	Common Name	Status
Amphibians		
Adelotus brevis	Tusked Frog	Vulnerable
Crinia tinnula	Wallum Froglet	Vulnerable
Birds		
Erythrotriorchis radiatus	Red Goshawk	Vulnerable
Hirundapus caudacutus	White-throated Needletail	Vulnerable
Calyptorhynchus lathami	Glossy Black Cockatoo	Vulnerable
Calyptorhynchus lathami lathami	Glossy Black Cockatoo (eastern)	Vulnerable
Calidris acuminata	Sharp-tailed Sandpiper	Vulnerable
Gallinago hardwickii	Latham's Snipe	Vulnerable
Ninox strenua	Powerful Owl	Vulnerable
Mammals		
Phascolarctos cinereus	Koala	Endangered
Petauroides armillatus	Central Greater Gider	Endangered
Plants		
Corynocarpus rupestris subsp. arborescens	Southern Corynocarpus	Vulnerable
Baloghia marmorata	Jointed Baloghia	Vulnerable
Mallotus megadontus	-	Vulnerable
Cryptocarya foetida	Stinking Cryptocarya	Vulnerable
Endiandra wongawallanensis	-	Endangered
Eucalyptus curtisii	Plunkett Mallee	Near Threatened
Rhodamnia rubescens	Scrub Turpentine	Critically Endangered
Rhodomyrtus psidioides	Native Guava	Critically Endangered
Syzygium moorei	Durobby	Vulnerable
Macadamia integrifolia	Macadamia Nut	Vulnerable
Randia moorei	Spiny Gardenia	Endangered
Cupaniopsis newmanii	Long-leaved Tuckeroo	Near Threatened

Scientific Name	Common Name	Status
Planchonella eerwah	-	Endangered
Corchorus cunninghamii	-	Endangered

The protected plants regulatory framework under the NCA, established survey and 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 site is located partially within a 'high risk area' for protected plants (refer **Figure 3**). This trigger area is predominantly within retained vegetation on-site however, a flora survey and exemption or permit to clear from the administering authority in accordance with the Flora Survey Guideline[2] may be required prior to the clearing of vegetation. If there are *in the wild* protected plants on-site that are required to be cleared, the person/entity completing the clearing will need a clearing permit unless an exemption applies. This exemption and permitting process is not triggered under the *Planning Act 2016* or *Planning Regulation 2017*, and must be addressed under the NCA.

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

[2] Department of Environment and Science 2020. *Flora Survey Guidelines - Protected Plants*. Available from:: https://www.qld.gov.au/__data/assets/pdf_file/0028/99901/gl-wl-pp-flora-survey.pdf

3.3 *Vegetation Management Act 1999*

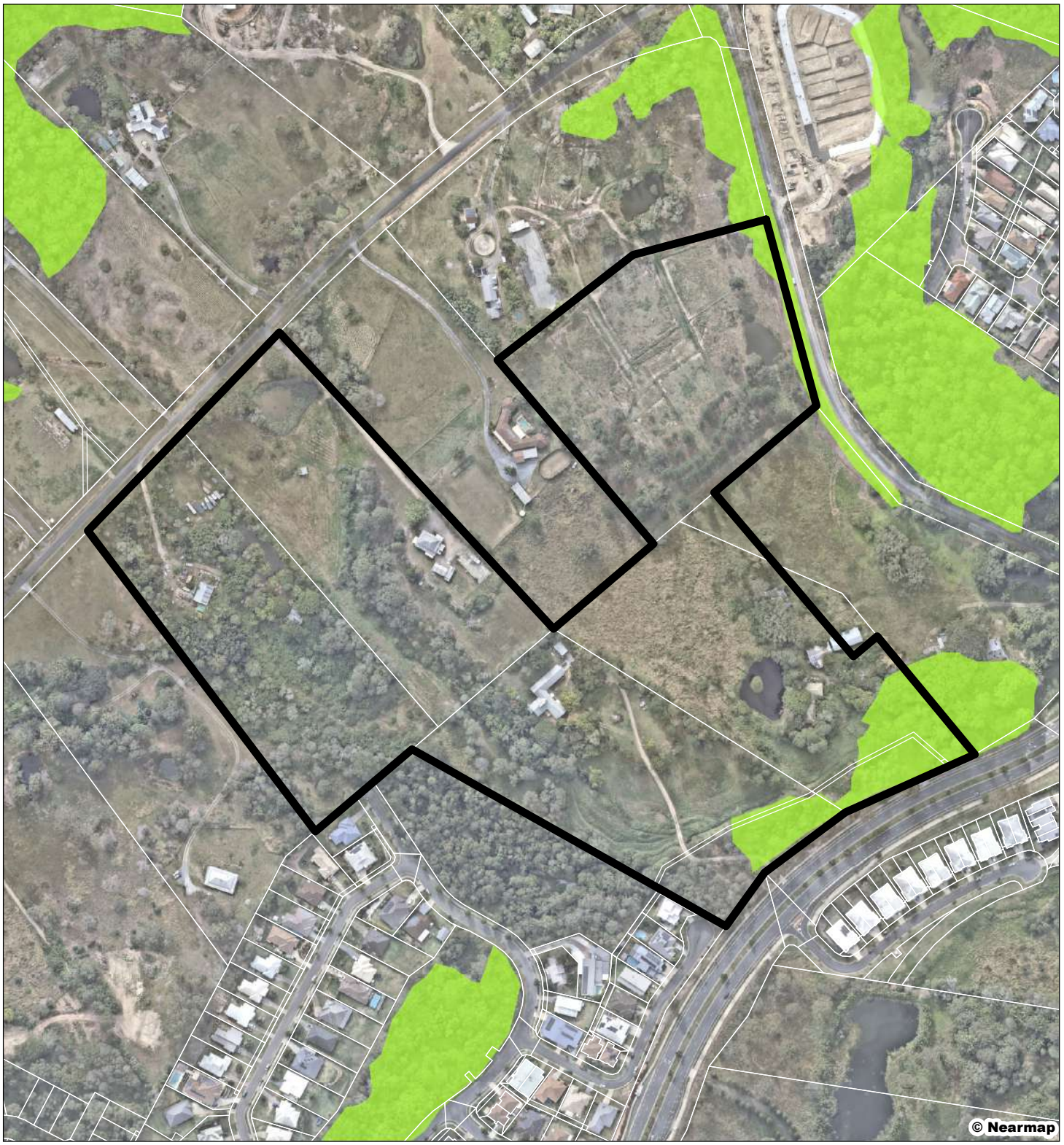
The VMA is the key mechanism by which the Queensland Government protects the State's environmental resources pertaining to vegetation. Under the VMA, a series of maps delineate vegetation features across the landscape, which are each assigned a conservation value directly related to the remaining extent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

The Regulated Vegetation Management Map (RVMM) shows vegetation categories used to determine clearing requirements. Generally, Category A, B, C or R are subject to clearing regulations under the VMA whereas impacts to Category X vegetation are less regulated. Category A, B, C or R vegetation can only be cleared in accordance with an exemption, accepted development vegetation clearing code, area management plan or development approval. The Regulated Vegetation Supporting Map (RVSM) defining regional ecosystems, wetlands, watercourses and essential habitat, accompanies the RVMM. When approval for clearing native vegetation is required under the *Planning Act 2016*, an assessment against the *State Code 16: Native Vegetation Clearing* of the State Development Assessment Provisions (SDAP) is required.

The subject site is mapped as predominantly Category X (non-remnant) vegetation with small polygons of Category B (remnant) in the eastern extent and Category C (high-value regrowth) in the north (refer **Figure 4**). The mapped Category B vegetation is identified as 'Of Concern' RE12.3.11 and 'Least Concern' 12.11.24 respectively (refer **Figure 5**). The mapped Category C vegetation is also identified as 'Least Concern' RE12.11.24 (refer Figure 5). Pre-clear RE mapping shows the majority of the site mapped as RE12.11.24, with RE 12.3.11 mapped within the drainage lines. **Table 4** provides a description for these regional ecosystems.

Table 4: Regional Ecosystem Descriptions

Regional Ecosystem	VMA Status	Category	Description
12.3.11	Of Concern	B	*Eucalyptus tereticornis +/- Eucalyptus siderophloia, Corymbia intermedia open forest on alluvial plains usually near coast*
12.11.24	Least Concern	B & C	*Eucalyptus carnea* or *E. tindaliae, Corymbia intermedia +/- E. siderophloia* or *E. crebra* woodland on metamorphics +/- interbedded volcanics



Legend

- Project boundary
- Qld DCDB
- High risk area - flora survey trigger

Figure 3

NCA - Protected Plants
Flora Survey Trigger

Norfolk Estates Pty Ltd

File ref. 11694 E Figure 3 NCA A
Date 9/12/2024
Project Courtney Drive, Upper Coomera

0 40 80 120 160 m

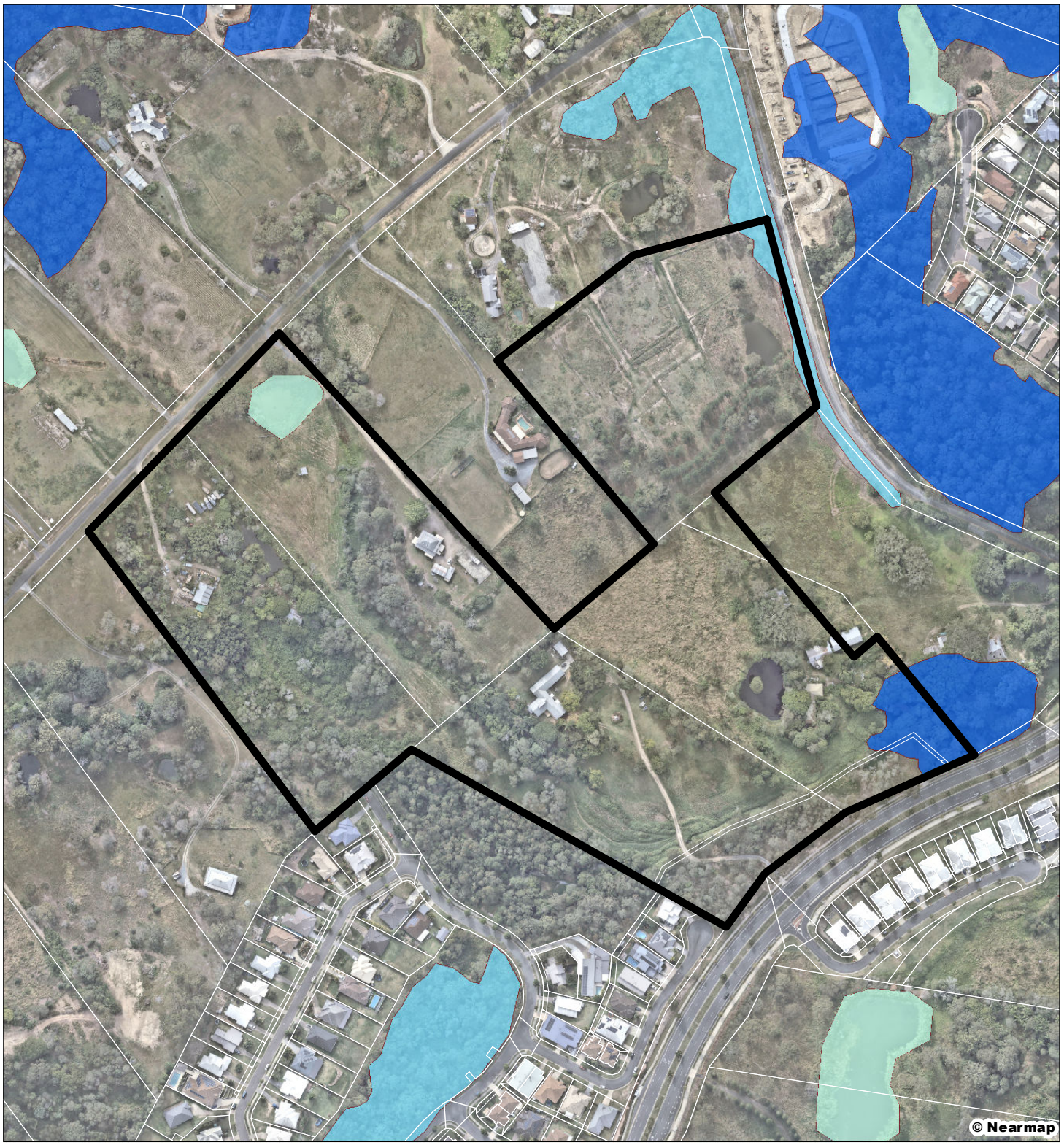
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Legend

- Project boundary
- Qld DCDB

Regulated Vegetation

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

Figure 4

Regulated Vegetation Management Map

Norfolk Estates Pty Ltd

File ref. 11694 E Figure 4 RVM A
Date 8/08/2023
Project Courtney Drive, Upper Coomera

0 20 40 60 80 100 m

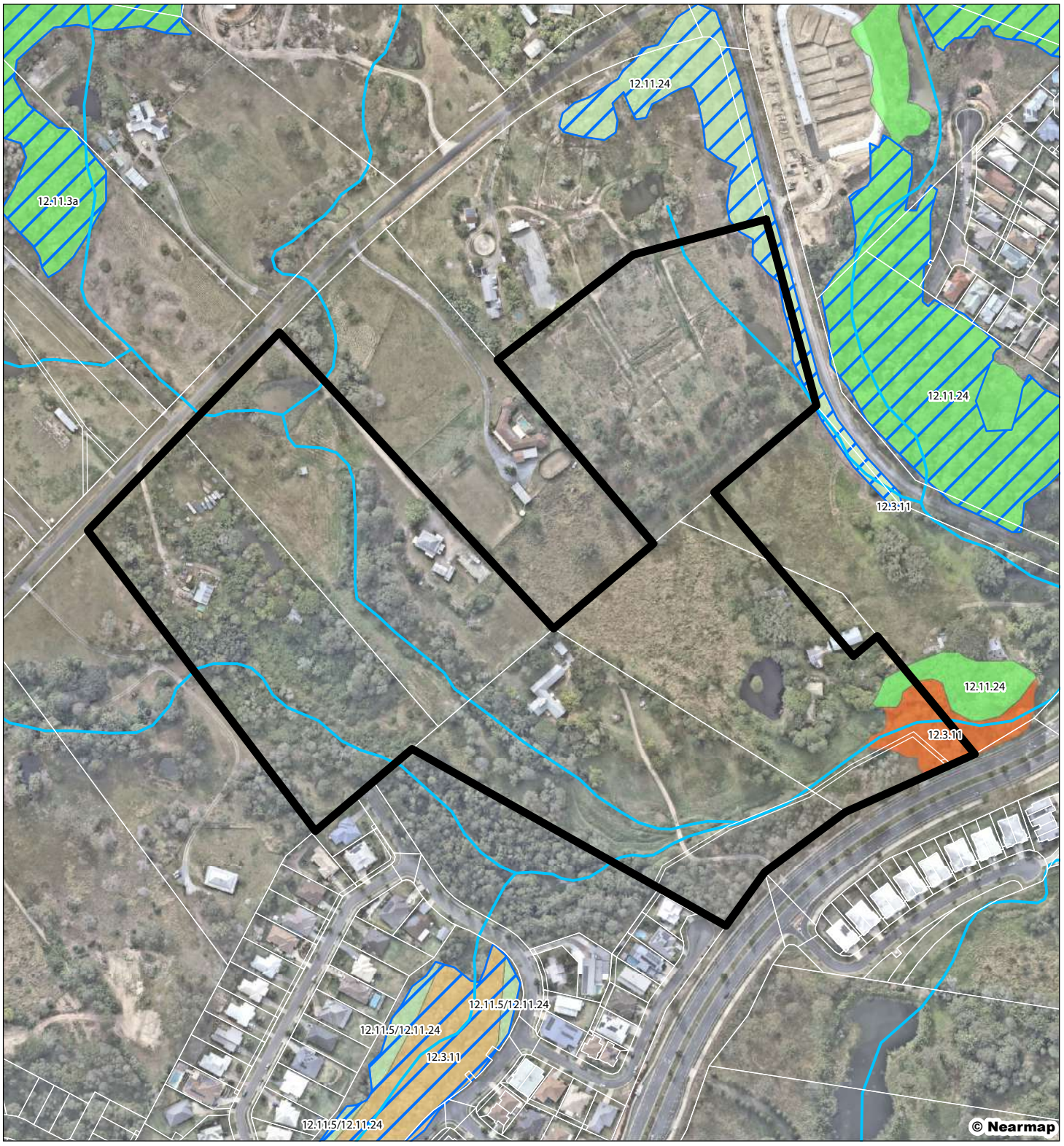
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Legend

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

Vegetation Management Regional Ecosystems Map

- 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

Vegetation Management Regional Ecosystem Map

Norfolk Estates Pty Ltd

File ref. 11694 E Figure 5 VMRE A
Date 9/12/2024
Project Courtney Drive, Upper Coomera

0 20 40 60 80 100 m

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3.4 Koala Habitat Provisions

South East Queensland Koala habitat protection mechanisms are incorporated into the *Planning Regulation 2017* (PR). Schedule 10 Part 10 of the PR sets out what is and is not prohibited or assessable development in a Koala Habitat Area (KHA). Where inside a Koala Priority Area (KPA), the provisions of Schedule 11 of the PR apply unless certain criteria are met (refer Part 10 Division 2 Section 16 A (2)). Where outside of a KPA, development that involves interfering with a Koala Habitat Area is assessable, also unless certain criteria apply (refer Part 10 Division 3 Section 16 B (2)). Development for extractive industries in key resource areas is dealt with under Part 10 Division 4. Development that is assessable outside of a KPA is referrable to the State and must address SDAP Code 25 Development in South East Queensland Koala Habitat Areas.

The site is not mapped within a KPA, however KHA is mapped within the eastern and northern extents of the site (refer **Figure 6**). The proposed development will retain the majority of mapped KHA on the site within proposed Environmental open space areas, however, some limited impacts to mapped KHA are proposed under exemptions.

3.5 Fisheries Act 1994

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

One *moderate risk* and two *low risk* DAF defined waterways for waterway barrier works (WWBW) are mapped across the site (refer **Figure 7**). On-ground surveys confirmed presence of these waterways

Referral to SARA and a response to State Code 18 is required at Operational Works stage where development proposes to create waterway barrier works within a waterway and does not meet *Accepted development requirements for operational work that is constructing or raising waterway barrier works* (ADR). It is anticipated that earthworks will be located outside the top of bank therefore, it is not anticipated that referral to SARA for waterway barrier works and a response to State Code 18 at Operational Works stage will be required. This will be confirmed following the completion of the final detailed engineering design at Operational Works stage.

3.6 Biosecurity Act 2014

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

The *Biosecurity Act 2014* 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 2: must be reported within 24 hours Biosecurity Queensland on 13 25 23.
- Category 3: must not be distributed either by sale or gift or released into the environment.
- Category 4: must not be moved.
- Category 5: must not be kept.
- Category 6: must not be fed (animals).
- Category 7: Must be euthanised (animals).

Restricted matters observed in the site area discussed in **Section 4**.

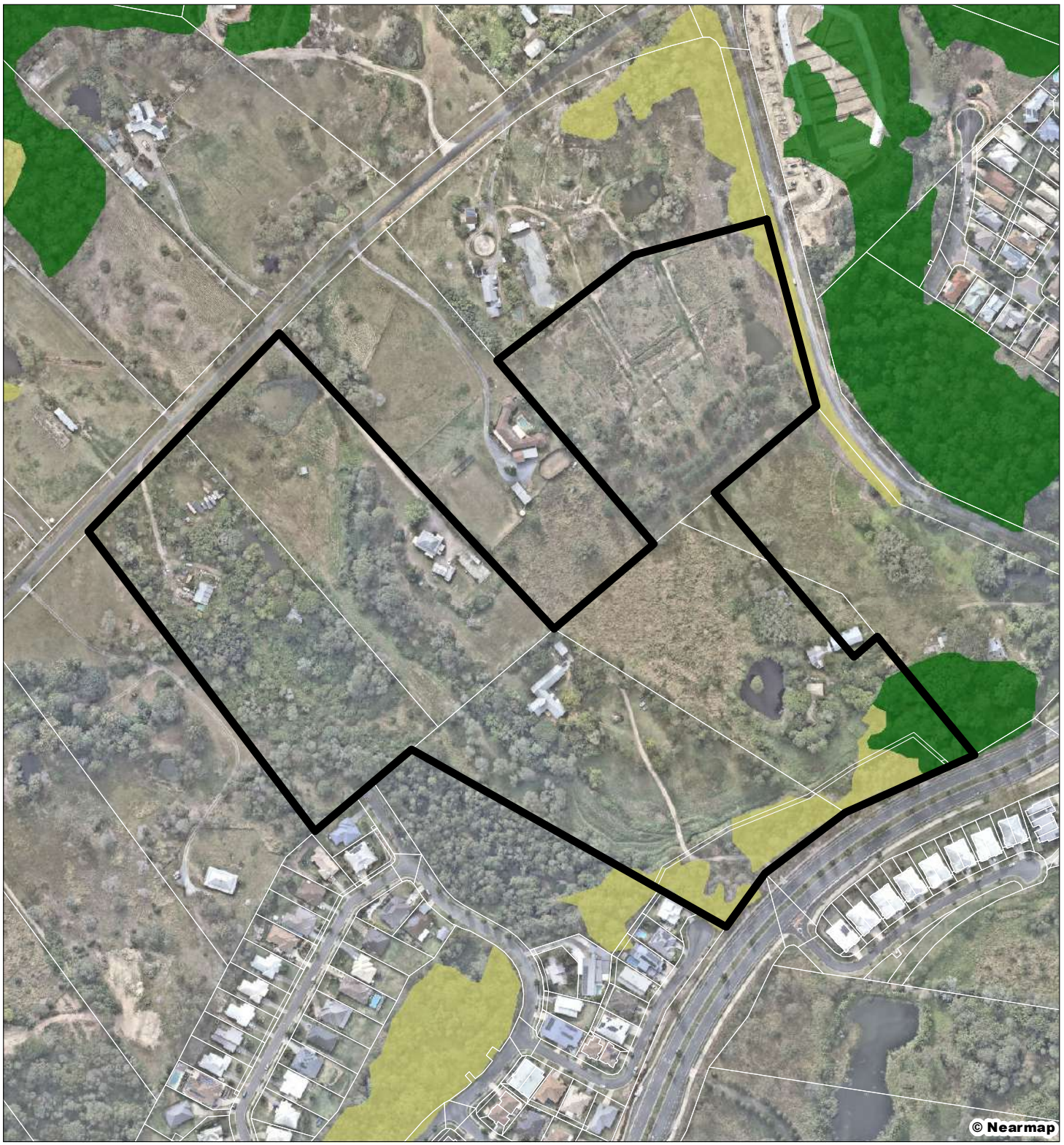
3.7 Other Queensland environmental legislation

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.	**Does not apply** 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*.
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.	**Does not apply** 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. A review of Queensland Globe indicates drainage features are mapped on-site as defined under the *Water Act 2000*. Drainage features are not considered watercourses, therefore a riverine protection permit is not required.
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	The site is mapped MSES – Wildlife habitat (endangered or vulnerable and koala habitat areas – core) and MSES – Regulated vegetation (category B, essential habitat and intersecting a watercourse) (refer **Figure 8**).

Legislation/ policy	Purpose	Relevance to proposed development
	are categorised under Biodiversity, Coastal Environment or Water Quality.	MSES mapping overlays and requirements of the SPP are required to be incorporated into the CGC City Plan and are reflected in the planning scheme overlays (refer **Section 3.8**). Compliance with the SPP is addressed through the provisions of the planning scheme.



Legend

- Project boundary
- Qld 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

Norfolk Estates Pty Ltd

File ref. 11694 E Figure 6 Koala 2019 A
Date 8/08/2023
Project Courtney Drive, Upper Coomera

0 20 40 60 80 100 m

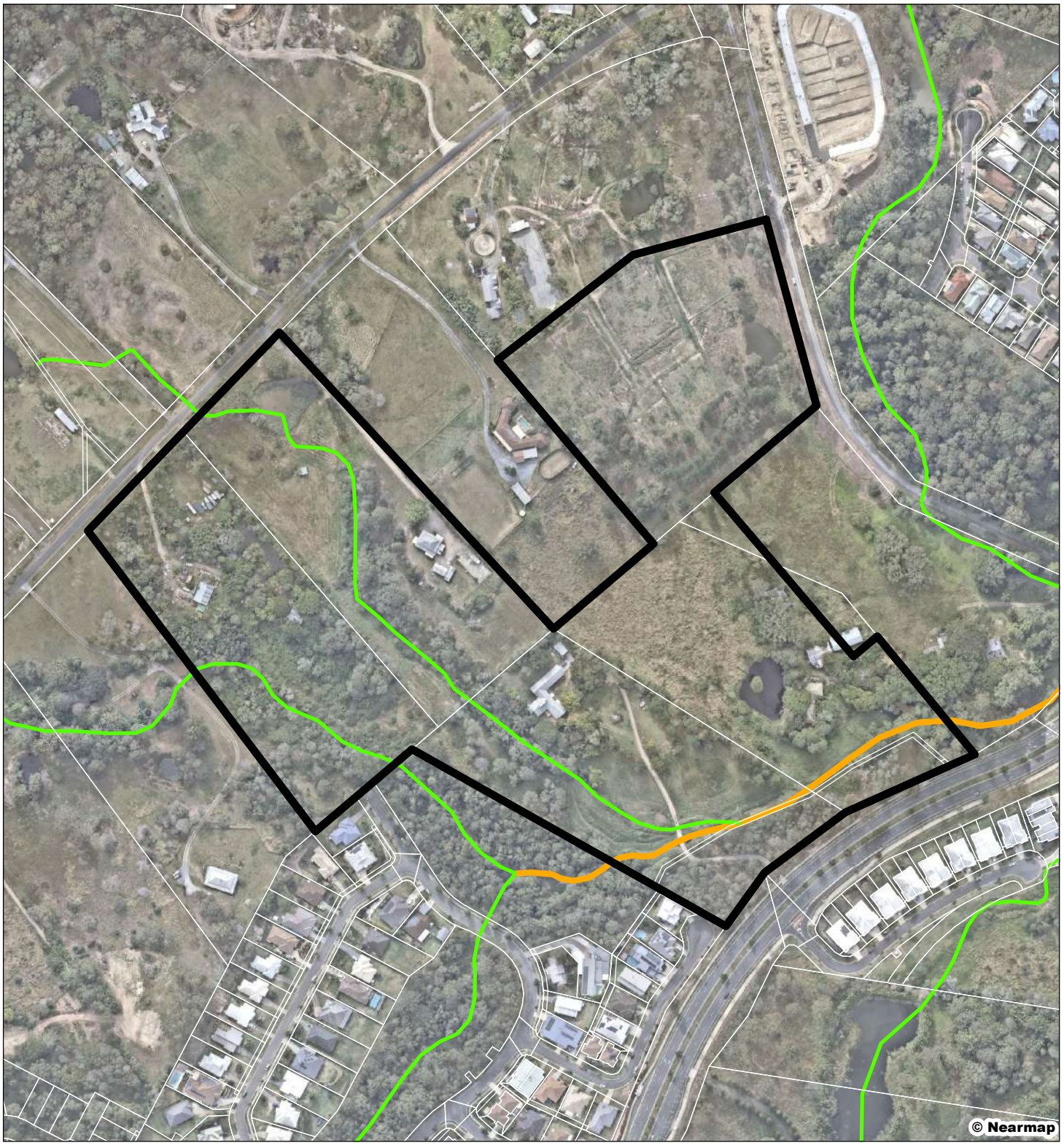
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Legend

Project boundary

Qld DCDB

Waterways

Risk of Impact

1 - Low

2 - Moderate

Figure 7

Fisheries - Waterways for Waterway Barrier Works

Norfolk Estates Pty Ltd

File ref. 11694 E Figure 7 Fisheries A
Date 9/12/2024
Project Courtney Drive, Upper Coomera

0 20 40 60 80 100 m

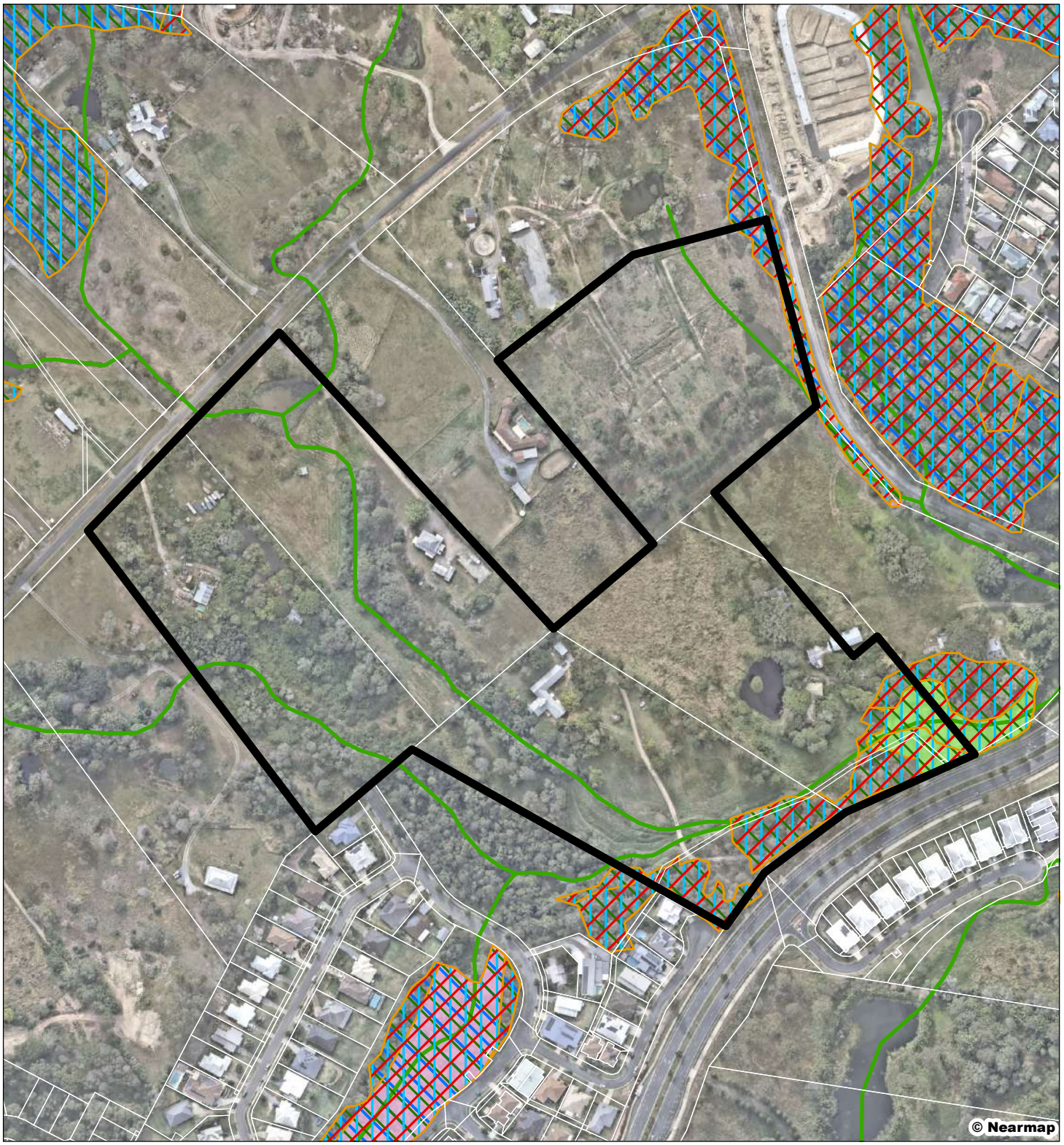
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Legend

- Project boundary
- Qld DCDB
- MSES Wildlife habitat (endangered or vulnerable)
- MSES Wildlife habitat (special least concern animal)
- MSES Wildlife habitat (SEQ koala habitat - core)
- MSES Regulated vegetation (intersecting a watercourse)
- MSES Regulated vegetation (essential habitat)
- MSES Regulated vegetation (category B)
- MSES Regulated vegetation (category C)

Figure 8

Matters of State Environmental Significance

Norfolk Estates Pty Ltd

File ref. 11694 E Figure 8 MSES A
Date 9/12/2024
Project Courtney Drive, Upper Coomera

0 20 40 60 80 100 m

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3.8 Town planning instruments

The subject site is situated within the jurisdiction of City of Gold Coast (CGC) and subject to the provisions of the *Gold Coast City Plan 2021*.

3.8.1 Gold Coast City Plan

Under the Gold Coast City Plan (v9), the subject site is zoned as 'Emerging Community' (refer **Figure 9**).

The purpose of the Emerging Community zone is to:

a) *identify land that is suitable for urban purposes and protect land that may be suitable for urban development in the future.*

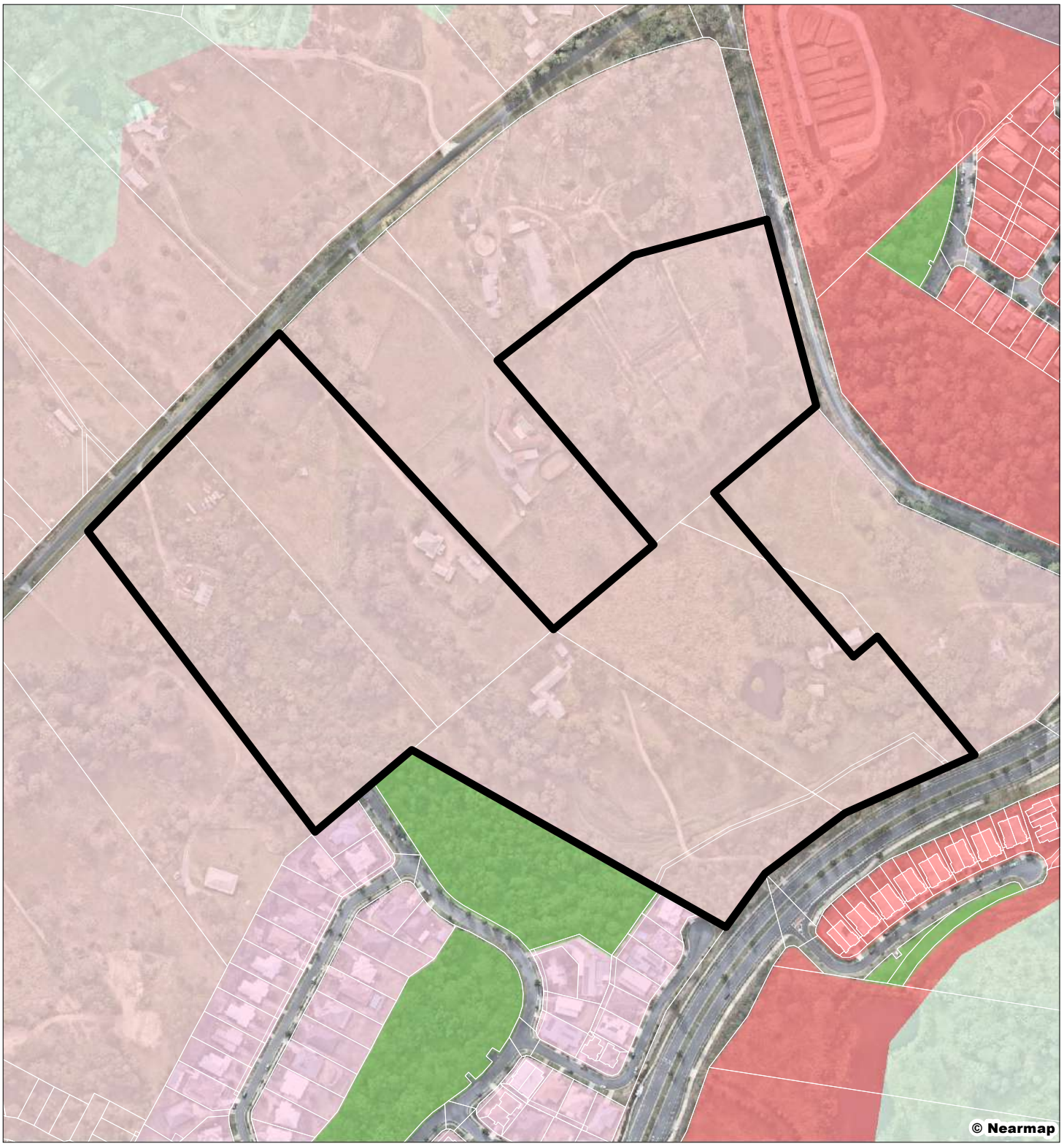
b) *manage the timely conversion of non-urban land to urban purposes.*

c) *prevent or discourage development that is likely to compromise appropriate longer term land use.*

Under the City Plan, the overall site is affected by the following ecologically relevant overlays:

- Environmental Significant Priority Species – Koala Habitat Areas, State significant species and local significant species (refer **Appendix C, Map 18**)
- Significant Vegetation Management – General Priority Vegetation, Medium Priority Vegetation and Regulated vegetation (refer **Figure 10**).
- Significant Wetlands and Watercourse – Waterway and Buffer Area (refer **Figure 11**).

A response to *Table 8.2.6-2: Environmental significance overlay code – for assessable development* is provided in **Appendix D.**



Legend

- Project boundary
- Qld DCDB

City Plan Zoning

- Low density residential
- Medium density residential
- Emerging community
- Open space
- Rural residential
- Rural

Figure 9

Gold Coast City Plan 2015
Zoning

Norfolk Estates
Pty Ltd

File ref. 11694 E Figure 9 Zoning A
Date 9/12/2024
Project Courtney Drive, Upper Coomera

0 20 40 60 80 100 m

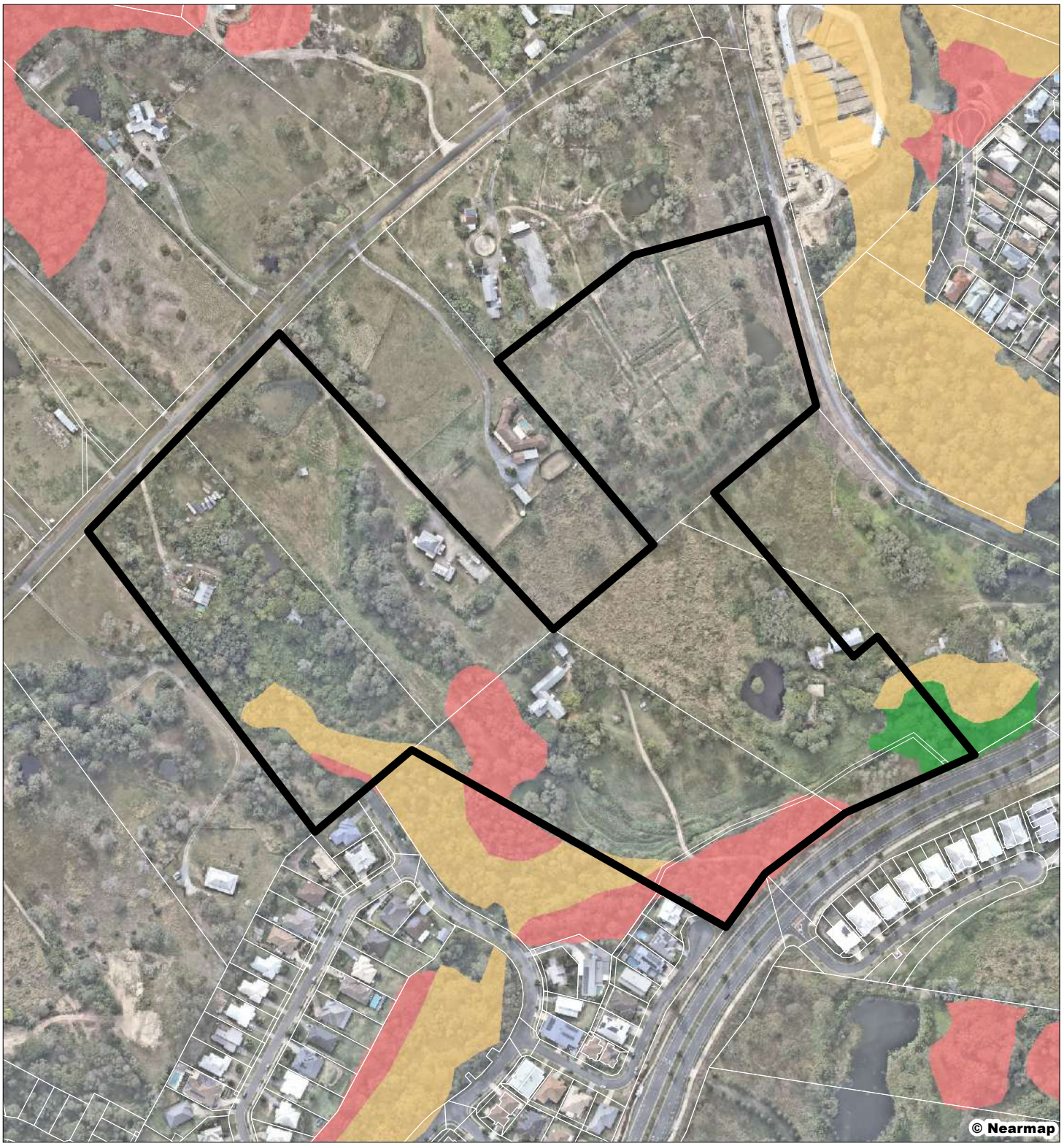
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Legend

- Project boundary
- Qld DCDB

Vegetation Management

- High priority vegetation
- General priority vegetion
- Medium priority vegetation
- Regulated vegetation

Figure 10

Gold Coast City Plan 2015
Environmental Significance
Vegetation Management

Norfolk Estates
Pty Ltd

File ref. 11694 E Figure 10 Vegetation Management A
Date 9/12/2024
Project Courtney Drive, Upper Coomera

0 20 40 60 80 100 m

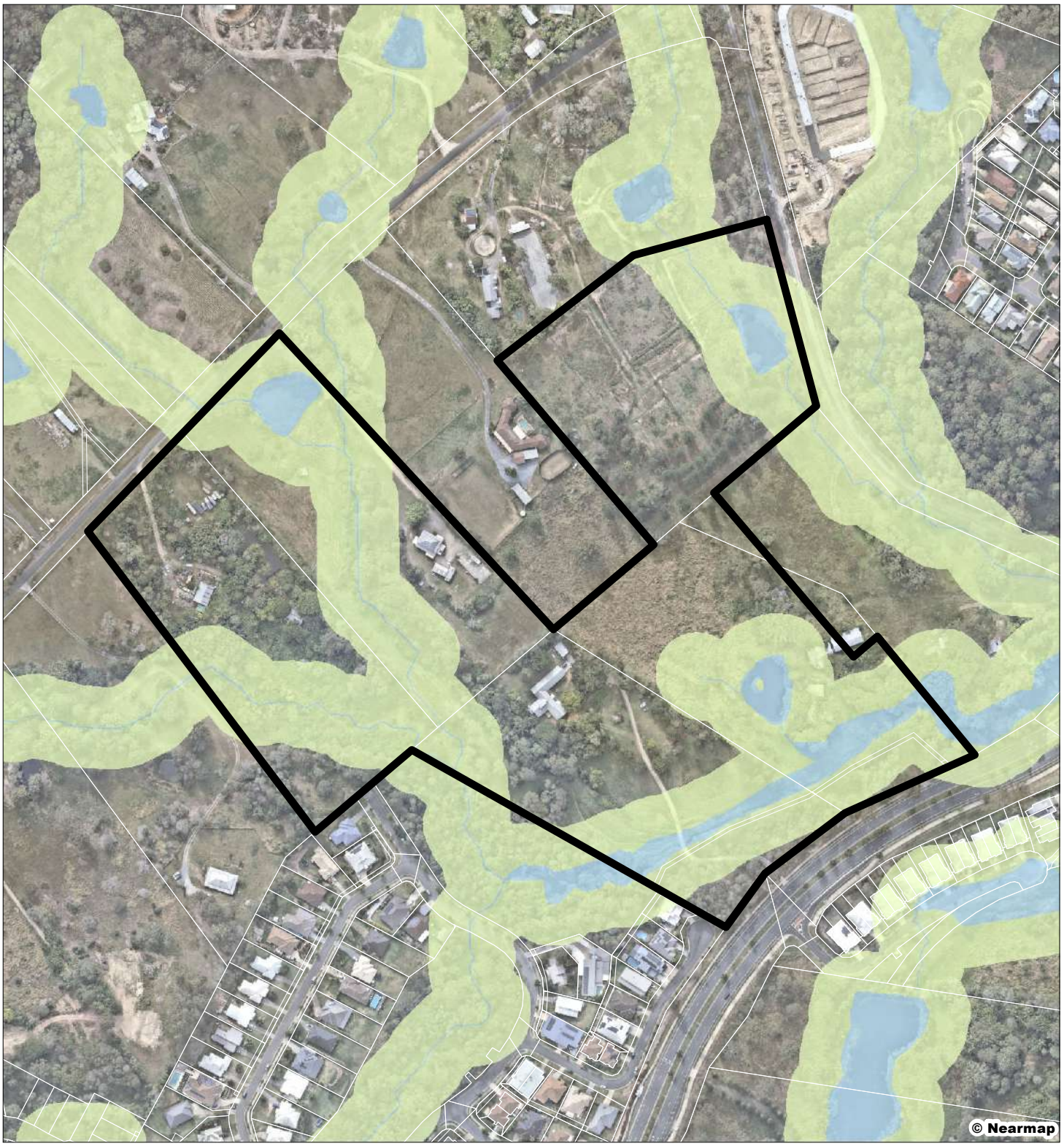
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Legend

- Project boundary
- Qld DCDB

Wetlands and Waterways

- Major waterway
- Minor waterway
- Local significant wetlands
- Wetland and waterways buffer area
- Canals and Lakes

Figure 11

Gold Coast City Plan 2015
Waterways and Wetlands

Norfolk Estates Pty Ltd

File ref. 11694 E Figure 11 Wetlands and Waterways A
Date 9/12/2024
Project Courtney Drive, Upper Coomera

0 20 40 60 80 100 m

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4 Ecological Survey Results

Two ecologists from SHG assessed the proposed development area on 6, 7 and 14 July 2023 and 11 October 2024, with weather conditions generally clear and dry throughout. The site was walked to ensure all vegetation communities and species were inspected and recorded. Particular attention was paid to any threatened flora and habitat for any threatened fauna species that were listed as possibly occurring on or within the vicinity of the site, and specific micro-assemblages which may support these threatened species. Refer **Plan 1** for resultant field survey effort, **Plan 2** for ground-truthed vegetation communities and **Plan 3** for ground-truthed waterways.

4.1 General site observations

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

- The site consists of 5 equally sized rural residential lots utilised for storage purposes, horse paddocks and residences with varying levels of-ongoing maintenance.
- The vast majority of the site is mapped as Category X (non-remnant) vegetation with a small polygon of Category B (remnant) vegetation in Lot 57 and Category C (high-value regrowth) vegetation along the road reserve boundary on Lot 183. Category B vegetation was observed to contain indicator species of the mapped Regional Ecosystems although this area was heavily modified with exotic canopy and sub-canopy species.
- The site is surrounded by a mix of similarly sized rural properties, higher density residential developments and vacant bushland. The site itself has undergone wholesale clearing resulting in highly disturbed weed infested areas across the majority of the site. Vegetation composition generally consists of a mix of native and exotic species with the majority as planted ornamental species.
- Koala habitat is mapped on-site along the eastern boundary of Lot 57 and 56 and the northern boundary of Lot 183. Koala habitat was confirmed in the east although NJKHTs were sparse with the area dominated by acacia regrowth. In the north, much of the mapped KHA within the road reserve had been recently cleared.
- One *moderate risk* and two *low risk* DAF waterway for wwbw are mapped across the site. These mapped waterways differ from the CGC waterway mapping and therefore were ground-truthed for accuracy and to inform the development design.

4.1.1 Koala Habitat Area (KHA) and Category B (remnant) vegetation

The mapped KHA on-site includes and extends beyond mapped Category B (remnant) and Category C (high-value regrowth) vegetation. In the east of the site two vegetation communities are present within Category B (remnant) vegetation being 'Least Concern' Regional Ecosystem (RE) 12.11.24 and 'Of Concern' RE12.3.11. A mapped watercourse is present within this vegetation (Yaun Creek). This area was identified on-ground as being heavily modified, reflective of residential uses. Native canopy species were present including *Eucalyptus crebra* (Narrow-leaved Ironbark), *Corymbia intermedia* (Pink Bloodwood), *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus microcorys* (Tallowwood) generally reflective of mapped RE 12.3.11. However, the area was

dominated by exotic species *Pinus elliottii* (Slash Pine) and *Cinnamomum camphor* (Camphor Laurel) within the canopy and *Tecoma stans* (Yellow Bells), *Syagrus romanzoffiana* (Cocos Plam), *Spagneticola trilobata* (Singapore Daisy) and *Asparagus aethiopicus* (Ground asparagus) within the understory.

Koala habitat extends along the eastern boundary, adjacent to the mapped watercourse, including predominantly acacia regrowth with scattered Non-juvenile Koala Habitat Trees including *Eucalyptus carnea* (Broad-leaved White Mahogany), *Eucalyptus siderophloia* (Grey Ironbark) and *Angophora leiocarpa* (Smooth-barked Apple). Koala habitat is also mapped in the north of the site associated with the road reserve of Baileys Mountain Road. Field surveys identified that the road reserve had been almost completely cleared within only scattered *Eucalyptus siderophloia* (Grey Ironbark) and acacia in the northern corner of the site. Koala habitat was confirmed in the east of the site albeit limited due to predominantly acacia regrowth. Nevertheless, species-specific searches were undertaken for Koala, utilising the scat meander technique. No evidence of Koala was observed, and no direct sightings of Koala were recorded.



Photo set 1: Mapped Koala Habitat Area and Category B (remnant) vegetation in the east of the site.

4.1.2 Modified rural residential vegetation

The vast majority of the site is mapped as Category X (non-remnant) vegetation varying in composition and levels of disturbance. Portions of the site were identified on-ground as reflecting 'Modified rural residential vegetation.' These areas were identified in the south-west corners of Lot 186 on RP173728 and Lot 183 on RP156422, the boundaries of Lot 56 on RP162858 and in the centre of Lot 57 on SP214370. These areas were defined as containing both native and exotic species reflective of a rural residential setting including *Ficus macrophylla* (Moreton Bay Fig), *Ficus benjamina* (Weeping Fig), *Corymbia intermedia* (Pink Bloodwood), *Angophora leiocarpa* (Smooth-barked Apple) and *Acacia* species. In general, these areas showed high levels of disturbance and frequently dominated by exotic species at the ground layer.



Photo set 2: Parts of the site identified as containing 'modified rural residential vegetation.'

4.1.3 Vegetated Drainage line

A flowpath is present through the centre of Lot 185 on RP173727 and Lot 56 on RP162858 which is mostly vegetated. This flow path has been defined under the *Water Act 2000* as a 'drainage feature.' Within Lot 185 on RP173727 the drainage feature is dominated by acacia regrowth with scattered large native trees including *Corymbia intermedia* (Pink Bloodwood) and *Eucalyptus siderophloia* (Grey Ironbark). The flowpath itself is dominated by exotic *Spagneticola trilobata* (Singapore Daisy) throughout. In Lot 56 on RP162858 the vegetation composition is more reflective of a wet sclerophyll environment including *Ficus macrophylla* (Moreton Bay Fig), *Castanospermum australe* (Black Bean) and *Archontophoenix cunninghamiana* (Bangalow Palm) however the area is dominated by exotic species including *Mangifera indica* (Mango), *Syagrus romanzoffiana* (Cocos Palm), *Libidibia ferrea* (Leopard Tree) and *Schefflera actinophylla* (Umbrella Tree).



Photo set 3: Vegetated drainage feature running through the centre of the site with weeds throughout.

4.1.4 Highly modified ornamental vegetation

Several areas across the site were identified on-ground to be vegetated with almost exclusively ornamental planted species. Lot 186 on RP173728 in the east of the site consisted of predominantly *Syagrus romanzoffiana*

(Cocos Palm) in the front half of the lot with several other planted species throughout including, *Libidibia ferrea* (Leopard Tree) and *Grevillea robusta* (Silky Oak). Similarly, a significant portion of the vegetated area on Lot 183 on RP156422 in the north of the site consists of planted *Pinus elliottii* (Slash Pine).



Photo set 4: Areas of 'highly modified ornamental vegetation' across the site.

4.1.5 Vegetation adjacent to dams

Three constructed dams are present on-site within Lot 57 on SP214370, Lot 185 on RP173727 and Lot 183 on RP156422. Vegetation lining the banks of these dams consisted of both native and exotic species including *Eucalyptus tereticornis* (forest Red Gum), *Corymbia intermedia* (Pink Bloodwood), *Glochidion sumatranum* (Umbrella Cheese Tree), Acacia species, *Archontophoenix cunninghamiana* (Bangalow Palm) with the ground layer dominated by weeds.



Photo set 5: Native and exotic species lining the banks of constructed dams on-site.

4.1.6 Weed dominated area

The majority of the site is heavily weed infested as a result of historical and on-going rural residential land-uses. Lot 186 on RP173728 in the west of the site is currently utilised for storage purposes with minimal on-going maintenance occurring. As a result, the rear of the lot, associated with a drainage flowpath that feeds

Yaun Creek, is densely vegetated with exotic *Tecoma stans* (Yellow Bells), *Solanum chrysotrichum* (Giant Devil's Fig), *Lantana camara* (Lantana) with almost no native vegetation present.



Photo set 6: Densely weed dominated area in the southern extent of Lot 186

4.1.7 Balance – Paddocks

The balance of the site consists of open mostly treeless paddocks which are either frequently maintained or un-maintained grasses and weeds as a result of now vacant properties. Lot 183 in the north of the site is primarily utilised for horse paddocks. Ornamental shrubs and trees are located around existing and previous dwellings.



Photo set 7: Treeless paddocks across large portions of the site.

4.1.8 Connectivity

Connectivity values are largely confined to the mapped waterway in the south-east, where mapped Category B (remnant) and Koala habitat is present. A council owned bushland borders the southern boundary of Lot 56 which aligns with the mapped waterway (Yuan Creek). Connectivity value to the north, west and east is limited by roads Bailys Mountain Road, Courtney Drive and Reserve Road respectively. Properties adjacent to the site and within the locality demonstrate similar vegetated status being predominantly cleared areas with patches of vegetation. Notably, a residential development is under construction on Lot 217 on RP151152 north of Bailys Mountain Road which coupled with surrounding higher density developments gives an indication of the planning intent of the area. Furthermore, the road reserve of Baileys Mountain Road, adjacent to Lot 183, has been cleared, presumably to facilitate infrastructure upgrades.



Photo set 8: Adjacent land-uses and minimal connectivity potential outside of the mapped waterway.

4.1.9 Mapped waterways

As mentioned previously, one *moderate risk* waterway and two *low risk* waterways for WWBW are mapped across the site (refer **Figure 7**) which are also mapped as 'minor' waterways under the CGC planning scheme (refer **Figure 11**). There is a discrepancy between the state Fisheries waterway mapping and the CGC local mapping in the centre of Lot 185 and Lot 56. Waterways on-site were ground-truthed and identified as closely reflecting the state mapping overlay. It is anticipated that the council waterway mapping is inaccurate and likely reflects historical flowpaths that have subsequently been altered by adjacent land management. For the purposes of this assessment and to inform the development design, the ground-truthed waterways have been used (refer **Plan 3**).

Fisheries 'moderate' risk waterway (Yuan Creek)

This waterway was observed on-ground to contain a defined flow-path with water present. The upstream extent of this waterway on Lot 56 was heavily weed infested with *Sphagneticola trilobata* (Singapore Daisy) and exotic grasses with minimal vegetation retained along the channel. The downstream extent on Lot 57 continued to show high levels of weed infestation however vegetation had been retained where Category B (remnant) vegetation is present in the north-east. This waterway is proposed to be entirely retained within an environmental open space.



Photo set 9: 'Moderate' WWBW in the south-east of the site.

Fisheries 'Low' risk waterways

Two other waterways which feed Yaun Creek are present across Lot 185 and Lot 186. In Lot 186 the mapped waterway is located within the vegetation community identified as 'weed dominated area' in **Section 4.1.6**. This area contains a defined channel with minimal native vegetation present as a result of rural land-uses (refer **Photo set 10**). The other *low risk* mapped waterway extends south from a constructed dam in the north of Lot 185 south through Lot 56 to merge within Yaun creek downstream. This mapped waterway aligns with the vegetation community identified as 'vegetated drainage line' discussed in **Section 4.1.3**. This mapped waterway varies from a deep defined channel to a low-lying drainage flow path which has clearly been heavily modified to divert water past the existing residential dwellings. The majority of this waterway is dominated by weeds at the ground level with some areas of native regrowth and ornamental trees present (refer **Photo set 11**).



Photo set 10: Low risk waterway mapped within 'weed dominated area'



Photo set 11: Low risk waterway aligns with 'vegetated drainage line' leading to constructed dam on Lot 186

4.1.10 Local 'minor' mapped waterway

In the north-east of the site, a local mapped waterway is present associated with a constructed dam. Unlike other local mapped waterways on-site, this flowpath is not mapped under state legislation. This area was identified on-ground as being reflective of a low-lying drainage channel with limited natural features such as defined bed and banks, riparian vegetation or permanent/semi-permanent flow.



Photo set 12: Council mapped 'minor' waterway in the north-east of the site.

1. Field Survey Effort



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

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Legend

- Qld DCDB
- Project boundary
- TEC quadrat
- Scat meander

GPS Tree Plot

- Non-juvenile Koala Habitat Tree
- Dead Tree (stag)
- Native Tree
- Introduced Tree
- Weed Tree

Issue	Date	Description	Drawn	Checked
A	9/12/2024	Preliminary	TC	LB

0 10 20 30 40 50 60 70 80 90 100 m

Transverse Mercator | GDA 2020 | Zone 56 | 1:2,400 @ A3

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Courtney Drive, Upper Coomera

Address / RPD: Courtney Drive, Upper Coomera

9/12/2024 | 11694 E 01 Field Survey Effort A

2. Vegetation Communities



Notes:
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Legend

- Qld DCDB
- Project boundary

Vegetation communities

- Dam & adjacent vegetation
- Highly modified ornamental vegetation
- Modified rural residential vegetation
- Vegetation drainage line
- Weed dominated area
- Core Koala habitat areas
- Balance area
- VMA High value regrowth vegetation
- WMA Remnant vegetation

Issue	Date	Description	Drawn	Checked
A	9/12/2024	Preliminary	TC	LB

0 20 40 60 80 100 m

Transverse Mercator | GDA 2020 | Zone 56 | 1:2,400 @ A3

saunders havill group

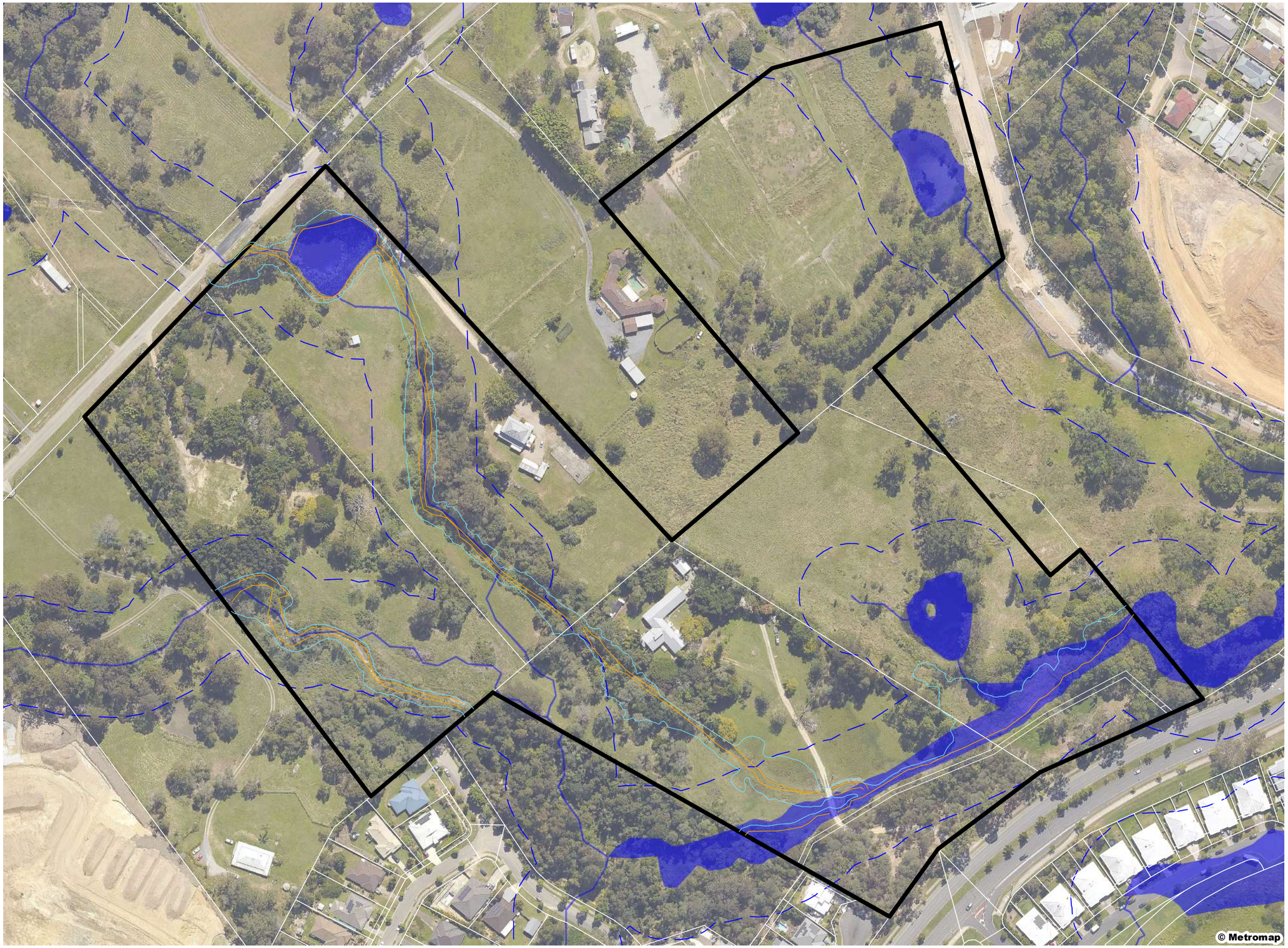
Norfolk Estates Pty Ltd

Courtney Drive, Upper Coomera

Address / RPD: Courtney Drive, Upper Coomera

9/12/2024 | 11694 E 02 Vegetation Communities A

3. Ground-truthed Waterways



Notes:
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Legend

- Qld DCDB
- Project boundary

Gold Cost City Council mapping

- Minor waterway
- Wetland and waterways buffer area

Waterway ground-truthing

- Waterway Low flow
- Top of high bank

Issue	Date	Description	Drawn	Checked
A	9/12/2024	Preliminary	TC	LB

0 20 40 60 80 m

Transverse Mercator | GDA 2020 | Zone 56 | 1:2,200 @ A3

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Norfolk Estates Pty Ltd

Courtney Drive, Upper Coomera

Address / RPD: Courtney Drive, Upper Coomera

9/12/2024 | 11694 E 03 GroundTruth Waterways A

4.2 Flora Survey Results

Flora was assessed during site surveys on the 6, 7 and 14 July 2023 and 11 October 2024 with the following section giving an overview of the general flora characteristics across the site.

4.2.1 Native flora species

- A total of one-hundred and ninety (190) species of flora were detected on-site during surveys, inclusive of eighty-nine (89) native species and one-hundred (101) exotic/weed species (refer **Table 6** and **Table 7**).
- Field observations identified the mapped Category B (remnant) areas of RE 12.3.11 and RE12.11.24 to be highly disturbed by invasive species at both the canopy and the sub-canopy layers. Indicator species of RE12.3.11 were observed scattered within this area.
- The vast majority of the site consists of Category X (non-remnant) vegetation which was observed on-ground to consist of cleared paddocks, planted ornamental species and modified rural vegetation.
- Of the 101 exotic species recorded, 11 are listed as 'invasive – restricted' under the *Biosecurity Act 2014*
- Several specimens of *Macadamia integrifolia* (Macadamia Nut) and *Macadamia tetraphylla* (Rough-shelled Macadamia Nut) were observed across the site. Given these specimens were located amongst planted ornamental species in close proximity to dwellings, they are not considered 'in the wild' and therefore not protected.
- A GPS Tree Plot Survey was carried out on-site locating and identifying Koala habitat trees and non-Koala habitat trees with a DBH ≥100 mm (measured at 1.4 m above ground). Trees meeting these criteria were located within and proximal to the proposed development area refer to **Plan 1** for tree plot and **Appendix E** for Tree Schedule.

Table 6: Native Flora Species observed on-site

Scientific Name	Common Name
Acacia concurrens	Black Wattle
Acacia disparrima	Hickory Wattle
Acacia fimbriata	Brisbane Wattle
Acacia leiocalyx	Early Flowering Black Wattle
Acacia melanoxylon	Australian Blackwood
Alloteropsis semialata	Cockatoo Grass
Allocasuarina littoralis	Black She-oak
Alphitonia excelsa	Soap Tree
Angophora leiocarpa	Smooth-barked Apple
Angophora woodsiana	Rough-barked Apple
Araucaria bidwillii	Bunya Pine
Araucaria cunninghamii	Hoop Pine

Scientific Name	Common Name
Araucaria heterophylla	Norfolk Island Pine
Archontophoenix cunninghamiana	Bangalow Palm
Aristida leptopoda	White Speargrass
Banksia robur	Wallum Banksia
Brachychiton acerifolius	Flame Tree
Breynia oblongifolia	Coffee Bush
Buckinghamia celsissima	Ivory Curl
Callitris columellaris	Coastal Cypress Pine
Castanospermum australe	Black Bean
Cheilanthes distans	Bristle Cloak Fern
Chrysocephalum apiculatum	Yellow Buttons
Cordyline stricta	Slender Palm Lily
Corymbia intermedia	Pink Bloodwood
Corymbia tessellaris	Moreton Bay Ash
Corymbia torelliana	Cadaghi
Cupaniopsis anacardioides	Tuckeroo
Cymbopogon refractus	Barbed Wire Grass
Dianella caerulea	Blue Flax Lily
Dockrillia linguiformis	Tick Orchid
Doodia aspera	Prickly Rasp Fern
Eragrostis brownii	Brown's Lovegrass
Eucalyptus carnea	Broad-leaved White Mahogany
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus grandis	Flooded Gum
Eucalyptus major	Grey Gum
Eucalyptus microcorys	Tallowwood
Eucalyptus moluccana	Gum-topped Box
Eucalyptus populnea	Poplar Box
Eucalyptus robusta	Swamp Mahogany
Eucalyptus saligna	Flooded Gum
Eucalyptus seeana	Narrow-leaved Red Gum
Eucalyptus siderophloia	Grey Ironbark
Eucalyptus tereticornis	Forest Red Gum
Eustrephus latifolius	Wombat Berry
Ficus benjamina	Weeping Fig
Ficus coronata	Sandpaper Fig

Scientific Name	Common Name
Ficus macrophylla	Moreton Bay Fig
Ficus obliqua	Small-leaved Fig
Ficus rubignosa	Rock Fig
Ficus watkinsiana	Strangler Fig
Geitonoplesium cymosum	Scrambling Lily
Glochidion ferdinandi	Cheese Tree
Glochidion sumatranum	Umbrella Cheese Tree
Goodenia rotundifolia	Star Goodenia
Grevillea robusta	Silky Oak
Hovea acutifolia	Purple Bush Pea
Imperata cylindrica	Blady Grass
Jagera pseudorhus	Foam Bark
Juncus usitatus	Common Rush
Leptospermum liversidgei	Olive Tea-tree
Livistona australis	Cabbage-tree Palm
Lobelia purpurascens	White Root
Lomandra longifolia	Long-leaved Matrush
Lomandra multiflora	Many Flowered Matrush
Lophostemon confertus	Brush Box
Lophostemon suavelons	Swamp Box
Macadamia integrifolia	Macadamia Nut
Macadamia tetraphylla	Rough-shelled Macadamia Nut
Macaranga tanarius	Macaranga
Maclura cochinchinensis	Cockspur Vine
Melaleuca bracteata	Black Tea-Tree
Melaleuca linariifolia	Snow-in-summer
Melaleuca quinquenervia	Broad-leaved Paperbark
Melaleuca saligna	White Bottlebrush
Melicope elleryana	Pink Doughwood
Pandorea pandorana	Wonga Wonga Vine
Panicum decompositum	Native Millet
Parablechnum minus	Small Water Fern
Parsonsia straminea	Monkey Rope
Pteridium esculentum	Bracken Fern
Pyrrosia confluens	Robber Fern
Syzygium luehmannii	Small-leaf Lillipilli

Scientific Name	Common Name
Telmatoblechnum indicum	Bungwall
Themeda triandra	Kangaroo Grass
Waterhousia floribunda	Weeping Lillipilli
Wodyetia bifurcata	Foxtail Palm
Xyris operculata	Hat Pins

4.2.2 Introduced species

A total of 101 flora species detected on-site were identified to be introduced to Australia or the local region (refer **Table 7**). Of these species, 11 are classified as 'restricted invasive' species under the *Biosecurity Act 2014* and will require some form of targeted management on-site. Further, these restricted species are assigned management priority under the Gold Coast City.

Table 7: Exotic/weed flora species detected on-site

Scientific Name	Common Name	Restricted under Biosecurity 2014	CGC Management Priority
Ageratum houstonianum	Blue Billy Goat Weed		
Ardisia crenata	Coral Berry		
Asclepias curassavica	Red-headed Cotton Bush		
Asparagus aethiopicus	Asparagus Fern	Invasive (Restricted)	Medium
Asparagus africanus	Climbing Asparagus	Invasive (Restricted)	Medium
Bauhinia variegata	Orchid Tree		
Bidens pilosa	Cobbler's Pegs		
Billbergia pyramidalis	Bromeliad		
Brachiaria decumbens	Signal Grass		
Calliandra haematocephala	Red Powder Puff		
Callisia repens	Creeping Inch Plant		
Celtis sinensis	Chinese Celtis	Invasive (Restricted)	Low
Cenchrus ciliaris	Buffel Grass		
Centella asiatica	Indian Pennywort		
Chloris gayana	Rhodes Grass		
Cinnamomum camphor	Camphor Laurel	Invasive (Restricted)	Medium
Citharexylum spinosum	Fiddlewood		
Commelina benghalensis	Hairy Commelina		
Crassocephalum crepidioides	Thickhead		
Cynodon dactylon	Green Couch		
Delonix regia	Poinciana		

Scientific Name	Common Name	Restricted under Biosecurity 2014	CGC Management Priority
Desmodium uncinatum	Silver-leaf Desmodium		
Dillenia indica	Elephant Apple		
Duranta erecta	Duranta		
Dypsis lutescens	Golden Cane Palm		
Echinochloa colona	Barnyard Grass		
Eriobotrya japonica	Loquat		
Erythrina sykesii	Common Coral Tree		
Eugenia uniflora	Surinam Cherry		
Gomphocarpus physocarpus	Balloon Cotton Bush		
Harpephyllum caffrum	South African Wild Plum		
Hylocereus undatus	Dragon Fruit		
Hypochaeris radicata	Flatweed		
Igna edulis	Ice Cream Bean		
Jacaranda mimosifolia	Jacaranda		
Koelreuteria elegans	Golden Rain Tree		
Lantana camara	Lantana	Invasive (Restricted)	Low
Leucaena leucocephala	Leucaena		
Libidibia ferrea	Leopard Tree		
Liquidambar styraciflua	Sweetgum		
Litchi chinensis	Lychee		
Macroptilium atropurpureum	Siratro		
Mangifera indica	Mango		
Megathyrsus maximus	Guinea Grass		
Melinis minutiflora	Molasses Grass		
Melinis repens	Red Natal Grass		
Morus alba	Mulberry		
Murraya paniculata	Mock Orange		
Musa sp.	Banana		
Neonotonia wightii	Green Glycine		
Nephrolepis cordifolia	Fishbone Fern		
Nymphaea caerulea	Blue Water Lily		
Ochna serrulata	Ochna		
Oxalis corniculata	Creeping Oxalis		
Paspalum mandiocanum	Broad-leaved Paspalum		
Passiflora edulis	Passion Fruit Vine		

Scientific Name	Common Name	Restricted under Biosecurity 2014	CGC Management Priority
Passiflora suberosa	Corky Passion Vine		
Persea sp.	Avocado		
Philodendron bipennifolium	Horsehead Philodendron		
Phoenix dactylifera	Date Palm		
Pinus elliottii	Slash Pine		
Plumbago auriculata	Blue Plumbago		
Plumeria sp.	Frangipani		
Psidium guajava	Common Guava		
Ravenala madagascariensis	Travellers Palm		
Rivina humilis	Coral Berry		
Schefflera actinophylla	Umbrella Tree		
Schinus terebinthifolius	Broadleaf Pepper Tree	Invasive (Restricted)	Medium
Schizolobium parahyba	Brazilian Firetree		
Schotia brachypetala	Drunken Parrot Tree		
Senecio madagascariensis	Fireweed	Invasive (Restricted)	Low
Senna pendula	Easter Cassia		
Setaria palmifolia	Palm Grass		
Setaria sphacelata	South African Pigeon Grass		
Sida acuta	Common Wireweed		
Sida cordifolia	Flannel Weed		
Sida rhombifolia	Common Sida		
Solanum chrysotrichum	Giant Devil's Fig		
Solanum mauritianum	Wild Tobacco		
Solanum nigrum	Blackberry Nightshade		
Solanum seaforthianum	Brazilian Nightshade		
Solanum torvum	Devil's Fig		
Spagneticola trilobata	Singapore Daisy	Invasive (Restricted)	Medium
Spathodea companulata	African Tulip Tree	Invasive (Restricted)	Low
Sporobolus africanus	Parramatta Grass	Invasive (Restricted)	
Sporobolus pyramidalis	Giant Rat's Tail Grass	Invasive (Restricted)	Low
Stachytarpheta cayennensis	Blue Snakeweed		
Syagrus romanzoffiana	Cocos Palm		
Synedrella nodiflora	Cinderella Weed		
Syngonium podophyllum	Arrowhead Plant		
Taraxacum officinale	Common Dandelion		

Scientific Name	Common Name	Restricted under Biosecurity 2014	CGC Management Priority
Taxodium distichum	Swamp Cypress		
Tecoma capensis	Cape Honeysuckle		
Tecoma stans	Yellow Bells		
Tipuana tipu	Tipuana		
Trifolium repens	White Clover		
Urena lobata	Urena Burr		
Xanthium occidentale	Noogoora Burr		
Yucca gigantea	Spineless Yucca		
Yucca gloriosa	Yucca		

4.2.3 Threatened Flora

The EPBC Act PMR listed six TECs considered to have the potential to be found within the area (refer **Section 3.1**). In addition, thirty-two (32) flora species are listed under the EPBC Act as possibly occurring on-site or within a 5 km radius; no naturally occurring EPBC flora species were recorded at the time of assessment.

- The Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland Ecological community which occurs in coastal catchments, mostly at elevations of less than 20 m above sea level that are typically found within 30 km of the coast, however, distance can vary by catchment. The canopy layer is dominated by *Casuarina glauca* (Swamp Oak) and generally reflected in RE12.1.1. No species composition that matches with the detailed characteristics were identified on-site.
- Coastal Swamp Sclerophyll Forest of New South Wales and Southeast Queensland community associated with freshwater (to brackish) wetlands on low-lying coastal areas. In typically intact forest, the canopy is often layered, with a typical canopy where one melaleuca species dominates or mixed melaleuca and eucalypts. This TEC is often associated with RE12.2.7, 12.3.4, 12.3.4a, 12.3.5, 12.3.6 and 12.3.20. Although *Melaleuca* species were present on-site they did not dominate and did not fit the species composition or detailed characteristics associated with this TEC.
- The Lowland Rainforest of Subtropical Australia TEC typically has high species richness. In the northern extent of NSW, this TEC is known to be associated with dry rainforests, northern warm temperate rainforests, and subtropical rainforests. This TEC is part of a number of RE communities including 12.3.1, 12.5.13, 12.8.3, 12.8.4, 12.8.13, 12.11.1, 12.11.10, 12.12.1 and 12.12.16. No species composition, associated RE's, or matches with the detailed characteristics were identified on-site.
- The Subtropical and Temperate Coastal Saltmarsh (hereafter Coastal Saltmarsh) ecological community occurs within a relatively narrow margin of the Australian coastline. This community is largely associated with Least Concern RE 12.1.2 (Saltpan vegetation including grassland and herb land on marine clay plains). Desktop analysis and field surveys confirmed that regional ecosystem 12.1.2 does not occur on-site nor any environment which would support this ecological community.

- White Box – Yellow Box – Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands are characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs, and the dominance, or prior dominance, of White Box, Yellow Box or Blakely's Red Gum trees. In Queensland the ecological community is a primary component of the following Regional Ecosystems: 11.8.2a, 11.8.8, 11.9.9a, 13.3.1, 13.11.8, 13.12.8 and 13.12.9. It can also be a smaller component of the following regional ecosystems: 11.3.23, 12.8.16 (only at the far western edge of the bioregion), 13.3.4, 13.11.3 and 13.11.4. These regional ecosystems range in conservation status from 'not of concern at present' to 'endangered'. None of these RE communities occur on site or within the immediate vicinity of the site.
- The Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions occurs in the New South Wales North Coast (NNC) and South Eastern Queensland (SEQ) IBRA bioregions and on Curtis Island in the Brigalow Belt North (BBN) IBRA Bioregion (DoE 2013). The ecological community is found on alluvial landforms, including floodplains, the riparian zones of parent rivers and other order tributaries, alluvial flats, floodplain/alluvial terraces and periodically flooded depressions. Components of this ecological community are recognised as endangered under this framework, including 12.3.2, 12.3.2a, 12.3.3, 12.3.3a, 12.3.3b, 12.3.3d, 12.3.4a, 12.3.7, 12.3.7c, 12.3.7d, 12.3.10, 12.3.11, 12.3.11a, 12.3.11b, 12.3.12, 12.3.14a, 12.3.15 and 12.3.19.
    - Category B (remnant) vegetation mapped as RE12.3.11 is present in the eastern corner of the site. However, field surveys identified this area as being highly modified with exotic species dominating the canopy and sub-canopy layers. As a result, vegetation on-ground is not considered to meet the key diagnostic characteristics or condition classes to be considered representative of this threatened ecological community.

No TECs were identified as being present on-site

A search of the NCA Wildlife Online database listed fifteen (15) threatened flora species as possibly occurring within the area, refer **Appendix B**. None of these species were recorded within the site or surrounds with habitat to support these species absent from the area.

For the purposes of this report, a significant flora species was a species:

- Scheduled as Critically Endangered, Endangered, Vulnerable or Conservation Dependent under the Commonwealth EPBC Act; and/or
- Scheduled as Endangered, Vulnerable, or Near Threatened (EVNT) under the Queensland NCA; and/or
- Identified by Council as a locally significant species.

Of note, several specimens of *Macadamia integrifolia* (Macadamia Nut) and *Macadamia tetraphylla* (Rough were recorded across the site. Given the location of the specimens amongst other ornamental planted species these specimens are not considered 'in the wild' and therefore are not protected.

No significant flora species as defined under the EPBC or NCA nor habitat to support them were encountered on-site.

4.3 Fauna Survey Results

A basic fauna assessment was conducted across the site to identify and describe on-ground habitat features (e.g. habitat trees, fallen logs, termite mounts, 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.

The following observations have been made based on field survey:

- As the majority of the site has undergone historical and on-going modification for rural uses microhabitat features such as fallen logs and areas of leaf litter are confined to vegetated areas of the site. Furthermore, the majority of the vegetated areas on-site are dominated by exotic weed species particularly at the ground layer. Therefore, it is considered unlikely that the site provides a diverse habitat features to support a high number of species. This is reflected in the species observed on-site during surveys, with the majority considered highly mobile, generalist species accustomed to urban environments.
- Thirty-one (31) fauna species were observed on-site or as fly-over species; twenty-six (26) birds, four (4) mammals and one (1) reptile (refer **Table 8**). All species recorded are considered species common to the local area with four of the species considered introduced.

Table 8: Fauna Species List

Scientific Name	Common Name	Native/Introduced
Birds		
Alectura lathami	Australian Brush-turkey	Native
Anas superciliosa	Pacific Black Duck	Native
Cacatua galerita	Sulphur-crested Cockatoo	Native
Cacatua sanguinea	Little Corella	Native
Corvus orru	Torresian Crow	Native
Cracticus nigrogularis	Pied Butcherbird	Native
Dacelo novaeguineae	Laughing Kookaburra	Native
Egretta novaehollandiae	White-faced Heron	Native
Entomyzon cyanotis	Blue-faced Honeyeater	Native
Eopsaltria australis	Eastern Yellow Robin	Native
Fulica atra	Eurasian Coot	Native
Gallus gallus domesticus	Chicken	Introduced
Geopelia humeralis	Bar-shouldered Dove	Native
Grallina cyanoleuca	Magpie-lark	Native
Gymnorhina tibicen	Australian Magpie	Native

Scientific Name	Common Name	Native/Introduced
Lichenostomus chrysops	Yellow-faced honeyeater	Native
Manorina melanophrys	Bell Miner / Bellbird	Native
Meliphaga lewinii	Lewin's Honeyeater	Native
Pardalotus striatus	Striated Paradalote	Native
Philemon corniculatus	Noisy Friarbird	Native
Psophodes olivaceus	Eastern Whipbird	Native
Rhipidura fuliginosa	Grey Fantail	Native
Rhipidura leucophrys	Willie Wagtail	Native
Streptopelia chinensis	Spotted Turtle-dove	Introduced
Todiramphus sanctus	Sacred Kingfisher	Native
Vanellus miles	Masked Lapwing	Native
Mammals		
Equus caballus	Horse	Introduced
Lepus europaeus	Hare	Introduced
Macropus giganteus	Eastern Grey Kangaroo	Native
Macropus rufogriseus	Red-necked Wallaby	Native
Reptiles		
Cryptoblepharus virgatus	Wall Skink	Native
Intellagama lesueurii	Australian Water Dragon	Native

4.3.1 Threatened fauna species

The EPBC Act PMST listed fifty-three (53) fauna species listed as Threatened under the EPBC Act with the potential to occur within 5 km of the site (**Appendix B**). Additionally, the NCA listed nine (9) fauna species listed as Threatened with the potential to occur within 5 km of the site (**Appendix C**). Assessments have identified that all flora and fauna species listed as threatened under the EPBC Act and NCA were considered unlikely to occur on-site. This conclusion is due to the highly modified nature of the site, which contains largely cleared characteristics, and limited connectivity potential.

No fauna species listed as threatened under the EPBC Act nor NCA were directly observed on-site.

Phascolarctos cinereus (Koala)

Remnant and regrowth vegetation is mapped on-site within small polygons along the eastern and northern boundaries. Koala Habitat Areas are also mapped in these areas including canopy species *Eucalyptus crebra* (Narrow-leaved Ironbark), *Corymbia intermedia* (Pink Bloodwood), *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus microcorys* (Tallowwood), *Eucalyptus carnea* (Broad-leaved White Mahogany), *Eucalyptus siderophloia* (Grey Ironbark) and *Angophora leiocarpa* (Smooth-barked Apple). However, the majority of

mapped Koala habitat is dominated by *Pinus elliottii* (Slash Pine) and acacia species. Targeted searches were carried out in the eastern extent of the site in the form of scat meanders. No scats or direct observations of the species were recorded on-site during these targeted surveys or incidentally during tree plotting surveys (refer **Plan 1** for field survey effort).

A review of online databases (Atlas of Living Australia and Biomaps) returned observed sightings of the Koala on-site and within the local area. However, the sighting on-site is dated as 1982, therefore not a practical indicator of species presence due to being over 40 years old. More abundant and recent records of the species (2017) occur 2 km north of the site, adjacent Crystal Creek Reserve. Only five (5) records occur within 2km of the site, three (3) of which were recorded within the last 20 years. The majority of Koala sightings within the Upper Coomera locality are further west associated with Cedar Creek and Mount Tamborine National Park or within parkland and retained bush east of Pacific Motorway.

As discussed previously, connectivity potential to the site is limited to Yaun Creek within the south of the site which connects to council bushland areas further east and south. All other boundaries of the site maintain minimal connectivity value as a result of cleared areas within surrounding properties, planted ornamental species and roads. Movement potential within the site itself is also limited as areas of vegetation were identified as consisting of predominantly ornamental planted species with high levels of weed presence. Therefore, it is considered unlikely that koala would utilise the site, particularly through the north, however vegetation associated with Yuan Creek does provide the ability for transient individuals to move through the area to vegetated areas within council land.

While potential koala habitat was identified on-site, there is limited evidence to indicate the species is present and limited local records coupled with the small total area of mapped KHA (approx. 1ha). The KHA area retains connectivity value associated with Yuan Creek which is to be mostly retained through the proposed development. A small are of mapped KHA is proposed to be removed in the southern corner of the site. Given this area adjoins an existing cul-de-sac it is unlikely to significantly impact any movement potential for koala. As the proposed development will impact vegetation within a Koala Habitat Area, referral to DES is required and an assessment against SDAP code 25 will be provided in conjunction with this report.

5 Development impact assessment

5.1 Proposed Development

The proposed development is for the creation of 149 residential lots, associated roads and infrastructure, detention and drainage areas, local park and environmental open space (refer **Appendix F**). Under the CGC City Plan the site is zoned as 'Emerging Community', with the proposed development aligning with the planning intent of the area in providing low intensity dwellings.

In order to deliver the proposed project, clearing of vegetation will occur across the majority of the site, with exception of the environmental open space areas (refer **Plan 4**). The retention of these areas aligns with regulated vegetation, Koala Habitat Area and mapped waterways. The local park space has potential to retain vegetation where possible within landscape designs. The retention and potential rehabilitation of these areas will maintain habitat connectivity and formalise a space for fauna refuge and movement potential.

Although assessments indicate that the site is not considered to provide significant fauna movement potential due to surrounding and current land uses, connectivity within the southern portion of the site is more prominent than the other boundaries. Therefore, retention of this portion of vegetation will formalise an area for future fauna movement potential within an urban area where development has steadily increased throughout recent years. Additionally, the retention of waterway corridors will allow for on-going local level connectivity and refuge. The majority of the proposed development will occur within areas that have long been highly modified and maintained for rural residential uses and horse agistment purposes. Vegetation within these areas is reflective of the historical and current land uses, with large areas dominated by planted ornamental and introduced species. The highest value vegetation was observed within the south-east corner of the site in conjunction with core KHA mapping, and this area will be retained under the proposed development.

Waterway setbacks

Following the release of updated fisheries waterway mapping in late 2023, the site is now heavily constrained by the presence of moderate and low risk waterways for waterway barrier works under the *Fisheries Act 1994*. Discrepancies were observed between the state fisheries mapping and the CGC local waterway mapping with the true extent of the waterways mapped on-ground.

Waterways mapped on-site were identified as being highly modified flowpaths reflective of rural residential uses. On-ground, significant natural waterway features such as channel shading, riparian vegetation and overhanging roots were limited. However, defined flowpaths were observed in parts albeit heavily weed infested, including restricted invasive species *Sphagneticola trilobata* (Singapore Daisy) and exotic grasses. With the exception of the council mapped waterway in the north-east of the site which is proposed as drainage/detention area due to the lack of waterway values, all other mapped waterways on-site are intended to be fully retained within environmental open space areas with corridor widths of at least 25 m (predominantly >30 m). All waterways are mapped as 'minor waterways' on the CGC planning scheme which states an acceptable outcome of a 30m setback from the outer bank to minimise impacts on waterways from development.

Reduced setbacks have been proposed for this project and are considered suitable. Firstly, the highly modified nature of the project lots has resulted in highly modified waterways which now retain minimal natural features such as riparian vegetation. Adjacent properties where these waterways are mapped consist of constructed dams, modified flowpaths and cleared paddocks. As a result, it is considered that the functionality of these waterways, from an ecological perspective, is confined to the bankful width. The full extent of the waterways is proposed to be retained within corridors at least 25 m wide which will maintain the current functionality of the waterways and provide a buffer from development. Notably, where corridor functionality is anticipated to be of greater value, such as along Yuan Creek in the south), corridor widths up to 60 m are proposed

The mapped waterways are present across the centre of the site which with the inclusion of a 30m buffer from the top of bank essentially eliminates the majority of the developable land on-site. From a planning perspective, it is not feasible to provide at least 30mm setbacks from mapped waterways while still achieving the planning intent of the 'emerging community' zone which is a key growth area in the region. Therefore, reduced setback have been proposed while still ensuring the full extent of waterways are retained

Koala habitat

Small polygons of KHA are present on-site which are intended to be impacted. At present, an impact assessment shows that impacts to KHA fall within exemptions (boundary clearing and 500m2) (refer **Plan 5**). However, should further impacts to KHA be required to facilitate earthworks, etc then referral to SARA and an assessment against State Code 25 would be required.

5.2 Offsets

Under the *Environmental Offset Act 2014* biodiversity offsets are required for any clearing of matters of State or Local Environmental Significance (MSES and MLES). Core koala habitat is considered an MSES and therefore clearing of KHA requires offsets, if not covered by exemptions.

A proponent may deliver an environmental offset in any of the following ways:

- Financial settlement offsets a payment
- Proponent-driven offsets which includes land-based offsets and/or delivery of actions in Direct Benefit Management Plan
- a combination of these approaches.

As a financial settlement offsets for koala habitat within the CGC are required to be offset at $920 per tree removed.

Alternatively, an on-ground offset of planting of NJKHTs at a 3:1 ratio could be implemented.

The proposed development is intending to have minimal impact on City of Gold Coast MLES. Furthermore, no MLES requiring offsets are proposed to be impacted by the development, refer **Plan 4** – Development layout and **Appendix D** – local code responses.

4.1 Development Assessment



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Legend

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- GC Vegetation Managment - Medium
- Detention Area
- Environmental Open Space
- Local Park
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- Stage boundaries
- 15m water offset
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Waterway ground-truthing

- Waterway Low flow
- Top of high bank

GPS Tree Plot

- Non-juvenile Koala Habitat Tree
- Dead Tree (stag)
- Native Tree
- Introduced Tree/Weed Tree
- Tree to remove
- Tree to retain
- Tree to retain (neighbouring)

Issue	Date	Description	Drawn	Checked
A	9/12/2024	Preliminary	TC	LB

0 20 40 60 80 100 m

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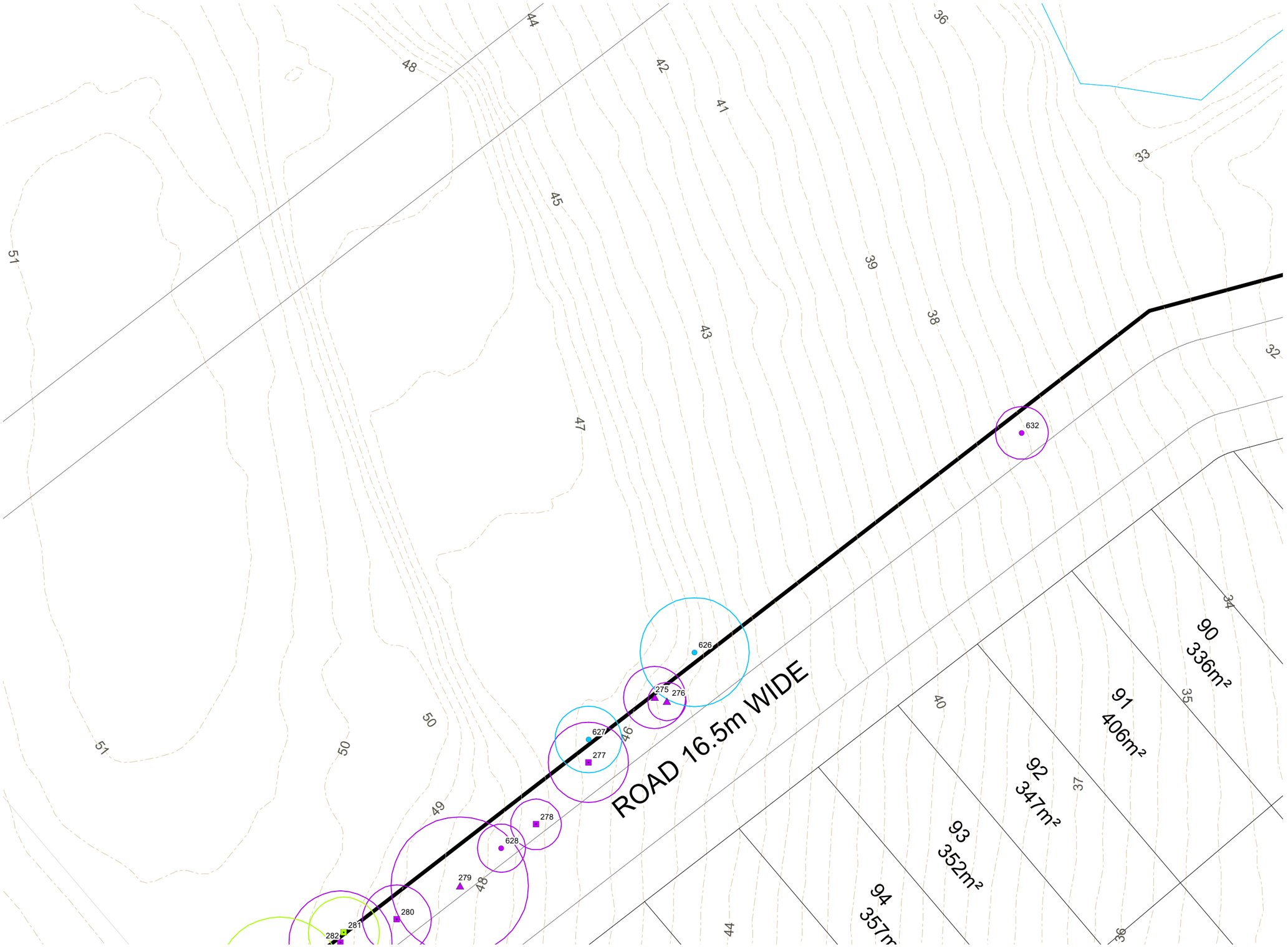
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4.02 Development Assessment



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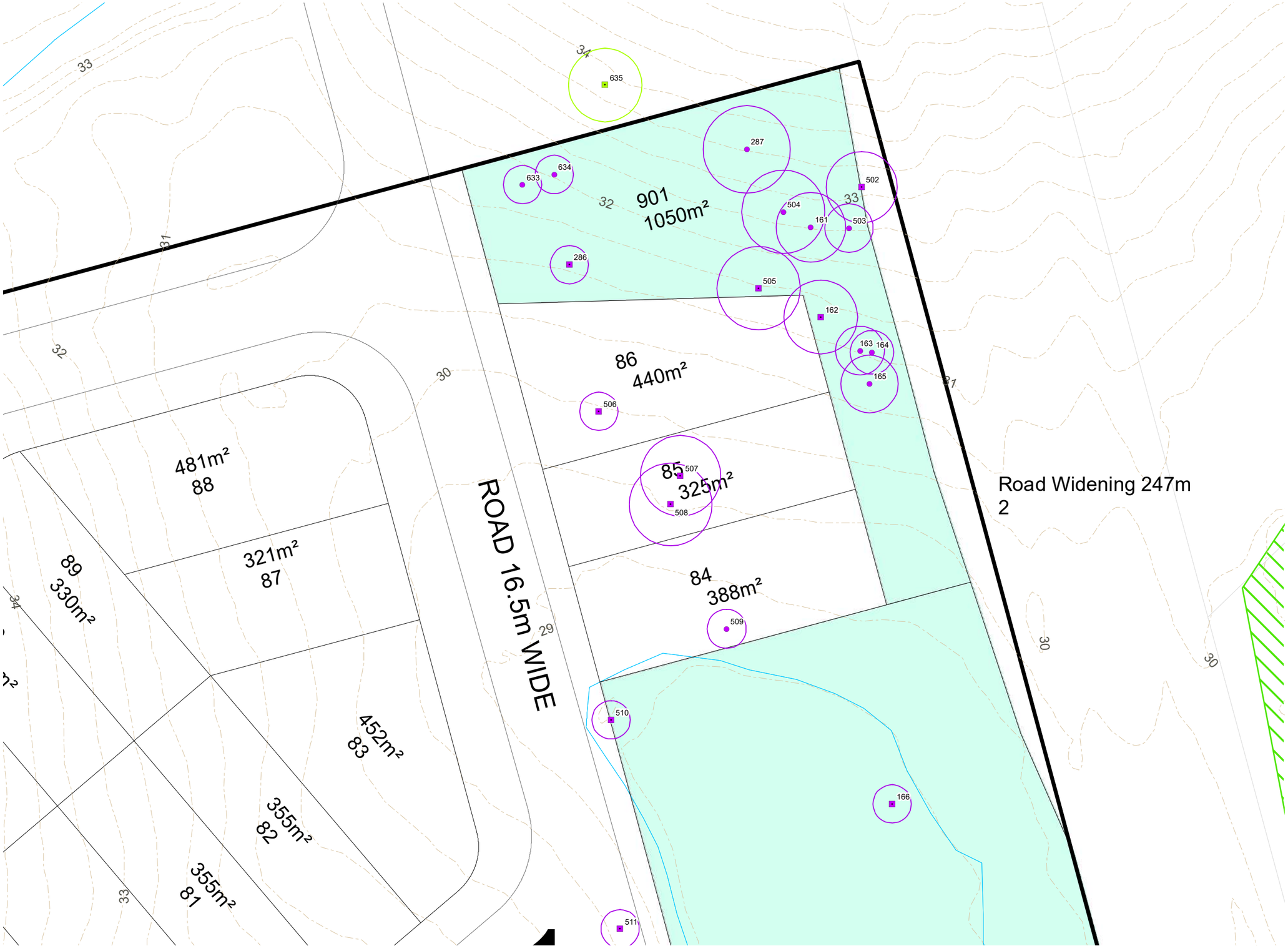
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4.03 Development Assessment



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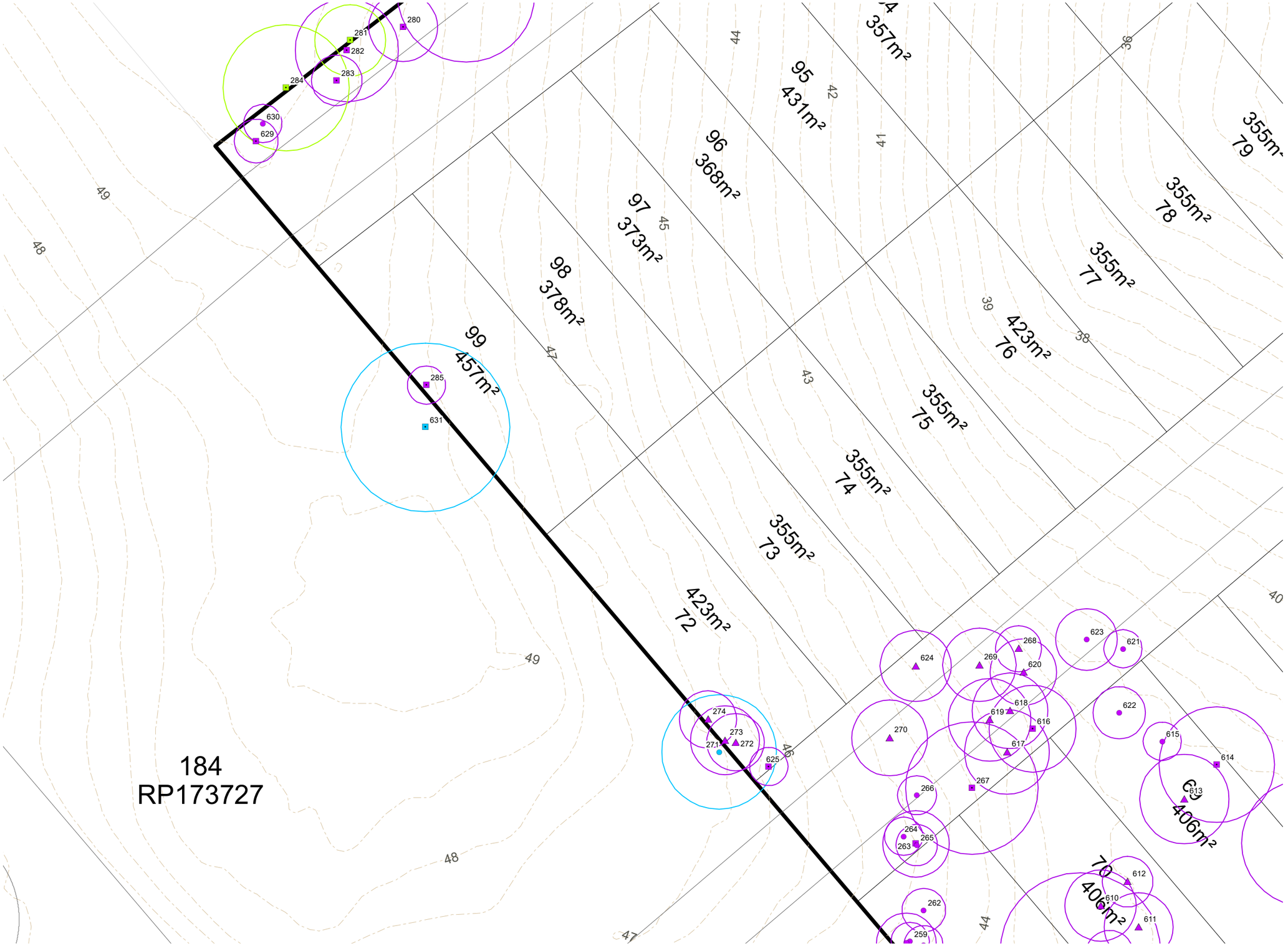
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4.04 Development Assessment



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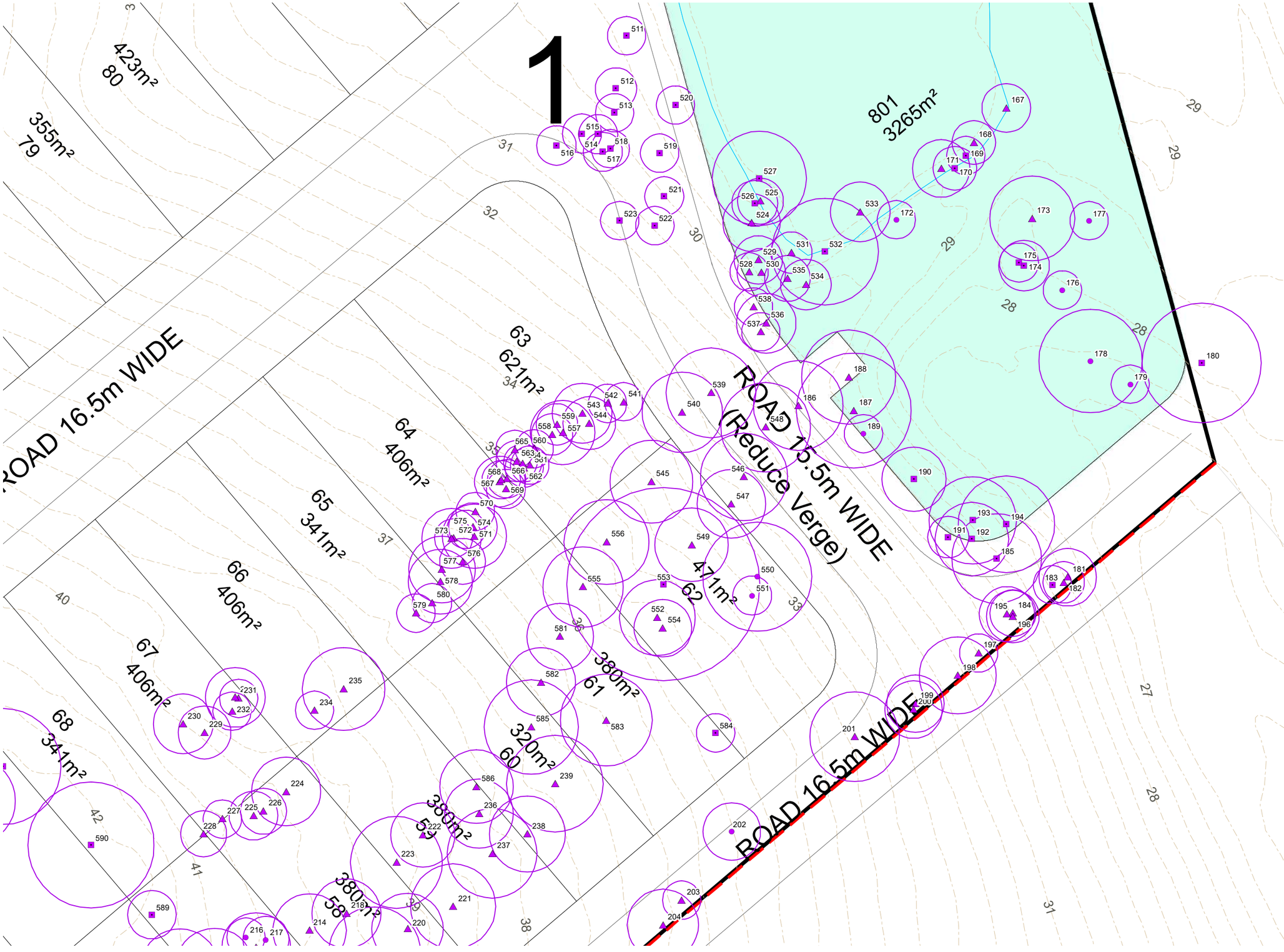
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4.05 Development Assessment



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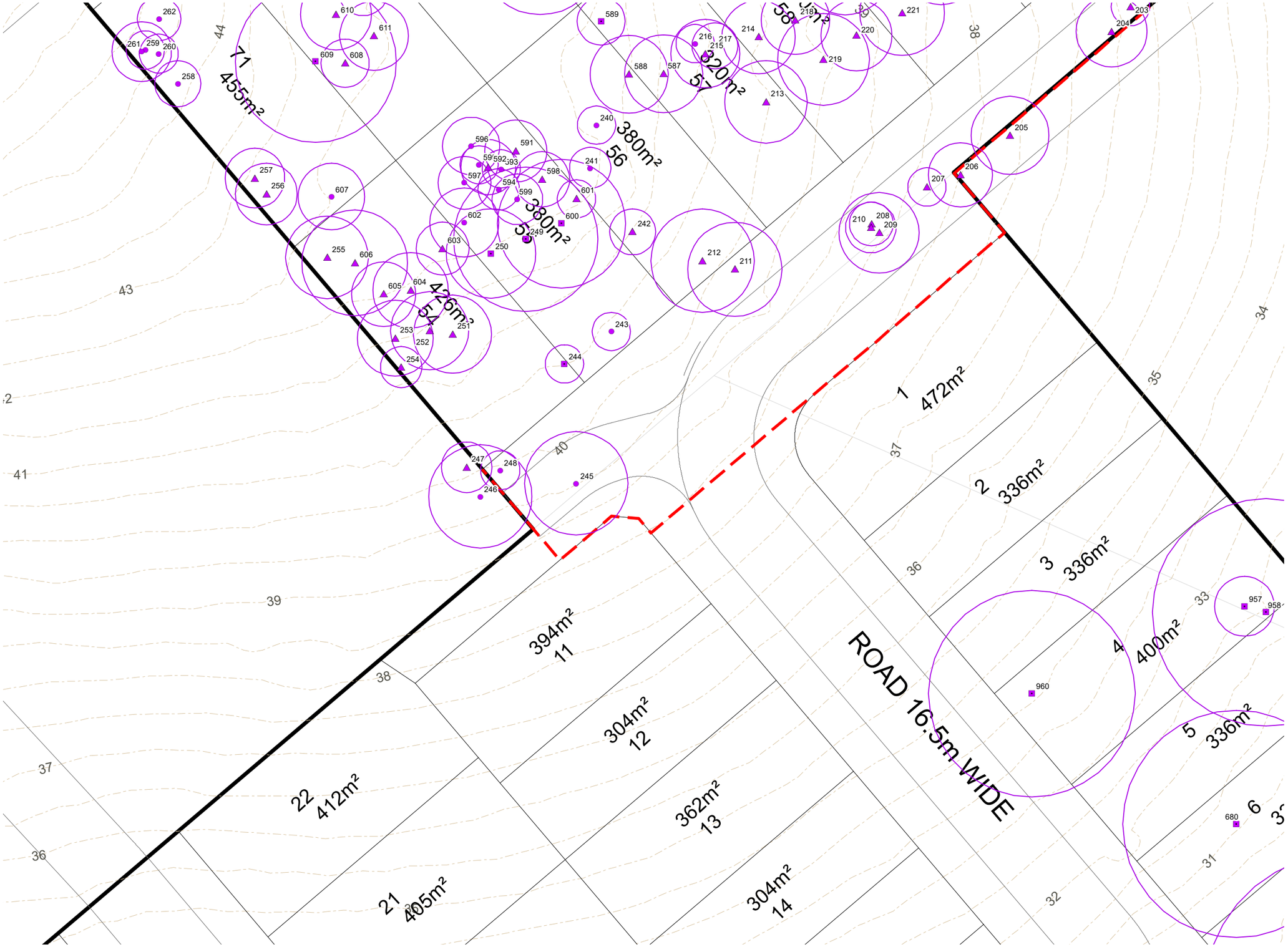
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4.06 Development Assessment



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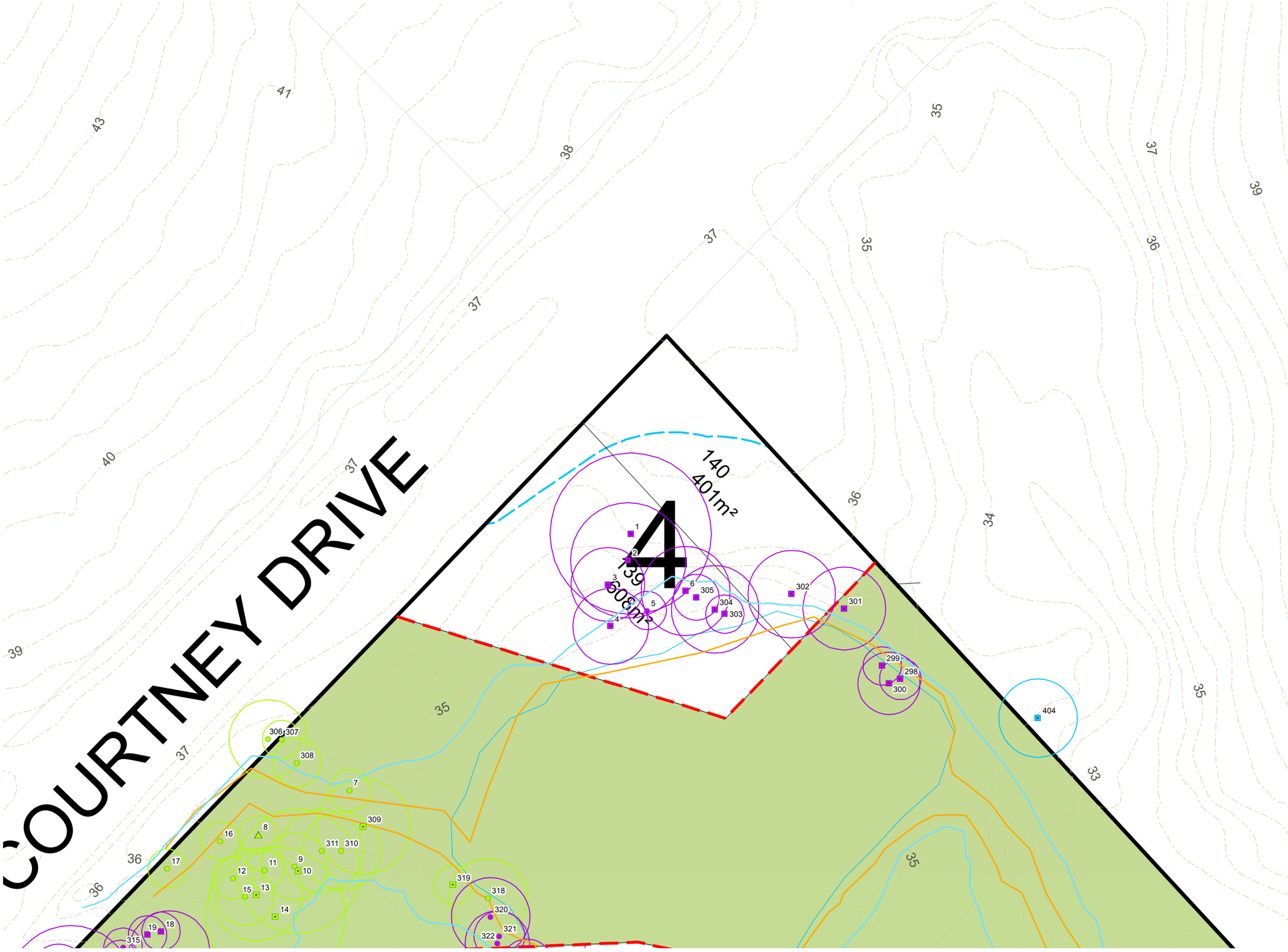
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4.07 Development Assessment



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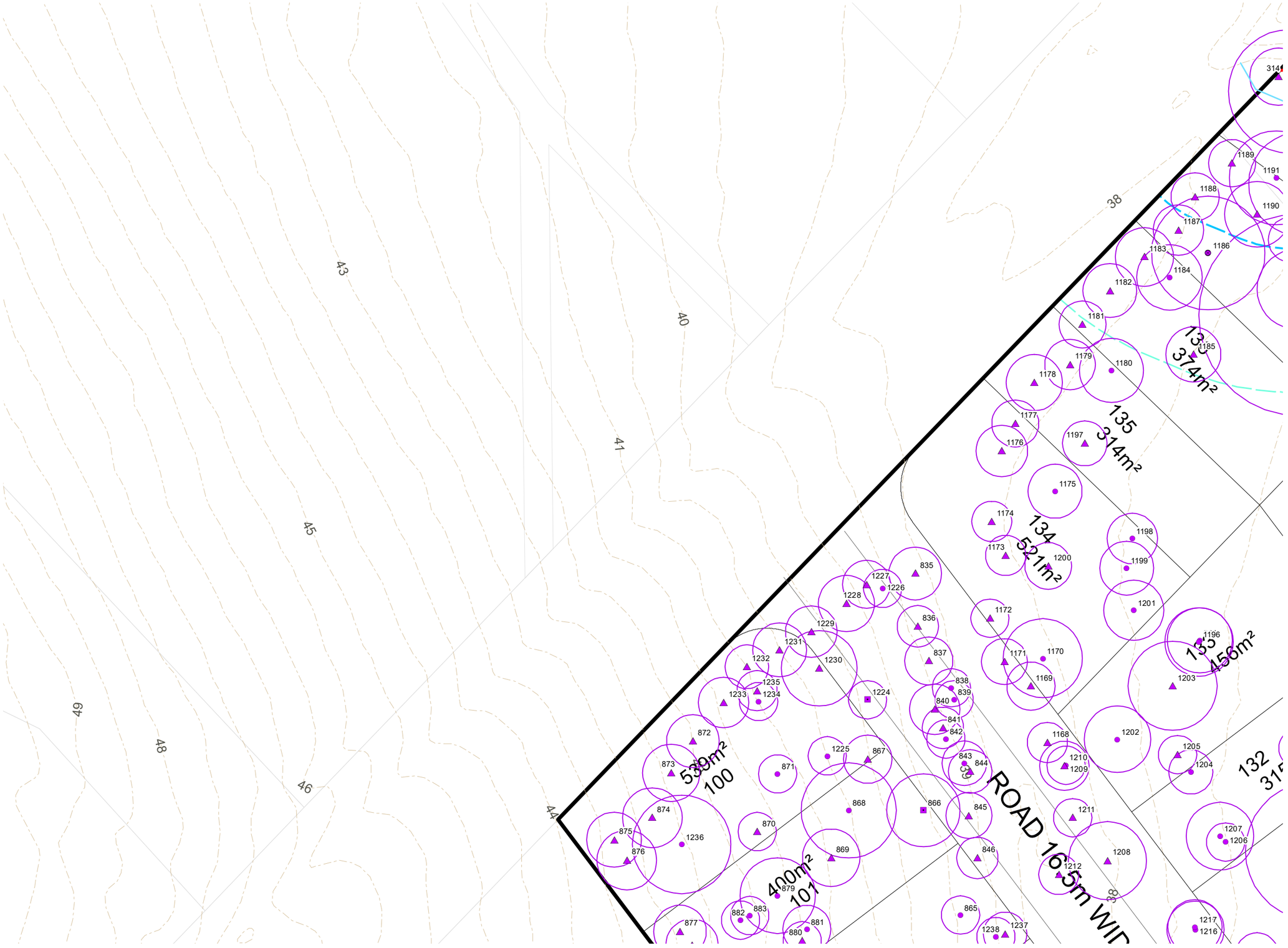
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4.08 Development Assessment



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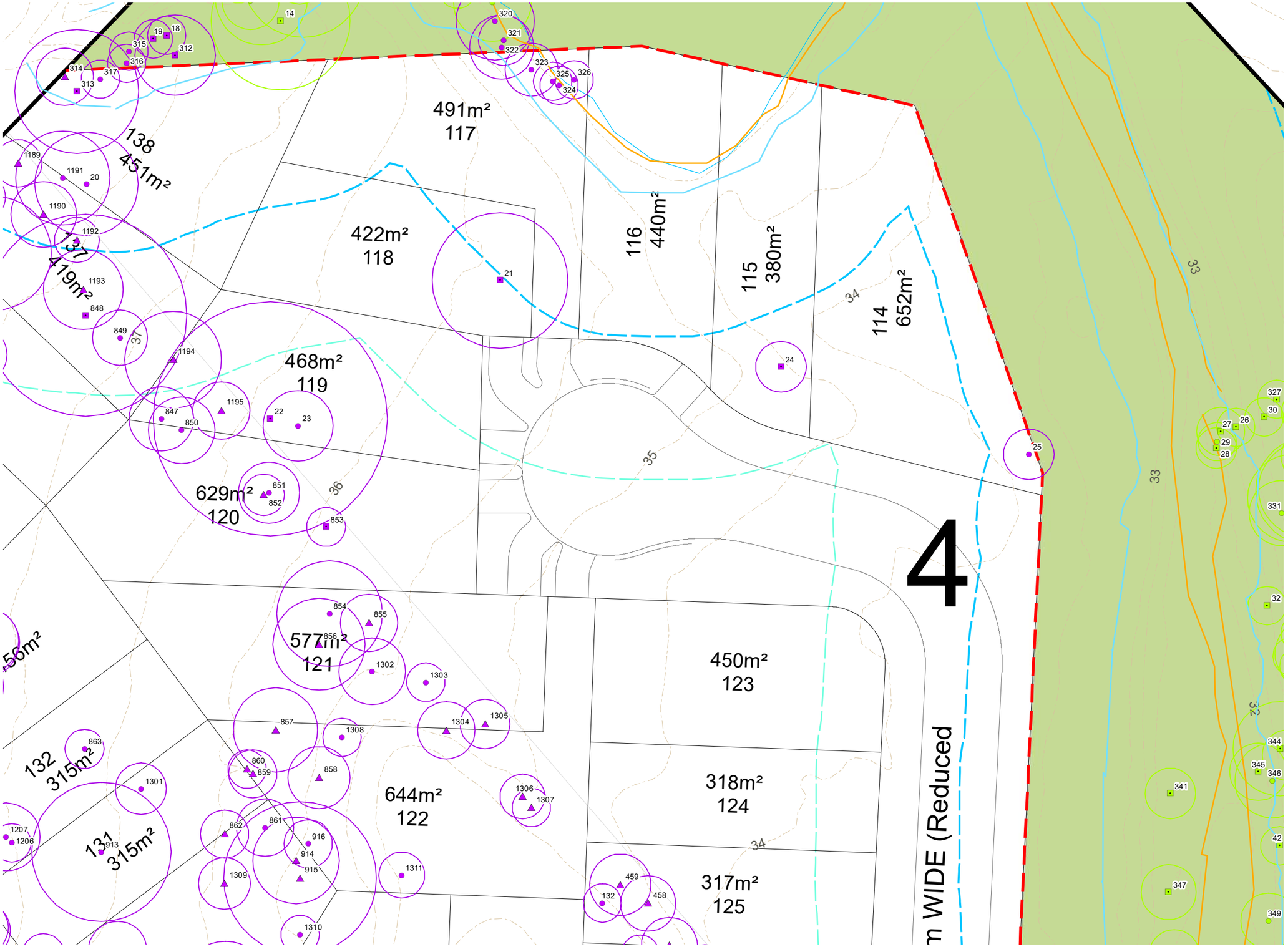
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4.09 Development Assessment



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Legend

- Qld DCDB
- Project boundary

Waterway ground-truthing

- Waterway Low flow
- Top of high bank
- GC Vegetation Managment - General
- GC Vegetation Managment - Medium
- Detention Area
- Environmental Open Space
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- Proposed lots
- Proposed road pavement
- Stage boundaries
- 15m water offset
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GPS Tree Plot (w/ TPZ)

- Non-juvenile Koala Habitat Tree
- Dead Tree (stag)
- Native Tree
- Introduced Tree/Weed Tree
- Tree to remove
- Tree to retain
- Tree to retain (neighbouring)

Issue	Date	Description	Drawn	Checked
A	9/12/2024	Preliminary	TC	LB

0 2 4 6 8 10 m

Transverse Mercator | GDA 2020 | Zone 56 | 1:400 @ A3

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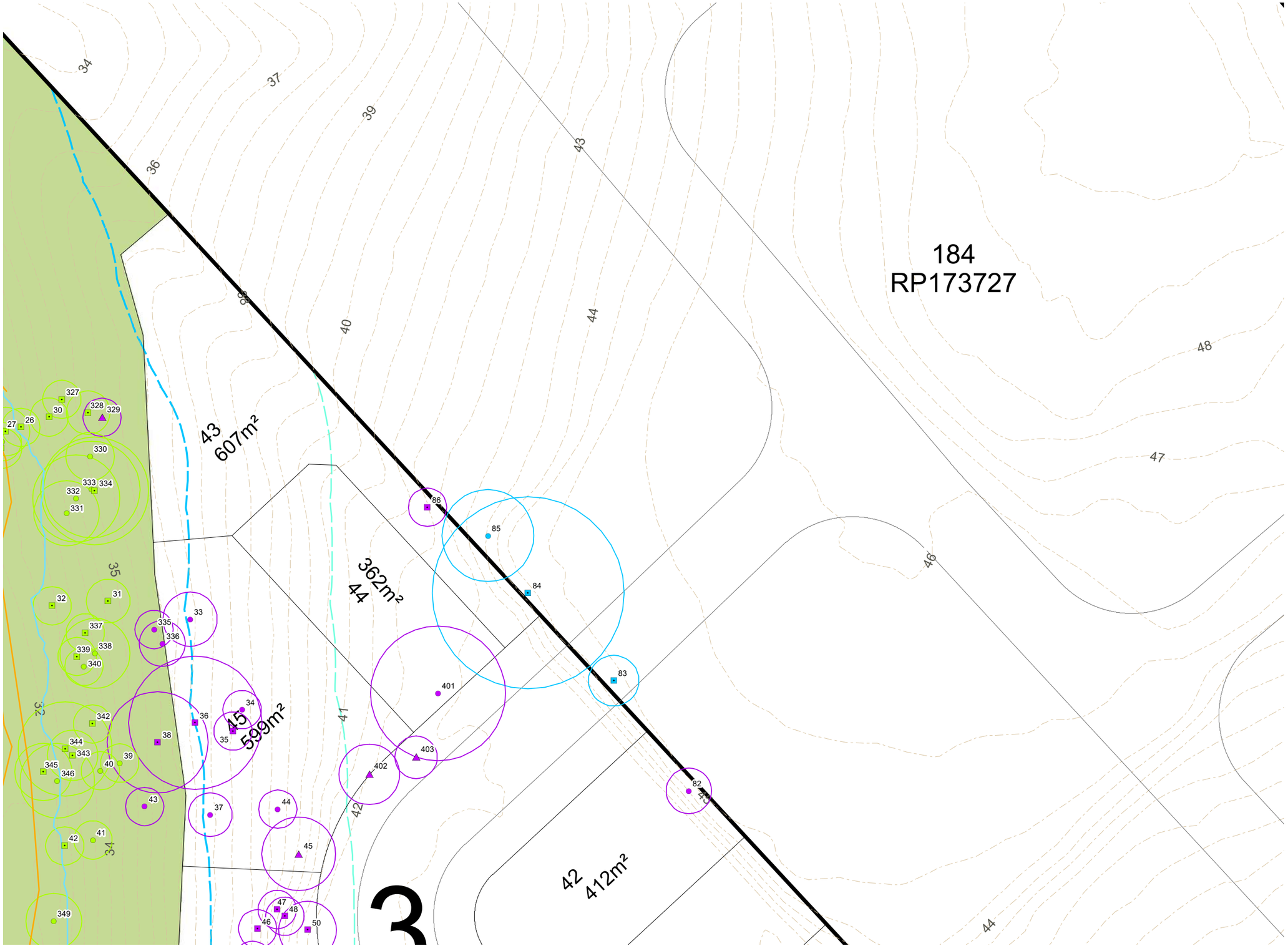
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4.10 Development Assessment



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Transverse Mercator | GDA 2020 | Zone 56 | 1:400 @ A3

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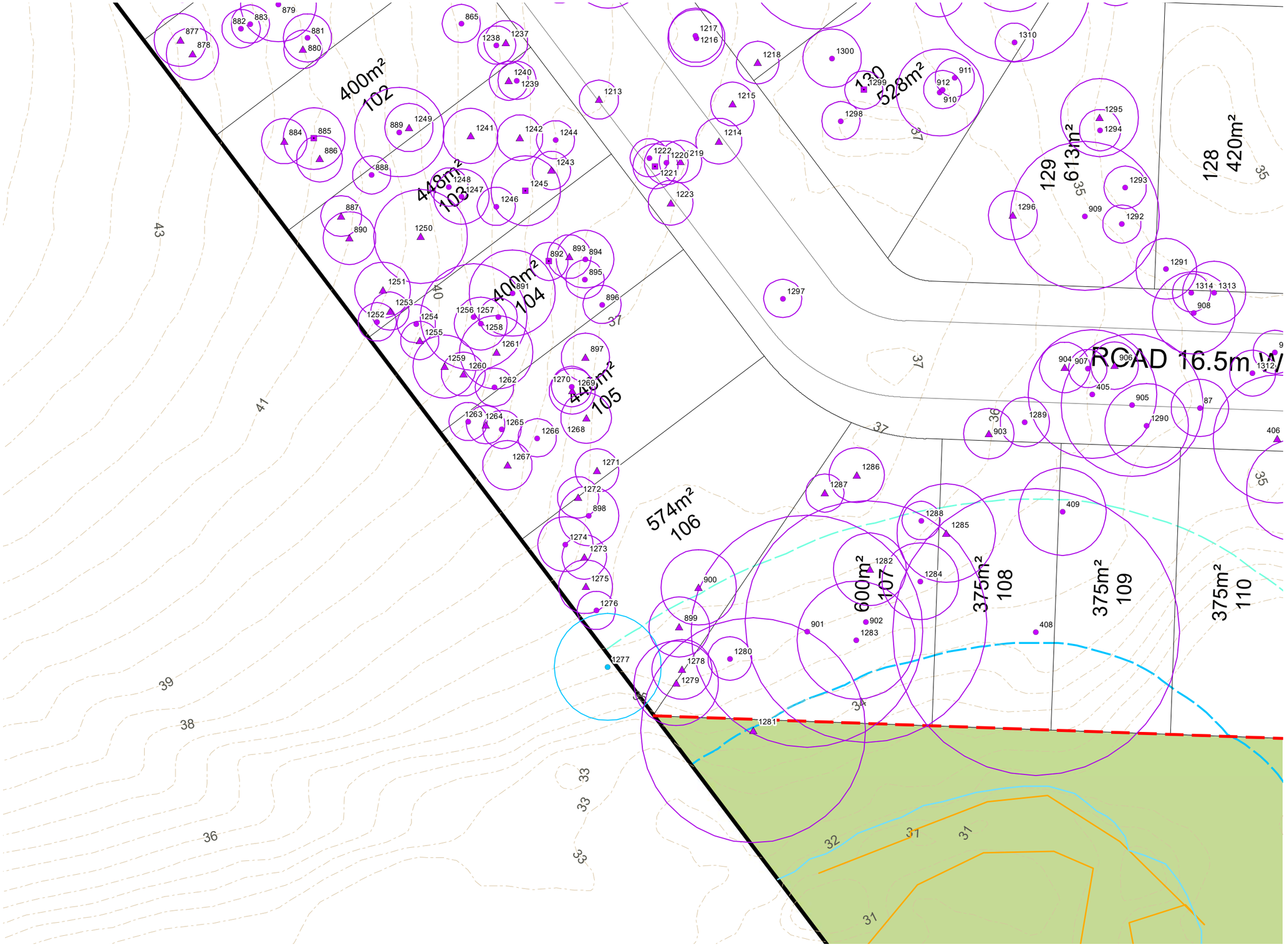
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4.11 Development Assessment



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Transverse Mercator | GDA 2020 | Zone 56 | 1:400 @ A3

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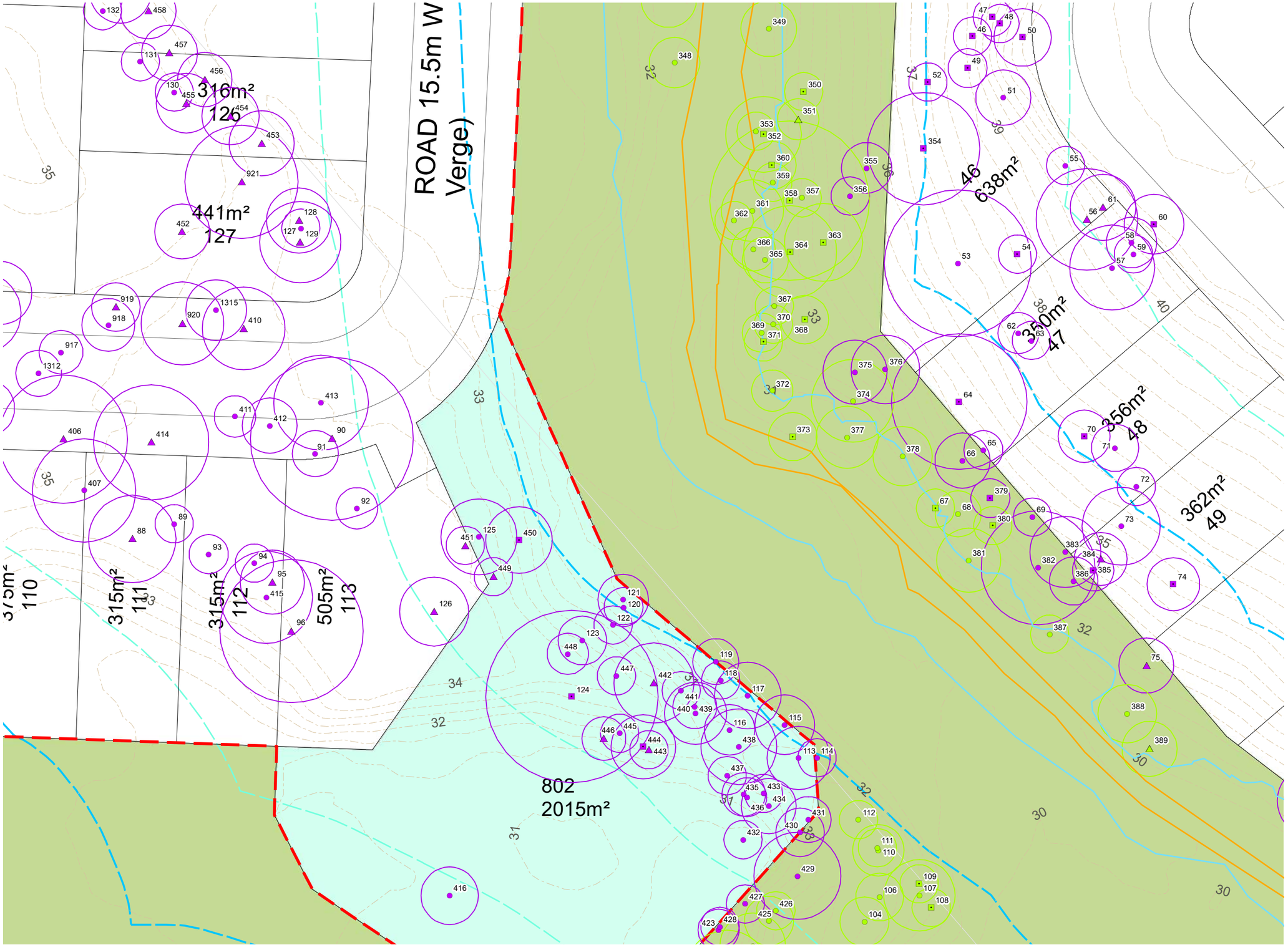
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4.12 Development Assessment



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Transverse Mercator | GDA 2020 | Zone 56 | 1:400 @ A3

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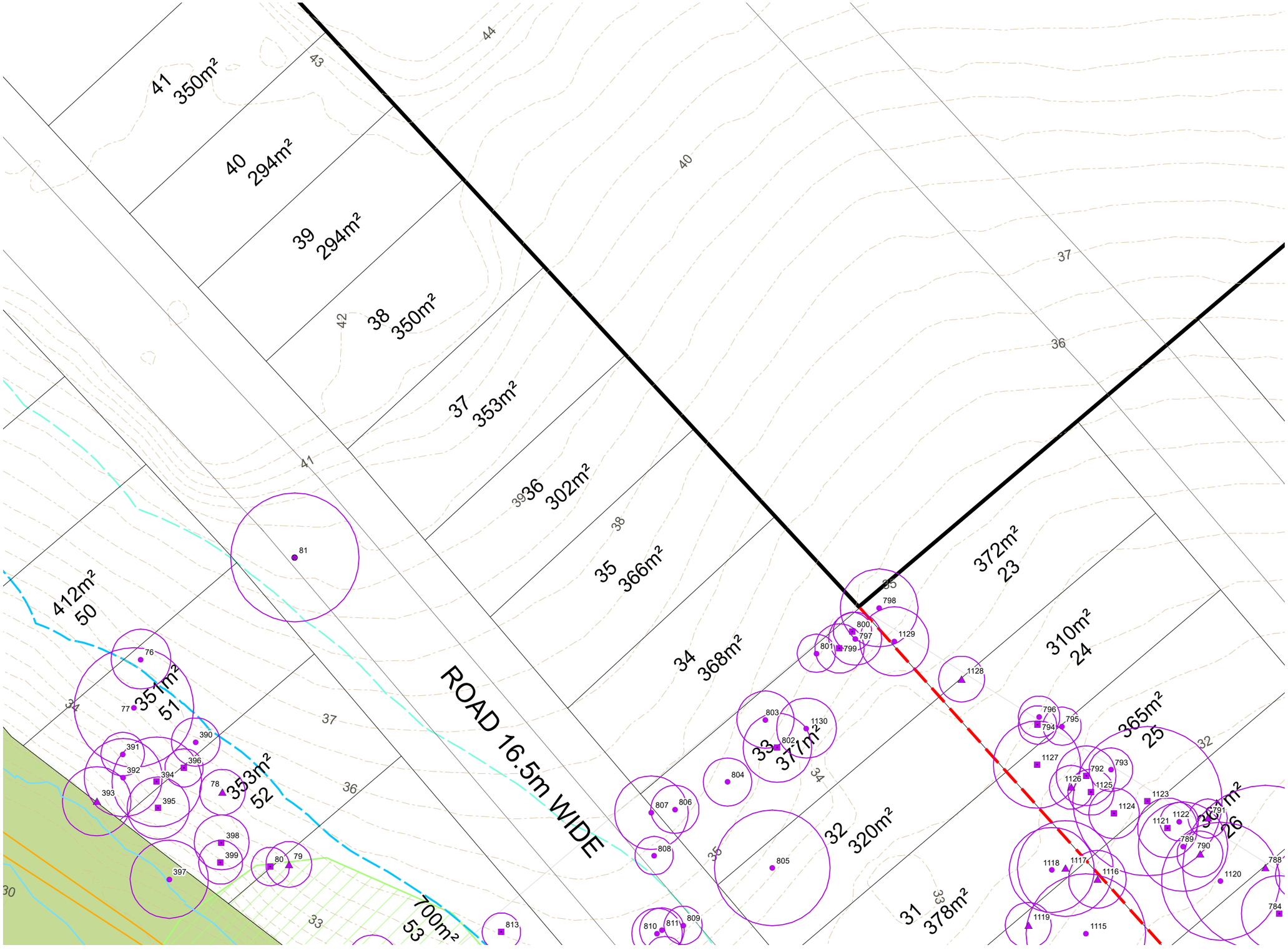
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4.13 Development Assessment



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Transverse Mercator | GDA 2020 | Zone 56 | 1:400 @ A3

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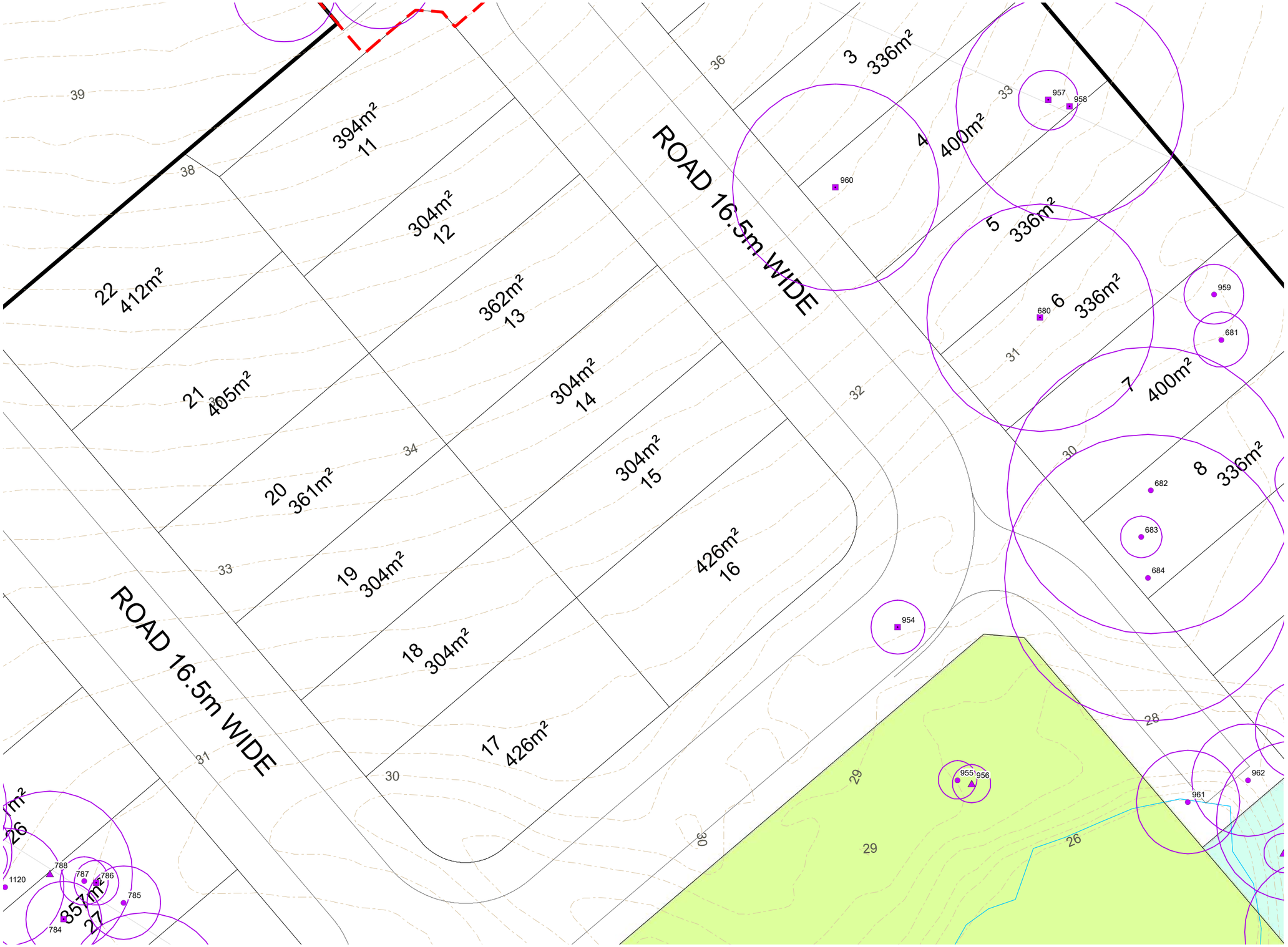
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4.14 Development Assessment



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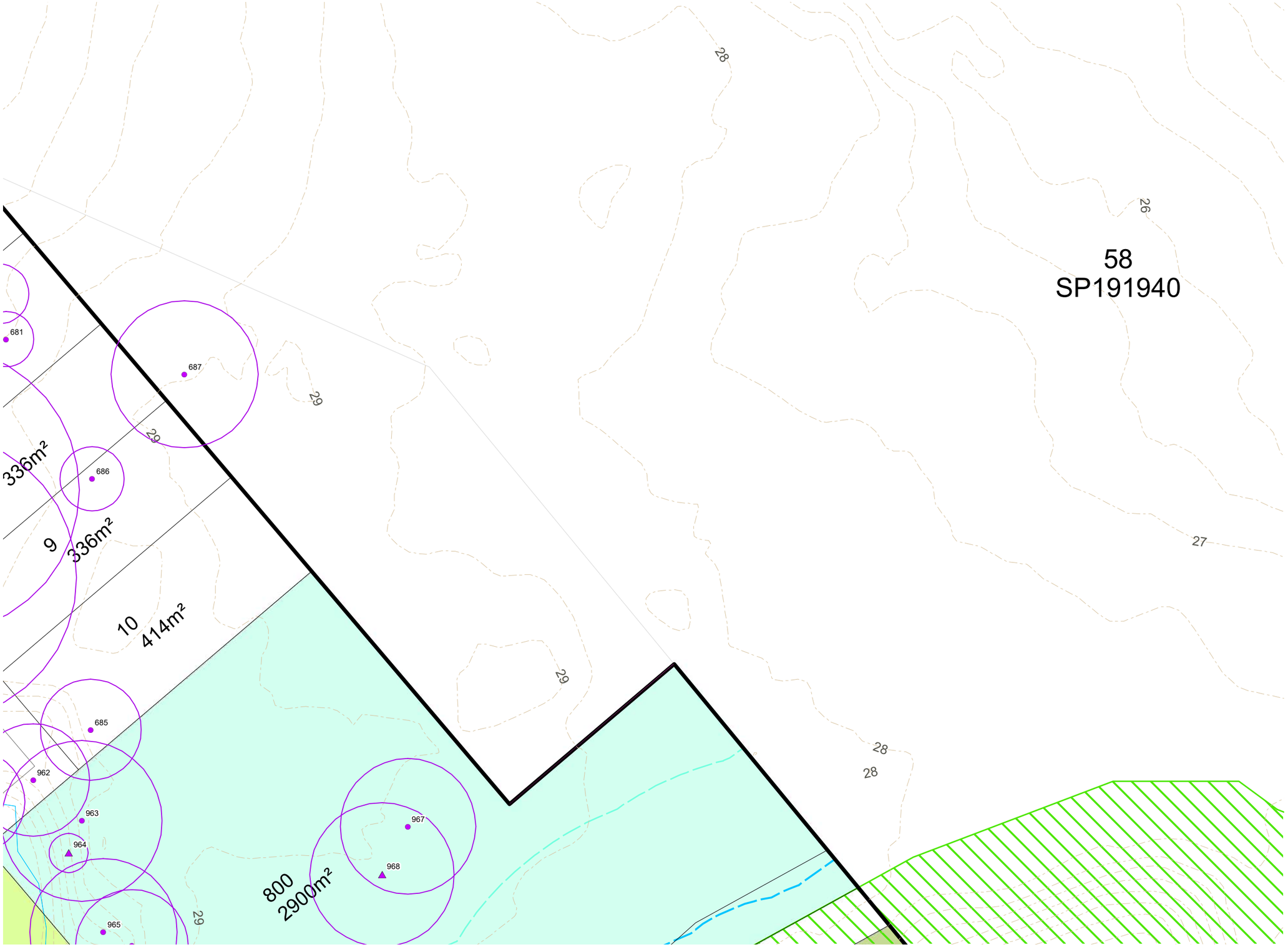
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4.15 Development Assessment



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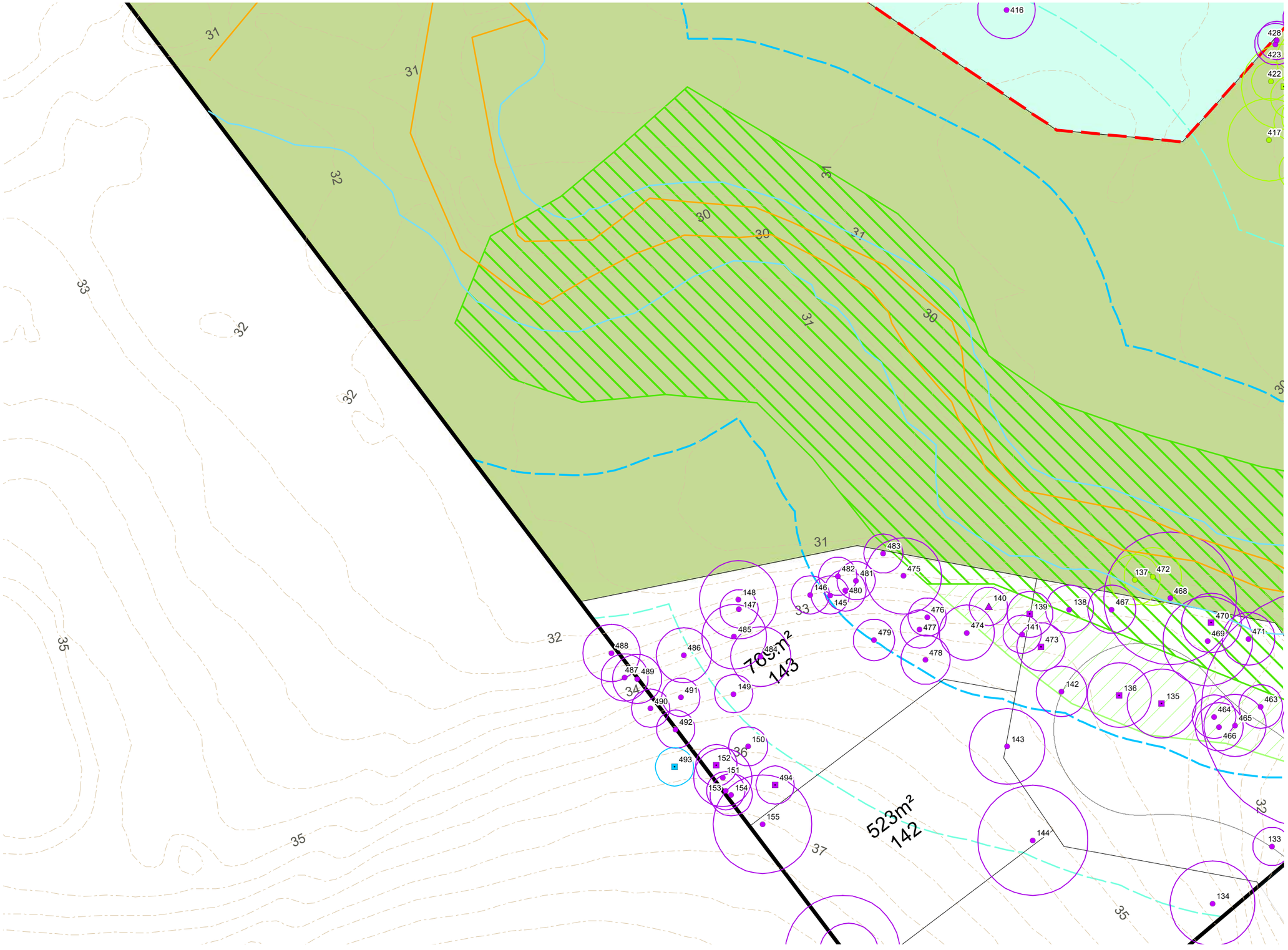
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4.16 Development Assessment



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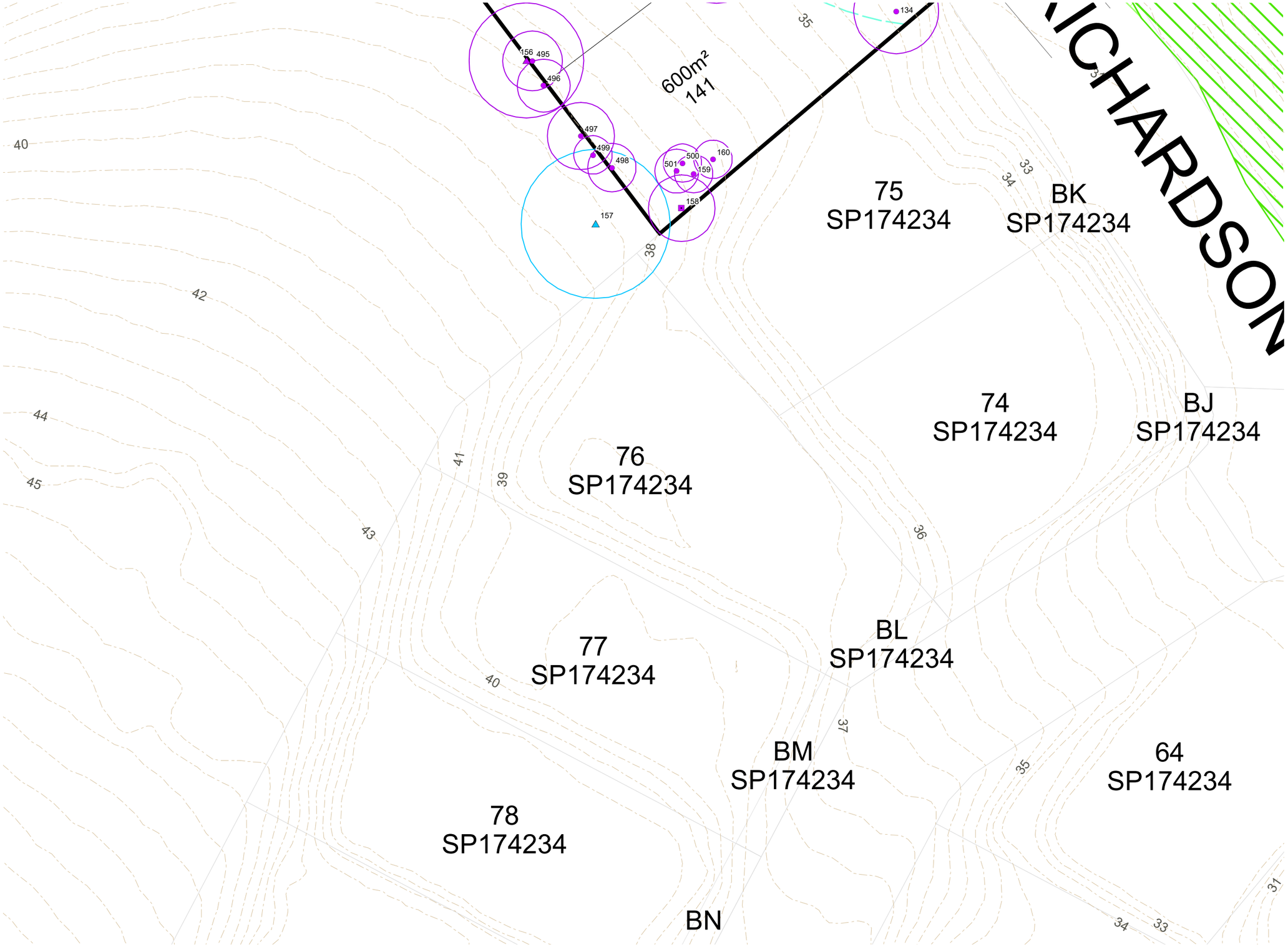
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4.17 Development Assessment



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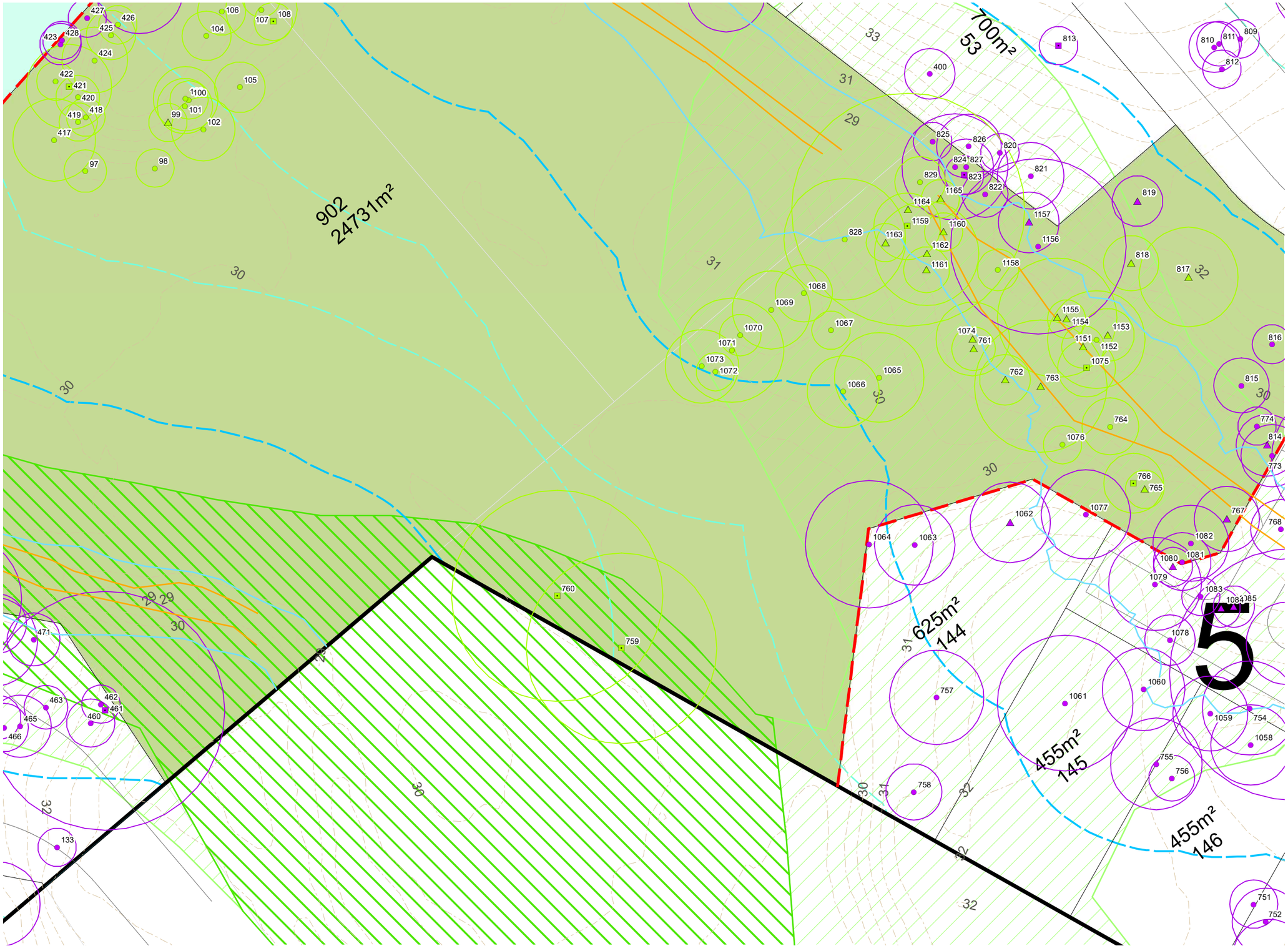
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4.18 Development Assessment



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4.19 Development Assessment



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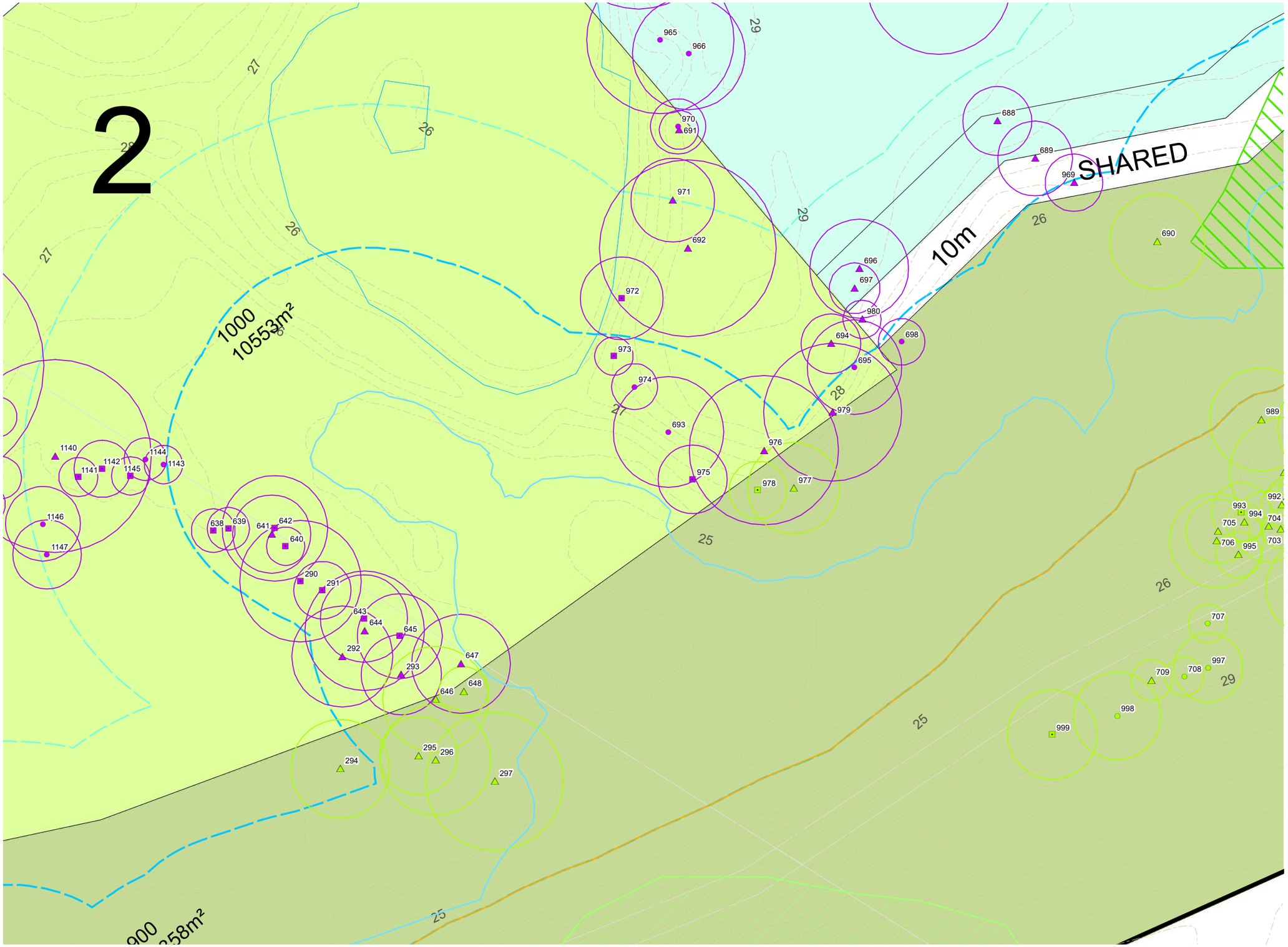
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4.20 Development Assessment



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Legend

- Qld DCDB
- Project boundary

Waterway ground-truthing

- Waterway Low flow
- Top of high bank
- GC Vegetation Managment - General
- GC Vegetation Managment - Medium
- Detention Area
- Environmental Open Space
- Local Park
- Proposed lots
- Proposed road pavement
- Stage boundaries
- 15m water offset
- 30m water offset
- Existing contours

GPS Tree Plot (w/ TPZ)

- Non-juvenile Koala Habitat Tree
- Dead Tree (stag)
- Native Tree
- Introduced Tree/Weed Tree
- Tree to remove
- Tree to retain
- Tree to retain (neighbouring)

Issue	Date	Description	Drawn	Checked
A	9/12/2024	Preliminary	TC	LB

0 2 4 6 8 10 m

Transverse Mercator | GDA 2020 | Zone 56 | 1:400 @ A3

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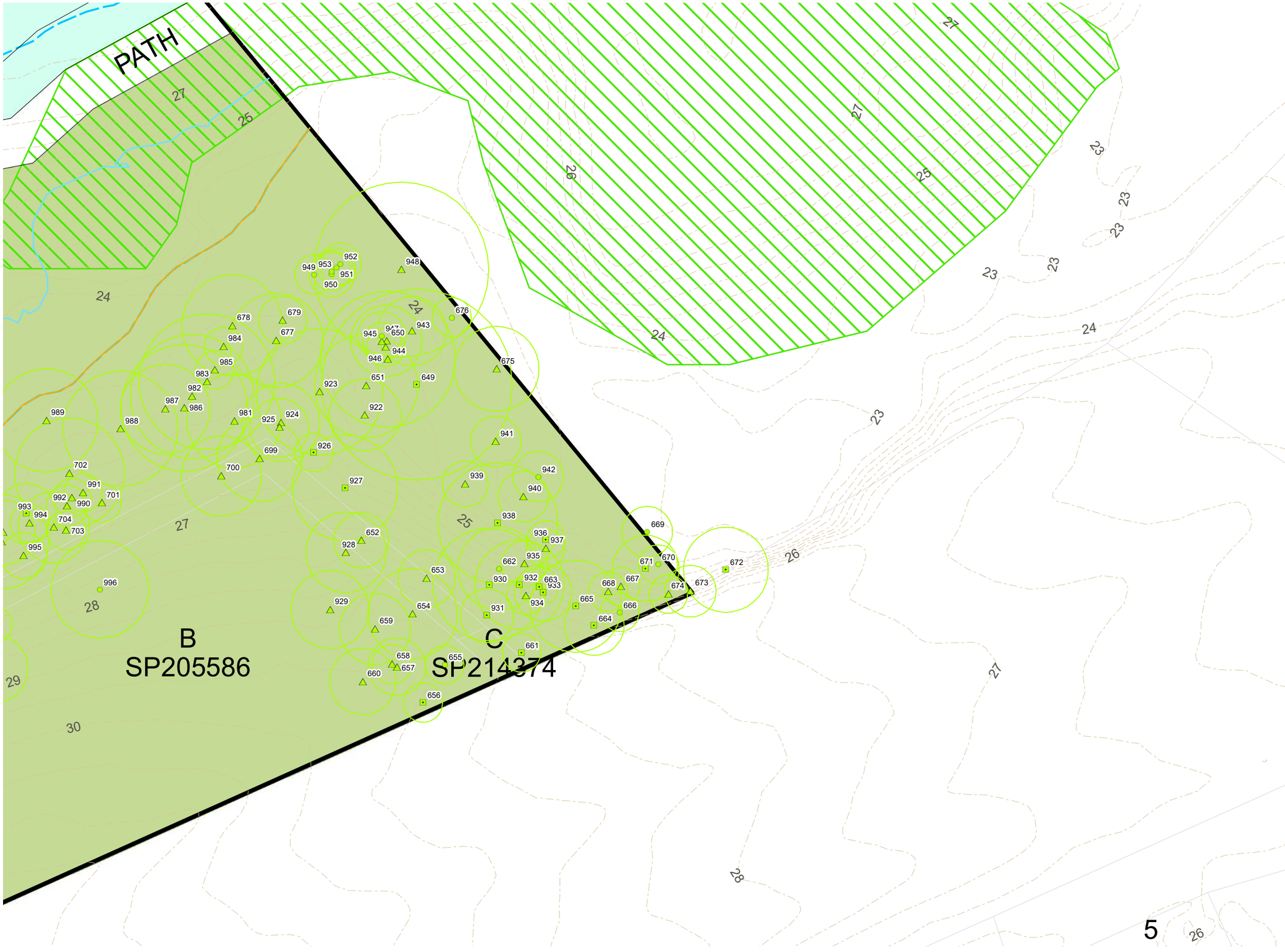
Norfolk Estates Pty Ltd

Courtney Drive, Upper Coomera

Address / RPD: Courtney Drive, Upper Coomera

9/12/2024 | 11694 E 4 20 Development Assessment A

4.21 Development Assessment



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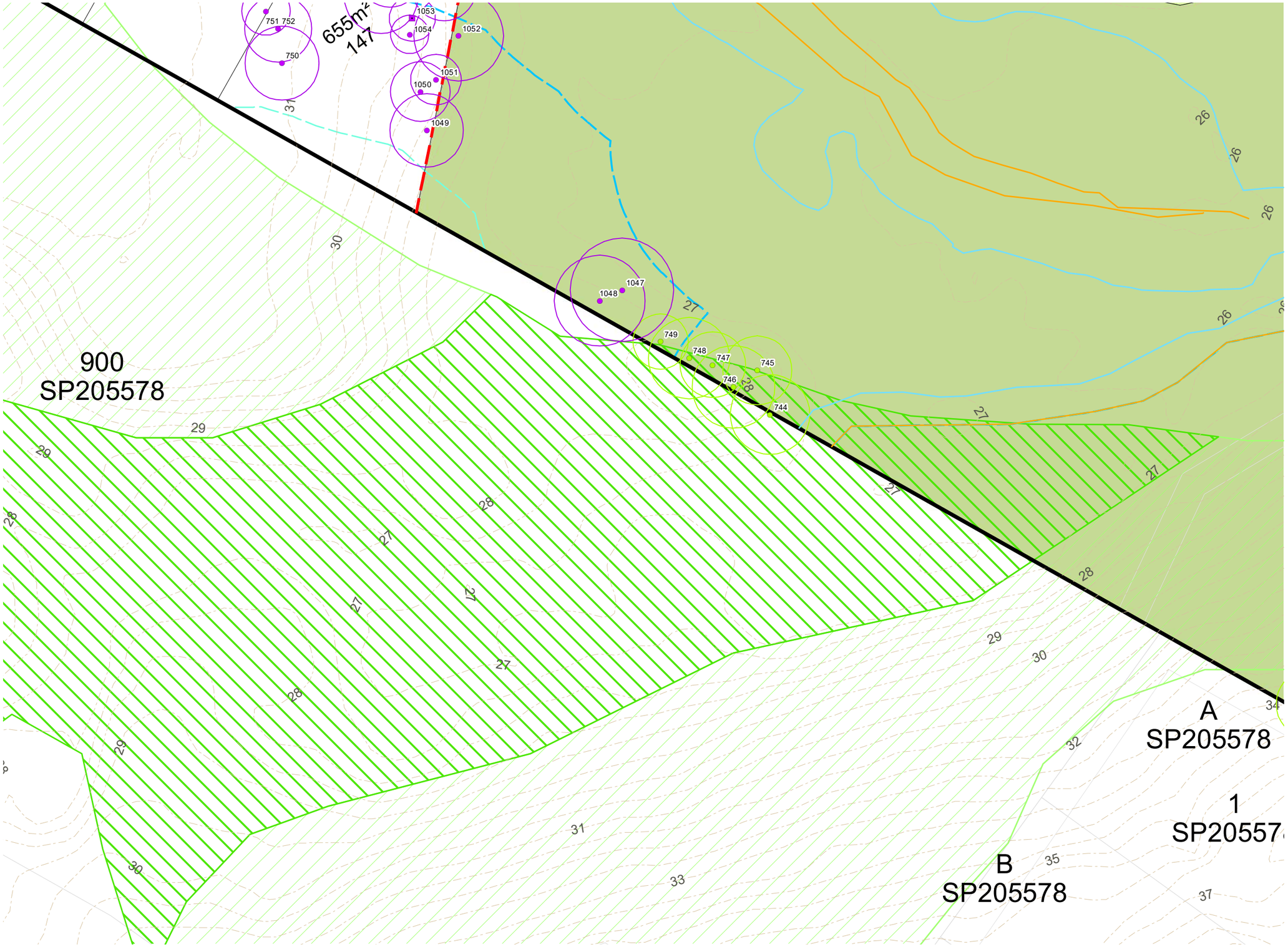
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4.22 Development Assessment



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Transverse Mercator | GDA 2020 | Zone 56 | 1:400 @ A3

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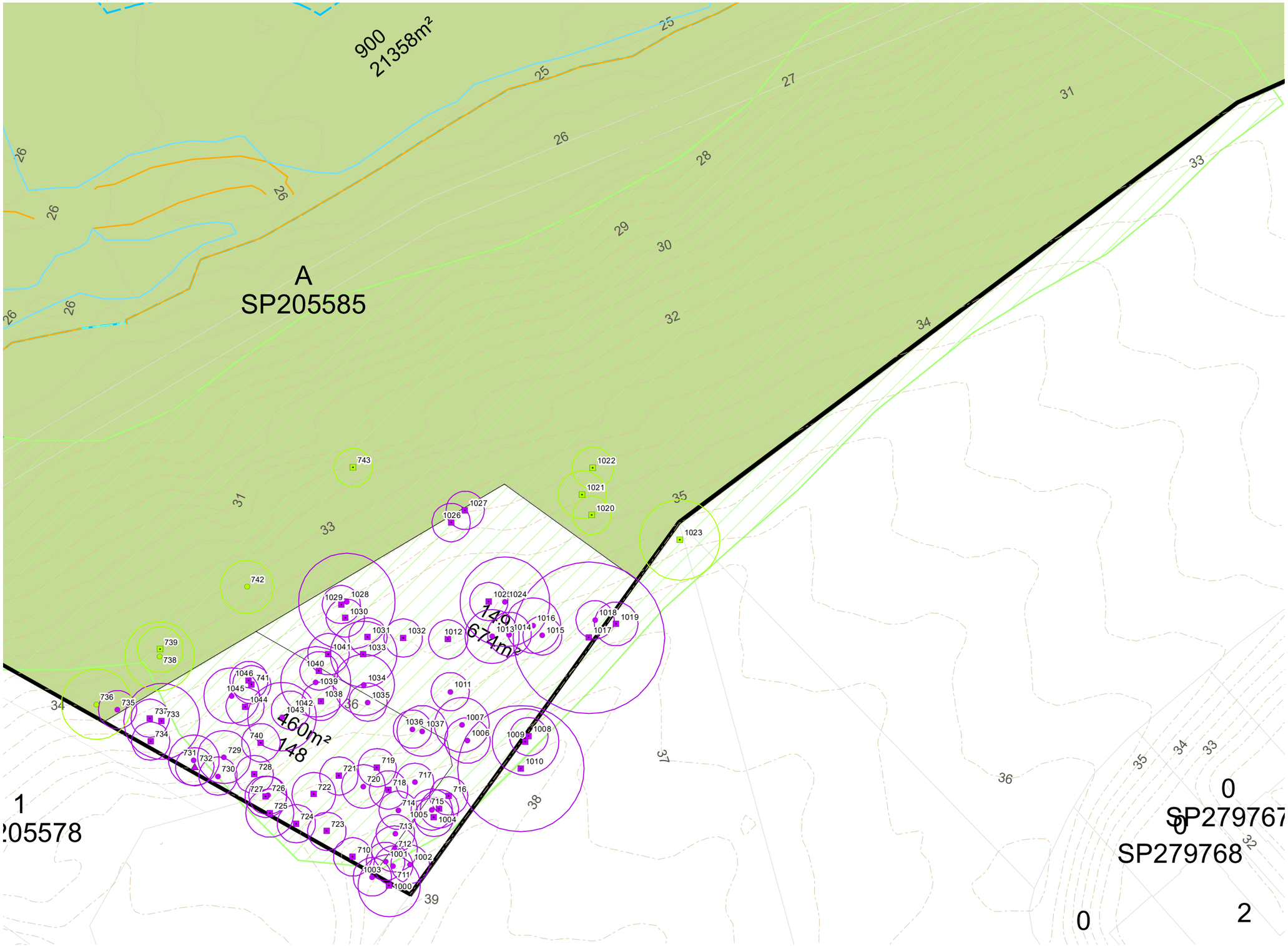
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4.23 Development Assessment



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0 2 4 6 8 10 m

Transverse Mercator | GDA 2020 | Zone 56 | 1:400 @ A3

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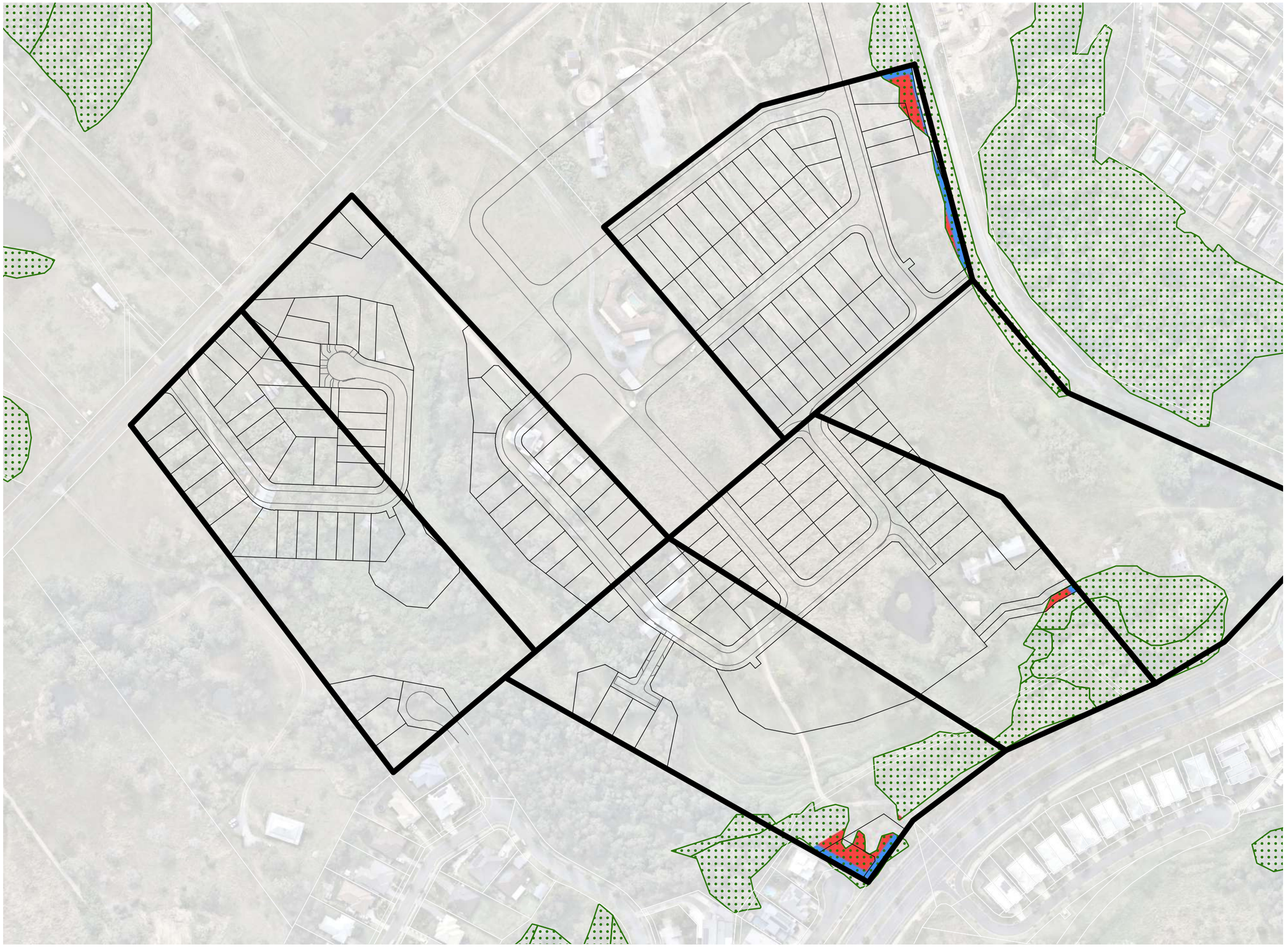
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5. Development Assessment - KHA



Notes:
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Legend

- Qld DCDB
- Site DCDB
- Core Koala Habiat Area
- Koala Habitat to Remove Under 5m Boundary Exemption
- Koala Habitat Area to Remove
  Lot 183 on RP156422 [360m^2]
  Lot 57 on SP214370 [82m^2]
  Lot 56 on RP162858 (inclusive of 5m buffer to new lots) [493m^2]
- Proposed lots
- Proposed road pavement

Issue	Date	Description	Drawn	Checked
A	9/12/2024	Preliminary	TC	LB

0 20 40 60 80 100 m

Transverse Mercator | GDA 2020 | Zone 56 | 1:2,400 @ A3

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Norfolk Estates Pty Ltd

Courtney Drive, Upper Coomera

Address / RPD: Courtney Drive, Upper Coomera

9/12/2024 | 11694 E 05 Koala Impact A

5.3 Potential Impacts

The key potential ecological impacts associated with the development proposal are described in the following subsections.

5.3.1 Vegetation clearing

Vegetation clearing is required across a large portion of the site in order to provide a functional development which fulfils the planning intent of the area. Clearing of vegetation to support the development will not significantly reduce native vegetation cover or available habitat for flora and fauna dependent on those ecosystems. As shown on **Plan 4**, the vegetation within the proposed impact area is considered to contain highly modified and generally fragmented values. Importantly, ecological field surveys did not identify any unique or significant biodiversity values within the proposed development area. Areas containing more intact native vegetation, i.e. remnant and koala habitat, are to be retained within proposed Environmental open space on-site. Additionally, retention of the DAF mapped moderate risk WWBW and locally mapped drainage features will provide an area of fauna movement opportunity which is not currently as readily available due to disturbance across the site. As such, the impact following the removal of the highly modified vegetation on-site is considered to be minor due to the significant areas proposed to be retained with potential for rehabilitation.

5.3.2 Weeds

Increased vehicle movement during the construction phase has the potential to increase the spread of weeds in the area. A large number of the species recorded on-site are exotic and introduced, including eleven (11) which are classified as restricted invasive species under the *Biosecurity Act 2014*. Therefore, the site currently contains significant spreading of invasive species, largely due to rural residential land uses including horse agistment. Regardless, mitigation measures will be implemented where cleared vegetation is disposed of in order to appropriately prevent further spread. With implementation of standard mitigation measures, the project is likely to result in a negligible impact to ecological values due to the potential introduction/spread of weeds. Further, the proposed development will result in the removal and management of pre-existing weed species located on-site, particularly within the identified 'weed dominated area' which is proposed to be rehabilitated within the Environmental open space

5.3.3 Vehicle movements

During construction, an increase in vehicles will be required on the subject site. Direct impacts from vehicle movements on threatened species and vegetation communities can 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 in turn can affect feeding, roosting, breeding or nesting behaviour;
- introducing and/or spreading weeds or feral animals carried on or in vehicles, resulting in deterioration or loss of vegetation and important fauna habitat; and

- damage or destruction of vegetation and fauna habitat through smothering by dust generated by vehicles traversing the project area.

With implementation of standard mitigation measures, the project is likely to result in a temporary and minor impact to ecological values due to vehicular movements. It was observed that the fauna species within the proposed development area are generalist, largely avi-fauna species, with specialised species likely to avoid the open space in favour of the larger areas of dense bushland within the wider region. As the site historically and currently has a long history of rural residential land uses with urban areas recently developing within the local region, it is anticipated that fauna already exhibits avoidance behaviour and is likely not to be increased by the development of the site.

5.3.4 Earthworks

Construction activities have the potential to generate dust emissions. However, dust emissions during construction will be temporary. Surrounding land uses within the vicinity of the site are likely to currently generate higher levels of dust than a typical patch of bushland in a rural area. The main sources of dust are typically generated via:

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

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

5.3.5 Light emissions during construction

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

Presence and intensity of artificial light in the project area will temporarily increase during the construction phase; however, night works will not be common. Lighting will be directed to construction areas within the project area. Some light spillages will be inevitable and is likely to be contained. Works on the proposed development are intended to occur through the daylight, therefore limiting the need for artificial light

sources. Potential impacts associated with light emissions will be temporary and unlikely to be significant. Current light emissions from dwellings on-site and surrounding residential areas are likely to already emit an avoidance response from fauna species. Therefore, the project area is unlikely to significantly increase impact from lighting. Additionally, the development proposes to retain the areas of mapped remnant, regrowth and majority of the KHA within Environmental open space on-site which will provide a fauna refuge area away from construction activities.

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

5.3.6 Noise and vibration

Noise levels greater than existing ambient noise levels are expected during the construction within the project area. Sources of noise are likely to consist of noise in short, intense pulses from mobile plant equipment, and more prolonged noise, with consistent vibration, pitch and volume from generators, excavators and pumps, in addition from noise from vehicles.

Both steady continuous and single noise events have the potential to lead to ecological impacts. Construction noise is expected to elicit some avoidance response from fauna using the surrounding vegetation though, with consideration of the extent of habitat available in the study area, this is likely to be a temporary and negligible to minor impact. Additionally, as is the case with lighting, noise emissions from surrounding residential areas and dwellings on-site are likely to already emit an avoidance response from fauna species. Therefore, the project area is likely to result in a negligible impact from noise compared to baseline conditions.

5.3.7 Waste disposal

Inappropriate disposal of non-hazardous wastes can attract vermin and other wildlife to site. This may exacerbate potential impacts (e.g. road mortality). Litter may also enter surrounding environments. Due to the current and long-standing rural residential uses of the site litter and general waste is already relatively prevalent within the site. The proposed development will result in the removal of dumped waste particularly from the proposed district park areas. 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.

5.3.8 Hazardous and dangerous goods

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

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

5.3.9 Increased human presence

Increased human activity during construction has the potential to disturb fauna within adjacent habitat areas. Resulting impacts to fauna include heightened vigilance and predator avoidance, which can disrupt foraging and roosting efficiency or deter wildlife from using particular areas. Impacts essentially represent a reduction in core habitat due to edge effects, although as mentioned within the ecological survey results section of this report, edge effects are largely already present within the site, with species avoidance already evident due residential land uses on and surrounding. The project is likely to result in a temporary and minor impact to ecological values due to increased human presence on site during the construction period.

5.4 Ongoing disturbance

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

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

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

5.4.1 Weed incursion

Landscaping may introduce new and exotic species to the area; however, the development intends to only utilise native species for landscaping purposes. Landscaping will also predominantly remain towards the northern boundaries of the site, therefore limiting potential for garden escapees into the area of retained bushland in the south. Regardless, weed incursion is often ongoing and can be difficult to prevent. However, the problem is often mostly constrained to edges of bushland that abut gardens and riparian zones of urban waterways. As mentioned throughout this report invasive and introduced species are dominant throughout the site as a result of historical and on-going land uses. This includes a high number of restricted invasive species being present within the project area. Hence, the development is not considered to have a high risk of significant impacts to surrounding flora and fauna from introducing new weed species.

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

5.4.2 Vehicle strike

Upon completion of the development, vehicle traffic will increase (compared to baseline conditions), increasing the likelihood of fauna strike. The probability of fauna strike is reduced due to the fact that most fauna will generally avoid urban areas. As the proposed development is within an area already highly trafficked due to the surrounding urban landscape, the likelihood of vehicle strike is not considered to be significant due to the likelihood species already avoid the area. Additionally, areas on-site noted to contain higher-value habitat, i.e. remnant and regrowth vegetation, are largely being retained within Environmental

open space and district park. Notwithstanding, a low number of macropods, as well as reptiles (i.e. snakes and lizards attracted to heated bitumen roads) may occasionally enter the area and be at risk of vehicular strike.

5.4.3 Noise and light

Noise levels are likely to increase once the development is complete as there will be increased vehicular and pedestrian traffic in comparison to baseline conditions. Sounds associated with newly established dwellings will be the primary source of noise impact. However, this is expected to be minor with surrounding areas already containing similarly sized residential housing lots.

Artificial light from new development may affect nocturnal and diurnal animals by disrupting patterns, with quality of light (e.g. wave length and colour), intensity and duration potentially evoking different responses. Impacts from increased light levels include disorientation from or attraction toward artificial sources of light; mortality from collisions with structures; and effects on light- sensitive cycles of species (e.g. breeding and migration for fauna and flowering in plants). The presence and intensity of artificial light will have most impact at the edge of adjacent vegetation communities. However, as the majority of the operational development is intended to occur within areas already highly disturbed due to rural residential land uses, including horse agistment, and retain areas of mapped regulated vegetation the project is likely to result in a negligible impact to wildlife due to light spillage.

5.4.4 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. As the area is already utilised for human activity with urban areas and new developments surrounding all sides human presence is already relatively high. The development also proposes to retain and rehabilitate a large portion of the site as Environmental open space and drainage which will allow safe fauna movement and refuge away from the new dwellings. Therefore, increased human presence as a result of this project is expected to have a minor impact to wildlife and vegetation.

5.5 Management and Mitigation Measures

5.5.1 Vegetation Management Plan

A Vegetation Management Plan (VMP) should form part of the broader management document submitted as part of the operational works drawings for the project site.

The VMP should cover clearing of all vegetation listed in this report in addition to all trees mapped as significant individual trees. It should include details on:

- trees marked for removal;
- all civil works likely to impact existing vegetation;
- temporary and permanent exclusion and protection fencing;
- roles and responsibilities for site contractors, the developer and the consultant group;
- stockpiling and site access locations;

- a clearing sequence plan showing the commencement of clearing and direction of removal (this should be in conjunction with the Fauna Management Plan (FMP) to allow for the appropriate flushing of fauna towards safe havens and/or the application of an appropriate relocation program);
- links to weed management and revegetation proposals; and
- stock piling and reuse of cleared vegetation.

5.5.2 Fauna Management Plan

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

The FMP should link closely with the VMP, or be included as part of a combined Vegetation Clearing and Fauna Management Plan (VCFMP), and include details on:

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

5.5.3 Rehabilitation Management Plan

A Rehabilitation Management Plan (RMP) should form part of the broader management documents submitted as part of the operational works phase, and will generally include information on:

- Rehabilitation approaches and planting specifications (if required)
- Existing and proposed contours
- Locations of services, earthworks
- Existing vegetation to be retained, removed
- Location of waterways and waterbodies
- Major weed infestations and proposed treatments
- Trail and path systems

5.5.4 Koala Management Plan

Due to the presence of mapped Koala habitat areas on site, a Koala Management Plan (KMP) is required to be prepared to specifically address the potential impacts of the construction phase on Koalas.

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

- Identification of risks to Koala's from clearing and construction activities
- Identification of management measures that will be implemented to address the risks to Koala's
- Detailed processes and measures that will be implemented to address accidental injury or death of Koala's
- Confirmation of how the proposed clearing activities will comply with the requirements of the Nature Conservation Koala Conservation Plan 2017
- Outline of detailed processes for implementing the management plan

6 Conclusion

This EAR was prepared on behalf of Norfolk Estates Pty Ltd who seek to develop land at 41 – 53 Courtney Drive, Upper Coomera, for the purposes of creating a residential development with associated roads and infrastructure, detention and drainage areas, district park and environmental open space. Overall, the proposed development largely avoids interfering with significant environmentally valuable areas whilst still creating a functional development that fulfills the zoning intent of the local region. The report accompanies a development application to City of Gold Coast (CGC) and provides a review of the site ecological values with reference to Commonwealth, State and Local legislation.

Overall, the following conclusions can be made:

- The site is surrounded similarly sized rural properties, higher density residential developments and vacant bushland. The site itself has undergone historical clearing and on-going maintenance resulting in highly disturbed weed infested areas across the majority of the site. Vegetation composition generally consists of a mix of native and exotic species with the majority as planted ornamental species.
- The vast majority of the site is mapped as Category X (non-remnant) vegetation with a small polygon of Category B (remnant) vegetation in Lot 57 and Category C (high-value regrowth) vegetation along the road reserve boundary on Lot 183. Field observations identified the mapped Category B (remnant) areas of RE 12.3.11 and RE12.11.24 to be highly disturbed by invasive species at both the canopy and the sub-canopy layers. Indicator species of RE12.3.11 were observed scattered within this area.
- Connectivity values are largely confined to the mapped waterway in the south-east, where mapped Category B (remnant) and Koala habitat is present. Connectivity value to the north, west and east is limited by roads Bailys Mountain Road, Courtney Drive and Reserve Road respectively.
- Several GCG local mapped 'minor' waterways are present across the site which are also mapped under the state fisheries legislation as 'low' and 'moderate' risk. These waterways exhibit high levels of modification and disturbance resulting in, cleared areas, dense weeds and shallow channel reflecting drainage lines. Nevertheless, these areas are intended to be fully retained within environmental open space areas with the exception of a CGC mapped waterway in the north-east which is proposed as drainage/detention area.
- The site is situated outside of a Koala Priority Area however Koala habitat is mapped on-site along the eastern boundary of Lot 57 and Lot 56 and the northern boundary of Lot 183. Koala habitat was confirmed in the east although NJKHTs were sparse with the area dominated by acacia regrowth. In the north, much of the mapped KHA had been cleared within the road reserve. At present, impacts to KHA are covered by exemptions however should additionally clearing of KHA be proposed, referral to SARA will be required and a report addressing *SDAP Code 25; Development in Southeast Queensland Koala Habitat Areas* will be provided.
- It is anticipated that earthworks will be located outside the 'top of bank' of Fisheries mapped waterways, therefore it is not anticipated that referral to SARA for waterway barrier works and a response to State Code 18 at Operational Works stage will be required. Where culverts are proposed

it is anticipated that these meet the *Accepted development requirements for operational work that is constructing or raising waterway barrier works* (ADR). This will be confirmed following the completion of the final detailed engineering design at Operational Works stage.

- A total of one-hundred and ninety (190) species of flora were detected on-site during surveys, inclusive of eighty-nine (89) native species and one-hundred (101) exotic/weed species.
- Several specimens of *Macadamia integrifolia* (Macadamia Nut) and *Macadamia tetraphylla* (Rough-shelled Macadamia Nut) were observed across the site. Given these specimens were located amongst planted ornamental species in close proximity to dwellings, they are not considered 'in the wild' and therefore not protected.
- Thirty-one (31) fauna species were observed on-site or as fly-over species; twenty-six (26) birds, four (4) mammals and one (1) reptile. All species recorded are considered species common to the local area with four of the species considered introduced.
- **No EPBC or NCA threatened flora or fauna species were observed on-site.**
- Whilst some vegetation with Koala habitat values was confirmed to occur on site, no direct (Koala sightings) or indirect (Koala scats) evidence of Koala presence was recorded during site surveys. Nonetheless, the retention of vegetation containing suitable Koala habitat in the south and east of the site will allow for Koala movement opportunities to be maintained into the future.
- In order to deliver the proposed project, clearing of vegetation will occur across the majority of the site. However, it is considered that the areas of the highest ecological value, being the majority of mapped Koala Habitat Area, mapped Category B vegetation, and confirmed waterway values will be retained within environmental open space areas.

7 Appendices

Appendix A

Environment Protection and Biodiversity Conservation Act 1999

Protected Matters Search Tool Results

Appendix B

Wildlife Online NCA 1992

Appendix C

Environmental Searches

Appendix D

Response to Environmental Significance Overlay Code

Gold Coast City Plan V10

Appendix E

Tree Schedule

Appendix F

Proposed Development Layout

Appendix A

Environment Protection and Biodiversity Conservation Act 1999 Protected Matters Search Tool Results

Australian Government

Department of Climate Change, Energy, the Environment and Water

EPBC Act Protected Matters Report

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

Report created: 18-Nov-2024

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:	100
Listed Migratory Species:	40

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:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	48
Whales and Other Cetaceans:	2
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:	42
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
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	Within 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 likely to occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area	In feature area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community likely to occur within area	In feature area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only
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 may occur within area	In buffer area only

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			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to 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 likely to 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
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 known to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes halli Northern Giant Petrel [1061]	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 known 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 known to occur within area	In feature area
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

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
[Turnix melanogaster](#) Black-breasted Button-quail [923]	Vulnerable	Species or species habitat 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
FROG			
[Litoria olongburensis](#) Wallum Sedge Frog [1821]	Vulnerable	Species or species habitat may occur within area	In feature area
[Mixophyes fleayi](#) Fleay's Frog [25960]	Endangered	Species or species habitat likely to occur within area	In feature area
[Mixophyes iteratus](#) Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat may occur within area	In buffer area only
INSECT			
[Argynnis hyperbius inconstans](#) Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Phyllodes imperialis smithersi](#) Pink Underwing Moth [86084]	Endangered	Species or species habitat may occur within area	In buffer area only
MAMMAL			
[Chalinolobus dwyeri](#) Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat likely to 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 likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
Notamacropus parma Parma Wallaby [89289]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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 feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat likely to 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
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
PLANT			
Acacia attenuata [10690]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Acronychia littoralis Scented Acronychia [8582]	Endangered	Species or species habitat may occur within area	In buffer area only
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Baloghia marmorata Marbled Balogia, Jointed Baloghia [8463]	Vulnerable	Species or species habitat known 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
Brachychiton sp. Ormeau (L.H.Bird AQ435851) Ormeau Bottle Tree [84105]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Clematis fawcettii Stream Clematis [4311]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Coleus habrophyllus listed as Plectranthus habrophyllus [91378]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Coleus nitidus listed as Plectranthus nitidus Nightcap Plectranthus, Silver Plectranthus [91380]	Endangered	Species or species habitat may occur within area	In feature area
Corchorus cunninghamii Native Jute [14659]	Endangered	Species or species habitat known to occur within area	In feature area
Croton mamillatus Bahrs Scrub Croton [84796]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Cryptocarya foetida Stinking Cryptocarya, Stinking Laurel [11976]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cupaniopsis shirleyana Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat may occur within area	In feature area
Diploglottis campbellii Small-leaved Tamarind [21484]	Endangered	Species or species habitat may occur within area	In buffer area only
Endiandra floydii Floyd's Walnut, Crystal Creek Walnut [52955]	Endangered	Species or species habitat known to occur within area	In feature area
Endiandra hayesii Rusty Rose Walnut, Velvet Laurel [13866]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Fontainea venosa [24040]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Leichhardtia longiloba listed as Marsdenia longiloba Clear Milkvine [91911]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Lepidium peregrinum Wandering Pepper-cress [14035]	Endangered	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 known 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 known to occur within area	In feature area
Notelaea lloydii Lloyd's Olive [15002]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Owenia cepiodora Onionwood, Bog Onion, Onion Cedar [11344]	Vulnerable	Species or species habitat may occur within area	In feature area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat likely to occur within area	In feature area
Planchonella eerwah Shiny-leaved Condoo, Black Plum, Wild Apple [17340]	Endangered	Species or species habitat known to occur within area	In feature area
Randia moorei Spiny Gardenia [10577]	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 likely to occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Sophora fraseri [8836]	Vulnerable	Species or species habitat known to occur within area	In feature area
Syzygium hodgkinsoniae Smooth-bark Rose Apple, Red Lilly Pilly [3539]	Vulnerable	Species or species habitat may occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Vincetoxicum woollsii listed as Tylophora woollsii [40080]	Endangered	Species or species habitat may occur within area	In feature area
Zieria collina [2178]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Congregation or aggregation 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
Coeranoscincus reticulatus Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may 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
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat may 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			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[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			
[Anous stolidus](#) Common Noddy [825]		Species or species habitat may occur within area	In buffer area only
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
[Ardenna grisea](#) Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat known to occur within area	In buffer area only
[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
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In buffer area only
[Fregata minor](#) Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
[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	Congregation or aggregation 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may 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 may occur within area	In buffer area only
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat may 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
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]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to 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 likely to occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Pandion haliaetus](#) Osprey [952]		Breeding known to occur within area	In buffer area only
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area	In buffer area only
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	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]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to 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
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to 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
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In buffer area only
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	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
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
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
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known 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]		Breeding 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Sterna striata			
White-fronted Tern [799]		Migration route may occur within 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
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]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Reptile			
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Congregation or aggregation 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
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 may occur within area	In buffer area only
Sousa sahulensis Australian Humpback Dolphin [87942]		Species or species habitat may occur within area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Saltwater Creek	Conservation Park	QLD	In buffer area only

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Lake Coombabah	QLD	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Alder Mixed Use Precinct - Potential Future Urban Development Project	2023/09601		Assessment	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Coomera Woods Master Planned Development, 49 & 51 George Alexander Way, Coomera, Qld	2017/8134		Assessment	In buffer area only
Oxenford quarry extractive boundary realignment, Oxenford, Qld	2018/8356		Assessment	In buffer area only
Stage 1 Coomera Connector	2020/8646		Post-Approval	In buffer area only
Controlled action				
Clearing of vegetation for the Gainsborough Greens residential subdivision	2013/6751	Controlled Action	Post-Approval	In buffer area only
Coomera Woods master planned residential development, Qld	2015/7610	Controlled Action	Completed	In buffer area only
Gold Coast International Marine Precinct	2008/4002	Controlled Action	Post-Approval	In buffer area only
Jacobs Well Airport	2004/1361	Controlled Action	Completed	In buffer area only
Jacobs Well Airport Project	2003/947	Controlled Action	Completed	In buffer area only
Nambucca Crescent residential subdivision Pimpama, QLD	2014/7190	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Clearing of vegetaion for a residential subdivision on Karingal Drive, Pimpama, QLD	2013/6716	Not Controlled Action	Completed	In buffer area only
Clearing of vegetation for a residential development at 278, 282 ,294 & 298 Kopps Road, Oxenford	2013/6869	Not Controlled Action	Completed	In buffer area only
Coomera Hospital and Health Precinct	2021/8946	Not Controlled Action	Completed	In buffer area only
Coomera Town Centre shopping centre development, Coomera Qld	2014/7292	Not Controlled Action	Completed	In buffer area only
Coomera Woods Protection Zone, 49 George Alexander Way, Coomera Qld	2018/8214	Not Controlled Action	Completed	In buffer area only
Development of the Heritage Park Sporting Precinct, Rifle Range Road, Pimpama, Qld	2016/7831	Not Controlled Action	Completed	In buffer area only
Development of the Pimpama Junction Shopping Centre Precinct	2013/6772	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Develop Stage 1 & 2 (Lots 21, 23 & 24), Coomera Urban Village, Cnr Foxwell Rd & Finnegan Wy, Coomera	2014/7124	Not Controlled Action	Completed	In buffer area only
Dreamworld Town Centre Development	2001/484	Not Controlled Action	Completed	In buffer area only
GCCC Northern Wastewater Strategy and associated Reclaimed Water Scheme - Stage	2001/282	Not Controlled Action	Completed	In buffer area only
Heavy Rail Duplication Project, Coomera to Helensvale, Qld	2014/7392	Not Controlled Action	Completed	In buffer area only
Helensvale Waste Transfer Station Expansion, QLD	2012/6581	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
Low impact industrial development and associated infrastructure, Old Pacific Highway, Coomera	2013/6819	Not Controlled Action	Completed	In buffer area only
Mixed use development, Lot 138, 62 Finnegan Way, Coomera, Qld	2015/7488	Not Controlled Action	Completed	In buffer area only
Pimpama School, Coomera, Qld	2018/8252	Not Controlled Action	Completed	In buffer area only
Prawn Aquaculture Expansion	2001/322	Not Controlled Action	Completed	In buffer area only
Residential development, Big Sky Estate (Stages 5-8), Coomera	2015/7535	Not Controlled Action	Completed	In buffer area only
Residential Development Stages 4 & 9-10 Big Sky Estate, Coomera, QLD	2014/7192	Not Controlled Action	Completed	In buffer area only
Residential subdivision, 152 Yawalpah Road, Pimpama, Qld	2013/6914	Not Controlled Action	Completed	In buffer area only
Residential subdivision, 54-64 Karingal Drive, Pimpama, Qld	2013/6739	Not Controlled Action	Completed	In buffer area only
Residential subdivision, Reserve Road	2004/1333	Not Controlled Action	Completed	In buffer area only
Road Extension - Foxwell Road, Coomera	2021/8990	Not Controlled Action	Completed	In buffer area only
To develop high and medium density residential dwellings, commercial precincts and open	2014/7291	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
space areas,				
Upgraded sewerage infrastructure in the Helensvale/Coombabah catchment	2004/1427	Not Controlled Action	Completed	In buffer area only
Vegetation clearing for the Gainsborough Park Residential Estate	2012/6667	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
Kerkins Levee Rehabilitation Project, Phases 2-8	2004/1435	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Waterway Downs Urban Estate Development	2010/5730	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Coomera, QLD	2013/7104	Referral Decision	Completed	In buffer area only
Coomera high school, Coomera, Qld	2018/8240	Referral Decision	Completed	In buffer area only
New School, Foxwell Road, Coomera, Qld	2018/8333	Referral Decision	Completed	In buffer area only
Residential Development on Finnegan Way, Coomera, QLD	2012/6685	Referral Decision	Completed	In buffer area only

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 is 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 on the contents of this report.

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 point locations and environmental data layers.

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 when time permits.

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 breeding sites; and
- 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

Wildlife Online NCA 1992

Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Queensland status: Rare and threatened species
Records: Confirmed
Date: Since 1980
Latitude: -27.866
Longitude: 153.284
Distance: 5
Email: liambrzezinski@saundershavill.com
Date submitted: Monday 18 Nov 2024 07:56:29
Date extracted: Monday 18 Nov 2024 08:00:04

The number of records retrieved = 26

Disclaimer
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The State of Queensland disclaims all responsibility for information contained in this product and all liability (including liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.
Information about your Species lists request is logged for quality assurance, user support and product enhancement purposes only.
The information provided should be appropriately acknowledged as being derived from WildNet database when it is used. As the WildNet Program is still in a process of collating and vetting data, it is possible the information given is not complete. Go to the WildNet database webpage (https://www.qld.gov.au/environment/plants-animals/species-information/wildnet) to find out more about WildNet and where to access other WildNet information products approved for publication. Feedback about WildNet species lists should be emailed to wildlife.online@des.qld.gov.au.

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Limnodynastidae	*Adelotus brevis*	tusked frog		V		15
animals	amphibians	Myobatrachidae	*Crinia tinnula*	wallum froglet		V		2
animals	birds	Accipitridae	*Erythrotriorchis radiatus*	red goshawk		E	E	1
animals	birds	Apodidae	*Hirundapus caudacutus*	white-throated needletail		V	V	2
animals	birds	Cacatuidae	*Calyptorhynchus lathami*	glossy black-cockatoo		V		2
animals	birds	Cacatuidae	*Calyptorhynchus lathami lathami*	glossy black-cockatoo (eastern)		V	V	14
animals	birds	Scolopacidae	*Calidris acuminata*	sharp-tailed sandpiper		V	V	2
animals	birds	Scolopacidae	*Gallinago hardwickii*	Latham's snipe		V	V	1
animals	birds	Strigidae	*Ninox strenua*	powerful owl		V		15
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		E	E	150
animals	mammals	Pseudocheiridae	*Petauroides volans volans*	southern greater glider		E	E	1
plants	land plants	Corynocarpaceae	*Corynocarpus rupestris subsp. arborescens*	southern corynocarpus		V		1/1
plants	land plants	Euphorbiaceae	*Baloghia marmorata*	jointed baloghia		V	V	1/1
plants	land plants	Euphorbiaceae	*Mallotus megadontus*			E		2/2
plants	land plants	Lauraceae	*Cryptocarya foetida*	stinking cryptocarya		V	V	1/1
plants	land plants	Lauraceae	*Endiandra wongawallanensis*			E		14/12
plants	land plants	Myrtaceae	*Eucalyptus curtisii*	Plunkett mallee		NT		1/1
plants	land plants	Myrtaceae	*Rhodamnia rubescens*	scrub turpentine		CR	CE	1
plants	land plants	Myrtaceae	*Rhodomyrtus psidioides*	native guava		CR	CE	1
plants	land plants	Myrtaceae	*Syzygium moorei*	Durobby		V	V	1/1
plants	land plants	Proteaceae	*Macadamia integrifolia*	macadamia nut		V	V	4/1
plants	land plants	Rubiaceae	*Randia moorei*	spiny gardenia		E	E	3/3
plants	land plants	Rutaceae	*Zieria collina*			V	V	1/1
plants	land plants	Sapindaceae	*Cupaniopsis newmanii*	long-leaved tuckeroo		NT		3/1
plants	land plants	Sapotaceae	*Planchonella eerwah*			E	E	2/2
plants	land plants	Sparrmanniaceae	*Corchorus cunninghamii*			E	E	4/2

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

Environmental Searches



saunders havill group

Environmental searches

41-53 Courtney Drive, Upper Coomera
Queensland, 4209

Norfolk Estates Pty Ltd

30 August 2023

11694

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Property attributes		**30 August 2023**
Address	41-53 Courtney Drive, Upper Coomera, Queensland, 4209	
Lot/plan(s)	Lot 56 on RP162858 Lot 57 on SP214370 Lot 183 on RP156422	Lot 185 on RP173727 Lot 186 on RP173728
Area (ha)	3.058 ha 3.112 ha 3.100 ha	3.017 ha 3.003 ha Total: 15.29 ha
Local government area	Gold Coast City Council	

1. Federal Matters of National Environmental Significance

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

World Heritage Properties:	None	
National Heritage Places:	None	
Wetlands of International Importance:	1	
Great Barrier Reef Marine Park:	None	
Commonwealth Marine Area:	None	
Listed Threatened Ecological Communities:	6	
Community	***Status***	***RE Mapped***
Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland Ecological Community	Endangered	No
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	No
Lowland Rainforest of Subtropical Australia	Critically Endangered	No
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	No

Subtropical Eucalypt Floodplain Forest and Woodland of the New South Wales North Coast and South East Queensland Bioregions	Endangered	Yes – 12.3.11
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	No
Listed Threatened Species:	92	
Listed Migratory Species:	42	

2. State Matters

2.1 Nature Conservation Act 1992 and subordinate legislation

Protected Plants Flora Survey Trigger Map	Partially within high risk area

2.2 Vegetation Management Act 1999 and subordinate legislation

Regulated Vegetation Management Map and Vegetation Management Supporting Map

Regional Ecosystem	VMA status	Category	Area (ha)				
			56 RP 162858	57 SP 214370	183 RP 156422	185 RP 173727	186 RP 173728
12.11.24	Least Concern	B	-	0.05	-	-	-
12.11.24	Least Concern	C	-	-	0.11	-	-
12.3.11	Of Concern	B	-	0.25	-	-	-
Non-rem	None	X	3.06	2.81	2.99	2.85	3.00
Water	None	Water	-	-	-	0.17	-

Essential Habitat	*Phascolarctos cinereus* (Koala)
Wetland/s	Not present
Bioregion	Coastal bioregions and sub-regions

2.3 Koala Habitat Mapping

Koala Priority Area (KPA)	Not within KPA
Koala Habitat Area	Koala Habitat Area (core)

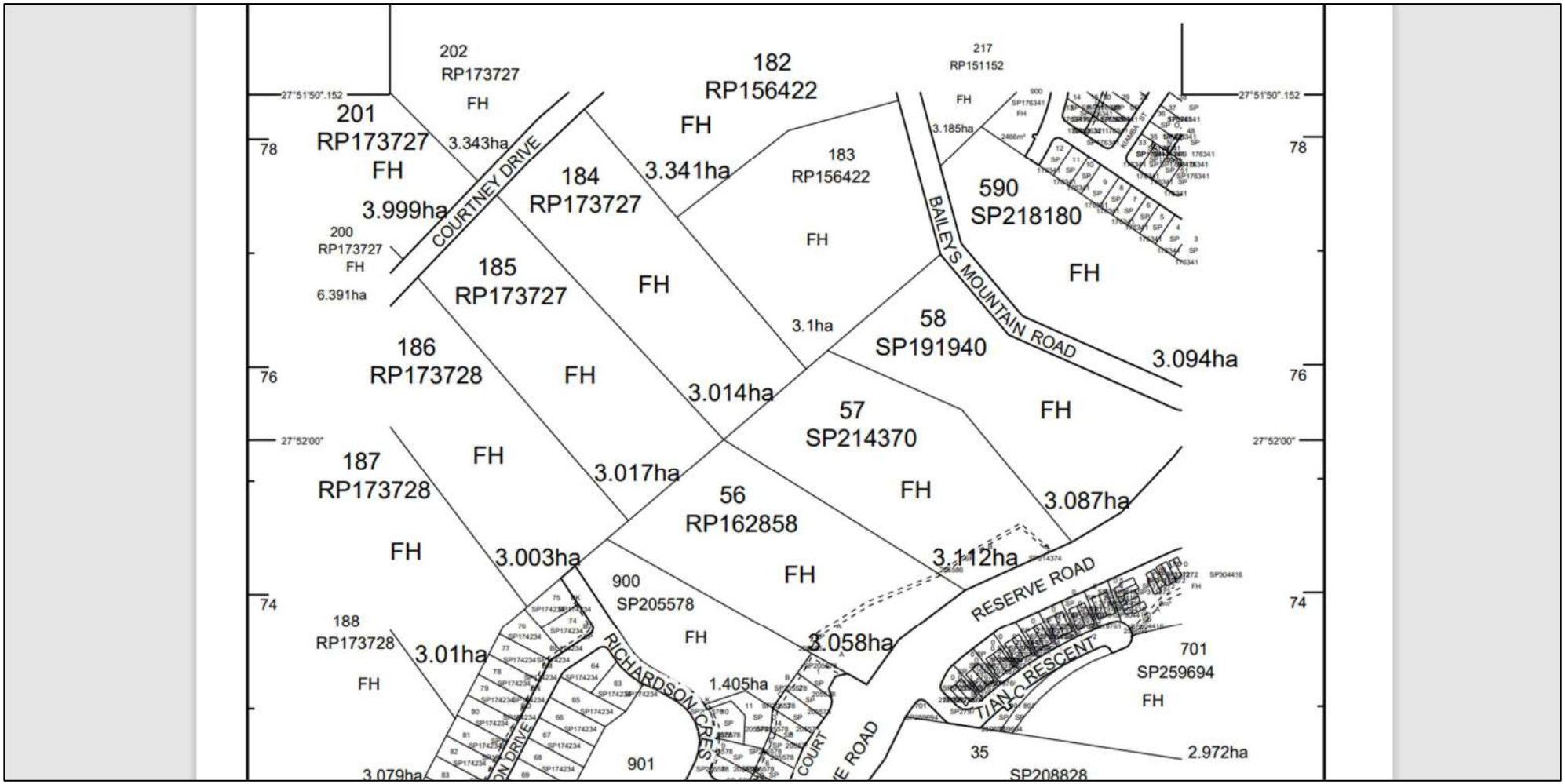
2.4 State Planning Policy Interactive Mapping System (selected environmental matters)

SPP — Biodiversity	MSES – Wildlife habitat (endangered or vulnerable) MSES – Wildlife habitat (koala habitat areas – core) MSES – Regulated vegetation (category B) MSES – Regulated vegetation (essential habitat) MSES – Regulated vegetation (intersecting a watercourse)

SPP --- Coastal Management	Not within coastal management district
SPP — Water Quality	Does not apply
SPP — Natural Hazards Risk and Resilience	Flood hazard area - Local Government flood mapping area Bushfire prone area Medium Potential Bushfire Intensity Potential Impact Buffer
2.5 Development Assessment Mapping System	
DAMS — Coastal Protection	Does not apply
DAMS — Fish Habitat Areas	Queensland waterways for waterway barrier works • 2 low risk and 1 Moderate risk

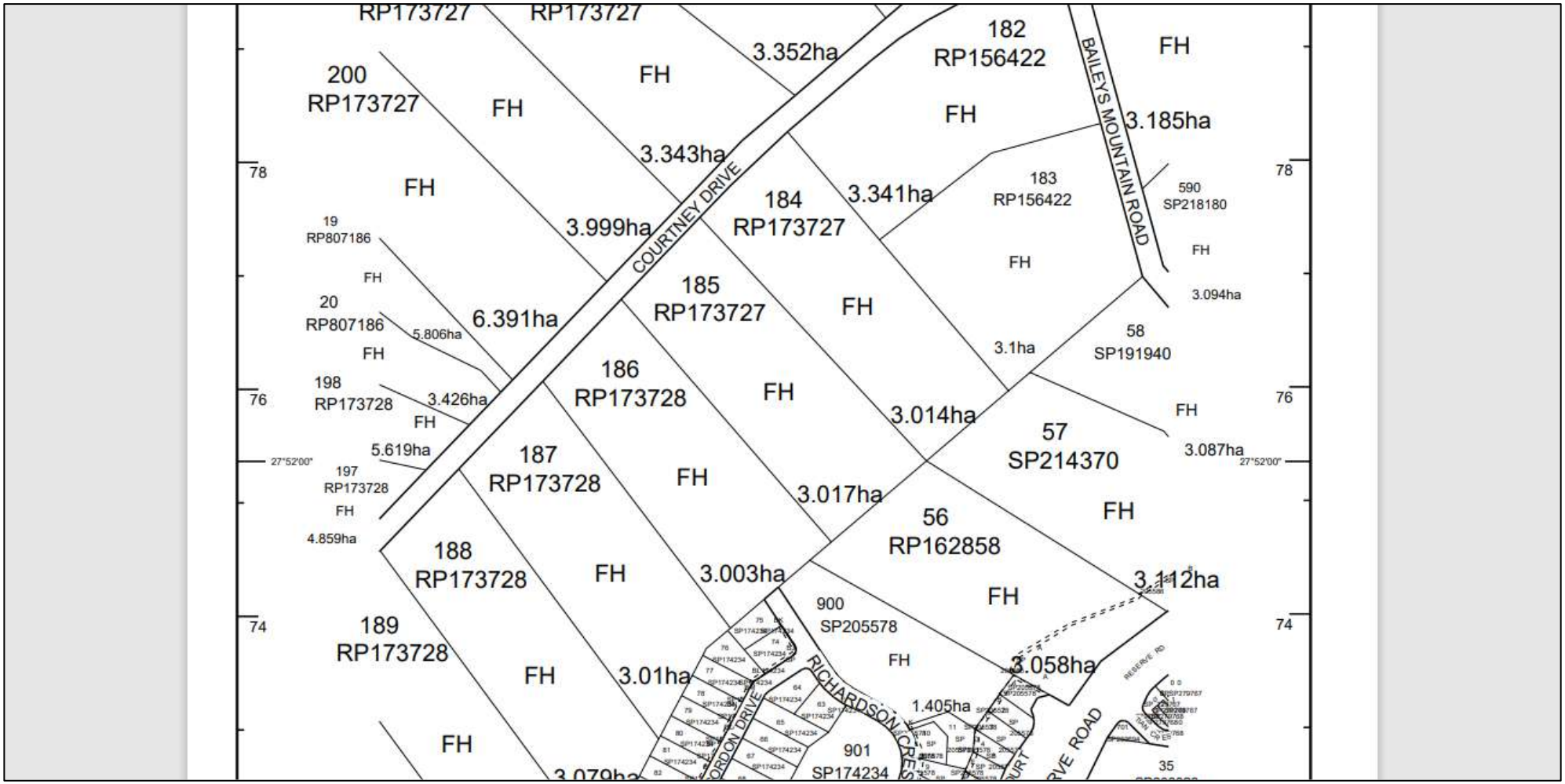
3. Local matters — Gold Coast LGA	
Zoning	Emerging Community
Overlay — Significance Biodiversity Areas	Does not apply
Overlay — Environmental Significance Priority Species	State significant species Local significant species Koala habitat areas
Overlay — Significance Vegetation Management	Regulated vegetation Medium priority vegetation General Priority Vegetation
Overlay — Significance Wetlands and Watercourse	Waterway Buffer area

Map 1a — Lot/plan(s)



Source: Smart Map (captured 26/06/2023)

Map 1b — Lot/plan(s)



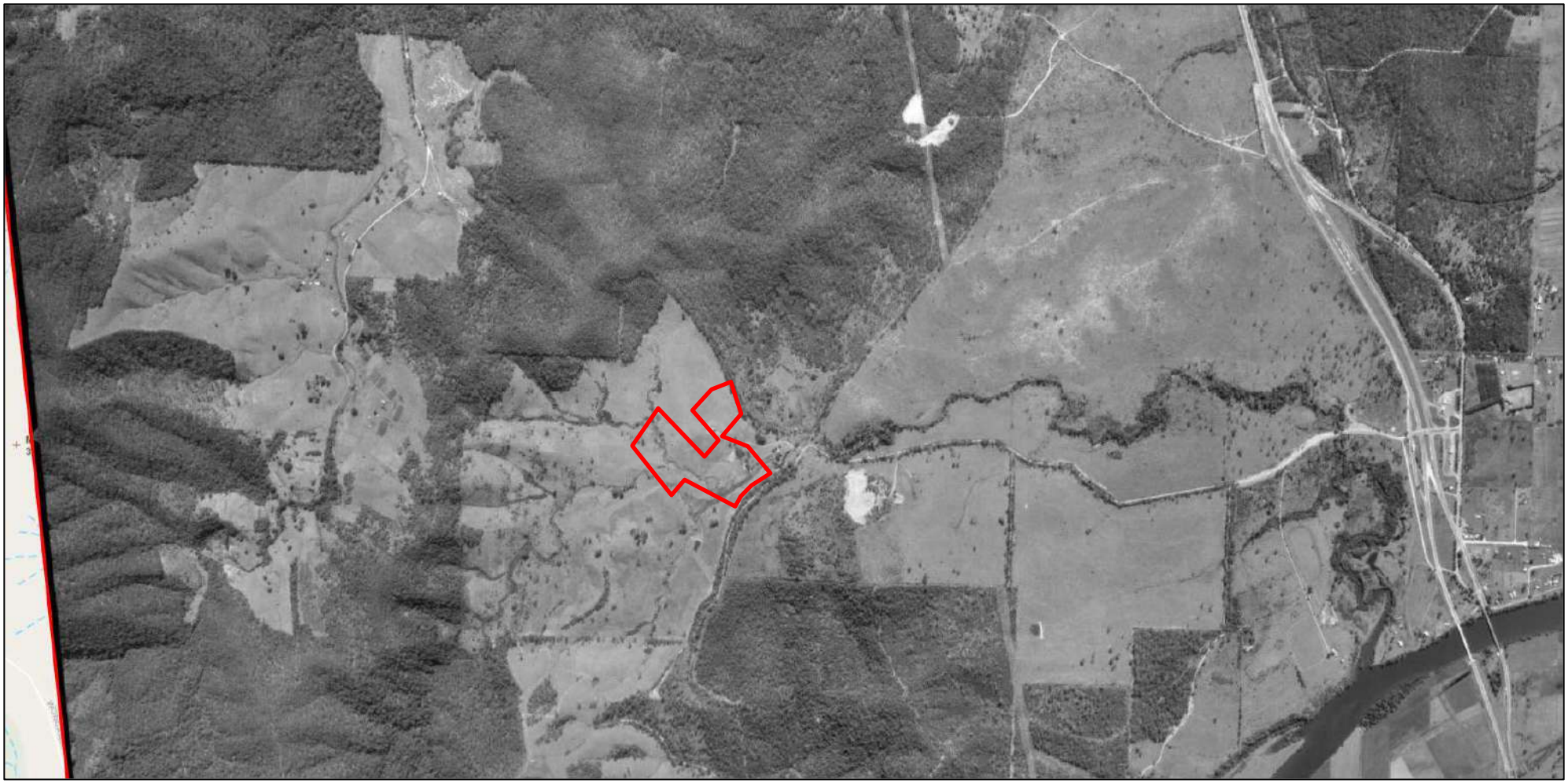
Source: Smart Map (captured 26/06/2023)

Map 2 — Aerial image (current)



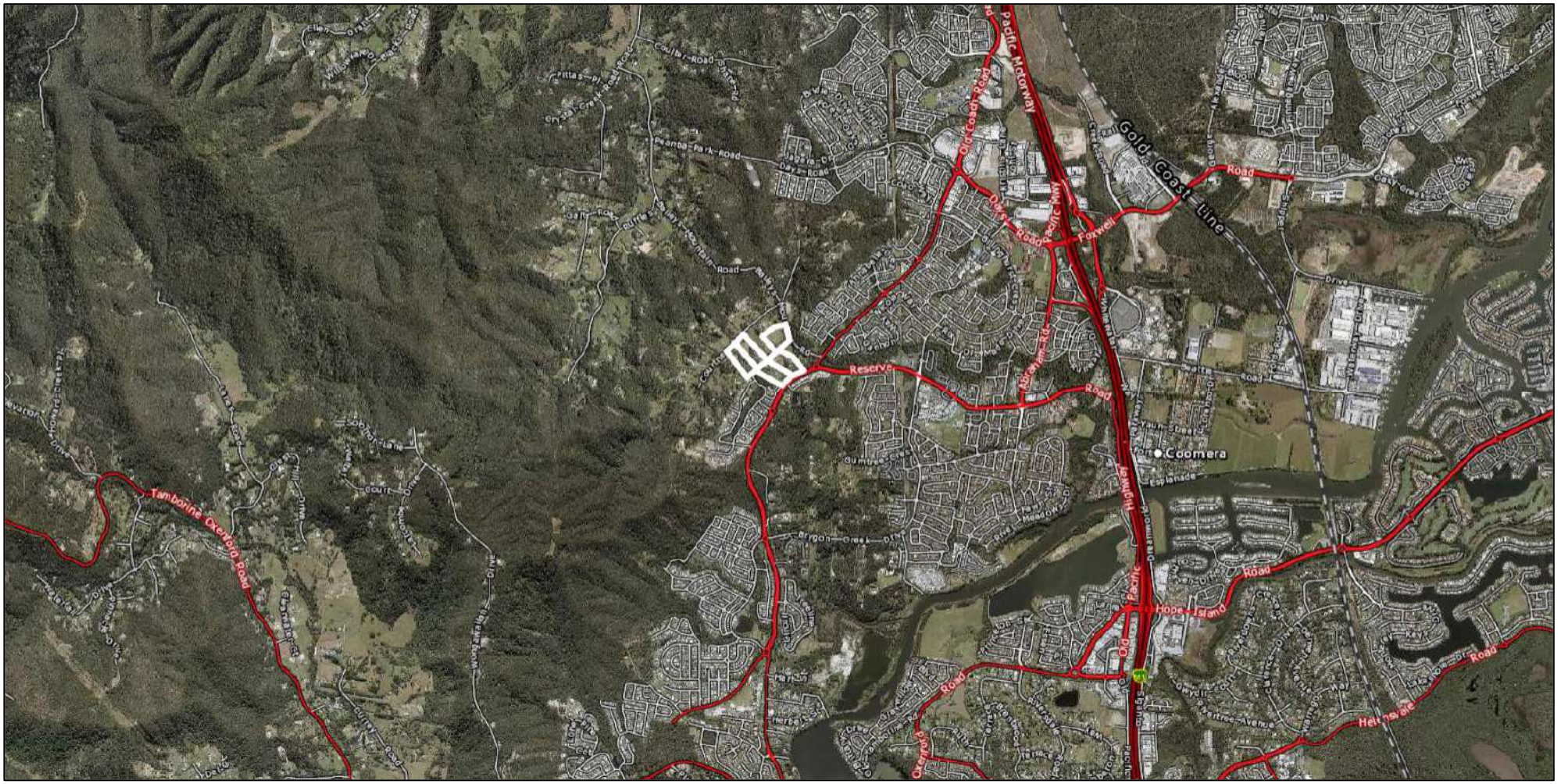
Source: Qld Globe (captured 27/06/2023)

Map 3 — Aerial image (historical)



Source: Qld Globe (captured 01/04/1974)

Map 4 — Locality



Source: Qld Globe (captured 27/06/2023)

Map 5 — Elevation Contours



Source: Qld Globe (captured 27/06/2023)

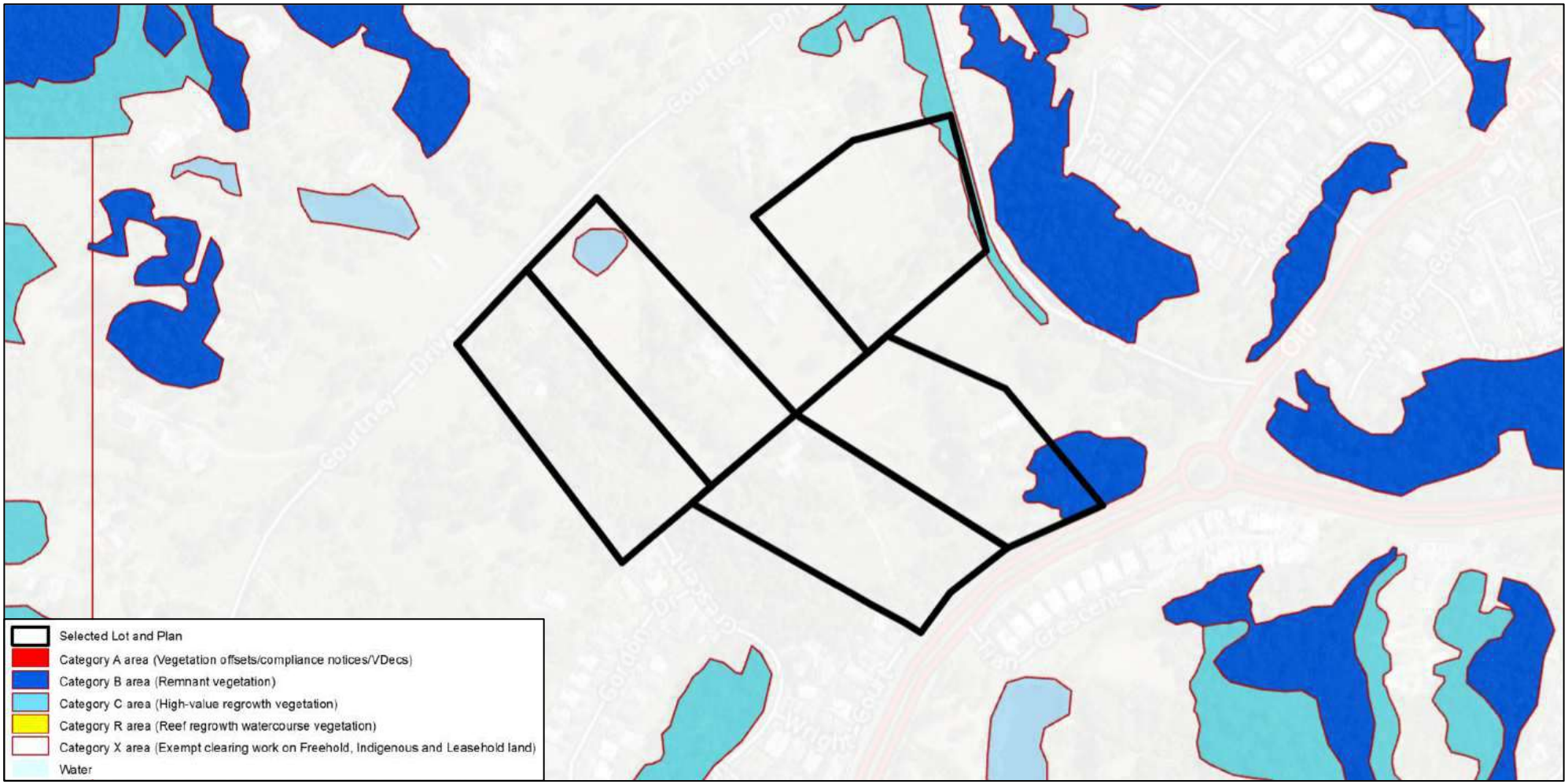
State matters

Map 6 — Protected Plants Flora Survey Trigger Map



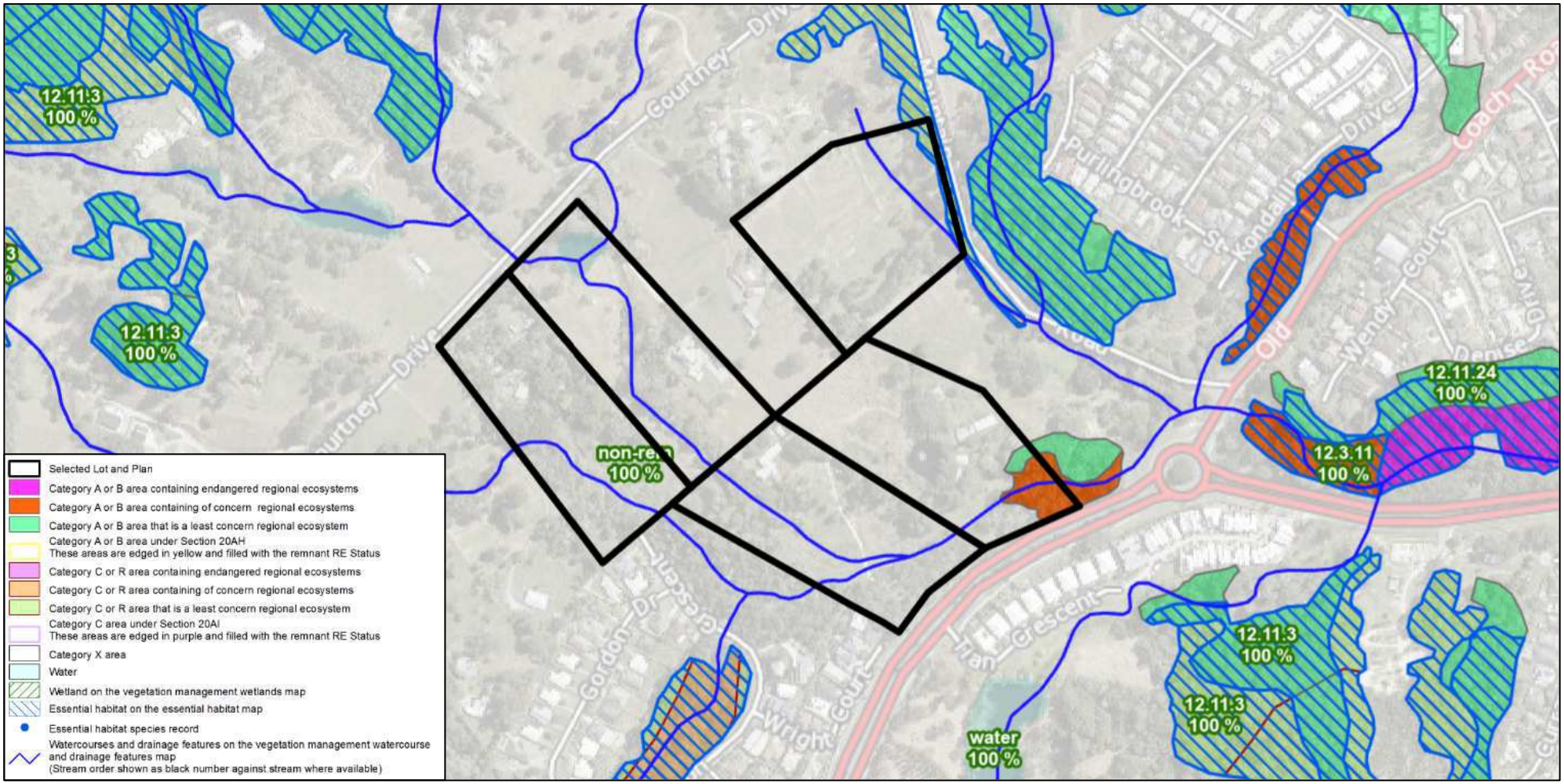
Source: QLD Globe (captured 27/06/2023)

Map 7 — Regulated Vegetation Management Map



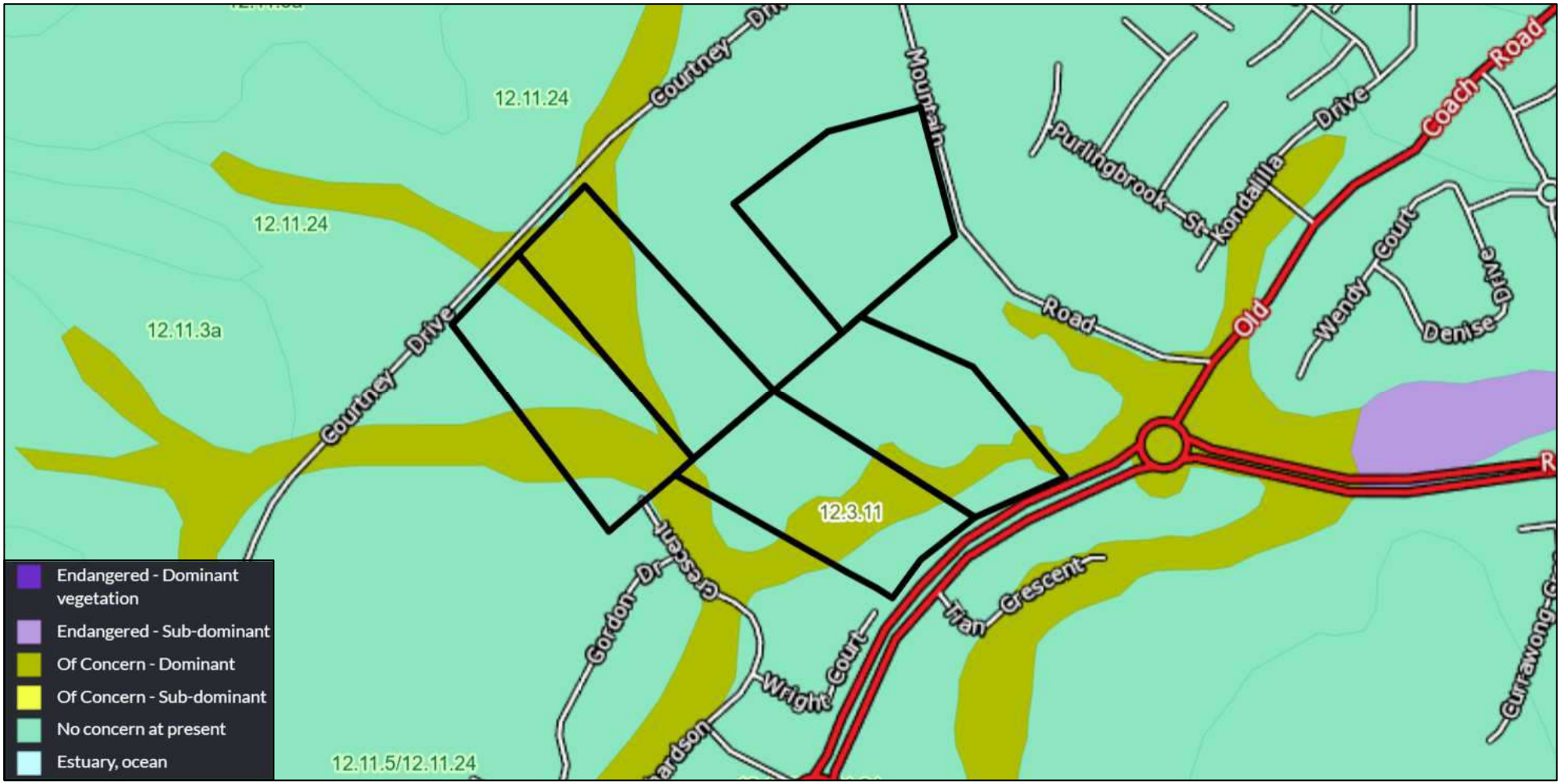
Source: QLD Globe (captured 27/06/2023)

Map 8 — Vegetation Management Supporting Map



Source: QLD Globe (captured 27/06/2023)

Map 9 — Vegetation Management Pre-clear Ecosystem Map



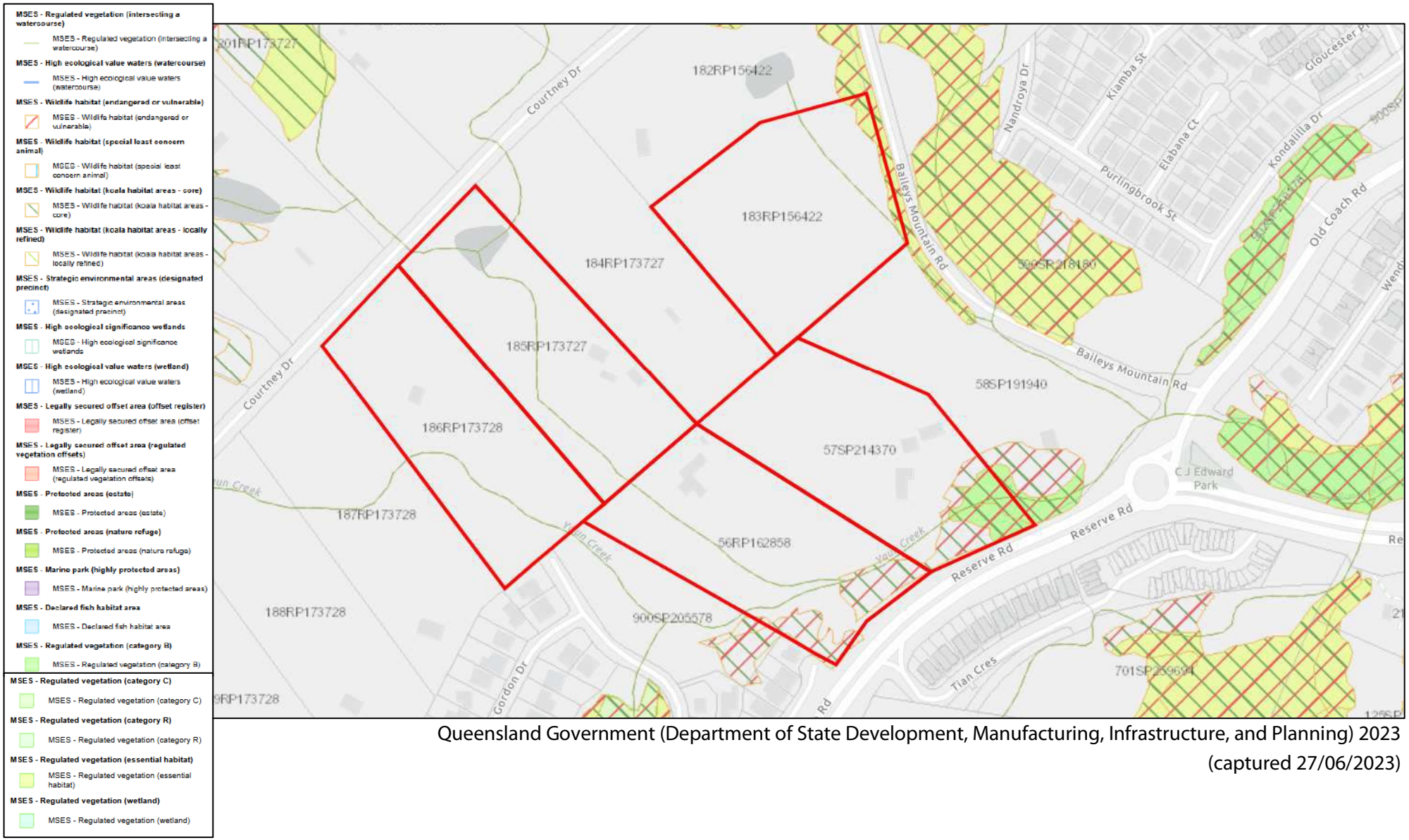
Source: QLD Globe (captured 27/06/2023)

Map 10 — Koala priority area and koala habitat area



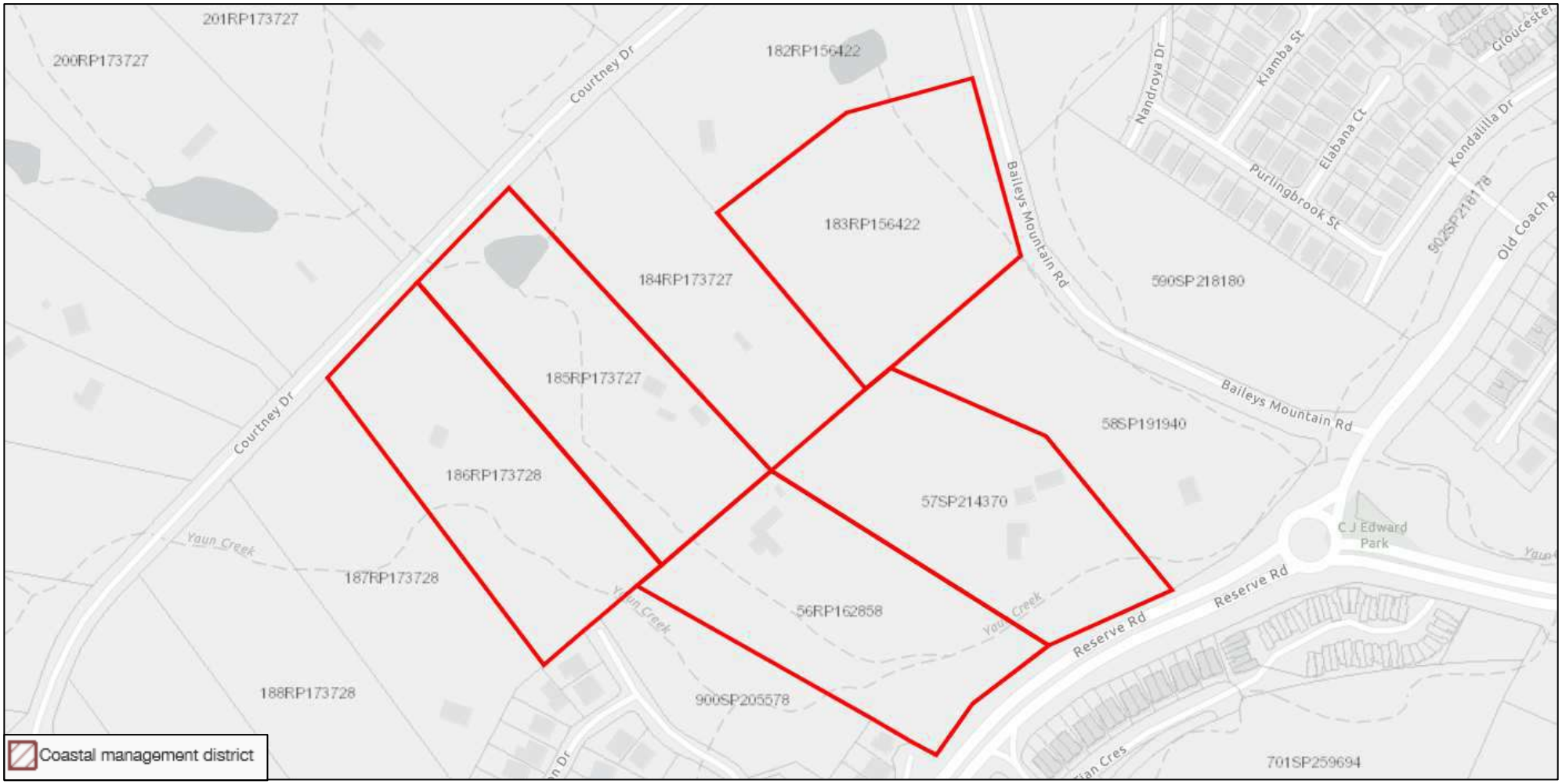
Source: QLD Globe (captured 27/06/2023)

Map 11 — SPP — Biodiversity



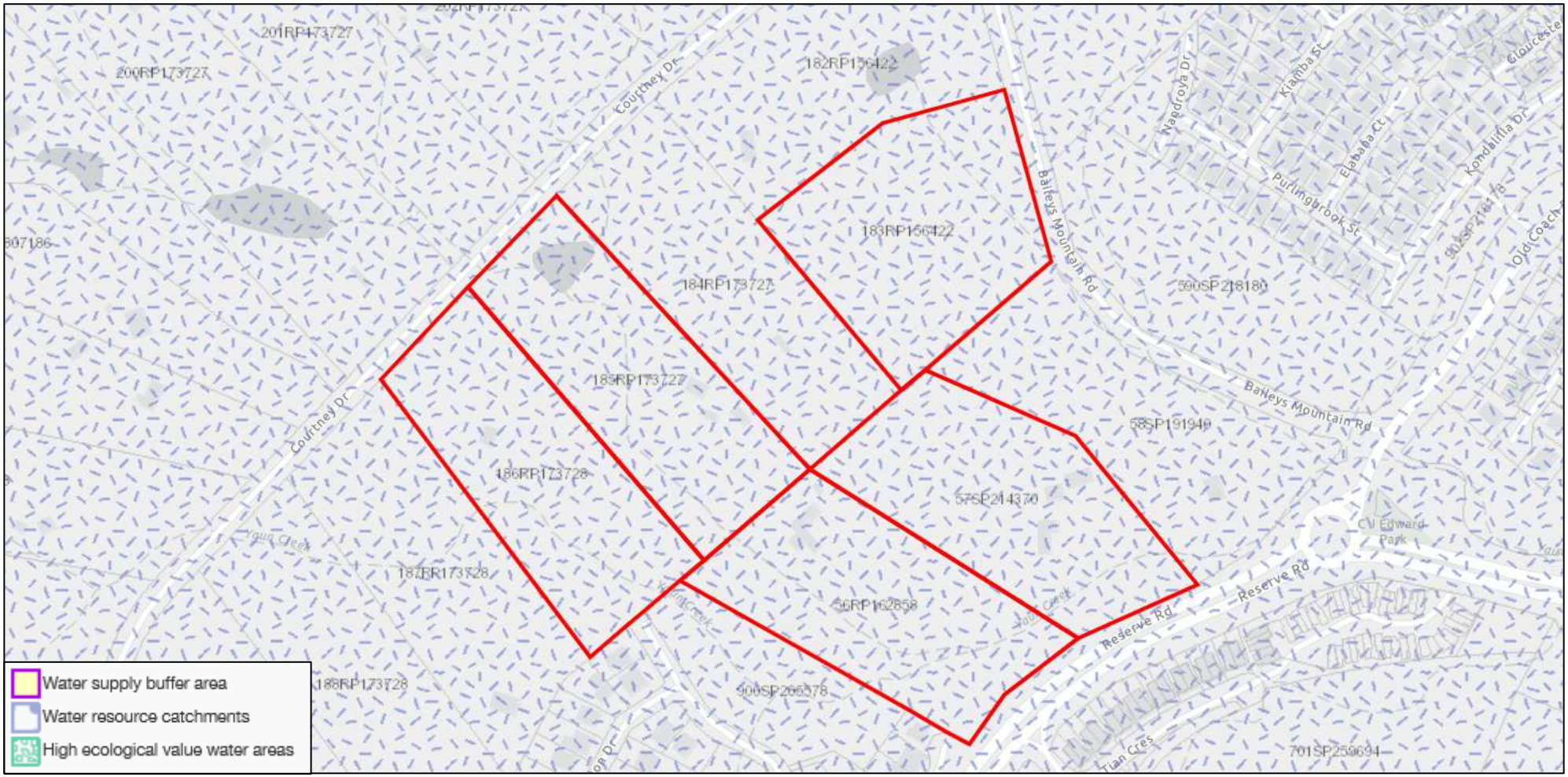
Queensland Government (Department of State Development, Manufacturing, Infrastructure, and Planning) 2023 (captured 27/06/2023)

Map 12 – SPP – Coastal Environment



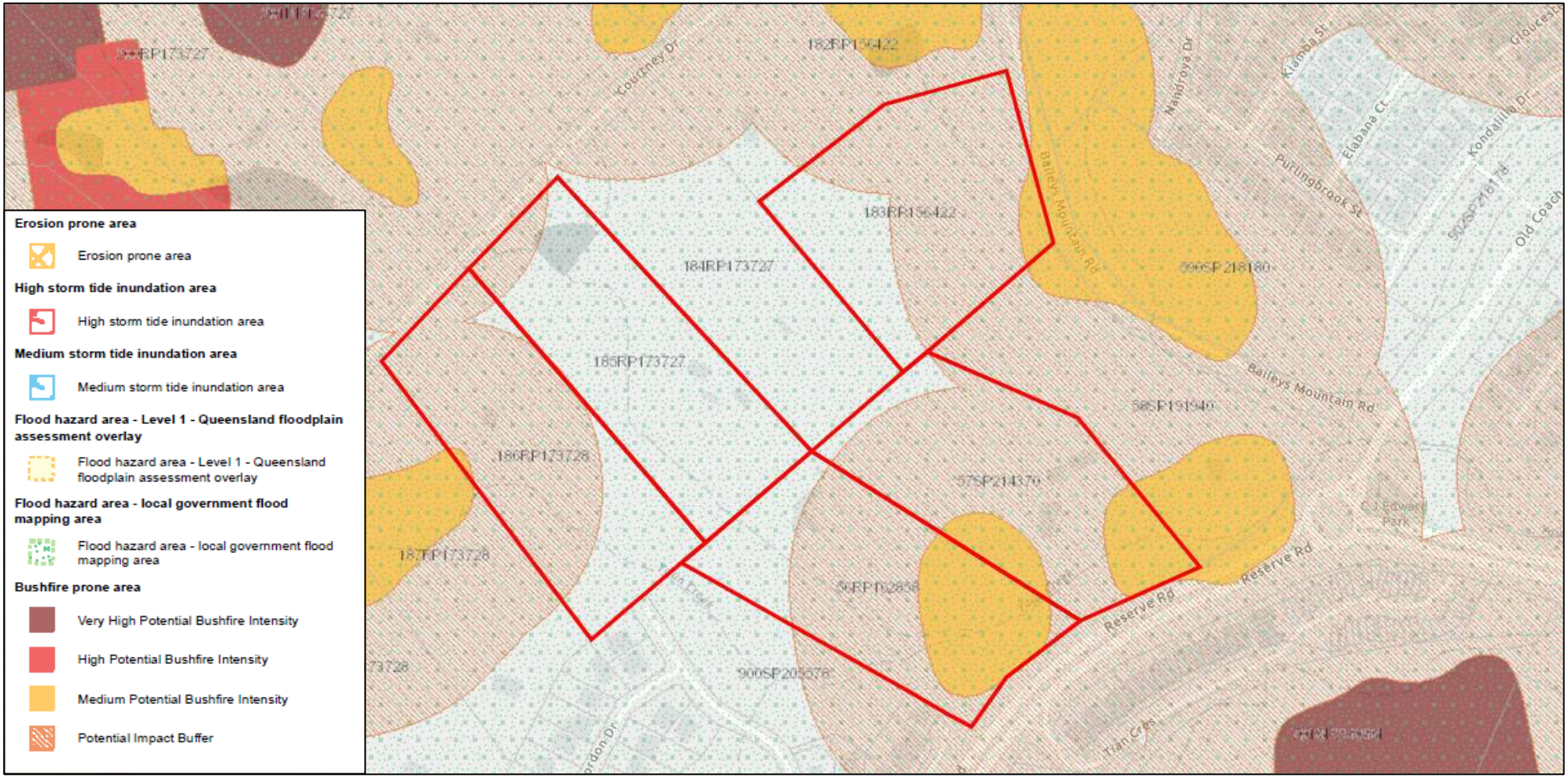
Source: Queensland Government (Department of State Development, Manufacturing, Infrastructure, and Planning) 2023 (captured 27/06/2023)

Map 13 — SPP — Water Quality



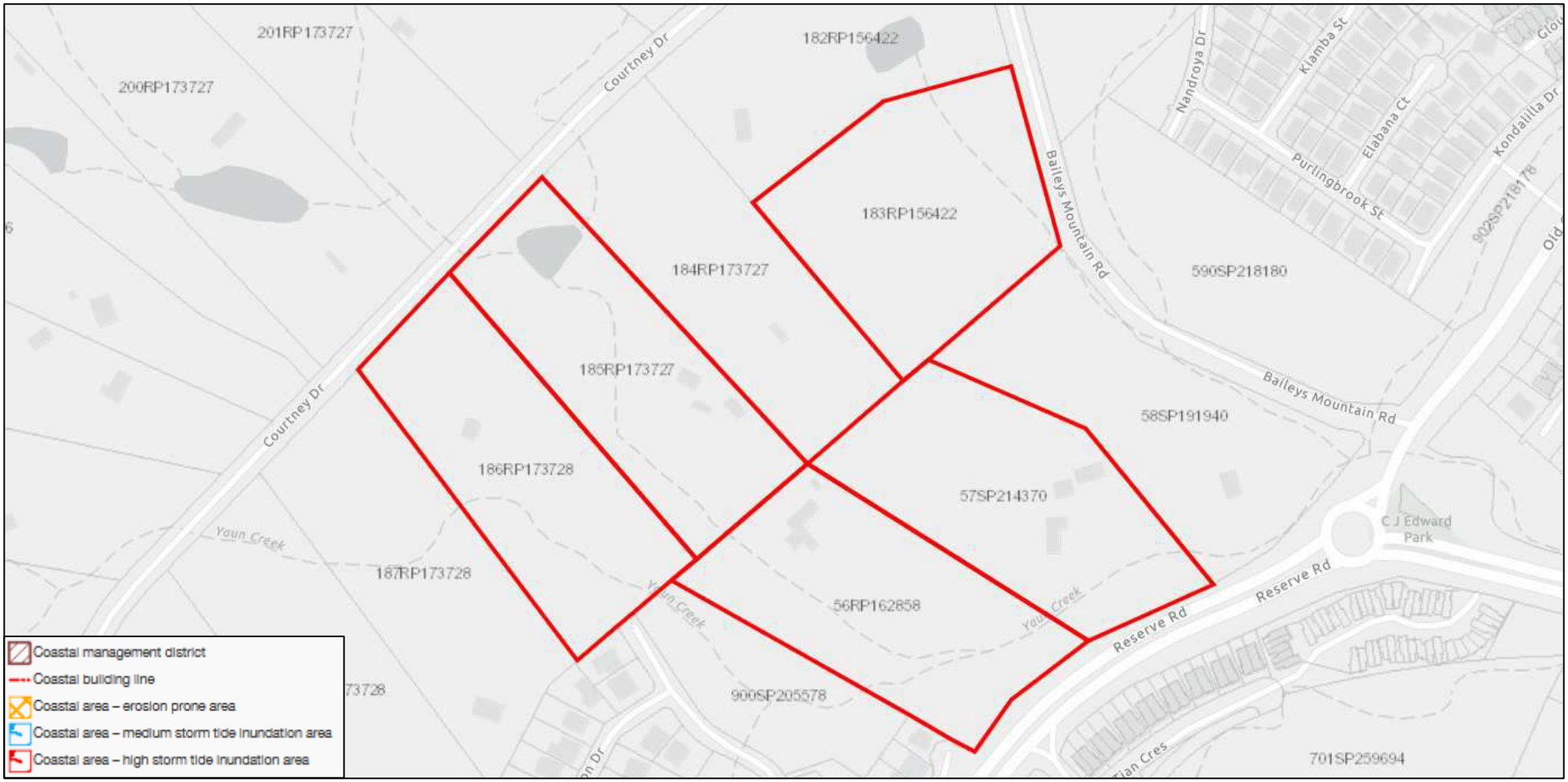
Source: Queensland Government (Department of State Development, Manufacturing, Infrastructure, and Planning) 2023 (captured 27/06/2023)

Map 14 — SPP — Natural Hazards Risk and Resilience



Source: Queensland Government (Department of State Development, Manufacturing, Infrastructure, and Planning) 2023 (captured 27/06/2023)

Map 15 — DAMS — Coastal Protection



Source: Queensland Government (Department of State Development, Manufacturing, Infrastructure, and Planning) 2023 (captured 27/06/2023)

Map 16 — DAMS — Fish Habitat Areas



Source: Queensland Government (Department of State Development, Manufacturing, Infrastructure, and Planning) 2023 (captured 27/06/2023)

Map 17 — Water Act 2000 – Watercourse Identification



Source: Qld Globe (captured: 27/06/2023)

Map 18 — Highest Astronomical Tide



Source: Qld Globe (captured: 27/06/2023)

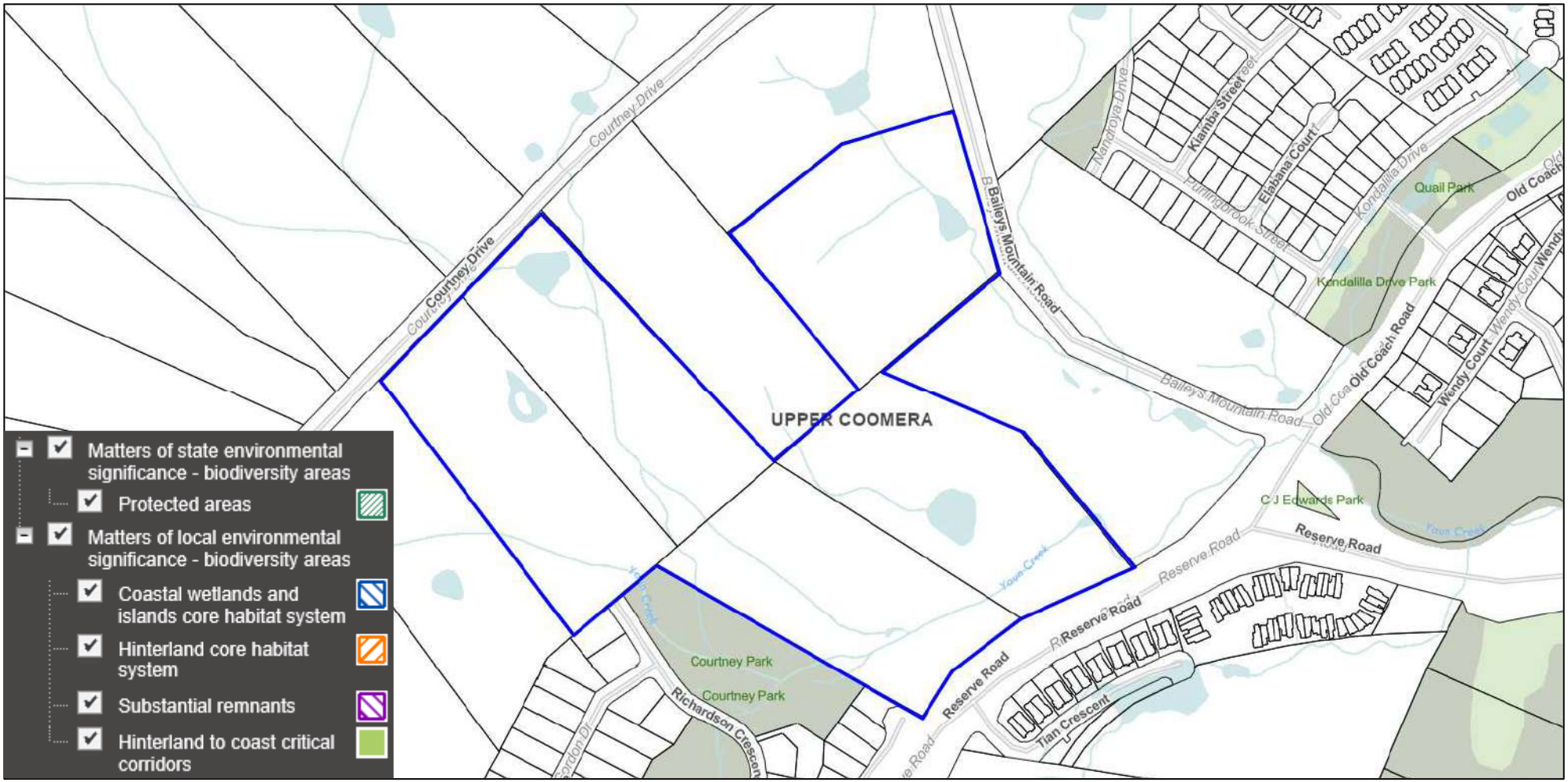
Local matters — Gold Coast LGA

Map 19 – Zoning



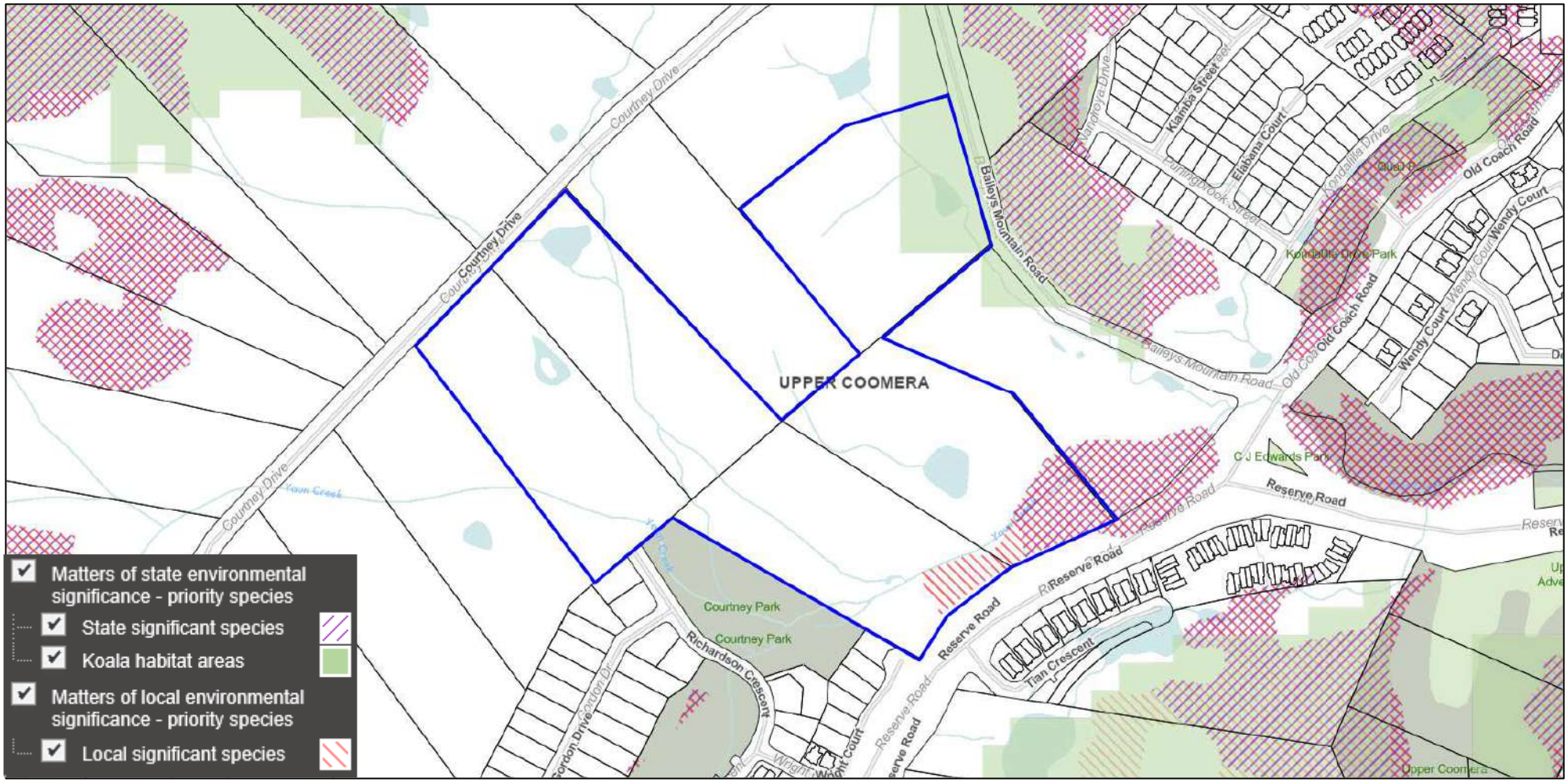
Source: Gold Coast City Plan 2017 (captured 30/08/2023)

Map 20 - Overlay — Environmental Significance Biodiversity Areas



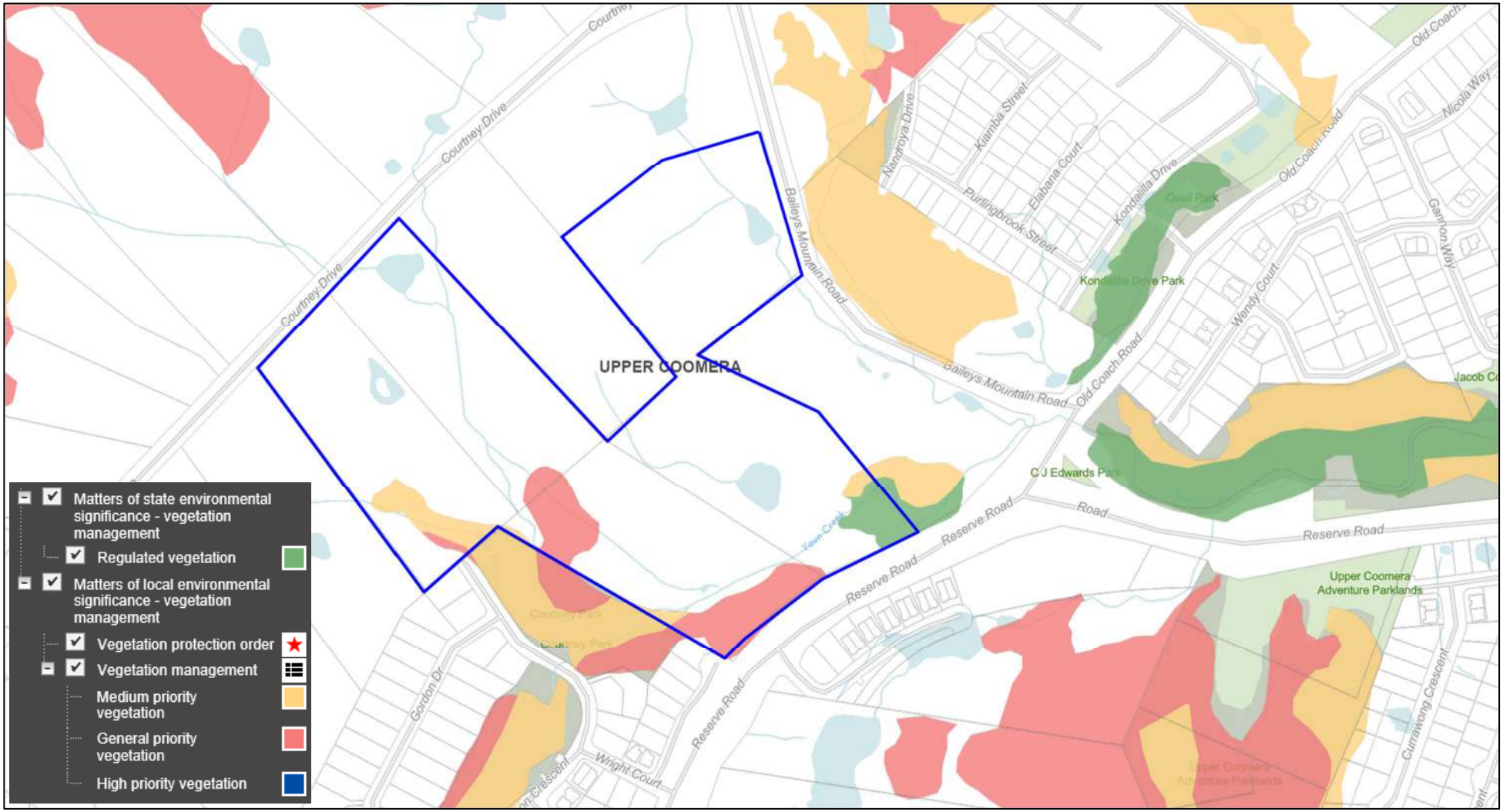
Source: Gold Coast City Plan 2017 (captured 27/06/2023)

Map 21 - Overlay — Environmental Significance Priority Species



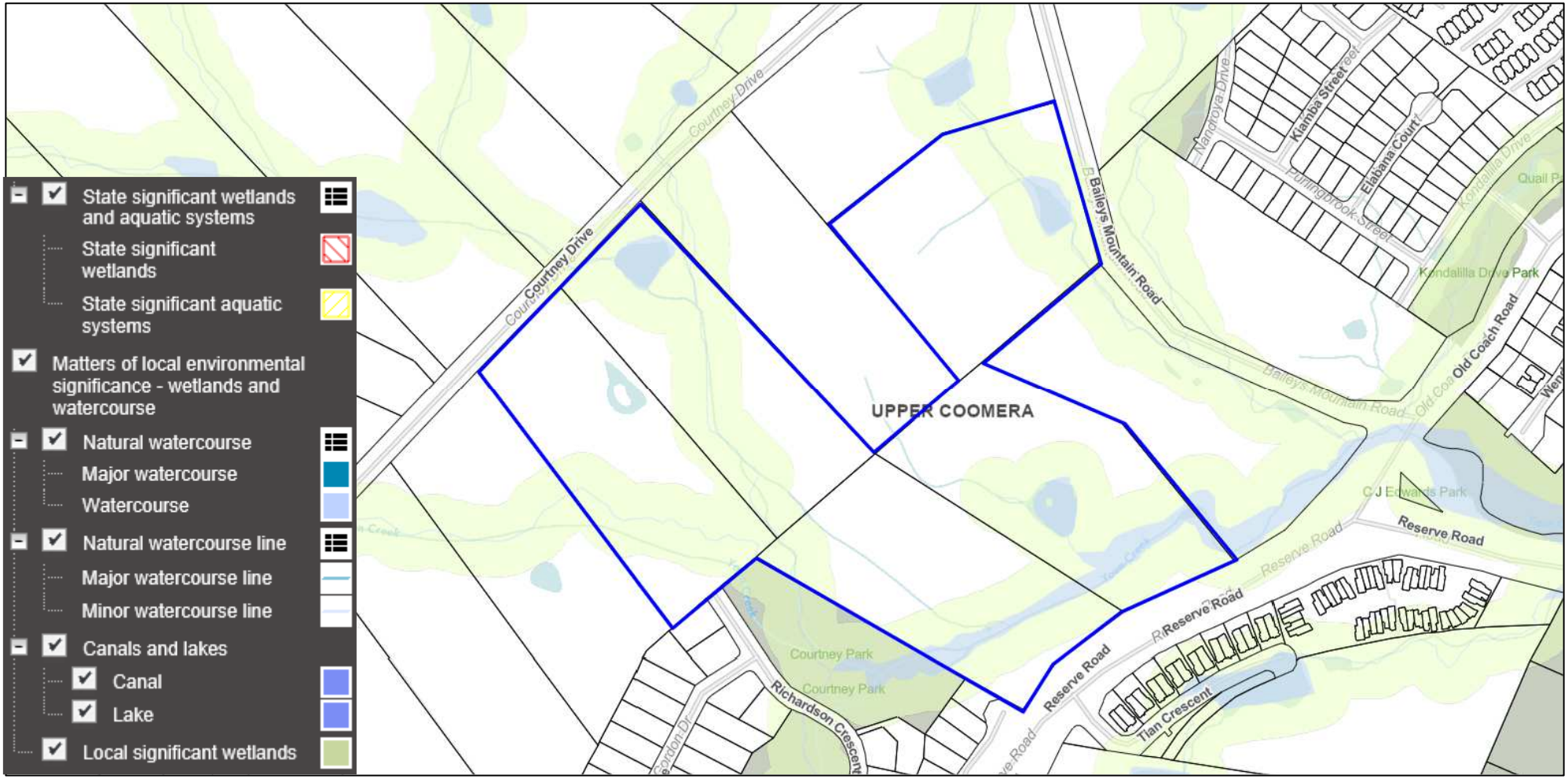
Source: Gold Coast City Plan 2017 (captured 27/06/2023)

Map 22 - Overlay — Environmental Significance Vegetation Management



Source: Gold Coast City Plan 2017 (captured 30/08/2023)

Map 23 - Overlay — Environmental Significance Wetlands and Watercourse



Source: Gold Coast City Plan 2017 (captured 27/06/2023)

Appendix D

Response to Environmental Significance Overlay Code

Gold Coast City Plan V10

Performance outcomes	Acceptable outcomes	Response
Ecological site assessment		
PO1 All matters of environmental significance on and adjacent to the development site are identified and protected. Note - An Ecological Site Assessment prepared in accordance with **SC6.7 City Plan policy – Ecological site assessments,** is Council's preferred method for addressing this performance outcome.	**AO1** Proposed works do not impact on: a) areas identified on **Environmental significance – vegetation management overlay map**; b) buffers to wetlands and waterways being: i. 100m from the mapped boundary of a State significant aquatic area, as identified on **Environmental significance – wetlands and waterways overlay map**; ii. 100m from the outer landward boundary of a State significant wetland, as identified on **Environmental significance – wetlands and waterways overlay map**; iii. 100m from the outer landward boundary of a Local significant wetland, as identified on Environmental significance **– wetlands and waterways overlay map**; iv. 60m from the outer bank of a Major Waterway identified on **Environmental significance – wetlands and waterways overlay map**; or	**PO1 – COMPLIES** Under local *Environmental significance – vegetation management overlay,* part of the site is identified as containing general priority, medium property and regulated vegetation (refer **Figure 10**). The local *Environmental significance – wetlands and waterways overlay* also indicates that several minor local waterways are mapped throughout the site (refer **Figure 11**), three of which are also mapped as a *moderate and low risk* DAF waterways for waterway barrier works (WWBW). The site is zoned as 'emerging community' within the Upper Coomera precinct; therefore the area is earmarked for residential development projects such as this. In order to fulfil the planning intent of the project site, clearing of vegetation is required. Project design has been informed by this Ecological Assessment Report, considered the on-ground values of the site, and proposes to retain the majority of mapped waterway and vegetation values within environmental open space and district park areas (refer **Plan 1**). The majority of the proposed development will occur within areas that have long been modified and maintained for rural residential uses and horse agistment purposes. Vegetation within these areas is reflective of the historical and current land uses with large areas dominated by planted ornamental and introduced species. Native vegetation is scattered and largely restricted to boundaries and around constructed dams which are in a highly modified state including significant weed infestations or dominated by regrowth Acacia species. The highest value vegetation was observed within the south-east in conjunction with core KHA mapping and Category B

Performance outcomes	Acceptable outcomes	Response
	v. 30m from the outer bank of a Waterway identified on **Environmental significance – wetlands and waterways overlay map**; and	(remnant) vegetation, which are also mapped with general priority vegetation, regulated vegetation and within the waterway buffer area. This area will be retained under the proposed development. Although the ecological assessment indicates that the site is not considered to provide significant fauna movement potential due to surrounding and current land uses, connectivity within the south and south/eastern portion of the site is more prominent than the other boundaries. Therefore, retention of this portion of vegetation within environmental open space areas will maintain the fauna movement potential provided by the retained vegetation within an urban area where development has steadily increased throughout recent years. The retention of vegetation within the south will also adjoin to areas mapped with CGC General Priority and Medium Priority Vegetation to the south-east of the site. The mapped *Environmental significance – wetlands and waterways overlay* includes four council mapped minor waterways throughout the site, the largest of which is mapped in conjunction with a *moderate-risk* DAF WWBW in the south-east of the site. This waterway was observed on-ground with areas showing a defined flow-path with water present throughout, however portions contain heavy disturbance and limited waterway features. The upstream extent of this waterway is heavily weed infested, with restricted invasive species *Sphagneticola trilobata* (Singapore Daisy) and exotic grasses dominating the ground and minimal native canopy vegetation retained along the channel. Similarly, the downstream exhibits high levels of weed infestation, however vegetation has been retained where Category B (remnant) vegetation is present. This waterway is proposed to be entirely retained as environmental open space of approximately 60 m wide with the a local park providing an additional buffer from development.

Performance outcomes	Acceptable outcomes	Response
		The three other council mapped waterways are reflective of low-lying drainage channels, lacking bed with invasive species dominating the area. Therefore, these areas are not considered to reflect true waterway values and instead are a result of heavy modification of natural flow within the area. Regardless, waterways that are also mapped as *low-risk* DAF WWBW are intended to be fully retained as environmental open space areas. Development is proposed within 30m of the top of bank, however these mapped watercourses are retained within a corridor of at least 25m wide which is consider suitable given the current disturbance levels on-site..
	c) individual trees within areas mapped on the environmental significance – priority species overlay map.	**(C) – COMPLIES** Vegetation clearing will occur within areas mapped on the *Environmental significance – priority species* overlay map. This mapping contains local significant species however this is mapped within the south-east and will be retained entirely within environmental open space. Similarly, the majority of the area mapped as Koala Habitat Area will be retained with exception to a small portion in the south and north-east. Small portions of KHA intended for impact in the south and north-east of the site will not compromise connectivity in the landscape as larger environmental open space areas will maintain and improve connectivity value. Rehabilitation within the Environmental open space will enhance fauna movement and foraging opportunities for Koala.

Performance outcomes	Acceptable outcomes	Response
		Overall, it is considered unlikely that Koala would utilise the site at present given lack of evidence on site and limited recent local sightings. The removal of the highly modified and largely fragmented vegetation on-site is unlikely to further reduce already limited movement potential. The retention of the majority of the vegetation in the south-east that is mapped as KHA and remnant vegetation, ensures that current connectivity value is not compromised. Impacts to KHA are prosed under exemptions (refer Plan 5). Should additionally clearing of KHA be needed, an offset consistent with the *Environmental Offsets Act 2014* and in accordance with *SC6.9 City Plan policy – Environmental offsets* will be required.
Biodiversity areas		
PO2 Development does not impact on Protected Areas as identified on the **Environmental significance–biodiversity areas overlay map.**	**AO2.1** No acceptable outcome provided.	**AO2.1 – NOT APPLICABLE** The subject site is not situated in areas mapped as Protected Areas as identified on the *Environmental significance–biodiversity areas* overlay map.
PO3 Development within the Hinterland to Coast Critical Corridors as identified on the **Environmental significance –biodiversity areas overlay map** is located and designed to: a) provide corridors of sufficient dimensions and characteristics that will enable adequate movement of fauna through the site; b) protect in situ matters of environmental significance and associated buffers; c) protect in situ, vegetation identified on the **Environmental significance – vegetation**	**AO3.1** No acceptable outcome provided.	**AO3.1 – NOT APPLICABLE** The subject site is not situated within the Hinterland to Coast Critical Corridor as identified on the *Environmental significance – biodiversity areas* overlay map.

Performance outcomes	Acceptable outcomes	Response
management overlay map and habitat for native flora and fauna; d) link matters of environmental significance, existing corridors and/or conservation estate/reserves on adjacent properties; e) maintain and improve upon the regional connectivity of the Hinterland to Coast Critical Corridors; and f) allow for the rehabilitation of disturbed, cleared or modified areas that form part of the Hinterland to Coast Critical Corridors. Note: Recommendations provided in an ecological site assessment (prepared in accordance with SC6.7 City Plan policy – Ecological site assessments) are Council's preferred method for determining corridor dimensions.		
PO4 Development within Hinterland Core Habitat Systems, Coastal Wetlands and Islands Core Habitat Systems and Substantial Remnant Areas as identified on the **Environmental significance – biodiversity areas overlay map** is located and designed to: a) protect in situ matters of environmental significance and associated buffers; b) protect in situ vegetation identified on the **Environmental significance – vegetation management overlay map** and habitat for native flora and fauna; and	**AO4** No acceptable outcome provided.	**P04 – NOT APPLICABLE** The assessment area is not identified within the Hinterland Core Habitat Systems as identified on the *Environmental significance – biodiversity areas overlay map*.

Performance outcomes	Acceptable outcomes	Response
c) allow for the rehabilitation of disturbed, cleared or modified areas.		
Wetland and waterway		
PO5 Buffers are provided to wetlands and waterways identified on the **Environmental significance – wetlands and waterways overlay map** to ensure the: a) protection of matters of environmental significance mapped onsite or identified through an ecological site assessment; b) unimpeded movement of fauna along the waterway; c) water quality is maintained; d) bank stability; and e) protection of property and infrastructure. Note: The buffer width for wetlands is measured from the outer, landward boundary of the mapped wetland, as shown on Environmental significance – wetland and waterways overlay map. Note: Recommendations provided in an ecological site assessment (prepared in accordance with SC6.7 City Plan policy – Ecological site assessments) is Council's preferred method for determining alternative buffer widths. Note Artificial waterways are to be addressed through the Coastal erosion hazard overlay code and map. Where a waterbody contains both natural and artificial banks, the	**AO5.1** Buffers at least 100m wide are provided between the development and the mapped boundary of a state significant aquatic area, as identified on environmental significance – wetlands and waterways overlay map.	**AO5.1 – NOT APPLICABLE** The subject site is not situated in or near areas mapped as state significant aquatic areas as identified on the *Environmental significance–wetlands and waterways* overlay map.
	AO5.2 Buffers at least 100m wide are provided between the development and the outer landward boundary of a state significant wetland, as identified on environmental significance – wetlands and waterways overlay map.	**AO5.2 – NOT APPLICABLE** The subject site is not situated in or near areas mapped as state significant wetland as identified on the *Environmental significance–wetlands and waterways* overlay map.
	AO5.3 Buffers at least 100m wide are provided between the development and the outer landward boundary of a local significant wetland as identified on the environmental significance – wetlands and waterways overlay map.	**AO5.3 – NOT APPLICABLE** The subject site is not situated as containing areas mapped as local significant wetland as identified on the *Environmental significance–wetlands and waterways* overlay map.
	AO5.4 Buffers at least 60m wide are provided between the development and the outer bank of a Major Waterway as identified on the **Environmental significance – wetlands and waterways overlay map**.	**AO5.4 – NOT APPLICABLE** The subject site is not situated in or near areas mapped as a Major Waterway as identified on the *Environmental significance–wetlands and waterways* overlay map.
	AO5.5	**PO5 - COMPLIES**

Performance outcomes	Acceptable outcomes	Response
natural banks are to be assessed in accordance with this performance outcome.	Buffers at least 30m wide are provided between the development and the outer bank of a waterway as identified on the **Environmental significance – wetlands and waterways overlay map**.	Several 'minor waterways' as identified on the *Environmental significance – wetlands and waterways overlay* are mapped on-site. Three of which are mapped in conjunction with DAF mapped *moderate and low risk* WWBW and two through the north-west. The waterway mapped to the south was identified to contain a defined channel with water present in areas, however the vegetation within this waterway is highly disturbed, particularly upstream where canopy vegetation is absent. Downstream contains higher-value habitat features with canopy shading and remnant vegetation present. The proposed development intends to retain the entirety of this mapped waterway within a 60 m wide eenvironmental open space and local park providing an additional buffer from development (refer **Appendix F**). The two other DAF mapped *low risk* WWBW on-site are comparatively more disturbed than the southern mapped waterway. These two are reminiscent of modified drainage features within low-lying areas. These drainage features lack significant, continuous bed and bank features with evidence that flow occurs following significant rain. Regardless of the disturbance observed within these areas, both waterways are intended to be fully retained within environmental open space areas of at least 25m wide (predominantly >30 m wide). Setbacks of less than 30m have been proposed and are considered suitable for this environment given the current highly levels of disturbance reflective of these rural residential properties. A forth local mapped waterway in the north-east of the site was identified on-ground as being no more than a low-lying overland flow area feeding water to a constructed dam. This area is proposed as drainage and detention area.

Performance outcomes	Acceptable outcomes	Response
		Therefore, the proposed development is not considered to have significant effects on locally mapped waterways, with the areas being retained and potentially rehabilitated on-site. Reduce buffers are considered suitable for these highly modified flow-paths.
Vegetation management		
PO6 Regulated vegetation is protected in situ when it is: identified on the **Environmental significance – vegetation management overlay map**; and within biodiversity areas as identified on the **Environmental significance – biodiversity areas overlay map.**	**AO6** Development does not impact on regulated vegetation.	**PO6 – COMPLIES** No mapped biodiversity areas as identified on the *Environmental significance – biodiversity areas overlay map* are present on-site.
PO7 Development is designed to maintain regulated vegetation and minimise disturbance when it is: A) identified on the **Environmental significance – vegetation management overlay map**; and outside of biodiversity areas as identified on the **Environmental significance – biodiversity areas overlay map.**	**AO7** Development avoids impacts on regulated vegetation.	**PO7 – COMPLIES** A small area of vegetation on-site is mapped as Regulated Vegetation as identified on the *Environmental significance – vegetation management overlay map* is mapped in the south-east of the site. This is mapped in conjunction with Category B (remnant) vegetation and outside of biodiversity areas as identified on the **Environmental significance – biodiversity areas overlay map.** Two vegetation communities are present within Category B (remnant) vegetation being 'Least Concern' Regional Ecosystem (RE) 12.11.24 and 'Of Concern' RE12.3.11. The area of regulated vegetation observed on-ground as being heavily modified, reflective of residential uses. The area is noted to be dominated by exotic species *Pinus elliottii* (Slash Pine) and *Cinnamomum camphor* (Camphor Laurel) within the canopy and *Tecoma stans* (Yellow Bells), *Syagrus romanzoffiana* (Cocos Plam), *Spagneticola trilobat*a (Singapore Daisy) and *Asparagus aethiopicus* (Ground asparagus) within the understory. Native canopy species were however present including *Eucalyptus*

Performance outcomes	Acceptable outcomes	Response
		crebra (Narrow-leaved Ironbark), *Corymbia intermedia* (Pink Bloodwood), *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus microcorys* (Tallowwood), generally reflective of mapped RE 12.3.11. Regardless of the disturbed characteristics of this vegetation, the proposed development intends to retain this area in its entirety within environmental open space. Therefore, the development does not impact on regulated vegetation.
PO8 High priority vegetation as identified on the **Environmental significance – vegetation management overlay map** is protected in situ.	**AO8** No acceptable outcome provided.	**PO8 – NOT APPLICABLE** The subject site is not situated in or near areas mapped as High Priority Vegetation as identified on the *Environmental significance–vegetation management* overlay map.
PO9 Medium and general priority vegetation as identified on the **Environmental significance – vegetation management overlay map** within biodiversity areas as identified on the **Environmental significance –biodiversity areas overlay map** is protected in situ.	**AO9** No acceptable outcome provided.	**PO9 – COMPLIES** No mapped biodiversity areas as identified on the *Environmental significance – biodiversity areas overlay map* are present on-site.
PO10 Vegetation is protected when it is: A) identified as medium priority vegetation on the **Environmental significance – vegetation management overlay map**; and located outside the biodiversity areas identified on the **Environmental significance – biodiversity areas overlay map.**	**AO10** Vegetation is not damaged when it is: a) identified as medium priority vegetation on the Environmental significance – vegetation management overlay map; and b) located outside the Environmental significance –biodiversity areas overlay map. OR	**AO10 – COMPLIES** Medium Priority Vegetation as identified on the *Environmental significance–vegetation management* overlay map is present within the south-west and south-east of the site. Although this vegetation on-ground was observed to be highly disturbed by invasive species, due to the portion also being mapped as a local waterway, the project intends to retain the area within proposed environmental open space and rehabilitated.

Performance outcomes	Acceptable outcomes	Response
	Where all attempts have been made to avoid and minimise damage to vegetation as stated above, any significant residual impact is offset consistent with the *Environmental Offsets Act 2014*, at a ratio of 3:1 (area) in accordance with **SC6.9 City Plan policy – Environmental offsets**. OR Damage to medium priority vegetation identified on the **Environmental significance – vegetation management overlay map** and located outside the biodiversity areas identified on the **Environmental significance – biodiversity areas overlay map** is for committed development.	
PO11 Disturbance to vegetation is minimised when it is: a) identified as General priority vegetation on the **Environmental significance – vegetation management overlay map**; and **b)** located outside the **Environmental significance – biodiversity areas overlay map**.	**AO11** Development avoids impacts on general priority vegetation. Any damage is minimised to the greatest extent possible.	**PO11 – COMPLIES** Vegetation mapped as General Priority Vegetation as identified on the *Environmental significance – vegetation management* overlay map will be impacted by the proposed development. All attempts have been made to avoid and minimize impacts to this vegetation, with the majority proposed to be retained within environmental open space. However, in order to fulfill the planning intent of the area and provide a functioning residential area with sufficient infrastructure and roads, some vegetation removal will be required. On-ground surveys identified these areas to contain highly modified characteristics largely dominated by invasive or non-endemic species, therefore not presenting significant habitat for fauna.
PO12 Buffers are provided that protect the long-term viability of high priority and regulated vegetation located on or adjacent to the site.	**AO12** Buffers at least 30m wide are provided between the development and any retained vegetation identified as high priority or regulated vegetation on the **Environmental significance – vegetation**	**PO12 – COMPLIES** High Priority Vegetation as identified under the *Environmental significance - vegetation management* overlay map is not present on- or adjacent the proposed development area, however a small area of regulated vegetation is present in the south-east of the site. As

Performance outcomes	Acceptable outcomes	Response
	management overlay map on or adjacent to the site.	mentioned previously, the entirety of this area is proposed to be retained *in situ* within environmental open space. This includes an appropriate buffering area from the development to the regulated vegetation (refer **Appendix F**). Therefore, the proposed development sufficiently protected regulated vegetation on-site.
Priority species		
PO13 Assessable koala feed and shelter trees are protected in situ when they are located: a) in koala habitat areas as identified on the **Environmental significance – priority species overlay map**; and b) within biodiversity areas as identified on the **Environmental significance – biodiversity areas overlay map**.	**AO13** Development does not impact on assessable koala feed and shelter trees.	**PO13 – COMPLIES** The southern portion of the site contains koala habitat areas as identified on the *Environmental significance – priority species* overlay map. It was identified that the site in general offers minimal opportunity for koala movement and suitable koala habitat outside of the mapped area. Overall, it is considered unlikely that Koala would utilise the site at present given lack of evidence on site and limited recent local sightings. Furthermore, connectivity to the site is limited to the south, where the development proposes an Environmental open space area and therefore retains the only viable area of connectivity. Should koala utilise the site at present, it is likely to be within this area. Ultimately the removal of the highly modified and largely fragmented vegetation on-site is unlikely to isolate or decrease the availability of habitat to the extent that the species is likely to decline, particularly due to the already currently fragmented state of this vegetation. The proposal has considered the vegetation in the south-east that is mapped as KHA and remnant vegetation, and proposes to retain and rehabilitate these areas, thus ensuring that current connectivity value is not compromised. It is not considered appropriate to retain koala habitat trees within the balance of the site given the fragmented nature of these trees and low likelihood of occurrence.

Performance outcomes	Acceptable outcomes	Response
PO14 Assessable koala feed and shelter trees are protected when they are: a) in koala habitat areas as identified on the **Environmental significance – priority species overlay map**; and b) outside biodiversity areas as identified on the **Environmental significance – biodiversity areas overlay map**.	**AO14** Development avoids impacts on assessable koala feed and shelter trees. Any damage is minimised to the greatest extent possible.	**PO14 – COMPLIES** Development layout has been designed to retain koala habitat areas as identified on the **Environmental significance – priority species overlay map**. The retention of the entirety of the KHA and remnant vegetation in the south/south-east will maintain the only viable ecological linkages present and provide feed and shelter habitat for Koala should a transient individual enter the site. It is not considered appropriate to retain koala feed trees outside of mapped koala habitat area on-site given the isolated, fragmented and modified nature of vegetation over the balance of the site.
PO15 Site design provides safe koala movement opportunities by incorporating measures to maintain connectivity between areas of koala habitat on and adjacent to the site. Note : ***DEHP's Koala-Sensitive Design Guideline*** should be consulted for suitable measures to provide for safe koala movement.	**AO15** No acceptable outcome provided.	**PO15 – COMPLIES** Existing vegetation within an extensive area of environmental open space proposed across the site will be retained to provide safe koala movement opportunities by maintaining connectivity between areas of intact vegetation along Yaun Creek and surrounding minor areas of Koala Habitat to the east and west.
PO16 During the clearing and construction phases, measures are incorporated to protect koalas from death or injury.	**AO16** Threats to koalas as a result of clearing and construction activities are mitigated by: a) ensuring no tree in which a koala is present or a tree with a crown overlapping a tree containing a koala is cleared; b) undertaking clearing of vegetation in stages, and ensuring:	**PO16 – COMPLIES** With the implementation of standard mitigation measures, the project will minimise impact to ecological values including safe movement to Koala. Clearing of vegetation across the site will be conducted under the provisions of a Vegetation Clearing and Management Plan (VCMP), Fauna Management Plan (FMP) and Koala Management Plan (KMP). Vegetation identified as containing the highest connectivity and ecological value will be retained in the south of the site, thus providing an area of safe fauna movement during and after construction phases.

Performance outcomes	Acceptable outcomes	Response
	i. no more than 1 ha is cleared per day for sites less than 6 ha in size; ii. no more than 2 ha is cleared per day for sites greater than 6 ha in size; iii. that between each stage there is at least 12 hours where no clearing occurs; and iv. koala habitat is always linked to allow koalas to move out of the site; c) use of qualified koala spotters; d) prohibition of domestic dogs and security dogs on site; and **e)** use of koala safety fencing.	A Vegetation Management Plan (VMP) and Fauna Management Plan (FMP) will be developed for the proposed development and submitted for approval prior to commencing operational works on-site. These plans will outline: • trees marked for removal • all civil works likely to impact existing vegetation • temporary and permanent exclusion and protection fencing • roles and responsibilities for site contractors, the developer and the consultant group • stockpiling and site access locations • a clearing sequence plan showing the commencement of clearing and direction of removal. This should be in conjunction with the Fauna Management Plan (FMP) to allow for the appropriate flushing of fauna towards safe havens • links to weed management and revegetation proposals • stock piling and reuse of cleared vegetation • management and mitigation measures – i.e., temporary use of fauna exclusion fencing • description of fauna spotter role, contacts and certification; and • specific fauna management procedures for potential or known habitat trees
PO17 State significant species, and their habitat, are protected in situ when it is:	**AO17** Development does not impact on State significant species, and their habitat.	**PO17 – COMPLIES** No biodiversity areas as identified on the *Environmental significance – biodiversity areas overlay map* are present on-site.

Performance outcomes	Acceptable outcomes	Response
a) identified on the **Environmental significance – priority species overlay map,** or through an ecological site assessment; and **b)** within biodiversity areas as identified on the **Environmental significance – biodiversity areas overlay map.**		
PO18 Development protects state significant species, and their habitat or is designed to minimise and mitigate impacts on habitat values when it is: a) identified on the **Environmental significance – priority species overlay map**; and b) outside of biodiversity areas as identified on the **Environmental significance – biodiversity areas overlay map.**	**AO18.1** Development avoids impacts on state significant species, and their habitat.	**AO18.1 – COMPLIES** Habitat for state significant species, as identified on the *Environmental significance – priority species overlay map*, is mapped on-site in conjunction with the regulated vegetation mapping in the south-east. Assessments have identified that, with the exception of Koala, all flora and fauna species listed as threatened under the EPBC Act and NCA were considered unlikely to occur on-site. This was determined from there being no records of threatened species on-site and limited recent records proximal to the site. The lack of records is attributable to the highly modified nature of the sites surrounds over a long period of time. Ultimately this has limited potential habitat to support threatened species as well as fauna movement opportunities. Potential for and minimising of the proposed development impacts on potential Koala habitat has been discussed throughout this report and through above code responses. Areas containing the highest foraging values and connectivity opportunity are proposed to be retained *in situ*. Assessments have identified that, with the exception of Koala, all flora and fauna species listed as threatened under the EPBC Act and NCA were considered highly unlikely to occur on-site. This was determined

Performance outcomes	Acceptable outcomes	Response
		from there being no records of threatened species on-site and limited recent records proximal to the site. The lack of records is attributable to the highly modified nature of the sites surrounds over a long period of time. Ultimately this has limited potential habitat to support threatened species as well as fauna movement opportunities. Potential for and minimising of the proposed development impacts on potential Koala habitat has been discussed throughout this report and through above code responses. Areas containing the highest foraging values and connectivity opportunity are proposed to be retained *in situ*.
	AO18.2 Where development impacts on state significant species and their habitat, the following occurs: flora species are propagated and used in rehabilitation and landscaping onsite; and fauna species are safely relocated by a qualified fauna spotter catcher.	**AO18.2 – COMPLIES** Given the current land-uses surrounding the site and potential for continued development local area due to emerging community zoning, it is not considered suitable to utilise NJKHTs in landscaping of the development area of the site. This may encourage Koala into areas with significant threats, including highly trafficked roads. However, given the proposal to retain a large portion of the site within Environmental open space area, Koala foraging, and dispersal trees could be utilised as part of proposed rehabilitation of these areas.
PO19 Local significant species, and their habitat, are protected in situ when it is: a) identified on the **Environmental significance – priority species overlay map,** or through an ecological site assessment; and	**AO19** Development does not impact on local significant species, and their habitat.	**PO19 – COMPLIES** Local significant species habitat as identified on the *Environmental significance – priority species overlay map* is present to the south of the site in conjunction with state mapped KHA. The development design and location of the proposed project has considered these areas of mapped ecological significance whilst still delivering an economically viable project that fulfils planning intent of the region. The project proposes to retain these higher value areas for connectivity potential within the environmental open space.

Performance outcomes	Acceptable outcomes	Response
b) within biodiversity areas as identified on the **Environmental significance – biodiversity areas overlay map.**		
PO20 Development protects local significant species, and their habitat or is designed to minimise and mitigate impacts on habitat values when it is: a) identified on the **Environmental significance – priority species overlay map**; and b) outside of biodiversity areas as identified on the **Environmental significance – biodiversity areas overlay map.**	**AO20.1** Development avoids impacts on local significant species, and their habitat. **AO20.2** Where development impacts on local significant species and their habitat, the following occurs: a) flora species are propagated and used in rehabilitation and landscaping onsite; and b) fauna species are safely relocated by a qualified fauna spotter catcher.	**PO20 – COMPLIES** Local significant species habitat as identified on the *Environmental significance – priority species overlay map* is present to the south of the site in conjunction with state mapped KHA. The design and location of the proposed project has considered these areas of mapped ecological significance whilst still delivering an economically viable project that fulfils planning intent of the region. In order to minimise impact to these areas identified to contain higher-value habitat and the highest connectivity value on-site, the project proposes to retain these values within Environmental open space. All species recorded are considered species common to the local area. Koala is considered the only threatened species with potential to occur in the area, however this is still considered a low likelihood due to the absence of direct or indirect evidence of Koala usage on site observed during site surveys, and the limited recent records and the lack of evidence of Koala presence in the area. However, the presence of suitable koala habitat vegetation on-site indicates potential for this species to utilise the area. The majority of koala habitat will be retained *in situ* with exception to a small portion in the south-west. This will not inhibit Koala movement as the area to the north will be retained and rehabilitated, maintaining connectivity values here. Clearing of vegetation across the site will be conducted under the provisions of a Vegetation Clearing and Management Plan (VCMP), Fauna Management Plan (FMP) and Koala Management Plan (KMP), these plans outline the use of a fauna spotter catcher prior any clearing. Therefore, the removal of vegetation across the site is not

Performance outcomes	Acceptable outcomes	Response
		considered to pose a significant risk of impact to locally significant species or their habitat as the majority is proposed for retention.
Fauna management		
PO21 Development design and location provides for the safe movement of native fauna through the site.	**AO21** Where infrastructure crosses native fauna movement paths, the design of new development incorporates fauna friendly movement solutions. Note: Fauna friendly movement solutions developed in accordance with the ***Queensland Government Fauna Sensitive Road Design Manual Volume 2: Preferred Practices; and the QLD Government Koala-Sensitive Design Guidelines*** is Council's preferred method for addressing this outcome.	**PO21 – COMPLIES** Connectivity values are largely confined to the mapped waterways, in particular the south-east, where mapped Category B (remnant) and Koala habitat is present. A council owned bushland borders the southern boundary of Lot 56 which aligns with the mapped waterway (Yuan Creek). Connectivity value to the north, west and east is limited by roads Bailys Mountain Road, Courtney Drive and Reserve Road respectively. Properties adjacent to the site and within the locality demonstrate similar vegetated status being predominantly cleared areas with patches of vegetation. Notably, a residential development is under construction on Lot 217 on RP151152 north of Baileys Mountain Road. This coupled with surrounding higher density developments and zoning of the area gives an indication of the planning intent of the area with urbanisation slowly increasing. Furthermore, the road reserve of Baileys Mountain Road, adjacent to Lot 183, has been cleared, presumably to facilitate infrastructure upgrades. Therefore, assessments indicate that the wider region is not considered to provide significant fauna movement potential, connectivity within the southern portion of the site is more prominent than the other boundaries where it is almost entirely absent. Therefore, retention of the vegetation with the proposed environmental open space area will formalise an area for future fauna movement potential within an area earmarked for further urban development.

Performance outcomes	Acceptable outcomes	Response
		Given the site and the majority of the surrounding area is zoned for emerging community and medium-density housing, removal of vegetation is expected in order to fulfil the planning intent of the area. Development on-site proposes to retain vegetation in the south currently containing minor connectivity within the local region and formalising an area for fauna refuge as the surrounding region continues to grow to meet population needs.
PO22 Where fauna habitat is proposed to be damaged, management strategies must be implemented to ensure: a) the native fauna is safely relocated to an area of similar habitat; b) the sequence of habitat disturbance ensures that fauna is not isolated from adjoining areas of habitat; c) fauna relocation occurs immediately prior to habitat disturbance; d) accredited and experienced spotter catchers, licensed by the Queensland Parks and Wildlife Service, are to be present on the site to direct and undertake the removal and relocation of fauna; and e) where possible, damaged habitat and nesting sites are rehabilitated outside of development areas.	**AO22** No acceptable outcome provided.	**PO22 – COMPLIES** Where fauna habitat is proposed to be damaged management strategies will be implemented. Clearing of vegetation across the site will be conducted under the provisions of a Vegetation Clearing and Management Plan (VCMP) and Fauna Management Plan (FMP).

Performance outcomes	Acceptable outcomes	Response
Note: A Fauna Management Plan prepared by a suitably qualified person and in accordance with SC6.8 City Plan policy – Environmental management plans is Council's preferred method for addressing this outcome.		
Tenure, ownership and management arrangements		
PO23 Matters of environmental significance and associated buffers, mapped areas as identified on the **Environmental significance – vegetation management overlay map** proposed for retention and areas requiring rehabilitation are suitably protected in perpetuity and will: a) enable necessary fire management in accordance with an approved fire management plan and any adopted bushfire management plan; b) allow unimpeded movement of native fauna through matters of environmental significance and associated buffers; c) enable maintenance access and regular management; d) enable auditing and reporting of maintenance and management activities; e) provide for public access along major waterways, where such access is consistent with the ecological functions; f) allow for linkages and buffers to adjacent areas of ecological significance; and	**AO23** Matters of environmental significance and associated buffers, mapped areas as identified on the **Environmental significance – vegetation management overlay map** proposed for retention and areas requiring rehabilitation are transferred to Council ownership as Public Open Space. OR Where not required for public access, matters of environmental significance and associated buffers, and mapped areas as identified on the **Environmental significance – vegetation management overlay map** proposed for retention and areas requiring rehabilitation are retained in private ownership and protected under a statutory covenant (under the *Land Title Act 1994*). Note: Where the area is adjacent to existing public open space, or is a buffer to a major waterway, Council's preference is for the land to be dedicated as Public Open Space.	**PO23 – COMPLIES** Matters of environmental significance and associated buffers, mapped areas as identified on the *Environmental significance – vegetation management overlay map* are proposed for retention. Environmental open space areas requiring rehabilitation will be suitably protected and rehabilitated. This will be conducted as per a Rehabilitation Management Plan prepared in accordance with the ***South East Queensland Ecological Restoration Framework*** and *SC6.8 City Plan policy – Environmental management* plans, which is Council's preferred method for addressing this outcome.

Performance outcomes	Acceptable outcomes	Response
g) allow for a coordinated approach to the management of adjacent areas of conservation estate.		
PO24 An Open Space Management Plan prepared in accordance with **SC6.12 City Plan policy – Landscape work** is prepared for areas to be dedicated to Council as Public Open Space.	**AO24** No acceptable outcome provided.	**PO24 – NOT APPLICABLE** Open space areas are not proposed to be dedicated as Public Open Space.
PO25 A Covenant Management Plan is prepared for areas to be protected under a statutory covenant. The management plan must include the following details: a) rehabilitation area and strategy of works; b) weed eradication and control requirements; c) how the covenant area will be maintained and managed in perpetuity; d) feral and domestic animal exclusion requirements; and e) required maintenance access. Note: A Covenant Management Plan is prepared by a suitably qualified person and in accordance with SC6.8 City Plan policy – Environmental management plans is Council's preferred method for addressing this performance outcome.	**AO25** No acceptable outcome provided.	**PO25 – COMPLIES** It is expected that the environmental open space areas are to be dedicated to council
Rehabilitation		

Performance outcomes	Acceptable outcomes	Response
PO26 Disturbed, cleared or modified areas are rehabilitated where they form part of: an ecological corridor; or matters of environmental significance and associated buffers; or areas identified within an Ecological Site Assessment as requiring rehabilitation. Note : A Rehabilitation Management Plan prepared in accordance with the ***South East Queensland Ecological Restoration Framework*** and SC6.8 City Plan policy – Environmental management plans is Council's preferred method for addressing this outcome.	**AO26** No acceptable outcome provided.	**PO26 – COMPLIES** Disturbed, cleared or modified areas which fall within the environmental open space areas will be rehabilitated as per a Rehabilitation Management Plan prepared in accordance with the ***South East Queensland Ecological Restoration Framework*** and *SC6.8 City Plan policy – Environmental management* plans, noted as Council's preferred method for addressing this outcome.

Appendix E

Tree Schedule

saunders havill group

Tree Schedule - Job 11694

41-53 Courtney Drive, Upper Coomera (Norfolk Estates Pty Ltd**)**

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
1	*Eucalyptus siderophloia*	Grey Ironbark	700		700	220	24.0	9.0	8.4	2.8	Regular	-	-	-	-	-	Typical	-	Introduced	-	-	Typical	-	-	-	-	-	-		
2	*Eucalyptus siderophloia*	Grey Ironbark	500		500	157	22.0	9.0	6.0	2.5	Regular	-	-	-	-	-	Typical	-	Introduced	-	-	Typical	-	-	-	-	-	-		
3	*Corymbia intermedia*	Pink Bloodwood	320		320	101	16.0	5.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
4	*Corymbia intermedia*	Pink Bloodwood	330		330	104	12.0	7.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
5	*Acacia disparrima*	Hickory Wattle	150		150	47	9.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
6	*Corymbia intermedia*	Pink Bloodwood	330	200	386	121	12.0	6.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
7	*Archontophoenix cunninghamiana*	Bangalow Palm	180		180	57	9.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
8	*Syagrus romanzoffiana*	Cocos Palm	160		160	50	8.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
9	*Acacia disparrima*	Hickory Wattle	290		290	91	10.0	7.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
10	*Corymbia intermedia*	Pink Bloodwood	490	220	537	169	19.0	7.0	6.4	2.5	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
11	*Acacia disparrima*	Hickory Wattle	170		170	53	9.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
12	*Glochidion ferdinandi*	Cheese Tree	180		180	57	11.0	5.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
13	*Corymbia intermedia*	Pink Bloodwood	400		400	126	17.0	6.0	4.8	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
14	*Corymbia intermedia*	Pink Bloodwood	430	300, 300	604	190	22.0	12.0	7.2	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
15	*Acacia melanoxylon*	Australian Blackwood	250		250	79	12.0	4.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
16	*Acacia melanoxylon*	Australian Blackwood	100		100	31	7.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
17	*Acacia melanoxylon*	Australian Blackwood	140		140	44	10.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
18	*Corymbia intermedia*	Pink Bloodwood	150		150	47	9.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
19	*Corymbia intermedia*	Pink Bloodwood	120		120	38	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
20	*Acacia disparrima*	Hickory Wattle	450		450	141	16.0	8.0	5.4	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
21	*Corymbia intermedia*	Pink Bloodwood	590		590	185	23.0	10.0	7.1	2.7	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
22	*Corymbia intermedia*	Pink Bloodwood	1020		1020	320	20.0	10.0	12.2	3.3	Regular	-	-	Die-back	-	-	Typical	-	-	-	-	Typical	-	-	Yes	-	-	-		
23	*Acacia disparrima*	Hickory Wattle	240	190	306	96	12.0	6.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
24	*Lophostemon suaveolens*	Swamp Box	220		220	69	9.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
25	*Acacia disparrima*	Hickory Wattle	220		220	69	7.0	4.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
26	*Corymbia intermedia*	Pink Bloodwood	120		120	38	9.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
27	*Corymbia intermedia*	Pink Bloodwood	210		210	66	15.0	6.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
28	*Corymbia intermedia*	Pink Bloodwood	130	120	177	56	9.0	5.0	2.1	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
29	*Acacia disparrima*	Hickory Wattle	160		160	50	8.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
30	*Corymbia intermedia*	Pink Bloodwood	110	80	136	43	9.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
31	*Eucalyptus tereticornis*	Forest Red Gum	190		190	60	15.0	5.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
32	*Eucalyptus siderophloia*	Grey Ironbark	160		160	50	13.0	6.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
33	*Acacia disparrima*	Hickory Wattle	190	140	236	74	12.0	6.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
34	*Acacia melanoxylon*	Australian Blackwood	100		100	31	7.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
35	*Corymbia intermedia*	Pink Bloodwood	110		110	35	6.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
36	*Eucalyptus siderophloia*	Grey Ironbark	580		580	182	22.0	10.0	7.0	2.6	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
37	*Acacia concurrens*	Black Wattle	140	130	191	60	12.0	6.0	2.3	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
38	*Corymbia intermedia*	Pink Bloodwood	440		440	138	17.0	9.0	5.3	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
39	*Acacia disparrima*	Hickory Wattle	130		130	41	7.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
40	*Acacia concurrens*	Black Wattle	100		100	31	7.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
41	*Acacia concurrens*	Black Wattle	120		120	38	7.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
42	*Eucalyptus siderophloia*	Grey Ironbark	120		120	38	9.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
43	*Acacia concurrens*	Black Wattle	110		110	35	8.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
44	*Acacia disparrima*	Hickory Wattle	160		160	50	12.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
45	*Corymbia torelliana*	Cadaghi	220	180, 150	321	101	12.0	9.0	3.9	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
46	*Eucalyptus siderophloia*	Grey Ironbark	130		130	41	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
47	*Eucalyptus siderophloia*	Grey Ironbark	100		100	31	8.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
48	*Corymbia intermedia*	Pink Bloodwood	130		130	41	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
49	*Corymbia intermedia*	Pink Bloodwood	170		170	53	11.0	5.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
50	*Eucalyptus tereticornis*	Forest Red Gum	250		250	79	12.0	4.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
51	*Acacia concurrens*	Black Wattle	170	170	240	76	11.0	9.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
52	*Eucalyptus siderophloia*	Grey Ironbark	140		140	44	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
53	*Acacia disparrima*	Hickory Wattle	460	330, 300	641	201	15.0	7.0	7.7	2.7	Regular	-	-	-	-	-	Typical	-	-	Trunk Dmg.	-	Typical	-	-	-	-	-	-		
54	*Eucalyptus tereticornis*	Forest Red Gum	130		130	41	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
55	*Acacia disparrima*	Hickory Wattle	140		140	44	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
56	*Cinnamomum camphora*	Camphor Laurel	200	200, 180, 170, 170, 160	442	139	14.0	11.0	5.3	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
57	*Ficus macrophylla*	Moreton Bay Fig	370		370	116	14.0	9.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
58	*Brachychiton acerifolius*	Illawara Flame Tree	220		220	69	8.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
59	*Macaranga tanarius*	Macaranga	150		150	47	9.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
60	*Eucalyptus siderophloia*	Grey Ironbark	260		260	82	17.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
61	*Schefflera actinophylla*	Umbrella Tree	120	120, 120, 120, 120, 100	286	90	9.0	6.0	3.4	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
62	*Acacia disparrima*	Hickory Wattle	110	100, 100	179	56	9.0	5.0	2.1	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
63	*Acacia disparrima*	Hickory Wattle	110		110	35	7.0	4.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
64	*Eucalyptus siderophloia*	Grey Ironbark	590		590	185	22.0	12.0	7.1	2.7	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
65	*Acacia disparrima*	Hickory Wattle	170		170	53	7.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
66	*Acacia disparrima*	Hickory Wattle	240		240	75	12.0	6.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
67	*Corymbia intermedia*	Pink Bloodwood	160		160	50	9.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
68	*Acacia disparrima*	Hickory Wattle	200		200	63	12.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
69	*Acacia disparrima*	Hickory Wattle	130		130	41	9.0	5.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
70	*Eucalyptus siderophloia*	Grey Ironbark	170	150	227	71	12.0	6.0	2.7	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
71	*Acacia disparrima*	Hickory Wattle	150	100, 100	206	65	12.0	5.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
72	*Acacia disparrima*	Hickory Wattle	120	100	156	49	9.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
73	*Acacia disparrima*	Hickory Wattle	180	170, 170, 160	340	107	11.0	8.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
74	*Corymbia intermedia*	Pink Bloodwood	230		230	72	14.0	6.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
75	*Pinus elliotii*	Slash Pine	240		240	75	12.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
76	*Acacia disparrima*	Hickory Wattle	260		260	82	12.0	5.0	3.1	1.9	Regular	-	-	Die-back	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
77	*Acacia disparrima*	Hickory Wattle	520		520	163	12.0	8.0	6.2	2.5	Regular	-	-	-	-	-	Typical	-	-	Trunk Dmg.	-	Typical	-	-	-	-	-	-		
78	*Pinus elliotii*	Slash Pine	140	140	198	62	7.0	3.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
79	*Corymbia torelliana*	Cadaghi	200		200	63	6.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
80	*Corymbia intermedia*	Pink Bloodwood	130		130	41	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
81	**DEAD/STAG**		560		560	176	15.0	9.0	6.7	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	Yes	-	-	-		
82	*Acacia melanoxylon*	Australian Blackwood	140	140	198	62	6.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
83	*Eucalyptus tereticornis*	Forest Red Gum	220		220	69	9.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
84	*Eucalyptus tereticornis*	Forest Red Gum	620	560	835	262	18.0	10.0	10.0	3.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
85	*Acacia disparrima*	Hickory Wattle	400		400	126	14.0	7.0	4.8	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
86	*Corymbia intermedia*	Pink Bloodwood	140		140	44	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
87	*Brachychiton acerifolius*	Illawara Flame Tree	250		250	79	9.0	4.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
88	*Inga edulis*	Ice-cream Bean	380		380	119	12.0	7.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
89	*Archontophoenix cunninghamiana*	Bangalow Palm	160		160	50	9.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
90	*Schizolobium parahyba*	Yellow Jacaranda	710		710	223	22.0	12.0	8.5	2.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
91	*Archontophoenix cunninghamiana*	Bangalow Palm	200		200	63	12.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
92	*Archontophoenix cunninghamiana*	Bangalow Palm	180		180	57	12.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
93	*Archontophoenix cunninghamiana*	Bangalow Palm	170		170	53	8.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
94	*Archontophoenix cunninghamiana*	Bangalow Palm	160		160	50	9.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
95	*Syagrus romanzoffiana*	Cocos Palm	280		280	88	14.0	7.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
96	*Citharexylum spinosum*	Fiddlewood	480	400	625	196	16.0	12.0	7.5	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
97	*Acacia melanoxylon*	Australian Blackwood	140	120	184	58	9.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
98	*Acacia melanoxylon*	Australian Blackwood	140		140	44	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
99	*Corymbia torelliana*	Cadaghi	100		100	31	7.0	4.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
100	*Acacia melanoxylon*	Australian Blackwood	120		120	38	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
101	*Acacia melanoxylon*	Australian Blackwood	170	170	240	76	10.0	4.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
102	*Acacia disparrima*	Hickory Wattle	220	170	278	87	12.0	6.0	3.3	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
103	*Acacia disparrima*	Hickory Wattle	280		280	88	12.0	5.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
104	*Acacia melanoxylon*	Australian Blackwood	170	130	214	67	9.0	5.0	2.6	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
105	*Acacia disparrima*	Hickory Wattle	220		220	69	12.0	4.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
106	*Acacia melanoxylon*	Australian Blackwood	170	120	208	65	9.0	3.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
107	*Acacia disparrima*	Hickory Wattle	310		310	97	14.0	8.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
108	*Corymbia intermedia*	Pink Bloodwood	110		110	35	7.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
109	*Lophostemon suaveolens*	Swamp Box	130		130	41	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
110	*Acacia disparrima*	Hickory Wattle	190	120	225	71	12.0	5.0	2.7	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
111	*Acacia disparrima*	Hickory Wattle	150		150	47	8.0	7.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
112	*Acacia disparrima*	Hickory Wattle	160		160	50	8.0	7.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
113	*Acacia disparrima*	Hickory Wattle	230	150	275	86	12.0	5.0	3.3	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
114	*Acacia disparrima*	Hickory Wattle	110		110	35	8.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
115	*Acacia melanoxylon*	Australian Blackwood	260		260	82	12.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
116	*Acacia melanoxylon*	Australian Blackwood	220		220	69	14.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
117	*Acacia melanoxylon*	Australian Blackwood	290		290	91	16.0	6.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
118	*Acacia melanoxylon*	Australian Blackwood	120		120	38	9.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
119	*Acacia melanoxylon*	Australian Blackwood	200		200	63	15.0	6.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
120	*Acacia disparrima*	Hickory Wattle	170		170	53	8.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
121	*Glochidion sumatranum*	Long leaf Cheese Tree	220		220	69	10.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
122	*Acacia disparrima*	Hickory Wattle	130		130	41	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
123	*Acacia disparrima*	Hickory Wattle	160	140	213	67	8.0	7.0	2.6	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
124	*Corymbia intermedia*	Pink Bloodwood	750		750	236	23.0	13.0	9.0	2.9	Regular	-	-	-	-	-	Typical	-	Both	-	-	Typical	-	-	-	-	-	-		
125	*Acacia disparrima*	Hickory Wattle	290	160	331	104	15.0	6.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
126	*Eriobotrya japonica*	Loquat	300		300	94	12.0	6.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
127	*Glochidion sumatranum*	Long leaf Cheese Tree	100		100	31	8.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
128	*Citharexylum spinosum*	Fiddlewood	200	200	283	89	12.0	5.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
129	*Mangifera indica*	Mango	250	250	354	111	11.0	5.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
130	*Archontophoenix cunninghamiana*	Bangalow Palm	130		130	41	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
131	*Archontophoenix cunninghamiana*	Bangalow Palm	160		160	50	6.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
132	*Archontophoenix cunninghamiana*	Bangalow Palm	120		120	38	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
133	*Acacia disparrima*	Hickory Wattle	150		150	47	8.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
134	*Acacia disparrima*	Hickory Wattle	220	220, 200	370	116	12.0	9.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
135	*Angophora leiocarpa*	Smooth-barked Apple	300		300	94	14.0	6.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
136	*Angophora leiocarpa*	Smooth-barked Apple	280		280	88	8.0	5.0	3.4	1.9	Regular	-	-	-	-	Lopped	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
137	*Acacia disparrima*	Hickory Wattle	220		220	69	9.0	4.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
138	*Acacia disparrima*	Hickory Wattle	210		210	66	12.0	5.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
139	*Corymbia intermedia*	Pink Bloodwood	200		200	63	12.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
140	*Corymbia torelliana*	Cadaghi	130		130	41	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
141	*Acacia concurrens*	Black Wattle	130		130	41	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
142	*Acacia disparrima*	Hickory Wattle	220		220	69	11.0	6.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
143	*Acacia disparrima*	Hickory Wattle	330		330	104	12.0	6.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
144	*Acacia disparrima*	Hickory Wattle	480		480	151	14.0	7.0	5.8	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
145	*Acacia concurrens*	Black Wattle	100		100	31	7.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
146	*Acacia concurrens*	Black Wattle	100		100	31	8.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
147	*Acacia disparrima*	Hickory Wattle	160		160	50	8.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
148	*Acacia disparrima*	Hickory Wattle	340		340	107	12.0	6.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
149	*Acacia disparrima*	Hickory Wattle	140		140	44	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
150	*Acacia disparrima*	Hickory Wattle	120	120	170	53	7.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
151	*Acacia disparrima*	Hickory Wattle	180	180	255	80	12.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
152	*Corymbia intermedia*	Pink Bloodwood	180		180	57	8.0	5.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
153	*Acacia disparrima*	Hickory Wattle	100		100	31	6.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
154	*Acacia disparrima*	Hickory Wattle	140	120	184	58	9.0	5.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
155	*Acacia disparrima*	Hickory Wattle	430		430	135	12.0	6.0	5.2	2.3	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
156	*Corymbia torelliana*	Cadaghi	500		500	157	15.0	9.0	6.0	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
157	*Corymbia torelliana*	Cadaghi	650		650	204	16.0	12.0	7.8	2.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
158	*Corymbia intermedia*	Pink Bloodwood	290		290	91	15.0	6.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
159	*Acacia disparrima*	Hickory Wattle	120		120	38	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details										Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
160	*Acacia disparrima*	Hickory Wattle	120		120	38	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
161	*Acacia disparrima*	Hickory Wattle	250	170	302	95	12.0	7.0	3.6	2.0	Regular	-	-	Die-back	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
162	*Eucalyptus siderophloia*	Grey Ironbark	320		320	101	16.0	5.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
163	*Acacia disparrima*	Hickory Wattle	150	150	212	67	9.0	8.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
164	*Acacia disparrima*	Hickory Wattle	190		190	60	7.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
165	*Acacia disparrima*	Hickory Wattle	250		250	79	14.0	6.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
166	*Eucalyptus tereticornis*	Forest Red Gum	120		120	38	7.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
167	*Pinus elliotii*	Slash Pine	150	150	212	67	8.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
168	*Pinus elliotii*	Slash Pine	190		190	60	12.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
169	*Corymbia intermedia*	Pink Bloodwood	130		130	41	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
170	*Corymbia intermedia*	Pink Bloodwood	190		190	60	8.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
171	*Pinus elliotii*	Slash Pine	250		250	79	16.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
172	*Acacia disparrima*	Hickory Wattle	100		100	31	7.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
173	*Pinus elliotii*	Slash Pine	370		370	116	22.0	8.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
174	*Eucalyptus tereticornis*	Forest Red Gum	220		220	69	14.0	6.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
175	*Eucalyptus tereticornis*	Forest Red Gum	170		170	53	8.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
176	*Acacia disparrima*	Hickory Wattle	150		150	47	6.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
177	*Acacia disparrima*	Hickory Wattle	140		140	44	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
178	*Acacia disparrima*	Hickory Wattle	450		450	141	14.0	6.0	5.4	2.4	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
179	*Acacia disparrima*	Hickory Wattle	130		130	41	5.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
180	*Corymbia intermedia*	Pink Bloodwood	520		520	163	20.0	8.0	6.2	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
181	*Pinus elliotii*	Slash Pine	250		250	79	12.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
182	*Pinus elliotii*	Slash Pine	180		180	57	10.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
183	*Lophostemon suaveolens*	Swamp Box	100		100	31	7.0	4.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
184	*Pinus elliotii*	Slash Pine	200		200	63	12.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
185	*Eucalyptus tereticornis*	Forest Red Gum	390		390	123	15.0	7.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
186	*Koelreuteria elegans*	Golden Raintree	360	150	390	123	12.0	8.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
187	*Pinus elliotii*	Slash Pine	500		500	157	20.0	10.0	6.0	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
188	*Pinus elliotii*	Slash Pine	410		410	129	19.0	8.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
189	*Alphitonia excelsa*	Soap Tree	140		140	44	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
190	*Corymbia intermedia*	Pink Bloodwood	280		280	88	16.0	5.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
191	*Eucalyptus tereticornis*	Forest Red Gum	180		180	57	7.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
192	*Eucalyptus tereticornis*	Forest Red Gum	320		320	101	22.0	8.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
193	*Eucalyptus tereticornis*	Forest Red Gum	380		380	119	23.0	9.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
194	*Eucalyptus tereticornis*	Forest Red Gum	420		420	132	23.0	9.0	5.0	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
195	*Pinus elliotii*	Slash Pine	240		240	75	12.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
196	*Pinus elliotii*	Slash Pine	230		230	72	12.0	5.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
197	*Pinus elliotii*	Slash Pine	110		110	35	8.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
198	*Pinus elliotii*	Slash Pine	320	100	335	105	12.0	5.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
199	*Pinus elliotii*	Slash Pine	250		250	79	12.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
200	*Pinus elliotii*	Slash Pine	250		250	79	12.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
201	*Pinus elliotii*	Slash Pine	390		390	123	14.0	7.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
202	*Acacia disparrima*	Hickory Wattle	250		250	79	12.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
203	*Pinus elliotii*	Slash Pine	140		140	44	7.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
204	*Pinus elliotii*	Slash Pine	310		310	97	12.0	5.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
205	*Pinus elliotii*	Slash Pine	340		340	107	14.0	5.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
206	*Pinus elliotii*	Slash Pine	280		280	88	14.0	5.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
207	*Pinus elliotii*	Slash Pine	100		100	31	7.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
208	*Pinus elliotii*	Slash Pine	190		190	60	8.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
209	*Pinus elliotii*	Slash Pine	350		350	110	16.0	7.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
210	*Pinus elliotii*	Slash Pine	220		220	69	14.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
211	*Pinus elliotii*	Slash Pine	410		410	129	16.0	7.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
212	*Pinus elliotii*	Slash Pine	450		450	141	16.0	9.0	5.4	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
213	*Pinus elliotii*	Slash Pine	360		360	113	17.0	8.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
214	*Pinus elliotii*	Slash Pine	320		320	101	17.0	8.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
215	*Pinus elliotii*	Slash Pine	300		300	94	16.0	7.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
216	*Acacia disparrima*	Hickory Wattle	150		150	47	8.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
217	*Grevillea robusta*	Silky Oak	200		200	63	12.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
218	*Pinus elliotii*	Slash Pine	300		300	94	16.0	7.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
219	*Pinus elliotii*	Slash Pine	400		400	126	17.0	6.0	4.8	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
220	*Pinus elliotii*	Slash Pine	310		310	97	16.0	7.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
221	*Pinus elliotii*	Slash Pine	370		370	116	14.0	8.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
222	*Pinus elliotii*	Slash Pine	280		280	88	14.0	6.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
223	*Pinus elliotii*	Slash Pine	400		400	126	18.0	8.0	4.8	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
224	*Pinus elliotii*	Slash Pine	300		300	94	14.0	5.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
225	*Pinus elliotii*	Slash Pine	150	150	212	67	8.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
226	*Pinus elliotii*	Slash Pine	200		200	63	9.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
227	*Pinus elliotii*	Slash Pine	150		150	47	7.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
228	*Pinus elliotii*	Slash Pine	200		200	63	12.0	6.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
229	*Pinus elliotii*	Slash Pine	230		230	72	14.0	6.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
230	*Pinus elliotii*	Slash Pine	260		260	82	16.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
231	*Pinus elliotii*	Slash Pine	110		110	35	8.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
232	*Pinus elliotii*	Slash Pine	100		100	31	7.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
233	*Pinus elliotii*	Slash Pine	260		260	82	14.0	5.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
234	*Pinus elliotii*	Slash Pine	120		120	38	7.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
235	*Pinus elliotii*	Slash Pine	360		360	113	13.0	5.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
236	*Pinus elliotii*	Slash Pine	300		300	94	15.0	7.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
237	*Pinus elliotii*	Slash Pine	390		390	123	16.0	7.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
238	*Pinus elliotii*	Slash Pine	330		330	104	15.0	8.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
239	*Pinus elliotii*	Slash Pine	420		420	132	16.0	9.0	5.0	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
240	*Acacia disparrima*	Hickory Wattle	140		140	44	8.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
241	*Acacia disparrima*	Hickory Wattle	180		180	57	7.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
242	*Syagrus romanzoffiana*	Cocos Palm	200		200	63	6.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
243	*Acacia concurrens*	Black Wattle	150		150	47	8.0	6.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
244	*Eucalyptus tereticornis*	Forest Red Gum	150		150	47	6.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
245	*Acacia disparrima*	Hickory Wattle	450		450	141	9.0	6.0	5.4	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
246	*Acacia disparrima*	Hickory Wattle	450		450	141	10.0	8.0	5.4	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
247	*Pinus elliotii*	Slash Pine	220		220	69	12.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
248	*Acacia melanoxylon*	Australian Blackwood	170		170	53	7.0	6.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
249	*Eucalyptus grandis*	Flooded Gum	630		630	198	25.0	12.0	7.6	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
250	*Melaleuca saligna*	White Bottlebrush	290	260	389	122	12.0	6.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
251	*Pinus elliotii*	Slash Pine	340		340	107	16.0	9.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
252	*Pinus elliotii*	Slash Pine	340		340	107	17.0	6.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
253	*Pinus elliotii*	Slash Pine	330		330	104	17.0	8.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
254	*Pinus elliotii*	Slash Pine	180		180	57	7.0	3.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
255	*Pinus elliotii*	Slash Pine	360		360	113	19.0	7.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
256	*Pinus elliotii*	Slash Pine	270		270	85	16.0	4.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
257	*Pinus elliotii*	Slash Pine	240	100	260	82	17.0	5.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
258	*Acacia disparrima*	Hickory Wattle	200		200	63	8.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
259	*Acacia disparrima*	Hickory Wattle	140		140	44	7.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
260	*Acacia melanoxylon*	Australian Blackwood	170		170	53	8.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
261	*Acacia disparrima*	Hickory Wattle	260		260	82	12.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
262	*Acacia disparrima*	Hickory Wattle	190		190	60	10.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
263	*Lophostemon confertus*	Brush Box	290		290	91	13.0	5.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
264	*Acacia disparrima*	Hickory Wattle	110		110	35	8.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
265	*Acacia disparrima*	Hickory Wattle	180		180	57	12.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
266	*Acacia disparrima*	Hickory Wattle	170		170	53	8.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
267	*Eucalyptus grandis*	Flooded Gum	530	230	578	182	17.0	9.0	6.9	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
268	*Pinus elliotii*	Slash Pine	200		200	63	12.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
269	*Pinus elliotii*	Slash Pine	320		320	101	15.0	6.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
270	*Pinus elliotii*	Slash Pine	330		330	104	15.0	8.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
271	*Ficus watkinsiana*	Strangler Fig	500		500	157	8.0	7.0	6.0	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
272	*Syagrus romanzoffiana*	Cocos Palm	250		250	79	12.0	4.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
273	*Syagrus romanzoffiana*	Cocos Palm	300		300	94	8.0	4.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
274	*Syagrus romanzoffiana*	Cocos Palm	250		250	79	12.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
275	*Jacaranda mimosifolia*	Jacaranda	270		270	85	8.0	4.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
276	*Jacaranda mimosifolia*	Jacaranda	150		150	47	7.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
277	*Corymbia citriodora*	Spotted Gum	350		350	110	15.0	6.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
278	*Corymbia citriodora*	Spotted Gum	220		220	69	15.0	6.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
279	*Corymbia torelliana*	Cadaghi	600		600	188	12.0	8.0	7.2	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
280	*Eucalyptus grandis*	Flooded Gum	300		300	94	15.0	7.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
281	*Eucalyptus grandis*	Flooded Gum	310		310	97	15.0	7.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
282	*Eucalyptus grandis*	Flooded Gum	450		450	141	18.0	9.0	5.4	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
283	*Eucalyptus grandis*	Flooded Gum	220		220	69	13.0	6.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
284	*Eucalyptus grandis*	Flooded Gum	550		550	173	19.0	12.0	6.6	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
285	*Melaleuca quinquenervia*	Broad-leaved Paperbark	120	100	156	49	7.0	2.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
286	*Eucalyptus tereticornis*	Forest Red Gum	100	100	141	44	4.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
287	*Acacia disparrima*	Hickory Wattle	380		380	119	16.0	7.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
288	*Jacaranda mimosifolia*	Jacaranda	260		260	82	6.0	7.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
289	*Spathodea companulata*	African Tulip	320	220, 200, 180, 160, 160	524	165	8.0	7.0	6.3	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
290	*Eucalyptus grandis*	Flooded Gum	530		530	167	21.0	9.0	6.4	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
291	*Lophostemon suaveolens*	Swamp Box	250		250	79	12.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
292	*Pinus elliotii*	Slash Pine	440		440	138	18.0	8.0	5.3	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
293	*Pinus elliotii*	Slash Pine	350		350	110	16.0	8.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
294	*Pinus elliotii*	Slash Pine	430		430	135	17.0	8.0	5.2	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
295	*Pinus elliotii*	Slash Pine	340		340	107	18.0	8.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
296	*Pinus elliotii*	Slash Pine	480		480	151	18.0	8.0	5.8	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
297	*Pinus elliotii*	Slash Pine	600		600	188	18.0	9.0	7.2	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
298	*Eucalyptus siderophloia*	Grey Ironbark	180		180	57	5.0	3.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
299	*Eucalyptus siderophloia*	Grey Ironbark	150		150	47	7.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
300	*Corymbia intermedia*	Pink Bloodwood	270		270	85	12.0	6.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
301	*Corymbia citriodora*	Spotted Gum	360		360	113	15.0	6.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
302	*Corymbia intermedia*	Pink Bloodwood	380		380	119	16.0	9.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
303	*Corymbia intermedia*	Pink Bloodwood	130		130	41	4.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
304	*Eucalyptus siderophloia*	Grey Ironbark	380		380	119	17.0	8.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
305	*Corymbia intermedia*	Pink Bloodwood	150	130	198	62	8.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
306	*Glochidion sumatranum*	Long leaf Cheese Tree	340		340	107	11.0	6.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
307	*Acacia melanoxylon*	Australian Blackwood	130		130	41	5.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
308	*Acacia melanoxylon*	Australian Blackwood	210		210	66	8.0	5.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
309	*Corymbia intermedia*	Pink Bloodwood	410		410	129	19.0	11.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
310	*Glochidion sumatranum*	Long leaf Cheese Tree	340		340	107	14.0	7.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
311	*Acacia disparrima*	Hickory Wattle	360		360	113	11.0	6.0	4.3	2.2	Regular	-	Thinning	Die-back	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
312	*Eucalyptus siderophloia*	Grey Ironbark	350		350	110	17.0	8.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
313	*Eucalyptus siderophloia*	Grey Ironbark	540		540	170	20.0	9.0	6.5	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
314	*Syagrus romanzoffiana*	Cocos Palm	250		250	79	6.0	4.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
315	*Acacia disparrima*	Hickory Wattle	140		140	44	5.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
316	*Acacia disparrima*	Hickory Wattle	120		120	38	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
317	*Acacia disparrima*	Hickory Wattle	130		130	41	5.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
318	*Acacia melanoxylon*	Australian Blackwood	340		340	107	8.0	5.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
319	*Lophostemon suaveolens*	Swamp Box	160		160	50	7.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
320	*Acacia melanoxylon*	Australian Blackwood	340		340	107	9.0	5.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
321	*Acacia melanoxylon*	Australian Blackwood	220		220	69	7.0	5.0	2.6	1.8	Regular	-	Thinning	Die-back	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
322	*Acacia melanoxylon*	Australian Blackwood	280		280	88	8.0	5.0	3.4	1.9	Regular	-	Thinning	Die-back	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
323	*Acacia melanoxylon*	Australian Blackwood	230		230	72	6.0	4.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
324	*Acacia melanoxylon*	Australian Blackwood	150		150	47	6.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
325	*Acacia melanoxylon*	Australian Blackwood	120		120	38	5.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
326	*Acacia melanoxylon*	Australian Blackwood	140		140	44	5.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
327	*Corymbia intermedia*	Pink Bloodwood	130		130	41	6.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
328	*Corymbia intermedia*	Pink Bloodwood	190		190	60	8.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
329	*Corymbia torelliana*	Cadaghi	150		150	47	7.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
330	*Acacia disparrima*	Hickory Wattle	210		210	66	8.0	5.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
331	*Acacia disparrima*	Hickory Wattle	220	180	284	89	14.0	10.0	3.4	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
332	*Acacia disparrima*	Hickory Wattle	380		380	119	17.0	8.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
333	*Acacia disparrima*	Hickory Wattle	420		420	132	17.0	11.0	5.0	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
334	*Corymbia intermedia*	Pink Bloodwood	470		470	148	22.0	14.0	5.6	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
335	*Acacia disparrima*	Hickory Wattle	130		130	41	5.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
336	*Acacia leiocalyx*	Early Flowering Wattle	200		200	63	6.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
337	*Eucalyptus siderophloia*	Grey Ironbark	110		110	35	7.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
338	*Acacia disparrima*	Hickory Wattle	220	210	304	96	11.0	8.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
339	*Eucalyptus siderophloia*	Grey Ironbark	120		120	38	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
340	*Acacia leiocalyx*	Early Flowering Wattle	110		110	35	7.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
341	*Eucalyptus siderophloia*	Grey Ironbark	220		220	69	12.0	4.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
342	*Eucalyptus siderophloia*	Grey Ironbark	160		160	50	8.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
343	*Corymbia intermedia*	Pink Bloodwood	220		220	69	13.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
344	*Corymbia intermedia*	Pink Bloodwood	410		410	129	19.0	12.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
345	*Corymbia intermedia*	Pink Bloodwood	250		250	79	12.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
346	*Acacia disparrima*	Hickory Wattle	230	230	325	102	14.0	6.0	3.9	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
347	*Eucalyptus siderophloia*	Grey Ironbark	240		240	75	13.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
348	*Acacia leiocalyx*	Early Flowering Wattle	220		220	69	8.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
349	*Alphitonia excelsa*	Soap Tree	150	140, 130	243	76	8.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
350	*Corymbia intermedia*	Pink Bloodwood	150		150	47	6.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
351	*Syagrus romanzoffiana*	Cocos Palm	180		180	57	3.0	2.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
352	*Corymbia intermedia*	Pink Bloodwood	330		330	104	15.0	9.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
353	*Alphitonia excelsa*	Soap Tree	140		140	44	7.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
354	*Eucalyptus siderophloia*	Grey Ironbark	490		490	154	21.0	12.0	5.9	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	Present	-		
355	*Acacia disparrima*	Hickory Wattle	220		220	69	6.0	3.0	2.6	1.8	Regular	-	Thinning	-	-	-	Poor	-	-	-	-	Typical	-	-	-	-	-	-		
356	*Acacia disparrima*	Hickory Wattle	150		150	47	7.0	2.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
357	*Acacia disparrima*	Hickory Wattle	140		140	44	7.0	3.0	2.0	1.4	Regular	-	Thinning	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
358	*Eucalyptus tereticornis*	Forest Red Gum	695		695	218	25.0	16.0	8.3	2.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	Yes	-	-	-		
359	*Jagera pseudorhus*	Foam Bark	110		110	35	5.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
360	*Corymbia intermedia*	Pink Bloodwood	210		210	66	12.0	5.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
361	*Glochidion ferdinandi*	Cheese Tree	270		270	85	8.0	5.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
362	*Archontophoenix cunninghamiana*	Bangalow Palm	130		130	41	5.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
363	*Eucalyptus siderophloia*	Grey Ironbark	340		340	107	16.0	9.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	Present	-		
364	*Eucalyptus siderophloia*	Grey Ironbark	405		405	127	27.0	15.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
365	*Acacia disparrima*	Hickory Wattle	200		200	63	9.0	6.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
366	*Acacia disparrima*	Hickory Wattle	190		190	60	6.0	5.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
367	*Acacia leiocalyx*	Early Flowering Wattle	120		120	38	5.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
368	*Corymbia intermedia*	Pink Bloodwood	210		210	66	14.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
369	*Acacia leiocalyx*	Early Flowering Wattle	170		170	53	6.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
370	*Acacia disparrima*	Hickory Wattle	120		120	38	7.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
371	*Eucalyptus tereticornis*	Forest Red Gum	130		130	41	6.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
372	*Acacia disparrima*	Hickory Wattle	180		180	57	6.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
373	*Eucalyptus siderophloia*	Grey Ironbark	210		210	66	9.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
374	*Acacia disparrima*	Hickory Wattle	360		360	113	13.0	8.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
375	*Acacia disparrima*	Hickory Wattle	280		280	88	11.0	5.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
376	*Acacia leiocalyx*	Early Flowering Wattle	300		300	94	12.0	6.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
377	*Acacia disparrima*	Hickory Wattle	270		270	85	14.0	6.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
378	*Acacia disparrima*	Hickory Wattle	210	150	258	81	13.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
379	*Eucalyptus siderophloia*	Grey Ironbark	170		170	53	8.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
380	*Corymbia intermedia*	Pink Bloodwood	140		140	44	7.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
381	*Acacia disparrima*	Hickory Wattle	280		280	88	8.0	6.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
382	*Acacia disparrima*	Hickory Wattle	370	330	496	156	7.0	9.0	5.9	2.5	Regular	-	Thinning	Die-back	-	-	Poor	-	-	Trunk Dmg.	-	Poor	-	-	-	-	-	-		
383	*Acacia disparrima*	Hickory Wattle	310		310	97	8.0	5.0	3.7	2.0	Regular	-	Thinning	Die-back	-	-	Poor	-	-	Trunk Dmg.	-	Typical	-	-	-	-	-	-		
384	*Corymbia torelliana*	Cadaghi	230		230	72	9.0	5.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
385	*Eucalyptus siderophloia*	Grey Ironbark	180		180	57	7.0	2.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
386	*Acacia leiocalyx*	Early Flowering Wattle	210		210	66	5.0	3.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
387	*Acacia leiocalyx*	Early Flowering Wattle	140		140	44	7.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
388	*Acacia disparrima*	Hickory Wattle	190	170	255	80	7.0	4.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
389	*Pinus elliotii*	Slash Pine	240		240	75	6.0	3.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
390	*Acacia disparrima*	Hickory Wattle	210		210	66	6.0	5.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
391	*Acacia leiocalyx*	Early Flowering Wattle	190		190	60	8.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
392	*Acacia disparrima*	Hickory Wattle	340		340	107	11.0	6.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
393	*Pinus elliotii*	Slash Pine	300		300	94	9.0	4.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
394	*Corymbia intermedia*	Pink Bloodwood	390		390	123	20.0	11.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	Present	-		
395	*Corymbia intermedia*	Pink Bloodwood	270		270	85	15.0	9.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
396	*Corymbia intermedia*	Pink Bloodwood	100		100	31	5.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
397	*Acacia disparrima*	Hickory Wattle	250	230	340	107	12.0	6.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
398	*Corymbia intermedia*	Pink Bloodwood	240		240	75	10.0	4.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
399	*Corymbia intermedia*	Pink Bloodwood	190		190	60	9.0	2.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
400	*Acacia disparrima*	Hickory Wattle	220		220	69	9.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
401	*Ficus benjamina*	Weeping Fig	420	410	587	184	16.0	11.0	7.0	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
402	*Radermachera sinica*	China Doll Tree	210	160	264	83	8.0	6.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
403	*Delonix regia*	Poinciana	140	120	184	58	6.0	5.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
404	*Eucalyptus crebra*	Narrow-leaved Ironbark	340		340	107	21.0	10.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
405	*Araucaria bidwillii*	Bunya Pine	560		560	176	17.0	9.0	6.7	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
406	*Jacaranda mimosifolia*	Jacaranda	560		560	176	17.0	10.0	6.7	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
407	*Araucaria heterophylla*	Norfolk Island Pine	450		450	141	15.0	6.0	5.4	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
408	*Ficus obliqua*	Small-leaved Fig	1985		1985	624	24.0	20.0	15.0	4.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
409	*Castanospermum australe*	Black Bean	280	260	382	120	17.0	8.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
410	*Mangifera indica*	Mango	360		360	113	12.0	7.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
411	*Archontophoenix cunninghamiana*	Bangalow Palm	180		180	57	8.0	3.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
412	*Archontophoenix cunninghamiana*	Bangalow Palm	240		240	75	13.0	4.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
413	*Macadamia integrifolia*	Macadamia Nut	270	240, 200	413	130	14.0	6.0	5.0	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
414	*Libidibia ferrea*	Leopard Tree	410	290	502	158	17.0	11.0	6.0	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
415	*Macadamia tetraphylla*	Rough-shelled Macadamia Nut	290	240, 140	402	126	13.0	5.0	4.8	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
416	*Acacia disparrima*	Hickory Wattle	250		250	79	7.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
417	*Acacia disparrima*	Hickory Wattle	360		360	113	8.0	5.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
418	*Acacia disparrima*	Hickory Wattle	150		150	47	7.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
419	*Acacia disparrima*	Hickory Wattle	160		160	50	8.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
420	*Acacia disparrima*	Hickory Wattle	190		190	60	10.0	6.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
421	*Eucalyptus seeana*	Narrow-leaved Red Gum	370		370	116	22.0	10.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
422	*Acacia disparrima*	Hickory Wattle	160		160	50	8.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
423	*Acacia disparrima*	Hickory Wattle	180		180	57	12.0	5.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
424	*Acacia disparrima*	Hickory Wattle	190	160, 140	285	90	12.0	7.0	3.4	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
425	*Acacia disparrima*	Hickory Wattle	170	130	214	67	12.0	6.0	2.6	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
426	*Acacia disparrima*	Hickory Wattle	160		160	50	13.0	6.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
427	*Acacia disparrima*	Hickory Wattle	130		130	41	9.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
428	*Acacia disparrima*	Hickory Wattle	160		160	50	11.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
429	*Glochidion sumatranum*	Long leaf Cheese Tree	310	220	380	119	13.0	9.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
430	*Acacia disparrima*	Hickory Wattle	210		210	66	12.0	5.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
431	*Acacia disparrima*	Hickory Wattle	200		200	63	13.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
432	*Glochidion sumatranum*	Long leaf Cheese Tree	160		160	50	7.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
433	*Acacia melanoxylon*	Australian Blackwood	160		160	50	7.0	2.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
434	*Acacia melanoxylon*	Australian Blackwood	240		240	75	12.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
435	*Acacia melanoxylon*	Australian Blackwood	190		190	60	9.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
436	*Acacia melanoxylon*	Australian Blackwood	170		170	53	10.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
437	*Acacia disparrima*	Hickory Wattle	110		110	35	5.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
438	*Acacia disparrima*	Hickory Wattle	330		330	104	14.0	6.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
439	*Acacia disparrima*	Hickory Wattle	270		270	85	14.0	8.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
440	*Acacia disparrima*	Hickory Wattle	190		190	60	13.0	5.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
441	*Acacia disparrima*	Hickory Wattle	130		130	41	10.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
442	*Syagrus romanzoffiana*	Cocos Palm	220	210, 170	348	109	10.0	8.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
443	*Syagrus romanzoffiana*	Cocos Palm	160		160	50	8.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
444	*Corymbia intermedia*	Pink Bloodwood	280		280	88	17.0	9.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
445	*Acacia disparrima*	Hickory Wattle	120		120	38	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
446	*Schefflera actinophylla*	Umbrella Tree	190		190	60	9.0	5.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
447	*Acacia disparrima*	Hickory Wattle	130		130	41	11.0	5.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
448	*Acacia disparrima*	Hickory Wattle	180		180	57	14.0	6.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
449	*Schizolobium parahyba*	Yellow Jacaranda	150		150	47	8.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
450	*Corymbia intermedia*	Pink Bloodwood	290		290	91	13.0	5.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
451	*Eriobotrya japonica*	Loquat	110	100	149	47	6.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
452	*Syagrus romanzoffiana*	Cocos Palm	240		240	75	12.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
453	*Citharexylum spinosum*	Fiddlewood	170	170, 150	283	89	9.0	6.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
454	*Citharexylum spinosum*	Fiddlewood	160	140, 130	249	78	9.0	6.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
455	*Syagrus romanzoffiana*	Cocos Palm	260		260	82	9.0	5.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
456	*Citharexylum spinosum*	Fiddlewood	140	140, 130	237	74	7.0	5.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
457	*Citharexylum spinosum*	Fiddlewood	160	140, 120	244	77	6.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
458	*Citharexylum spinosum*	Fiddlewood	140	120, 120, 100	242	76	7.0	6.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
459	*Citharexylum spinosum*	Fiddlewood	200	130, 120	267	84	6.0	5.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
460	*Acacia disparrima*	Hickory Wattle	210		210	66	7.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
461	*Angophora leiocarpa*	Smooth-barked Apple	1040		1040	327	26.0	17.0	12.5	3.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
462	*Acacia disparrima*	Hickory Wattle	120		120	38	5.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
463	*Acacia disparrima*	Hickory Wattle	190		190	60	6.0	3.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
464	*Acacia disparrima*	Hickory Wattle	160	100	189	59	7.0	3.0	2.3	1.6	Regular	-	Thinning	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
465	*Acacia disparrima*	Hickory Wattle	210	170	270	85	7.0	3.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
466	*Acacia disparrima*	Hickory Wattle	210		210	66	9.0	5.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
467	*Acacia disparrima*	Hickory Wattle	210		210	66	11.0	6.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
468	*Acacia disparrima*	Hickory Wattle	460	350	578	182	13.0	8.0	6.9	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
469	*Acacia disparrima*	Hickory Wattle	390		390	123	14.0	9.0	4.7	2.2	Regular	-	Thinning	Die-back	-	-	Poor	-	-	-	-	Typical	-	-	-	-	-	-		
470	*Corymbia intermedia*	Pink Bloodwood	260		260	82	14.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
471	*Glochidion ferdinandi*	Cheese Tree	230		230	72	6.0	4.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
472	*Acacia disparrima*	Hickory Wattle	250		250	79	5.0	3.0	3.0	1.8	Regular	-	-	-	-	Lopped	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
473	*Corymbia intermedia*	Pink Bloodwood	210		210	66	8.0	3.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
474	*Acacia disparrima*	Hickory Wattle	240		240	75	9.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
475	*Acacia disparrima*	Hickory Wattle	250	220	333	105	11.0	6.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
476	*Acacia leiocalyx*	Early Flowering Wattle	140		140	44	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
477	*Acacia leiocalyx*	Early Flowering Wattle	160		160	50	9.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
478	*Acacia leiocalyx*	Early Flowering Wattle	170	130	214	67	7.0	4.0	2.6	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
479	*Acacia leiocalyx*	Early Flowering Wattle	180		180	57	8.0	3.0	2.2	1.6	Regular	-	Thinning	Die-back	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
480	*Acacia leiocalyx*	Early Flowering Wattle	180		180	57	10.0	5.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
481	*Acacia leiocalyx*	Early Flowering Wattle	110		110	35	8.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
482	*Acacia leiocalyx*	Early Flowering Wattle	140		140	44	9.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
483	*Acacia leiocalyx*	Early Flowering Wattle	170		170	53	8.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
484	*Acacia disparrima*	Hickory Wattle	220	140	261	82	9.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
485	*Acacia disparrima*	Hickory Wattle	200	140, 140	281	88	9.0	7.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
486	*Acacia disparrima*	Hickory Wattle	240		240	75	6.0	4.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
487	*Acacia disparrima*	Hickory Wattle	150	140	205	64	9.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
488	*Acacia disparrima*	Hickory Wattle	250		250	79	9.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
489	*Acacia disparrima*	Hickory Wattle	170	130	214	67	9.0	5.0	2.6	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
490	*Acacia disparrima*	Hickory Wattle	160		160	50	9.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
491	*Acacia disparrima*	Hickory Wattle	130		130	41	9.0	5.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
492	*Acacia disparrima*	Hickory Wattle	130		130	41	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
493	*Corymbia intermedia*	Pink Bloodwood	160		160	50	10.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
494	*Corymbia intermedia*	Pink Bloodwood	110		110	35	5.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
495	*Acacia disparrima*	Hickory Wattle	260		260	82	11.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
496	*Acacia leiocalyx*	Early Flowering Wattle	230		230	72	13.0	6.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
497	*Acacia leiocalyx*	Early Flowering Wattle	230	180	292	92	12.0	6.0	3.5	2.0	Regular	-	-	Die-back	-	-	Poor	-	-	-	-	Typical	-	-	-	-	-	-		
498	*Acacia leiocalyx*	Early Flowering Wattle	210		210	66	9.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
499	*Acacia leiocalyx*	Early Flowering Wattle	160		160	50	8.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
500	*Acacia disparrima*	Hickory Wattle	120	110	163	51	6.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
501	*Acacia disparrima*	Hickory Wattle	120	110, 100	191	60	5.0	4.0	2.3	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
502	*Eucalyptus siderophloia*	Grey Ironbark	310		310	97	15.0	7.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
503	*Acacia disparrima*	Hickory Wattle	210		210	66	5.0	3.0	2.5	1.7	Regular	-	Thinning	Die-back	-	-	Poor	-	-	-	-	Typical	-	-	-	-	-	-		
504	*Acacia disparrima*	Hickory Wattle	260	210, 140	362	114	9.0	6.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
505	*Eucalyptus siderophloia*	Grey Ironbark	280	230	362	114	14.0	5.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
506	*Eucalyptus tereticornis*	Forest Red Gum	130	90	158	50	4.0	2.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
507	*Eucalyptus siderophloia*	Grey Ironbark	350		350	110	17.0	9.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
508	*Eucalyptus major*	Grey Gum	360		360	113	17.0	10.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
509	*Acacia leiocalyx*	Early Flowering Wattle	170		170	53	5.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
510	*Lophostemon suaveolens*	Swamp Box	150		150	47	6.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
511	*Eucalyptus tereticornis*	Forest Red Gum	140		140	44	5.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
512	*Eucalyptus tereticornis*	Forest Red Gum	180		180	57	7.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
513	*Eucalyptus tereticornis*	Forest Red Gum	140		140	44	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
514	*Eucalyptus tereticornis*	Forest Red Gum	170		170	53	6.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
515	*Eucalyptus tereticornis*	Forest Red Gum	170		170	53	6.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
516	*Eucalyptus tereticornis*	Forest Red Gum	140	100	172	54	6.0	4.0	2.1	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
517	*Eucalyptus tereticornis*	Forest Red Gum	170		170	53	8.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
518	*Corymbia intermedia*	Pink Bloodwood	100	90	135	42	6.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
519	*Lophostemon suaveolens*	Swamp Box	120		120	38	6.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
520	*Eucalyptus tereticornis*	Forest Red Gum	120		120	38	4.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
521	*Eucalyptus tereticornis*	Forest Red Gum	170		170	53	6.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
522	*Eucalyptus tereticornis*	Forest Red Gum	130		130	41	5.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
523	*Eucalyptus tereticornis*	Forest Red Gum	130		130	41	5.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
524	*Pinus elliotii*	Slash Pine	250		250	79	17.0	8.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
525	*Pinus elliotii*	Slash Pine	200		200	63	15.0	6.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
526	*Eucalyptus tereticornis*	Forest Red Gum	200		200	63	4.0	3.0	2.4	1.7	Regular	-	Thinning	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
527	*Eucalyptus tereticornis*	Forest Red Gum	410		410	129	17.0	10.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
528	*Pinus elliotii*	Slash Pine	150		150	47	11.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
529	*Pinus elliotii*	Slash Pine	210		210	66	16.0	7.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
530	*Pinus elliotii*	Slash Pine	210		210	66	15.0	8.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
531	*Pinus elliotii*	Slash Pine	180		180	57	14.0	5.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
532	*Corymbia intermedia*	Pink Bloodwood	370	280	464	146	19.0	13.0	5.6	2.4	Regular	-	-	-	-	-	Typical	-	Introduced	-	-	Typical	-	-	-	-	-	-		
533	*Pinus elliotii*	Slash Pine	260		260	82	13.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
534	*Pinus elliotii*	Slash Pine	220		220	69	17.0	6.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
535	*Pinus elliotii*	Slash Pine	200		200	63	10.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
536	*Pinus elliotii*	Slash Pine	260		260	82	16.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
537	*Pinus elliotii*	Slash Pine	150		150	47	12.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
538	*Pinus elliotii*	Slash Pine	160		160	50	15.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
539	*Pinus elliotii*	Slash Pine	390		390	123	20.0	13.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
540	*Pinus elliotii*	Slash Pine	350		350	110	21.0	13.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
541	*Pinus elliotii*	Slash Pine	140		140	44	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
542	*Pinus elliotii*	Slash Pine	120		120	38	7.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
543	*Pinus elliotii*	Slash Pine	260		260	82	15.0	7.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
544	*Pinus elliotii*	Slash Pine	230		230	72	16.0	8.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
545	*Pinus elliotii*	Slash Pine	360		360	113	20.0	12.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
546	*Pinus elliotii*	Slash Pine	380		380	119	22.0	12.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
547	*Pinus elliotii*	Slash Pine	300		300	94	19.0	13.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
548	*Pinus elliotii*	Slash Pine	390		390	123	22.0	14.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
549	*Pinus elliotii*	Slash Pine	320		320	101	20.0	12.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
550	*Acacia disparrima*	Hickory Wattle	350	320	474	149	10.0	8.0	5.7	2.4	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
551	*Acacia disparrima*	Hickory Wattle	170		170	53	7.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
552	*Pinus elliotii*	Slash Pine	330		330	104	16.0	12.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
553	*Eucalyptus tereticornis*	Forest Red Gum	840		840	264	24.0	14.0	10.1	3.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
554	*Pinus elliotii*	Slash Pine	250		250	79	14.0	6.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
555	*Pinus elliotii*	Slash Pine	350		350	110	20.0	14.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
556	*Pinus elliotii*	Slash Pine	370		370	116	18.0	10.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
557	*Pinus elliotii*	Slash Pine	280		280	88	16.0	8.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
558	*Pinus elliotii*	Slash Pine	180		180	57	14.0	6.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
559	*Pinus elliotii*	Slash Pine	180		180	57	16.0	7.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
560	*Pinus elliotii*	Slash Pine	160		160	50	15.0	6.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
561	*Pinus elliotii*	Slash Pine	120		120	38	9.0	5.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
562	*Pinus elliotii*	Slash Pine	150		150	47	9.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
563	*Pinus elliotii*	Slash Pine	180		180	57	17.0	8.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
564	*Pinus elliotii*	Slash Pine	150		150	47	14.0	6.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
565	*Pinus elliotii*	Slash Pine	130		130	41	9.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
566	*Pinus elliotii*	Slash Pine	160		160	50	13.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
567	*Pinus elliotii*	Slash Pine	220		220	69	14.0	7.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
568	*Pinus elliotii*	Slash Pine	130		130	41	9.0	5.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
569	*Pinus elliotii*	Slash Pine	170		170	53	14.0	6.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
570	*Pinus elliotii*	Slash Pine	150		150	47	9.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
571	*Pinus elliotii*	Slash Pine	280		280	88	15.0	9.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
572	*Pinus elliotii*	Slash Pine	150		150	47	9.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
573	*Pinus elliotii*	Slash Pine	260		260	82	15.0	8.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
574	*Pinus elliotii*	Slash Pine	210		210	66	16.0	8.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
575	*Pinus elliotii*	Slash Pine	130		130	41	10.0	5.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
576	*Pinus elliotii*	Slash Pine	200		200	63	15.0	6.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
577	*Pinus elliotii*	Slash Pine	290		290	91	17.0	9.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
578	*Pinus elliotii*	Slash Pine	280		280	88	14.0	6.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
579	*Pinus elliotii*	Slash Pine	160		160	50	10.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
580	*Pinus elliotii*	Slash Pine	170		170	53	11.0	5.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
581	*Pinus elliotii*	Slash Pine	290		290	91	16.0	7.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
582	*Pinus elliotii*	Slash Pine	300		300	94	15.0	8.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
583	*Pinus elliotii*	Slash Pine	400		400	126	17.0	10.0	4.8	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
584	*Eucalyptus tereticornis*	Forest Red Gum	130	100	164	52	4.0	2.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
585	*Pinus elliotii*	Slash Pine	410		410	129	20.0	13.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
586	*Pinus elliotii*	Slash Pine	320		320	101	18.0	8.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
587	*Pinus elliotii*	Slash Pine	340		340	107	18.0	9.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
588	*Pinus elliotii*	Slash Pine	340		340	107	15.0	10.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
589	*Eucalyptus carnea*	Broad-leaved White Mahogany	210		210	66	8.0	6.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
590	*Melaleuca bracteata*	Black Tea-tree	280	250, 250, 240, 200	549	172	9.0	8.0	6.6	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
591	*Syagrus romanzoffiana*	Cocos Palm	270		270	85	10.0	5.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
592	*Syagrus romanzoffiana*	Cocos Palm	240		240	75	13.0	6.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
593	*Acacia disparrima*	Hickory Wattle	120		120	38	4.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
594	*Acacia disparrima*	Hickory Wattle	180		180	57	13.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
595	*Acacia disparrima*	Hickory Wattle	160		160	50	12.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
596	*Acacia disparrima*	Hickory Wattle	250		250	79	13.0	6.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
597	*Archontophoenix cunninghamiana*	Bangalow Palm	230		230	72	14.0	5.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
598	*Syagrus romanzoffiana*	Cocos Palm	240		240	75	14.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
599	*Ficus benjamina*	Weeping Fig	170	140	220	69	7.0	6.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
600	*Eucalyptus grandis*	Flooded Gum	560		560	176	21.0	14.0	6.7	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
601	*Syagrus romanzoffiana*	Cocos Palm	160		160	50	12.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
602	*Ficus benjamina*	Weeping Fig	160	160, 150, 130	301	95	10.0	11.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
603	*Syagrus romanzoffiana*	Cocos Palm	230		230	72	13.0	5.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
604	*Pinus elliotii*	Slash Pine	330		330	104	21.0	14.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
605	*Pinus elliotii*	Slash Pine	280		280	88	18.0	12.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
606	*Pinus elliotii*	Slash Pine	460		460	145	22.0	15.0	5.5	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
607	*Araucaria heterophylla*	Norfolk Island Pine	290		290	91	16.0	7.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
608	*Syagrus romanzoffiana*	Cocos Palm	210		210	66	9.0	6.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
609	*Eucalyptus grandis*	Flooded Gum	530	410, 210	702	221	20.0	13.0	8.4	2.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
610	*Syagrus romanzoffiana*	Cocos Palm	310		310	97	11.0	6.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
611	*Syagrus romanzoffiana*	Cocos Palm	300		300	94	12.0	6.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
612	*Syagrus romanzoffiana*	Cocos Palm	220		220	69	13.0	7.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
613	*Pinus elliotii*	Slash Pine	390		390	123	20.0	13.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
614	*Eucalyptus carnea*	Broad-leaved White Mahogany	360	260, 240	505	159	13.0	6.0	6.1	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
615	*Acacia disparrima*	Hickory Wattle	140		140	44	6.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
616	*Eucalyptus grandis*	Flooded Gum	280	220, 130	379	119	12.0	8.0	4.5	2.2	Regular	-	-	Die-back	-	Lopped	Typical	-	-	Trunk Dmg.	-	Typical	-	-	-	-	-	-		
617	*Pinus elliotii*	Slash Pine	370		370	116	17.0	8.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
618	*Pinus elliotii*	Slash Pine	330		330	104	18.0	10.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
619	*Pinus elliotii*	Slash Pine	360		360	113	17.0	9.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
620	*Pinus elliotii*	Slash Pine	290		290	91	17.0	9.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
621	*Acacia melanoxylon*	Australian Blackwood	140		140	44	4.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
622	*Acacia disparrima*	Hickory Wattle	180	140	228	72	9.0	5.0	2.7	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
623	*Acacia melanoxylon*	Australian Blackwood	230	140	269	85	8.0	5.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
624	*Pinus elliotii*	Slash Pine	310		310	97	16.0	9.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
625	*Melaleuca saligna*	White Bottlebrush	160		160	50	8.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
626	*Acacia disparrima*	Hickory Wattle	390	270	474	149	13.0	6.0	5.7	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
627	*Acacia melanoxylon*	Australian Blackwood	220	190	291	91	9.0	5.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
628	*Acacia melanoxylon*	Australian Blackwood	210		210	66	5.0	3.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
629	*Eucalyptus saligna*	Flooded Gum	190		190	60	12.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
630	*Acacia disparrima*	Hickory Wattle	130		130	41	5.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
631	*Melaleuca quinquenervia*	Broad-leaved Paperbark	520	520	735	231	14.0	8.0	8.8	2.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
632	*Grevillea robusta*	Silky Oak	230		230	72	10.0	4.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
633	*Acacia disparrima*	Hickory Wattle	150		150	47	5.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
634	*Acacia disparrima*	Hickory Wattle	150		150	47	5.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
635	*Eucalyptus siderophloia*	Grey Ironbark	320		320	101	12.0	6.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
636	*Acacia disparrima*	Hickory Wattle	380	300	484	152	10.0	6.0	5.8	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
637	*Acacia disparrima*	Hickory Wattle	220		220	69	6.0	3.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
638	*Corymbia citriodora*	Spotted Gum	190		190	60	8.0	3.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
639	*Melaleuca saligna*	White Bottlebrush	140	120	184	58	5.0	3.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
640	*Melaleuca quinquenervia*	Broad-leaved Paperbark	130		130	41	5.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
641	*Cinnamomum camphora*	Camphor Laurel	260	170, 140	341	107	8.0	4.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
642	*Eucalyptus grandis*	Flooded Gum	460		460	145	21.0	13.0	5.5	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
643	*Eucalyptus tereticornis*	Forest Red Gum	380		380	119	21.0	12.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
644	*Pinus elliotii*	Slash Pine	520		520	163	22.0	15.0	6.2	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
645	*Eucalyptus grandis*	Flooded Gum	370		370	116	22.0	10.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
646	*Pinus elliotii*	Slash Pine	460		460	145	23.0	15.0	5.5	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
647	*Pinus elliotii*	Slash Pine	430		430	135	22.0	14.0	5.2	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
648	*Cinnamomum camphora*	Camphor Laurel	190	100	215	67	6.0	4.0	2.6	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
649	*Corymbia tessellaris*	Moreton Bay Ash	830		830	261	26.0	11.0	10.0	3.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
650	*Pinus elliotii*	Slash Pine	310		310	97	14.0	6.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
651	*Pinus elliotii*	Slash Pine	450		450	141	25.0	6.0	5.4	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
652	*Pinus elliotii*	Slash Pine	240		240	75	13.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
653	*Pinus elliotii*	Slash Pine	250		250	79	12.0	3.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
654	*Pinus elliotii*	Slash Pine	390		390	123	24.0	9.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
655	*Acacia disparrima*	Hickory Wattle	160		160	50	6.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
656	*Eucalyptus siderophloia*	Grey Ironbark	170		170	53	9.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
657	*Pinus elliotii*	Slash Pine	250		250	79	13.0	3.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
658	*Syagrus romanzoffiana*	Cocos Palm	170		170	53	5.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
659	*Pinus elliotii*	Slash Pine	310		310	97	14.0	8.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
660	*Pinus elliotii*	Slash Pine	290		290	91	12.0	8.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	Present	-		with excavation
661	*Eucalyptus siderophloia*	Grey Ironbark	160		160	50	6.0	2.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
662	*Acacia disparrima*	Hickory Wattle	360		360	113	12.0	3.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
663	*Eucalyptus microcorys*	Tallowwood	150		150	47	6.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
664	*Eucalyptus microcorys*	Tallowwood	260		260	82	12.0	4.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
665	*Eucalyptus crebra*	Narrow-leaved Ironbark	400		400	126	22.0	7.0	4.8	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
666	*Wodyetia bifurcata*	Foxtail Palm	130		130	41	4.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
667	*Syagrus romanzoffiana*	Cocos Palm	160		160	50	10.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
668	*Syagrus romanzoffiana*	Cocos Palm	170		170	53	7.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
669	*Archontophoenix cunninghamiana*	Bangalow Palm	220		220	69	8.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
670	*Archontophoenix cunninghamiana*	Bangalow Palm	170		170	53	9.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
671	*Eucalyptus microcorys*	Tallowwood	290		290	91	9.0	4.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
672	*Eucalyptus microcorys*	Tallowwood	370		370	116	13.0	7.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
673	*Celtis sinensis*	Chinese Celtis	210	80	225	71	9.0	4.0	2.7	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
674	*Celtis sinensis*	Chinese Celtis	160		160	50	6.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
675	*Cinnamomum camphora*	Camphor Laurel	370		370	116	16.0	8.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
676	*Archontophoenix cunninghamiana*	Bangalow Palm	170		170	53	11.0	6.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
677	*Pinus elliotii*	Slash Pine	410		410	129	17.0	4.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
678	*Pinus elliotii*	Slash Pine	440		440	138	17.0	8.0	5.3	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
679	*Pinus elliotii*	Slash Pine	210		210	66	9.0	2.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
680	*Corymbia intermedia*	Pink Bloodwood	990		990	311	14.0	9.0	11.9	3.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	Yes	-	-	-		
681	*Grevillea robusta*	Silky Oak	240		240	75	9.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
682	*Ficus watkinsiana*	Strangler Fig	1780		1780	559	16.0	17.0	15.0	4.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	Yes	-	-	-		
683	*Ficus coronata*	Sandpaper Fig	180		180	57	6.0	5.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
684	*Ficus macrophylla*	Moreton Bay Fig	2120		2120	666	14.0	16.0	15.0	4.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	Yes	-	-	-		
685	*Grevillea robusta*	Silky Oak	440		440	138	7.0	4.0	5.3	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
686	*Grevillea robusta*	Silky Oak	280		280	88	10.0	4.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
687	*Grevillea robusta*	Silky Oak	640		640	201	13.0	9.0	7.7	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	Yes	-	-	-		
688	*Syagrus romanzoffiana*	Cocos Palm	300		300	94	16.0	6.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
689	*Jacaranda mimosifolia*	Jacaranda	240	220	326	102	8.0	9.0	3.9	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
690	*Jacaranda mimosifolia*	Jacaranda	330	250	414	130	11.0	13.0	5.0	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
691	*Delonix regia*	Poinciana	170		170	53	5.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
692	*Libidibia ferrea*	Leopard Tree	770		770	242	13.0	13.0	9.2	3.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
693	*Jagera pseudorhus*	Foam Bark	330	280, 210	481	151	12.0	10.0	5.8	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
694	*Syagrus romanzoffiana*	Cocos Palm	260		260	82	13.0	5.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
695	*Acacia disparrima*	Hickory Wattle	360	200	412	129	11.0	6.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
696	*Schefflera actinophylla*	Umbrella Tree	260	200, 170, 220	430	135	6.0	4.0	5.2	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
697	*Syagrus romanzoffiana*	Cocos Palm	220		220	69	9.0	4.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
698	*Ficus benjamina*	Weeping Fig	100	90, 80, 80, 100	202	64	5.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
699	*Pinus elliotii*	Slash Pine	370		370	116	17.0	5.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
700	*Pinus elliotii*	Slash Pine	350		350	110	17.0	7.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
701	*Pinus elliotii*	Slash Pine	160		160	50	10.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
702	*Pinus elliotii*	Slash Pine	480		480	151	15.0	8.0	5.8	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
703	*Pinus elliotii*	Slash Pine	170		170	53	11.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
704	*Pinus elliotii*	Slash Pine	310		310	97	16.0	4.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
705	*Pinus elliotii*	Slash Pine	280		280	88	17.0	6.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
706	*Pinus elliotii*	Slash Pine	410		410	129	13.0	6.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
707	*Acacia disparrima*	Hickory Wattle	130		130	41	5.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
708	*Acacia disparrima*	Hickory Wattle	170		170	53	5.0	5.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
709	*Delonix regia*	Poinciana	130	120	177	56	8.0	6.0	2.1	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
710	*Eucalyptus tindaliae*	Tindale's Stringybark	120		120	38	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
711	*Acacia disparrima*	Hickory Wattle	170		170	53	7.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
712	*Acacia disparrima*	Hickory Wattle	160	120	200	63	7.0	3.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
713	*Acacia disparrima*	Hickory Wattle	150		150	47	6.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
714	*Acacia disparrima*	Hickory Wattle	140		140	44	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
715	*Eucalyptus carnea*	Broad-leaved White Mahogany	140		140	44	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
716	*Eucalyptus carnea*	Broad-leaved White Mahogany	110		110	35	7.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
717	*Acacia disparrima*	Hickory Wattle	130		130	41	6.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
718	*Eucalyptus siderophloia*	Grey Ironbark	130		130	41	7.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
719	*Eucalyptus carnea*	Broad-leaved White Mahogany	120	80	144	45	6.0	2.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
720	*Acacia disparrima*	Hickory Wattle	190		190	60	9.0	3.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
721	*Eucalyptus major*	Grey Gum	160		160	50	12.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
722	*Eucalyptus siderophloia*	Grey Ironbark	190		190	60	7.0	3.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
723	*Eucalyptus carnea*	Broad-leaved White Mahogany	150		150	47	8.0	2.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
724	*Angophora leiocarpa*	Smooth-barked Apple	150		150	47	7.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
725	*Eucalyptus carnea*	Broad-leaved White Mahogany	210		210	66	7.0	5.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
726	*Acacia disparrima*	Hickory Wattle	120		120	38	6.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
727	*Eucalyptus carnea*	Broad-leaved White Mahogany	180		180	57	5.0	1.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
728	*Corymbia intermedia*	Pink Bloodwood	140		140	44	8.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
729	*Acacia disparrima*	Hickory Wattle	230		230	72	5.0	4.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
730	*Acacia disparrima*	Hickory Wattle	160		160	50	7.0	2.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
731	*Acacia disparrima*	Hickory Wattle	220		220	69	7.0	3.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
732	*Schefflera actinophylla*	Umbrella Tree	130		130	41	5.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
733	*Eucalyptus tereticornis*	Forest Red Gum	330		330	104	13.0	5.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
734	*Lophostemon confertus*	Brush Box	120		120	38	5.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
735	*Acacia disparrima*	Hickory Wattle	130		130	41	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
736	*Acacia disparrima*	Hickory Wattle	190	180, 160	307	96	8.0	5.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
737	*Lophostemon confertus*	Brush Box	140		140	44	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
738	*Acacia disparrima*	Hickory Wattle	230	160, 110	301	95	8.0	6.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
739	*Lophostemon confertus*	Brush Box	200		200	63	12.0	6.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
740	*Eucalyptus carnea*	Broad-leaved White Mahogany	100		100	31	8.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
741	*Eucalyptus carnea*	Broad-leaved White Mahogany	130		130	41	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
742	*Acacia disparrima*	Hickory Wattle	230		230	72	8.0	5.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
743	*Corymbia intermedia*	Pink Bloodwood	150		150	47	8.0	2.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
744	*Acacia disparrima*	Hickory Wattle	260	230	347	109	9.0	6.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
745	*Acacia disparrima*	Hickory Wattle	300		300	94	12.0	4.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
746	*Acacia disparrima*	Hickory Wattle	360		360	113	12.0	5.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
747	*Acacia disparrima*	Hickory Wattle	190	170, 130	286	90	12.0	5.0	3.4	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
748	*Acacia disparrima*	Hickory Wattle	260	240	354	111	8.0	4.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
749	*Acacia disparrima*	Hickory Wattle	240		240	75	6.0	4.0	2.9	1.8	Regular	-	-	-	-	-	Typical	Major	-	-	-	Typical	-	-	-	-	-	-		
750	*Acacia disparrima*	Hickory Wattle	260	190	322	101	7.0	7.0	3.9	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
751	*Acacia disparrima*	Hickory Wattle	210		210	66	8.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
752	*Acacia disparrima*	Hickory Wattle	250	150	292	92	9.0	4.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
753	*Acacia disparrima*	Hickory Wattle	240		240	75	12.0	3.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
754	*Acacia disparrima*	Hickory Wattle	410		410	129	12.0	4.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
755	*Acacia disparrima*	Hickory Wattle	310	250	398	125	13.0	4.0	4.8	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
756	*Ficus benjamina*	Weeping Fig	180	60, 60	199	63	5.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
757	*Acacia disparrima*	Hickory Wattle	410		410	129	8.0	8.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
758	*Acacia disparrima*	Hickory Wattle	200	140	244	77	8.0	3.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
759	*Eucalyptus tereticornis*	Forest Red Gum	830		830	261	16.0	13.0	10.0	3.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
760	*Eucalyptus tereticornis*	Forest Red Gum	920		920	289	14.0	13.0	11.0	3.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
761	*Syagrus romanzoffiana*	Cocos Palm	190		190	60	9.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
762	*Syagrus romanzoffiana*	Cocos Palm	220		220	69	9.0	4.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
763	*Jacaranda mimosifolia*	Jacaranda	270	180, 180, 230, 290, 240	576	181	14.0	12.0	6.9	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
764	*Syzygium luehmannii*	small opposite leaves	180	120, 120	247	78	11.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
765	*Syagrus romanzoffiana*	Cocos Palm	140		140	44	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
766	*Corymbia intermedia*	Pink Bloodwood	260		260	82	13.0	3.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
767	*Mangifera indica*	Mango	220	180	284	89	7.0	4.0	3.4	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
768	*Waterhousea floribunda*	Weeping Lillipilli	260		260	82	13.0	4.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
769	*Castanospermum australe*	Black Bean	330	170, 310	484	152	14.0	7.0	5.8	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
770	*Corymbia torelliana*	Cadaghi	280		280	88	15.0	8.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
771	*Taxodium distichum*	Swamp Cypress	210		210	66	12.0	6.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
772	*Libidibia ferrea*	Leopard Tree	640		640	201	13.0	15.0	7.7	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
773	*Melicope elleryana*	Pink Doughwood	270		270	85	13.0	4.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
774	*Melicope elleryana*	Pink Doughwood	130		130	41	11.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
775	*Schefflera actinophylla*	Umbrella Tree	130	70, 10	148	46	6.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
776	*Melaleuca quinquenervia*	Broad-leaved Paperbark	270		270	85	7.0	3.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
777	*Melaleuca quinquenervia*	Broad-leaved Paperbark	530		530	167	15.0	8.0	6.4	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
778	*Acacia disparrima*	Hickory Wattle	190		190	60	11.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
779	*Grevillea robusta*	Silky Oak	540		540	170	9.0	7.0	6.5	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
780	*Melaleuca bracteata*	Black Tea-tree	220	190	291	91	11.0	5.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
781	*Murraya paniculata*	Mock Orange	110	80, 70, 70, 60	179	56	5.0	8.0	2.1	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
782	*Inga edulis*	Ice-cream Bean	120	80, 80, 60, 120, 60	221	69	10.0	14.0	2.7	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
783	*Jacaranda mimosifolia*	Jacaranda	310	240, 270, 140, 110, 230	558	175	14.0	15.0	6.7	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
784	*Melaleuca quinquenervia*	Broad-leaved Paperbark	330		330	104	8.0	5.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
785	*Acacia disparrima*	Hickory Wattle	320		320	101	12.0	9.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
786	*Melaleuca quinquenervia*	Broad-leaved Paperbark	160	110	194	61	8.0	2.0	2.3	1.7	Regular	-	-	-	-	Lopped	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
787	*Acacia disparrima*	Hickory Wattle	210		210	66	8.0	5.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
788	*Pinus elliotii*	Slash Pine	720		720	226	15.0	11.0	8.6	2.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
789	*Grevillea robusta*	Silky Oak	280	270	389	122	14.0	6.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
790	*Syagrus romanzoffiana*	Cocos Palm	200		200	63	9.0	3.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
791	*Syagrus romanzoffiana*	Cocos Palm	170		170	53	6.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
792	*Eucalyptus robusta*	Swamp Mahogany	260		260	82	12.0	4.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
793	*Acacia disparrima*	Hickory Wattle	190		190	60	8.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
794	*Melaleuca quinquenervia*	Broad-leaved Paperbark	100		100	31	6.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
795	*Acacia disparrima*	Hickory Wattle	140		140	44	6.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
796	*Grevillea robusta*	Silky Oak	180		180	57	8.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
797	*Acacia disparrima*	Hickory Wattle	230		230	72	8.0	4.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
798	*Grevillea robusta*	Silky Oak	280	190	338	106	9.0	5.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
799	*Melaleuca linariifolia*	Snow-in-summer	170	130	214	67	4.0	5.0	2.6	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
800	*Melaleuca linariifolia*	Snow-in-summer	130	60	143	45	5.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
801	*Acacia disparrima*	Hickory Wattle	150		150	47	6.0	2.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
802	*Eucalyptus populnea*	Poplar Box	300		300	94	13.0	5.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
803	*Glochidion ferdinandi*	Cheese Tree	190	160	248	78	5.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
804	*Acacia disparrima*	Hickory Wattle	210		210	66	8.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
805	*Ficus benjamina*	Weeping Fig	280	180, 280, 140, 130, 120, 80, 80	503	158	6.0	11.0	6.0	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
806	*Acacia disparrima*	Hickory Wattle	210		210	66	7.0	3.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
807	*Acacia disparrima*	Hickory Wattle	320		320	101	8.0	5.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
808	*Acacia disparrima*	Hickory Wattle	140		140	44	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
809	*Acacia disparrima*	Hickory Wattle	130		130	41	5.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
810	*Acacia disparrima*	Hickory Wattle	220		220	69	6.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
811	*Acacia disparrima*	Hickory Wattle	130	120, 80	194	61	6.0	4.0	2.3	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
812	*Acacia disparrima*	Hickory Wattle	150		150	47	5.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
813	*Corymbia intermedia*	Pink Bloodwood	160		160	50	5.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
814	*Schefflera actinophylla*	Umbrella Tree	130	120, 90, 110, 120, 80	269	84	8.0	4.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
815	*Glochidion ferdinandi*	Cheese Tree	240		240	75	8.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
816	*Archontophoenix cunninghamiana*	Bangalow Palm	170		170	53	6.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
817	*Schefflera actinophylla*	Umbrella Tree	280	180, 150, 130, 170, 90	433	136	8.0	3.0	5.2	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
818	*Liquidambar styraciflua*	Liquidambar	180	160	241	76	5.0	4.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
819	*Jacaranda mimosifolia*	Jacaranda	220		220	69	6.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
820	*Acacia disparrima*	Hickory Wattle	140		140	44	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
821	*Acacia disparrima*	Hickory Wattle	210	200	290	91	9.0	3.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
822	*Acacia disparrima*	Hickory Wattle	200		200	63	9.0	2.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
823	*Lophostemon suaveolens*	Swamp Box	170		170	53	9.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
824	*Acacia disparrima*	Hickory Wattle	320	240, 230	461	145	9.0	4.0	5.5	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
825	*Grevillea robusta*	Silky Oak	160		160	50	10.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
826	*Acacia disparrima*	Hickory Wattle	280		280	88	5.0	3.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
827	*Acacia disparrima*	Hickory Wattle	240		240	75	4.0	3.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
828	*Araucaria cunninghamii*	Hoop Pine	530		530	167	17.0	8.0	6.4	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
829	*Archontophoenix cunninghamiana*	Bangalow Palm	220		220	69	13.0	3.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
830	*Mangifera indica*	Mango	320	310, 270, 240, 230, 320	696	219	8.0	9.0	8.4	2.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
831	*Melaleuca linariifolia*	Snow-in-summer	180	130	222	70	6.0	3.0	2.7	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
832	*Macadamia integrifolia*	Macadamia Nut	210		210	66	5.0	3.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
833	*Macadamia integrifolia*	Macadamia Nut	150	140, 120	238	75	5.0	3.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
834	*Acacia disparrima*	Hickory Wattle	120	100, 110	191	60	5.0	3.0	2.3	1.7	Regular	-	-	-	-	-	Typical	-	-	Trunk Dmg.	-	Typical	-	-	-	-	-	-		
835	*Syagrus romanzoffiana*	Cocos Palm	230		230	72	8.0	4.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
836	*Syagrus romanzoffiana*	Cocos Palm	180		180	57	6.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
837	*Syagrus romanzoffiana*	Cocos Palm	210		210	66	8.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
838	*Acacia disparrima*	Hickory Wattle	160		160	50	8.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
839	*Acacia disparrima*	Hickory Wattle	140		140	44	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
840	*Syagrus romanzoffiana*	Cocos Palm	220		220	69	6.0	4.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
841	*Syagrus romanzoffiana*	Cocos Palm	180		180	57	7.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
842	*Acacia disparrima*	Hickory Wattle	120		120	38	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
843	*Acacia disparrima*	Hickory Wattle	160	110	194	61	7.0	4.0	2.3	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
844	*Syagrus romanzoffiana*	Cocos Palm	190		190	60	8.0	5.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
845	*Syagrus romanzoffiana*	Cocos Palm	200		200	63	6.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
846	*Syagrus romanzoffiana*	Cocos Palm	180		180	57	7.0	5.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
847	*Araucaria cunninghamii*	Hoop Pine	280		280	88	8.0	4.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
848	*Angophora woodsiana*	Rough-barked Apple	880		880	276	25.0	6.0	10.6	3.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	Yes	-	-	-		
849	*Grevillea robusta*	Silky Oak	240		240	75	8.0	4.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
850	*Araucaria cunninghamii*	Hoop Pine	290		290	91	9.0	4.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
851	*Macadamia integrifolia*	Macadamia Nut	160	130, 110, 130	267	84	5.0	5.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
852	*Citharexylum spinosum*	Fiddlewood	180		180	57	6.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
853	*Corymbia intermedia*	Pink Bloodwood	170		170	53	6.0	2.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
854	*Araucaria cunninghamii*	Hoop Pine	460		460	145	8.0	3.0	5.5	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
855	*Syagrus romanzoffiana*	Cocos Palm	250		250	79	8.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
856	*Mangifera indica*	Mango	290	180, 210	401	126	6.0	7.0	4.8	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
857	*Libidibia ferrea*	Leopard Tree	330	160	367	115	6.0	11.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
858	*Syagrus romanzoffiana*	Cocos Palm	270		270	85	9.0	7.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
859	*Syagrus romanzoffiana*	Cocos Palm	210		210	66	8.0	3.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
860	*Syagrus romanzoffiana*	Cocos Palm	120		120	38	5.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
861	*Araucaria cunninghamii*	Hoop Pine	250		250	79	6.0	4.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
862	*Syagrus romanzoffiana*	Cocos Palm	210		210	66	9.0	3.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
863	*Archontophoenix cunninghamiana*	Bangalow Palm	170		170	53	8.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
864	*Grevillea robusta*	Silky Oak	220	180	284	89	6.0	3.0	3.4	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
865	*Acacia disparrima*	Hickory Wattle	130		130	41	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
866	*Melaleuca bracteata*	Black Tea-tree	210	130, 120, 120, 110	319	100	7.0	6.0	3.8	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
867	*Syagrus romanzoffiana*	Cocos Palm	210		210	66	8.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
868	*Ficus benjamina*	Weeping Fig	290	250, 160	415	130	6.0	9.0	5.0	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
869	*Syagrus romanzoffiana*	Cocos Palm	250		250	79	8.0	7.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
870	*Libidibia ferrea*	Leopard Tree	130	100	164	52	5.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
871	*Grevillea robusta*	Silky Oak	150		150	47	6.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
872	*Syagrus romanzoffiana*	Cocos Palm	230		230	72	8.0	4.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
873	*Syagrus romanzoffiana*	Cocos Palm	250		250	79	7.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
874	*Syagrus romanzoffiana*	Cocos Palm	260		260	82	8.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
875	*Syagrus romanzoffiana*	Cocos Palm	240		240	75	8.0	4.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
876	*Syagrus romanzoffiana*	Cocos Palm	260		260	82	9.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
877	*Syagrus romanzoffiana*	Cocos Palm	230		230	72	7.0	4.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
878	*Citharexylum spinosum*	Fiddlewood	170	80, 70, 110	229	72	5.0	5.0	2.7	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
879	*Acacia disparrima*	Hickory Wattle	330		330	104	7.0	5.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
880	*Corymbia torelliana*	Cadaghi	100		100	31	6.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
881	*Acacia disparrima*	Hickory Wattle	160	110, 80	210	66	8.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
882	*Acacia disparrima*	Hickory Wattle	120		120	38	7.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
883	*Acacia disparrima*	Hickory Wattle	100		100	31	6.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
884	*Citharexylum spinosum*	Fiddlewood	140	140	198	62	6.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
885	*Melaleuca bracteata*	Black Tea-tree	190	190	269	84	6.0	5.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
886	*Syagrus romanzoffiana*	Cocos Palm	200		200	63	8.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
887	*Citharexylum spinosum*	Fiddlewood	140	110	178	56	6.0	4.0	2.1	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
888	*Acacia disparrima*	Hickory Wattle	100		100	31	6.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
889	*Ficus benjamina*	Weeping Fig	210	200, 190, 180	391	123	8.0	8.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
890	*Syagrus romanzoffiana*	Cocos Palm	230		230	72	8.0	4.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
891	*Ficus benjamina*	Weeping Fig	280	250	375	118	11.0	7.0	4.5	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
892	*Melaleuca bracteata*	Black Tea-tree	100	70	122	38	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
893	*Syagrus romanzoffiana*	Cocos Palm	190		190	60	7.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
894	*Acacia disparrima*	Hickory Wattle	140	130, 130, 100	252	79	7.0	3.0	3.0	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
895	*Acacia disparrima*	Hickory Wattle	110		110	35	6.0	4.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
896	*Acacia disparrima*	Hickory Wattle	120	100	156	49	7.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
897	*Syagrus romanzoffiana*	Cocos Palm	210		210	66	9.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
898	*Acacia disparrima*	Hickory Wattle	260		260	82	8.0	3.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
899	*Citharexylum spinosum*	Fiddlewood	180	150, 120	263	83	8.0	3.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
900	*Libidibia ferrea*	Leopard Tree	330		330	104	12.0	14.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
901	*Ficus benjamina*	Weeping Fig	490	410, 300, 320, 350, 370, 290, 280	1011	318	13.0	17.0	12.1	3.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
902	*Ficus benjamina*	Weeping Fig	790	490, 330, 370	1054	331	14.0	18.0	12.6	3.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
903	*Syagrus romanzoffiana*	Cocos Palm	220		220	69	7.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
904	*Syagrus romanzoffiana*	Cocos Palm	220		220	69	8.0	4.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
905	*Araucaria bidwillii*	Bunya Pine	620		620	195	13.0	13.0	7.4	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
906	*Dillenia indica*	Elephant Apple	140	100, 90, 70	206	65	6.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
907	*Archontophoenix cunninghamiana*	Bangalow Palm	140		140	44	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
908	*Planted Native spp.*	Planted Native spp	360		360	113	12.0	5.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
909	*Ficus benjamina*	Weeping Fig	510	230, 330	650	204	9.0	13.0	7.8	2.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
910	*Araucaria cunninghamii*	Hoop Pine	380		380	119	12.0	4.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
911	*Archontophoenix cunninghamiana*	Bangalow Palm	170		170	53	8.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
912	*Archontophoenix cunninghamiana*	Bangalow Palm	160		160	50	9.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
913	*Ficus benjamina*	Weeping Fig	310	280, 220, 280, 210, 150	607	191	12.0	16.0	7.3	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
914	*Liquidambar styraciflua*	Liquidambar	290	180, 160	377	118	8.0	5.0	4.5	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
915	*Tipuana tipu*	Tipuana	370	260, 340, 350	665	209	13.0	14.0	8.0	2.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
916	*Grevillea robusta*	Silky Oak	210		210	66	13.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
917	*Macadamia integrifolia*	Macadamia Nut	190		190	60	8.0	6.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
918	*Archontophoenix cunninghamiana*	Bangalow Palm	230		230	72	11.0	3.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
919	*Jacaranda mimosifolia*	Jacaranda	180	110	211	66	8.0	6.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
920	*Dillenia indica*	Elephant Apple	180	170, 180, 130, 140	361	113	7.0	7.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
921	*Harpephyllum caffrum*	South African Wild Plum	320	290, 240	494	155	8.0	12.0	5.9	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
922	*Cinnamomum camphora*	Camphor Laurel	220	220	311	98	10.0	5.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
923	*Pinus elliotii*	Slash Pine	550		550	173	22.0	9.0	6.6	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
924	*Pinus elliotii*	Slash Pine	340		340	107	17.0	9.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
925	*Cinnamomum camphora*	Camphor Laurel	180	180	255	80	9.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
926	*Eucalyptus crebra*	Narrow-leaved Ironbark	140		140	44	9.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
927	*Eucalyptus major*	Grey Gum	460		460	145	23.0	8.0	5.5	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
928	*Pinus elliotii*	Slash Pine	350		350	110	12.0	8.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
929	*Pinus elliotii*	Slash Pine	340		340	107	16.0	8.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
930	*Eucalyptus crebra*	Narrow-leaved Ironbark	490		490	154	24.0	9.0	5.9	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
931	*Corymbia intermedia*	Pink Bloodwood	170	160	233	73	9.0	5.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
932	*Eucalyptus major*	Grey Gum	390		390	123	24.0	10.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
933	*Lophostemon confertus*	Brush Box	250		250	79	12.0	8.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
934	*Pinus elliotii*	Slash Pine	100		100	31	9.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
935	*Celtis sinensis*	Chinese Celtis	200		200	63	13.0	6.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
936	*Eucalyptus crebra*	Narrow-leaved Ironbark	150		150	47	9.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
937	*Syagrus romanzoffiana*	Cocos Palm	130		130	41	5.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
938	*Eucalyptus tereticornis*	Forest Red Gum	470	230	523	164	25.0	9.0	6.3	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
939	*Syagrus romanzoffiana*	Cocos Palm	200		200	63	14.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
940	*Syagrus romanzoffiana*	Cocos Palm	220		220	69	9.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
941	*Syagrus romanzoffiana*	Cocos Palm	220		220	69	12.0	6.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
942	*Archontophoenix cunninghamiana*	Bangalow Palm	220		220	69	12.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
943	*Pinus elliotii*	Slash Pine	300		300	94	18.0	8.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
944	*Pinus elliotii*	Slash Pine	590		590	185	25.0	9.0	7.1	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
945	*Pinus elliotii*	Slash Pine	140		140	44	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
946	*Pinus elliotii*	Slash Pine	160		160	50	9.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
947	*Archontophoenix cunninghamiana*	Bangalow Palm	210		210	66	12.0	5.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
948	*Cinnamomum camphora*	Camphor Laurel	600	300, 300, 200	762	239	18.0	12.0	9.1	3.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
949	*Archontophoenix cunninghamiana*	Bangalow Palm	170		170	53	9.0	5.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
950	*Archontophoenix cunninghamiana*	Bangalow Palm	200		200	63	9.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
951	*Archontophoenix cunninghamiana*	Bangalow Palm	140		140	44	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
952	*Archontophoenix cunninghamiana*	Bangalow Palm	180		180	57	9.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
953	*Archontophoenix cunninghamiana*	Bangalow Palm	160		160	50	9.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
954	*Corymbia intermedia*	Pink Bloodwood	150	150, 100	235	74	8.0	5.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
955	*Grevillea robusta*	Silky Oak	110		110	35	9.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
956	*Syagrus romanzoffiana*	Cocos Palm	140		140	44	9.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
957	*Corymbia citriodora*	Spotted Gum	260		260	82	11.0	4.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
958	*Eucalyptus seeana*	Narrow-leaved Red Gum	990		990	311	24.0	13.0	11.9	3.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	Yes	-	-	-		
959	*Grevillea robusta*	Silky Oak	260		260	82	14.0	9.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
960	*Corymbia intermedia*	Pink Bloodwood	900		900	283	25.0	14.0	10.8	3.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	Yes	-	-	-		
961	*Grevillea robusta*	Silky Oak	450		450	141	16.0	7.0	5.4	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
962	*Grevillea robusta*	Silky Oak	490		490	154	22.0	9.0	5.9	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
963	*Grevillea robusta*	Silky Oak	700		700	220	24.0	10.0	8.4	2.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
964	*Cinnamomum camphora*	Camphor Laurel	170		170	53	9.0	6.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
965	*Araucaria cunninghamii*	Hoop Pine	510	390	642	202	24.0	13.0	7.7	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
966	*Araucaria cunninghamii*	Hoop Pine	490		490	154	18.0	10.0	5.9	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
967	*Araucaria heterophylla*	Norfolk Island Pine	590		590	185	22.0	12.0	7.1	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
968	*Delonix regia*	Poinciana	400	380, 300	628	197	15.0	14.0	7.5	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
969	*Jacaranda mimosifolia*	Jacaranda	250		250	79	15.0	9.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
970	*Acacia disparrima*	Hickory Wattle	240		240	75	15.0	6.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
971	*Schefflera actinophylla*	Umbrella Tree	180	170, 120, 120, 120, 120, 120	365	115	11.0	9.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
972	*Corymbia intermedia*	Pink Bloodwood	360		360	113	15.0	9.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
973	*Corymbia intermedia*	Pink Bloodwood	100		100	31	8.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
974	*Acacia disparrima*	Hickory Wattle	200		200	63	9.0	6.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
975	*Lophostemon confertus*	Brush Box	300		300	94	18.0	7.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
976	*Pinus elliotii*	Slash Pine	650		650	204	22.0	9.0	7.8	2.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
977	*Pinus elliotii*	Slash Pine	400		400	126	18.0	8.0	4.8	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
978	*Eucalyptus crebra*	Narrow-leaved Ironbark	250		250	79			3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
979	*Pinus elliotii*	Slash Pine	600		600	188	18.0	8.0	7.2	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
980	*Jacaranda mimosifolia*	Jacaranda	130		130	41	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
981	*Pinus elliotii*	Slash Pine	410		410	129	24.0	9.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
982	*Pinus elliotii*	Slash Pine	540		540	170	17.0	8.0	6.5	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
983	*Pinus elliotii*	Slash Pine	590		590	185	22.0	9.0	7.1	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
984	*Syagrus romanzoffiana*	Cocos Palm	150		150	47	8.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
985	*Syagrus romanzoffiana*	Cocos Palm	150		150	47	8.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
986	*Pinus elliotii*	Slash Pine	550		550	173	26.0	12.0	6.6	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
987	*Pinus elliotii*	Slash Pine	390		390	123	18.0	7.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
988	*Pinus elliotii*	Slash Pine	500		500	157	22.0	9.0	6.0	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
989	*Pinus elliotii*	Slash Pine	450		450	141	21.0	9.0	5.4	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
990	*Pinus elliotii*	Slash Pine	160		160	50	8.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
991	*Pinus elliotii*	Slash Pine	100		100	31	10.0	5.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
992	*Pinus elliotii*	Slash Pine	180		180	57	12.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
993	*Corymbia intermedia*	Pink Bloodwood	260		260	82	14.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
994	*Pinus elliotii*	Slash Pine	160		160	50	10.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
995	*Pinus elliotii*	Slash Pine	200		200	63	11.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
996	*Acacia disparrima*	Hickory Wattle	350	240	424	133	17.0	8.0	5.1	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
997	*Acacia disparrima*	Hickory Wattle	300		300	94	12.0	4.0	3.6	2.0	Regular	-	-	Die-back	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
998	*Acacia disparrima*	Hickory Wattle	380		380	119	15.0	6.0	4.6	2.2	Regular	-	-	Die-back	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
999	*Corymbia intermedia*	Pink Bloodwood	390		390	123	16.0	5.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1000	*Angophora leiocarpa*	Smooth-barked Apple	270		270	85	12.0	6.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1001	*Acacia disparrima*	Hickory Wattle	140		140	44	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1002	*Acacia disparrima*	Hickory Wattle	130		130	41	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1003	*Acacia disparrima*	Hickory Wattle	160		160	50	7.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1004	*Eucalyptus carnea*	Broad-leaved White Mahogany	170		170	53	6.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1005	*Acacia disparrima*	Hickory Wattle	180		180	57	12.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1006	*Acacia disparrima*	Hickory Wattle	150	130	198	62	12.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1007	*Acacia disparrima*	Hickory Wattle	200	130	239	75	12.0	6.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1008	*Corymbia intermedia*	Pink Bloodwood	160		160	50	9.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1009	*Angophora leiocarpa*	Smooth-barked Apple	290		290	91	14.0	7.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1010	*Eucalyptus siderophloia*	Grey Ironbark	550		550	173	25.0	9.0	6.6	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1011	*Acacia disparrima*	Hickory Wattle	150		150	47	9.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1012	*Eucalyptus siderophloia*	Grey Ironbark	170		170	53	12.0	5.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1013	*Acacia disparrima*	Hickory Wattle	190	140	236	74	14.0	5.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1014	*Acacia disparrima*	Hickory Wattle	190		190	60	12.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1015	*Acacia disparrima*	Hickory Wattle	170		170	53	8.0	5.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1016	*Acacia disparrima*	Hickory Wattle	180	160	241	76	11.0	4.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1017	*Eucalyptus carnea*	Broad-leaved White Mahogany	660		660	207	20.0	9.0	7.9	2.8	Regular	-	-	Die-back	-	-	Poor	-	-	-	-	Typical	-	-	-	-	-	-		
1018	*Acacia disparrima*	Hickory Wattle	130		130	41	7.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1019	*Corymbia intermedia*	Pink Bloodwood	190		190	60	12.0	5.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1020	*Eucalyptus carnea*	Broad-leaved White Mahogany	150		150	47	7.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1021	*Eucalyptus siderophloia*	Grey Ironbark	210		210	66	12.0	5.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1022	*Eucalyptus tereticornis*	Forest Red Gum	180		180	57	13.0	5.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	Yes	-	-	-		
1023	*Eucalyptus siderophloia*	Grey Ironbark	350		350	110	16.0	7.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1024	*Acacia disparrima*	Hickory Wattle	390		390	123	15.0	8.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
1025	*Eucalyptus siderophloia*	Grey Ironbark	110		110	35	8.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1026	*Eucalyptus carnea*	Broad-leaved White Mahogany	130		130	41	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1027	*Eucalyptus carnea*	Broad-leaved White Mahogany	130		130	41	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1028	*Acacia disparrima*	Hickory Wattle	420		420	132	13.0	7.0	5.0	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1029	*Lophostemon confertus*	Brush Box	100		100	31	6.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1030	*Eucalyptus carnea*	Broad-leaved White Mahogany	130		130	41	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1031	*Corymbia intermedia*	Pink Bloodwood	130		130	41	12.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1032	*Eucalyptus carnea*	Broad-leaved White Mahogany	140		140	44	7.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1033	*Eucalyptus major*	Grey Gum	290		290	91	14.0	7.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1034	*Acacia disparrima*	Hickory Wattle	220	150	266	84	13.0	6.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1035	*Acacia disparrima*	Hickory Wattle	160		160	50	8.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1036	*Acacia disparrima*	Hickory Wattle	130		130	41	7.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1037	*Acacia disparrima*	Hickory Wattle	170	140	220	69	9.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1038	*Eucalyptus siderophloia*	Grey Ironbark	120		120	38	9.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1039	*Acacia disparrima*	Hickory Wattle	160	160, 150, 140	305	96	12.0	7.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1040	*Eucalyptus siderophloia*	Grey Ironbark	120		120	38	7.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1041	*Eucalyptus siderophloia*	Grey Ironbark	180		180	57	15.0	5.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1042	*Eucalyptus carnea*	Broad-leaved White Mahogany	110		110	35	8.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1043	*Acacia disparrima*	Hickory Wattle	230	190	298	94	16.0	9.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1044	*Eucalyptus siderophloia*	Grey Ironbark	130		130	41	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1045	*Acacia disparrima*	Hickory Wattle	190	150	242	76	12.0	7.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1046	*Corymbia intermedia*	Pink Bloodwood	120		120	38	12.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1047	*Acacia disparrima*	Hickory Wattle	450		450	141	8.0	5.0	5.4	2.4	Regular	-	-	-	-	-	Typical	Major	-	-	-	Typical	-	-	-	-	-	-		
1048	*Acacia disparrima*	Hickory Wattle	280	280	396	124	14.0	9.0	4.8	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1049	*Acacia disparrima*	Hickory Wattle	320		320	101	16.0	8.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1050	*Acacia disparrima*	Hickory Wattle	260		260	82	16.0	5.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1051	*Acacia disparrima*	Hickory Wattle	220		220	69	17.0	6.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1052	*Acacia disparrima*	Hickory Wattle	300	250	391	123	16.0	9.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1053	*Corymbia intermedia*	Pink Bloodwood	200		200	63	12.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1054	*Acacia disparrima*	Hickory Wattle	100		100	31	8.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1055	*Acacia disparrima*	Hickory Wattle	170	170, 160, 140	321	101	16.0	7.0	3.9	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1056	*Acacia disparrima*	Hickory Wattle	280		280	88	16.0	7.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1057	*Acacia disparrima*	Hickory Wattle	170	160, 150	277	87	12.0	6.0	3.3	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1058	*Acacia disparrima*	Hickory Wattle	350		350	110	16.0	7.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1059	*Acacia disparrima*	Hickory Wattle	250	210	326	103	15.0	8.0	3.9	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1060	*Acacia disparrima*	Hickory Wattle	360		360	113	15.0	7.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	Introduced	-	-	Typical	-	-	-	-	-	-		
1061	*Acacia disparrima*	Hickory Wattle	590		590	185	18.0	12.0	7.1	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1062	*Pinus elliotii*	Slash Pine	350		350	110	14.0	7.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1063	*Acacia disparrima*	Hickory Wattle	350		350	110	16.0	7.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1064	*Acacia disparrima*	Hickory Wattle	440	340	556	175	16.0	10.0	6.7	2.6	Regular	-	-	-	-	-	Typical	-	-	Trunk Dmg.	-	Typical	-	-	-	-	-	-		
1065	*Acacia disparrima*	Hickory Wattle	390		390	123	17.0	7.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1066	*Acacia disparrima*	Hickory Wattle	240	200	312	98	14.0	7.0	3.7	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1067	*Acacia disparrima*	Hickory Wattle	160		160	50	11.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1068	*Grevillea robusta*	Silky Oak	250		250	79	14.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1069	*Acacia disparrima*	Hickory Wattle	250	190, 130	340	107	15.0	6.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1070	*Grevillea robusta*	Silky Oak	180		180	57	12.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1071	*Acacia disparrima*	Hickory Wattle	260	240, 220, 180	454	143	15.0	8.0	5.4	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1072	*Grevillea robusta*	Silky Oak	120		120	38	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1073	*Grevillea robusta*	Silky Oak	320		320	101	16.0	6.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1074	*Mangifera indica*	Mango	320		320	101	14.0	6.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1075	*Corymbia intermedia*	Pink Bloodwood	250		250	79	16.0	6.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1076	*Acacia disparrima*	Hickory Wattle	150		150	47	9.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1077	*Acacia disparrima*	Hickory Wattle	320	220	388	122	16.0	6.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1078	*Acacia disparrima*	Hickory Wattle	220		220	69	16.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
1079	*Acacia disparrima*	Hickory Wattle	310	260	405	127	16.0	8.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1080	*Syagrus romanzoffiana*	Cocos Palm	170		170	53	8.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1081	*Acacia disparrima*	Hickory Wattle	250		250	79	17.0	6.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1082	*Acacia disparrima*	Hickory Wattle	330		330	104	16.0	7.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1083	*Acacia disparrima*	Hickory Wattle	140		140	44	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1084	*Syagrus romanzoffiana*	Cocos Palm	140		140	44	8.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1085	*Syagrus romanzoffiana*	Cocos Palm	180		180	57	8.0	3.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1086	*Acacia disparrima*	Hickory Wattle	360		360	113	16.0	6.0	4.3	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1087	*Ficus macrophylla*	Moreton Bay Fig	1100		1100	346	20.0	16.0	13.2	3.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1088	*Acacia disparrima*	Hickory Wattle	180		180	57	14.0	5.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1089	*Acacia disparrima*	Hickory Wattle	210		210	66	15.0	6.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1090	*Corymbia citriodora*	Spotted Gum	440		440	138	17.0	9.0	5.3	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1091	*Schefflera actinophylla*	Umbrella Tree	160		160	50	12.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1092	*Grevillea robusta*	Silky Oak	240		240	75	16.0	8.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1093	*Acacia disparrima*	Hickory Wattle	230		230	72	16.0	5.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1094	*Acacia disparrima*	Hickory Wattle	230		230	72	16.0	7.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
1095	*Syagrus romanzoffiana*	Cocos Palm	150		150	47	8.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1096	*Acacia disparrima*	Hickory Wattle	140		140	44	13.0	5.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1097	*Bauhinia galpinii*	Orchid Tree	130		130	41	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1098	*Archontophoenix cunninghamiana*	Bangalow Palm	200		200	63	15.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1099	*Jacaranda mimosifolia*	Jacaranda	280	260, 190	427	134	16.0	9.0	5.1	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1100	*Grevillea robusta*	Silky Oak	250	250	354	111	15.0	8.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1101	*Grevillea robusta*	Silky Oak	470		470	148	19.0	9.0	5.6	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1102	*Syagrus romanzoffiana*	Cocos Palm	200		200	63	12.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1103	*Bauhinia galpinii*	Orchid Tree	270	170	319	100	8.0	8.0	3.8	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1104	*Banksia robur*	Wallum Banksia	330	250, 220	469	147	15.0	7.0	5.6	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1105	*Persea americana*	Avocado	150		150	47	11.0	6.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1106	*Syagrus romanzoffiana*	Cocos Palm	170		170	53	11.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1107	*Syagrus romanzoffiana*	Cocos Palm	200		200	63	12.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1108	*Syagrus romanzoffiana*	Cocos Palm	190		190	60	11.0	5.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1109	*Syagrus romanzoffiana*	Cocos Palm	220		220	69	11.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1110	*Syzygium luehmannii*	Small-leaved Lillipilli	220	170	278	87	12.0	5.0	3.3	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1111	*Araucaria heterophylla*	Norfolk Island Pine	450		450	141	15.0	8.0	5.4	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1112	*Syagrus romanzoffiana*	Cocos Palm	260		260	82	12.0	5.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1113	*Litchi chinensis*	Lychee	280	240	369	116	10.0	11.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1114	*Jacaranda mimosifolia*	Jacaranda	310	300, 280, 230, 200	598	188	14.0	10.0	7.2	2.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1115	*Ficus macrophylla*	Moreton Bay Fig	520		520	163	18.0	14.0	6.2	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1116	*Syagrus romanzoffiana*	Cocos Palm	250		250	79	14.0	6.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1117	*Spathodea companulata*	African Tulip	300	290	417	131	12.0	5.0	5.0	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1118	*Ficus macrophylla*	Moreton Bay Fig	370		370	116	16.0	9.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1119	*Syagrus romanzoffiana*	Cocos Palm	200		200	63	12.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1120	*Cupaniopsis anacardioides*	Tuckeroo	310	300, 280	514	162	14.0	9.0	6.2	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1121	*Corymbia intermedia*	Pink Bloodwood	260		260	82	14.0	5.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1122	*Acacia disparrima*	Hickory Wattle	150		150	47	12.0	5.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1123	*Eucalyptus robusta*	Swamp Mahogany	440	380, 290	650	204	21.0	12.0	7.8	2.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1124	*Corymbia intermedia*	Pink Bloodwood	220		220	69	12.0	5.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1125	*Corymbia citriodora*	Spotted Gum	200		200	63	12.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1126	*Spathodea companulata*	African Tulip	190		190	60	13.0	5.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1127	*Melaleuca quinquenervia*	Broad-leaved Paperbark	200	150, 150, 140, 140, 140	379	119	13.0	7.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1128	*Spathodea companulata*	African Tulip	200		200	63	12.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1129	*Acacia disparrima*	Hickory Wattle	300		300	94	12.0	8.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1130	*Waterhousia floribunda*	Weeping Lillipilli	170	150, 130	261	82	14.0	9.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1131	*Pinus elliotii*	Slash Pine	515		515	162	16.0	8.0	6.2	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1132	*Corymbia citriodora*	Spotted Gum	215		215	68	16.0	5.0	2.6	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
1133	*Grevillea robusta*	Silky Oak	370		370	116	15.0	7.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1134	*Jacaranda mimosifolia*	Jacaranda	235	150, 140, 130	338	106	8.0	5.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1135	*Acacia leiocalyx*	Early Flowering Wattle	135		135	42	6.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1136	*Acacia leiocalyx*	Early Flowering Wattle	110	100	149	47	6.0	2.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1137	*Eucalyptus moluccana*	Gum-topped Box	980	470	1087	341	20.0	13.0	13.0	3.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1138	*Pinus elliotii*	Slash Pine	395		395	124	16.0	6.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1139	*Syagrus romanzoffiana*	Cocos Palm	175		175	55	6.0	3.0	2.1	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1140	*Taxodium distichum*	Swamp Cypress	840		840	264	17.0	13.0	10.1	3.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1141	*Melaleuca quinquenervia*	Broad-leaved Paperbark	170		170	53	8.0	2.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1142	*Melaleuca quinquenervia*	Broad-leaved Paperbark	180	170	248	78	9.0	3.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1143	*Acacia leiocalyx*	Early Flowering Wattle	130		130	41	7.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1144	*Acacia leiocalyx*	Early Flowering Wattle	185		185	58	7.0	2.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1145	*Corymbia citriodora*	Spotted Gum	130		130	41	6.0	1.0	2.0	1.4	Regular	-	-	-	-	-	Typical	Minor	-	-	-	Typical	-	-	-	-	-	-		
1146	*Allocasuarina littoralis*	Black She-oak	325		325	102	17.0	8.0	3.9	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1147	*Allocasuarina littoralis*	Black She-oak	300		300	94	11.0	5.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1148	*Lophostemon suaveolens*	Swamp Box	180		180	57	8.0	3.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1149	*Tristaniopsis laurina*	Water Gum	160	90	184	58	7.0	3.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1150	*Eucalyptus tereticornis*	Forest Red Gum	380		380	119	24.0	11.0	4.6	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1151	*Syagrus romanzoffiana*	Cocos Palm	185		185	58	13.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1152	*Ficus rubiginosa*	Rock Fig	425		425	134	17.0	9.0	5.1	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1153	*Syagrus romanzoffiana*	Cocos Palm	230		230	72	15.0	6.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1154	*Schefflera actinophylla*	Umbrella Tree	120	70	139	44	8.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1155	*Celtis sinensis*	Chinese Celtis	520		520	163	16.0	9.0	6.2	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1156	*Grevillea robusta*	Silky Oak	540	420, 340	764	240	21.0	13.0	9.2	3.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1157	*Spathodea companulata*	African Tulip	265		265	83	18.0	9.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1158	*Archontophoenix cunninghamiana*	Bangalow Palm	180		180	57	16.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1159	*Melaleuca quinquenervia*	Broad-leaved Paperbark	290		290	91	16.0	8.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1160	*Syagrus romanzoffiana*	Cocos Palm	120		120	38	7.0	1.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1161	*Spathodea companulata*	African Tulip	200		200	63	15.0	8.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1162	*Mangifera indica*	Mango	340	300	453	142	13.0	8.0	5.4	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1163	*Syagrus romanzoffiana*	Cocos Palm	155		155	49	8.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1164	*Liquidambar styraciflua*	Liquidambar	1015		1015	319	21.0	16.0	12.2	3.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1165	*Ravenala madagascariensis*	Travellers Palm	130		130	41	8.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1166	*Ficus rubiginosa*	Rock Fig	560		560	176	16.0	10.0	6.7	2.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1167	*Macadamia integrifolia*	Macadamia Nut	140	100, 100	199	63	7.0	3.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1168	*Syagrus romanzoffiana*	Cocos Palm	175		175	55	7.0	3.0	2.1	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1169	*Syagrus romanzoffiana*	Cocos Palm	210		210	66	7.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1170	*Araucaria cunninghamii*	Hoop Pine	345		345	108	14.0	7.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1171	*Syagrus romanzoffiana*	Cocos Palm	200		200	63	8.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1172	*Syagrus romanzoffiana*	Cocos Palm	125		125	39	7.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1173	*Syagrus romanzoffiana*	Cocos Palm	175		175	55	8.0	4.0	2.1	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1174	*Syagrus romanzoffiana*	Cocos Palm	175		175	55	8.0	4.0	2.1	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1175	*Araucaria cunninghamii*	Hoop Pine	235		235	74	12.0	3.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1176	*Syagrus romanzoffiana*	Cocos Palm	225		225	71	8.0	4.0	2.7	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1177	*Syagrus romanzoffiana*	Cocos Palm	205		205	64	9.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1178	*Syagrus romanzoffiana*	Cocos Palm	245		245	77	9.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1179	*Syagrus romanzoffiana*	Cocos Palm	220		220	69	9.0	4.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1180	*Macadamia integrifolia*	Macadamia Nut	280		280	88	7.0	4.0	3.4	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1181	*Syagrus romanzoffiana*	Cocos Palm	205		205	64	9.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1182	*Syagrus romanzoffiana*	Cocos Palm	235		235	74	9.0	4.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1183	*Syagrus romanzoffiana*	Cocos Palm	255		255	80	9.0	4.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1184	*Grevillea robusta*	Silky Oak	285		285	90	11.0	6.0	3.4	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1185	*Libidibia ferrea*	Leopard Tree	240		240	75	9.0	6.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1186	**DEAD/STAG**		495		495	156	13.0	6.0	5.9	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	Yes	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
1187	*Syagrus romanzoffiana*	Cocos Palm	220		220	69	9.0	4.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1188	*Syagrus romanzoffiana*	Cocos Palm	210		210	66	9.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1189	*Syagrus romanzoffiana*	Cocos Palm	205		205	64	9.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1190	*Citharexylum spinosum*	Fiddlewood	210	195	287	90	7.0	5.0	3.4	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1191	*Acacia disparrima*	Hickory Wattle	410		410	129	14.0	7.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1192	*Syagrus romanzoffiana*	Cocos Palm	195		195	61	9.0	4.0	2.3	1.7	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
1193	*Citharexylum spinosum*	Fiddlewood	250	210, 120	348	109	11.0	7.0	4.2	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1194	*Citharexylum spinosum*	Fiddlewood	390	160	422	132	13.0	7.0	5.1	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1195	*Citharexylum spinosum*	Fiddlewood	250		250	79	13.0	7.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1196	*Grevillea robusta*	Silky Oak	230	190	298	94	13.0	4.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1197	*Libidibia ferrea*	Leopard Tree	195		195	61	6.0	4.0	2.3	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1198	*Macadamia integrifolia*	Macadamia Nut	140	120, 120	220	69	6.0	3.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1199	*Araucaria cunninghamii*	Hoop Pine	235		235	74	7.0	3.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1200	*Libidibia ferrea*	Leopard Tree	160	125	203	64	6.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1201	*Macadamia integrifolia*	Macadamia Nut	170	125, 110, 110	262	82	6.0	3.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1202	*Cupaniopsis anacardioides*	Tuckeroo	290		290	91	10.0	6.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1203	*Libidibia ferrea*	Leopard Tree	310	170, 160	388	122	9.0	6.0	4.7	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1204	*Acacia disparrima*	Hickory Wattle	150	120	192	60	9.0	5.0	2.3	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1205	*Leucaena leucocephala*	Leucaena	130		130	41	6.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	Minor	-	-	-	Typical	-	-	-	-	-	-		
1206	*Archontophoenix cunninghamiana*	Bangalow Palm	140		140	44	10.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1207	*Grevillea robusta*	Silky Oak	295		295	93	15.0	8.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1208	*Jacaranda mimosifolia*	Jacaranda	340		340	107	13.0	7.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1209	*Acacia leiocalyx*	Early Flowering Wattle	110		110	35	9.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1210	*Syagrus romanzoffiana*	Cocos Palm	215		215	68	6.0	4.0	2.6	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1211	*Syagrus romanzoffiana*	Cocos Palm	155		155	49	8.0	4.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1212	*Syagrus romanzoffiana*	Cocos Palm	175		175	55	7.0	4.0	2.1	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1213	*Syagrus romanzoffiana*	Cocos Palm	170		170	53	7.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1214	*Syagrus romanzoffiana*	Cocos Palm	200		200	63	6.0	3.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1215	*Syagrus romanzoffiana*	Cocos Palm	190		190	60	6.0	3.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1216	*Ficus benjamina*	Weeping Fig	160	140, 130	249	78	8.0	6.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1217	*Acacia disparrima*	Hickory Wattle	200	125	236	74	8.0	5.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1218	*Syagrus romanzoffiana*	Cocos Palm	185		185	58	8.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1219	*Syagrus romanzoffiana*	Cocos Palm	185		185	58	7.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1220	*Acacia disparrima*	Hickory Wattle	190		190	60	7.0	3.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1221	*Melaleuca bracteata*	Black Tea-tree	195		195	61	3.0	1.0	2.3	1.7	Regular	-	-	-	-	Lopped	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1222	*Acacia disparrima*	Hickory Wattle	150		150	47	6.0	2.0	2.0	1.5	Regular	-	-	-	-	Lopped	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1223	*Syagrus romanzoffiana*	Cocos Palm	195		195	61	8.0	4.0	2.3	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1224	*Melaleuca bracteata*	Black Tea-tree	140		140	44	7.0	4.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1225	*Acacia leiocalyx*	Early Flowering Wattle	110		110	35	8.0	3.0	2.0	1.3	Regular	-	-	Die-back	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1226	*Acacia concurrens*	Black Wattle	165		165	52	6.0	3.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1227	*Syagrus romanzoffiana*	Cocos Palm	210		210	66	7.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1228	*Syagrus romanzoffiana*	Cocos Palm	245		245	77	7.0	4.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1229	*Syagrus romanzoffiana*	Cocos Palm	225		225	71	8.0	4.0	2.7	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1230	*Jacaranda mimosifolia*	Jacaranda	220	220, 110	330	104	7.0	6.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1231	*Syagrus romanzoffiana*	Cocos Palm	235		235	74	7.0	4.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	Native	-	-	Typical	-	-	-	-	-	-		
1232	*Syagrus romanzoffiana*	Cocos Palm	190		190	60	8.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1233	*Syagrus romanzoffiana*	Cocos Palm	220		220	69	7.0	4.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1234	*Acacia disparrima*	Hickory Wattle	120		120	38	7.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1235	*Spathodea companulata*	African Tulip	175		175	55	9.0	5.0	2.1	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1236	*Araucaria cunninghamii*	Hoop Pine	430		430	135	13.0	7.0	5.2	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1237	*Syagrus romanzoffiana*	Cocos Palm	190		190	60	7.0	5.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1238	*Acacia leiocalyx*	Early Flowering Wattle	100		100	31	5.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1239	*Acacia leiocalyx*	Early Flowering Wattle	100		100	31	5.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1240	*Syagrus romanzoffiana*	Cocos Palm	170		170	53	5.0	2.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
1241	*Jacaranda mimosifolia*	Jacaranda	240		240	75	5.0	2.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1242	*Syagrus romanzoffiana*	Cocos Palm	200		200	63	5.0	2.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1243	*Syagrus romanzoffiana*	Cocos Palm	155		155	49	6.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1244	*Acacia leiocalyx*	Early Flowering Wattle	100		100	31	6.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1245	*Melaleuca bracteata*	Black Tea-tree	220	210	304	96	7.0	4.0	3.6	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1246	*Grevillea robusta*	Silky Oak	155		155	49	7.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1247	*Araucaria cunninghamii*	Hoop Pine	240		240	75	16.0	8.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1248	*Acacia leiocalyx*	Early Flowering Wattle	100		100	31	6.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1249	*Syagrus romanzoffiana*	Cocos Palm	210		210	66	8.0	4.0	2.5	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1250	*Cinnamomum camphora*	Camphor Laurel	220	210, 215, 170	409	129	14.0	8.0	4.9	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1251	*Citharexylum spinosum*	Fiddlewood	150	130, 140	243	76	7.0	4.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1252	*Acacia disparrima*	Hickory Wattle	125		125	39	5.0	1.0	2.0	1.4	Regular	-	-	-	-	-	Typical	Minor	-	-	-	Typical	-	-	-	-	-	-		
1253	*Syagrus romanzoffiana*	Cocos Palm	165		165	52	8.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1254	*Acacia leiocalyx*	Early Flowering Wattle	100		100	31	5.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1255	*Citharexylum spinosum*	Fiddlewood	130		130	41	5.0	3.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1256	*Araucaria cunninghamii*	Hoop Pine	465		465	146	19.0	8.0	5.6	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1257	*Acacia disparrima*	Hickory Wattle	120		120	38	13.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1258	*Acacia disparrima*	Hickory Wattle	230		230	72	12.0	6.0	2.8	1.8	Regular	-	-	-	-	-	Typical	Minor	-	-	-	Typical	-	-	-	-	-	-		
1259	*Schefflera actinophylla*	Umbrella Tree	180	140, 110, 110	276	87	8.0	5.0	3.3	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1260	*Dillenia indica*	Elephant Apple	140	130	191	60	6.0	4.0	2.3	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1261	*Phoenix dactylifera*	Date Palm	320		320	101	3.0	3.0	3.8	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1262	*Acacia leiocalyx*	Early Flowering Wattle	125		125	39	8.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1263	*Acacia leiocalyx*	Early Flowering Wattle	120		120	38	6.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1264	*Citharexylum spinosum*	Fiddlewood	115		115	36	6.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1265	*Acacia leiocalyx*	Early Flowering Wattle	130		130	41	6.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1266	*Acacia leiocalyx*	Early Flowering Wattle	100		100	31	6.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1267	*Syagrus romanzoffiana*	Cocos Palm	215		215	68	8.0	4.0	2.6	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1268	*Syagrus romanzoffiana*	Cocos Palm	220		220	69	7.0	4.0	2.6	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1269	*Syagrus romanzoffiana*	Cocos Palm	200		200	63	8.0	4.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1270	*Acacia disparrima*	Hickory Wattle	130	120	177	56	8.0	5.0	2.1	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1271	*Syagrus romanzoffiana*	Cocos Palm	190		190	60	6.0	4.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1272	*Syagrus romanzoffiana*	Cocos Palm	180		180	57	8.0	6.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1273	*Citharexylum spinosum*	Fiddlewood	140	100, 90	194	61	5.0	3.0	2.3	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1274	*Acacia disparrima*	Hickory Wattle	240		240	75	11.0	5.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1275	*Citharexylum spinosum*	Fiddlewood	180	150	234	74	6.0	5.0	2.8	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1276	*Acacia disparrima*	Hickory Wattle	155		155	49	8.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1277	*Acacia disparrima*	Hickory Wattle	290	365	466	146	13.0	7.0	5.6	2.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1278	*Citharexylum spinosum*	Fiddlewood	210	155	261	82	12.0	6.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1279	*Citharexylum spinosum*	Fiddlewood	255	170, 150, 140	369	116	12.0	6.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1280	*Grevillea robusta*	Silky Oak	190		190	60	17.0	10.0	2.3	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1281	*Citharexylum spinosum*	Fiddlewood	980		980	308	16.0	9.0	11.8	3.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1282	*Dillenia indica*	Elephant Apple	180	180, 145, 120	317	99	7.0	4.0	3.8	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1283	*Araucaria cunninghamii*	Hoop Pine	515		515	162	19.0	9.0	6.2	2.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1284	*Grevillea robusta*	Silky Oak	335		335	105	18.0	9.0	4.0	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1285	*Dillenia indica*	Elephant Apple	430		430	135	8.0	6.0	5.2	2.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1286	*Delonix regia*	Poinciana	240		240	75	6.0	3.0	2.9	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1287	*Erythrina sykesii*	Common Coral Tree	160		160	50	5.0	2.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1288	*Acacia leiocalyx*	Early Flowering Wattle	110		110	35	7.0	3.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1289	*Archontophoenix cunninghamiana*	Bangalow Palm	215		215	68	7.0	4.0	2.6	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1290	*Grevillea robusta*	Silky Oak	365		365	115	16.0	7.0	4.4	2.2	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1291	*Grevillea robusta*	Silky Oak	265		265	83	16.0	9.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1292	*Archontophoenix cunninghamiana*	Bangalow Palm	145		145	46	7.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1293	*Archontophoenix cunninghamiana*	Bangalow Palm	185		185	58	9.0	5.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1294	*Archontophoenix cunninghamiana*	Bangalow Palm	180		180	57	8.0	4.0	2.2	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Specimen Details											Canopy Condition Details							Trunk Condition Details					Fauna Details and Habitat Value								
Tree ID	Botanical Name	Common Name	Trunk DBH (mm)	Additional Trunks DBH (mm)	Total DBH (mm) [AS 4970-2009]	Trunk Circumference (cm) [AS 4970-2009]	Height (m)	Spread (m)	Tree Protection Zone (m)	Structural Root Zone (m)	Canopy Form	Spreading	Thinning	Die-Back	Epicormic Growth	Lopped	Canopy Health	Leaning	Vines	Trunk Damage	Fire Damage	Trunk Health	Scats	Scratches	Hollows	Nest	Termite Nest	Habitat Value	Retention	Additional Notes
1295	*Phoenix dactylifera*	Date Palm	340		340	107	6.0	5.0	4.1	2.1	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1296	*Dillenia indica*	Elephant Apple	165	135	213	67	5.0	3.0	2.6	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1297	*Acacia fimbriata*	Brisbane Wattle	160		160	50	5.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1298	*Acacia disparrima*	Hickory Wattle	120		120	38	6.0	2.0	2.0	1.4	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1299	*Corymbia intermedia*	Pink Bloodwood	100		100	31	6.0	2.0	2.0	1.3	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1300	*Grevillea robusta*	Silky Oak	255		255	80	13.0	5.0	3.1	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1301	*Archontophoenix cunninghamiana*	Bangalow Palm	160	155	223	70	8.0	5.0	2.7	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1302	*Grevillea robusta*	Silky Oak	290		290	91	13.0	7.0	3.5	2.0	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1303	*Araucaria cunninghamii*	Hoop Pine	145		145	46	5.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1304	*Syagrus romanzoffiana*	Cocos Palm	250		250	79	8.0	5.0	3.0	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1305	*Citharexylum spinosum*	Fiddlewood	155	150	216	68	6.0	4.0	2.6	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1306	*Citharexylum spinosum*	Fiddlewood	140	135	194	61	5.0	3.0	2.3	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1307	*Libidibia ferrea*	Leopard Tree	145		145	46	6.0	3.0	2.0	1.5	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1308	*Archontophoenix cunninghamiana*	Bangalow Palm	165		165	52	8.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1309	*Syagrus romanzoffiana*	Cocos Palm	225		225	71	11.0	6.0	2.7	1.8	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1310	*Archontophoenix cunninghamiana*	Bangalow Palm	165		165	52	9.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1311	*Archontophoenix cunninghamiana*	Bangalow Palm	200		200	63	8.0	3.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1312	*Archontophoenix cunninghamiana*	Bangalow Palm	200		200	63	13.0	5.0	2.4	1.7	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1313	*Acacia disparrima*	Hickory Wattle	275		275	86	15.0	8.0	3.3	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1314	*Archontophoenix cunninghamiana*	Bangalow Palm	165		165	52	15.0	4.0	2.0	1.6	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		
1315	*Planted Native spp.*	Planted Native spp	265		265	83	14.0	7.0	3.2	1.9	Regular	-	-	-	-	-	Typical	-	-	-	-	Typical	-	-	-	-	-	-		

Appendix F

Proposed Development Layout

CONCEPT PLAN



NOT TO BE USED FOR ENGINEERING DESIGN OR CONSTRUCTION

NOTES

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

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

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

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

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PROJECTION - GDA2020 MGA56
SUBJECT BOUNDARIES PLOTTED FROM RECORDS

LEGEND

- Site Boundary
- Major Contour (1.0m interval)
- Minor Contour (0.5m interval)
- Vegetation Management
- Temporary Turnaround Lot
- Stage Boundary
- 1 Stage No.

DEVELOPMENT STATISTICS			
RESIDENTIAL ALLOTMENTS	**No. Lots**	**%**	**Net Area**
10.5m - 12.49m Frontage	54	36.2%	1.953 ha
12.5m - 13.99m Frontage	52	34.9%	2.059 ha
14m - 14.99m Frontage	14	9.4%	0.623 ha
> 15m Frontage	18	12.1%	0.918 ha
Irregular Frontage	11	7.4%	0.640 ha
Total Residential Allotments	**149**	**100.0%**	**6.193 ha**
Land Budget	**Area (Ha)**	**%**	
Area of Subject Site / Stage	15.252 ha	—	
Net Residential Area (no roads)	6.193 ha	40.6%	
Detention / Drainage	0.923 ha	6.1%	
Local Park	1.055 ha	6.9%	
Environmental Open Space	4.574 ha	30.0%	
Pedestrian Links	0.035 ha	0.2%	
Road Widening	0.025 ha	0.2%	
Road Areas	2.447 ha	16.0%	
Total	**15.252 ha**	**100.0%**	

RP DESCRIPTION: Lot 185 on RP173727, Lot 186 on RP173728, Lot 57 on SP214370 & Lot 56 on RP162858, Lot 58 on SP191940

SCALE @A1 1:1250 @A3 1:2500 - LENGTHS ARE IN METRES

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

saunders havill group

NORFOLK ESTATES PTY LTD ATF SOLANDER INVESTMENT UNIT TRUST

41 - 53 COURTNEY DRIVE , UPPER COOMERA ● 14/11/2024 ● 11694 P 05 Rev G - CON 01

Transport Engineering Report

41-53 Courtney Drive, Upper Coomera

On Behalf of Norfolk Estates Pty Ltd. C/- QM Properties



About TTM

For 40 years, we've been at the centre of the Australian development and infrastructure industry. Our unique combination of acoustics, data, traffic and waste services is fundamental to the success of any architectural or development project.

We have over 60 staff, with an unrivalled depth of experience. Our industry knowledge, technical expertise and commercial insight allow us to deliver an exceptional and reliable service.

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Data Acoustics Transport Waste Design

Revision Record

No.	Author	Reviewed/Approved	Description	Date
1.	I. Ahn	D. Watkins (RPEQ #23854)	DA Report	03/10/2024
2.				
3.				
4.				

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1. Introduction

1.1. Purpose

TTM Consulting Pty Ltd (TTM, now Colliers) has been engaged by Norfolk Estates Pty. Ltd C/- QM Properties to prepare a Transport Engineering Report investigating a proposed Residential development involving a Reconfiguration of Lot (ROL) at 41-53 Courtney Drive, Upper Coomera (subject site). It is understood this report will accompany a Development Application to be lodged with the City of Gold Coast Council ('Council').

1.2. Background

TTM have undertaken background research on the site and note the recent Development Application for the adjacent site at 202 Baileys Mountain Road, Upper Coomera with property description Lot 58 on SP191940. This application has been submitted as a townhouse-type residential development also involving a ROL which shares the access with the current site, through Baileys Mountain Road.

1.3. Scope

The scope of the transport aspects investigated includes:

- Reviewing the prevailing traffic and transport conditions surrounding the site.
- Assessing the access configuration to provide efficient and safe manoeuvring between the site and the public road network for cars, service vehicles, cyclists and pedestrians.
- Identifying the service vehicle needs for the site
- Assessing the internal service vehicle layouts to provide efficiency and safety for on-site service vehicle operation
- Reviewing access to a suitable level of public and active transport provisions.
- Internal road hierarchy to cater for lot access, vehicle design speeds and road user amenity requirements
- Identification of likely traffic volumes and traffic distribution from the development.
- Identification of likely traffic impacts of development on the surrounding road network.

The development plans have been assessed against the following guidelines and planning documents:

- City of Gold Coast (City Plan 2024), specifically:
  - Transport code
  - Driveways and vehicle crossings code

  - Reconfiguration Of Lot Code
  - Solid Waste Management Code
  - Transport and Traffic Facilities Planning Scheme Policy
- Australian Standards for Parking Facilities, specifically:
  - Part 1: Off-street car parking (AS2890.1:2004)
  - Part 2: Off-street commercial vehicle facilities (AS2890.2:2018)
- Department of Transport and Main Roads 'Guide to Traffic Impact Assessment' (GTIA)
- Transport for NSW (TfNSW) 'Guide to Transport Impact Assessment' (2024)

2. Site Location

The subject site is located at 41 - 53 Courtney Drive, Upper Coomera, near the Courtney Drive / Baileys Mountain Road intersection, and consists of Lot 183 on RP156422, Lot 185 on RP173727, Lot 186 on RP173728, Lot 56 on RP162858 and Lot 57 on SP214370. The site has road frontages to Courtney Drive and Baileys Mountain Road as shown in Figure 2-1 and Figure 2-2.

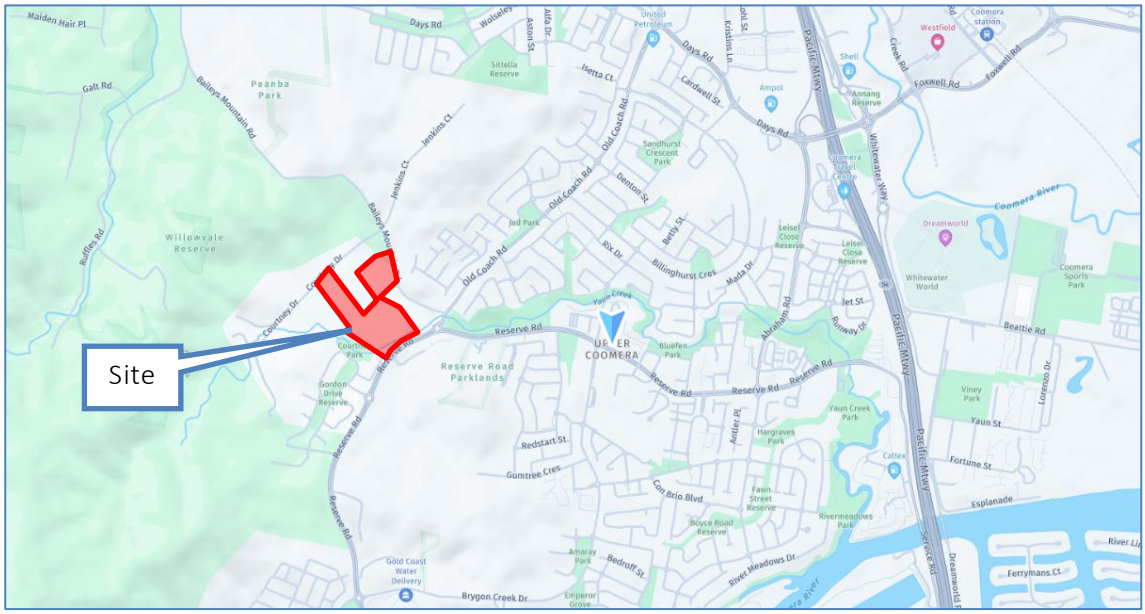


Figure 2-1: Site Location (Greater Context)

Source: NearMap (2024)



Figure 2-2: Site Location (Immediate Context)

Source: NearMap (2024)

The site is currently occupied by single dwelling units on two (2) of the five (5) lots.

Key site characteristics from a planning perspective include:

- 153,140m² combined site area
- All sites in the “emerging community” zoning
- Located within the Upper Coomera precinct

3. Site Travel Environment

3.1. Public and Active Transport Provisions

3.1.1. Train Services

There are no train services located in close proximity to the subject site. The nearest train station is Coomera Train Station, located approximately 4.4km east of the subject site.

3.1.2. Bus Services

There are no bus stops located within close proximity to the subject site. The nearest bus stops are located on Reserve Road ~1.4km to the south and Old Coach Road ~1.1km to the east of the subject site. These bus stops are serviced by Route 727 (Reserve Road) and 725 / 727 (Old Coach Road) respectively.

Bus Route 725 runs from Helensvale Station to Coomera Station via Discovery Drive, Helensvale Drive and Heathwood Drive. Bus Route 727 runs from Helensvale Station to Coomera Station via Gaven Arterial Road and Maudsland Road. Both services run hourly all days of the week.

3.1.3. Pedestrians and Bicyclists

The subject site is located close to the on-road bikeway along Reserve Road to the south. There are no existing pedestrian footpaths on either side of Courtney Drive or Baileys Mountain Drive. This is a walking and cycle route running along Reserve Road and Old Coach Road. Further details regarding existing pedestrian walkways and bikeways are outlined in Figure 3-1.

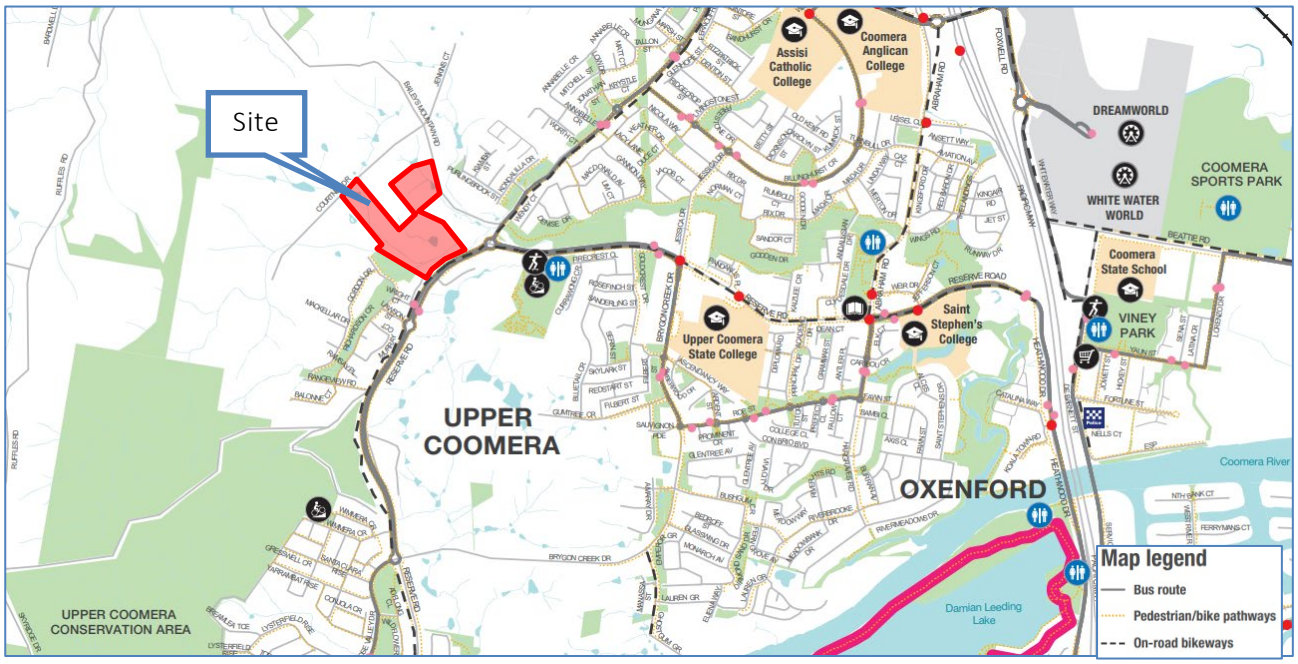


Figure 3-1: Surrounding Bicycle Provisions

Source: City of Gold Coast – Coomera, Hope Island & surrounds Walking & Cycling Maps

3.2. The Road Network

3.2.1. Road Hierarchy

The hierarchy and characteristics of roads in the immediate vicinity of the site are shown in Table 3-1.

Table 3-1: Surrounding Road Hierarchy

Road	Speed Limit	Road Configuration			Classification
		Reserve Width	Carriageway Width	Lane Configuration	
Baileys Mountain Road	60km/h	20m	5.7m	2 traffic lanes, divided, sealed road.	Distributor
Old Coach Road	60km/h	33 – 43m	11.5m	2 traffic lanes, divided, sealed road.	Arterial
Reserve Road	60km/h	43 – 45m	25.0m	4 traffic lanes, sealed road separated by central median island.	Arterial
Courtney Drive	50km/h[1]	20m	6.0m	2 traffic lanes, undivided, sealed road.	Residential Access

Note: [1]Default speed limit on unsigned roads in built up areas in Queensland.

The intersection of Courtney Drive / Baileys Mountain Road and Old Coach Road / Baileys Mountain Road are priority-controlled intersections. The intersection between Old Coach Road and Reserve Road is in the form of a roundabout.

3.3. Transport Planning

TTM understand that Council do have plans to upgrade and signalise the intersection of Baileys Mountain Road and Old Coach Road. It is understood the extent of the road upgrade extends beyond the subject site to the west. A concept plan of the planned upgrades, drafted by Burchills Engineering Solutions Drawing Number "27144-P304 Revision A" (see **Appendix C**).

Furthermore, it is understood that a new road hierarchy overlay has been introduced to the Gold Coast City Plan, identifying land dedication required to support the future road widening. The dedication will be introduced on a portion of the land at Baileys Mountain Road, depicted in Figure 3-2 overleaf.

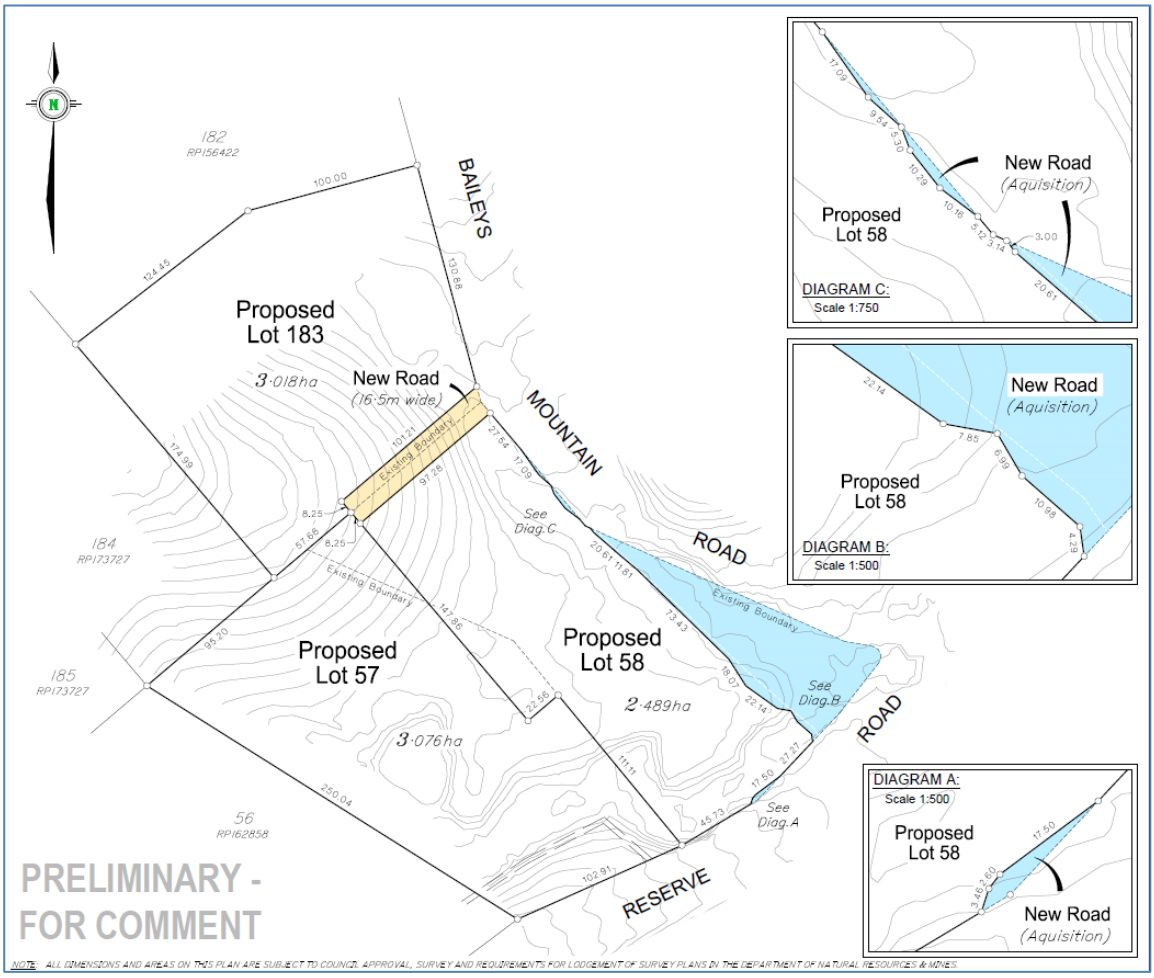


Figure 3-2: Land Dedication

Source: Focus On Surveying (2024)

Courtney Drive has currently been constructed with the following: 20.0m wide road reserve, 5.5m wide carriageway with approximately 7.5m and 7.0m wide verges. The road currently services approximately 14 lots and will service an anticipated 51 lots upon completion of the development proposal, which would result in a generation of 510 vpd for the proposed development. Given this, the road is required to be upgraded to the CoGC "residential access street" standard for 0 – 1,000 vpd. As part of the carriageway widening to 7.5m, outlined in Figure 3-3 overleaf, there will be a realignment of a portion of Courtney Drive at the Courtney Drive / Baileys Mountain Road intersection.

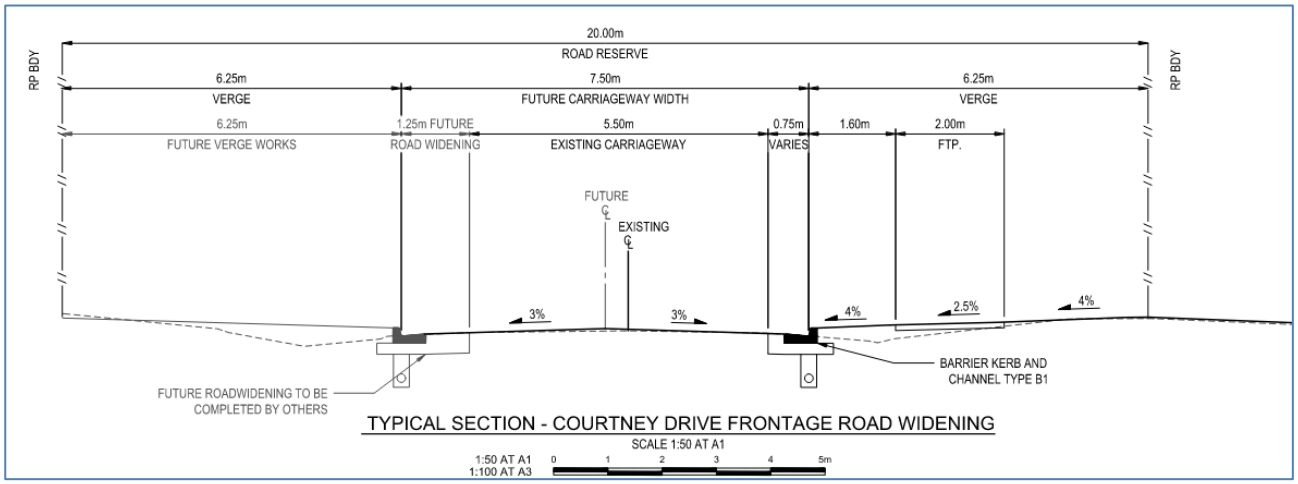


Figure 3-3: Courtney Drive Intended Road Upgrade

Source: OSKA Consulting Group

TTM have also consulted with the Department of Transport and Main Roads' (DTMR's) QTRIP interactive mapping and road infrastructure planning document, as well as Council's LGIP. TTM have identified that there are no other road works in the site vicinity that may have an impact on the proposed development.

4. The Proposed Development

4.1. Development Profile

The development proposal will consist of a total of 149 residential lots with varying frontage widths (between 10.5m - greater than 15.0m).

It has been confirmed that the majority of the lots will consist of 4-bedroom single dwellings, with anticipation of a minor proportion of lots containing 3-bedroom (or less) single dwellings.

A copy of the development plans, prepared by Saunders Havill Group, is included in **Appendix A**.

4.2. Staging & Connectivity

The proposed development is to be constructed into five distinct stages, starting from the right at Baileys Mountain Road and finishing with the construction of the 4 rear lots. The staging of the proposed development has been represented in Figure 5-2 overleaf.

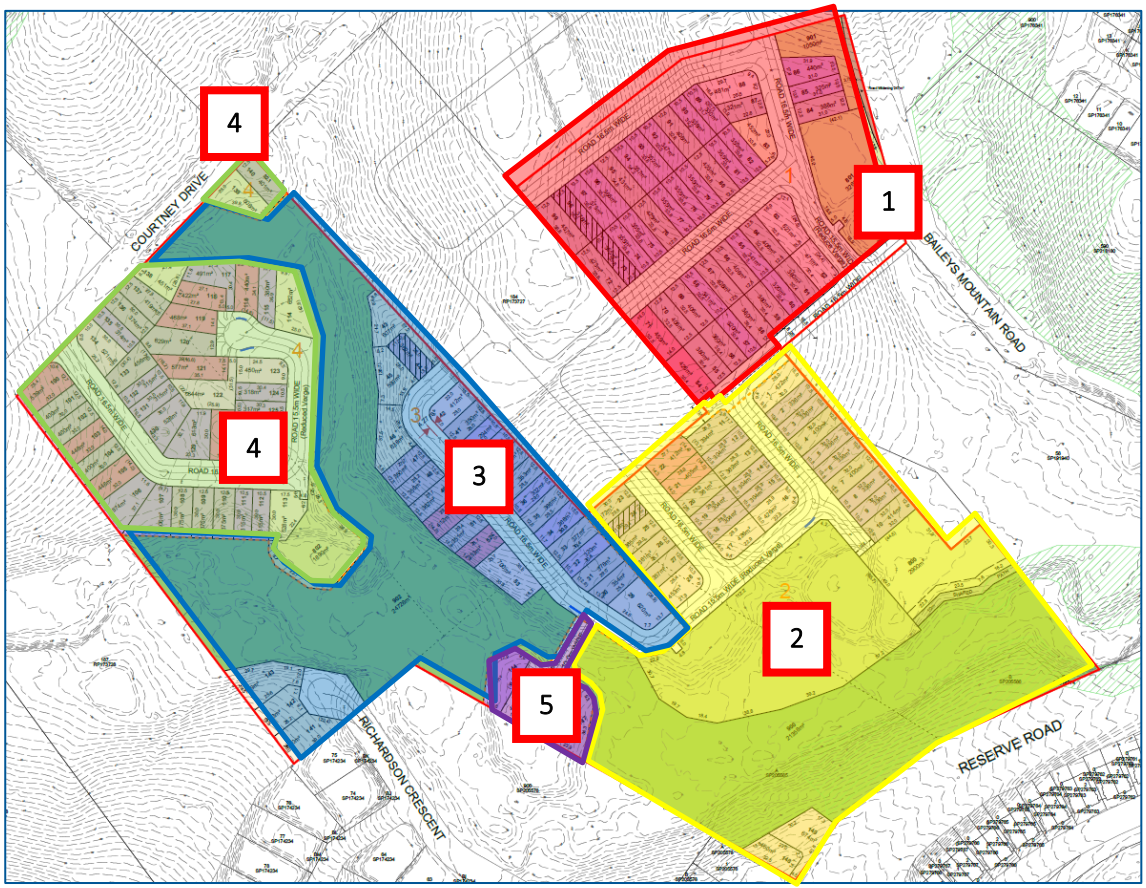


Figure 4-1: Proposed Development Staging

The layout of the proposed development has been designed so that continuity will be achieved when acquiring the land for lot 182 on RP156422 and lot 184 on RP173727. Currently, there are four (4) dead-end roads that

will connect to the internal road of the future residential subdivision. The development plans indicate that there will be one (1) empty lot at the penultimate lot of each dead-end road to facilitate the turnaround of service and refuse collection vehicles. These lots will feature a 5.5m wide crossover and driveway, with the driveway reaching at least 10.5m past the property boundary.

4.3. Parking

The development plan includes 298 car parking spaces, with the typical provision of a double garage as part of the dwelling house.

Further details regarding the proposed car parking provisions are included in Section 6.

4.4. Access

There are two main accesses that will be constructed to support the development:

- Eastern access (Site Access 1)
  - Provided via the construction of a 16.5m road reserve up to Baileys Mountain Road.
  - This access will accommodate both cars and service vehicles and allow all movements.
- Northern access (Site Access 2)
  - Provided via the construction of a new 16.5m road reserve up to at Courtney Drive.
  - This access will accommodate both cars and service vehicles and allow all movements.

Access to lots not serviced by the above road connections will be through existing site accesses or in the case of Lots 139 - 140, will have access provided directly from Courtney Drive.

Further details regarding the proposed access arrangements are included in Section 7.

4.5. Servicing

The proposed development will allow for servicing and refuse collection to the frontage of each lot to occur at the roadway kerbside in a safe and efficient manner.

Further details regarding the proposed servicing arrangements are included in Section 8.

5. Internal Road Network

5.1. Road Hierarchy

The requirements with regards to planning and design of the internal road layout is given in the Infrastructure PSP. Based on the scale of the proposed development and external access intersection points, the internal road network will generally consist of the "residential street" classification, with access streets (0 – 750 vehicles per day - vpd) and collector streets (750 – 3,000 vpd) subcategories, according to the Gold Coast City Council Standard Drawing "05-02-001." Based on a daily traffic volume generate rate of 10 vpd per lot, the lots encapsulated by the Baileys Mountain Road access are classified as "residential collector street" and the Courtney Drive access as "residential access street."

The key design criteria for each road classification, as outlined in Figure 5-1 entails the following:

- 16.5m wide road reserve
- 4.5m wide verges either side
- 7.5m wide carriageway with 3.0% crossfall either way

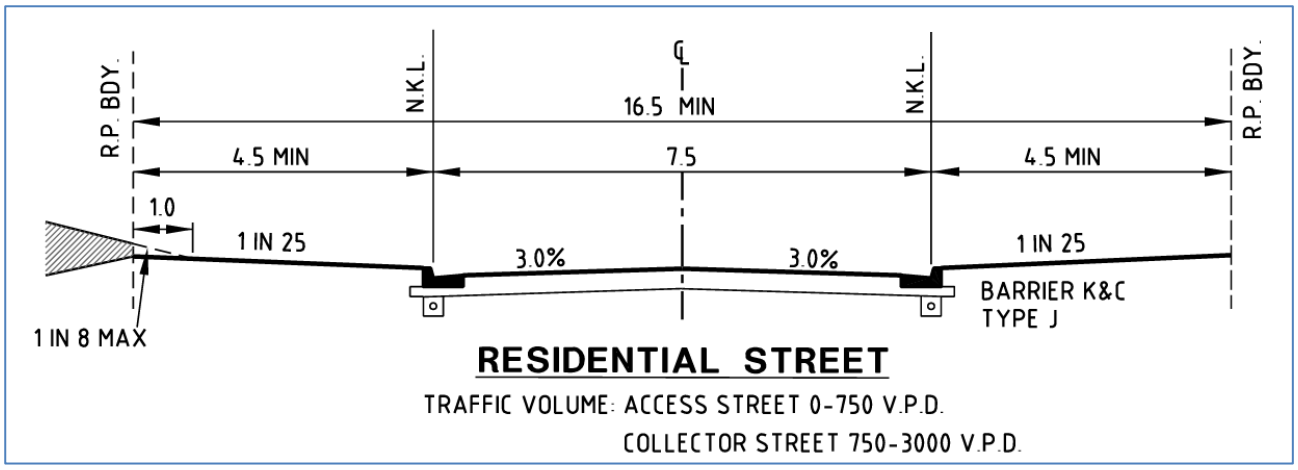


Figure 5-1: Residential Street Cross Section
Source: City of Gold Coast (2005)

This will be the case for the majority of road reserve for the subject site. However, due to the arrangement of the site layout, the development proposes the implementation of a reduced road reserve for extension into Lots 54 to 55 and Lots 7 to 10, which can both be classified as "rural access street." The road reserve at these two locations features an overall width of 12.5m: comprising of a 5.5m wide carriageway and 3.5m verges either side. The City of Gold Coast Standard Drawing "05-02-005" indicates a minimum road width of 4.5m and 3.0m verge width (without footpath). Where the road reserve is situated along an open parks & reserve or detention / drainage area, a reduced verge width of 3.2m has been applied.

Given this, TTM determines that a compliant design has been adhered to in the extension of the road reserves to service the necessary lots.

Additionally, a 1.5m wide footpath on one side of the carriageway with a maximum grade of 2.5% has been included into the design, providing accessibility and walkability for pedestrians. It is generally expected that bicyclists will share the internal road with vehicle users, noting that the overall low-speed environment is capped at 50km/h, low expected traffic volumes and with good sight visibility. Overall, the internal provision for footpath and linkages will provide a permeable and walkable network, aligning with requirements of good connection to the external wider pedestrian network.

Temporary Road

For Lots 88 to 99, a reduced 3/4 carriageway of 5.75m width is intended to be constructed as an interim solution, where a temporary batter of 1:2 slope will be implemented at the northern road portion, as represented in Figure 5-2.

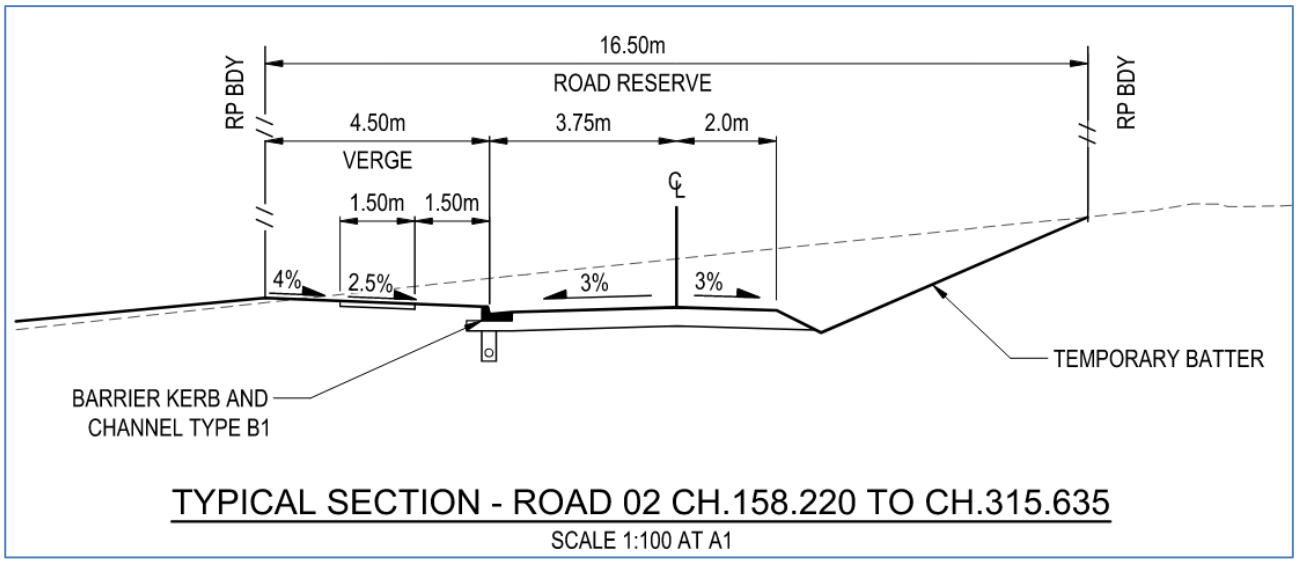


Figure 5-2: Proposed 3/4 Road
Source: OSKA Consulting Group

Ultimately, it is intended that the temporary batter be removed, and roadworks be undertaken to construct the road to the CoGC "residential collector street" standard. On this basis, TTM considers the temporary implementation of the 3/4 road as suitable to meet the needs of the proposed development.

Based on a review of the site plans, the internal road has generally been designed to CoGC standards.

5.2. Intersection Locations and Treatments

TTM have reviewed the intersections of the internal road network to Queensland Streets standards for road design. The development plans illustrate that T-intersections within the internal road network will be priority-controlled.

The Queensland Streets states the following for desirable minimum intersection spacings as:

- Minimum separation of 60m between intersections on the same side of the road and 40m between intersections on opposite sides, for all access street & collector street intersections.
- Minimum separation of 100m between intersections on the same side of the road and 60m between intersections on opposite sides, for all neighbourhood road intersections.

Assessing for the subject site, the minimum intersection separation distance for access street & collector streets is 70m and for two collector streets is 70m (opposite sides). Hence, the intersection spacing is generally in line with Queensland Street guidelines.

5.3. Turnaround Treatments

The subdivision layout has been generally designed to maximise circulation within the internal roads and to minimise the need for any formal turnaround treatments. Notwithstanding, there are four (4) locations that will have temporary turn-around arrangements - being Lots 24, 44, 73 and 98. Swept paths **(Attachment B – 24BRT0559_SK02 - SK03)** indicate that the design vehicle of CoGC 9.8m RCV will generally not have any issues making a reverse in / forward out manoeuvre using the designated turnaround areas.

The inclusion of a turnaround area within an empty lot has been instated as an interim solution to facilitate service and refuse vehicles. Though, it is also considered appropriate to provide a cul-de-sac or T-head treatment at the end of each (temporary) dead-end road.

5.4. Crossover Locations

The specific locations of driveways will be resolved as required as part of Operations Works to minimise conflicts with adjacent road features. The City of Gold Coast require at least 6m distance from the tangent points of where the kerb return finishes at an intersection. If a 6m offset is not achievable, Australian Standards (AS)2890.1:2004 dictates that a reduced offset is allowable, given that as much of the 6m is provided while still in line with the CoGC standards for crossover separation.

5.5. Rear Access Lots

Lots 144 to 147 encapsulated by the Baileys Mountain Road access are rear access lots accessible through the main internal road network. Although the access easement provides access to four (4) lots instead of two (2), the CoGC City Plan states that as Performance Outcome 3:

"Design and management arrangements of access strips and easements:

(a) Provide safe and efficient access for vehicles and pedestrians and:
- *(i) Are of an adequate width to facilitate the intended function;*
- *(ii) Are constructed to an appropriate standard; and*
- *(iii) Do not result in unreasonable detriment or nuisance to an adjacent premises*

(b) Allow for effective and reasonable ongoing maintenance."

Access to these lots will be provided through the provision of a 5.0m wide driveway within a 10.0m wide easement. This is compliant against Council's 'Reconfiguring a lot code,' where Table 9.4.8-2 outlines a minimum easement width of 6m for rural residential uses. Furthermore, the there are no residential developments adjacent along the length of the easement access.

Refuse collection will occur at a dedicated bin pad location along the internal public road before the easement access, in lieu of a 2m x 2m truncation at the lot boundary. For servicing and delivery requirements to the rear lots, it is anticipated that vehicles up to an MRV will access these lots. Swept paths (Attachment B – 24BRT0559_SK05) indicate that the manoeuvre into / out of the rear lots is possible, with turnaround via the T-head at the end of the driveway.

On the basis of the above, TTM determines that all conditions of Performance Outcome 3 have been sufficiently met.

6. Parking Arrangements

6.1. Car Parking Requirements

The car parking supply requirements for the proposed development land uses have been determined in line with Table 9.4.13-3 requirements of the CoGC City Plan. The development consists largely of dwelling houses with up to 4 dwelling units per lot and as such, falls under the "dwelling house" definition according to the City of Gold Coast City Plan.

For residential purposes (CoGC), the car parking rates for the "dwelling house" land use is outlined as:

- *2 per 4 bedroom unit or dwelling;*

Based on the above CoGC parking rates, the following car parking requirements apply:

- Residents – 298 spaces

TTM anticipates that each lot will include a double garage, a base rate of two (2) car parking spaces per lot, equating to a total of 298 car parking spaces provided. Although there are no requirements for visitor parking, it is expected that visitors arriving at residential properties will utilise on-street kerbside parking if there is insufficient space within each lot.

Given the above, TTM considers the car parking arrangements for the site as suitable for the development proposal.

7. Access Arrangements

7.1. Vehicular Access

7.1.1. Introduction

The subject site features a residential subdivision from 5 lots into 149 lots for dwelling houses, reshaping the arrangement of each lot. In doing so, aside from Lots 141 to 143 and Lots 148 and 149, which will be serviced by existing roads along Richardson Crescent and Wright Circuit respectively, two accesses in the form of intersections are intended to be created to facilitate access into / out of the development.

Baileys Mountain Road Access

The Baileys Mountain Road access originates from the eastern side of the frontage, providing access to 104 lots of the development proposal. This will extend access into the site via the construction of a 16.5m road.

It is understood that upgrades at the Baileys Mountain Road intersection, including a BAR (basic auxiliary right) and BAL (basic auxiliary right) turn treatments were identified as part of the transport assessments for the adjacent development application (for Lot 58 on SP191940).

Information on the proposed Baileys Mountain Road is provided in Figure 7-1.

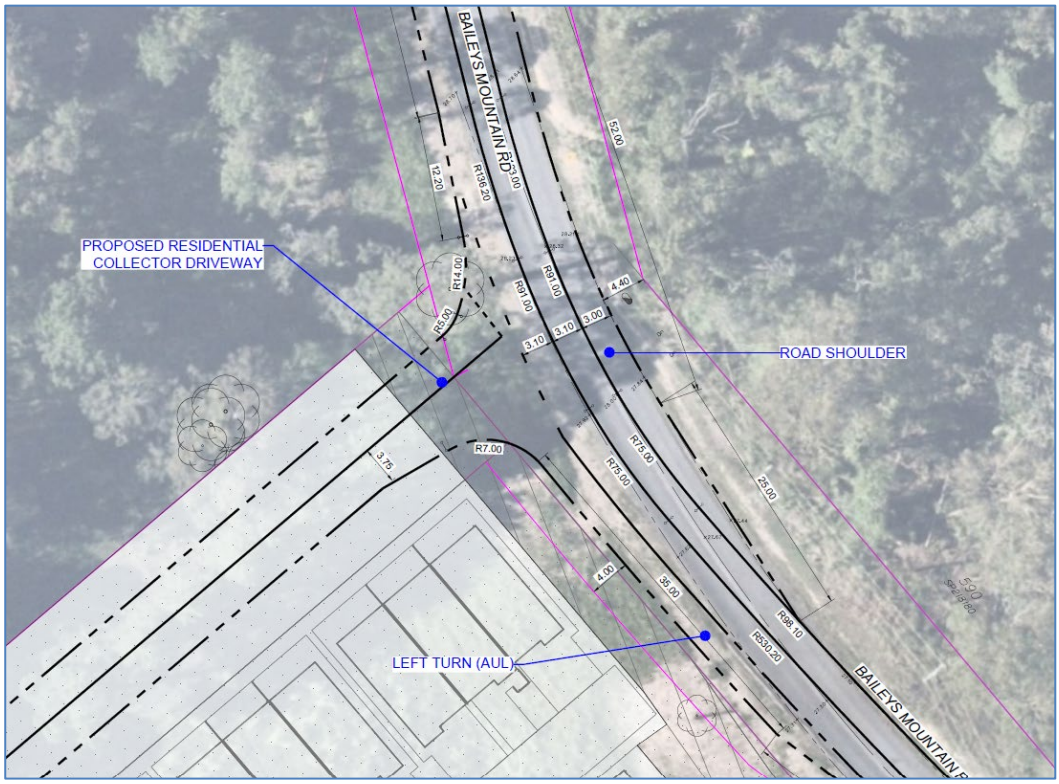


Figure 7-1: Baileys Mountain Road Access
Source: TTM Consulting (now Colliers, 2024)

Courtney Road Access

The Courtney Drive access stems from the northern side of the frontage, providing access to 39 lots. It is anticipated that the access will not require turn treatments resulting from the proposed development, due to the overall low traffic generation of the development uses and the low background traffic along Courtney Drive.

Lots 139 and 140 are also situated along Courtney Drive and will have individual separate accesses.

Richardson Crescent / Wright Circuit Access

There are a combined five (5) Lots to be constructed at the ends of Richardson Crescent and Wright Circuit, with exit onto the external road network through the nearby Lawson Street / Reserve Road roundabout. These lots are not expected to generate a significant amount of traffic and will not change the functionality of the existing roundabout.

8. Service Vehicle Arrangements

8.1. Council Requirements

To assess the required number of service bays for the development, TTM has referred to the City of Gold Coast (CoGC) requirements for service vehicles.

The service vehicle requirements have been estimated by TTM based on practical operational requirements of the site. The development plan allows for occasional access for a Medium Rigid Vehicle (MRV) and regular access for a 9.8m CoGC side-loading Refuse Collection Vehicle (RCV).

It is to be noted that the internal road network will connect to future residential subdivisions in the future and temporary turnaround solutions have been implemented for the time being.

8.2. Proposed Service Vehicle Arrangements and Their Adequacy

The proposed development allows for refuse collection via domestic wheelie bins in front of each lot. For certain lots where kerbside refuse collection is not possible, dedicated bin pad locations have been designated on the site layout – refer to **Attachment A**. The bins pads will be provided in line with requirements of CoGC's 'City Plan policy - Solid waste management'. During refuse collection days, the standard CoGC Side Loader 9.8m RCV would be the design vehicle. It is expected that for every-day deliveries and furniture loading / unloading, an MRV would be the more frequent design vehicle.

TTM has conducted swept paths within the internal road network (see **Attachment B – 24BRT0559_SK01**), demonstrating the manoeuvrability of the design vehicle, with the following notes:

- As a temporary service vehicle turnaround, there will be an unoccupied lot (second to the last lot) with a constructed, compliant driveway and crossover to facilitate turnaround. There will be a concreted area approximately 5.5m wide x 10.5m deep beyond the property boundary to facilitate this movement. Once the roadways have been extended / connected, the temporary turn-around arrangements will not be required – it is understood that the driveway and crossovers are to remain.
- It is recommended that the width of concreted area for Lot 44 be increased to 7.6m to facilitate a forward in / forward out manoeuvre into the turnaround area.
- Swept path assessment using B99 (large car) vehicle and the CoGC RCV design vehicles has been undertaken at key road sections. The swept path assessment indicates (**Attachment B – 24BRT0559_SK04**) that these design vehicles are circulating in opposing directions, they are able to pass by each other with the 300mm and 500mm clearances being met.

Overall, the swept paths indicate that servicing of the proposed development is able to occur safely and efficiently for all Lots.

Given the above, the proposed servicing arrangements for the subject site are considered adequate.

9. Development Transport Demands

9.1. Development Traffic Demands

9.1.1. Traffic Generation

To estimate the traffic generation expectations of the proposed land uses, reference is made to RTA's 'Guide to Traffic Generating Developments (GTGD).' This indicates the following traffic generation rates should be adopted for low density residential developments are:

Residential

- AM Peak Hour: 0.83 vph per unit
- PM Peak Hour: 0.84 vph per unit
- Daily: 7.53 vpd per unit

RFor directional splits for a residential development, the following distribution factors have been adopted:

- AM Peak Hour: 25% inbound / 75% outbound
- PM Peak Hour: 61% inbound / 39% outbound

Application of the above generation rates and directional splits would result in proposed development traffic demand estimates as shown in Table 8-1.

Table 8-1: Traffic Generation Estimate

Land Use	Yield	Generation Rate	AM Peak Hour			PM Peak Hour			Daily Traffic
			In	Out	Total	In	Out	Total	
Residential	2 units	As per above	1vph	1vph	2vph	1vph	1vph	2vph	8vpd
Total (Existing)			**1vph**	**1vph**	**2vph**	**1vph**	**1vph**	**2vph**	**8vpd**
Residential	149 units	As per above	31ph	93vph	124vph	76vph	49vph	125vph	1,122vpd
Total (Proposed)			**31vph**	**93vph**	**124vph**	**76vph**	**49vph**	**125vph**	**1,122vpd**
Net Change			**+30vph**	**+92vph**	**+122vph**	**+75vph**	**+48vph**	**+123vph**	**+1,114vpd**

9.2. Warrants for Further Assessment

Given the estimated traffic generated by the development to be 125 vph at maximum, the level of traffic generation is considered small and within the range of typical fluctuation in traffic volumes on the road network. The local road network can accommodate the expected development traffic volumes (distributed over two accesses) without significant impact on the safety or operation (delay) of the surrounding road system. Further detailed traffic impact assessment is not considered warranted.

10. Summary and Conclusions

10.1. Proposed Development

The proposed development is a 149-lot residential subdivision over 5 lots. A structure plan indicates that the internal road layout will continue the dead-end roads outlined in the current application.

10.2. Parking Arrangements

The proposed development indicates a parking supply of 298 spaces which meets the Council's parking rate / requirement. Due to the nature of the development, it is anticipated that visitors will park kerbside.

Overall, the parking arrangements for the site are considered suitable for the proposed development.

10.3. Internal Road Network

An assessment of the development proposal internal road network – including road cross-sections, intersection treatments / locations, crossover, rear-lot access – identified that these were generally in line with CoGC guidelines.

10.4. Access Arrangements

Two new accesses, one to Courtney Drive and one via Baileys Mountain Road will provide access to the proposed development for all movements for cars and service vehicles.

Overall, the access arrangements for the site are considered adequate.

10.5. Service Vehicle Arrangements

The servicing and refuse collection arrangements are to be completed kerbside and have been determined to generally comply with the CoGC guidelines. It is recommended that the width of concreted area for Lot 44 be increased to 7.6m to facilitate a forward in / forward out manoeuvre into the turnaround area.

10.6. Traffic Impact Assessment

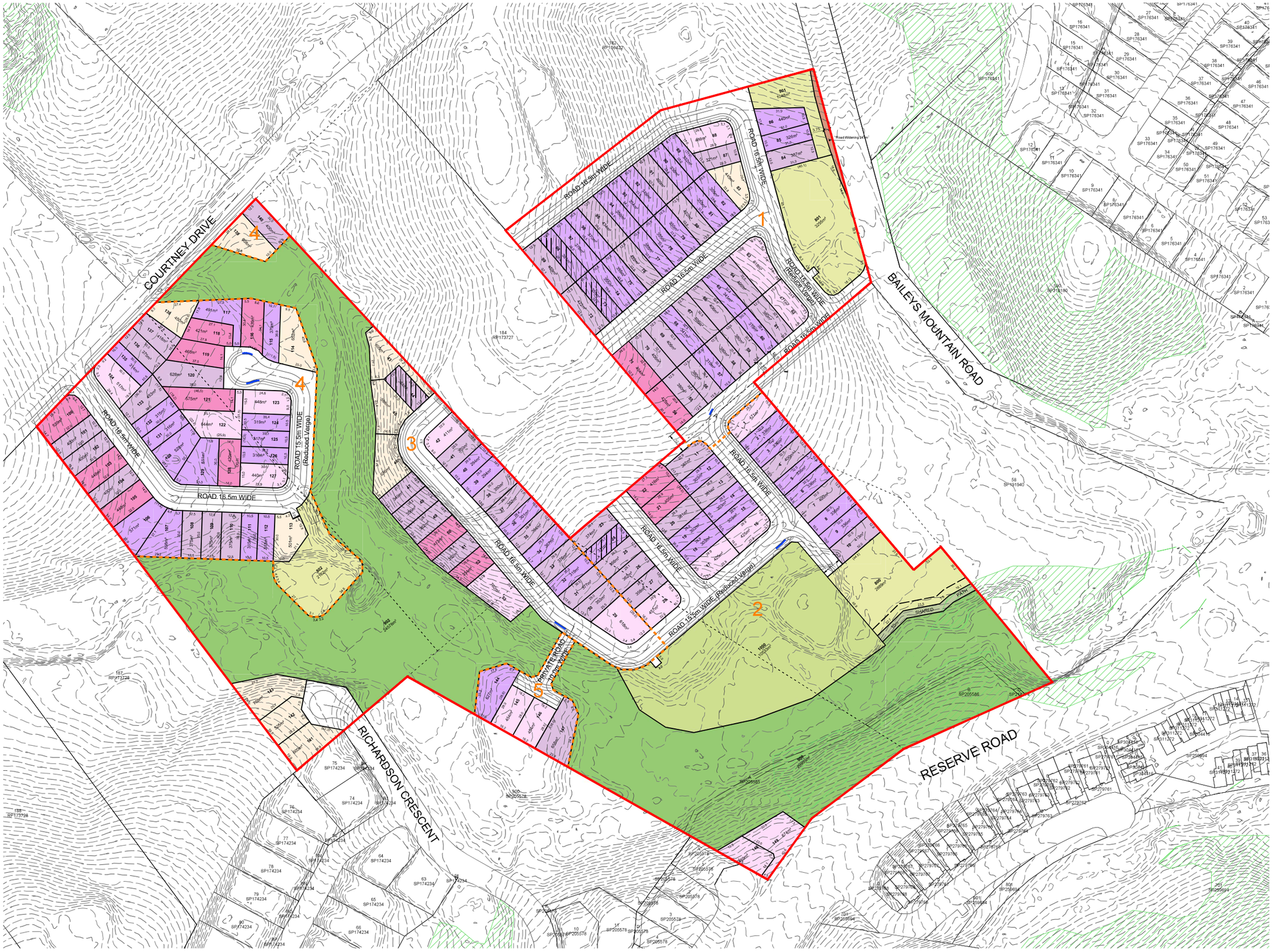
The local road network can accommodate the expected development traffic volumes (distributed over two accesses) without significant impact on the safety or operation (delay) of the surrounding road system. Further detailed traffic impact assessment is not considered warranted.

10.7. Conclusion

Based on the assessment contained within this report, TTM see no traffic engineering reason why the relevant approvals should not be granted.

Appendix A Development Plans

CONCEPT PLAN



NOT TO BE USED FOR ENGINEERING DESIGN OR CONSTRUCTION

NOTES

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

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

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

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

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

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PROJECTION: GDA2020 MGA56

SUBJECT BOUNDARIES: LOT CALCULATIONS BY LANDPARTNERS DATED 25/11/2024

LEGEND

- Site Boundary
- Major Contour (1.0m interval)
- Minor Contour (0.5m interval)
- Vegetation Management
- Temporary Turnaround Lot
- Stage Boundary
- 1 Stage No.

DEVELOPMENT STATISTICS			
RESIDENTIAL ALLOTMENTS	**No. Lots**	**%**	**Net Area**
10.5m - 12.49m Frontage	54	36.2%	1.954 ha
12.5m - 13.99m Frontage	52	34.9%	2.055 ha
14m - 14.99m Frontage	14	9.4%	0.622 ha
> 15m Frontage	18	12.1%	0.917 ha
Irregular Frontage	11	7.4%	0.639 ha
Total Residential Allotments	**149**	**100.0%**	**6.187 ha**
Land Budget	**Area (Ha)**	**%**	
Area of Subject Site / Stage	15.251 ha	—	
Net Residential Area (no roads)	6.187 ha	40.6%	
Detention / Drainage	0.935 ha	6.1%	
Local Park	1.053 ha	6.9%	
Environmental Open Space	4.557 ha	29.9%	
Pedestrian Links	0.035 ha	0.2%	
Road Widening	0.025 ha	0.2%	
Road Areas	2.459 ha	16.1%	
Total	**15.251 ha**	**100.0%**	

RP DESCRIPTION: Lot 185 on RP173727, Lot 186 on RP173728, Lot 57 on SP214370 & Lot 56 on RP162858, Lot 58 on SP191940

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10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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NORFOLK ESTATES PTY LTD ATF SOLANDER INVESTMENT UNIT TRUST

41 - 53 COURTNEY DRIVE , UPPER COOMERA • 03/12/2024 • 11694 P 05 Rev I - CON 01

Appendix B TTM Drawings



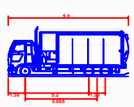
GCC RCV GENERAL SITE CIRCULATION

SCALE 1:2000

PRELIMINARY ADVICE ONLY

3 December 2024

VEHICLE PROFILES



GCC Side Leader 9.8m

Overall Length	9.800m
Overall Width	2.472m
Overall Body Height	4.050m
Min Body Ground Clearance	0.150m
Track Width	2.472m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	11.500m

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
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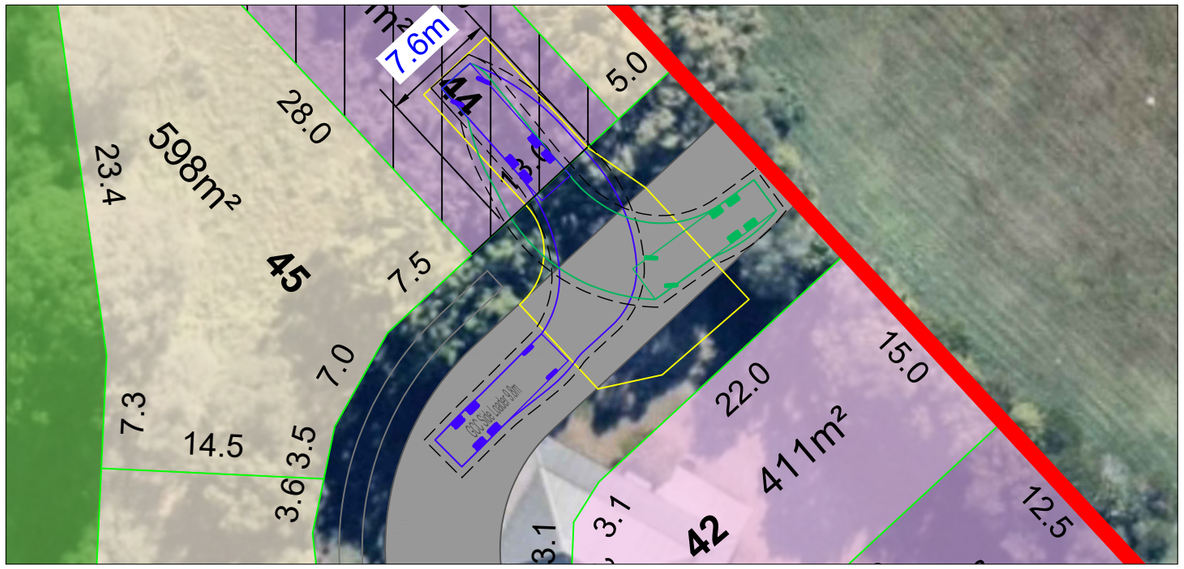
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TTM CONSULTING PTY LTD
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E: ttmbris@ttmgroup.com.au W: www.ttmgroup.com.au

PROJECT: 41-53 COURTNEY DRIVE, UPPER COOMERA

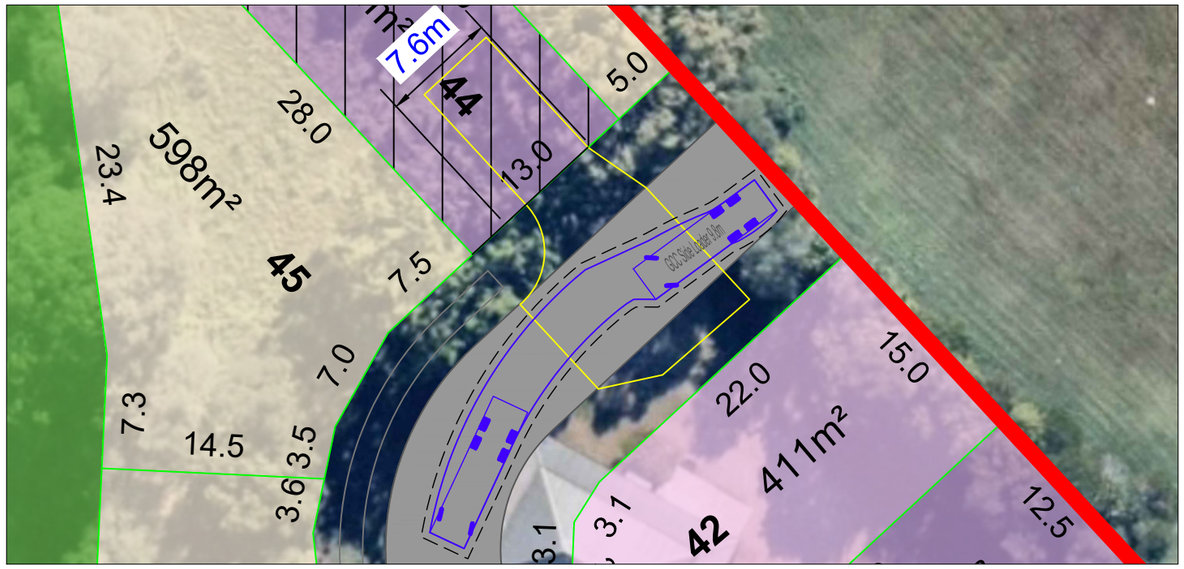
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9.8m GCC RCV CIRCULATION

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ORIGINAL SIZE	A3
DRAWING NUMBER	24BRT0559_SK01
REVISION	A
DATE	03/12/24
SHEET	1 OF 5



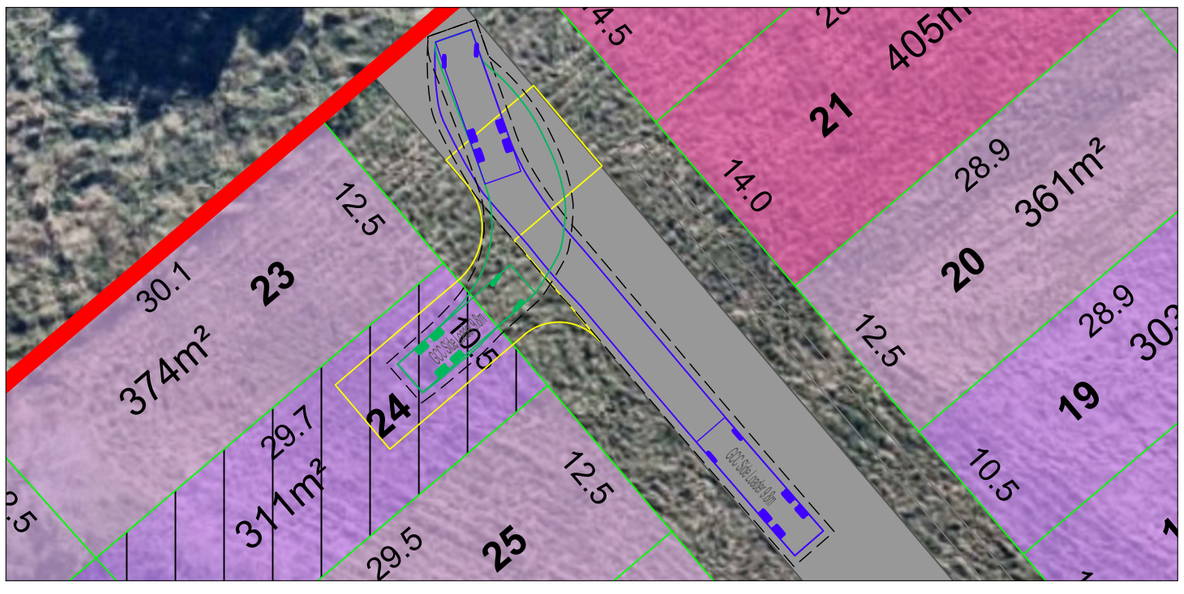
RCV TURNAROUND MOVEMENT IN - LOT 44

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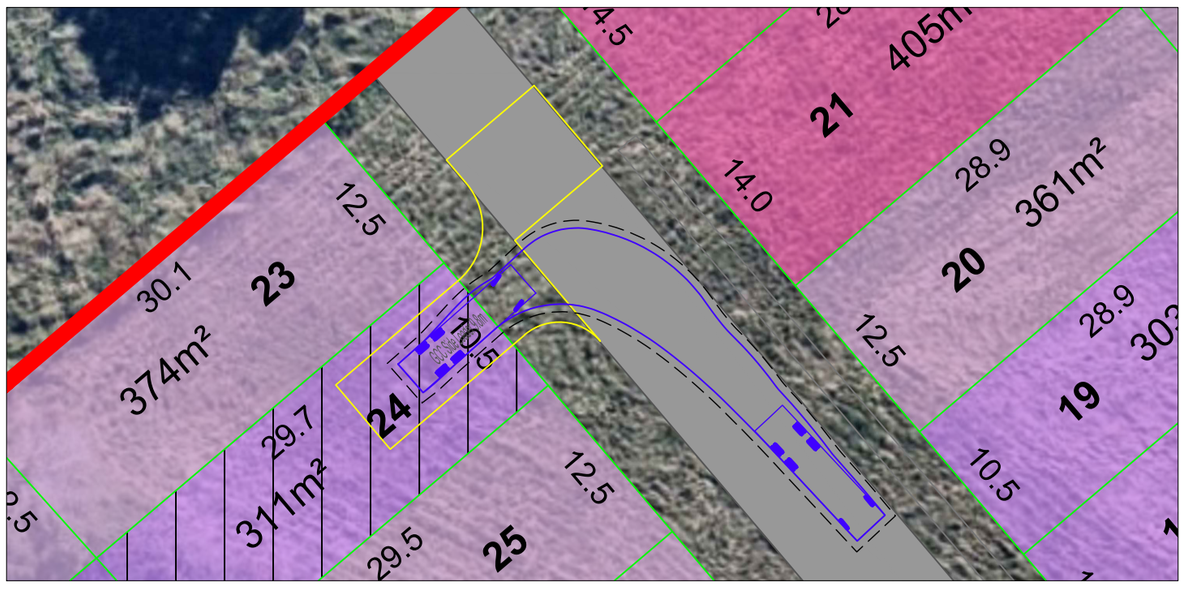
RCV TURNAROUND MOVEMENT OUT - LOT 44

SCALE 1:400



RCV TURNAROUND MOVEMENT IN - LOT 24

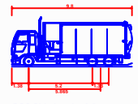
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RCV TURNAROUND MOVEMENT OUT - LOT 24

SCALE 1:400

VEHICLE PROFILES



GCC Side Loader 9.8m

Overall Length	9.800m
Overall Width	2.472m
Overall Body Height	4.050m
Min Body Ground Clearance	0.150m
Track Width	2.472m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	11.500m

PRELIMINARY ADVICE ONLY

3 December 2024

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
A	03/12/24	ISSUED FOR DESIGN ADVICE	IA	DW	DW

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SCALE 1:250 AT ORIGINAL SIZE

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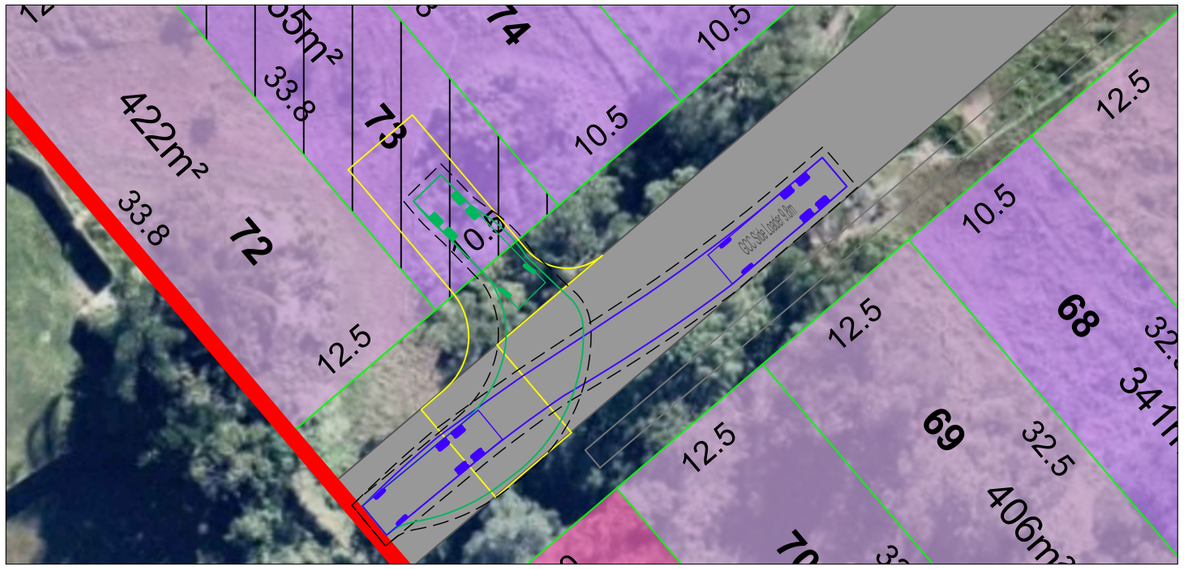
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TTM CONSULTING PTY LTD
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PROJECT: 41-53 COURTNEY DRIVE, UPPER COOMERA

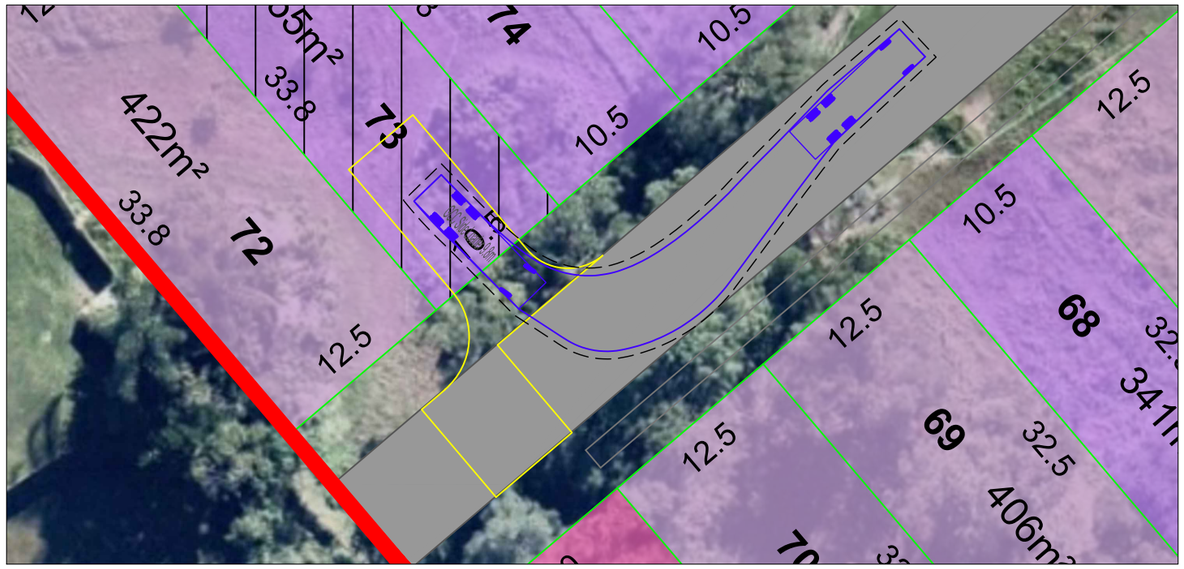
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DRAWING NUMBER	REVISION
24BRT0559_SK02	A
DATE	SHEET
03/12/24	2 OF 5



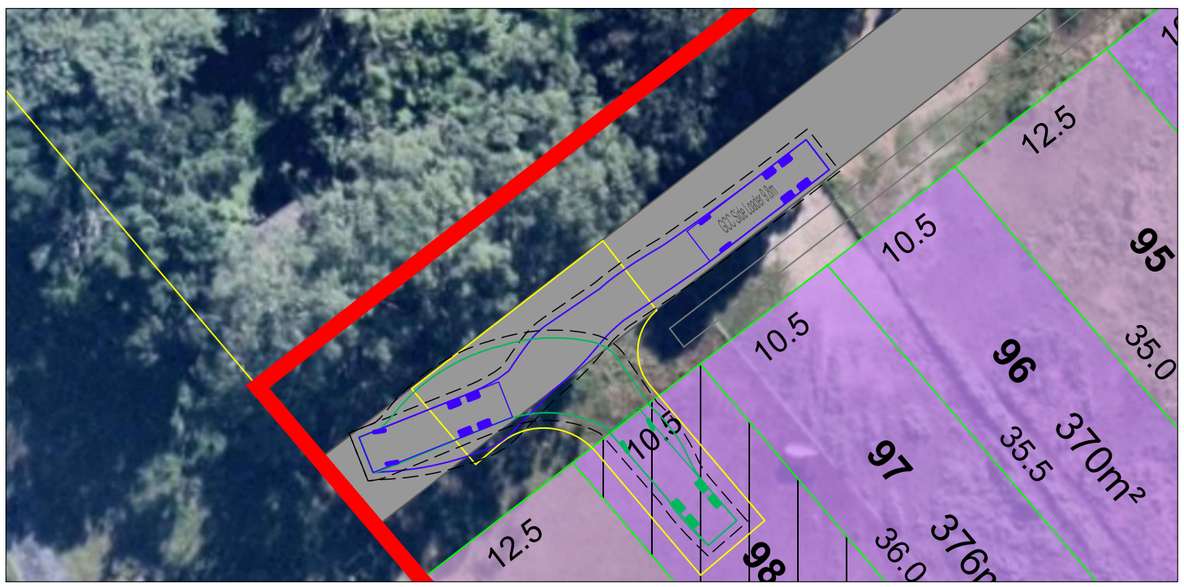
RCV TURNAROUND MOVEMENT IN - LOT 73

SCALE 1:400



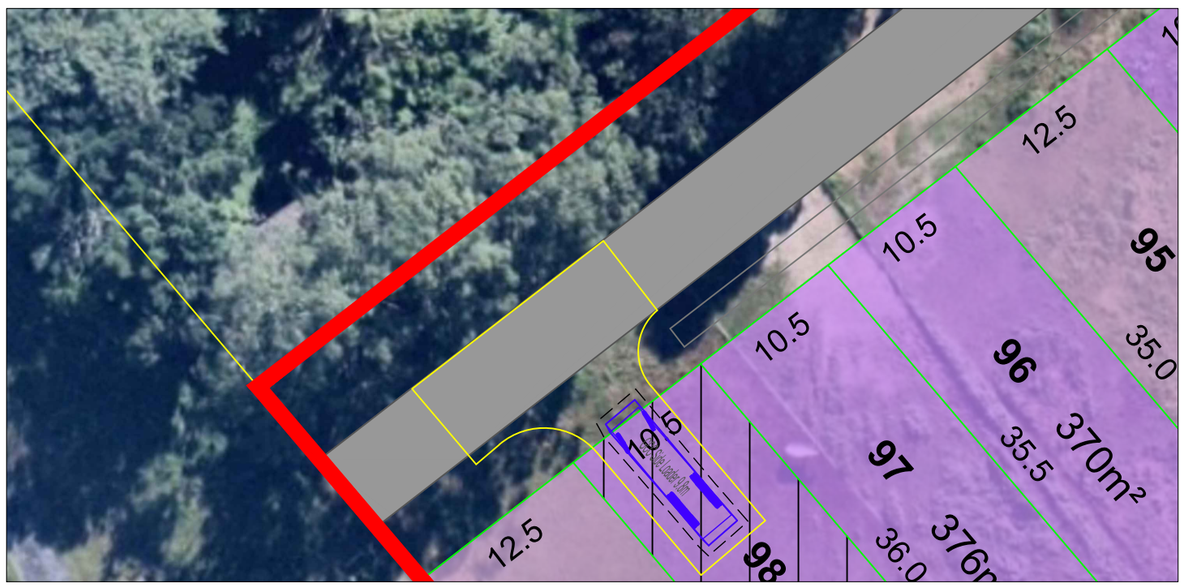
RCV TURNAROUND MOVEMENT OUT - LOT 73

SCALE 1:400



RCV TURNAROUND MOVEMENT IN - LOT 98

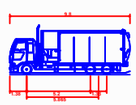
SCALE 1:400



RCV TURNAROUND MOVEMENT OUT - LOT 98

SCALE 1:400

VEHICLE PROFILES



GCC Side Loader 9.8m	
Overall Length	9.800m
Overall Width	2.472m
Overall Body Height	4.050m
Min Body Ground Clearance	0.150m
Track Width	2.472m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	11.500m

PRELIMINARY ADVICE ONLY

3 December 2024

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
A	03/12/24	ISSUED FOR DESIGN ADVICE	IA	DW	DW

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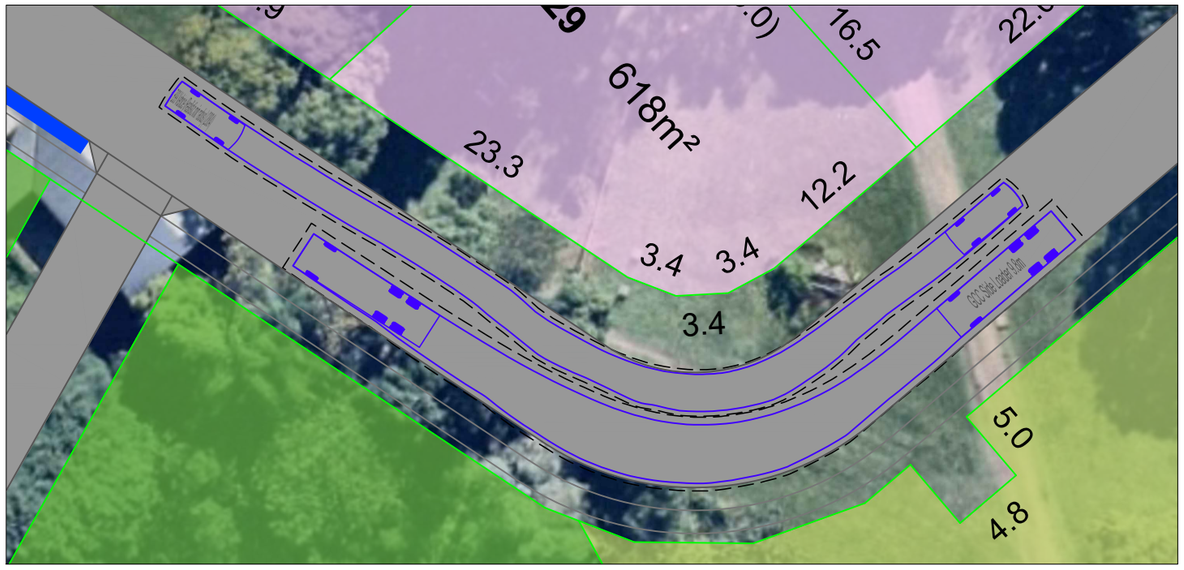
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PROJECT: 41-53 COURTNEY DRIVE, UPPER COOMERA

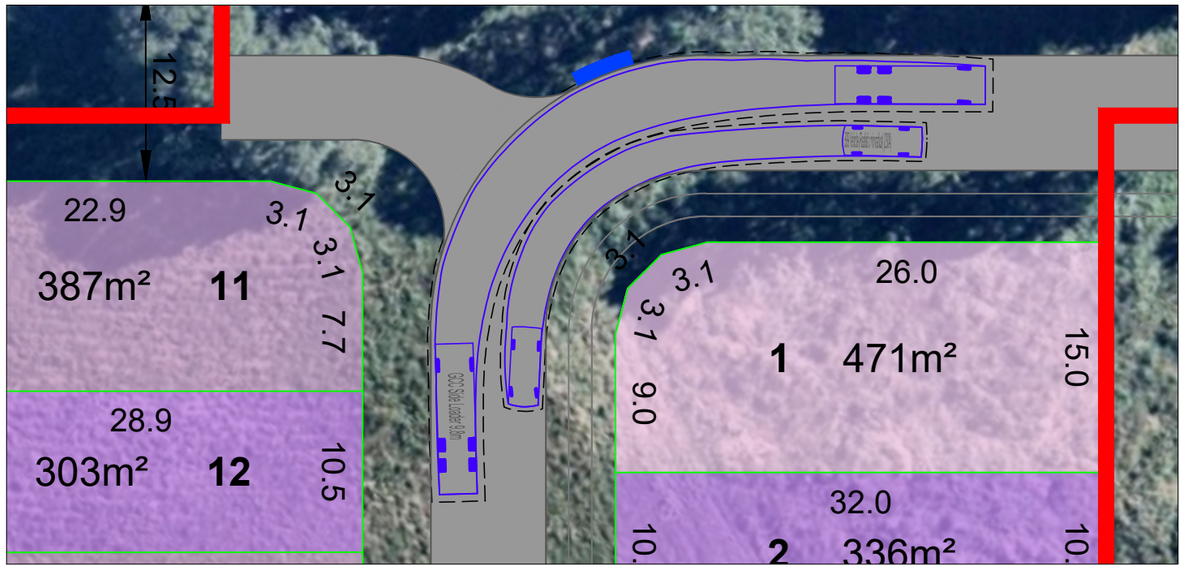
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9.8m GCC RCV TURNAROUND AREA

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DRAWING NUMBER	REVISION
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DATE	SHEET
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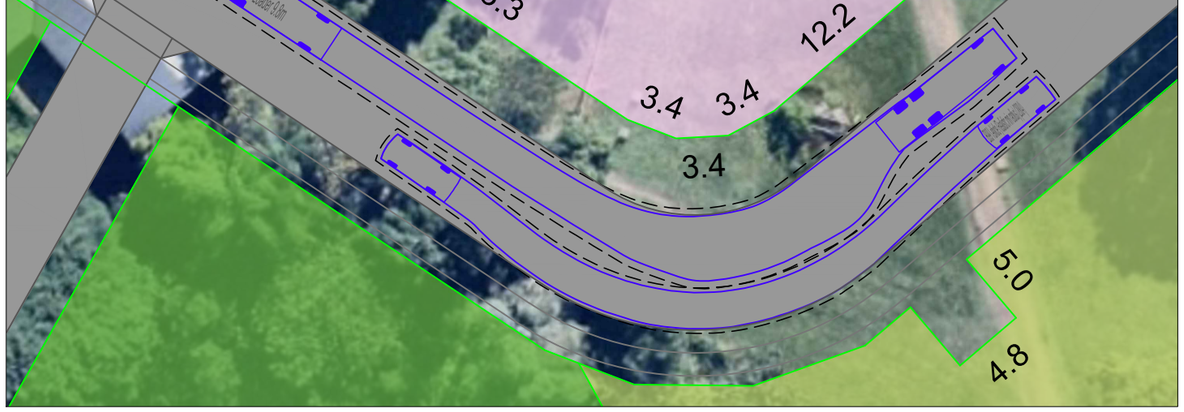
RCV / B99 INTERFACE

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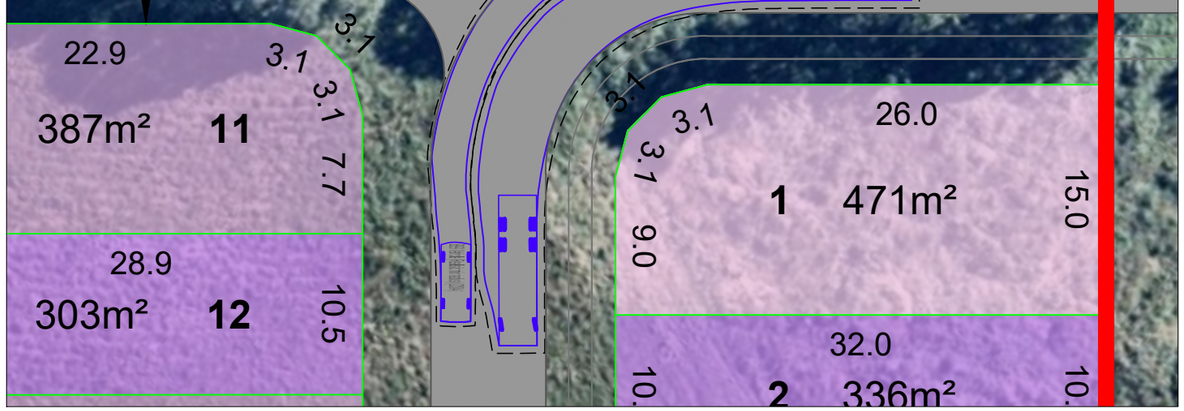
RCV / B99 INTERFACE

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RCV / B99 INTERFACE

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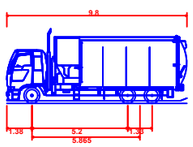
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PRELIMINARY ADVICE ONLY

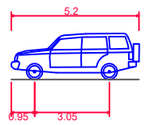
3 December 2024

VEHICLE PROFILES



GCC Side Loader 9.8m

Overall Length	9.800m
Overall Width	2.472m
Overall Body Height	4.050m
Min Body Ground Clearance	0.150m
Track Width	2.472m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	11.500m



B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m
Design Speed Forward	5.00km/h
Clearance Envelope	0.300m

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
A	03/12/24	ISSUED FOR DESIGN ADVICE	IA	DW	DW

SCALE 0 2.5 5 7.5 10 12.5m

SCALE 1:250 AT ORIGINAL SIZE

NORTH

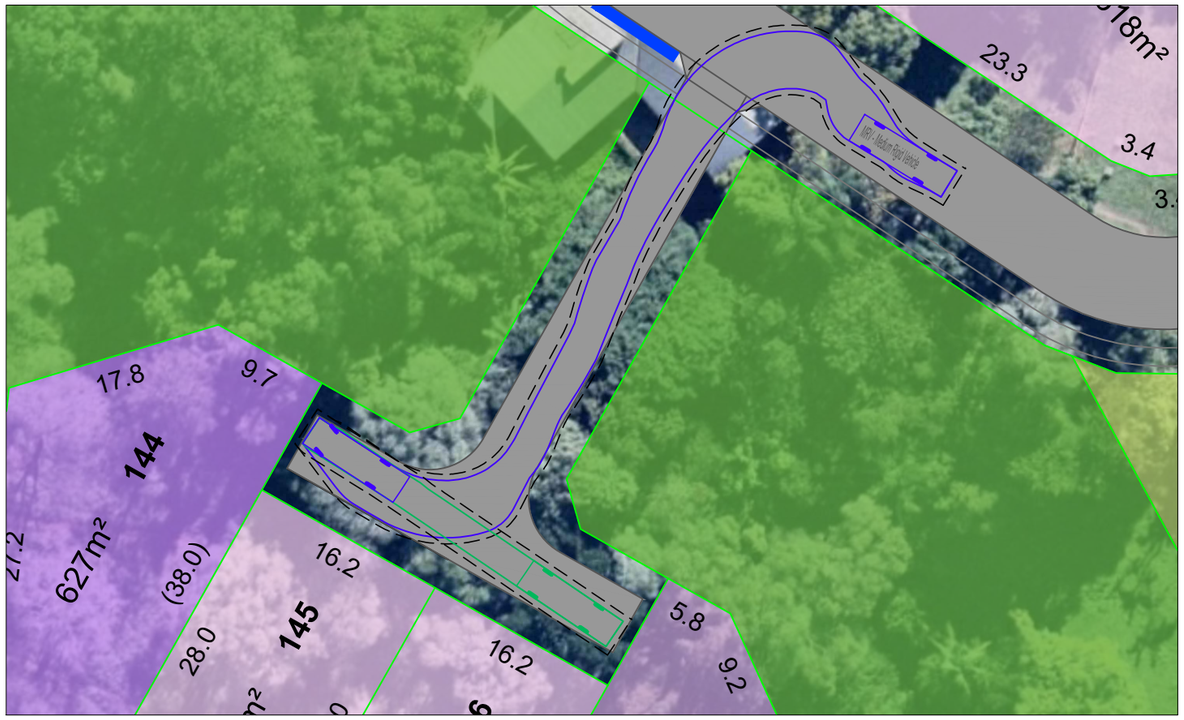
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E: ttmbris@ttmgroup.com.au W: www.ttmgroup.com.au

PROJECT: 41-53 COURTNEY DRIVE, UPPER COOMERA

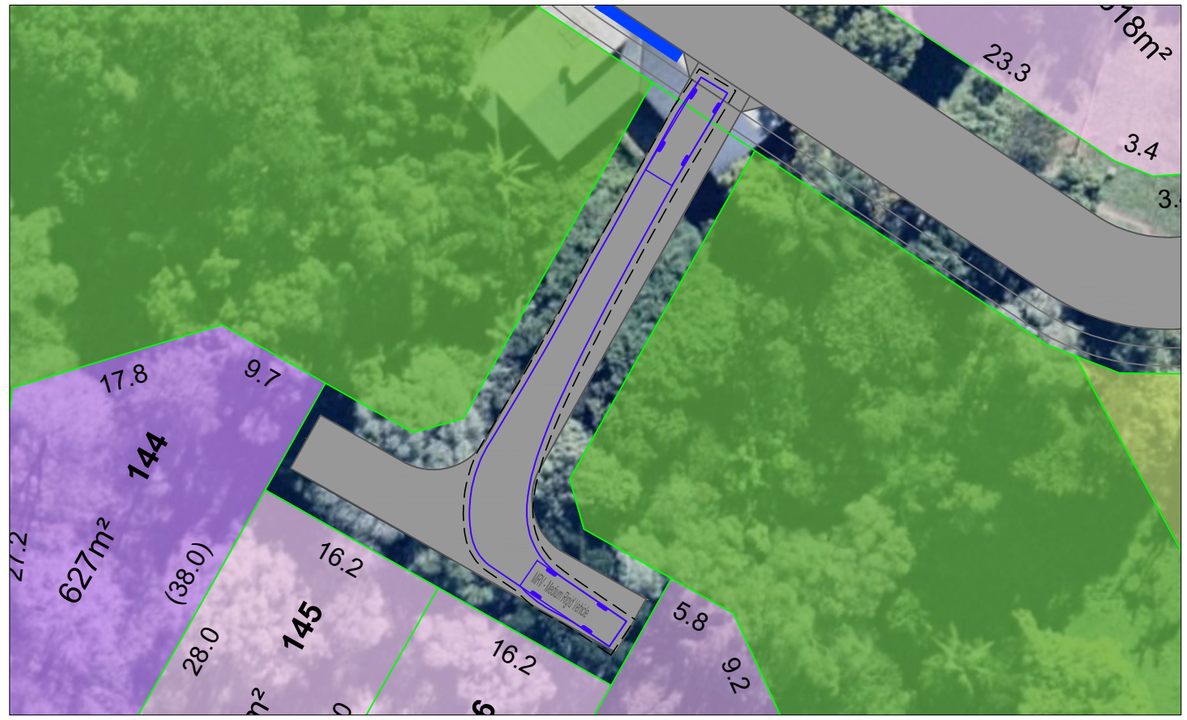
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B99 / RCV INTERFACE

PROJECT NUMBER	24BRT0559
ORIGINAL SIZE	A3
DRAWING NUMBER	24BRT0559_SK04
REVISION	A
DATE	03/12/24
SHEET	4 OF 5



MRV TURNAROUND MOVEMENT IN

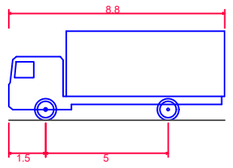
SCALE 1:400



MRV TURNAROUND MOVEMENT OUT

SCALE 1:400

VEHICLE PROFILES



MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.000m
Design Speed Forward	5.00km/h
Clearance Envelope	0.500m

PRELIMINARY ADVICE ONLY

3 December 2024

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
A	03/12/24	ISSUED FOR DESIGN ADVICE	IA	DW	DW

SCALE 0 2.5 5 7.5 10 12.5m

SCALE 1:250 AT ORIGINAL SIZE

NORTH

CLIENT: QM PROPERTIES PTY LTD

TTM CONSULTING PTY LTD
ABN 65 010 868 621
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PROJECT: 41-53 COURTNEY DRIVE, UPPER COOMERA

DRAWING TITLE: **SWEPT PATH ASSESSMENT**
MRV MOVEMENTS IN / OUT

PROJECT NUMBER	24BRT0559
ORIGINAL SIZE	A3
DRAWING NUMBER	24BRT0559_SK05
REVISION	A
DATE	03/12/24
SHEET	5 OF 5

Appendix C Road Upgrade Plans



PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF GOLDCOAST

BURCHILLS ENGINEERING SOLUTIONS

Designed	J.DAVIES
Engineered	LUCAS FAULKNER
Drafted	W.JESUS
Certified	RPEQ
Drawing Checked	
Authorised	
Manager	MARK RICKETTS
Project Identifier\-\CAD File Name	BMTN-GWS_08
Projects Records File Number	
Contracts Records File Number	

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Issue	Description ✳	Name	Initial	Date
B	MILESTONE 2 ISSUE	J.DAVIES	JD	26-06-20
A	DRAFT ISSUE	J.DAVIES	JD	02-04-20

Design not to be amended without authorisation by Statutory Certifier

Bar Scales

0 5 10 15m

SCALE 1:250 @ A1

Do not scale, use figured dimensions only

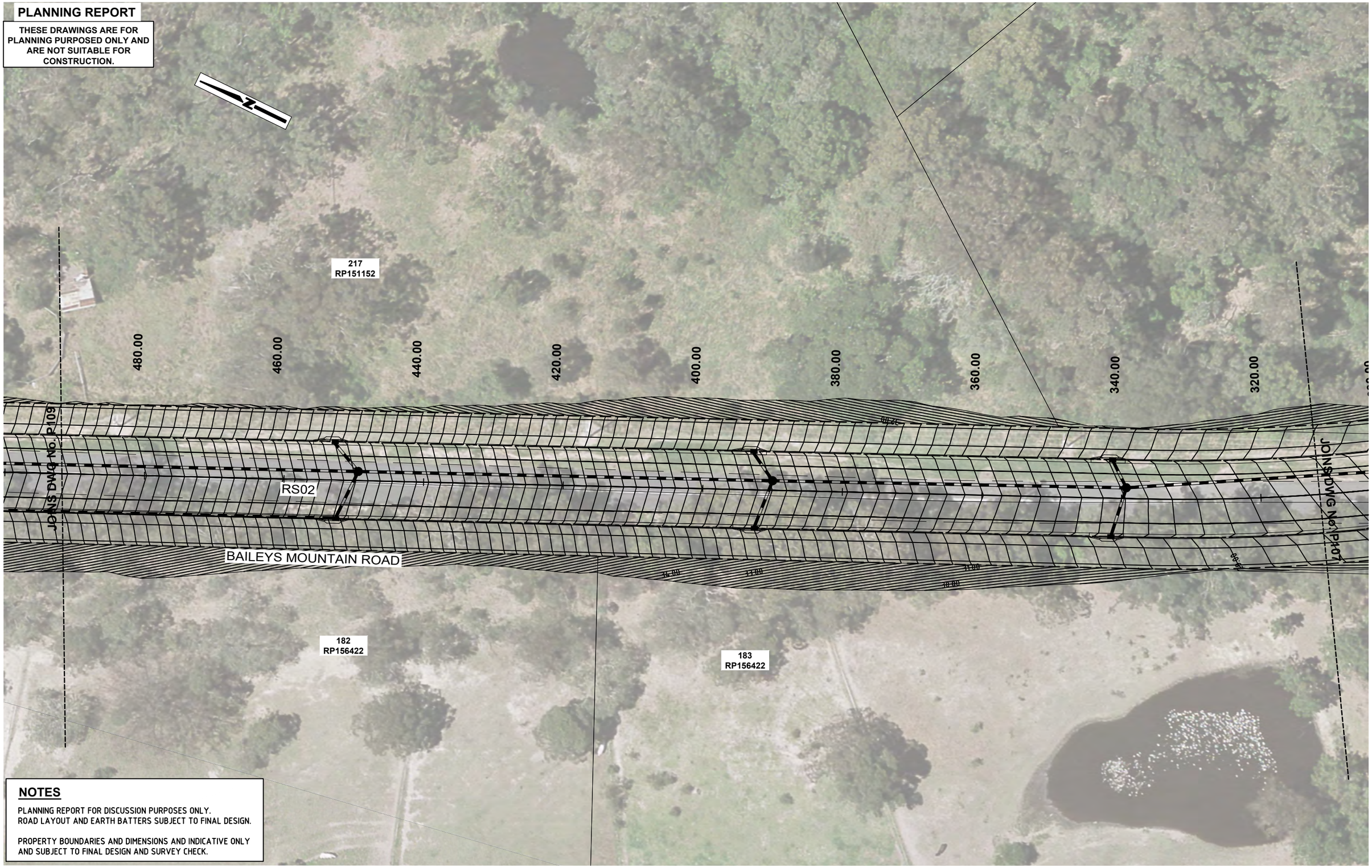
ARTERIAL ROAD - BAILEYS MOUNTAIN ROAD UPPER COOMERA PRELIM ROUNDABOUT UPGRADE

GENERAL WORKS AND SERVICES PLAN
SHEET 4

Project Number	27144
Page of	08 62
Issue	B
Drawing Number	27144.P107

PLANNING REPORT

THESE DRAWINGS ARE FOR PLANNING PURPOSED ONLY AND ARE NOT SUITABLE FOR CONSTRUCTION.



NOTES

PLANNING REPORT FOR DISCUSSION PURPOSES ONLY.
ROAD LAYOUT AND EARTH BATTERS SUBJECT TO FINAL DESIGN.

PROPERTY BOUNDARIES AND DIMENSIONS AND INDICATIVE ONLY AND SUBJECT TO FINAL DESIGN AND SURVEY CHECK.

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF GOLDCOAST.

BURCHILLS ENGINEERING SOLUTIONS

Designed	J.DAVIES	Engineered	LUCAS FAULKNER
Drafted	W.JESUS	Certified	RPEQ
Drawing Checked		Authorised	
Manager	MARK RICKETTS	Project Identifier\-\CAD File Name	BMTN-GWS_09
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A	DRAFT ISSUE	J.DAVIES	JD	02-04-20

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Bar Scales: 0 5 10 15m — SCALE 1:250 @ A1

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ARTERIAL ROAD - BAILEYS MOUNTAIN ROAD UPPER COOMERA PRELIM ROUNDABOUT UPGRADE

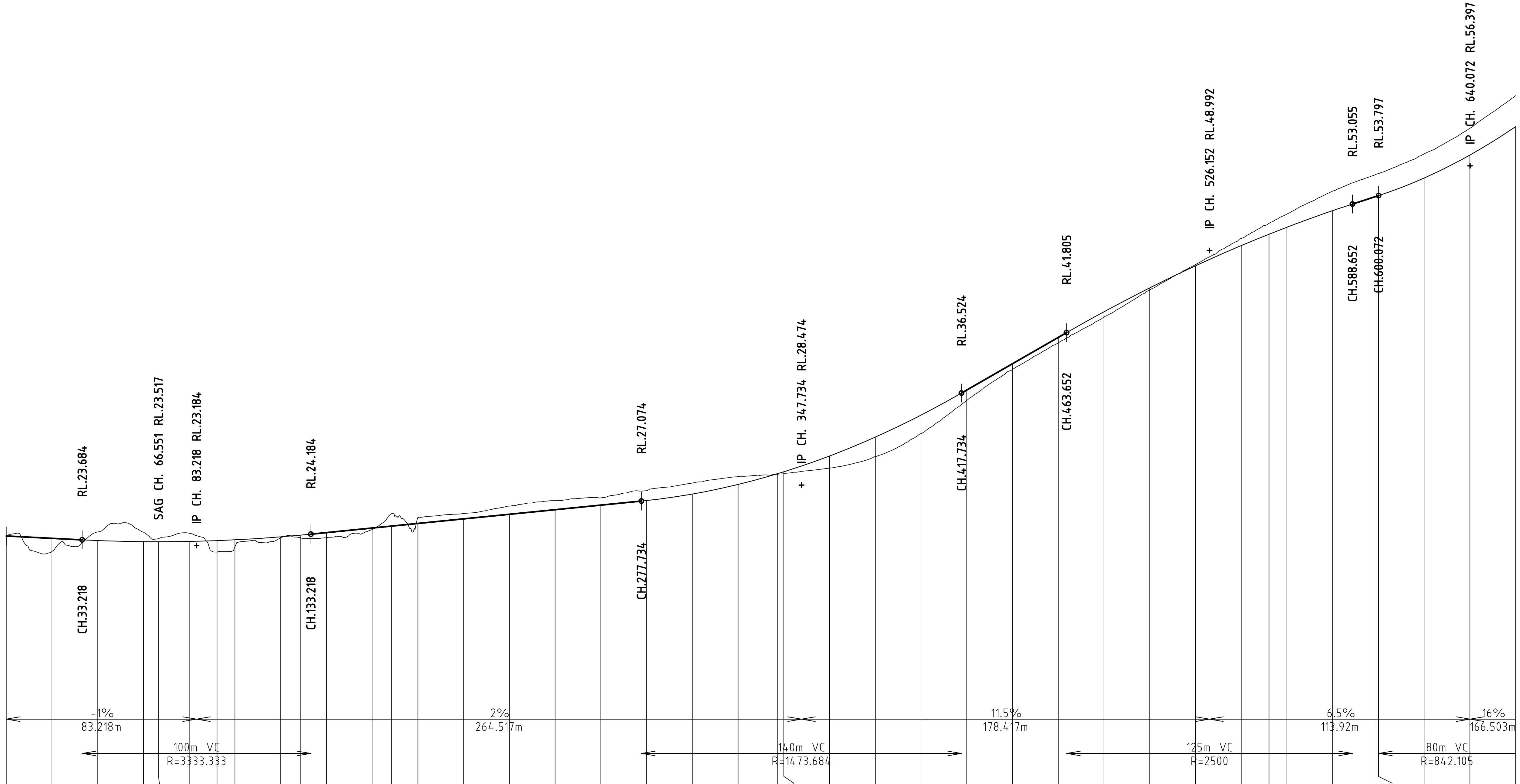
GENERAL WORKS AND SERVICES PLAN
SHEET 5

Project Number: 27144

Page of: 09 62

Issue: B

Drawing Number: 27144.P108



CONTROL LINE CHAINAGE	EXISTING NATURAL SURFACE LEVELS	CUT / FILL DEPTH TO EXISTING	CONTROL LINE FINISHED LEVEL
0.000	24.043	-0.026	24.016
20.000	22.667	1.149	23.816
40.000	24.371	-0.747	23.623
60.000	24.355	-0.832	23.524
66.551	23.791	-0.274	23.517
80.000	24.257	-0.713	23.545
92.178	22.625	0.991	23.616
100.000	23.083	0.602	23.685
120.000	23.857	0.089	23.946
128.568	23.881	0.214	24.094
140.000	23.875	0.445	24.320
160.000	24.591	0.129	24.720
168.479	25.974	-1.084	24.889
180.000	25.670	-0.550	25.120
200.000	25.983	-0.463	25.520
220.000	26.632	-0.713	25.920
240.000	27.132	-0.812	26.320
260.000	27.354	-0.634	26.720
280.000	27.983	-0.861	27.122
300.000	28.653	-0.965	27.688
320.000	29.219	-0.693	28.526
337.339	29.425	0.047	29.472
340.000	29.466	0.169	29.635
360.000	29.949	1.067	31.016
380.000	30.964	1.704	32.668
400.000	32.981	1.611	34.592
420.000	35.881	0.904	36.785
440.000	38.581	0.504	39.085
460.000	40.913	0.472	41.385
480.000	43.178	0.453	43.632
500.000	45.531	0.190	45.721
520.000	47.751	-0.101	47.650
540.000	50.045	-0.626	49.419
552.164	51.364	-0.947	50.417
560.000	52.182	-1.154	51.028
580.000	54.186	-1.709	52.478
598.958	55.655	-1.930	53.725
600.000	55.726	-1.933	53.793
620.000	57.437	-2.108	55.328
640.000	59.680	-2.341	57.339
660.000	62.536	-2.711	59.825

Horizontal Geometry Data

R=200m (CH 100.000 – 140.000)

R270m (CH 168.479 – 337.339)

R=200m (CH 560.000 – 598.958)

LONGITUDINAL SECTION RS02

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF GOLDCOAST.

BURCHILLS ENGINEERING SOLUTIONS

Manager: MARK RICKETTS

Designed: J.DAVIES | Engineered: LUCAS FAULKNER
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Drawing Checked | Authorised
Project Identifier\-\CAD File Name: BMTN-RS02LS_15
Projects Records File Number | Contracts Records File Number

Issue	Description ✳	Name	Initial	Date
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A	DRAFT ISSUE	J.DAVIES	JD	02-04-20

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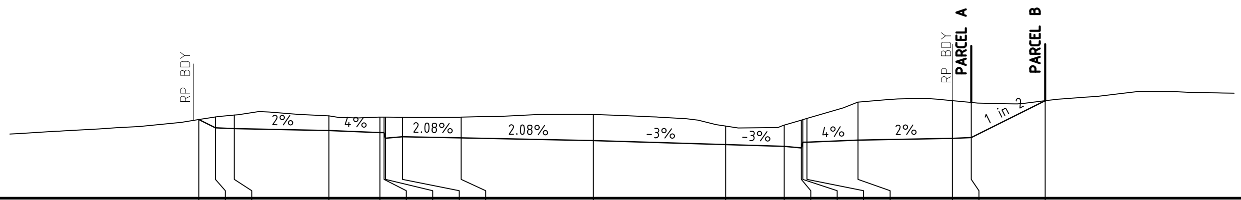
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ARTERIAL ROAD - BAILEYS MOUNTAIN ROAD
UPPER COOMERA
PRELIM ROUNDABOUT UPGRADE
RS02 LONGITUDINAL SECTION
SHEET 1

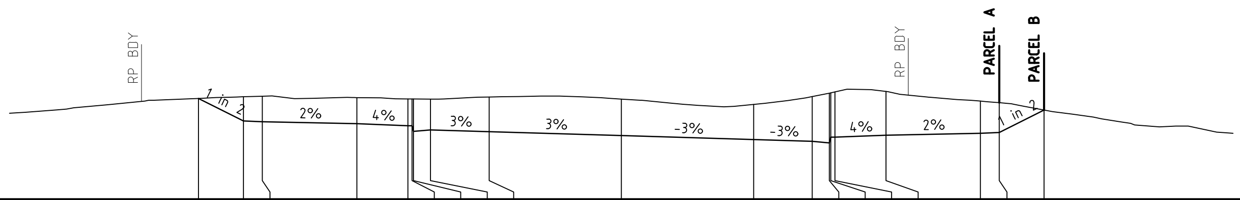
Project Number: 27144
Page 15 of 62
Issue: B
Drawing Number: 27144.P114



Datum 27.0

DESIGN LEVELS	29.084	28.865	28.845	28.795	28.741	28.741	28.591	28.631	28.599	28.526	28.421	28.374	28.334	28.484	28.484	28.538	28.588	28.608	29.585
NATURAL SURFACE	29.084	29.153	29.203	29.184	29.150	29.150	29.150	29.145	29.149	29.219	28.911	28.939	29.070	29.082	29.114	29.546	29.587	29.538	29.585
OFFSET	-10.439	-10.000	-9.500	-7.000	-5.650	-5.540	-5.500	-5.050	-3.500	0.000	3.500	5.050	5.500	5.540	5.650	7.000	9.500	10.000	11.953

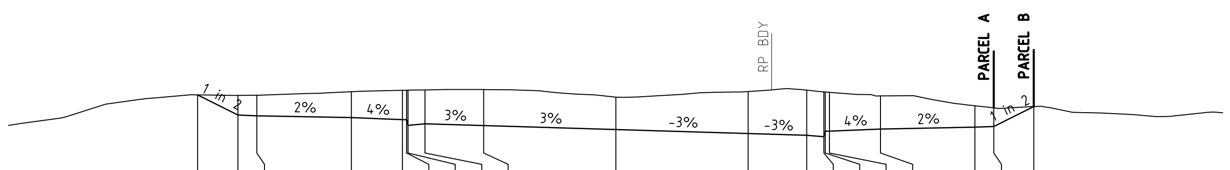
CH. 320.000



Datum 26.0

DESIGN LEVELS	28.669	28.073	28.053	28.003	27.949	27.949	27.799	27.839	27.793	27.688	27.583	27.536	27.496	27.646	27.646	27.700	27.750	27.770	28.362
NATURAL SURFACE	28.669	28.714	28.729	28.691	28.657	28.656	28.656	28.652	28.707	28.653	28.511	28.719	28.807	28.814	28.840	28.853	28.598	28.556	28.362
OFFSET	-11.192	-10.000	-9.500	-7.000	-5.650	-5.540	-5.500	-5.050	-3.500	0.000	3.500	5.050	5.500	5.540	5.650	7.000	9.500	10.000	11.184

CH. 300.000



Datum 26.0

DESIGN LEVELS	28.042	27.507	27.487	27.437	27.383	27.383	27.233	27.273	27.227	27.122	27.017	26.970	26.930	27.080	27.080	27.134	27.184	27.204	27.733
NATURAL SURFACE	28.042	28.027	28.032	28.127	28.163	28.165	28.165	28.173	28.183	27.983	28.131	28.169	28.122	28.118	28.109	28.013	27.751	27.696	27.733
OFFSET	-11.070	-10.000	-9.500	-7.000	-5.650	-5.540	-5.500	-5.050	-3.500	0.000	3.500	5.050	5.500	5.540	5.650	7.000	9.500	10.000	11.057

CH. 280.000

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF GOLDCOAST.

BURCHILLS ENGINEERING SOLUTIONS

Manager: MARK RICKETTS

Designed: J.DAVIES
Engineered: LUCAS FAULKNER
Drafted: W.JESUS
Certified: RPEQ
Drawing Checked
Authorised
Project Identifier\-\CAD File Name: BMTN-RS02XS_33
Projects Records File Number
Contracts Records File Number

Issue	Description ✳	Name	Initial	Date
B	MILESTONE 2 ISSUE	J.DAVIES	JD	26-06-20
A	DRAFT ISSUE	J.DAVIES	JD	02-04-20

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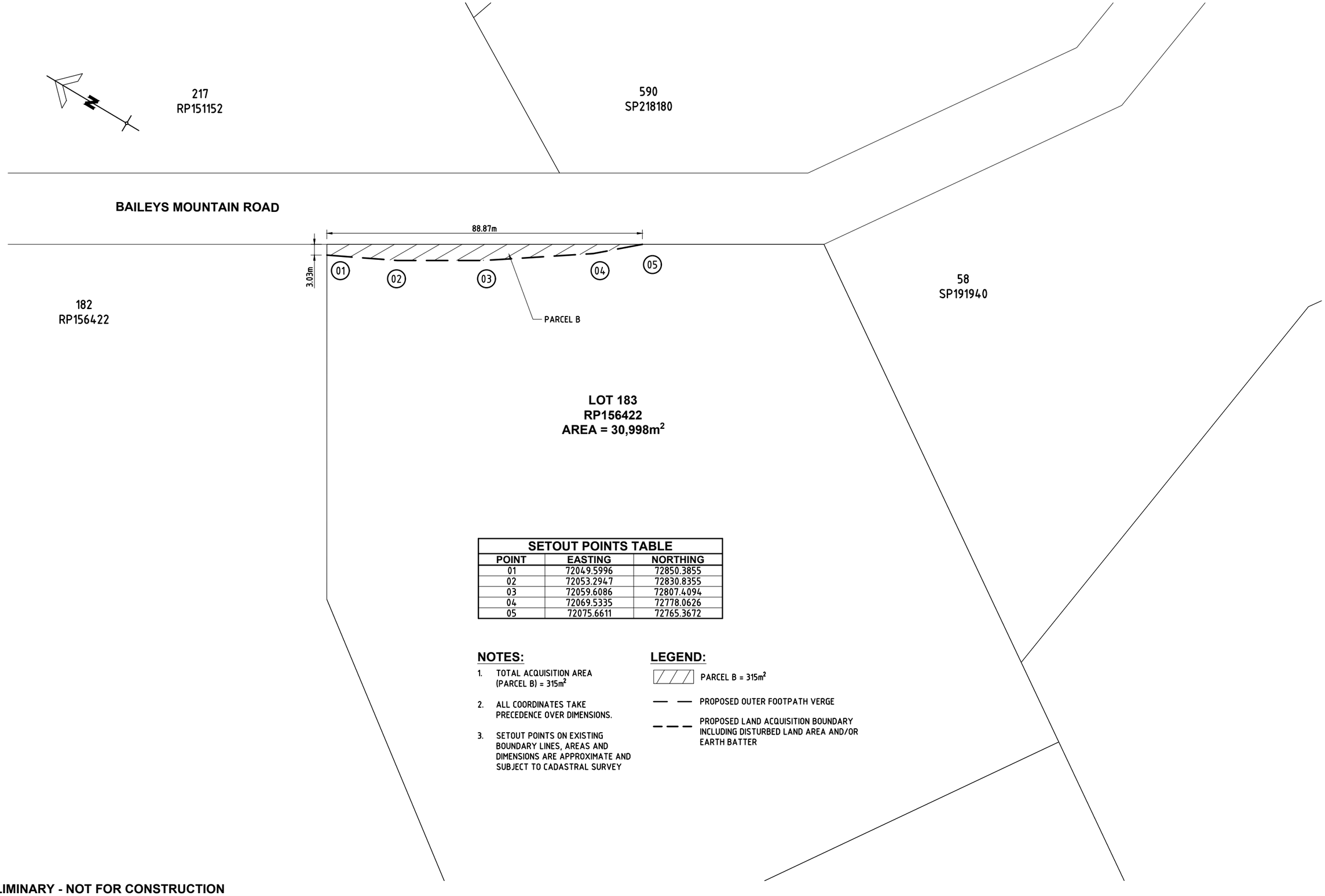
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ARTERIAL ROAD - BAILEYS MOUNTAIN ROAD
UPPER COOMERA
PRELIM ROUNDABOUT UPGRADE
RS02 CROSS SECTIONS CH280 TO CH320

Project Number: 27144
Page 33 of 62
Issue: B
Drawing Number: 27144.P132



SETOUT POINTS TABLE		
POINT	EASTING	NORTHING
01	72049.5996	72850.3855
02	72053.2947	72830.8355
03	72059.6086	72807.4094
04	72069.5335	72778.0626
05	72075.6611	72765.3672

NOTES:

1. TOTAL ACQUISITION AREA (PARCEL B) = 315m²
2. ALL COORDINATES TAKE PRECEDENCE OVER DIMENSIONS.
3. SETOUT POINTS ON EXISTING BOUNDARY LINES, AREAS AND DIMENSIONS ARE APPROXIMATE AND SUBJECT TO CADASTRAL SURVEY

LEGEND:

PARCEL B = 315m²

PROPOSED OUTER FOOTPATH VERGE

PROPOSED LAND ACQUISITION BOUNDARY INCLUDING DISTURBED LAND AREA AND/OR EARTH BATTER

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF GOLDCOAST.

BURCHILLS ENGINEERING SOLUTIONS

Manager: MARK RICKETTS

Designed: J.DAVIES | Engineered: LUCAS FAULKNER

Drafted: W.JESUS | Certified: RPEQ

Drawing Checked | Authorised

Project Identifier\-\CAD File Name: BMTN-ACQ05_P305

Projects Records File Number | Contracts Records File Number

Issue	Description ✳	Name	Initial	Date
A	DRAFT ISSUE	J.DAVIES	JD	11-06-20

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Bar Scales: 0 10 20 30m — SCALE 1:500 @ A1

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ARTERIAL ROAD - BAILEYS MOUNTAIN ROAD UPPER COOMERA PRELIMINARY DESIGN

LAND ACQUISITION PLAN
LOT 183 RP156422

Project Number: 27144

Page 6 of 12 | Issue: A

Drawing Number: 27144.P305

ENGINEERING INFRASTRUCTURE REPORT

Proposed Residential Subdivision

41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera

Lots 185 & 186 on SP173728, Lot 183 on RP156422, Lot 58 on SP191940, Lot 56 on RP162858 & Lot 57 on SP214370

For Norfolk Estates Pty Ltd

11 December 2024

File No: OSK6521-0004-A

DOCUMENT CONTROL SHEET

Title:	Engineering Infrastructure Report
Document No:	OSK6521-0004-A
Original Date of Issue:	11 December 2024
Project Manager:	Daley Curran
Author:	Adam Iervese
Applicant:	Norfolk Estates Pty Ltd
Client:	QM Properties
Client Contact:	Richard Sefton
Client Reference:	41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera
Synopsis:	This report examines the existing infrastructure and future engineering impacts for the proposed development of the site, including the availability of services and the provision of water and sewerage servicing the development site and determines the demand on these systems from the proposed development.

Reviewed by RPEQ	Reg. No.	Signed	Date
Daley Curran	26353		11 December 2024

Revision/Checking History			
Revision No	**Date**	**Checked By**	**Issued By**
A	11 December 2024	Aaron Pianta	Adam Iervese

Distribution		
Recipient	**No of Copies**	**Method**
Norfolk Estates Pty Ltd – Richard Sefton	1	PDF

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1.1 Background 1
2.0 SITE DESCRIPTION 2
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2.2 Site Topography 2
2.3 Vegetation and Land Use 3
2.4 Proposed Development 3
3.0 EARTHWORKS 4
4.0 ROADWORKS 4
5.0 STORMWATER 5
6.0 SEWERAGE 5
7.0 WATER 6
8.0 ELECTRICAL, COMMUNICATIONS AND GAS 7
9.0 CONCLUSIONS 7

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Figure 1: Locality Plan (Source Nearmap) 1
Figure 2: Aerial Image of the Site (Source: Nearmap – Image taken 2 June 2024) 2

APPENDICES

Appendix A: LandPartners, Detail Survey (Ref: BRJD8528-00-12-1)
Appendix B: Saunders Havill Group; Concept Plan (Ref: 11694 P06)
Appendix C: OSKA Consulting Group; Preliminary Bulk Earthworks Plans (Ref: OSK6521- P010-P019)
Appendix D: OSKA Consulting Group; Preliminary Roadworks Plans (Ref: OSK6521-P020-P029)
Appendix E: OSKA Consulting Group; Preliminary Services Plans (Ref: OSK6521-P040 & P041)
Appendix F: Before You Dig Australia Plans

1.0 INTRODUCTION

1.1 Background

OSKA Civil Consultants has been commissioned by Norfolk Estates Pty Ltd to prepare a Engineering Infrastructure Report (EIR) to support a Development Application for the proposed residential subdivision development situated at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera.

The subject site is described as Lots 185 & 186 on SP173728, Lot 183 on RP156422, Lot 58 on SP191940, Lot 56 on RP162858 & Lot 57 on SP214370 and has a total site area of 15.251 ha.

The purpose of this report is to demonstrate that the proposed development can be connected to Council's existing stormwater drainage, sewerage, water systems and other utility services.

2.0 SITE DESCRIPTION

2.1 Location

The subject site is located at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera. The site fronts Courtney Drive to the north, Baileys Mountain Road to the east, Reserve Road and Richardson Crescent to the south and has existing residential properties to the north, east and west. The site covers a total combined area of 15.251 ha, with details as summarised in Table 1 and as located in Figure 1.

Table 1: Site Description

Client	Lot and Property Description	Street Address
Norfolk Estates Pty Ltd	*Lots 185 & 186 on SP173728, Lot 183 on RP156422, Lot 58 on SP191940, Lot 56 on RP162858 & Lot 57 on SP214370*	*41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera*

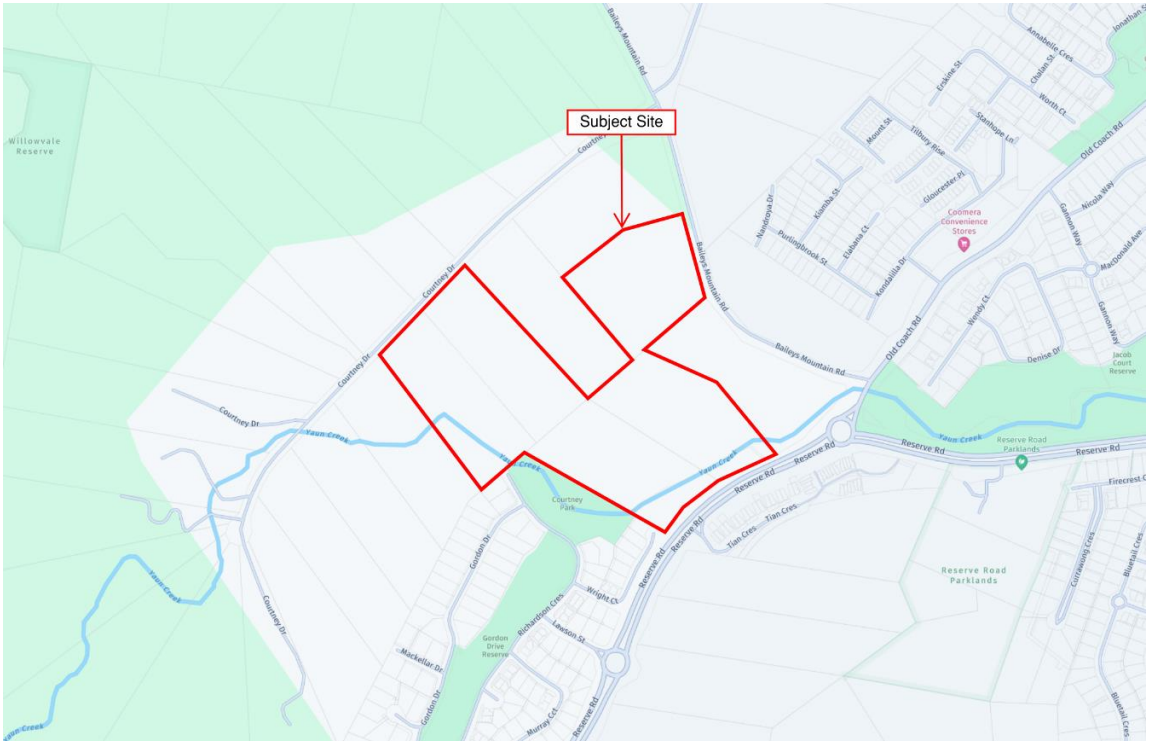


Figure 1: Locality Plan (Source: Nearmap)

2.2 Site Topography

The site generally grades to the south/east either towards the existing waterway through the site or the existing swale along Baileys Mountain Road. The existing site is relatively steep with spot heights ranging from approximately RL 23.00m AHD to 49.50m AHD. Based on the provided survey and aerial information, any stormwater runoff from the site either drains to the existing waterway through the site or the existing swale along Baileys Mountain Road**.**

Further information of the site survey has been provided by LandPartners, Detail Survey (Ref: BRJD8528-00-12-1) included as Appendix A.

2.3 Vegetation and Land Use

The subject site currently consists of five residential properties and most of the lots contain a number of dwellings/structures typically consisting of a residential dwelling, detached garage and shed. The subject site contains a total of three dams and a waterway that runs through the site from the north-west and along the southern site boundary through the south-eastern corner of the site. The majority of the subject site is covered in grassed areas with multiple trees throughout the site. Access to each lot is gained via dirt driveways from the road fronting each lot.

An aerial photograph taken on the 2 June 2024 of the subject site is included in Figure 2.



Figure 2: Aerial Image of the Site (Source: Nearmap – Image taken 2 June 2024)

2.4 Proposed Development

The proposed development for the site consists of a 149 lot residential subdivision with lot areas ranging between 294-769m^2. Access to the proposed development will be gained via one of the number of new road connections from Courtney Drive, Baileys Mountain Road, Reserve Road and Richardson Crescent which will provide access to all lots. The development will be completed through five stages of works, ranging from 4 – 40 lots per stage.

Refer to Appendix B for further proposed layout details prepared by Saunders Havill Group; Concept Plan (Ref: 11694 P05).

3.0 EARTHWORKS

Earthworks will be required across the site to facilitate the development. The proposed site grading will require a combination of cut and fill to construct the proposed roadways, allotment pads and direct the development's overland flow to the proposed basin extents.

Retaining walls will be required within the development site to facilitate construction of building pads, stormwater drainage and facilitate sewer servicing for the development. To minimise slopes across the proposed allotments retaining walls up to a maximum height of 3m will be required, with walls higher than 1.5m are to be tiered in accordance with Council requirements. All walls will be wholly contained within the proposed allotments and shall not encroach into road reserves.

Earthworks will be constructed in accordance with Section 3 of the CoGC Land Development Guidelines (LDG's), and all relevant Australian Standards. Any areas of filling of the site will be to a Level 1 compaction standard in accordance with the Planning Scheme Policy and AS3798.

The proposed development lots that border the central neighbouring lot (Lot 184 RP 173728) have been proposed to have temporary batters throughout the lot to in with existing levels. In additional, temporary batters have been proposed to facilitate the temporary turnaround areas at the end of roads 1, 2, 3 and 4. Once the neighbouring lot was developed, these respective lots can be graded to road reserve and necessary retaining walls constructed.

For further details, see schematic drawings showing the proposed earthworks intent as illustrated in OSKA Consulting Group; Preliminary Bulk Earthworks Plan (Ref: OSK6521-P010 & P011) included as Appendix C.

3.1 Sediment & Erosion Controls

Sediment and erosion control devices (S&EC) employed on the site shall be designed and constructed in accordance with the Institution of Engineers, Soil Erosion and Sediment Control Guidelines (IESESC) and City of Gold Coast.

Future Operational Works applications will provide additional details on the sediment and erosion control details proposed for the site. Typically, there are water quality basins proposed for each of the sub catchments and it is proposed that these will be utilised as sediment basins during construction. The OSKA Consulting Group Conceptual Stormwater Management Plan provides high level sediment and erosion control intents.

4.0 ROADWORKS

The proposed development will be accessed via both Courtney Drive and Baileys Mountain Road. Access will be provided to be via a new intersection on Courtney Drive for the north-eastern lots and the proposed intersection along Baileys Mountain Road which was currently as a part of the neighbouring townhouse development application (Council DA Ref: COM/2024/317).

The design of the internal roads has been undertaken in accordance with CoGC's Planning Scheme Policy. Road grades will vary between a minimum of 0.5% and a maximum of 16%. Final road levels will be set to ensure that driveways can be provided to all allotments with a desirable maximum grade of 16.6% wherever possible.

Internal roadworks across the site will be provided by new 16.5m residential access streets, with 15.5m road reserves proposed where there was a parallel waterway and park. Road 5, which provides access to Basin B, is proposed as a 12.0m residential street.

A 16.5m road reserve has been provided for Road 2, with a three-quarter road proposed to be constructed as a part of the development. Throughout the future development of Lot 182 SP156422, the remaining carriageway and verge will be completed to allow for future lots to front Road 2. In the interim, a temporary swale drain will be constructed off the proposed pavement, with a temporary batter (maximum 1:2) required to tie in with the existing levels. This road ties in with adjacent existing levels as best practical due to the existing topography with the maximum road grade being 16% (absolute maximum), aligned with Council's planning scheme policy.

External roadworks will be required to facilitate the construction of the major intersection access points to the proposed development, however all roadworks to along Baileys Mountain Road will be completed by Council as part of the Bailey Mountain Rd upgrade. A widening of the road pavement has been proposed along Courtney Drive to ensure that half the road of the ultimate Courtney Drive carriageway and road reserve were completed. The works will extend along the complete site frontage and taper back to tie in with the existing roadway.

To ensure the proposed development ties in with the future development of Lot 184 RP 173728, a preliminary road design has been completed to ensure a connective future road network. Due to the existing topography, the top of the hill will be required to be excavated to ensure compliant road grades across the future network. In the interim, temporary turnaround areas have been proposed at the end of roads 1, 2, 3 and 4. 1 in 2 batters will be utilised to tie in with existing site levels.

For further details, see schematic drawing showing the proposed roadworks as illustrated in the OSKA Consulting Group; Preliminary Roadworks Plan (Ref: OSK6521-P020-P029) included as Appendix D.

5.0 STORMWATER

All captured stormwater from the proposed subdivision is to be directed to the proposed Council owned combined bioretention-detention basins across the site. These Council Stormwater basins has been designed to comply with the requirements of the CoGC LDG's. Internal council stormwater drainage will be provided to convey all site flows in accordance with the LDG's and QUDM requirements.

For further details, see OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-003).

6.0 SEWERAGE

There is an existing 300mm PVC trunk sewer main that runs parallel with Yaun Creek traversing the site. As there were multiple ongoing neighbouring developments around the subject site, there are multiple sewer main extensions currently being proposed or constructed. These have been summarised below:

- The subdivision of 79 Courtney Drive has proposed a continuation of the trunk sewer main which will be constructed through the south-west corner of the site (OPW Ref: OPW/2024/987)

- The townhouse development on 202 Baileys Mountain Road has proposed to extend the downstream sewer main across Yaun Creek in the south-east corner of the site. (DA Ref: COM/2024/317)
- The townhouse development on 155 Baileys Mountain Road has proposed to extend the sewer infrastructure along Baileys Mountain Road past the subject site (DA Ref: MIN/2024/449)

The proposed development will continue the construction of the 225m PVC trunk sewer main through the site and up to Courtney Drive. This asset has been flagged in Council LGIP for construction and therefore can be deemed as trunk infrastructure which will be creditable.

The internal sewerage reticulation will provide new 150mm PVC-U sewer reticulation across the site within the proposed new road reserve to service each new lot. Due to the existing topography of the site, the proposed development will discharge at multiple sewer access points throughout the proposed trunk sewer main and sewer mains to be constructed by others.

For further details, see schematic drawings showing the existing sewer infrastructure and the proposed modifications to the existing network as illustrated in the OSKA Consulting Group; Preliminary Services Plan (Ref: OSK6521-P040 & P041) included as Appendix E.

The proposed demands upon the existing sewer network due to the proposed development have been calculated in accordance with the SEQ Water Supply and Sewerage Design & Construction Code (SEQ WS&S D&C Code), as amended by the CoGC Desired Standard of Service (DSS) and Water & Sewer demand tables. Refer to the Water and Sewer capacity assessment completed by WCS Engineering.

7.0 WATER

There are currently no existing live water mains servicing the subject site. However, there are currently multiple water mains being proposed or constructed to service neighbouring developments. These have been summarised below:

- The subdivision of 79 Courtney Drive has proposed an internal water main extension through the development from Gordon Drive to Courtney Drive. The water main will extend through to the site's frontage of Courtney Drive, approx. 120m from the subject site (DA Ref: COM/2019/82)
- The townhouse development on 202 Baileys Mountain Road has proposed to extend the external water main into the subject site (along Road 1) to provide their development with an internal connection (DA Ref: COM/2024/317)
- The townhouse development on 155 Baileys Mountain Road has proposed to extend the external water main infrastructure along Baileys Mountain Road past the subject site (DA Ref: MIN/2024/449)

It is proposed to extend the existing water main along Courtney Drive approximately 120m to the constructed watermain outside of 79 Courtney Drive. The eastern portion of the proposed development will be connected to the constructed watermain along Baileys Mountain Road.

For further details, see schematic drawings showing the existing water infrastructure and the proposed modifications to the existing network as illustrated in the OSKA Consulting Group; Preliminary Services Plan (Ref: OSK6521-P040 & P041) included as Appendix E.

The proposed demands upon the existing sewer network due to the proposed development have been calculated in accordance with the SEQ Water Supply and Sewerage Design & Construction Code (SEQ WS&S D&C Code), as amended by the CoGC Desired Standard of Service (DSS) and Water & Sewer demand tables. Refer to the Water and Sewer capacity assessment completed by WCS Engineering.

8.0 ELECTRICAL, COMMUNICATIONS AND GAS

Electrical, Telecommunications and Gas services are all available to connect to the site. Electrical services are available along Courtney Drive. Telecommunication services are available along Courtney Drive and Baileys Mountain Drive. Gas services are available along Baileys Mountain Drive.
The proposed connection and load requirements and any necessary upgrades will need to be determined as part of more detailed investigations.

The Dial Before You Dig Plans for the existing services is included in Appendix F.

9.0 CONCLUSIONS

OSKA Civil Consultants has been commissioned by Norfolk Estates Pty Ltd to prepare an Engineering Infrastructure Report (EIR) to support a Development Application (DA) to the City of Gold Coast (CoGC) for the proposed Residential Subdivision situated at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera. The subject site is described as Lots 185 & 186 on SP173728, Lot 183 on RP156422, Lot 58 on SP191940, Lot 56 on RP162858 & Lot 57 on SP214370.

This Engineering Infrastructure Report has detailed the existing infrastructure and the provision of services to the proposed development and determined the proposed demand on the existing water and sewerage infrastructure. The location of the existing water and sewerage reticulation infrastructure as well as the proposed connection points for the development have been shown on the servicing plans in addition to the proposed roadworks.

APPENDIX

A

LandPartners, Detail Survey (Ref: BRJD8528-00-12-1)

COURTNEY DRIVE

BAILEYS MOUNTAIN ROAD

182
RP156422

183
RP156432

184
RP173727

185
RP173727

186
RP173728

187
RP173728

188
RP173728

58
SP191940

57
SP214370

56
RP162858

Emt B SP205586

Emt C SP214374

Emt A SP205586

RESERVE ROAD

75
SP174234

RICHARDSON CRES

900
SP205578

Emt A SP205578

Emt B SP205578

Emt C SP205578

1
SP205578

2
SP205578

3
SP205578

WRIGHT COURT

BRJD8528-000-12-1
Eden - Upper Coomera
Detail Survey
Contour Interval - 0.5m
10/09/2024

10 0 20 50 110m

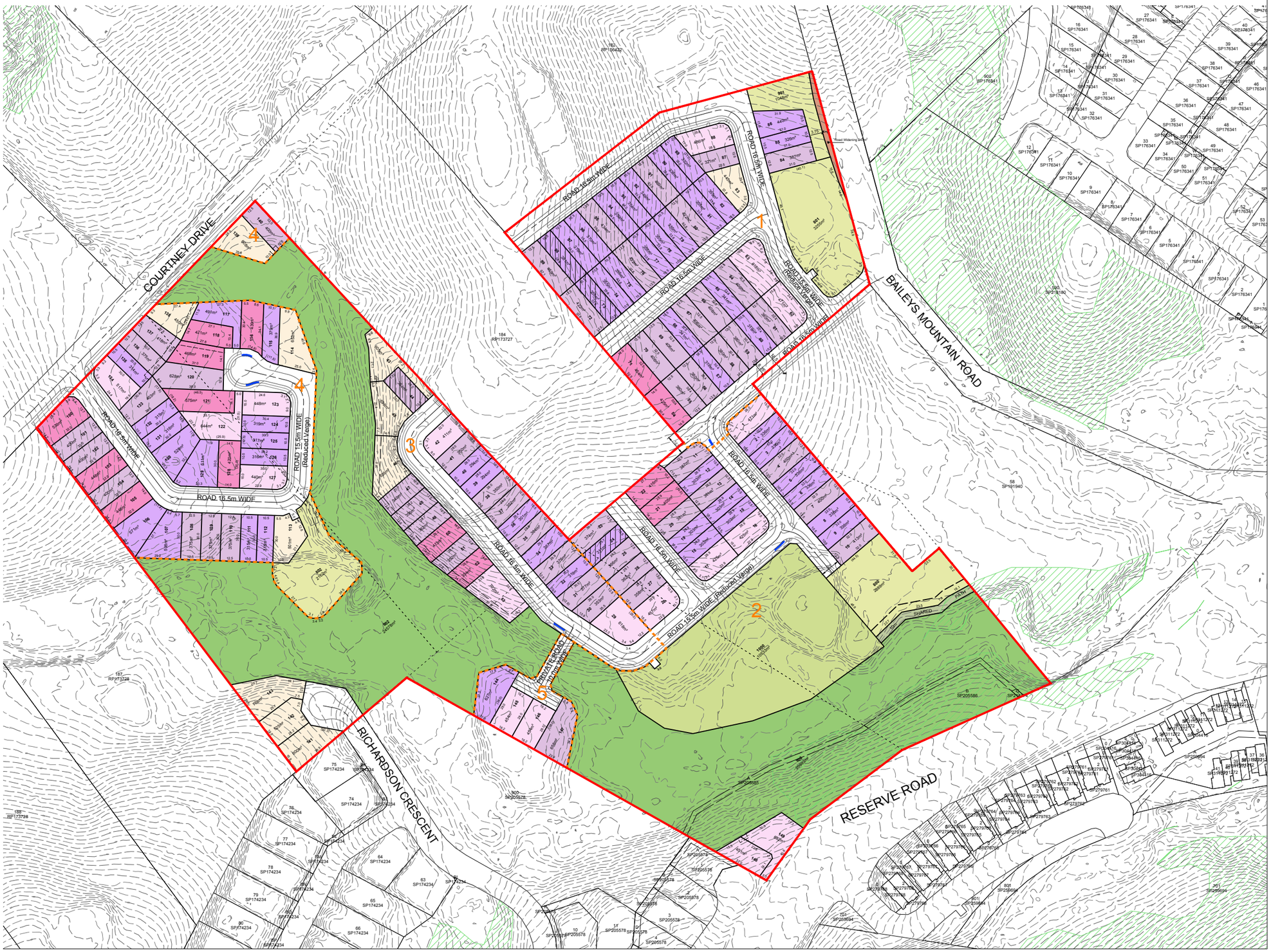
SCALE BAR

APPENDIX

B

Saunders Havill Group; Concept Plan (Ref: 11694 P06)

PROPOSAL PLAN



NOT TO BE USED FOR ENGINEERING DESIGN OR CONSTRUCTION

NOTES

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

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

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

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

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

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Lidar Data © State of Queensland (Department of Natural Resources and Mines) 2016.

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

PROJECTION: GDA2020 MGA56

SUBJECT BOUNDARIES: LOT CALCULATIONS BY LANDPARTNERS DATED 25/11/2024

LEGEND

- Site Boundary
- Major Contour (1.0m interval)
- Minor Contour (0.5m interval)
- Vegetation Management
- Temporary Turnaround Lot
- Stage Boundary
- 1 Stage No.
- Indicative Bin Pad location
- Easement

DEVELOPMENT STATISTICS			
RESIDENTIAL ALLOTMENTS	**No. Lots**	**%**	**Net Area**
10.5m - 12.49m Frontage	54	36.2%	1.954 ha
12.5m - 13.99m Frontage	52	34.9%	2.056 ha
14m - 14.99m Frontage	14	9.4%	0.623 ha
> 15m Frontage	18	12.1%	0.917 ha
Irregular Frontage	11	7.4%	0.639 ha
Total Residential Allotments	**149**	**100.0%**	**6.189 ha**
Land Budget	**Area (Ha)**	**%**	
Area of Subject Site / Stage	15.251 ha	—	
Net Residential Area (no roads)	6.189 ha	40.6%	
Detention / Drainage	0.935 ha	6.1%	
Local Park	1.053 ha	6.9%	
Environmental Open Space	4.557 ha	29.9%	
Pedestrian Links	0.035 ha	0.2%	
Road Widening	0.025 ha	0.2%	
Road Areas	2.457 ha	16.1%	
Total	**15.251 ha**	**100.0%**	

RP DESCRIPTION: Lot 185 on RP173727, Lot 186 on RP173728, Lot 57 on SP214370 & Lot 56 on RP162858, Lot 58 on SP191940

SCALE @A1 1:1250 @A3 1:2500 - LENGTHS ARE IN METRES

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

saunders havill group

NORFOLK ESTATES PTY LTD ATF SOLANDER INVESTMENT UNIT TRUST

41 - 53 COURTNEY DRIVE , UPPER COOMERA • 10/12/2024 • 11694 P 06 Rev A - CON 01

APPENDIX

C

OSKA Consulting Group; Preliminary Bulk Earthworks Plan (Ref: OSK6521-P010-P019)

BULK EARTHWORKS LEGEND

- 80.0 — FINISHED SURFACE CONTOURS
- 80.0 — EXISTING SURFACE CONTOURS
- 0.0 - 1.5m RETAINING WALL
- 1.5 - 3.0m RETAINING WALL
- STAGE BOUNDARY
- SPLIT LEVEL LOT
- 99 — LOT NUMBER

EXISTING SERVICES LEGEND

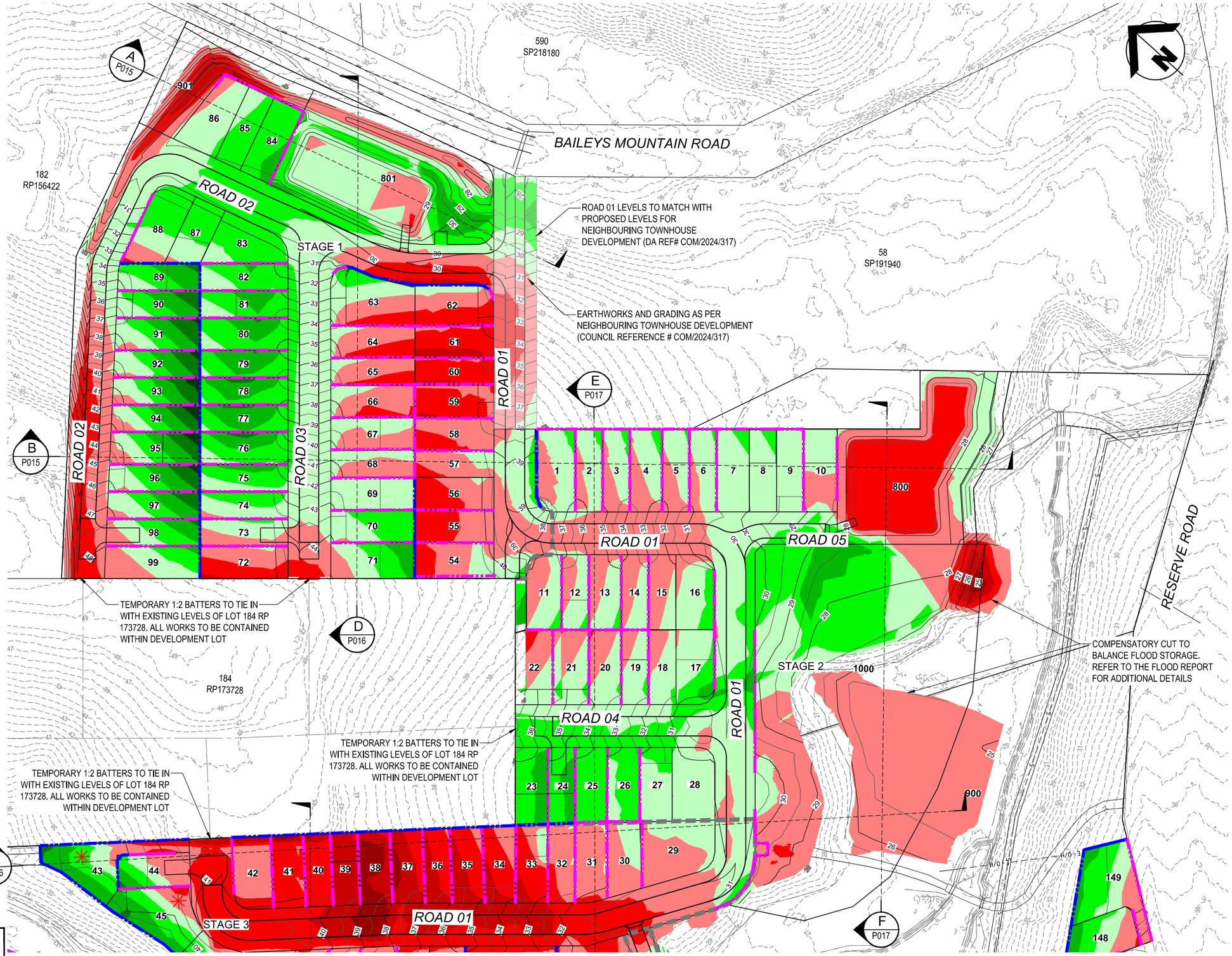
- S — EXISTING SEWER MAIN
- W — EXISTING WATER MAIN
- SWD — EXISTING STORMWATER PIPE
- T — EXISTING TELECOMMUNICATIONS CABLE
- E — EXISTING ELECTRICAL CABLE

CUT & FILL LEGEND

EXCAVATION	FILLING
0.0m - 1.0m	0.0m - 1.0m
1.0m - 2.0m	1.0m - 2.0m
2.0m - 3.0m	2.0m - 3.0m
3.0m - 4.0m	3.0m - 4.0m
	GREATER THAN 4m

APPROVAL ISSUE
NOT FOR CONSTRUCTION
UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS



FOR CONTINUATION REFER SHEET 2

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION
2	05-11-24	ISSUED FOR INFORMATION
1	31-10-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY BULK EARTHWORKS PLAN
SHEET 1 OF 2

SCALE: 1:750 AT A1
1:1500 AT A3
0 15 30 45 60m

PROJECT NO. OSK6521

DWG NO. P010

ISSUE B

BULK EARTHWORKS LEGEND

- 80.0 — FINISHED SURFACE CONTOURS
- 80.0 — EXISTING SURFACE CONTOURS
- 0.0 - 1.5m RETAINING WALL
- 1.5 - 3.0m RETAINING WALL
- STAGE BOUNDARY
- SPLIT LEVEL LOT
- 99 — LOT NUMBER

EXISTING SERVICES LEGEND

- S — EXISTING SEWER MAIN
- W — EXISTING WATER MAIN
- SWD — EXISTING STORMWATER PIPE
- T — EXISTING TELECOMMUNICATIONS CABLE
- E — EXISTING ELECTRICAL CABLE

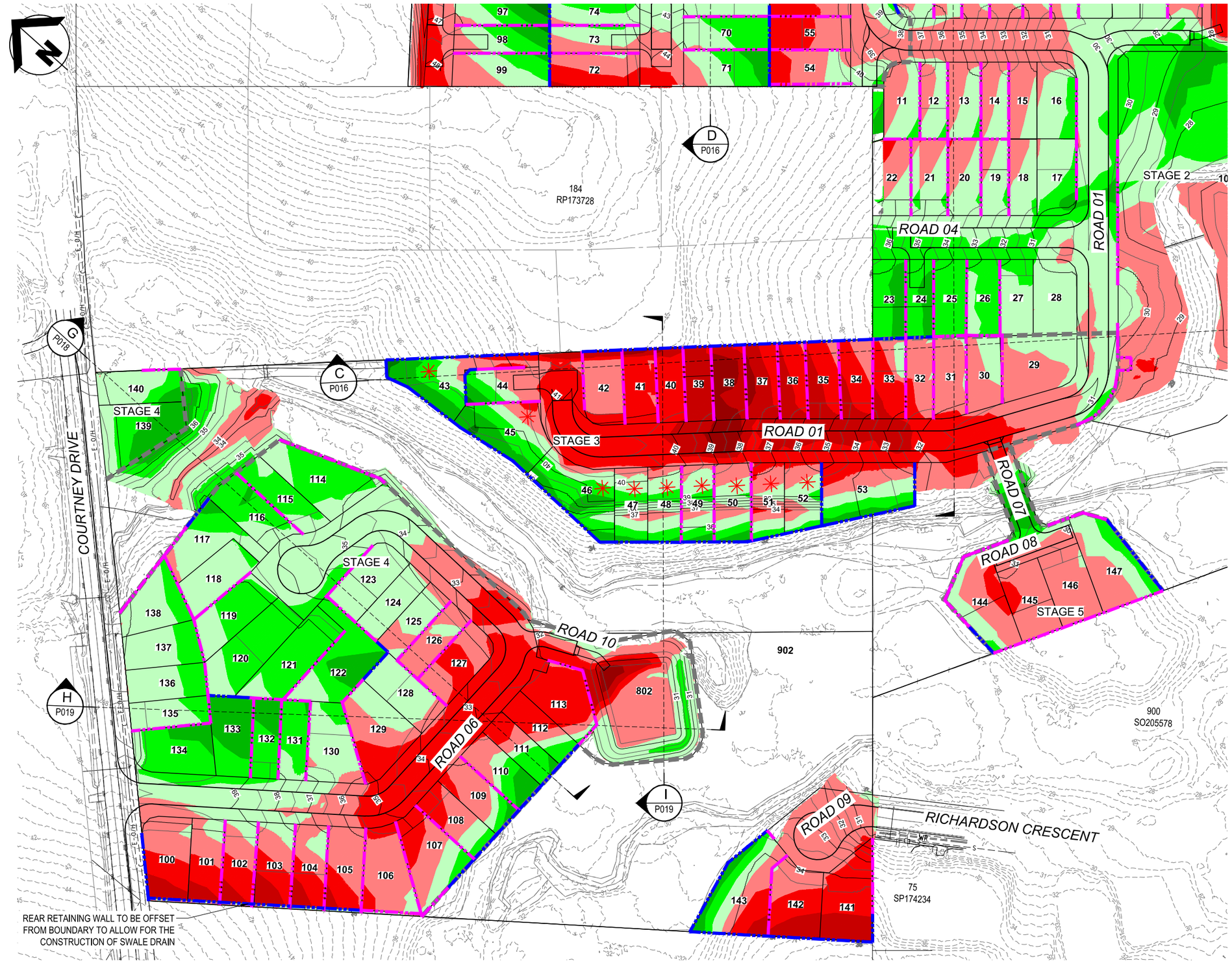
CUT & FILL LEGEND

EXCAVATION	FILLING
0.0m - 1.0m	0.0m - 1.0m
1.0m - 2.0m	1.0m - 2.0m
2.0m - 3.0m	2.0m - 3.0m
3.0m - 4.0m	3.0m - 4.0m
	GREATER THAN 4m

APPROVAL ISSUE
NOT FOR CONSTRUCTION
UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

FOR CONTINUATION REFER SHEET 1



ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION
2	05-11-24	ISSUED FOR INFORMATION
1	31-10-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY BULK EARTHWORKS PLAN
SHEET 2 OF 2

SCALE: 1:750 AT A1
1:1500 AT A3
0 15 30 45 60m

PROJECT NO. OSK6521

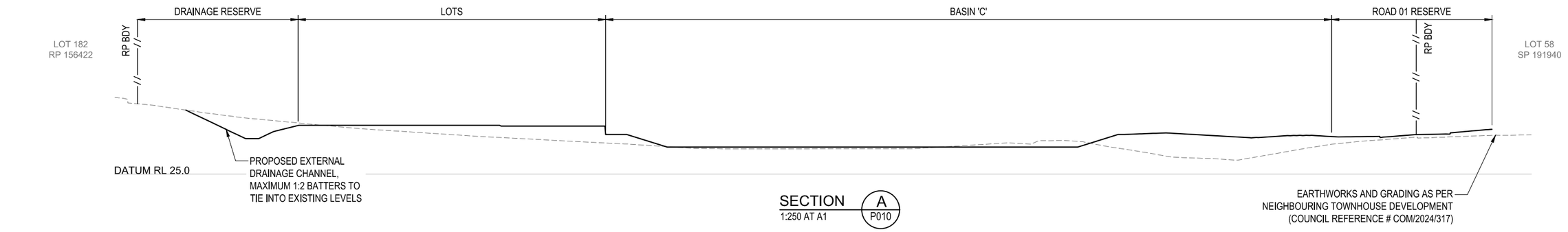
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ISSUE B

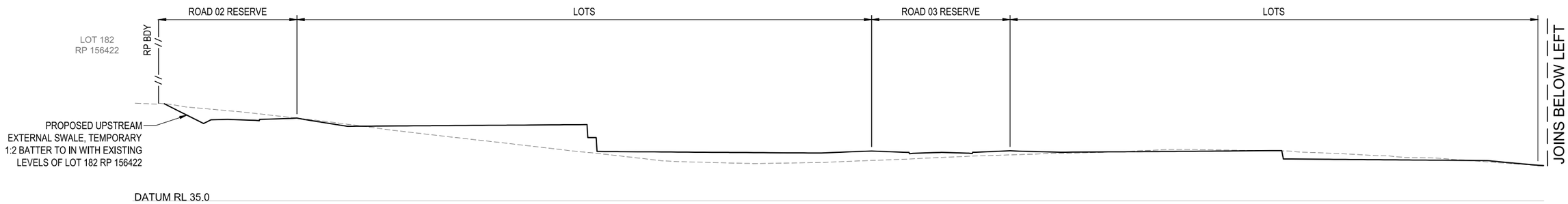
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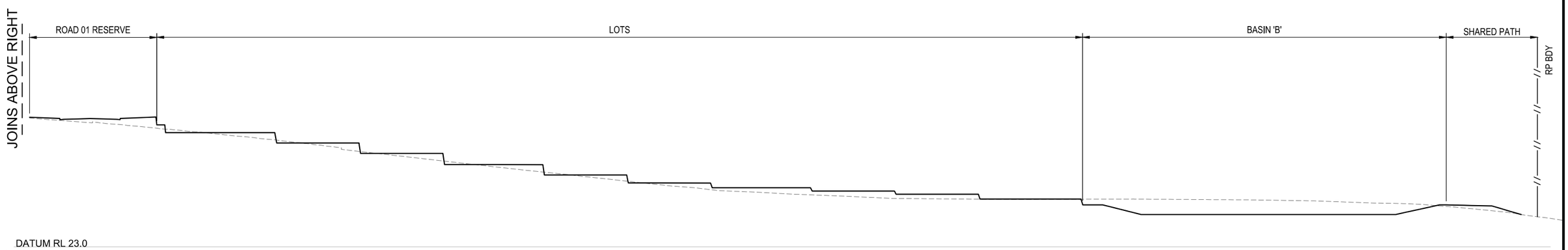
DESIGN SURFACE

EXISTING SURFACE



SECTION A
1:250 AT A1 P010





SECTION B
1:250 AT A1 P010

APPROVAL ISSUE
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UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY BULK EARTHWORKS SITE SECTIONS - SHEET 1 OF 5

SCALE: 1:250 AT A1, 1:500 AT A3 (0 5 10 15 20m)

PROJECT NO. OSK6521

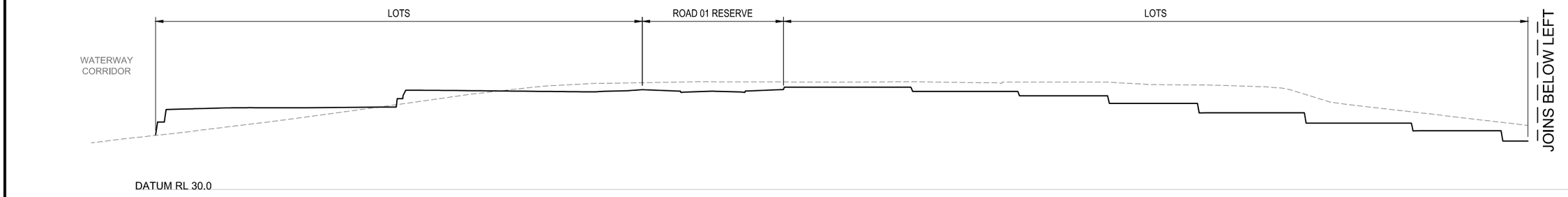
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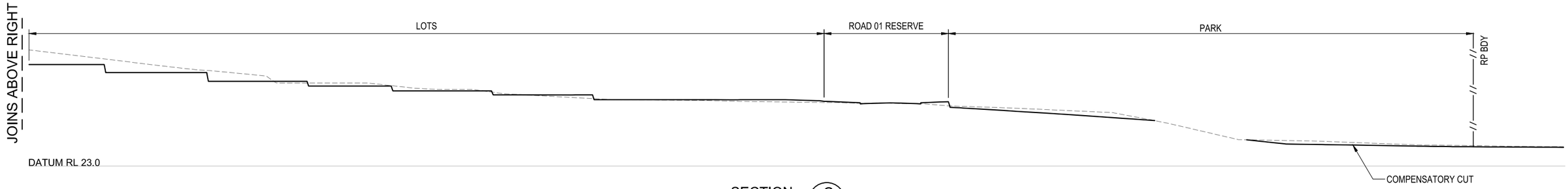
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LEGEND

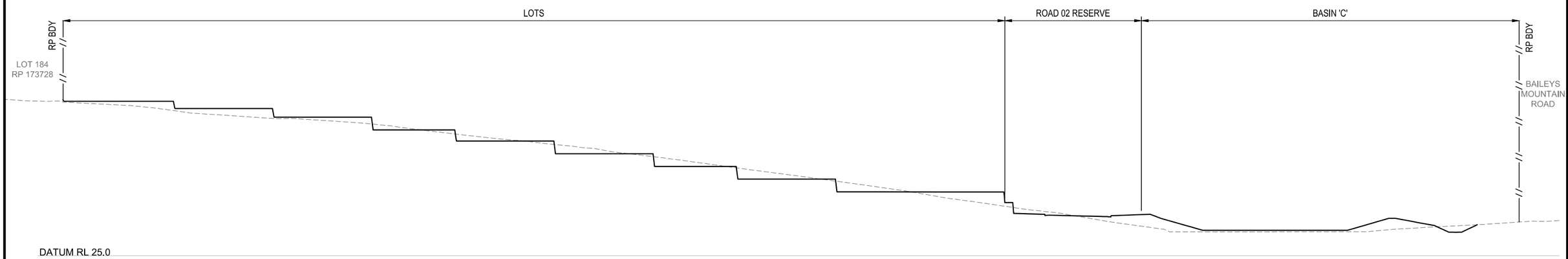
DESIGN SURFACE

EXISTING SURFACE





SECTION C
1:250 AT A1 P010



SECTION D
1:250 AT A1 P010

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY BULK EARTHWORKS SITE SECTIONS - SHEET 2 OF 5

SCALE: 1:250 AT A1, 1:500 AT A3 (0 5 10 15 20m)

PROJECT NO. OSK6521

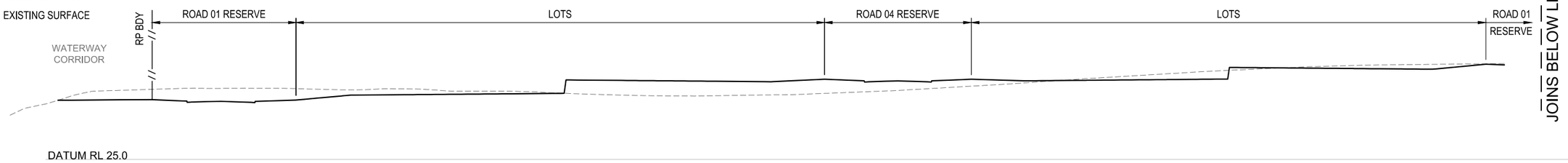
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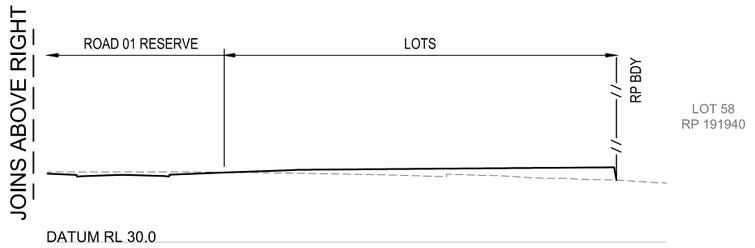
ISSUE B

LEGEND

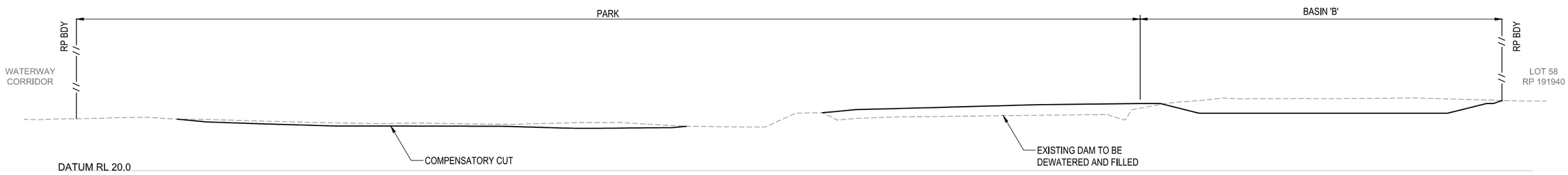
DESIGN SURFACE

EXISTING SURFACE





SECTION E
1:250 AT A1 P010



SECTION F
1:250 AT A1 P010

APPROVAL ISSUE
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UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY BULK EARTHWORKS SITE SECTIONS - SHEET 3 OF 5

SCALE: 1:250 AT A1, 1:500 AT A3 (0 5 10 15 20m)

PROJECT NO. OSK6521

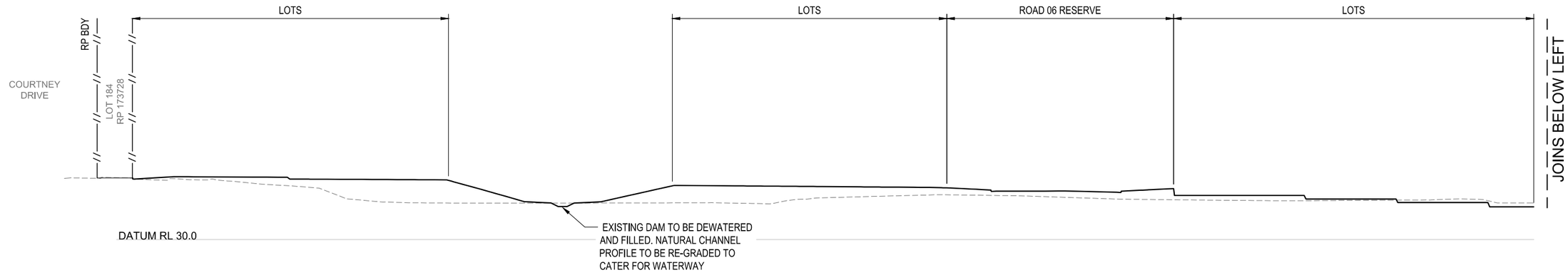
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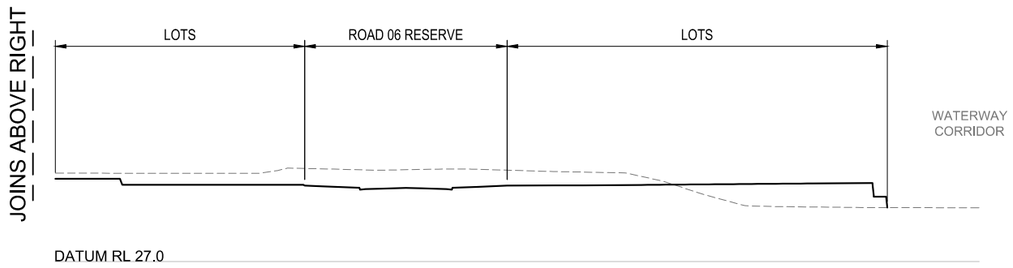
ISSUE B

LEGEND

DESIGN SURFACE

EXISTING SURFACE





SECTION G
1:250 AT A1 P011

APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY BULK EARTHWORKS SITE SECTIONS - SHEET 4 OF 5

SCALE: 1:250 AT A1, 1:500 AT A3 (0 5 10 15 20m)

PROJECT NO. OSK6521

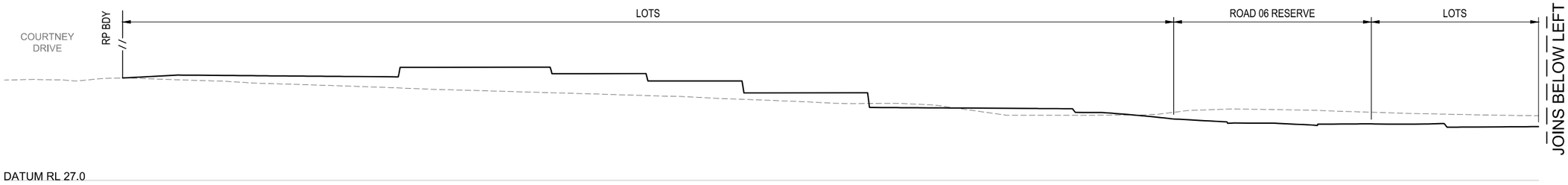
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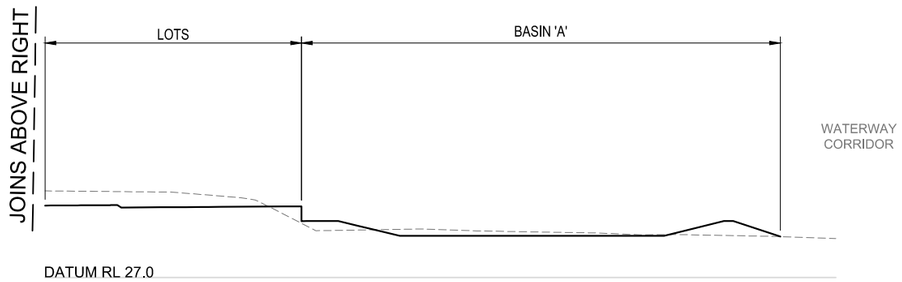
ISSUE B

LEGEND

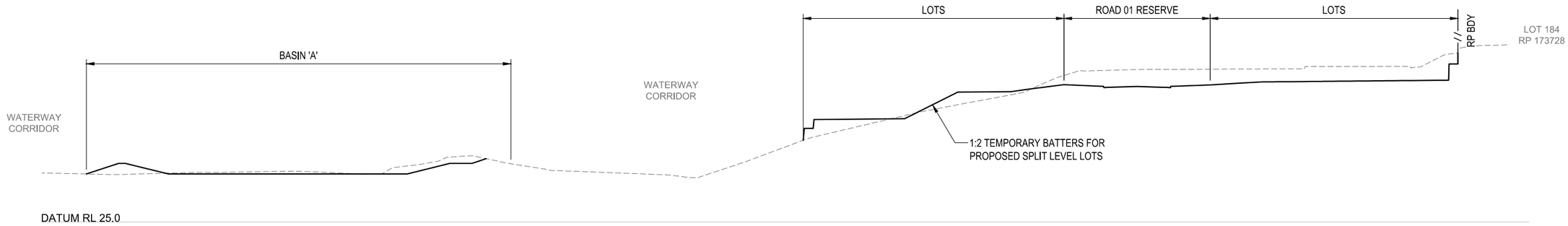
DESIGN SURFACE

EXISTING SURFACE





SECTION H
1:250 AT A1 P011



SECTION I
1:250 AT A1 P011

APPROVAL ISSUE
NOT FOR CONSTRUCTION
UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY BULK EARTHWORKS SITE SECTIONS - SHEET 5 OF 5

SCALE: 1:250 AT A1, 1:500 AT A3 (0 5 10 15 20m)

PROJECT NO. OSK6521

DWG NO. P019

ISSUE B

APPENDIX

D

OSKA Consulting Group; Preliminary Roadworks Plan (Ref: OSK6521-P020-P029)

ROADWORKS LEGEND

- FINISHED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- ROAD CONTROL LINE
- PROPOSED PAVEMENT
- PROPOSED MAINTENANCE PATHWAY TO BASIN
- TEMPORARY TURNAROUND
- STAGE BOUNDARY
- CONCRETE BIN PADS
- PROPOSED SWALE

EXISTING SERVICES LEGEND

- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- EXISTING STORMWATER PIPE
- EXISTING TELECOMMUNICATIONS CABLE
- EXISTING ELECTRICAL CABLE

PROPOSED 3/4 ROAD ALONG NORTHERN BOUNDARY OF DEVELOPMENT TO ALLOW FOR THE CONSTRUCTION OF A TEMPORARY SWALE DRAIN TO DIVERT THE UPSTREAM CATCHMENT

PROPOSED ROAD WIDENING DEDICATION EXTENTS

590 SP218180

182 RP156422

184 RP173728

58 SP191940

BAILEYS MOUNTAIN ROAD

BAILEYS MOUNTAIN ROAD INTERSECTION TO BE COMPLETED BY NEIGHBOURING DEVELOPMENT (COUNCIL REFERENCE # COM/2024/317)

ROADWORKS AS PER NEIGHBOURING TOWNHOUSE DEVELOPMENT (COUNCIL REFERENCE # COM/2024/317)

ROAD 01 | ROAD 02 | ROAD 03 | ROAD 04 | ROAD 05

RESERVE ROAD

STAGE 1 | STAGE 2 | STAGE 3

TEMPORARY TURNAROUND

BIN PADS

FOR CONTINUATION REFER SHEET 2

APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION
1	31-10-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY ROADWORKS LAYOUT PLAN SHEET 1 OF 2

SCALE: 1:750 AT A1, 1:1500 AT A3 (0, 15, 30, 45, 60m)

PROJECT NO.: OSK6521

DWG NO.: P020

ISSUE: B

ROADWORKS LEGEND

- 80.0 — FINISHED SURFACE CONTOURS
- 80.0 — EXISTING SURFACE CONTOURS
- ROAD CONTROL LINE
- PROPOSED PAVEMENT
- PROPOSED MAINTENANCE PATHWAY TO BASIN
- TEMPORARY TURNAROUND
- STAGE BOUNDARY
- CONCRETE BIN PADS
- PROPOSED SWALE

EXISTING SERVICES LEGEND

- S — EXISTING SEWER MAIN
- W — EXISTING WATER MAIN
- SWD — EXISTING STORMWATER PIPE
- T — EXISTING TELECOMMUNICATIONS CABLE
- E — EXISTING ELECTRICAL CABLE

FOR CONTINUATION REFER SHEET 1



APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION
1	31-10-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

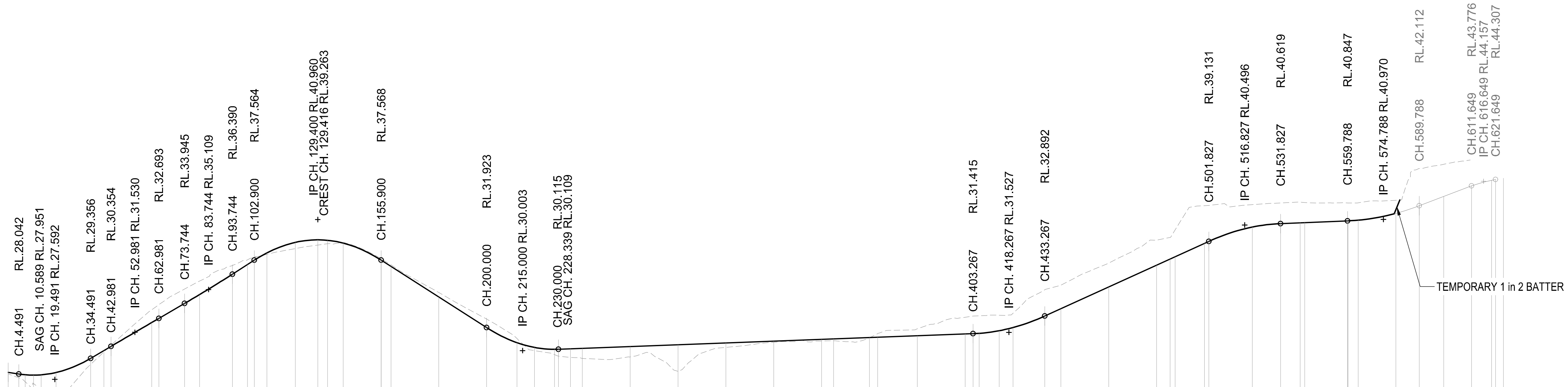
TITLE: PRELIMINARY ROADWORKS LAYOUT PLAN SHEET 2 OF 2

SCALE: 1:750 AT A1, 1:1500 AT A3 (0, 15, 30, 45, 60m)

PROJECT NO.: OSK6521

DWG NO.: P021

ISSUE: B



Horiz Curve Data	R-30m	R-14.25m	R14.25m	R14.25m	R30m	R-50m	R14.25m

Vertical Geometry Grade (%)	-3%	11.758%	11.632%	12.815%	-12.8%	0.75%	9.1%	0.818%	7.613%	3%
Vertical Grade Length (m)	19.491m	33.49m	30.764m	45.656m	85.6m	203.267m	98.559m	57.961m	41.861m	8.3m

Vertical Curve Length (m)	L 30	L 20	L 20	L 53	L 30	L 30	L 30	L 30	L 10
Vertical Curve Radius (m)	R 203.279	R 15871.957	R 1690.161	R 206.907	R 221.402	R 359.281	R 362.21	R 441.453	R 216.767

DATUM R.L.16.000

CHAINAGE	NAT. SURFACE	CUT / FILL	DESIGN LEVELS
0	28.065	0.112	28.177
4.491	27.726	0.316	28.042
7.134	27.393	0.587	27.980
10.589	27.246	0.705	27.951
13.802	26.459	1.517	27.976
20	26.457	1.712	28.169
34.491	28.848	0.509	29.356
40	29.886	0.118	30.004
42.981	30.451	-0.097	30.354
60	33.412	-1.065	32.346
62.981	33.835	-1.141	32.693
73.744	35.149	-1.204	33.945
80	35.816	-1.132	34.685
93.744	37.114	-0.724	36.390
100	37.590	-0.398	37.192
102.9	37.820	-0.257	37.564
107.43			
120	38.533	0.516	39.048
129.416	38.825	0.437	39.263
133.5	38.932	0.290	39.222
140	39.028	-0.036	38.992
155.884	37.680	-0.110	37.570
155.9	37.678	-0.111	37.568
160	37.171	-0.128	37.043
180	34.858	-0.375	34.483
200	32.637	-0.714	31.923
212.643	31.013	-0.347	30.665
220	30.003	0.263	30.266
228.339	29.667	0.442	30.109
230	29.543	0.572	30.115
235.027	29.435	0.718	30.153
240	29.345	0.845	30.190
260	29.475	0.866	30.340
280	28.261	2.229	30.490
300	30.271	0.370	30.640
320	30.698	0.092	30.790
340	30.804	0.136	30.940
345.004	30.823	0.155	30.978
360	31.068	0.023	31.090
363.392	31.415	-0.300	31.116
380	31.823	-0.583	31.240
400	32.793	-1.403	31.390
403.267	32.886	-1.471	31.415
405.818	32.909	-1.466	31.443
414.23	32.960	-1.296	31.664
420	33.130	-1.200	31.930
433.267	35.089	-2.197	32.892
440	35.475	-1.970	33.505
460	37.313	-1.988	35.325
480	39.233	-2.088	37.145
485.634	39.464	-1.807	37.658
487.757	40.098	-2.247	37.851
500	42.116	-3.151	38.965
501.827	42.134	-3.003	39.131
520	42.205	-1.876	40.329
531.827	42.346	-1.727	40.619
540	42.413	-1.727	40.686
541.896	42.383	-1.682	40.701
559.788	42.337	-1.489	40.847
560	42.335	-1.486	40.849
564.28	42.360	-1.453	40.907
580	42.571	-1.095	41.475
589.788	45.222	-3.110	42.112
600	45.575	-2.685	42.889
611.649	45.933	-2.157	43.776
620	46.065	-1.814	44.251
621.649	46.078	-1.771	44.307
624.949	46.135	-1.729	44.406

ROAD CONSTRUCTION TO BE COMPLETED BY NEIGHBOURING DEVELOPMENT (DA REF COM/2024/317)

FUTURE ROAD CONSTRUCTION WORKS ON LOT 184 RP173728

LONGITUDINAL SECTION ROAD 01

SCALE HORIZ: 1:1000 AT A1
VERTI: 1:200 AT A1

APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

1:1000 AT A1 (1:2000 AT A3) 0 20 40 60 80 100m HOR
1:200 AT A1 (1:400 AT A3) 0 4 8 12 16 20m VERT

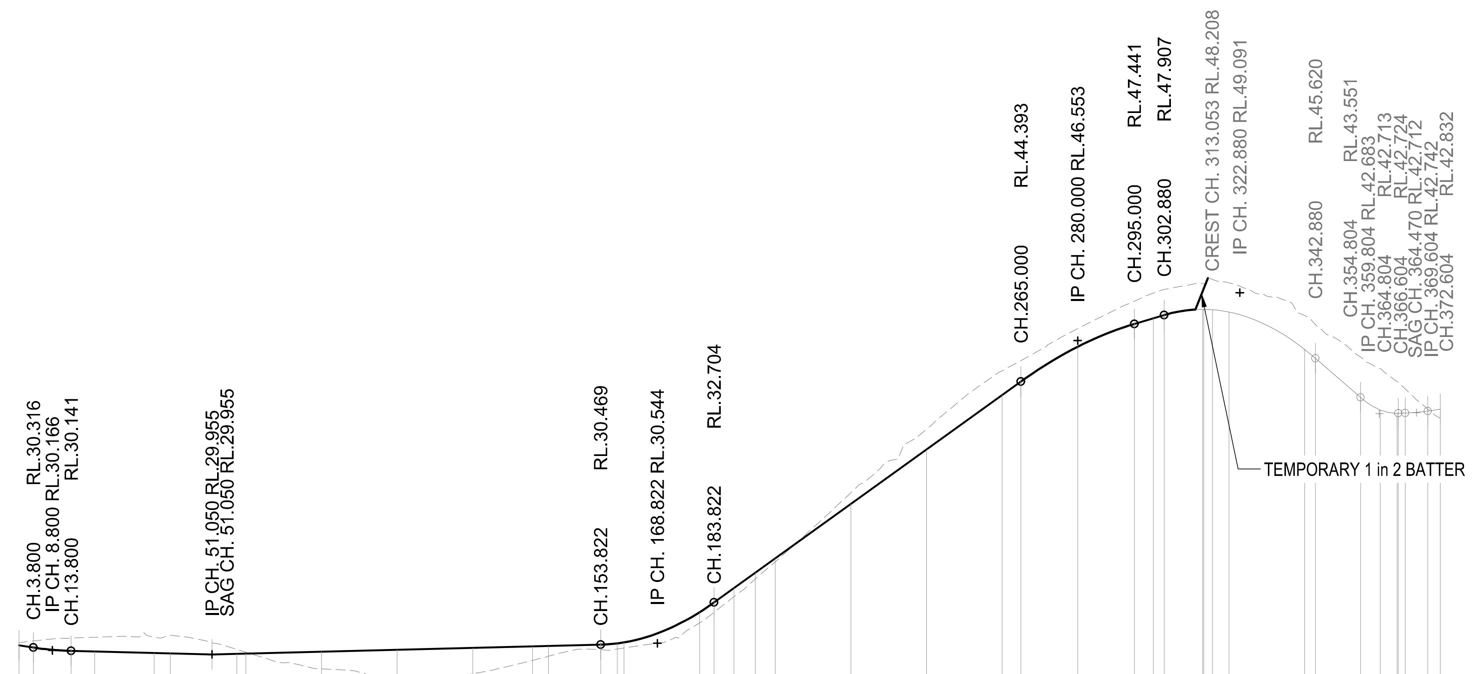
ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION
1	31-10-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION, 41-53 COURTNEY DRIVE, UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY ROADWORKS LONGITUDINAL SECTIONS - SHEET 1 OF 4
SCALE:
PROJECT NO. OSK6521
DWG NO. P025
ISSUE B



Horiz Curve Data: R49.462m, R-14.25m, R-14.25m, R-50m

Vertical Geometry Grade (%) / Vertical Grade Length (m): -3% 8.8m; -0.5% 42.25m; 0.5% 117.772m; 14.4% 111.178m; 5.919% 42.88m; -17.354% 36.924m; 0.6% 9.8m; 3% 6.3m

Vertical Curve Length (m) / Vertical Curve Radius (m): L 10 R 400; L 30 R 215.827; L 30 R 353.727; L 40 R 171.872; L 10 R 55.697; L 6 R 250

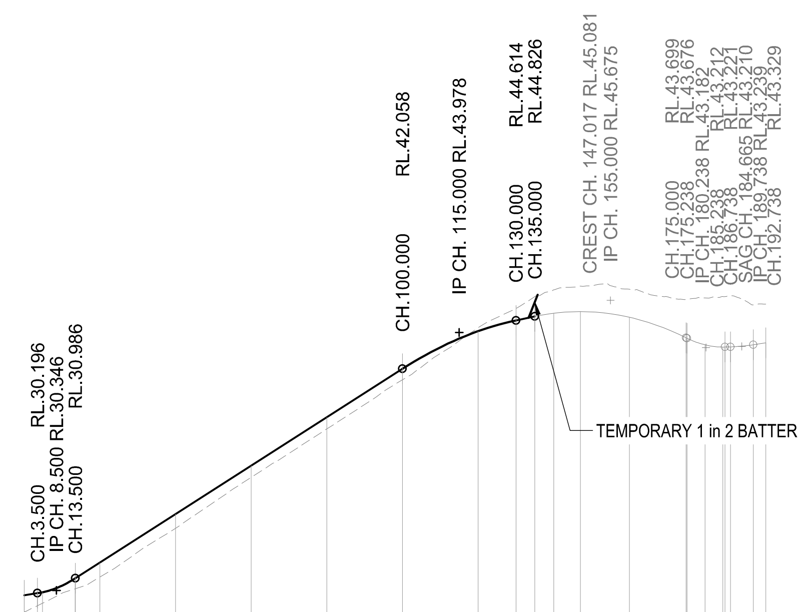
DATUM R.L.18.000

CHAINAGE	NAT. SURFACE	CUT / FILL	DESIGN LEVELS
0	30.576	-0.146	30.430
3.8	30.671	-0.355	30.316
13.8	30.823	-0.682	30.141
20	30.859	-0.749	30.110
35.762	30.870	-0.839	30.031
40	30.972	-0.962	30.010
57.577	30.222	-0.235	29.987
60	30.070	-0.070	30.000
80	29.195	0.904	30.100
100	28.596	1.603	30.200
120	28.932	1.367	30.300
135.832	29.634	0.744	30.379
140	29.861	0.538	30.400
153.822	30.212	0.257	30.469
158.22	30.243	0.292	30.535
160	30.295	0.293	30.588
180	31.625	0.562	32.187
183.822	32.178	0.525	32.704
189.102	33.011	0.453	33.464
194.731	33.949	0.326	34.274
200	34.857	0.176	35.033
220	38.512	-0.599	37.913
240	41.862	-1.069	40.793
260	44.951	-1.278	43.673
265	45.503	-1.109	44.393
280	47.188	-0.952	46.235
295	48.645	-1.204	47.441
300	49.068	-1.331	47.737
302.88	49.258	-1.351	47.907
313.053	49.573	-1.364	48.208
313.344	49.569	-1.361	48.208
315.635	49.793	-1.604	48.189
320	49.616	-1.548	48.068
340	47.878	-1.782	46.096
342.88	47.402	-1.782	45.620
354.804	45.690	-2.139	43.551
360	45.072	-2.181	42.892
364.47	44.393	-1.680	42.712
364.804	44.335	-1.622	42.713
366.604	44.006	-1.282	42.724
372.604	42.921	-0.089	42.832
375.904	42.439	0.492	42.931

FUTURE ROAD CONSTRUCTION WORKS ON LOT 184 RP173728

LONGITUDINAL SECTION ROAD 02

SCALE HORIZ: 1:1000 AT A1
VERTI: 1:200 AT A1



Horiz Curve Data: R-20m

Vertical Geometry Grade (%) / Vertical Grade Length (m): 3% 8.501m; 12.8% 106.5m; 4.241% 40m; -9.877% 25.238m; 0.6% 9.5m; 3% 6.3m

Vertical Curve Length (m) / Vertical Curve Radius (m): L 10 R 102.041; L 30 R 350.524; L 40 R 283.328; L 10 R 95.451; L 6 R 250

DATUM R.L.19.000

CHAINAGE	NAT. SURFACE	CUT / FILL	DESIGN LEVELS
0	29.213	0.878	30.091
3.5	29.538	0.658	30.196
4.831	29.667	0.578	30.245
13.419	30.426	0.549	30.976
13.5	30.432	0.554	30.986
20	31.053	0.765	31.818
40	33.630	0.748	34.378
60	36.323	0.615	36.938
80	38.885	0.614	39.498
100	41.483	0.575	42.058
120	44.228	-0.180	44.047
130	45.239	-0.625	44.614
135	45.876	-1.049	44.826
140	46.227	-1.233	44.994
147.017	46.432	-1.351	45.081
160	46.267	-1.483	44.784
175	45.729	-2.030	43.699
175.238	45.734	-2.058	43.676
180	45.803	-2.479	43.324
184.665	45.880	-2.670	43.210
185.238	45.878	-2.666	43.212
186.738	45.915	-2.694	43.221
192.738	45.441	-2.112	43.329
196.038	45.476	-2.048	43.428

FUTURE ROAD CONSTRUCTION WORKS ON LOT 184 RP173728

LONGITUDINAL SECTION ROAD 03

SCALE HORIZ: 1:1000 AT A1
VERTI: 1:200 AT A1

APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

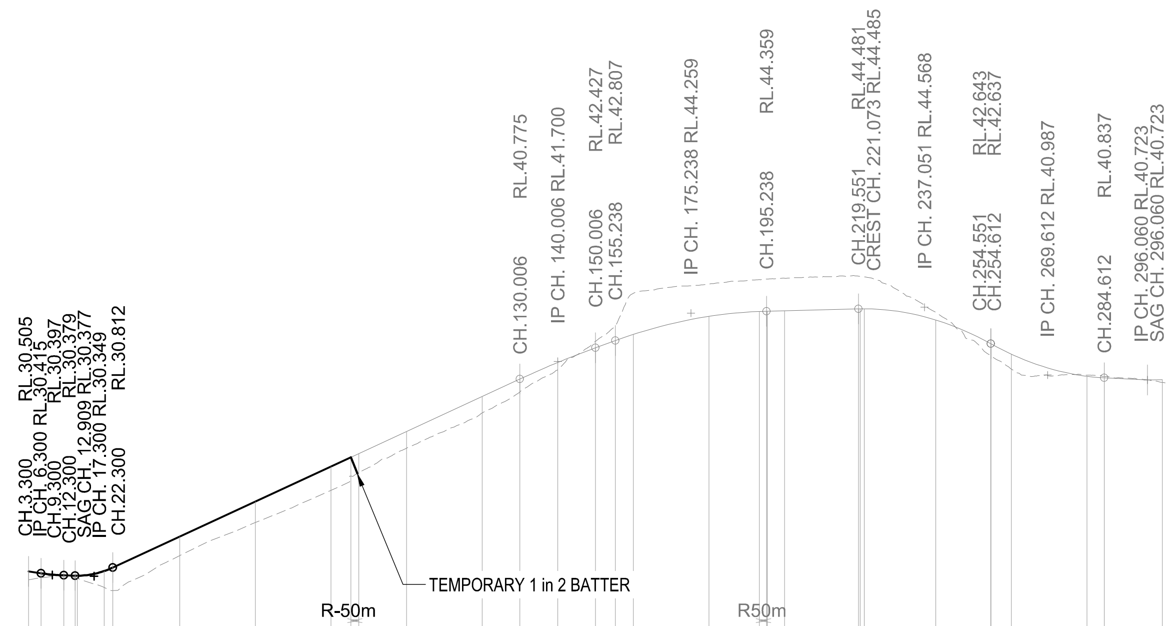
CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

1:1000 AT A1 (1:2000 AT A3) 0 20 40 60 80 100m HOR
1:200 AT A1 (1:400 AT A3) 0 4 8 12 16 20m VERT

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION
1	31-10-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION, 41-53 COURTNEY DRIVE, UPPER COOMERA, QLD, 4209
DESIGN: DR | DRAWN: MS | APPROVED: DC
TITLE: PRELIMINARY ROADWORKS LONGITUDINAL SECTIONS - SHEET 2 OF 4
SCALE:
PROJECT NO.: OSK6521
DWG NO.: P026 | ISSUE: B



Horiz Curve Data: R-50m, R50m

Vertical Geometry Grade (%): -3%, -0.6%, 9.251%, 7.264%, 0.5%, -11%, -0.997%
Vertical Grade Length (m): 6.3m, 11m, 122.706m, 35.232m, 61.813m, 32.561m, 26.448m

Vertical Curve Length (m): L 6, L 10, L 20, L 40, L 35, L 30
Vertical Curve Radius (m): R 250, R 101.516, R 1006.61, R 591.384, R 304.348, R 299.912

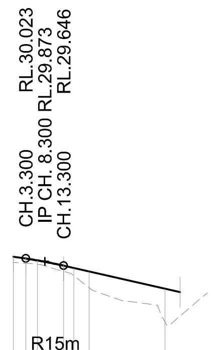
DATUM R.L.19.000

NAT. SURFACE	30.156	30.266	30.422	30.271	30.230	29.759	29.589	31.446	33.192	34.892	35.643	35.837	37.119	38.977	40.101	41.270	42.768	43.588	45.305	45.798	46.028	46.058	46.061	46.103	46.216	46.201	46.179	44.305	42.013	42.005	41.302	40.978	40.916	40.595
CUT / FILL	0.448	0.239	-0.025	0.108	0.147	0.866	1.223	1.003	1.107	1.257	0.994	0.996	0.880	0.872	0.674	0.380	-0.341	-0.781	-2.172	-1.711	-1.681	-1.699	-1.700	-1.720	-1.735	-1.719	-1.695	-0.409	0.630	0.632	0.790	-0.060	-0.079	0.147
DESIGN LEVELS	30.604	30.505	30.397	30.379	30.377	30.625	30.812	32.449	34.299	36.149	36.637	36.833	37.999	39.849	40.775	41.650	42.427	42.807	43.133	44.087	44.347	44.359	44.360	44.383	44.481	44.483	44.485	43.896	42.643	42.637	42.092	40.919	40.837	40.743
CHAINAGE	0	3.3	9.3	12.3	12.909	20	22.3	40	60	80	85.272	87.395	100	120	130.006	140	150.006	155.238	160	180	193.379	195.238	195.454	200	219.551	220	221.073	240	254.551	254.612	260	280	284.612	300

FUTURE ROAD CONSTRUCTION
WORKS ON LOT 184 RP173728

LONGITUDINAL SECTION ROAD 04

SCALE HORIZ: 1:1000 AT A1
VERTI: 1:200 AT A1



R15m

-3% 8.3m; -4.549% 35.677m

L 10
R 645.489

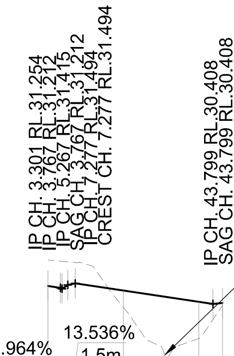
DATUM R.L.16.000

NAT. SURFACE	29.815	29.770	29.717	29.343	29.120	28.480	26.680	28.204
CUT / FILL	0.307	0.253	0.207	0.303	0.406	0.861	1.751	
DESIGN LEVELS	30.122	30.023	29.924	29.646	29.525	29.341	28.431	
CHAINAGE	0	3.3	6.361	13.3	15.945	20	40	51.154

BASIN MAINTENANCE
PATHWAY

LONGITUDINAL SECTION ROAD 05

SCALE HORIZ: 1:1000 AT A1
VERTI: 1:200 AT A1



-8.964% 0.466m
13.536% 1.5m
3.935% 2.01m
-3.005% 3.301m
-2.974% 36.522m
2% 2.5m

DATUM R.L.17.000

NAT. SURFACE	32.730	30.228	28.569	30.328
CUT / FILL	-1.377	0.888	1.952	0.130
DESIGN LEVELS	31.353	31.116	30.521	30.458
CHAINAGE	0	20	40	46.299

LONGITUDINAL SECTION ROAD 07

SCALE HORIZ: 1:1000 AT A1
VERTI: 1:200 AT A1



3% 15.252m; 3% 15.248m

DATUM R.L.19.000

NAT. SURFACE	30.099	30.455	31.836
CUT / FILL	-0.099	0.145	-0.921
DESIGN LEVELS	30.000	30.600	30.915
CHAINAGE	0	20	30.5

LONGITUDINAL SECTION ROAD 08

SCALE HORIZ: 1:1000 AT A1
VERTI: 1:200 AT A1

APPROVAL ISSUE
NOT FOR CONSTRUCTION
UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

1:1000 AT A1 (1:2000 AT A3) 0 20 40 60 80 100m HOR
1:200 AT A1 (1:400 AT A3) 0 4 8 12 16 20m VERT

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION
1	31-10-24	ISSUED FOR INFORMATION

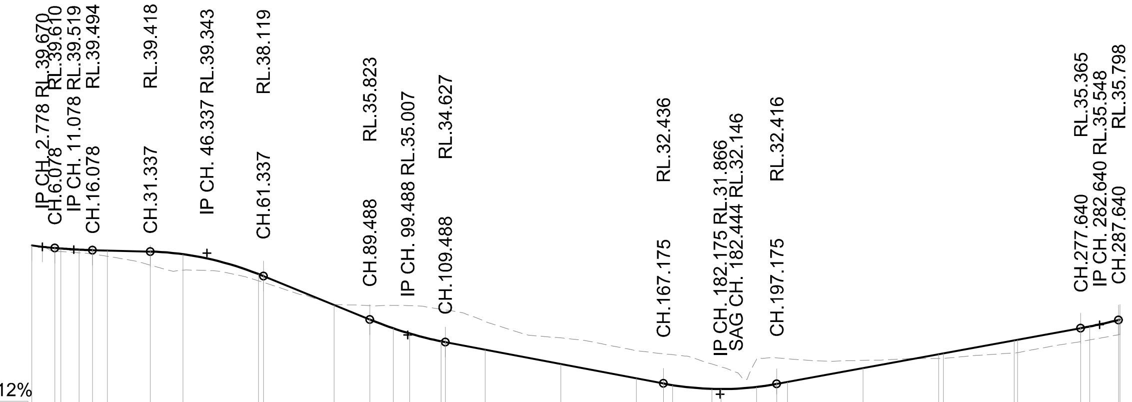
OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION, 41-53 COURTNEY DRIVE, UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY ROADWORKS LONGITUDINAL SECTIONS - SHEET 3 OF 4
SCALE

PROJECT NO. OSK6521
DWG NO. P027
ISSUE B



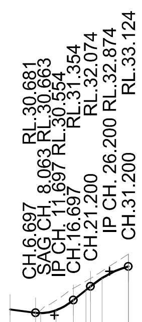
Horiz Curve Data	-2.812% 2.778m	R30m		R-14.25m		R-14.25m	R-14.25m	
Vertical Geometry Grade (%)	-1.812%	-0.5%	-8.158%		-3.799%		3.666%	5%
Vertical Grade Length (m)	8.3m	35.259m	53.151m		82.687m		100.464m	5.393m
Vertical Curve Length (m)	L 10	L 30		L 20		L 30		L 10
Vertical Curve Radius (m)	R 762.195	R 391.747		R 458.836		R 401.89		R 749.388

DATUM R.L.21.000

CHAINAGE	NAT. SURFACE	CUT / FILL	DESIGN LEVELS
0	39.748	-0.000	39.748
6.078	39.443	0.167	39.610
7.651	39.414	0.169	39.583
12.485	39.354	0.167	39.521
16.078	39.282	0.213	39.494
20	39.166	0.308	39.475
31.337	38.701	0.717	39.418
40	38.440	0.840	39.279
60	37.865	0.361	38.226
61.337	37.780	0.339	38.119
80	36.609	-0.013	36.597
89.488	36.556	-0.734	35.823
95.687	36.568	-1.208	35.359
100	36.561	-1.475	35.086
108.335	36.371	-1.699	34.672
109.488	36.336	-1.709	34.627
120	35.720	-1.493	34.228
140	34.852	-1.384	33.468
160	34.177	-1.469	32.708
167.175	34.013	-1.577	32.436
169.58	33.960	-1.609	32.351
180	33.465	-1.312	32.153
182.444	33.318	-1.173	32.146
191.793	33.714	-1.459	32.254
197.175	33.789	-1.373	32.416
200	33.748	-1.229	32.519
220	33.662	-0.410	33.252
240	33.760	0.226	33.985
241.301	33.771	0.262	34.033
260	34.056	0.663	34.718
260.918	34.073	0.679	34.752
277.64	34.658	0.707	35.365
280	34.741	0.714	35.455
287.64	35.022	0.776	35.798
288.032	35.040	0.777	35.818

LONGITUDINAL SECTION ROAD 06

SCALE HORIZ: 1:1000 AT A1
VERTI: 1:200 AT A1



R-15m

5% 5.062m

-2.531% 11.697m | 16% 14.503m

L 10 R 53.964 | L 10 R 90.909

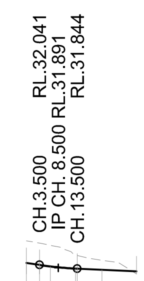
DATUM R.L.20.000

CHAINAGE	NAT. SURFACE	CUT / FILL	DESIGN LEVELS
0	30.850	0.000	30.850
6.697	30.681	0.000	30.681
8.063	30.807	-0.144	30.663
12.133	31.340	-0.523	30.817
16.697	31.973	-0.619	31.354
20	32.349	-0.467	31.882
21.2	32.496	-0.421	32.074
24.229	32.882	-0.373	32.509
31.2	33.776	-0.652	33.124
31.262	33.784	-0.656	33.128

EXISTING ROADWAY

LONGITUDINAL SECTION ROAD 09

SCALE HORIZ: 1:1000 AT A1
VERTI: 1:200 AT A1



R15m

-3% 8.5m | -0.921% 20.683m

L 10 R 481.059

DATUM R.L.21.000

CHAINAGE	NAT. SURFACE	CUT / FILL	DESIGN LEVELS
0	33.322	-1.176	32.146
3.5	33.200	-1.159	32.041
6.402	33.078	-1.115	31.962
13.063	32.565	-0.716	31.849
13.5	32.544	-0.700	31.844
20	32.293	-0.508	31.785
29.189	31.569		

BASIN MAINTENANCE PATHWAY

LONGITUDINAL SECTION ROAD 10

SCALE HORIZ: 1:1000 AT A1
VERTI: 1:200 AT A1

APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

1:1000 AT A1 (1:2000 AT A3) 0 20 40 60 80 100m HOR
1:200 AT A1 (1:400 AT A3) 0 4 8 12 16 20m VERT

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION
1	31-10-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

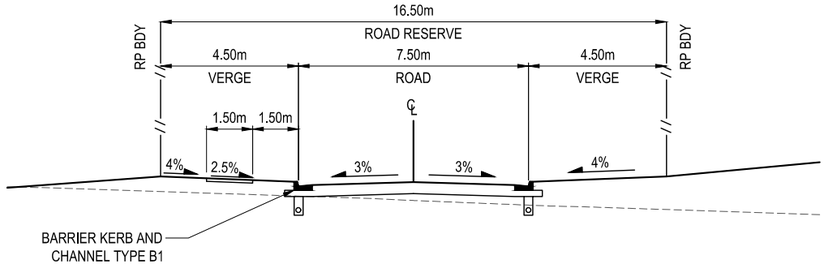
DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY ROADWORKS LONGITUDINAL SECTIONS - SHEET 4 OF 4

SCALE

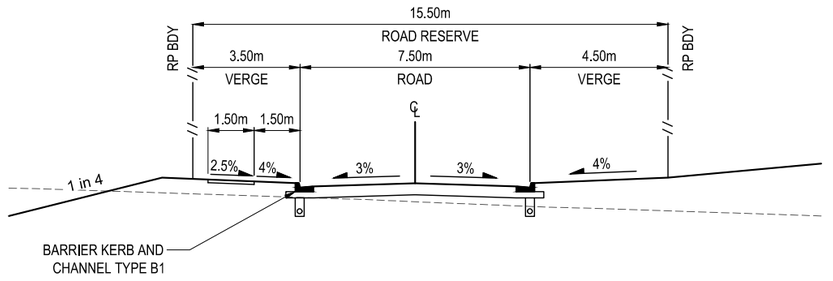
PROJECT NO. OSK6521

DWG NO. P028 | ISSUE B



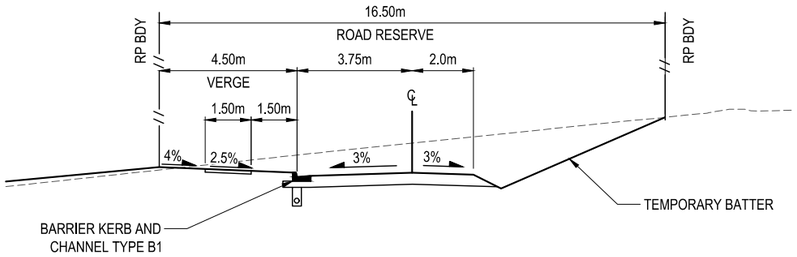
TYPICAL SECTION - ROAD 01 CH.0 TO CH.235.027, CH.360 TO CH.624.949 / ROAD 02 CH.0 TO CH.35.762, CH.100 TO CH.158.220 / ROAD 03 / ROAD 04 / ROAD 06 CH.0 TO CH.180, CH. 241.929 TO CH.302.479 / ROAD 09

SCALE 1:100 AT A1



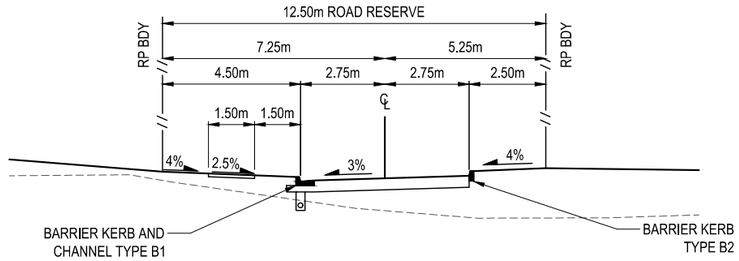
TYPICAL SECTION - ROAD 01 CH.235.027 TO CH.360 / ROAD 02 CH.35.762 TO CH.100 / ROAD 06 CH.180 TO CH. 241.929

SCALE 1:100 AT A1



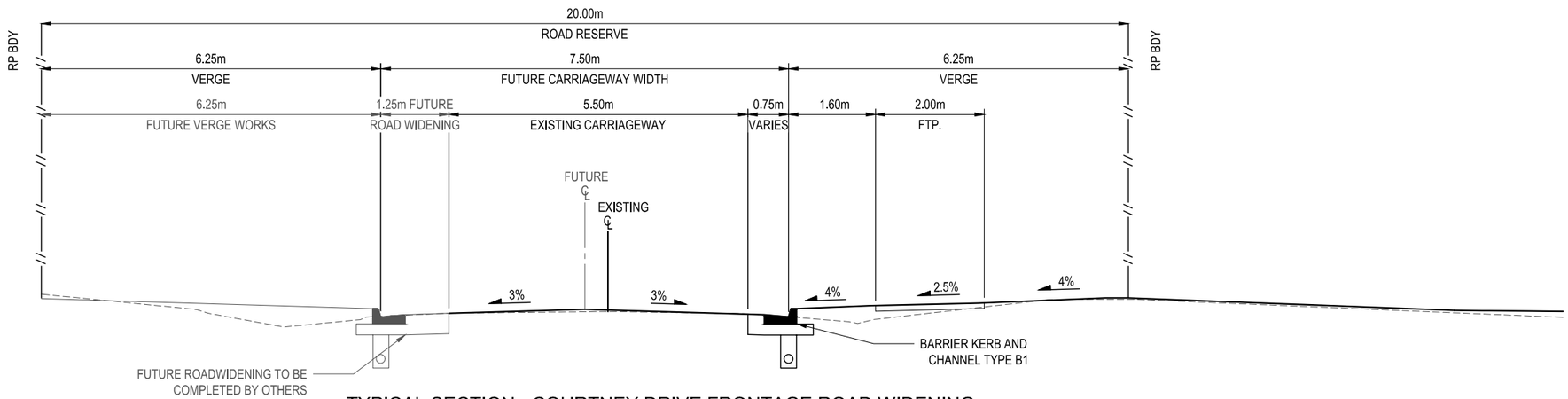
TYPICAL SECTION - ROAD 02 CH.158.220 TO CH.315.635

SCALE 1:100 AT A1



TYPICAL SECTION - ROAD 05

SCALE 1:100 AT A1



TYPICAL SECTION - COURTNEY DRIVE FRONTAGE ROAD WIDENING

SCALE 1:50 AT A1

1:50 AT A1
1:100 AT A3

0 1 2 3 4 5m

APPROVAL ISSUE
NOT FOR CONSTRUCTION
UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION
1	31-10-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY ROADWORKS TYPICAL CROSS SECTIONS

SCALE: 1:100 AT A1, 1:200 AT A3 — 0 2 4 6 8 10m

PROJECT NO.: OSK6521

DWG NO.: P029

ISSUE: B

APPENDIX

E

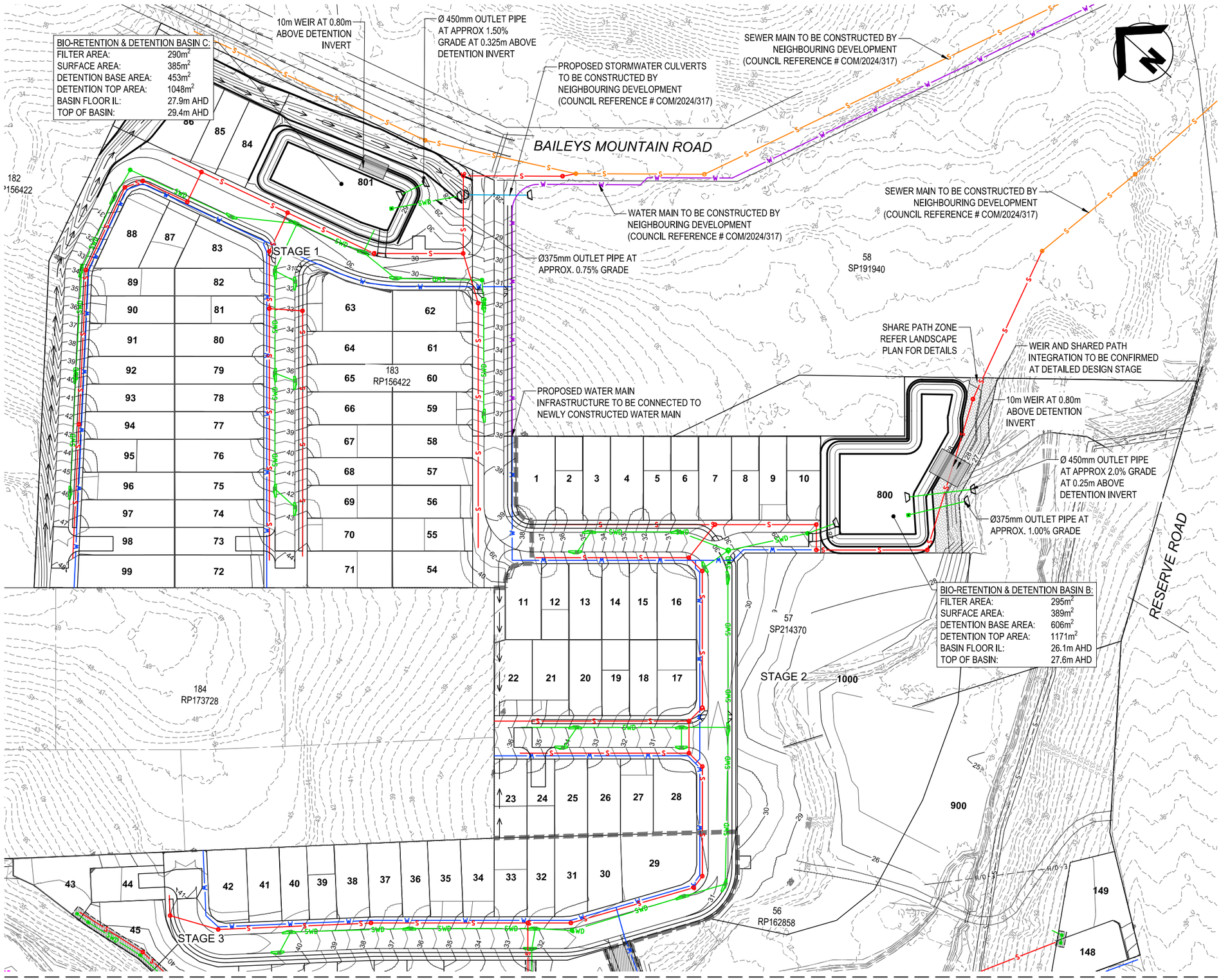
OSKA Consulting Group; Preliminary Services Plan (Ref: OSK6521-P040 & P041)

LEGEND

- PROPOSED SEWER MAIN
- PROPOSED TRUNK SEWER MAIN
- PROPOSED WATER MAIN
- PROPOSED STORMWATER DRAINAGE
- FINISHED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- STAGE BOUNDARY
- PROPOSED SEWER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED WATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED STORMWATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED SERVICE EASEMENTS

EXISTING SERVICES LEGEND

- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- EXISTING STORMWATER PIPE
- EXISTING TELECOMMUNICATIONS CABLE
- EXISTING ELECTRICAL CABLE



APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY SERVICES LAYOUT PLAN - SHEET 1 OF 2

SCALE: 1:750 AT A1, 1:1500 AT A3 (0, 15, 30, 45, 60m)

PROJECT NO. OSK6521

DWG NO. P040

ISSUE B

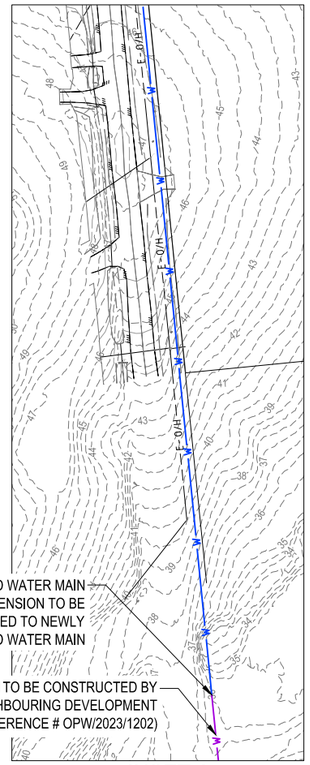
LEGEND

- PROPOSED SEWER MAIN
- PROPOSED TRUNK SEWER MAIN
- PROPOSED WATER MAIN
- PROPOSED STORMWATER DRAINAGE
- FINISHED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- STAGE BOUNDARY
- PROPOSED SEWER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED WATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED STORMWATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED SERVICE EASEMENTS

EXISTING SERVICES LEGEND

- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- EXISTING STORMWATER PIPE
- EXISTING TELECOMMUNICATIONS CABLE
- EXISTING ELECTRICAL CABLE

FOR CONTINUATION REFER SHEET 1



INSET A
SCALE 1:750 AT A1

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

REFER INSET A

EXISTING CULVERTS AND HEADWALLS TO BE EXTENDED TO ACCOMDATE FOR PROPOSED ROAD WIDENING WORKS

Ø 450mm OUTLET PIPE AT APPROX 1.50% GRADE AT 0.35m ABOVE DETENTION INVERT

Ø375mm OUTLET PIPE AT APPROX. 0.50% GRADE

10m WEIR AT 0.81m ABOVE DETENTION INVERT

Ø 225 TRUNK SEWER MAIN TO BE CONSTRUCTED BY NEIGHBOURING DEVELOPMENT (COUNCIL REFERENCE # OPW/2024/987)

PROPOSED CULVERT AND HEADWALL WORKS IN ACCORDANCE WITH FLOOD REPORT

TRUNK SEWER WORKS TO CONNECT INTO Ø225 STUB CONNECTION PROVIDE AS A PART OF THE ONGOING SEWER OPW APPLICATION (COUNCIL REFERENCE # OPW/2024/987)

BIO-RETENTION & DETENTION BASIN A:

FILTER AREA:	230m²
SURFACE AREA:	333m²
DETENTION BASE AREA:	484m²
DETENTION TOP AREA:	992m²
BASIN FLOOR IL:	31.6m AHD
TOP OF BASIN:	33.1m AHD

COURTNEY DRIVE

RICHARDSON CRESCENT

STAGE 2 · STAGE 3 · STAGE 4 · STAGE 5

184 RP173728 · 185 RP173728 · 186 RP173728 · 19 · 57 SP214370 · 56 RP162858 · 900 SO205578 · 75 SP174234

APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY SERVICES LAYOUT PLAN - SHEET 2 OF 2

SCALE: 1:750 AT A1 · 1:1500 AT A3 · 0 15 30 45 60m

PROJECT NO. OSK6521

DWG NO. P041

ISSUE B

APPENDIX

F

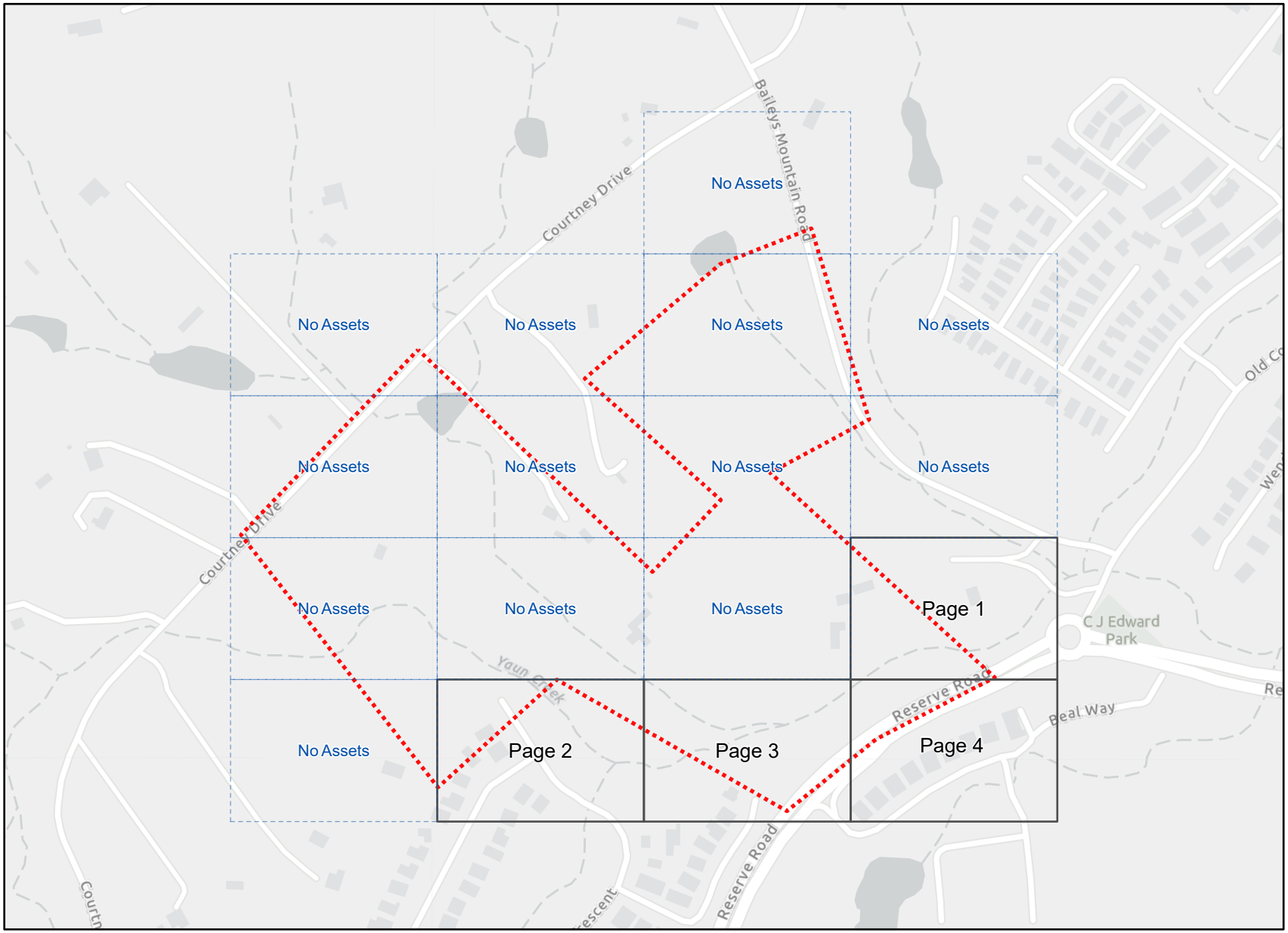
Before You Dig Australia Plans

CITY OF GOLDCOAST.

Job # 38214212
Seq # 248396249

Provided by City of Gold Coast

BEFORE YOU DIG www.byda.com.au



Legend

- BYDA Enquiry
- Detailed map page
- No dig site assets

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Disclaimer: The Plan is provided in response to a Before You Dig request. While all reasonable care has been taken to ensure the accuracy of the information on this plan, its purpose is to provide a general indication of the location of Gold Coast City Council infrastructure. The information provided may contain errors or omissions and the accuracy may not suit all users. A site inspection and investigation is recommended before commencement of any project based on this data.

In an emergency contact City of Gold Coast on 1300 465 326

Index Sheet

Plans generated by SmarterWX™ Automate

0 60 120 240 m

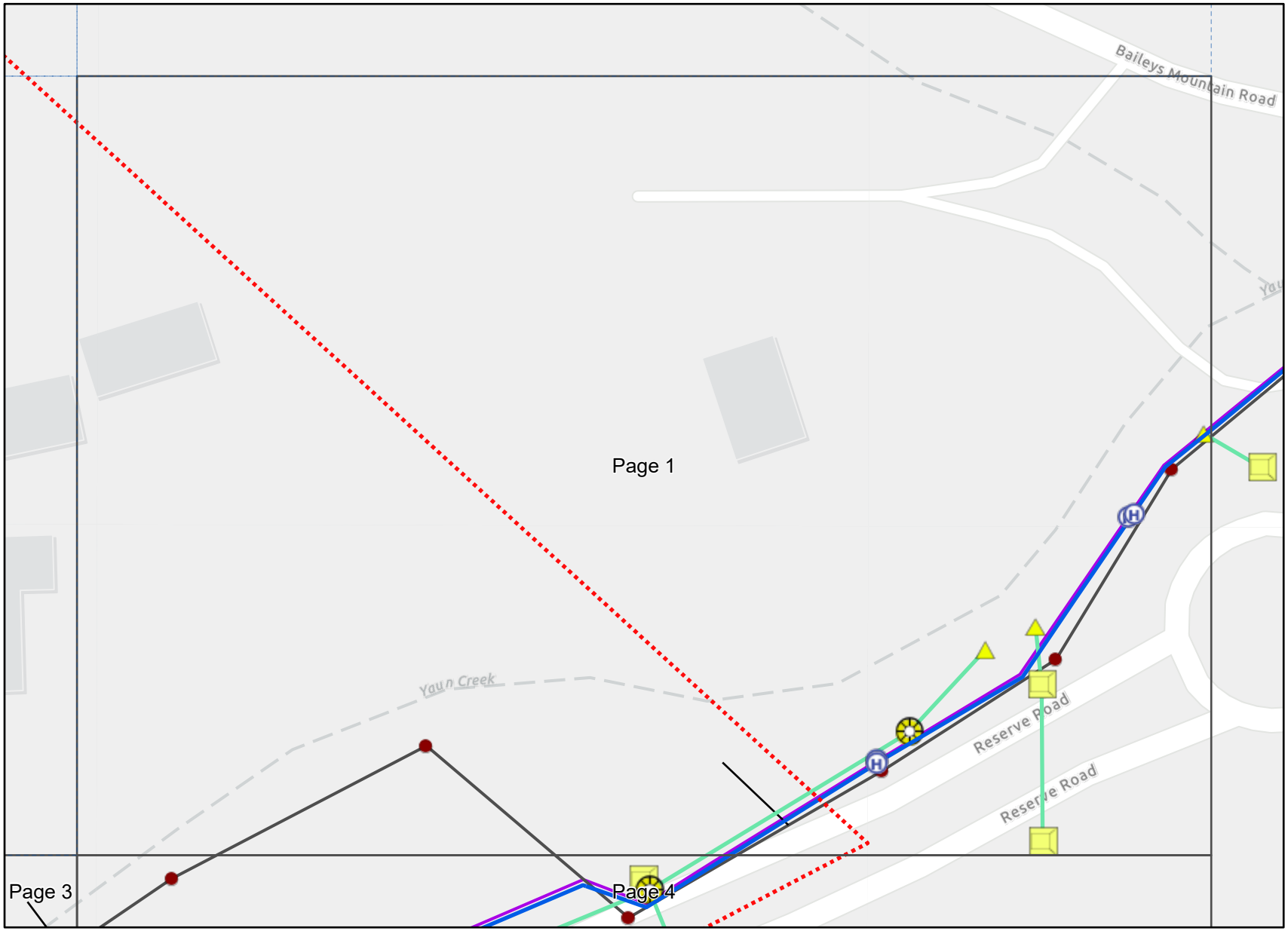
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Scale 1:5,500

CITY OF GOLDCOAST.

Job # 38214212
Seq # 248396249
Provided by City of Gold Coast

BEFORE YOU DIG www.byda.com.au



Legend

- BYDA Enquiry
- Water Hydrant
- Water Pipe
- Stormwater Drainage Pipe
- Stormwater Inlet Gully
- Stormwater Manhole
- Stormwater End Structure
- Sewer Connection
- Sewer Pipe Non Pressure
- Sewer Manhole
- Recycled Water Pipe
- Fibre Optic Pit
- Fibre Optic Cable
- GCCC Boundary

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In an emergency contact City of Gold Coast on 1300 465 326

05/12/24 (valid for 30 days)

Plans generated by SmarterWX™ Automate

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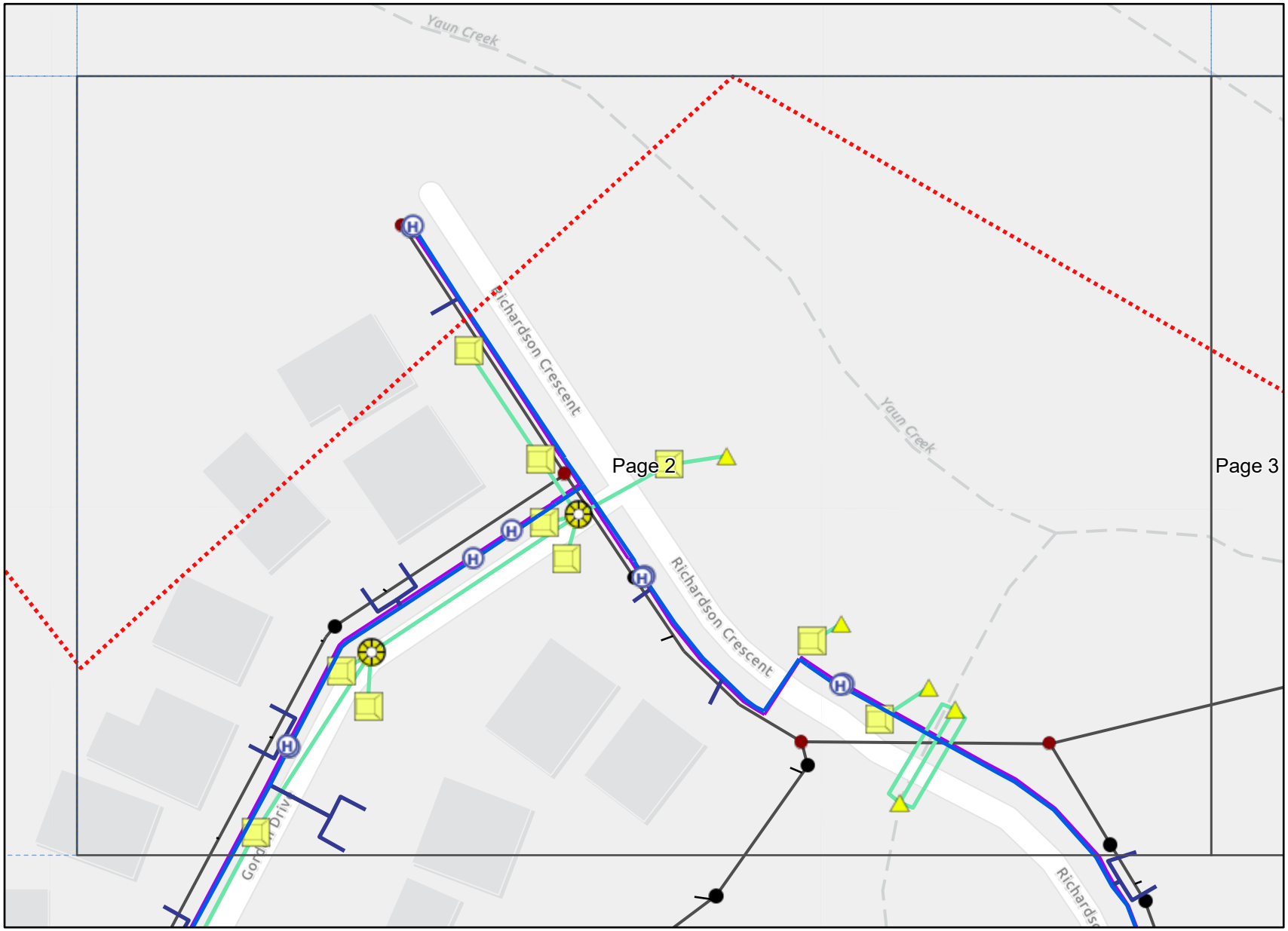
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Scale 1:1,000

CITY OF GOLDCOAST.

Job # 38214212
Seq # 248396249
Provided by City of Gold Coast

BEFORE YOU DIG www.byda.com.au



Legend

- BYDA Enquiry
- Water Hydrant
- Water Pipe
- Potable Water Connection
- Stormwater Drainage Pipe
- Stormwater Inlet Gully
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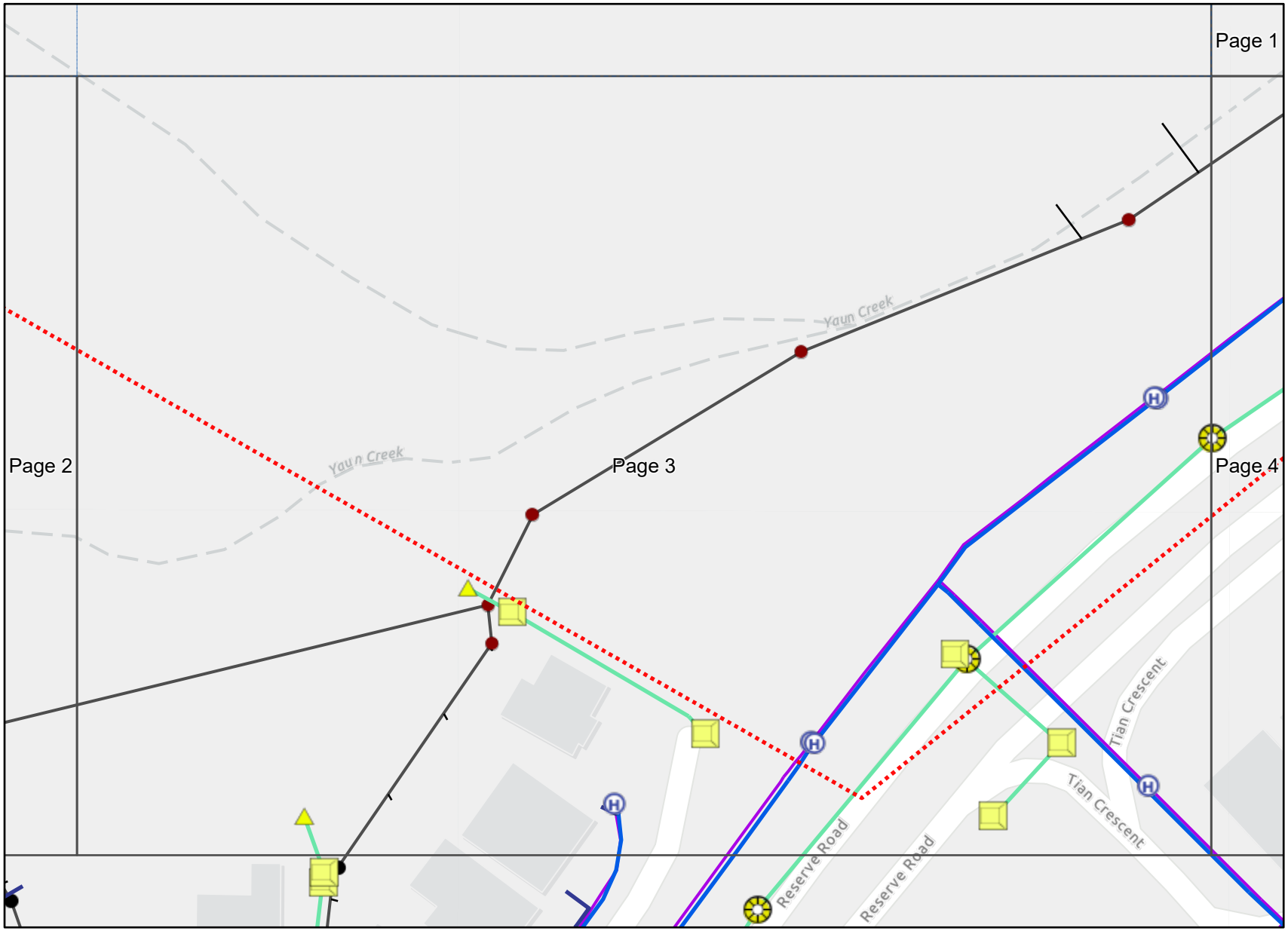
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Scale 1:1,000

CITY OF GOLDCOAST.

Job # 38214212
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Legend

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Plans generated by SmarterWX™ Automate

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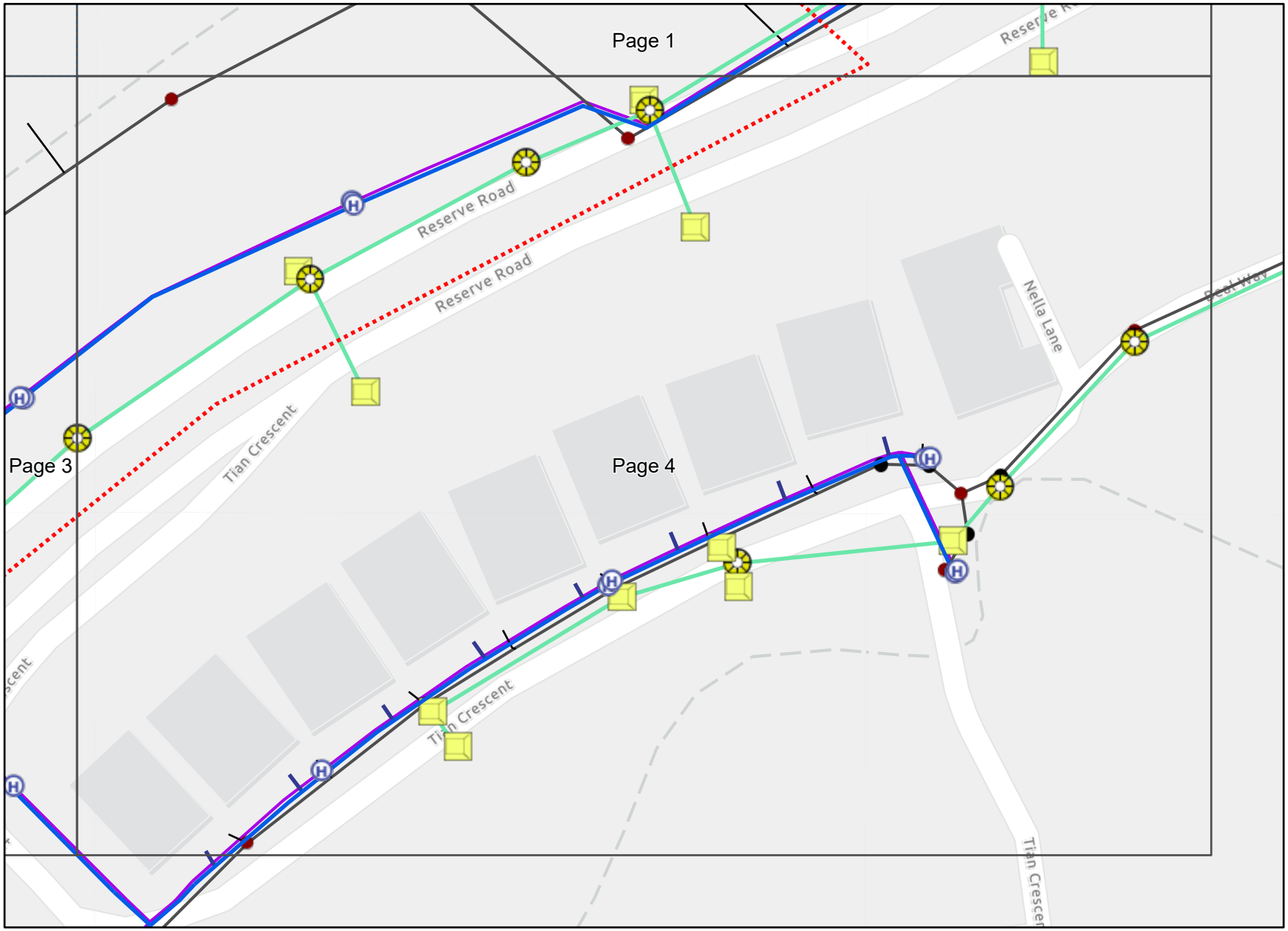
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Scale 1:1,000

CITY OF GOLDCOAST.

Job # 38214212
Seq # 248396249
Provided by City of Gold Coast

BEFORE YOU DIG www.byda.com.au



Legend

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In an emergency contact City of Gold Coast on 1300 465 326

05/12/24 (valid for 30 days)

Plans generated by SmarterWX™ Automate

0 10 20 40 m

N

Scale 1:1,000

Before You Dig Australia

Classification: Networks

Enquiry Date:	05/12/2024
Sequence Number:	248396250
Work Site Address:	57 Courtney Drive Upper Coomera QLD 4209



NO WORK TO PROCEED UNTIL APPROVED BY APA

For your immediate information THERE IS A CRITICAL GAS PIPELINE OR INFRASTRUCTURE (Gas Assets) located in close vicinity to your works.

Enquiry Date: 05/12/2024
Enquirer: Jake Lowry

Sequence Number: 248396250
Worksite Address: 57 Courtney Drive
Upper Coomera
QLD 4209

Thank you for your Before You Dig enquiry regarding the location of gas assets.

We confirm there are CRITICAL Gas Assets located in close vicinity of the above location. Damage to gas assets may result in explosion, fire and personal injury.

Any work activity in vicinity of Critical Gas Assets operated by APA requires an assessment by APA and may require attendance by APA Site Watch whilst work is in progress. Please ensure you read and comply with all the relevant information contained in this response to your BYDA enquiry.

Complete the **Work In The Vicinity Of Critical Gas Assets request form** on the following page and forward this to APA as soon as practicable.

Wait for APA to provide written authorisation before proceeding with works. APA may require supervision of works, issuance of a permit, or conditional instructions to ensure the safety of the community and security of supply.

Work in the vicinity of critical gas assets request form

Work / Excavation Site Details	
Number:	Street:
Suburb:	State:
Sequence Number : 248396250	
Requestors Name:	
Company Name:	
Name of Authorised Company Site Representative:	
Email:	
Phone:	Mobile:

Request to work in the vicinity of critical gas assets conditions

It is the proponent's* responsibility to read these conditions and complete the request form

1. A minimum of three (3) business days is required to process and assess requests to work in vicinity of critical assets and provide a response.
2. This request form must be accompanied by a detailed schedule of works.
3. When an APA Authority to Work permit is issued, the permit will provide the applicable conditions whilst conducting excavation or work in vicinity of the gas assets.
4. Work must not commence until the requestor has received an APA Authority to Work Permit, or written approval from APA.

*Person or company requesting to undertake works in proximity to critical gas assets.

Work/Excavation Drawings Attached ○ Yes ○ No

Proposed Work Dates and Times			
From		To	
Date	Time	Date	Time
/ /	am/pm	/ /	am/pm

*Requestor / Billing Details - Mandatory Information
Company / Requestor Name:
Address:
Purchase Order (if applicable):
Phone:
Email:

Description of Work / Excavation	
Activity/Excavation Details:	
Tick Applicable	
Excavation	Change to surface level
Service crossing	Boring
Proving / Pot-holing	Other (provide details)
Earthworks	
Excavator Size, Tooth Type & Tooth Size (provide details)	

Return this to: BYDA_APA@apa.com.au
Enquiries: APA Before You Dig officer - 1800 085 628

Before You Dig Checklist



1. Plan

- Review maps provided with this BYDA response and confirm the location of your work site is correct.
- Complete the **Work in the Vicinity of Critical Gas Assets** request form and submit to APA.
- Have received contact from APA to confirm details of proposed work.
- Review the **APA Guidelines for Works Near Existing Gas Assets** and clearly understand requirements relating to my scope of work.
- Receive authority to proceed with work from APA.



2. Prepare

- Electronically locate gas assets and mark locations.
- Site Watch booking confirmed (if required by APA).
- Note: Enquirers should still look for visible evidence of gas assets at the worksite not shown on plans.



3. Pothole

- Physically confirm ('prove') the location of gas assets by potholing by hand excavation or non- destructive vacuum excavation methods in accordance with **APA Guidelines for Works Near Existing Gas Assets.**
- Road authorities, councils, utilities and their authorised contractors and agents are responsible to pothole or use other suitable methods to verify the location and depth of all gas assets, including gas (inlet) services, prior to commencing any works.



4. Protect

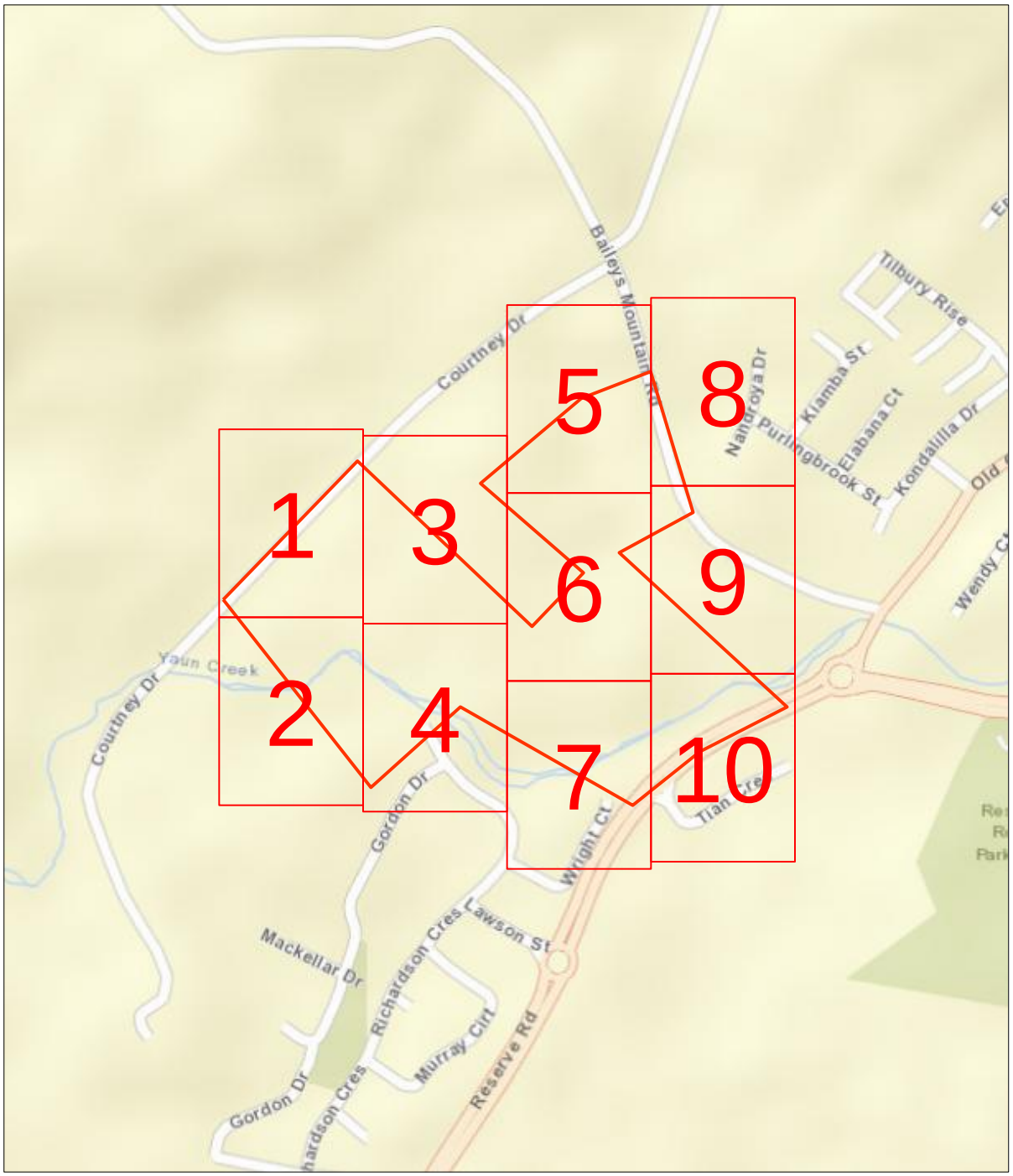
- Protect gas assets by maintaining clearances whilst excavating and following conditions provided by APA.
- Where required by APA, only conducting work in proximity to gas assets while Site Watch is on site.
- Where applicable, APA Authority To Work permit conditions are clearly understood and complied.
- Strap and support exposed mains and inlet services. Cover exposed mains to prevent damage until the excavation can be restored permanently.



5. Proceed

- Only proceed with your work once you have completed all the planning, preparation, potholing and protection requirements.
- APA BYDA response (including maps) are on site for reference at all times, and less than 30 days old.

Site Address	57 Courtney Drive Upper Coomera QLD 4209	Sequence No 248396250



Scale 1: 6000

Map Sources: Esri, Garmin, HERE, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

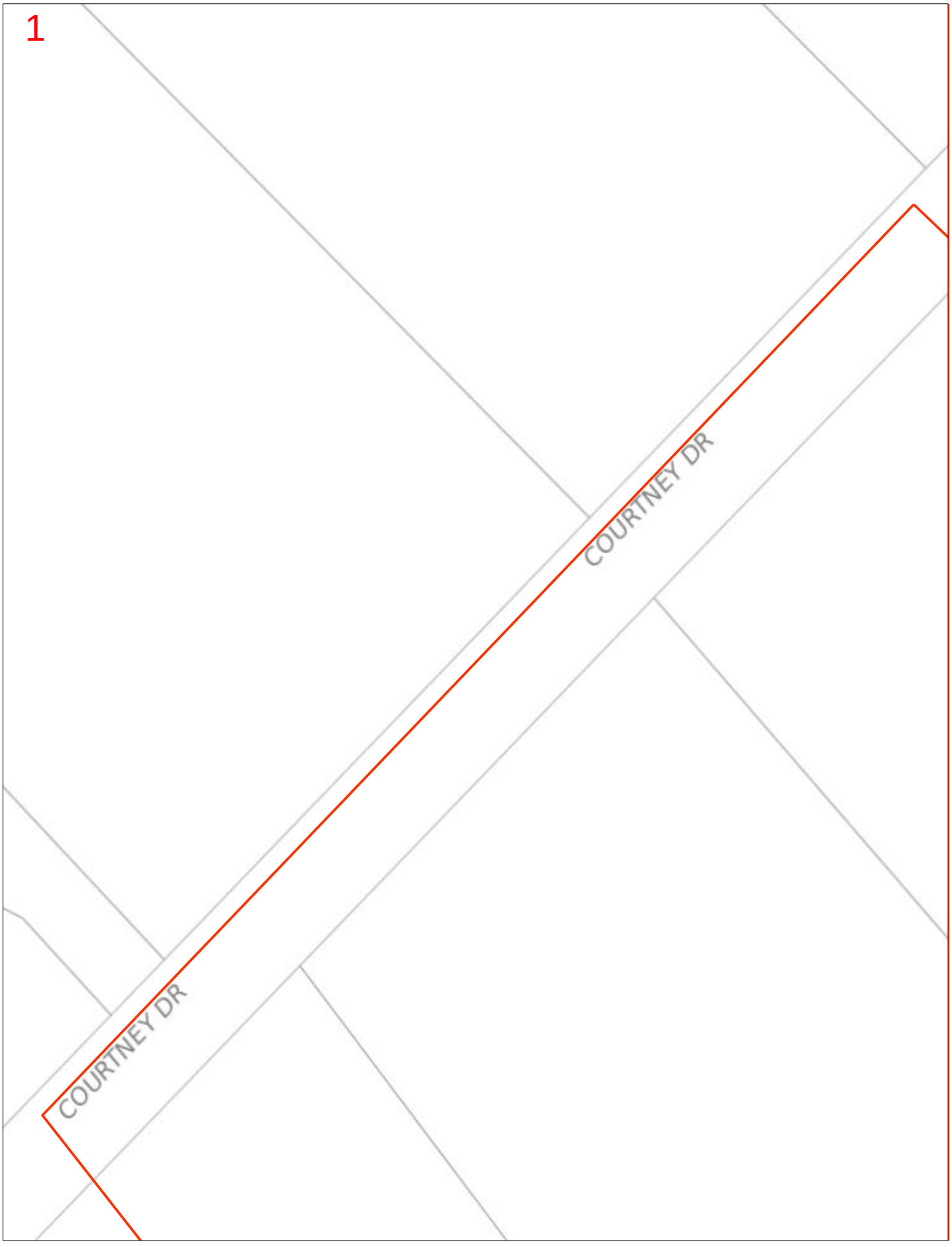
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Enquiry Area

Map Key Area

Site Address 57 Courtney Drive
Upper Coomera
QLD 4209

Sequence No 248396250



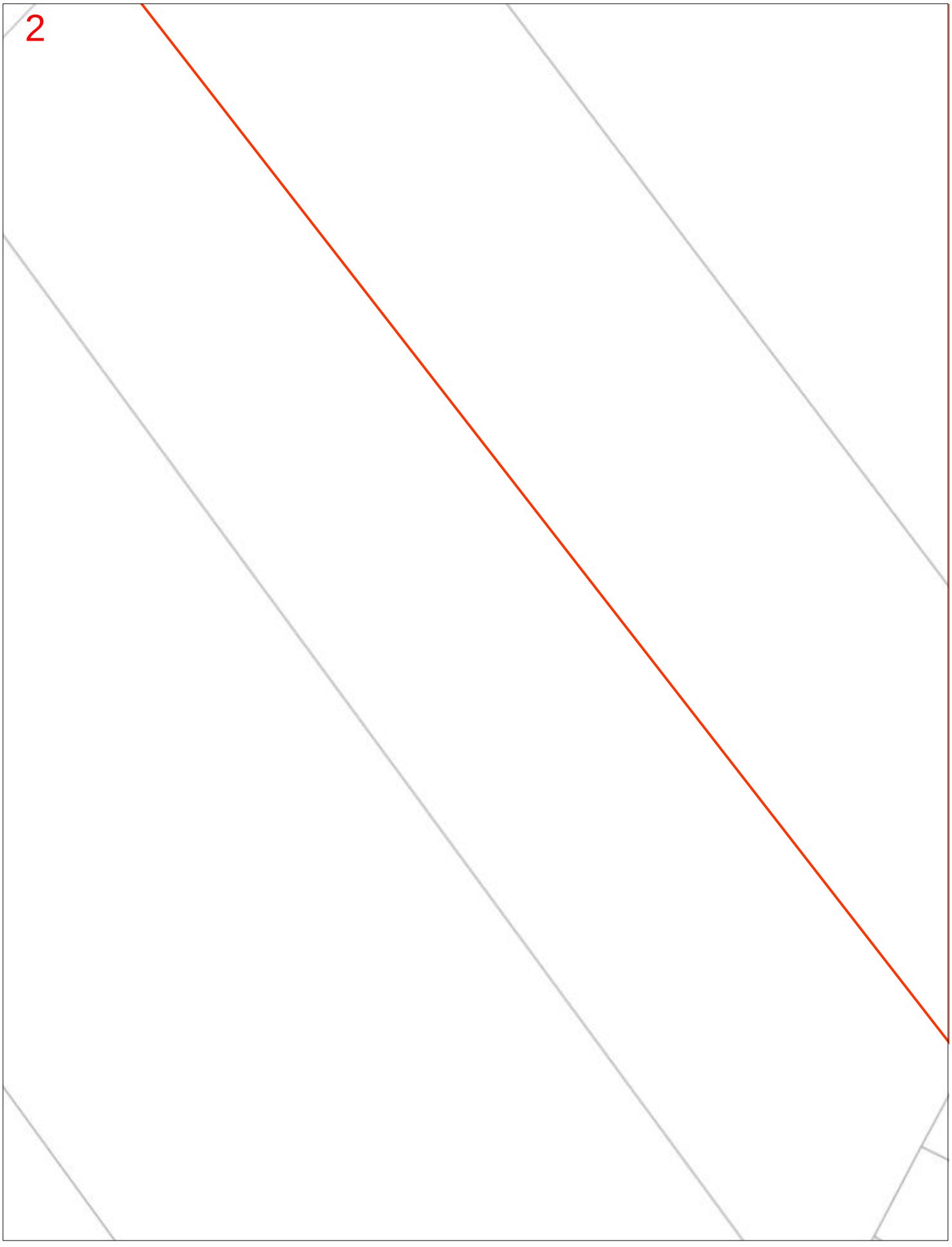
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Map Sources: Esri, Garmin, HERE, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

N

Enquiry Area

Map Key Area



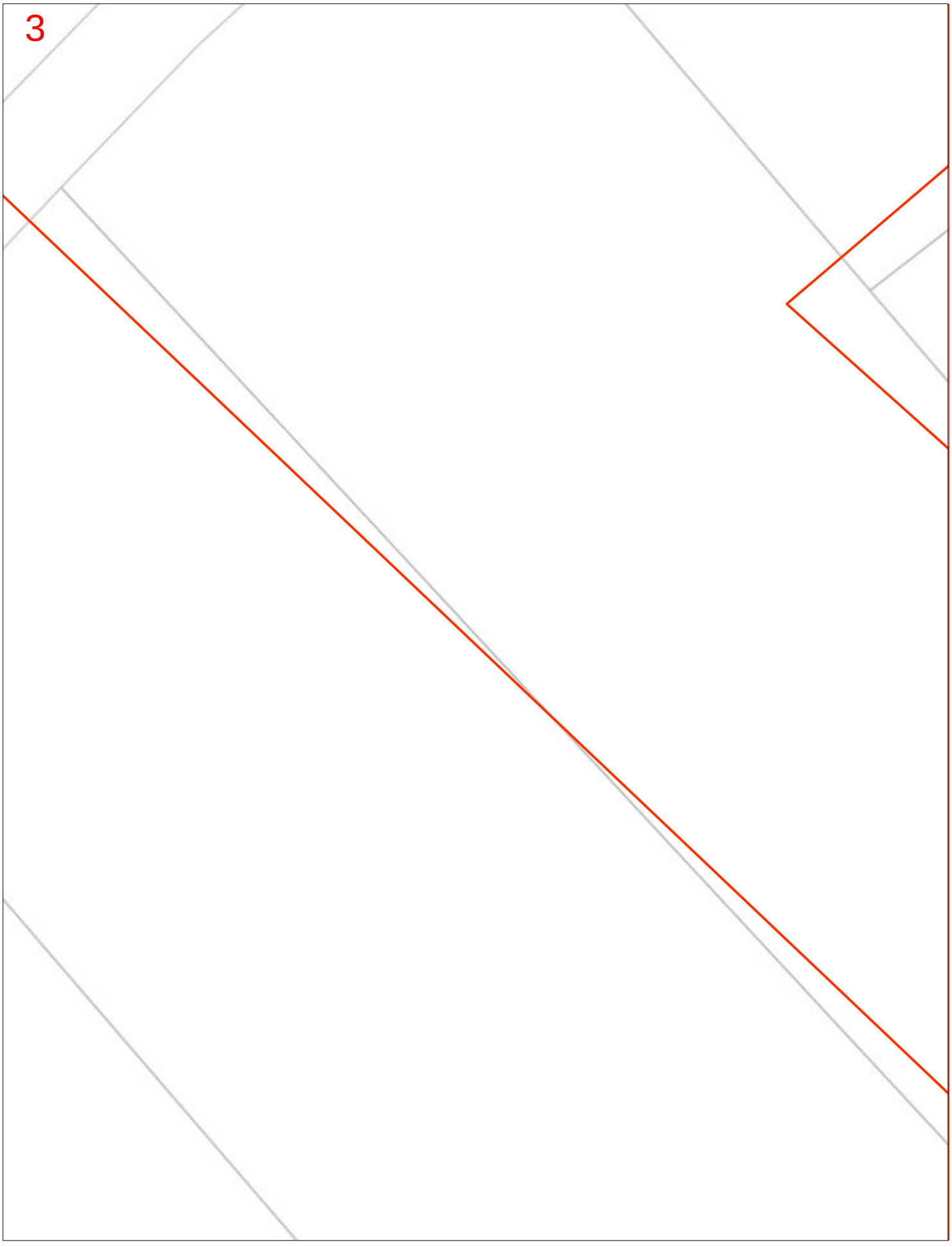
Scale 1: 700

Map Sources: Esri, Garmin, HERE, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

N

Enquiry Area

Map Key Area



Scale 1: 700

Map Sources: Esri, Garmin, HERE, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

N

Enquiry Area

Map Key Area

4



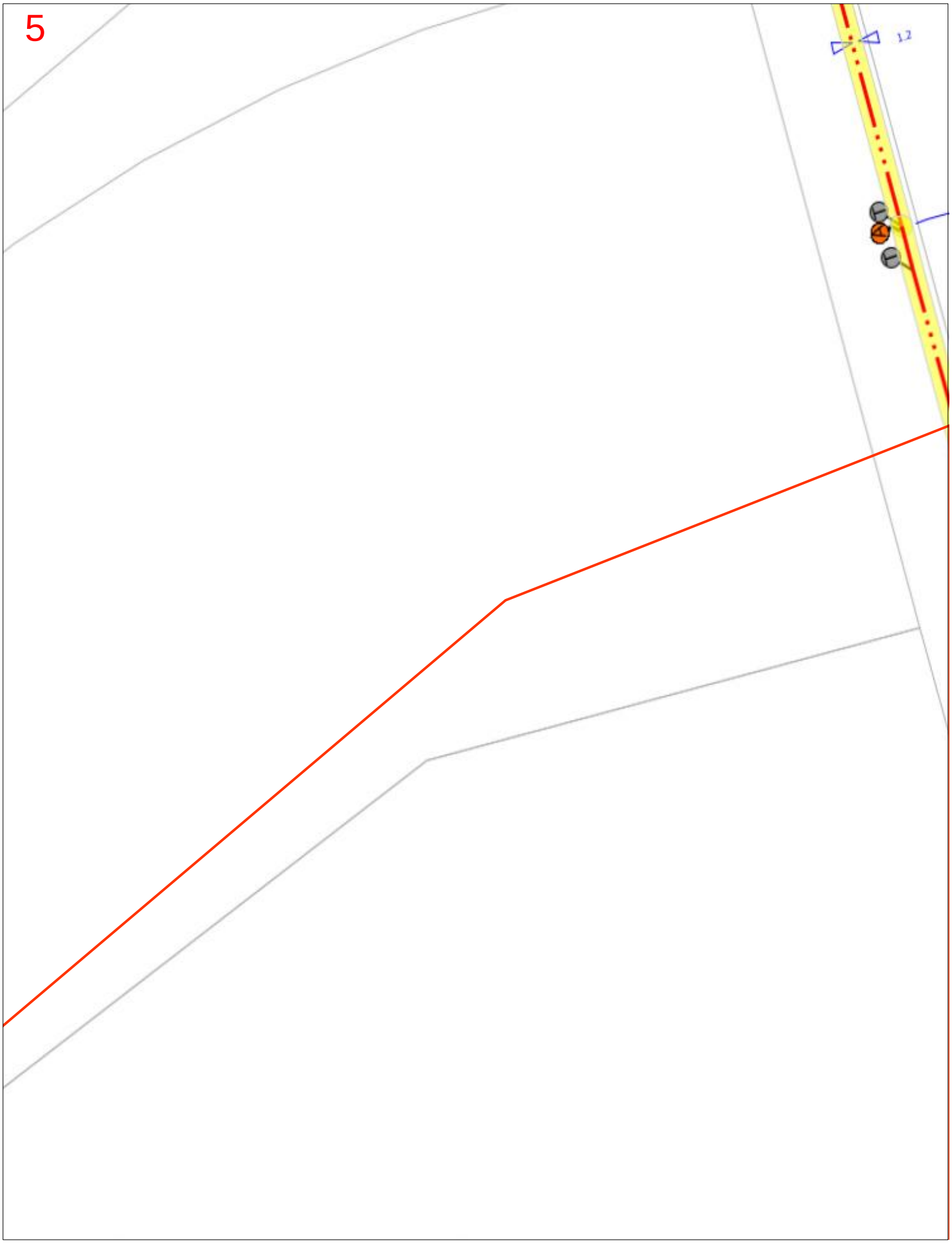
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Map Sources: Esri, Garmin, HERE, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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Enquiry Area

Map Key Area



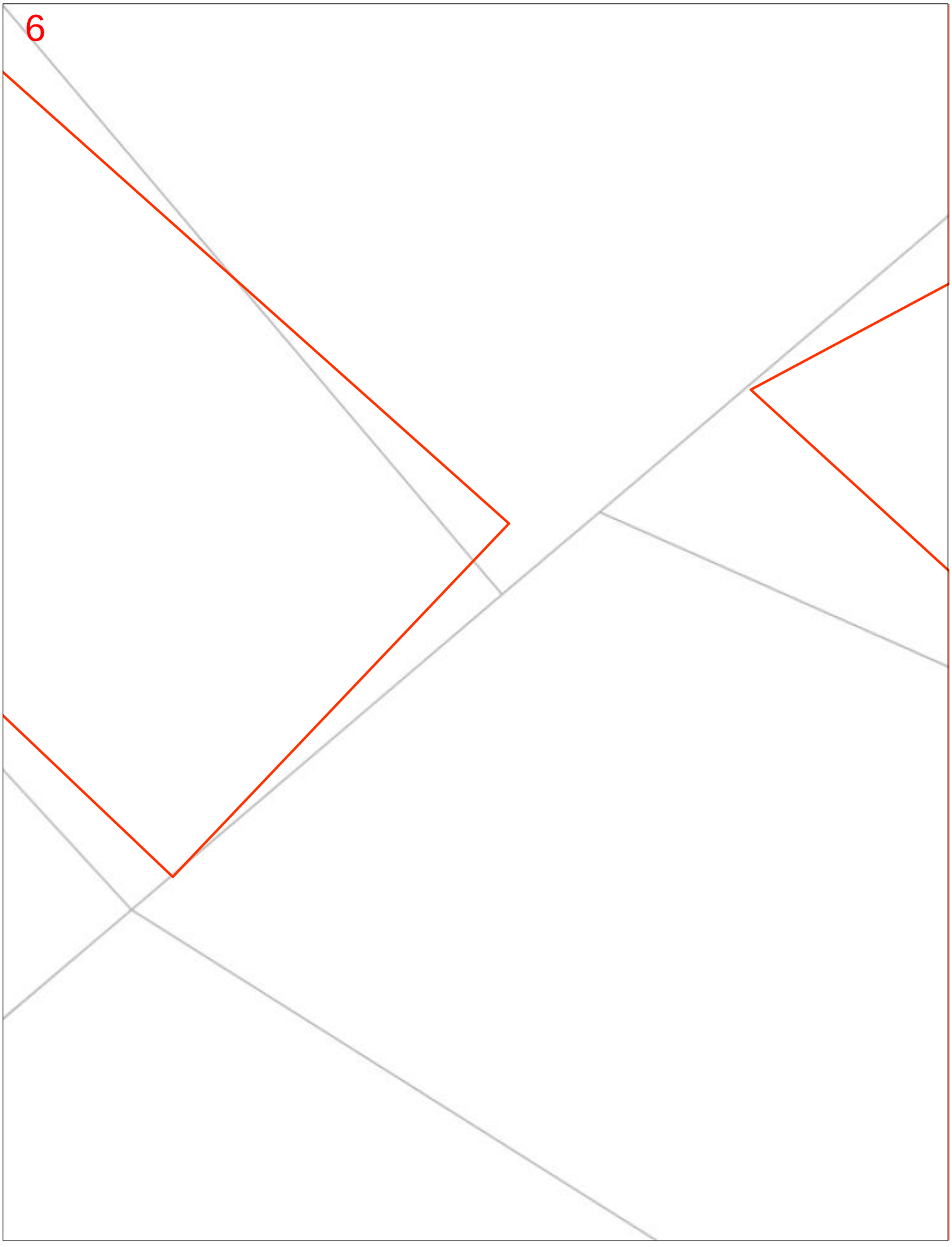
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Map Sources: Esri, Garmin, HERE, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

N

Enquiry Area

Map Key Area



Scale 1: 700

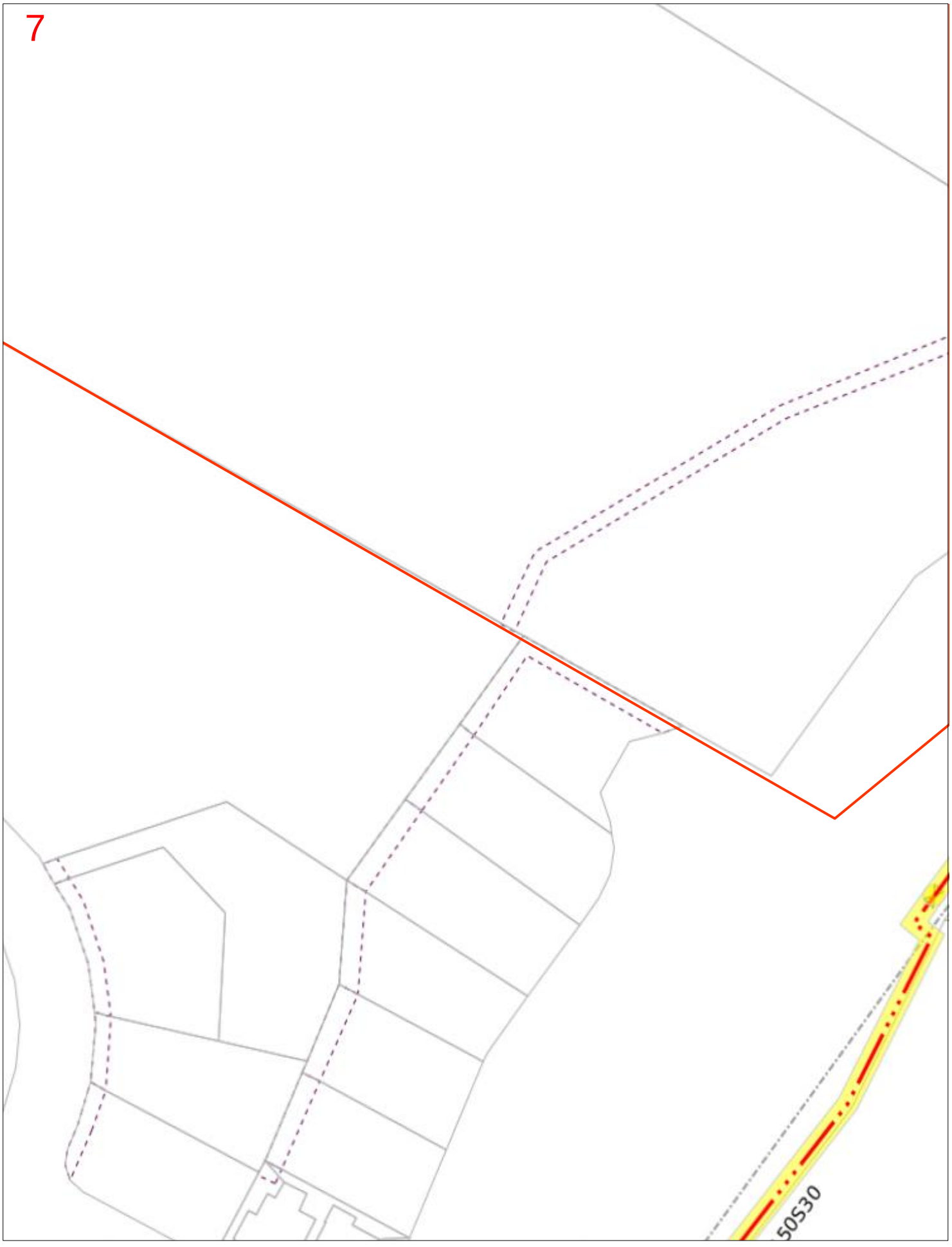
Map Sources: Esri, Garmin, HERE, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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Enquiry Area

Map Key Area

7



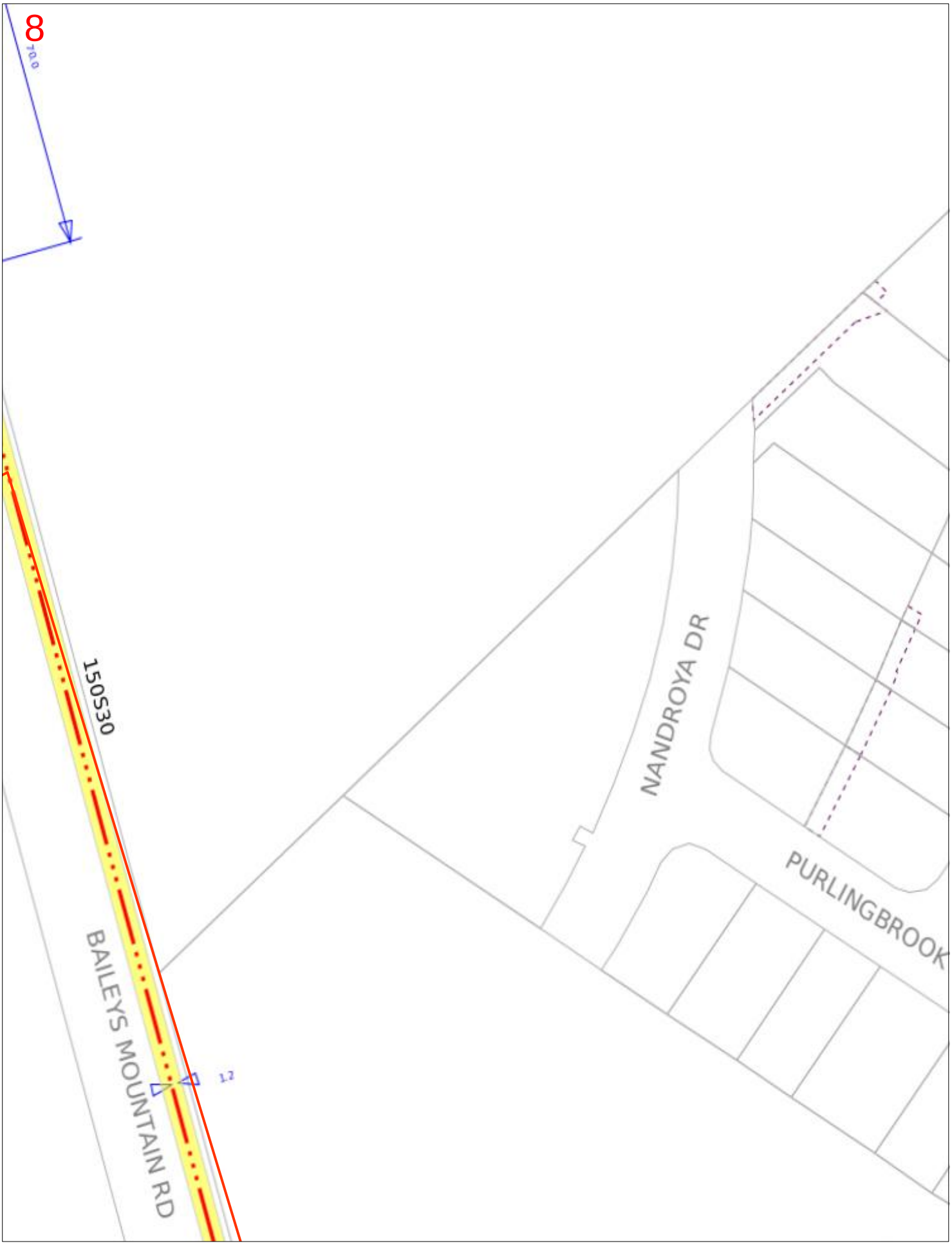
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Map Sources: Esri, Garmin, HERE, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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Enquiry Area

Map Key Area



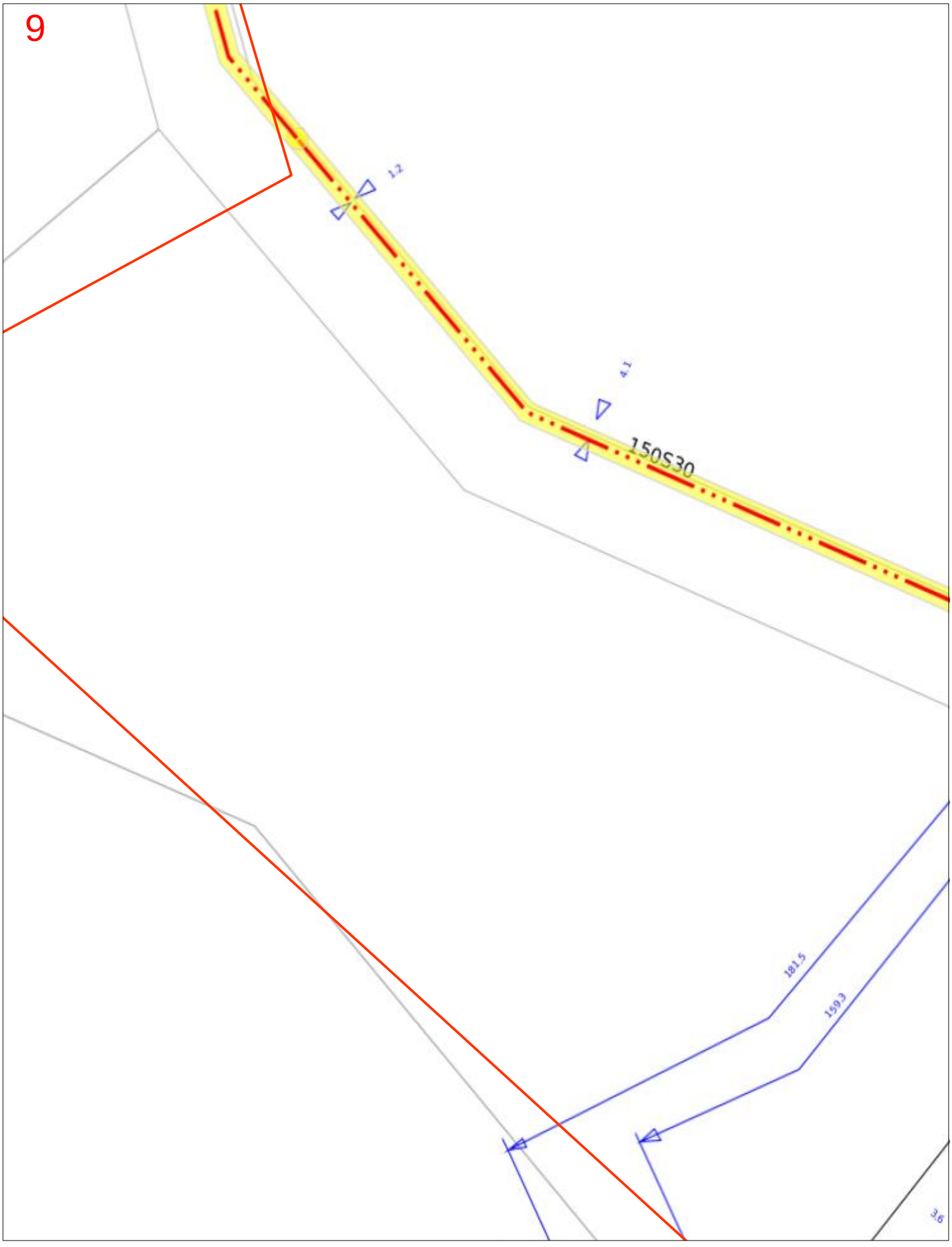
Scale 1: 700

Map Sources: Esri, Garmin, HERE, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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Enquiry Area

Map Key Area



Scale 1: 700

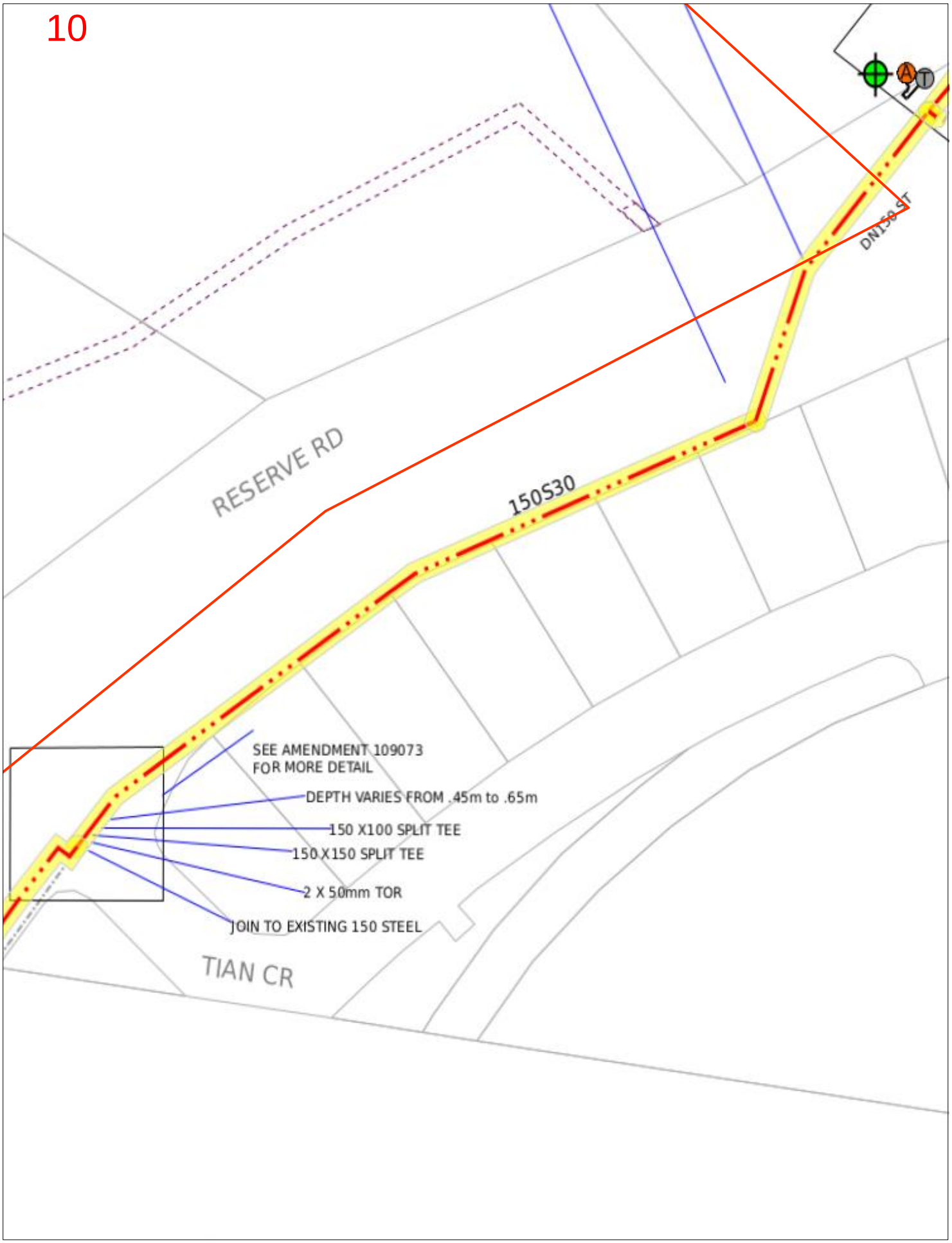
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Enquiry Area

Map Key Area

10



Scale 1: 700

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Enquiry Area

Map Key Area

Map Symbology

Pipe

- Low pressure
- Medium pressure
- High pressure
- Transmission pressure
- Critical main (behind pipe)
- Proposed (pressure by colour)
- LPG (pressure by colour)
- Abandoned
- Idle/inactive
- Sleeve
- Casing (behind pipe)

Area

- BYDA area of interest

Pipe code and material

C* (for example, C2)	Cast iron
CU	Copper
N2	Nylon
P*	Polyethylene (PE)
P6, P7, P9–P12	Medium density PE
P2, P4, P8	High density PE
S*	Steel
W2	Wrought galv iron
W3	PE coat wrought galv iron

Object

- Valve
- Buried valve
- Regulator
- Gas supplied = yes
- CP rectifier terminal
- CP test station
- CP anode
- CP bond wire
- Syphon
- Trace wire point

Abbreviation

BoK	Back of kerb	FoK	Front of kerb
C	Depth of cover	Galv	Galvanized
CP	Cathodic protection	NTI	Not tied in

Example

Pipe

40P6 in 80C2 — 40 mm high pressure medium density poly in an 80 mm cast iron casing

63S8 — 63 mm medium pressure steel

Pipe code

Pipe diameter in millimetres is shown before pipe code.
40P6 = 40 mm nominal diameter

This map was created in colour and should be printed in colour

Site Watch

Site Watch is where an APA field officer attends your work site to monitor and ensure controls are in place to protect critical gas assets from damage during work. The following rates apply for this service (1 hour minimum charge):

Item	Rate (excl. gst)
Site Watch - Business Hours	$143.42 per hour
Site Watch - After Hours	$175.06 per hour
Cancellation Fee Fee applies where cancellations received after 12pm (midday) 1 business day prior to the booking	$286.84

- Contact APA - Before You Dig officer for state specific hours of business.

Contacts

Contacts APA Group	
Enquiry	Contact Numbers
General enquiries or feedback regarding this information or gas assets.	APA - Before You Dig Officer Phone: 1800 085 628 Email: BYDA_APA@apa.com.au
Gas Emergencies	Phone: 1800 GAS LEAK (1800 427 532)

Important Information

- Refer to requirements relating to construction, excavation and other work activities in the APA **Guidelines for Works Near Existing Gas Assets** document with this BYDA response.
- BYDA enquiries are valid for 30 days. If your works commence after 30 days from the date of this response a new enquiry is required to validate location information.
- For some BYDA enquiries, you may receive two (2) responses from APA. Please read both responses carefully as they relate to different assets.
- Gas (inlet) services connecting Gas Assets in the street to the gas meter on the property are not marked on the map. South Australia Only - if a meter box is installed on the property, a sketch of the gas service location may be found inside the gas meter box. APA does not guarantee the accuracy or completeness of these sketches.

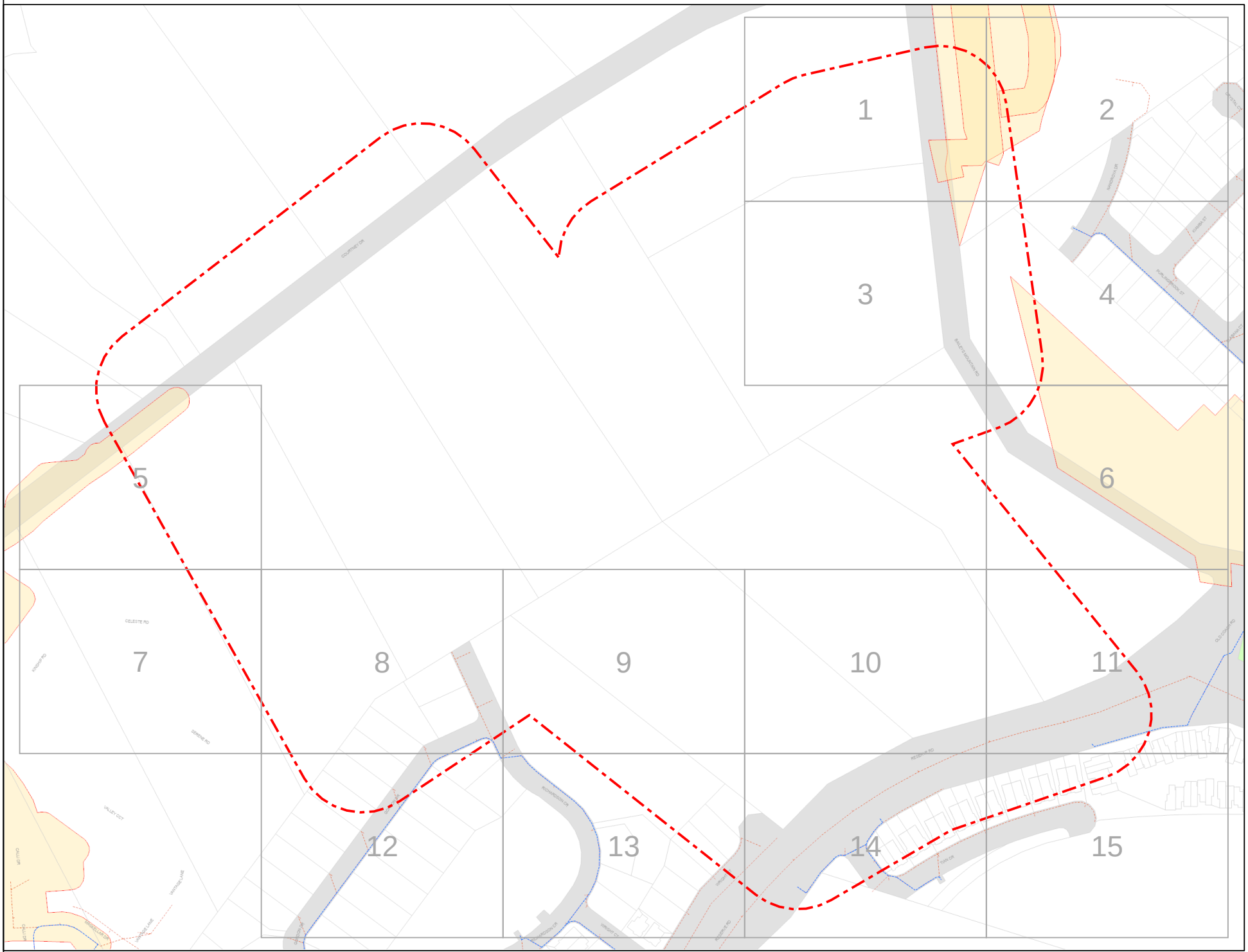
Disclaimer and legal details

- This information is valid for 30 days from the date of this response.
- This information has been generated by an automated system based on the area highlighted in your BYDA request and has not been independently verified.
- Map location information is provided as AS5488-2022 Quality Level D, as such supplied location information is indicative only.
- Whilst APA has taken reasonable steps to ensure that the information supplied is accurate, the information is provided strictly on the condition that no assurance, representation, warranty or guarantee (express or implied) is given by APA in relation to the information (including without limitation quality, accuracy, reliability, completeness, currency, sustainability, or suitability for any particular purpose) except that the information has been disclosed in good faith.
- Any party who undertakes activities in the vicinity of APA operated assets has a legal duty of care that must be observed. This legal obligation requires all parties to adhere to a standard of reasonable care while performing any acts that could foreseeably harm these assets.



All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ENERGEX BYDA map, then ENERGEX shall be contacted immediately.

For Emergency Situations
Please Call 13 19 62



energex

BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:2563
Tile No: **OVERVIEW**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

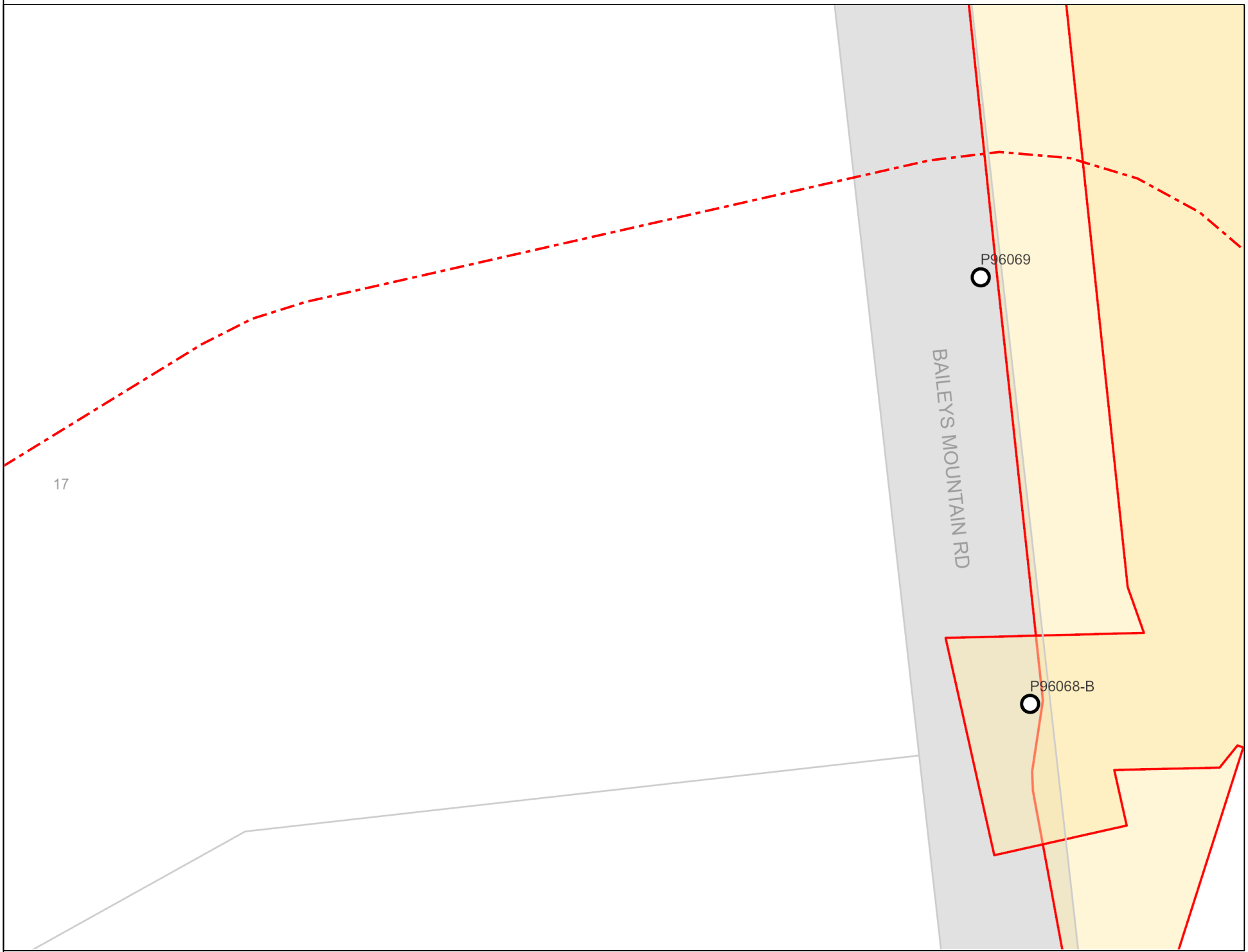
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energex

BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 1**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

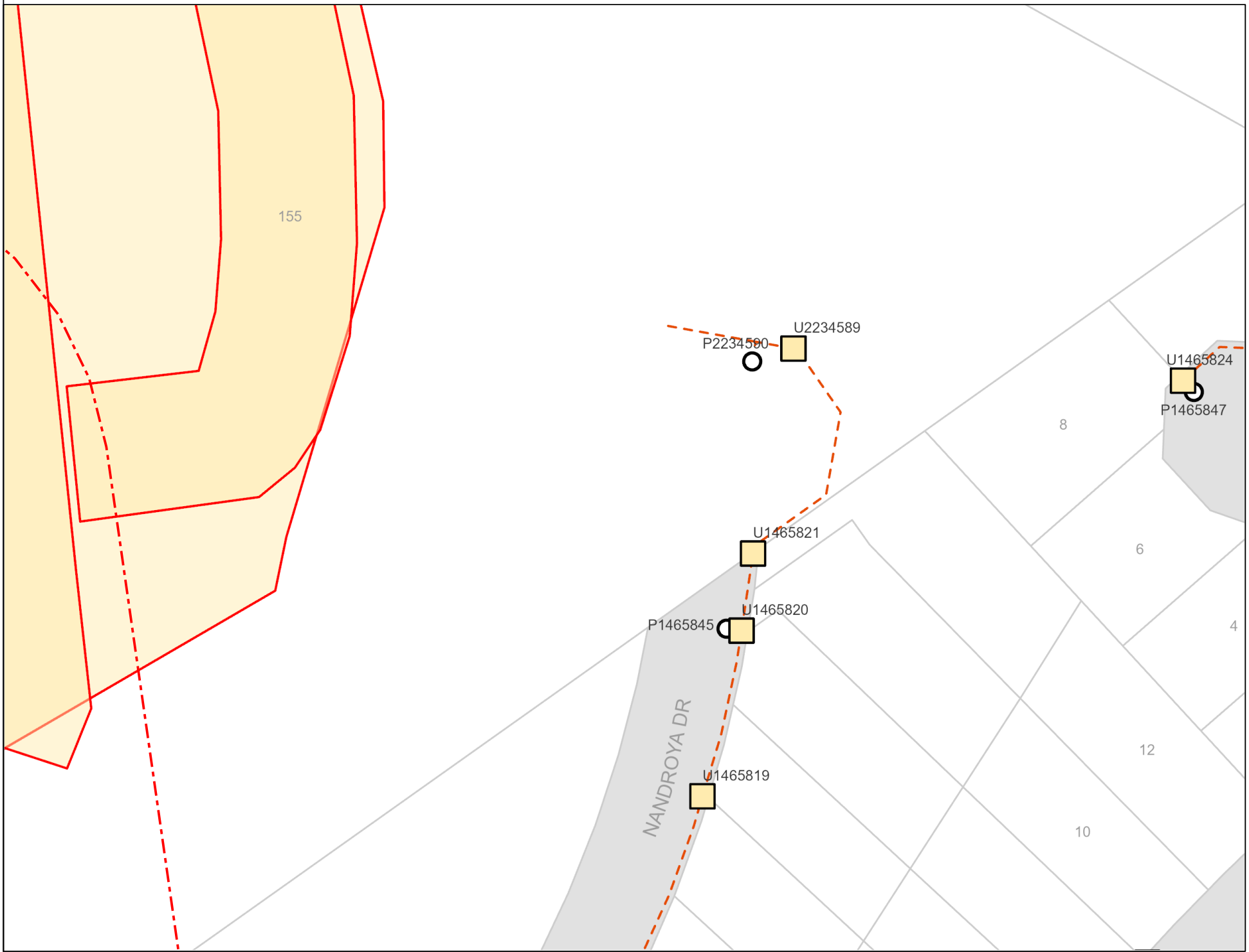
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Please Call 13 19 62



energex

BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 2**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

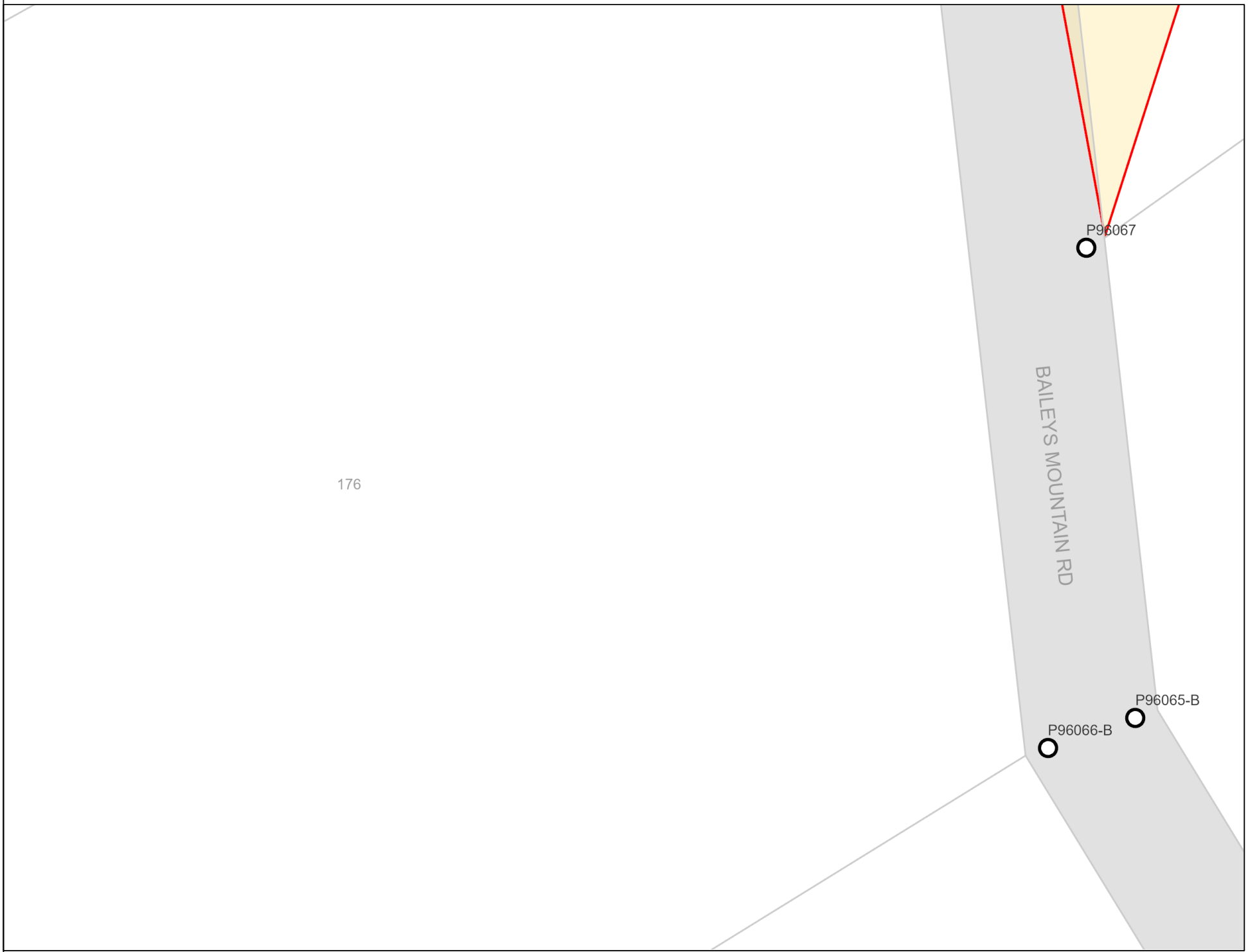
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energex

BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 3**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

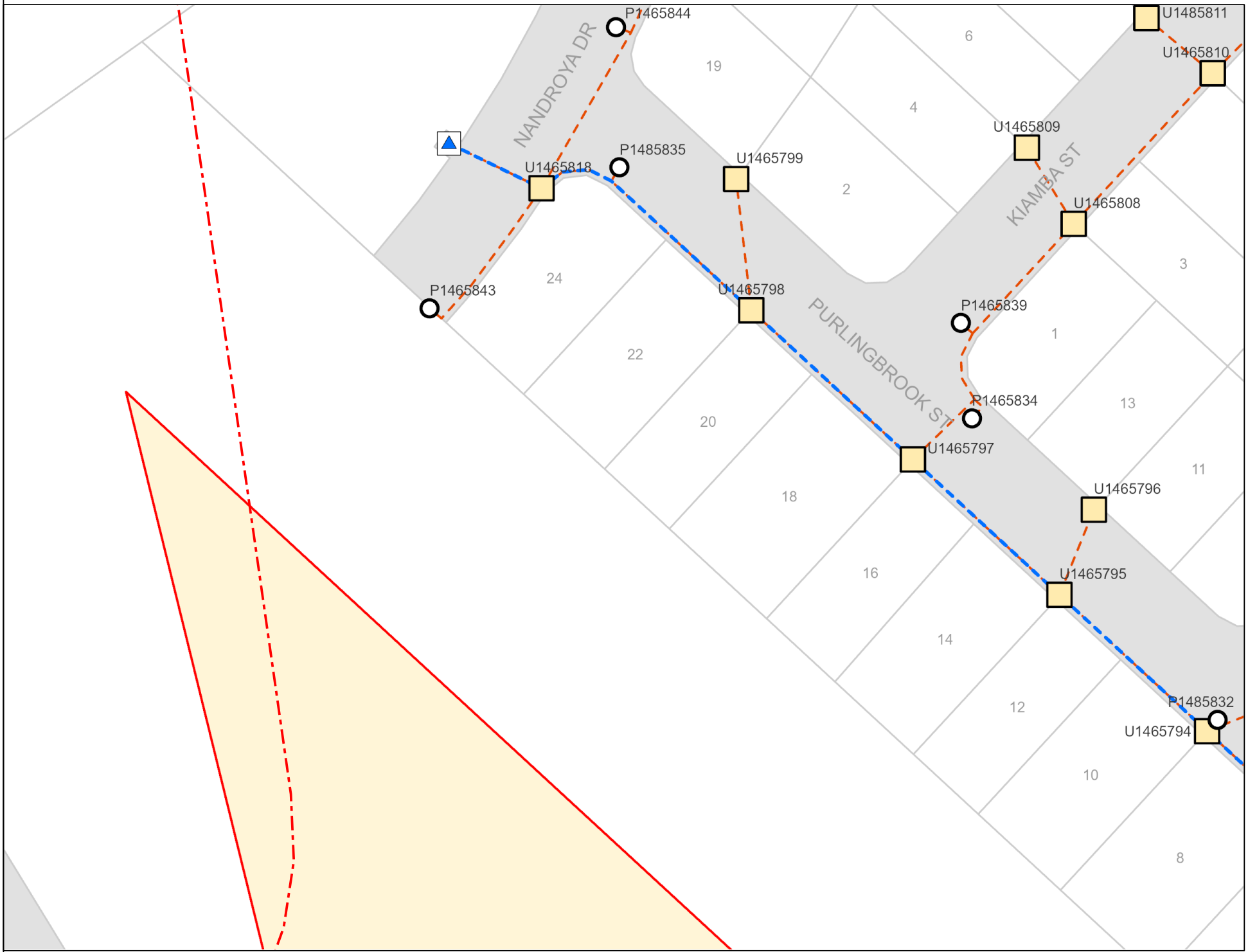
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BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 4**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

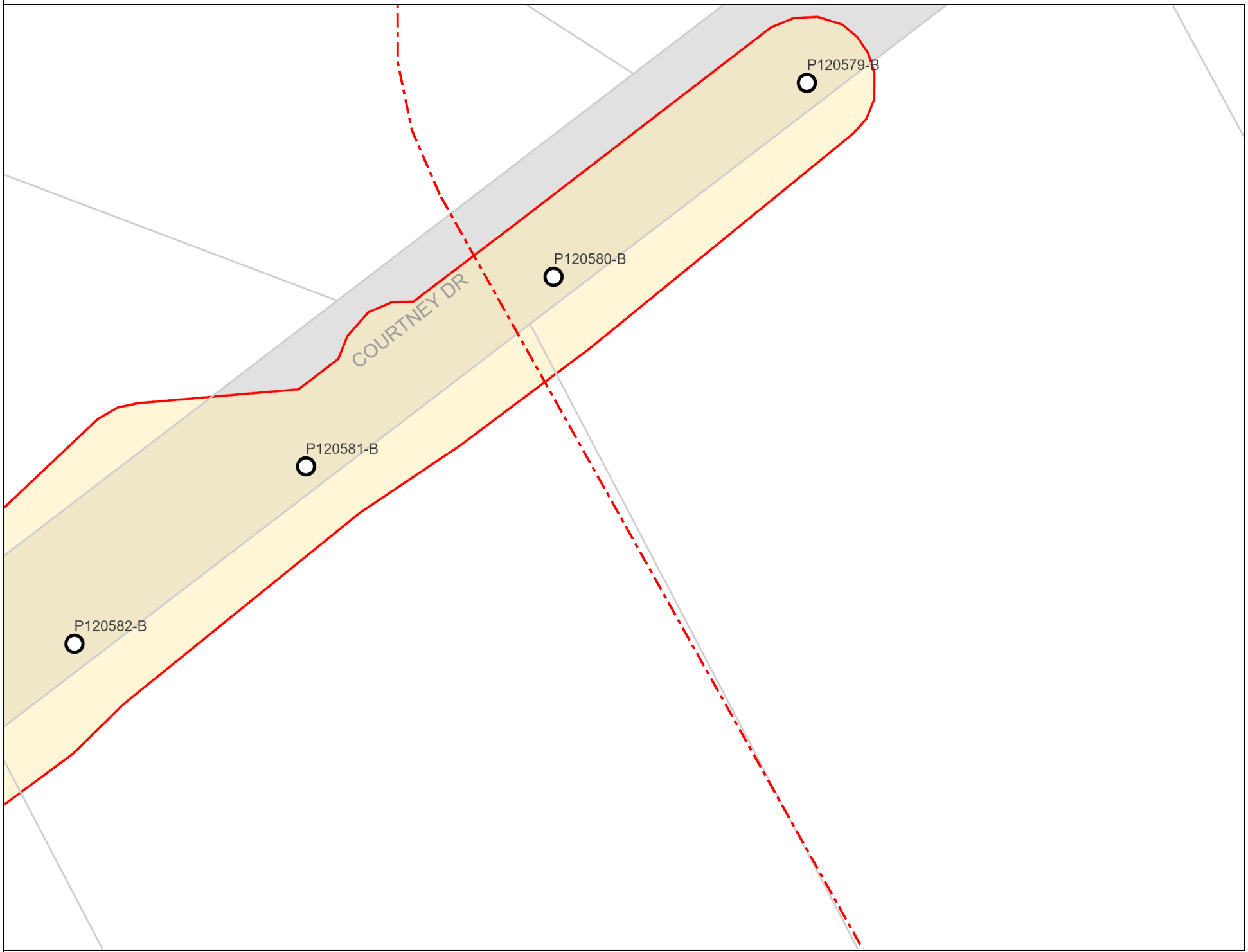
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BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 5**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

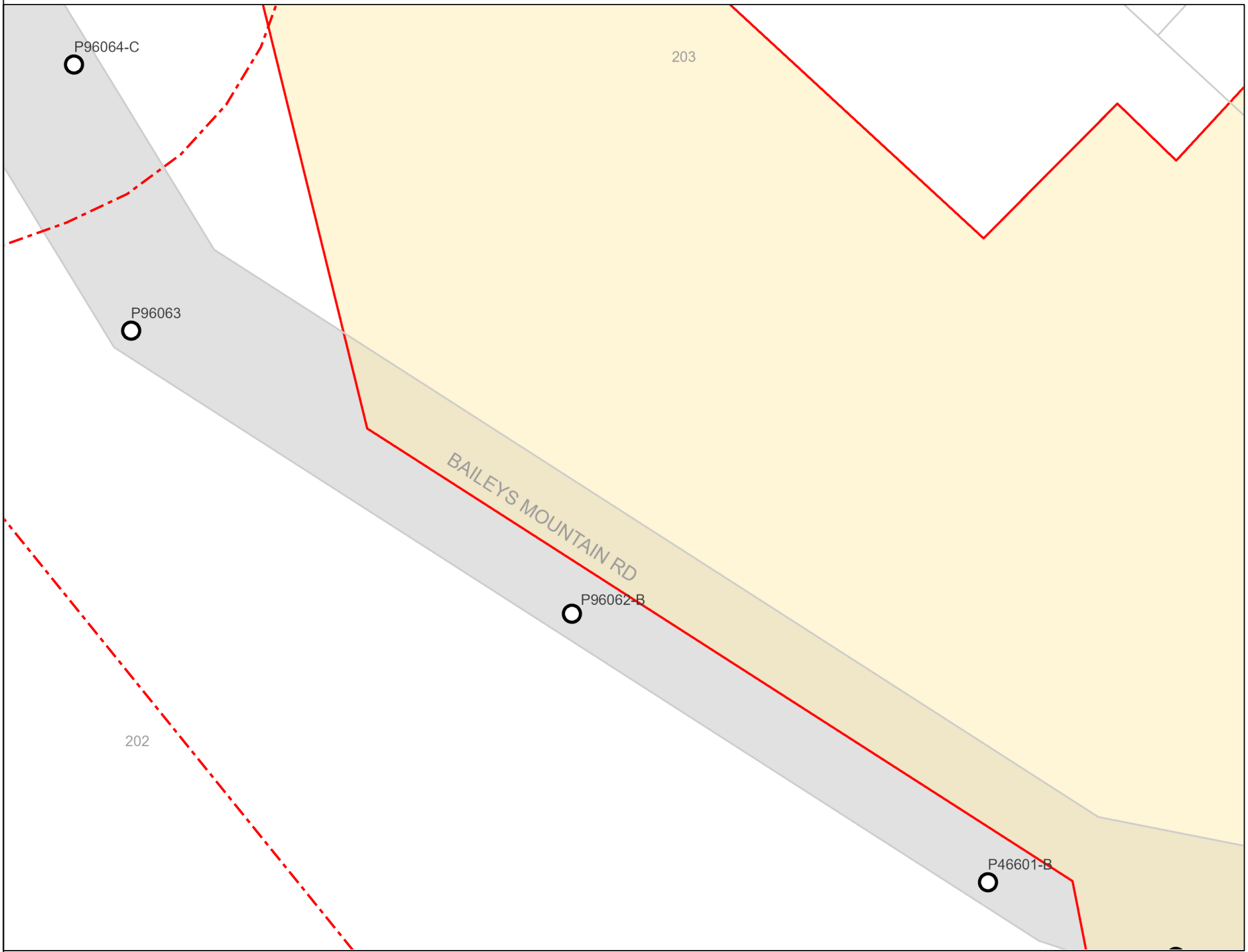
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BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 6**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

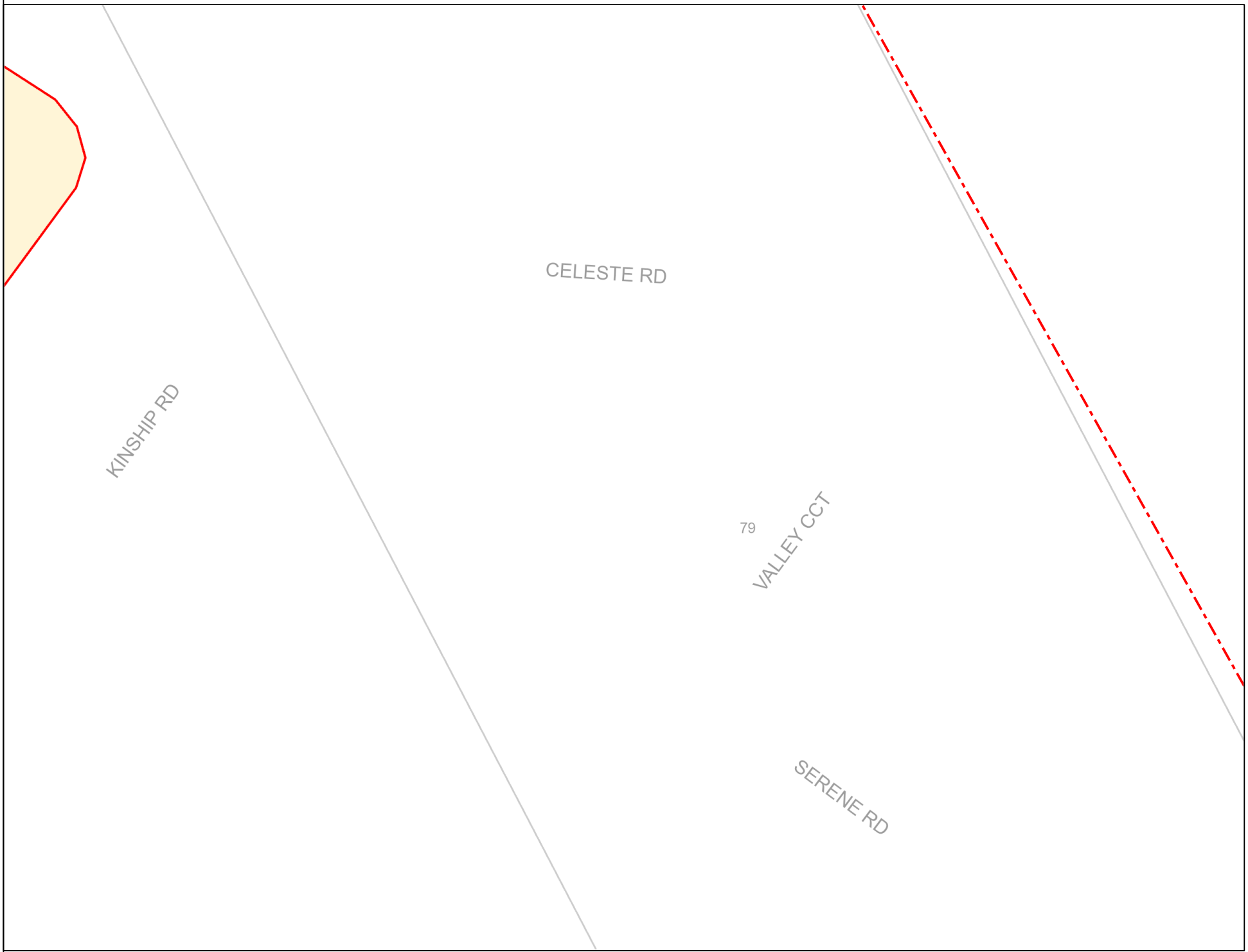
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BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 7**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

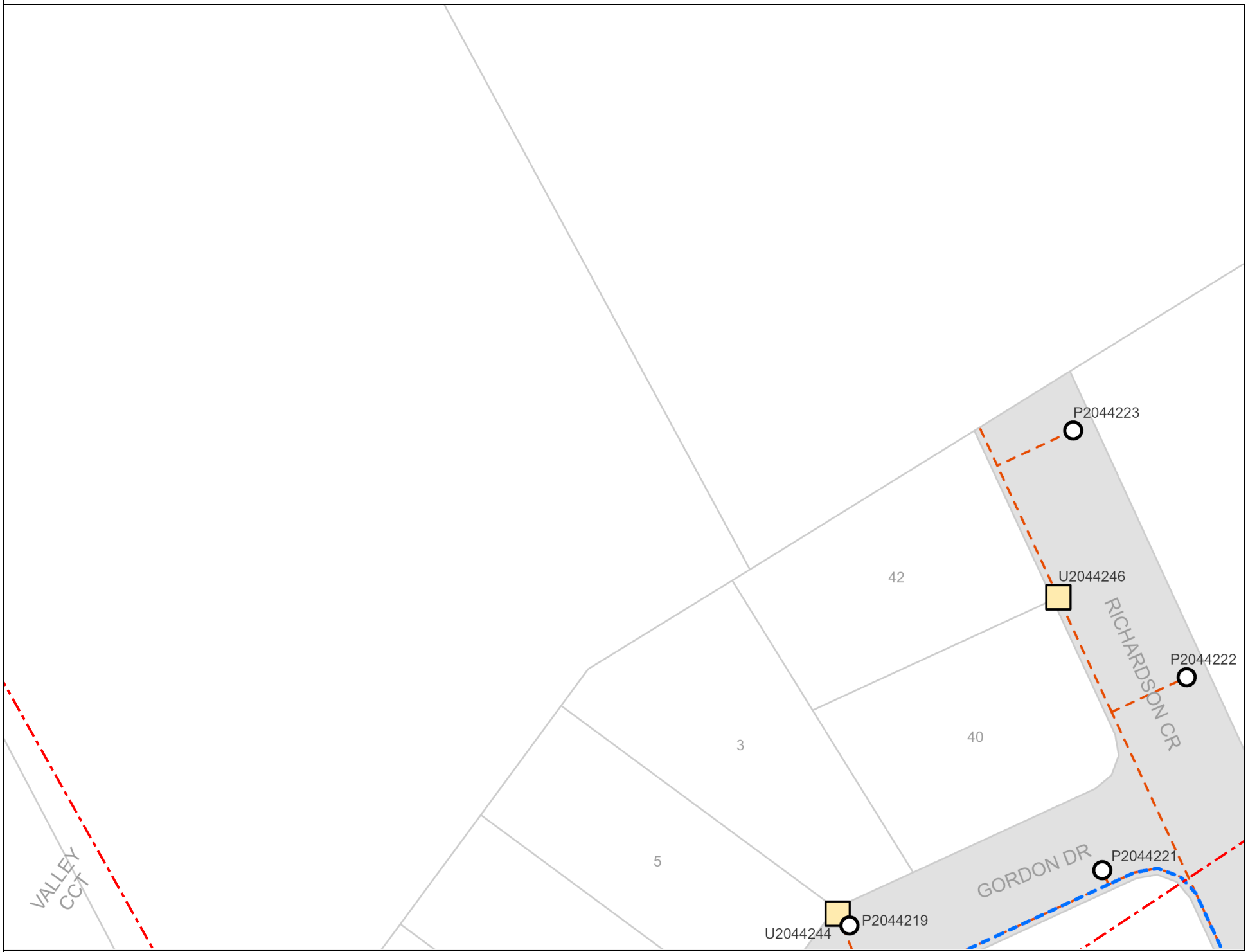
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BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 8**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

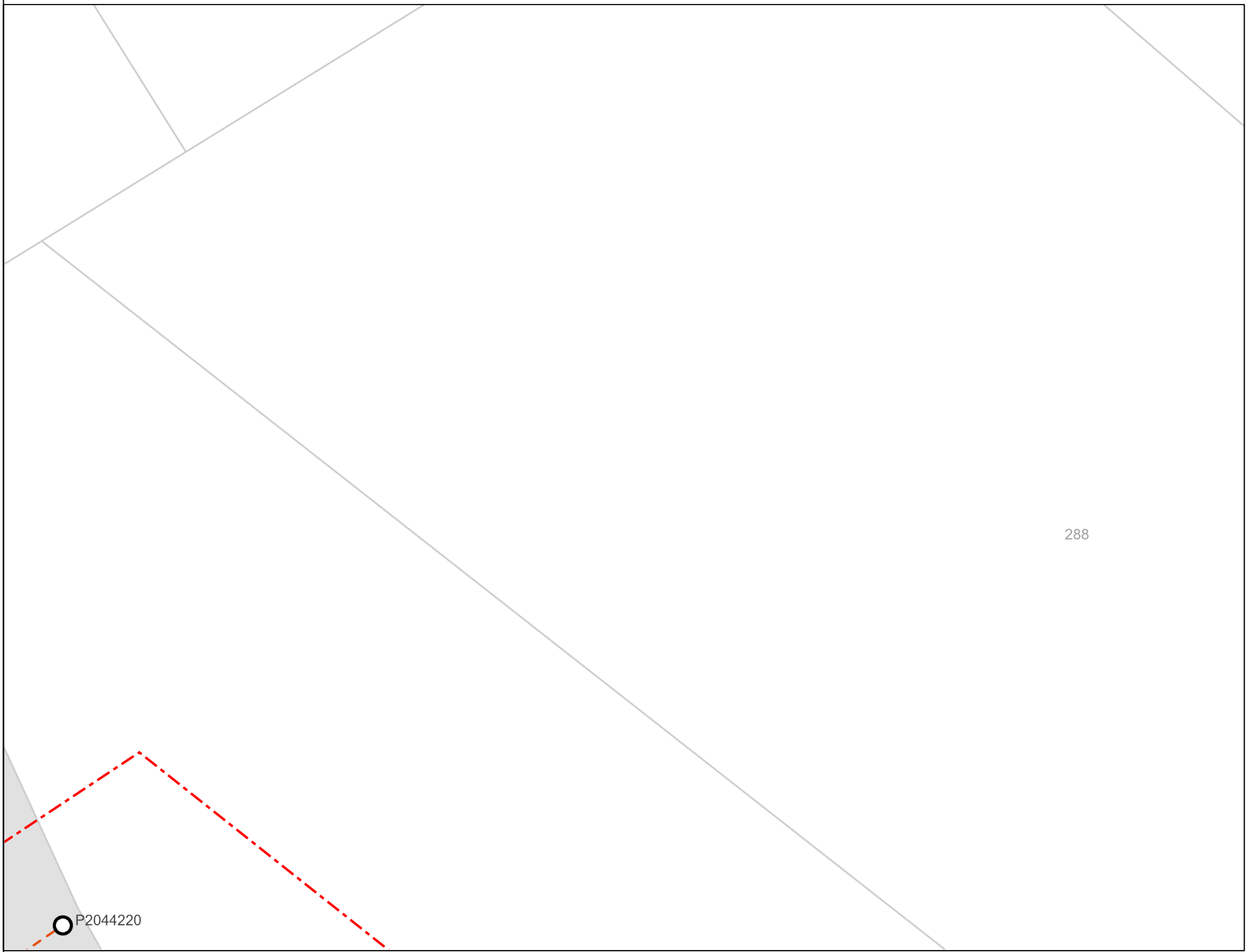
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Please Call 13 19 62



energex

BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 9**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

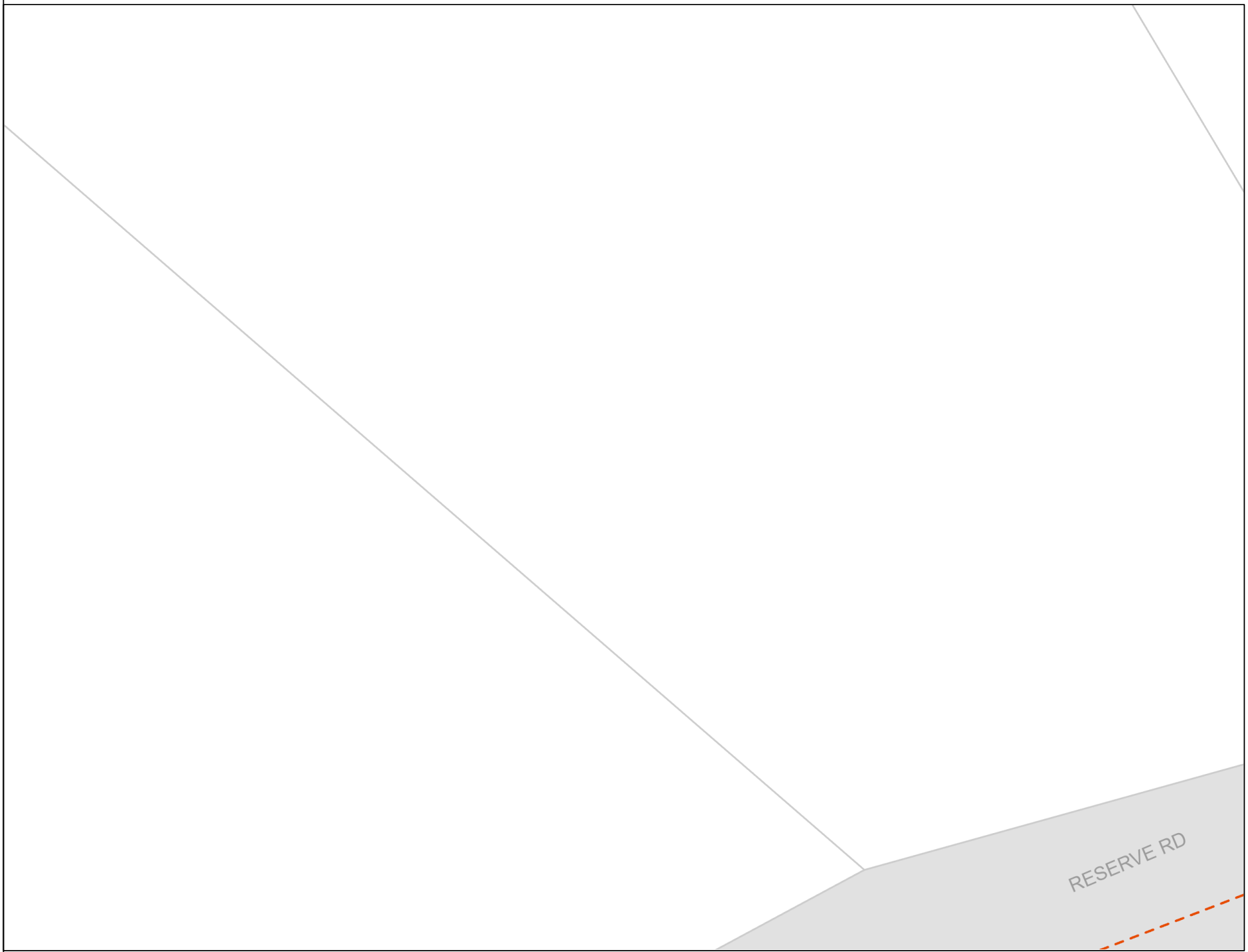
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For Emergency Situations
Please Call 13 19 62



energex

BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 10**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category “D” Plan

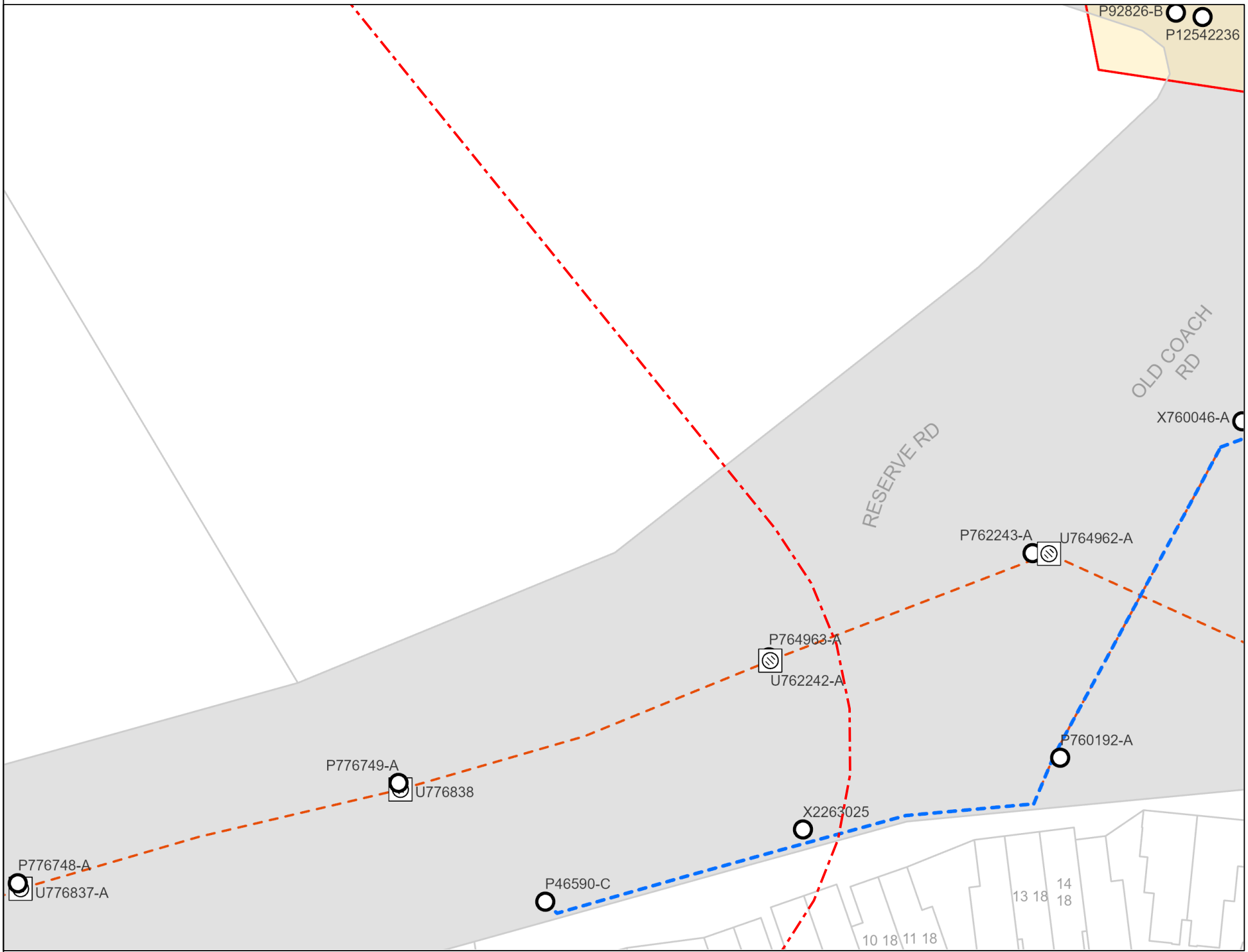
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For Emergency Situations
Please Call 13 19 62



energex

BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 11**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

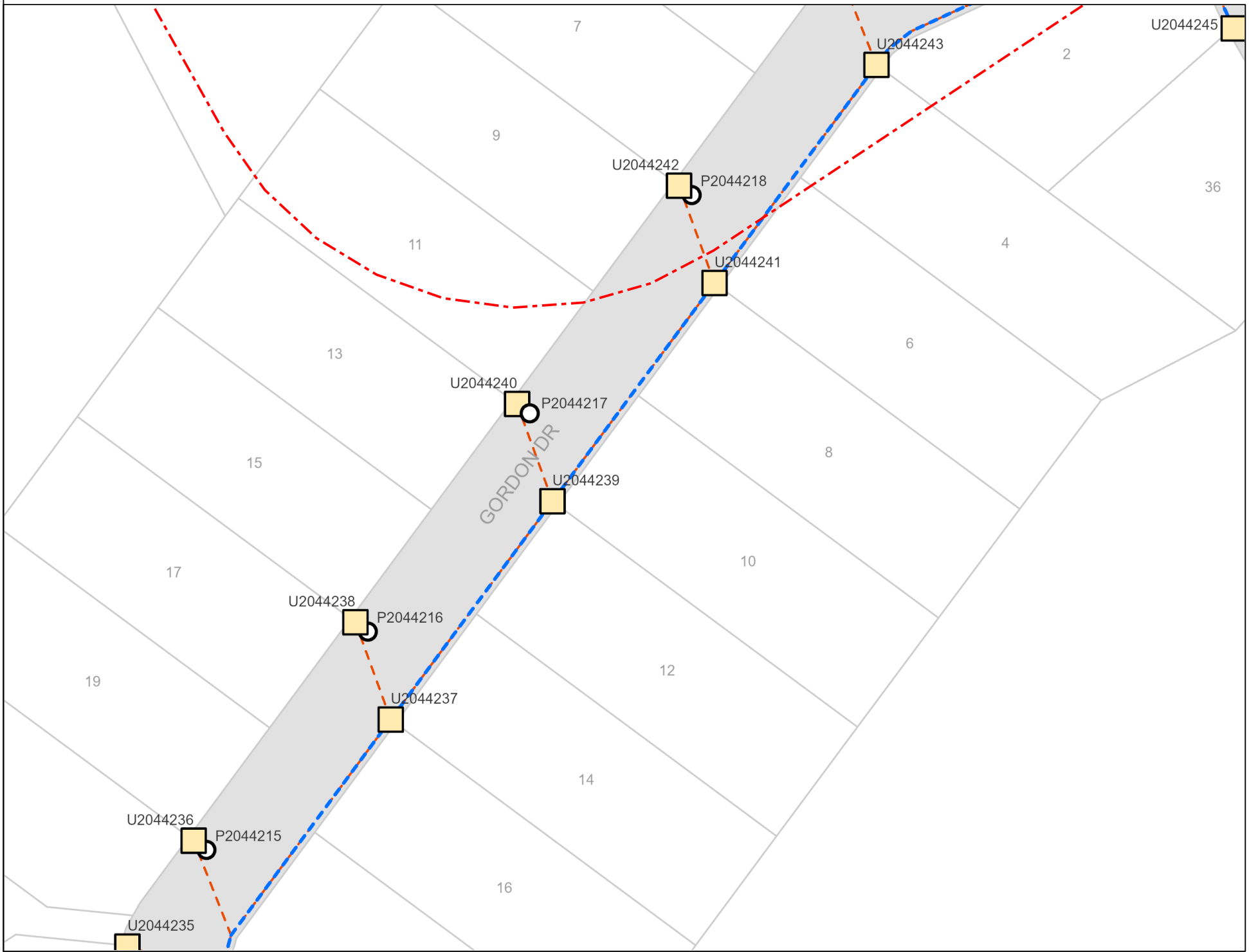
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For Emergency Situations
Please Call 13 19 62



energex

BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 12**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

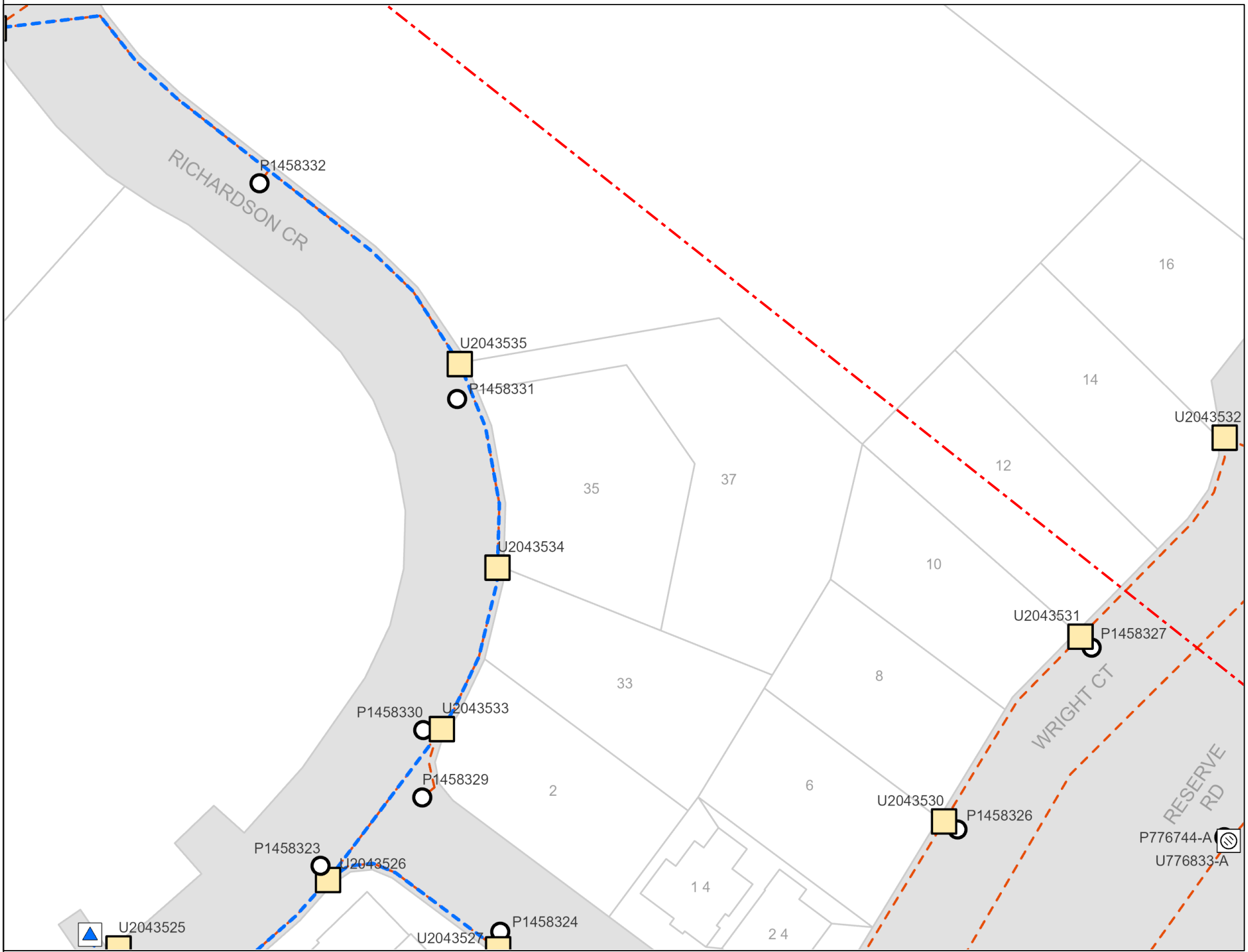
N
W E
S

DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor Pelican Corp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

This output provides details of the ENERGEX electrical network. As variations may exist no responsibility is incurred by ENERGEX for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.

All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ENERGEX BYDA map, then ENERGEX shall be contacted immediately.

For Emergency Situations
Please Call 13 19 62



energex

BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 13**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

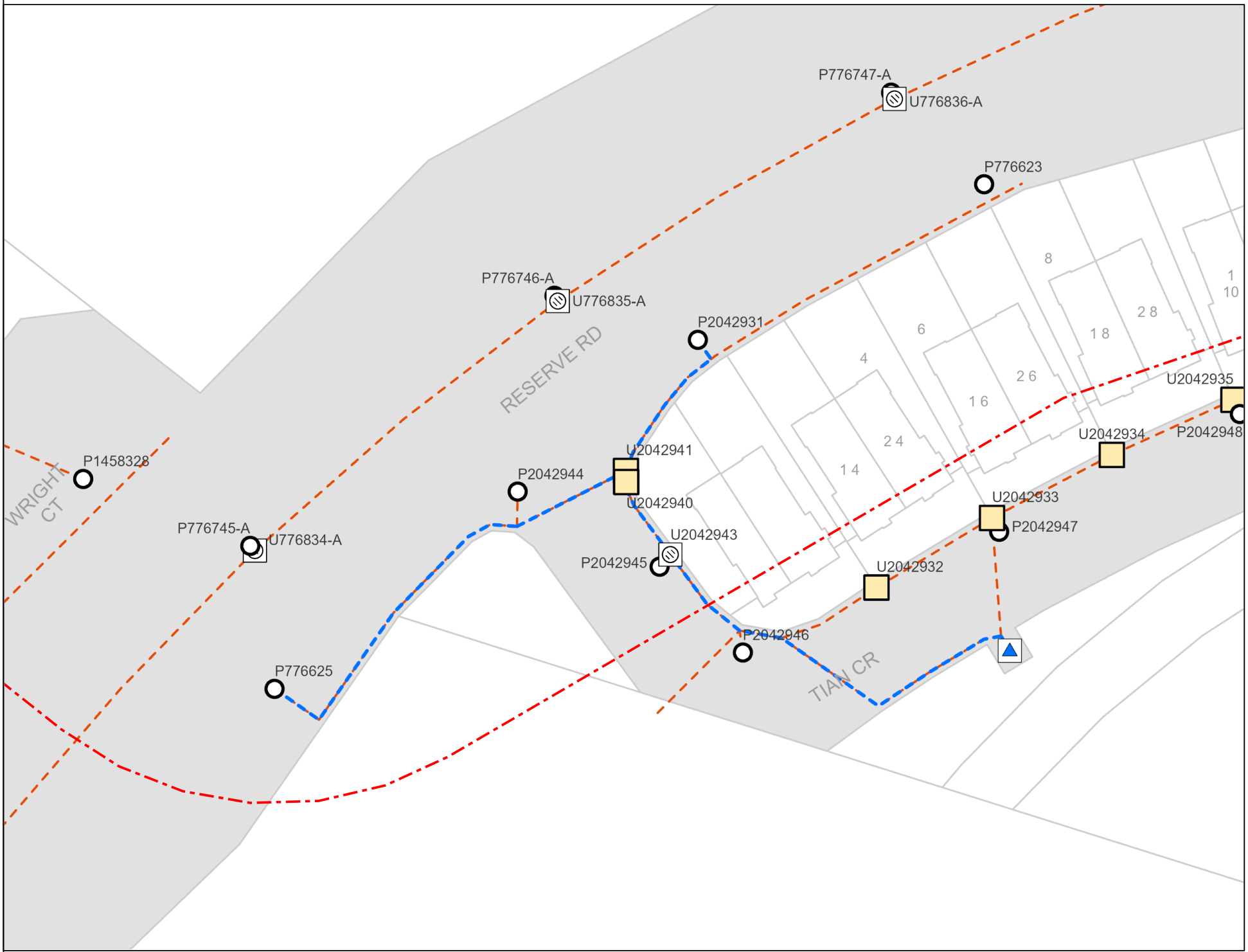
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For Emergency Situations
Please Call 13 19 62



BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 14**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

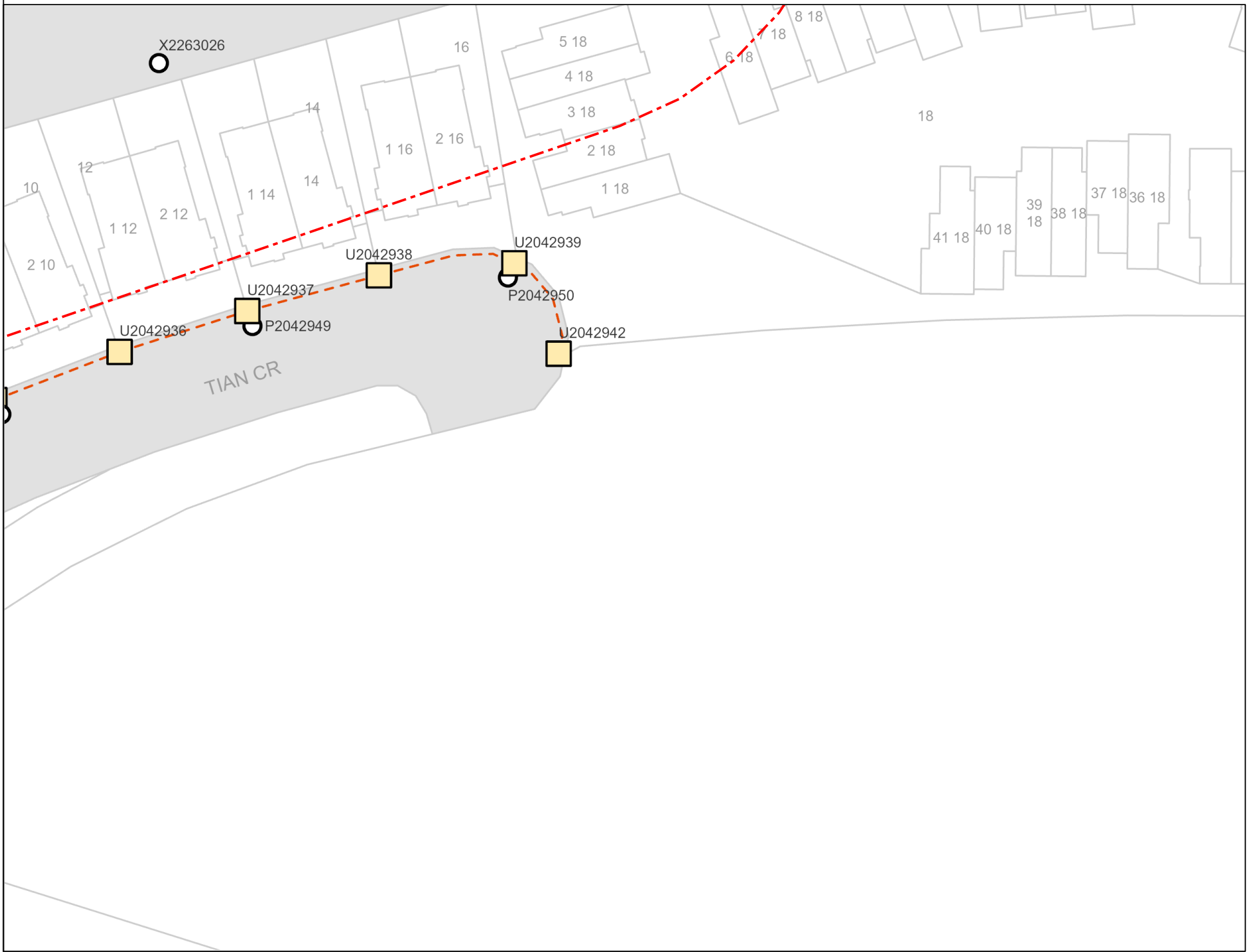
N
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DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor Pelican Corp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

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For Emergency Situations
Please Call 13 19 62



energex

BYDA

Sequence: 248396251
Date: 05/12/2024

Scale: 1:500
Tile No: **Tile No: 15**

CAUTION - HIGH VOLTAGE

LEGEND

- Substation
- Cable Marker
- Pit
- Pole
- Pillar
- LV Cable (up to 1kV)
- HV Cable (1kV – <33kV)
- HV Cable (33kV and over)
- Pit Boundary
- Planned Work Area

AS5488 Category "D" Plan

N
W E
S

DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor Pelican Corp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

This output provides details of the ENERGEX electrical network. As variations may exist no responsibility is incurred by ENERGEX for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.

To:	Jake Lowry
Phone:	Not Supplied
Fax:	Not Supplied
Email:	jlowry@oska.net.au

Dial before you dig Job #:	38214212
Sequence #	248396248
Issue Date:	05/12/2024
Location:	57 Courtney Drive , Upper Coomera , QLD , 4209

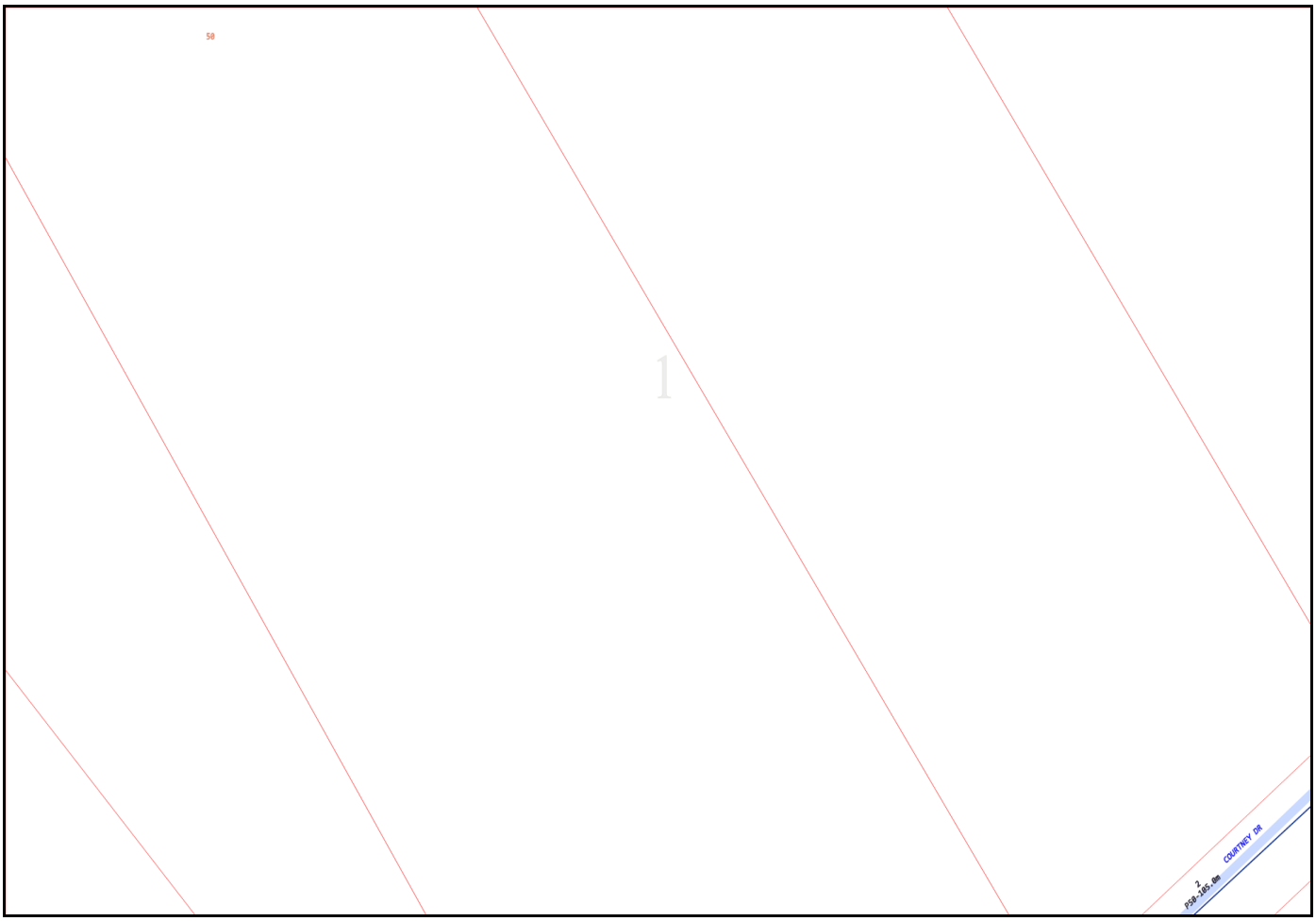
BEFORE YOU DIG www.byda.com.au Zero Damage - Zero Harm

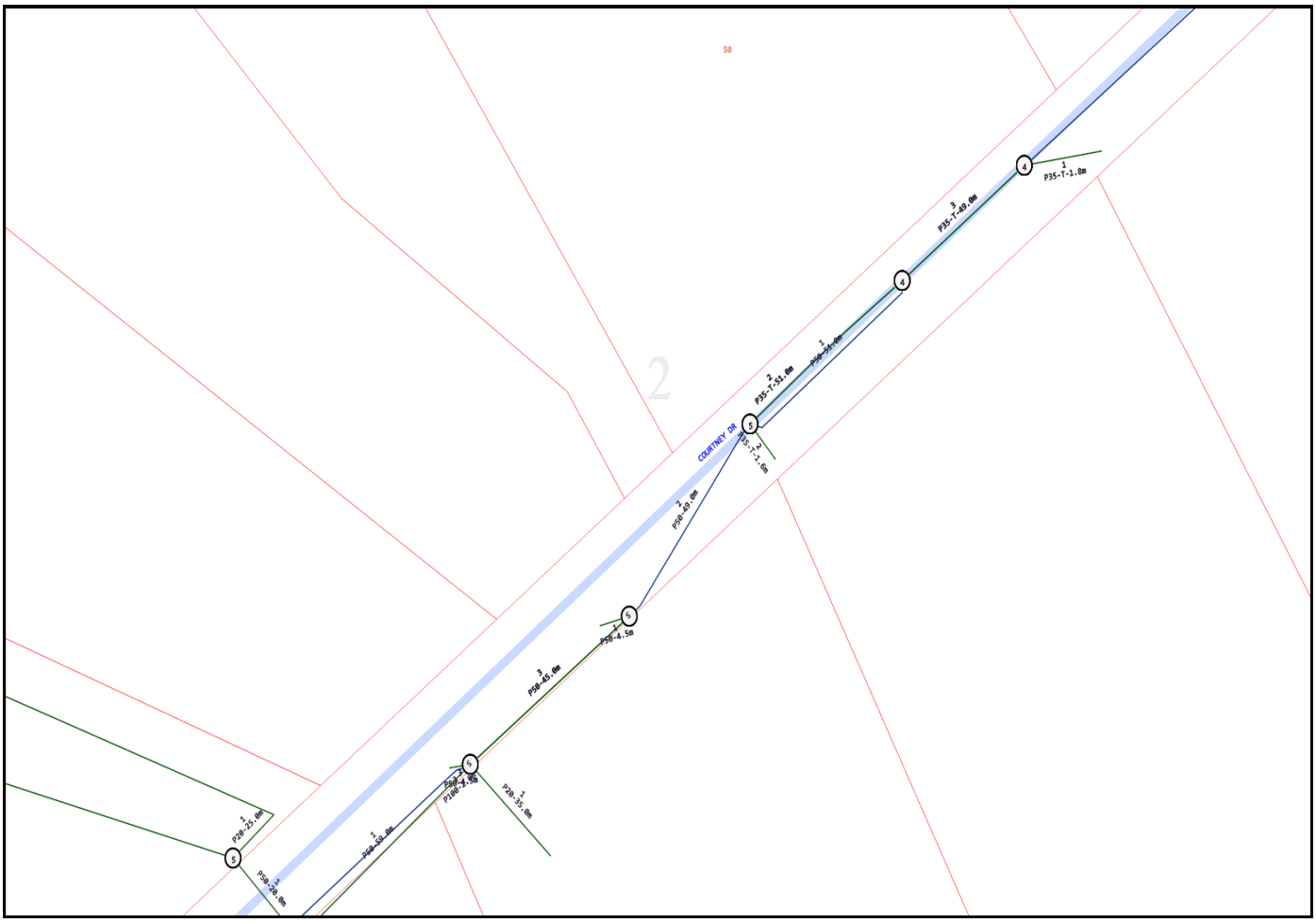
Indicative Plans are tiled below to demonstrate how to layout and read nbn asset plans

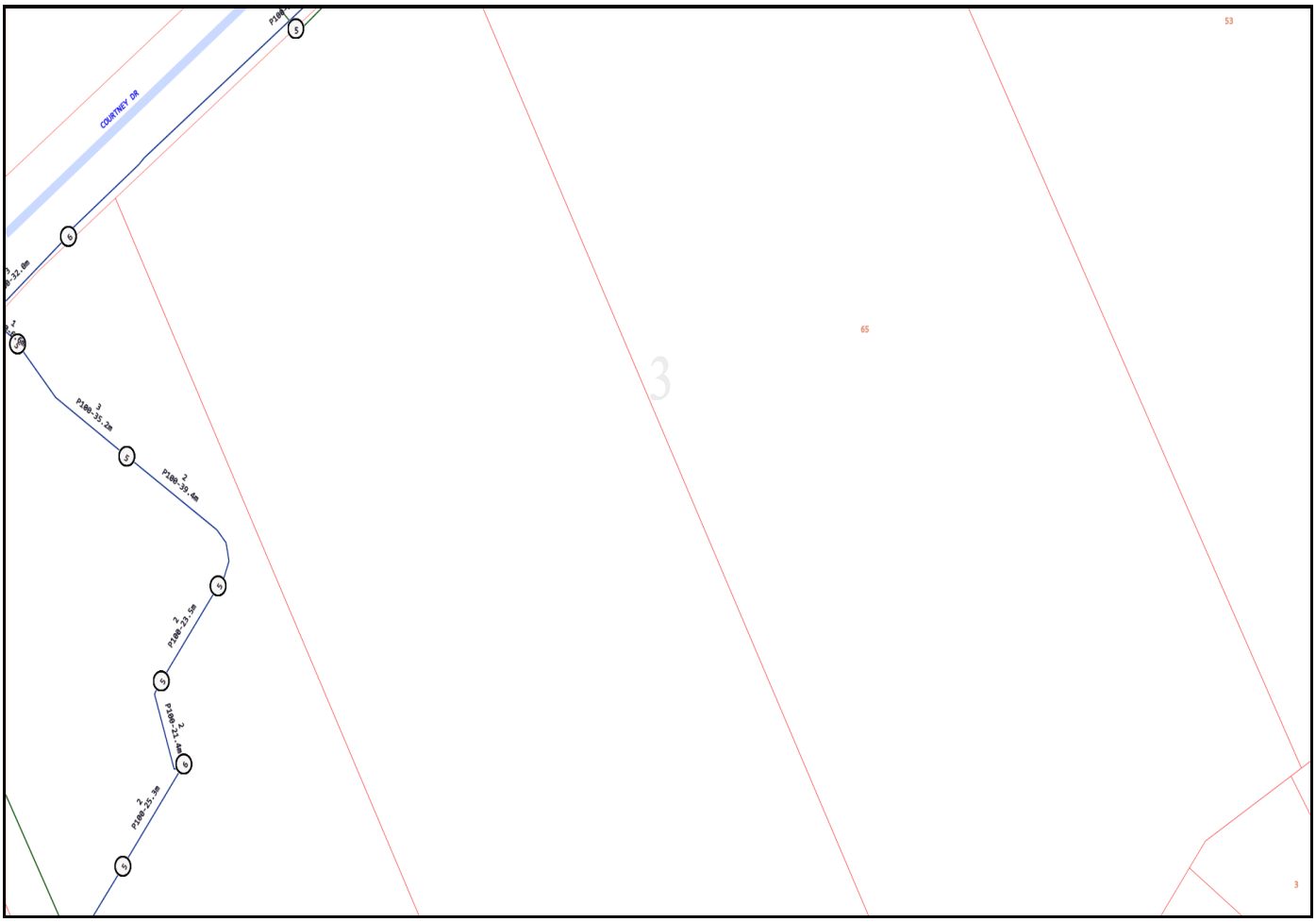
1	5	9
2	6	10
3	7	11
4	8	12

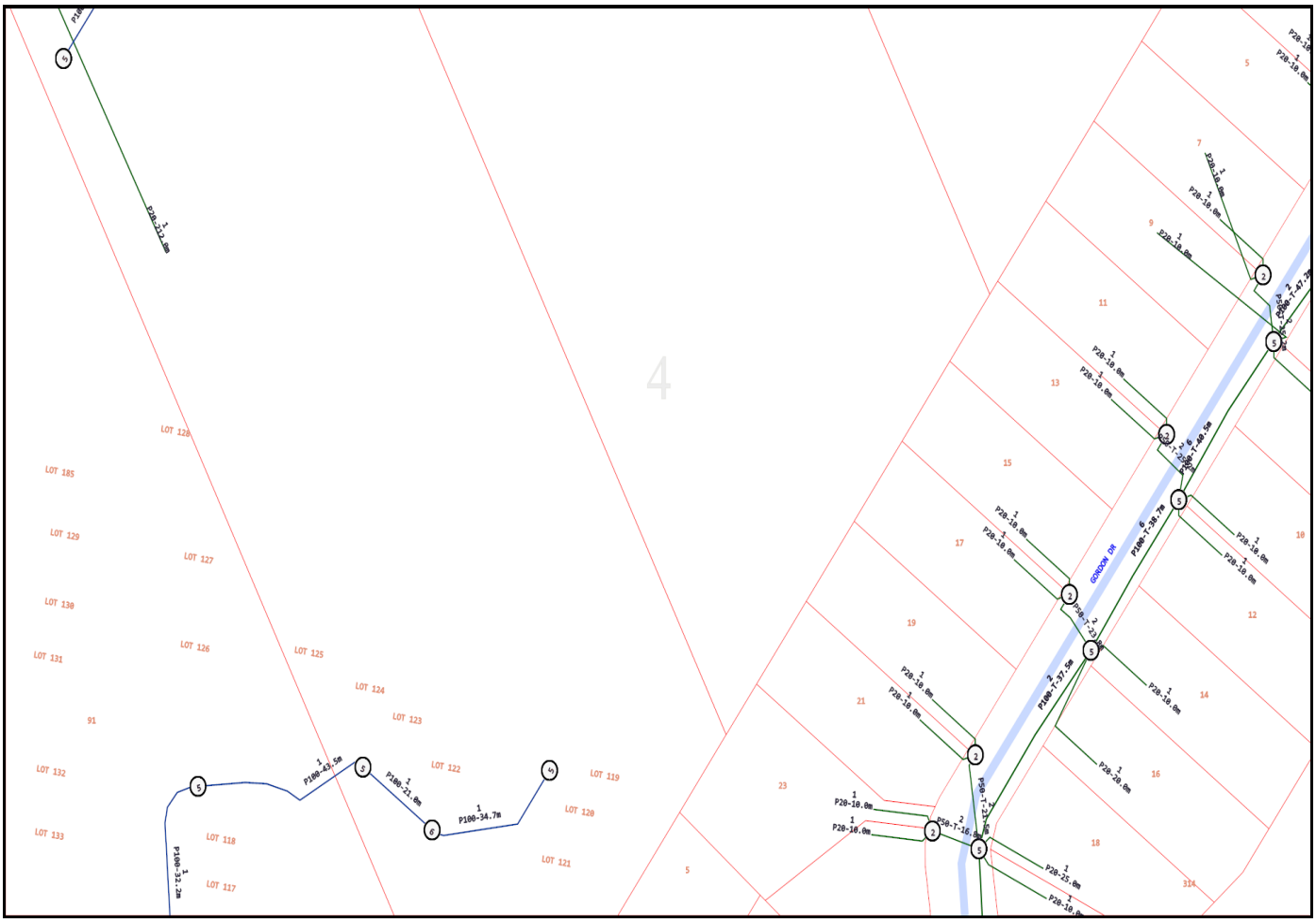
LEGEND

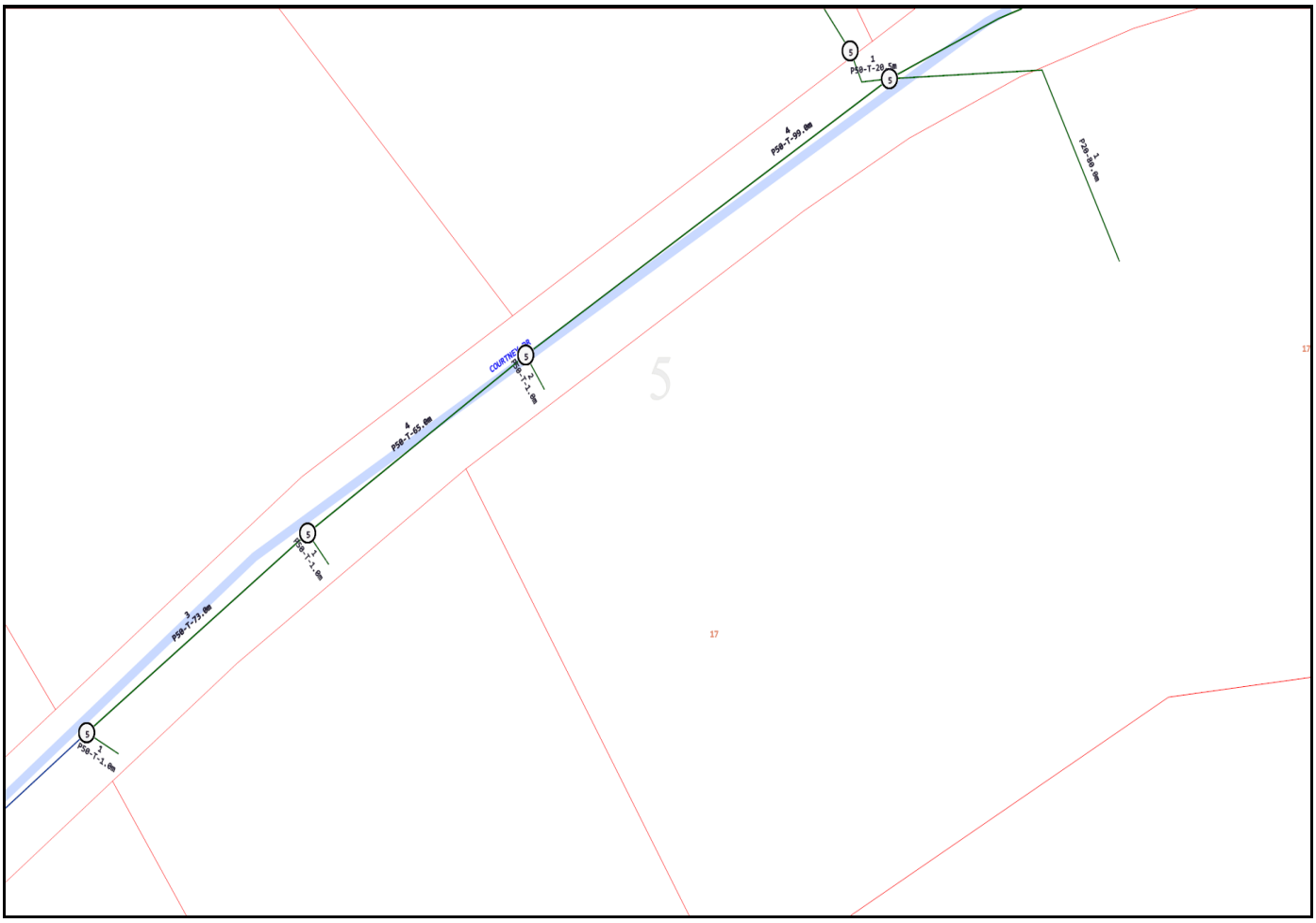
34	Parcel and the location
5	Pit with size "5"
2E	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
2 PO – T- 25.0m P40 – 20.0m 5 9	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.
2 10.0m 5 9	2 Direct buried cables between pits of sizes ,"5" and "9" are 10.0m apart.
5 9	Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables.
5 9	Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables.
5 9	Trench containing any INSERVICE/CONSTRUCTED (Power) cables.
BROADWAY ST	Road and the street name "Broadway ST"
Scale	0 20 40 60 Meters 1:2000 1 cm equals 20 m

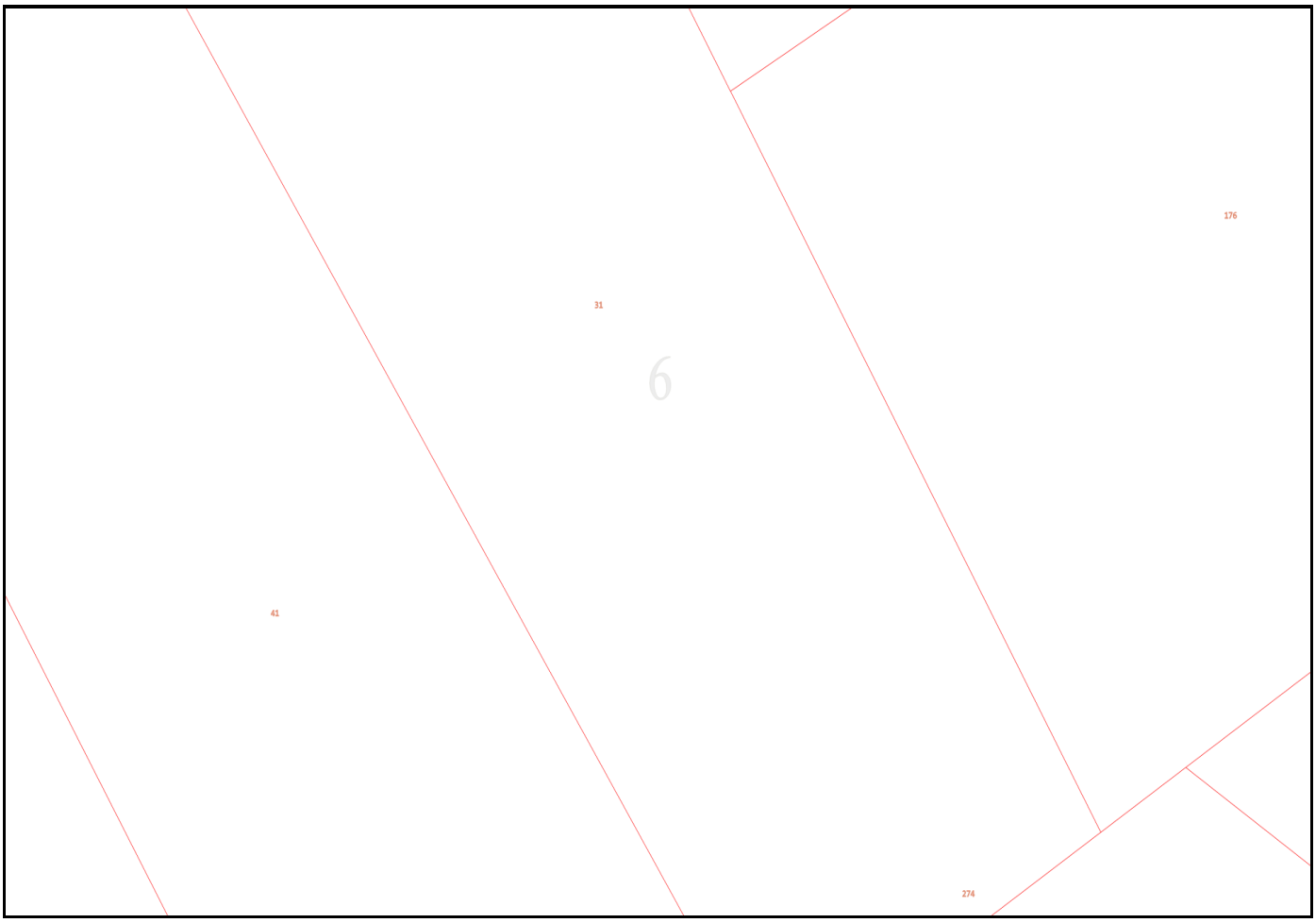

50
1
COUNTREY DR
2
PSB-185.0m

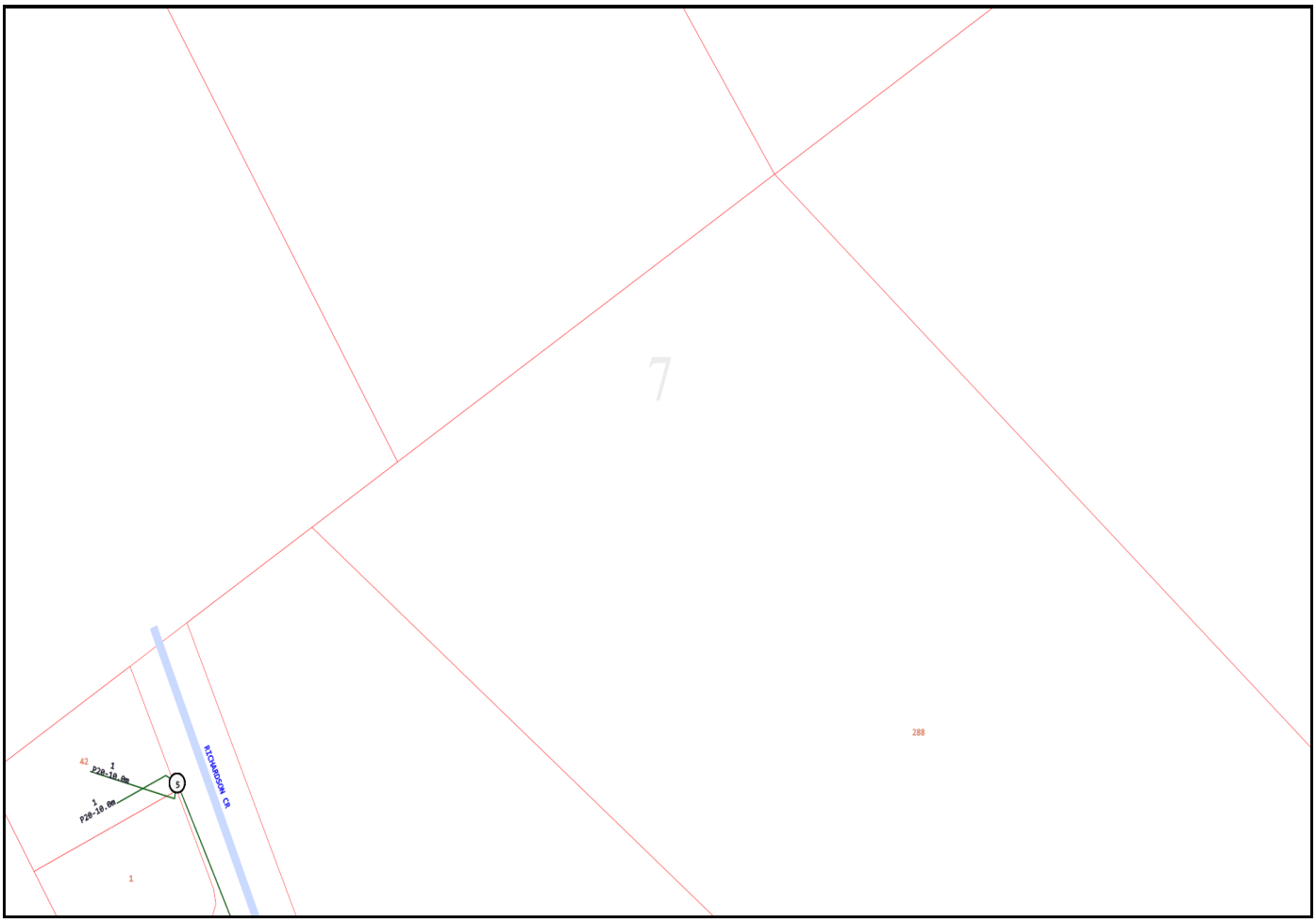

50
2
COURTNEY DR
4
5
6
P35-T-1.8m
P35-T-40.4m
P35-T-51.4m
P35-T-1.6m
P58-45.4m
P58-4.5m
P58-45.4m
P35-35.4m
P35-23.8m
P58-58.4m

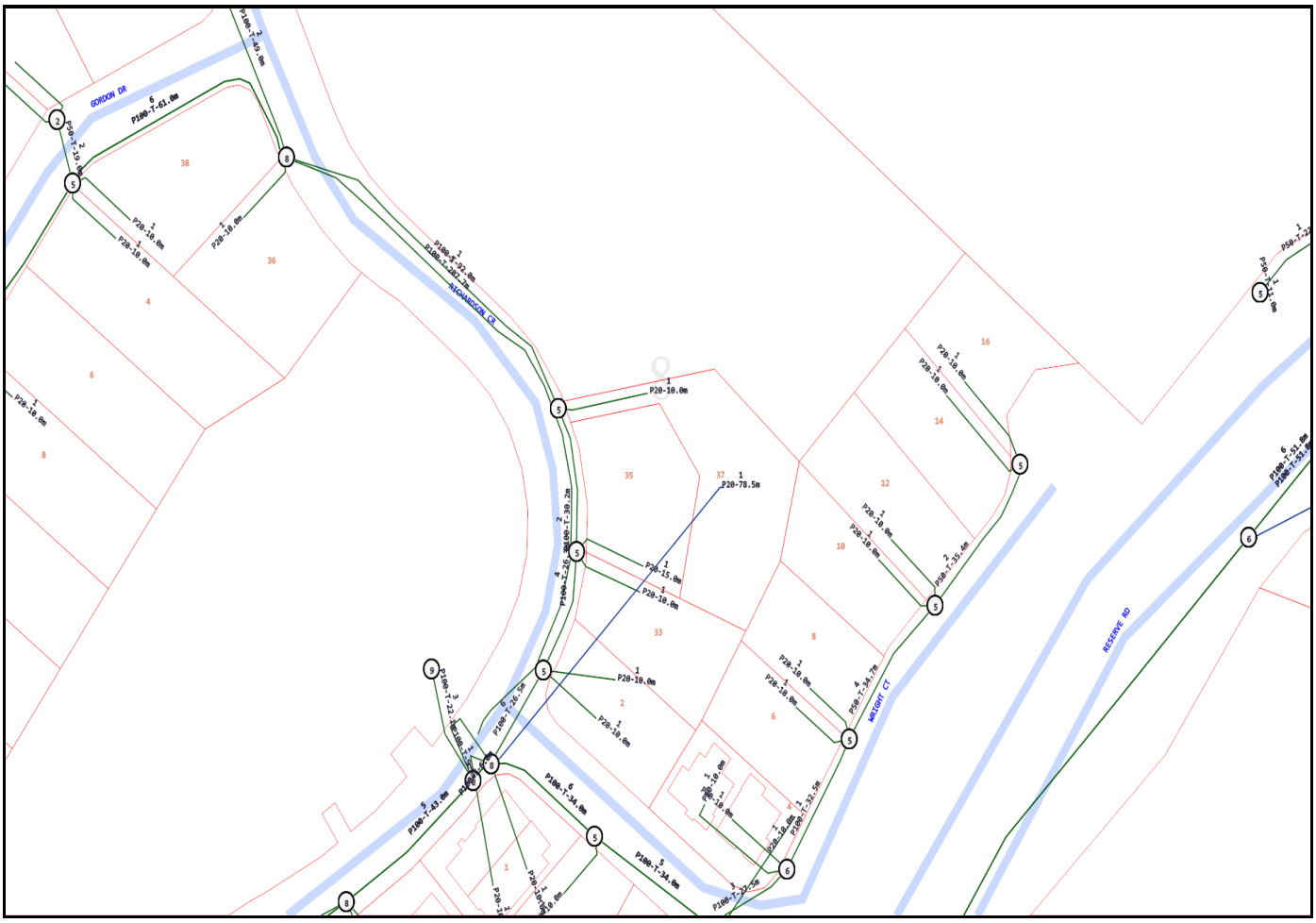

COURTNEY DR
P100-35.2m
P100-39.4m
P100-23.5m
P100-21.4m
P100-25.3m
53
65
3
3

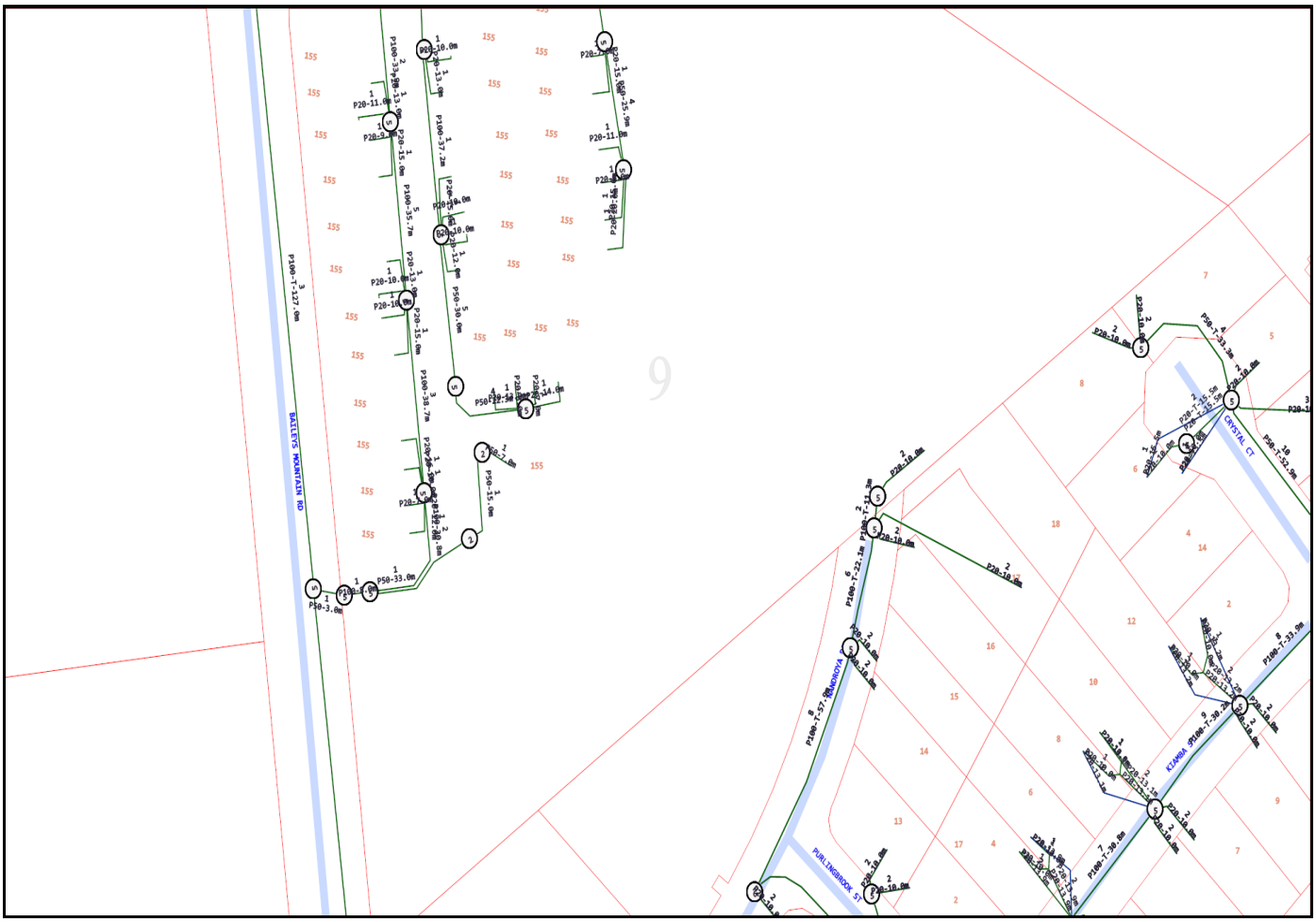

4
LOT 128
LOT 185
LOT 129
LOT 127
LOT 130
LOT 126
LOT 131
LOT 125
LOT 124
LOT 123
91
LOT 132
LOT 122
LOT 119
LOT 120
LOT 133
LOT 118
LOT 121
LOT 117
5
GORDON DR
P100-42.5m
P100-21.6m
P100-34.7m
P100-32.2m
P100-7.38.7m
P100-7.37.5m
P20-10.0m
P20-12.0m
P20-25.0m
P50-T-16.0m
P50-T-22.5m
P50-T-40.5m
P50-T-47.2m
7
9
11
13
15
17
19
21
23
5
10
12
14
16
18
314

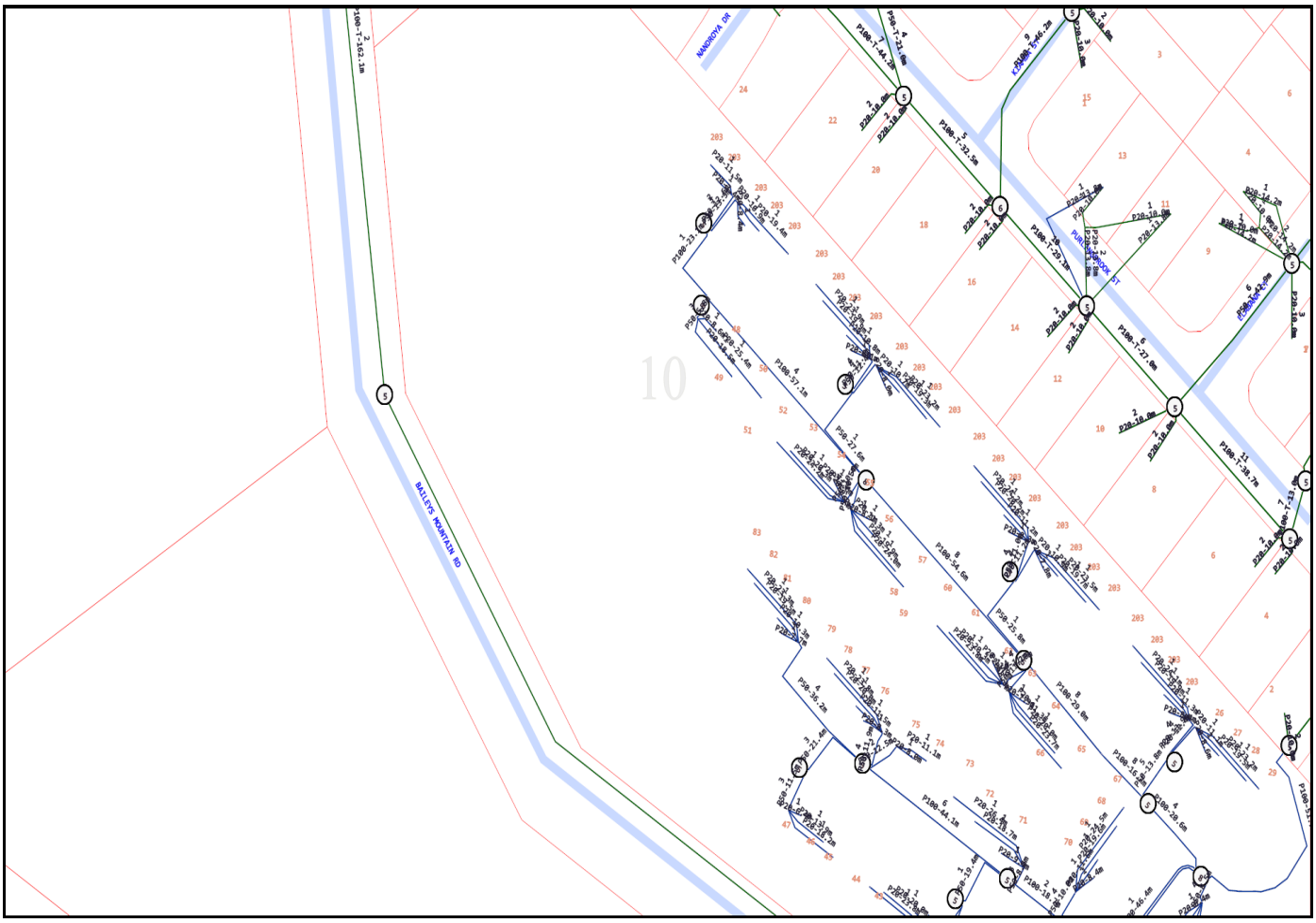

5
17
17
COURTNEY DR
PSB-T-20.5m
PSB-T-99.8m
PSB-T-65.4m
PSB-T-73.6m
PSB-T-1.6m
PSB-T-1.6m
PSB-T-1.6m
PSB-T-20.5m

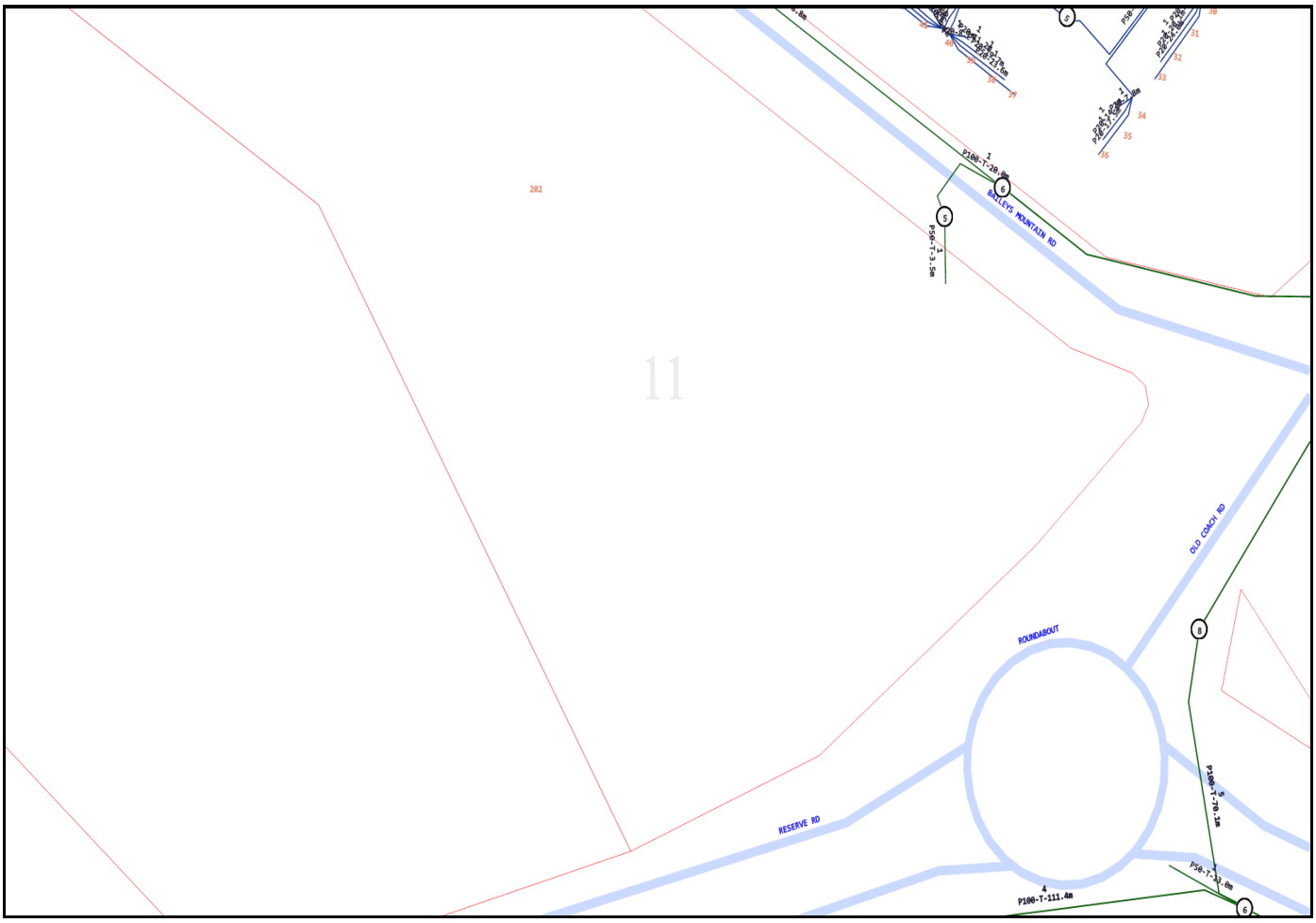

176
31
6
41
274

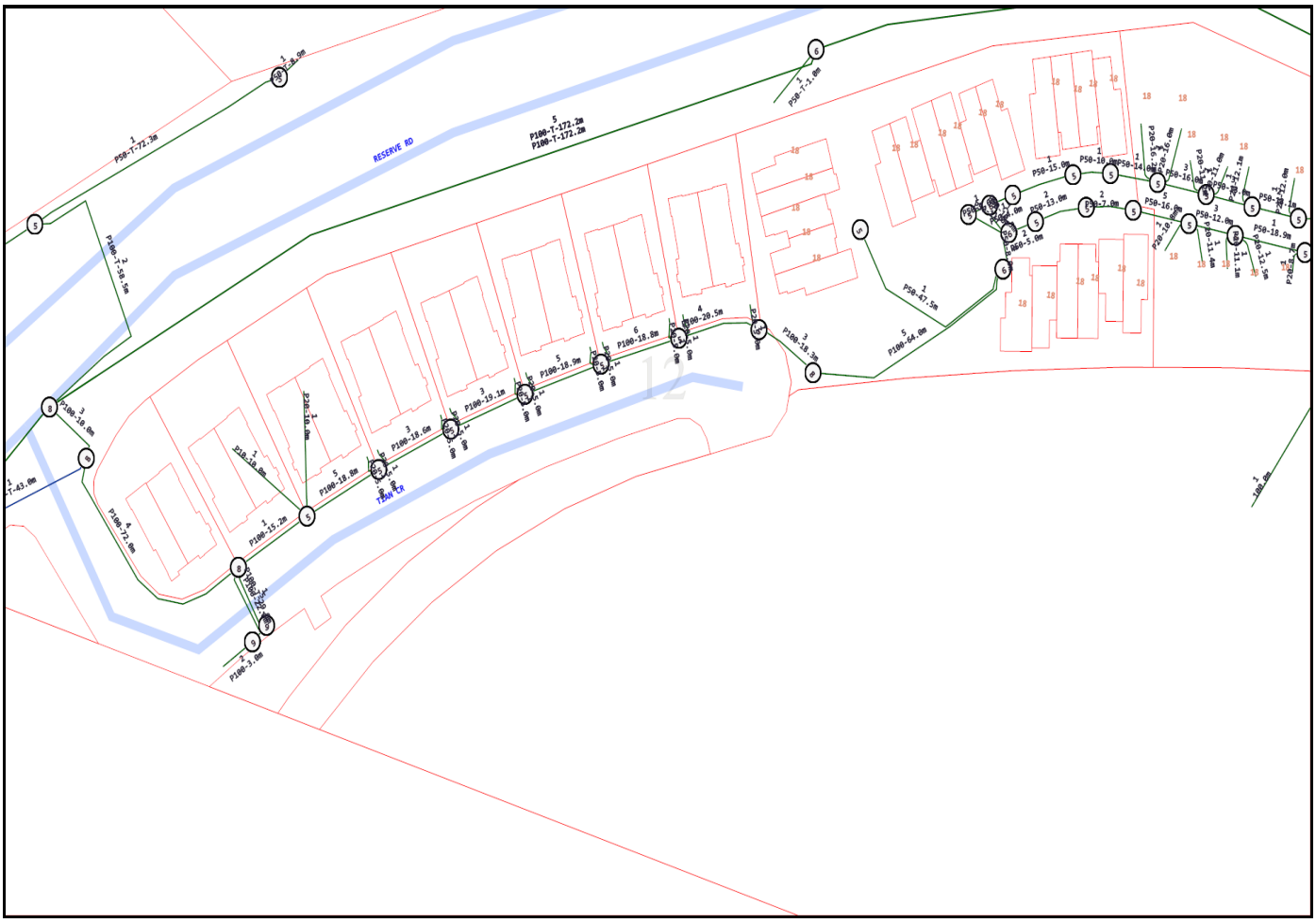

7
288
42
1
P28-10.0m
1
P28-10.0m
5
RICHARDSON CR
1


GORDON DR
ASCHAMBEAU CT
WRIGHT CT
RESERVE RD
P20-10.0m
P20-78.5m
P20-15.0m
P20-7-35.4m
P20-7-34.7m
P20-7-32.5m
P20-7-30.2m
P20-7-26.5m
P20-7-22.5m
P20-7-19.8m
P20-7-17.4m
P20-7-15.0m
P20-7-12.6m
P20-7-10.2m
P20-7-7.8m
P20-7-5.4m
P20-7-3.0m
P20-7-0.6m
P20-7-1.8m
P20-7-4.2m
P20-7-6.6m
P20-7-9.0m
P20-7-11.4m
P20-7-13.8m
P20-7-16.2m
P20-7-18.6m
P20-7-21.0m
P20-7-23.4m
P20-7-25.8m
P20-7-28.2m
P20-7-30.6m
P20-7-33.0m
P20-7-35.4m
P20-7-37.8m
P20-7-40.2m
P20-7-42.6m
P20-7-45.0m
P20-7-47.4m
P20-7-49.8m
P20-7-52.2m
P20-7-54.6m
P20-7-57.0m
P20-7-59.4m
P20-7-61.8m
P20-7-64.2m
P20-7-66.6m
P20-7-69.0m
P20-7-71.4m
P20-7-73.8m
P20-7-76.2m
P20-7-78.6m
P20-7-81.0m
P20-7-83.4m
P20-7-85.8m
P20-7-88.2m
P20-7-90.6m
P20-7-93.0m
P20-7-95.4m
P20-7-97.8m
P20-7-100.2m
P20-7-102.6m
P20-7-105.0m
P20-7-107.4m
P20-7-109.8m
P20-7-112.2m
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P20-7-145.8m
P20-7-148.2m
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P20-7-227.4m
P20-7-229.8m
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P20-7-234.6m
P20-7-237.0m
P20-7-239.4m
P20-7-241.8m
P20-7-244.2m
P20-7-246.6m
P20-7-249.0m
P20-7-251.4m
P20-7-253.8m
P20-7-256.2m
P20-7-258.6m
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P20-7-611.4m
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P20-7-618.6m
P20-7-621.0m
P20-7-623.4m
P20-7-625.8m
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P20-7-729.0m
P20-7-731.4m
P20-7-733.8m
P20-7-736.2m
P20-7-738.6m
P20-7-741.0m
P20-7-743.4m
P20-7-745.8m
P20-7-748.2m
P20-7-750.6m
P20-7-753.0m
P20-7-755.4m
P20-7-757.8m
P20-7-760.2m
P20-7-762.6m
P20-7-765.0m
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P20-7-769.8m
P20-7-772.2m
P20-7-774.6m
P20-7-777.0m
P20-7-779.4m
P20-7-781.8m
P20-7-784.2m
P20-7-786.6m
P20-7-789.0m
P20-7-791.4m
P20-7-793.8m
P20-7-796.2m
P20-7-798.6m
P20-7-801.0m
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P20-7-870.6m
P20-7-873.0m
P20-7-875.4m
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P20-7-882.6m
P20-7-885.0m
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P20-7-901.8m
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P20-7-918.6m
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P20-7-930.6m
P20-7-933.0m
P20-7-935.4m
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P20-7-942.6m
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P20-7-949.8m
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P20-7-957.0m
P20-7-959.4m
P20-7-961.8m
P20-7-964.2m
P20-7-966.6m
P20-7-969.0m
P20-7-971.4m
P20-7-973.8m
P20-7-976.2m
P20-7-978.6m
P20-7-981.0m
P20-7-983.4m
P20-7-985.8m
P20-7-988.2m
P20-7-990.6m
P20-7-993.0m
P20-7-995.4m
P20-7-997.8m
P20-7-1000.2m


BAILEYS MOUNTAIN RD
CRYSTAL CT
KIAMBA ST
PURLINGBROOK ST


MANDRIVA DR
BALLEYS MOUNTAIN RD
PURLINGBROOK ST


202
11
BILLEYS MOUNTAIN RD
OLD COACH RD
ROUNDABOUT
RESERVE RD
P100-T-111.4m
P50-T-3.5m
P100-T-79.1m
P50-T-33.0m



Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

CONCEPTUAL STORMWATER MANAGEMENT PLAN

Proposed Residential Subdivision

41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera

Lots 185 & 186 on SP173728, Lot 183 on RP156422, Lot 58 on SP191940, Lot 56 on RP162858 & Lot 57 on SP214370

For Norfolk Estates Pty Ltd

11 December 2024

File No: OSK6521-0003-A

DOCUMENT CONTROL SHEET

Title:	Conceptual Stormwater Management Plan
Document No:	OSK6521-0003-A
Original Date of Issue:	11 December 2024
Project Manager:	Daley Curran
Author:	Ben Grant
Applicant:	Norfolk Estates Pty Ltd
Client:	QM Properties
Client Contact:	Richard Sefton
Client Reference:	41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera
Synopsis:	This *Conceptual Stormwater Management Plan* describes the existing site characteristics, and corresponding stormwater quantity and quality management controls to be implemented during the construction and operational phase of the development.

Reviewed by RPEQ	Reg. No.	Signed	Date
Daley Curran	26353		11 December 2024

Revision/Checking History			
Revision No	**Date**	**Checked By**	**Issued By**
A	11 December 2024	Aaron Pianta	Ben Grant

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Recipient	**No of Copies**	**Method**
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APPENDICES

Appendix A LandPartners, *Detail Survey* (Ref: BRJD8528-00-12-1)

Appendix B Saunders Havill Group, *Proposal Plan* (Ref: 11694 P 06)

Appendix C OSKA Consulting Group, Pre-Development Catchment Plan (Ref: OSK6521/P001/C)

Appendix D OSKA Consulting Group, Post-Development Catchment Plan (Ref: OSK6521/P002/C) & External Catchment Plan (Ref: OSK6521/P005/B)

Appendix E OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521/P003/D), Conceptual Stormwater Management Details (Ref: OSK6521/P006/B), Preliminary Services Layout Plan – Sheet 1 of 2 (Ref: OSK6521/P040/B) & Preliminary Services Layout Plan – Sheet 2 of 2 (Ref: OSK6521/P041/B)

Appendix F OSKA Consulting Group, Sediment and Erosion Control Plan – Sheet 1 of 2 (Ref: OSK6521/P050/B), Sediment and Erosion Control Plan – Sheet 2 of 2 (Ref: OSK6521/P051/B) & Sediment and Erosion Control Details (Ref: OSK6521/P052/B)

Appendix G OSKA Consulting Group, Response to Healthy Waters Code (Ref: OSK6521-0004)

1.0 INTRODUCTION

1.1 Background

OSKA Civil Consultants has been commissioned by Norfolk Estates Pty Ltd to prepare a Conceptual Stormwater Management Plan (CSWMP) to support a Development Application for the proposed residential subdivision development situated at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera.

The subject site is described as Lots 185 & 186 on SP173728, Lot 183 on RP156422, Lot 58 on SP191940, Lot 56 on RP162858 & Lot 57 on SP214370 and has a total site area of 15.251ha.

1.2 Scope

This CSWMP details the conceptual planning, layout and design of the stormwater management infrastructure for both the construction and operational phases of this development.

This CSWMP aims to:

- Establish the required performance criteria for the proposed stormwater quantity and quality improvement systems;
- Provide a conceptual design of stormwater infrastructure including stormwater quality improvement devices and stormwater quantity management controls;
- Demonstrate the modelled post-development stormwater quality discharging from the site does not adversely impact on the water quality and ecological values of downstream watercourses;
- Demonstrate stormwater runoff is conveyed through the site to a Lawful Point of Discharge (LPOD) in accordance with the Queensland Urban Drainage Manual (QUDM); and
- Provide reporting and monitoring mechanisms whereby the performance of this system can be measured enabling identification of corrective actions/alterations required to ensure the above mentioned objectives are maintained.

This CSWMP has been prepared in accordance with the IEAust *Australian Runoff Quality: Guide to Water Sensitive Urban Design, Queensland State Planning Policy 2017*, IPWEA *Queensland Urban Drainage Manual (QUDM) Fourth Edition (2017)* and City of Gold Coast (CoGC), *SC6.12 City Plan Policy – Land Development Guidelines.*

2.0 SITE DESCRIPTION

2.1 Location

The subject site is located at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera. The site fronts Courtney Drive to the north, Baileys Mountain Road to the east, Reserve Road and Richardson Crescent to the south and has existing residential properties to the north, east and west. The site covers a total combined area of 15.251ha, with details as summarised in Table 1 and as located in Figure 1.

Table 1: Site Description

Client	Lot and Property Description	Street Address
Norfolk Estates Pty Ltd	*Lots 185 & 186 on SP173728, Lot 183 on RP156422, Lot 58 on SP191940, Lot 56 on RP162858 & Lot 57 on SP214370*	*41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera*



Figure 1: Locality Plan (Source: Nearmap)

2.2 Site Topography

The site generally grades to the south/east either towards the existing waterway through the site or the existing swale along Baileys Mountain Road. The existing site is relatively steep with spot heights ranging from approximately RL 23.00m AHD to 49.50m AHD. Based on the provided survey and aerial information, any stormwater runoff from the site either drains to the existing waterway through the site or the existing swale along Baileys Mountain Road.

Further information of the site survey has been provided by LandPartners, Detail Survey (Ref: BRJD8528-00-12-1) included as Appendix A.

2.3 Vegetation and Land Use

The subject site currently consists of five residential properties and most of the lots contain a number of dwellings/structures typically consisting of a residential dwelling, detached garage and shed. The subject site contains a total of three dams and a waterway that runs through the site from the north-west and along the southern site boundary through the south-eastern corner of the site. The majority of the subject site is covered in grassed areas with multiple trees throughout the site. Access to each lot is gained via dirt driveways from the road fronting each lot.

An aerial photograph taken on the 2 June 2024 of the subject site is included in Figure 2.



Figure 2: Aerial Image of the Site (Source: Nearmap – Image taken 2 June 2024)

2.4 Proposed Development

The proposed development for the site consists of a 149 lot residential subdivision with lot areas ranging between 294-769m^2. Access to the proposed development will be gained via one of the number of new road connections from Courtney Drive, Baileys Mountain Road and Richardson Crescent which will provide access to all lots. The development will be completed through five stages of works, ranging from 4 – 40 lots per stage.

Refer to Appendix B for further proposed layout details prepared by Saunders Havill Group, Proposal Plan (Ref: 11694 P 06).

2.5 Proposed Conceptual Drainage

It is proposed that the site's captured stormwater be conveyed to proposed bio-retention basins located within each major catchment. The Stormwater Quality Improvement Devices (SQID) will treat the majority of the site's stormwater runoff with at minimum the Q3-month flow rate being treated by the SQID's. The basins proposed will look to treat stormwater quality as well as mitigate the site's post-development flow rates to those evident in the pre-development scenario (quantity).

The captured flows from the three basins in the western and southern parts of the site, are to discharge directly to the existing waterway through the site which will be the Lawful Point of Discharge (LPOD) for the respective catchments. The captured flows from the eastern basin will discharge directly to the existing swale along Baileys Mountain Road, the LPOD for the catchment. All runoff from undeveloped areas of the site will drain directly to the existing waterway through the site.

2.6 Rainfall Data

Rainfall intensity data has been obtained from the Australian Bureau of Meteorology's 2016 Design IFD Rainfall System. The data has been extracted for the nearest grid cell at Latitude 27.8625 (S) and Longitude 153.2875 (E). The IFD data and average rainfall intensities used in this report are in accordance with the procedures outlined in Geosciences Australia, Australian Rainfall and Runoff 2019.

3.0 DATA

Data which has been sourced or provided, in order to prepare this report for the site, was gathered from the following sources:

- Detailed site survey provided by LandPartners, Detail Survey (Ref: BRJD8528-00-12-1) included as Appendix A;
- Proposed site layout provided by Saunders Havill Group, Proposal Plan (Ref: 11694 P 06) included as Appendix B;
- LIDAR data for the subject site sourced from Australian Government Elevation and Depth Foundation Spatial Data (ELVIS), Date Source: 2014, DEM Data;
- Rainfall and Meteorological 2016 IFD Data by the Australian Bureau of Meteorology;
- Information Extracted from CoGC City Plan Interactive Mapping – Version 11;
- Aerial Imagery by Nearmap (Accessed on 21 November 2024); and
- MUSIC data sourced from Rainfall Station 40584, Hinze Dam.

4.0 SITE HYDROLOGY

4.1 Background

The following sections define the method and parameters utilised within the hydrologics of the site, in order to establish a simulation of the anticipated flow regime and peak discharge at the Lawful Point of Discharge (LPOD). A Rational Method calculation has been provided for comparison of the pre and post-development peak flow rates.

The Rational Method (Section 4.3 of the Queensland Urban Drainage Manual - QUDM 2017) is a suitable estimation technique, given its flexibility in its data requirements and is able to produce satisfactory estimates of peak site discharges based on the following data input:
specific intensity frequency duration (IFD) data;

- length/type of flow path;
- contributing catchment areas; and
- coefficient of discharge.

4.2 Pre-Development

4.2.1 Catchment Definition and Lawful Point of Discharge

The pre-development site has been analysed as three internal catchments with a total contributing area of 9.757ha.

The pre-development catchments have been defined based on the post-development catchments to ensure a like for like comparison and to only include the development extent. Any areas outside the development extent are to remain similar to existing (grass and vegetation) and as such have not been included within the peak flow rate assessment.

Pre A

- Total Catchment Area 2.445ha
- 0.114ha of impervious surfaces (4.65%)
- Runoff is conveyed as sheet/overland flow towards the existing waterway through the site (LPOD A) within the western part of the site.

Pre B

- Total Catchment Area 4.226ha
- 0.364ha of impervious surface (8.61%)
- Runoff is conveyed as sheet/overland flow towards the existing waterway through the site (LPOD B) within the south-eastern part of the site.

Pre C

- Total Catchment Area 3.086ha
- Fully Pervious
- Runoff is conveyed as sheet/overland flow towards the existing swale along Baileys Mountain Road (LPOD C) along the site's eastern boundary.

The catchment area and LPOD for the subject site are shown on OSKA Consulting Group, Pre-Development Catchment Plan (Ref: OSK6521/P001/C) included as Appendix C.

4.2.2 Coefficient of Runoff

The pre-development coefficients of runoff (C year) were determined using the fraction impervious method as specified in QUDM and based on Table 4.5.4 in QUDM. Using a one hour, ten-year rainfall intensity ($^1I_{10}$) of 64.9 mm/hr and Table 4.5.4 in QUDM with good grass cover and medium permeability, the adopted C_{10} values for all the individual pre-development catchments have been shown in bold Table 2.

The following pre-development coefficients of runoff (as shown in Table 2) have been adopted in accordance with QUDM Table 4.5.2, which apply the frequency factors for the standard Annual Exceedance Probability (AEP) design storms of 39%, 10%, 5% and 1% (corresponding to the 2, 10, 20 and 100 year Average Recurrence Interval (ARI) storms).

Table 2: Pre-Development Coefficient of Runoff

Catchment	C_2	C_{10}	C_{20}	C_{100}
PRE A	0.57	**0.67**	0.71	0.81
PRE B	0.58	**0.68**	0.72	0.82
PRE C	0.56	**0.66**	0.69	0.79

4.2.3 Time of Concentration

The Time of Concentration (TOC) for the pre-development catchments have been calculated in accordance with QUDM Section 4.6.6 – Overland Flow and 4.6.11 - Time of concentration for rural and creek catchments. Friend's Equation ($t = (107*n*L^{0.333})/S^{0.2}$) has been used to calculate the initial travel time using sheet flow and Bransby-Williams' ($t = (58 * L)/(A^{0.1} * S_e^{0.2})$ equation has been used to calculate the travel time using channel flow.

Refer to *Table 3* for the calculated time of concentration for the pre-developed catchments.

Table 3: Pre-Development Time of Concentration

Catchment	Catchment Area (ha)	Time of Concentration		
		Overland flow Friend's Equation	Concentrated Overland Flow Bransby-Williams	Total t_c
Pre-Development Catchment A	2.445	Horton's (n) = 0.040 L = 50m Slope = 10.50% t = 9.84 mins	Length (km) = 0.150 Area (ha) = 2.445 Slope = 4.41% t = 5.91 mins	16 mins
Pre-Development Catchment B	4.226	Horton's (n) = 0.040 L = 50m Slope = 5.00% t = 11.41 mins	Length (km) = 0.230 Area (ha) = 4.226 Slope = 6.68% t = 7.90 mins	19 mins
Pre-Development Catchment C	3.086	Horton's (n) = 0.040 L = 50m Slope = 11.00% t = 9.75 mins	Length (km) = 0.200 Area (ha) = 3.086 Slope = 7.41% t = 6.94 mins	17 mins

4.2.4 Design Flow Rates

Pre-development peak flow rates have been estimated for the adopted storms using design rainfall intensities from the Bureau of Meteorology IFD Data. The Rational Method ($Q = 2.78 \times 10^{-3}$ CIA) has been used to estimate the subject site's design peak flow rates. The pre-development peak flows for the subject site are presented in Tables 4-6.

Table 4: Pre-Development A Peak Flow Estimation – Rational Method

PRE A					
Annual Exceedance Probability	**AEP**	39%	10%	5%	1%
Coefficient of Runoff	**C**	0.57	0.67	0.71	0.81
Area of Catchment (ha)	**A**	2.445	2.445	2.445	2.445
Average Rainfall Intensity (mm/h)	**I**	94	135	154	196
Peak Flow Rate (m^3/s)	**Q**	**0.366**	**0.614**	**0.736**	**1.072**

Table 5: Pre-Development B Peak Flow Estimation – Rational Method

PRE B					
Annual Exceedance Probability	**AEP**	39%	10%	5%	1%
Coefficient of Runoff	**C**	0.58	0.68	0.72	0.82
Area of Catchment (ha)	**A**	4.226	4.226	4.226	4.226
Average Rainfall Intensity (mm/h)	**I**	87	124	141	181
Peak Flow Rate (m^3/s)	**Q**	**0.591**	**0.992**	**1.189**	**1.735**

Table 6: Pre-Development C Peak Flow Estimation – Rational Method

PRE C					
Annual Exceedance Probability	**AEP**	39%	10%	5%	1%
Coefficient of Runoff	**C**	0.56	0.66	0.69	0.79
Area of Catchment (ha)	**A**	3.086	3.086	3.086	3.086
Average Rainfall Intensity (mm/h)	**I**	92	131	149	190
Peak Flow Rate (m^3/s)	**Q**	**0.442**	**0.742**	**0.888**	**1.294**

4.3 Post-Development

4.3.1 Catchment Definition and Lawful Point of Discharge

The post-development scenario has been analysed as described in the pre-development scenario with three internal catchments with a total contributing area of 9.757ha.

The post-development catchments, which are consistent with the pre-development catchments, contain the majority of the lots to be developed. It is noted that some of the smaller lot groupings (less than 5 lots) are not included in the catchments that are conveyed to the basin which include Lots 139-140, 141-143, 144-147 and 148-149. Although this is the case, it is not practical to provide basins for these areas and these areas are not considered to cause any adverse impacts (quality or quantity) to the receiving system or downstream properties. Therefore, these areas have been excluded from the quantity and quality analysis within this report.

Further to the above, the bypass areas have been included within the Hydraulic Impact Assessment has been completed by Biome Consulting which demonstrated no impacts downstream of the development as a result of these bypass areas. For further information, refer to the Hydraulic Impact Assessment (Ref: BC-23170 Version 1) completed by Biome Consulting.

Post A

- Total Catchment Area 2.445ha
- 1.588ha of impervious surfaces (64.96%)
- Runoff is conveyed as sheet/overland flow towards the existing waterway through the site (LPOD A) within the western part of the site.

Post B

- Total Catchment Area 4.226ha
- 2.039ha of impervious surface (48.26%)
- Runoff is conveyed as sheet/overland flow towards the existing waterway through the site (LPOD B) within the south-eastern part of the site.

Post C

- Total Catchment Area 3.086ha
- 1.839ha of impervious surfaces (59.60%)
- Runoff is conveyed as sheet/overland flow towards the existing swale along Baileys Mountain Road (LPOD C) along the site's eastern boundary.

The post-development catchment area and LPOD are detailed on OSKA Consulting Group, Post-Development Catchment Plan (Ref: OSK6521/P002/C) included as Appendix D.

4.3.2 Coefficient of Runoff

The post-development coefficients of runoff (C year) were determined using the fraction impervious method as specified in QUDM. Based on the supplied layout plans, the post-development catchment has an approximate total of 5.467ha of impervious surfaces which equates to a fraction impervious (fi) of 0.56.

This report will adopt a fraction impervious value on 0.70 for all the developable area of the development which corresponds to the roof areas having a fraction impervious of 1.00, the ground areas (excluding basin areas/lots) having a fraction impervious of 0.30 and the road reserve areas having a fraction impervious of 0.75. This fraction impervious value has been adopted based on the recommended C_{10} value for areas zoned as Emerging Community in *Table 4.4: Runoff Coefficient vs development category* of the City of Gold Coast City. The recommended C_{10} value of 0.80-0.85 correlates to a fraction impervious value of approximately 0.70 and as such will be adopted throughout this report for all developable areas.

Using a one-hour, ten-year rainfall intensity ($^1I_{10}$) of 64.9 mm/hr, the adopted C_{10} values for all the individual post-development catchments have been shown in bold Table 8.

The following post-development Coefficients of Runoff (as shown in *Table 7*) have been adopted in accordance with QUDM Table 4.5.2, which apply the frequency factors for the standard Annual Exceedance Probability (AEP) design storms of 39%, 10%, 5% and 1% (corresponding to the 2, 10, 20 and 100-year ARI storms).

Table 7: Post-Development Coefficient of Runoff

Catchment	C_2	C_{10}	C_{20}	C_{100}
POST A	0.69	**0.81**	0.85	0.97
POST B	0.66	**0.78**	0.82	0.93
POST C	0.68	**0.80**	0.84	0.96

4.3.3 Time of Concentration

The Time Of Concentration for the post-developed catchments have been calculated in accordance with QUDM Table 4.6.3 – Recommended roof drainage system travel times.
In accordance with Table 4.6.3 and Figure 4.5 of QUDM, the post-development time of concentration for each individual catchment has been shown in Table 8.

Table 8: Post-Development Time of Concentration

Catchment	Catchment Area (ha)	Time of Concentration		
		Roof to Downpipes (Table 4.06.2)	Pipe Flow (Figure 4.5)	Total t_c
Post-Development Catchment A	2.445	t = 5 mins	Length (m) = 200 Slope = 2% t = 3 mins	8 mins
Post-Development Catchment B	4.226	t = 5 mins	Length (m) = 480 Slope = 2% t = 5 mins	10 mins
Post-Development Catchment C	3.086	t = 5 mins	Length (m) = 280 Slope = 2% t = 4 mins	9 mins

4.3.4 Design Flow Rates

Post-development peak flow rates have been calculated for the adopted storms using design rainfall intensities from the Bureau of Meteorology 2016 IFD Data. The Rational Method ($Q = 2.78 \times 10^{-3}$ CIA) has been used to estimate the required design peak flow rates for the subject site. The post-development peak flows for the subject site are presented in Tables 9-11.

Table 9: Post-Development A Peak Flow Estimation – Rational Method

POST A					
Annual Exceedance Probability	AEP	39%	10%	5%	1%
Coefficient of Runoff	**C**	0.69	0.81	0.85	0.97
Area of Catchment (ha)	**A**	2.445	2.445	2.445	2.445
Average Rainfall Intensity (mm/h)	**I**	124	178	204	262
Peak Flow Rate (m^3/s)	**Q**	**0.582**	**0.982**	**1.180**	**1.736**

Table 10: Post-Development B Peak Flow Estimation – Rational Method

POST B					
Annual Exceedance Probability	AEP	39%	10%	5%	1%
Coefficient of Runoff	**C**	0.66	0.78	0.82	0.93
Area of Catchment (ha)	**A**	4.226	4.226	4.226	4.226
Average Rainfall Intensity (mm/h)	**I**	115	164	188	240
Peak Flow Rate (m^3/s)	**Q**	**0.891**	**1.499**	**1.798**	**2.627**

Table 11: Post-Development C Peak Flow Estimation – Rational Method

POST C					
Annual Exceedance Probability	AEP	39%	10%	5%	1%
Coefficient of Runoff	**C**	0.68	0.80	0.84	0.96
Area of Catchment (ha)	**A**	3.086	3.086	3.086	3.086
Average Rainfall Intensity (mm/h)	**I**	119	171	195	250
Peak Flow Rate (m^3/s)	**Q**	**0.695**	**1.171**	**1.406**	**2.060**

4.4 Change in Flow Rates

The difference in peak flow rates calculated from the individual pre and post-developed catchments have been estimated via The Rational Method, with the results detailed in Tables 12-14.

Table 12: Change in Peak Flow Rates Estimation (Catchment A) – Rational Method

Annual Exceedance Probability	**AEP**	39%	10%	5%	1%
Pre-Developed Peak Flow Rate (m^3/s)	**Q**	0.366	0.614	0.736	1.072
Post-Developed Peak Flow Rate (m^3/s)	**Q**	0.582	0.982	1.180	1.736
Change in Peak Flow Rate (m^3/s)	**Q**	**+0.216**	**+0.368**	**+0.444**	**+0.664**

The Rational Method assessment has demonstrated that there is a potential increase in peak flow rates discharging to the existing waterway through the site (LPOD A) within the western part of the site. Therefore, on-site detention measures may be required to mitigate flows to pre-development conditions with a further hydraulic assessment undertaken using XP-SWMM in Section 5 to confirm the detention requirements.

Table 13: Change in Peak Flow Rates Estimation (Catchment B) – Rational Method

Annual Exceedance Probability	**AEP**	39%	10%	5%	1%
Pre-Developed Peak Flow Rate (m^3/s)	**Q**	0.591	0.992	1.189	1.735
Post-Developed Peak Flow Rate (m^3/s)	**Q**	0.891	1.499	1.798	2.627
Change in Peak Flow Rate (m^3/s)	**Q**	**+0.300**	**+0.507**	**+0.609**	**+0.892**

The Rational Method assessment has demonstrated that there is a potential increase in peak flow rates discharging to the existing waterway through the site (LPOD B) within the south-eastern part of the site. Therefore, on-site detention measures may be required to mitigate flows to pre-development conditions with a further hydraulic assessment undertaken using XP-SWMM in Section 5 to confirm the detention requirements.

Table 14: Change in Peak Flow Rates Estimation (Catchment C) – Rational Method

Annual Exceedance Probability	**AEP**	39%	10%	5%	1%
Pre-Developed Peak Flow Rate (m^3/s)	**Q**	0.442	0.742	0.888	1.294
Post-Developed Peak Flow Rate (m^3/s)	**Q**	0.695	1.171	1.406	2.060
Change in Peak Flow Rate (m^3/s)	**Q**	**+0.253**	**+0.429**	**+0.518**	**+0.766**

The Rational Method assessment has demonstrated that there is a potential increase in peak flow rates discharging to the existing swale along Baileys Mountain Road (LPOD C) along the site's eastern boundary. Therefore, on-site detention measures may be required to mitigate flows to pre-development conditions with a further hydraulic assessment undertaken using XP-SWMM in Section 5 to confirm the detention requirements.

4.5 External Catchments

The subject site and the surrounding area were examined to determine if any localised external catchments will contribute to the subject site. The site was deemed to contain two (2) influencing external catchments (A and B) to the north of the subject site. The development will propose to capture and convey the flows from External Catchment A through the proposed road reserve and internal stormwater drainage network with all flows (up to the 1% AEP event) ultimately conveyed into the detention basin via a combination of pipe and overland flow. To ensure flows are directed to the road reserve between Lots 22 and 23, two swales are proposed in Lots 22 and 23 directing flows to the road reserve with the internal stormwater drainage to be designed to capture and convey the external flows into the basin.

The development will propose to capture and convey the flows from External Catchment B around the site via a swale along the northern and eastern boundaries. All captured flows within the swale are to be discharged into the existing swale along Baileys Mountain Road along the eastern site boundary (LPOD C).

Further information on the external catchments including area, flows and the proposed swale sizing will be undertaken in the sections below.

It is to be noted that there is an existing waterway that runs through the site and contains a number of influencing external catchments. These external catchments do not convey flows directly onto the developable area of the subject site and as such have not been included within this assessment or report. A Hydraulic Impact Assessment has been completed by Biome Consulting which provides a detailed assessment of the waterway and other influencing external catchments that run through the site. Refer to the Hydraulic Impact Assessment (Ref: BC-23170 Version 1) completed by Biome Consulting for further information.

4.5.1 Catchment Definition and Lawful Point of Discharge

The external catchment A has been split into two sub-catchments (A1 and A2) to allow for the proposed swales on Lots 22 and 23 to be sized sufficiently. The external catchment A has a total contributing area of 1.236ha and external catchment B has a total contributing area of 4.375ha and a breakdown of the external catchment and sub-catchments has been shown below:

Ext A1

- Total Catchment Area 0.824ha
- 0.115ha of impervious surfaces (13.96%)
- Runoff is conveyed as sheet/overland flow to the south-east towards proposed Lot 23 and into the proposed road reserve.

Ext A2

- Total Catchment Area 0.412ha
- 0.025ha of impervious surface (6.06%)
- Runoff is conveyed as sheet/overland flow to the south-east towards proposed Lot 22 and into the proposed road reserve.

Ext B

- Total Catchment Area 4.375ha
- 0.656ha of impervious surface (15.00%) – conservative estimate
- Runoff is conveyed as sheet/overland flow to the south-east towards the proposed road reserve along the northern boundary.

The external catchments area's and LPOD's are detailed on OSKA Consulting Group, External Catchment Plan (Ref: OSK6521/P005/B) included as Appendix D.

4.5.2 Coefficient of Runoff

The coefficient of runoff (C year) was determined based on the fraction impervious (f_i) method as specified in QUDM and using the provided survey and latest aerial imagery of the site and surrounding area. Using a one-hour, ten-year rainfall intensity ($^1I_{10}$) of 64.9 mm/hr, the C_{10} values for the external catchments have been shown in bold in Table 15.

The following external catchments Coefficients of Runoff (as shown in *Table 15*) have been adopted in accordance with QUDM Table 4.5.2, which apply the frequency factors for the standard Annual Exceedance Probability (AEP) design storms of 39%, 10%, 5% and 1% (corresponding to the 2, 10, 20 and 100-year ARI storms).

Table 15: External Catchments Coefficient of Runoff

Catchment	C_2	C_{10}	C_{20}	C_{100}
EXT A1	0.59	**0.69**	0.73	0.83
EXT A2	0.57	**0.68**	0.71	0.81
EXT B	0.59	**0.70**	0.73	0.84

4.5.3 Time of Concentration

The Time of Concentration for the external catchments has been calculated in accordance with QUDM Section 4.6.6 – Overland Flow and 4.6.11 - Time of concentration for rural and creek catchments. Friend's Equation ($t = (107*n*L^{0.333})/S^{0.2}$) has been used to calculate the initial travel time using sheet flow and Bransby-Williams' ($t = (58 * L)/(A^{0.1} * S_e^{0.2})$) equation has been used to calculate the travel time using channel flow.

Refer to *Table 16* for the calculated time of concentration for the external catchments.

Table 16: External Catchments Time of Concentration

Sub-Catchment	Catchment Area (ha)	Time of Concentration		
		Overland flow Friend's Equation	Concentrated Overland Flow Bransby-Williams	Total t_c
External Sub-Catchment A1	0.824	Horton's (n) = 0.040 L = 50m Slope = 7.00% t = 10.67 mins	Length (km) = 0.090 Area (ha) = 0.824 Slope = 6.68% t = 3.64 mins	14 mins
External Sub-Catchment A2	0.412	Horton's (n) = 0.040 L = 50m Slope = 7.00% t = 10.67 mins	Length (km) = 0.080 Area (ha) = 0.412 Slope = 6.68% t = 3.47 mins	14 mins
External Catchment B	4.375	Horton's (n) = 0.040 L = 50m Slope = 15.00% t = 9.16 mins	Length (km) = 0.215 Area (ha) = 4.375 Slope = 15.00% t = 6.26 mins	15 mins

4.5.4 Design Flow Rates

Design storm flow rates have been calculated for standard storms for the external catchments using design rainfall intensities from the Bureau of Meteorology. The Rational Method ($Q = 2.78 \times 10^{-3}$ CIA) has been used to calculate the design flow rates. The peak flow rates for the external catchments are presented in Tables 17-19.

Table 17: External Sub-Catchment A1 Peak Flow Rates

External Sub-Catchment A1					
Annual Exceedance Probability	**AEP**	39%	10%	5%	1%
Coefficient of Runoff	**C**	0.59	0.69	0.73	0.83
Area of Catchment (ha)	**A**	0.824	0.824	0.824	0.824
Average Rainfall Intensity (mm/h)	**I**	100	143	163	208
Peak Flow Rate (m^3/s)	**Q**	**0.136**	**0.228**	**0.273**	**0.397**

Table 18: External Sub-Catchment A2 Peak Flow Rates

External Sub-Catchment A1					
Annual Exceedance Probability	**AEP**	39%	10%	5%	1%
Coefficient of Runoff	**C**	0.57	0.68	0.71	0.81
Area of Catchment (ha)	**A**	0.412	0.412	0.412	0.412
Average Rainfall Intensity (mm/h)	**I**	100	143	163	208
Peak Flow Rate (m^3/s)	**Q**	**0.066**	**0.111**	**0.133**	**0.193**

Table 19: External Catchment B Peak Flow Rates

External Catchment B					
Annual Exceedance Probability	**AEP**	39%	10%	5%	1%
Coefficient of Runoff	**C**	0.59	0.70	0.73	0.84
Area of Catchment (ha)	**A**	4.375	4.375	4.375	4.375
Average Rainfall Intensity (mm/h)	**I**	97	139	158	201
Peak Flow Rate (m^3/s)	**Q**	**0.701**	**1.176**	**1.409**	**2.051**

4.5.5 External Catchment Conveyance

The external catchment A (A1 and A2) flows are to be conveyed by a swale along the northern boundaries of Lots 22 and 23 to direct flows around the lots and into the proposed road reserve. All flows within the road reserve are to be captured and conveyed via a combination of pipe and overland flow to the proposed basin and ultimately conveyed into the existing waterway. The external catchment B flows are to be conveyed by a swale along the northern and eastern boundaries of the site and discharged to the existing swale along Baileys Mountain Road.

To demonstrate that the proposed swales are capable of conveying the external catchments 1% AEP flow rates around the site, the proposed swales have been sized utilising the Manning's equation (9.1), $Q = \frac{A}{n} \times R^{\frac{2}{3}} \times S^{\frac{1}{2}}$, from QUDM to ensure that it is sized to an adequate capacity to accommodate and safely convey the external flows.

Refer to Table 20 for the calculated swales capacity.

Table 20: Swale Flow Capacity

Swale Parameters	External Sub-Catchment A1	External Sub-Catchment A2	External Catchment B
Swale ID	Swale 1	Swale 2	Swale 3
Swale Depth, d (m)	0.425	0.310	0.850
Freeboard (m)	0.100	0.100	0.280
Base Width, W (m)	0	0	1.50
Top Width (m)	3.40	2.48	4.90
Bank Slope (Ratio of V:H)	1:4	1:4	1:2
Manning's Roughness, n	0.032 (turf)	0.032 (turf)	0.032 (turf)
Longitudinal Grade, S	1.10% (0.011m/m)	3.00% (0.030m/m)	1.00% (0.010m/m)
Q - Flow Rate (m^3/s)	**0.404**	**0.208**	**2.430**
Design Flow Rate (m^3/s)	0.397	0.193	2.051

For further information on the external catchment stormwater network, refer to the OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521/P003/D), Conceptual Stormwater Management Details (Ref: OSK6521/P006/B), Preliminary Services Layout Plan – Sheet 1 of 2 (Ref: OSK6521/P040/B) & Preliminary Services Layout Plan – Sheet 2 of 2 (Ref: OSK6521/P041/B) in *Appendix E.*

5.0 STORMWATER QUANTITY ASSESSMENT

5.1 Background

The following sections define the method and parameters utilised within the hydrologic assessment of the site, to establish a simulation of the anticipated flow regime and peak discharge at the Lawful Point of Discharge (LPOD).

The analysis of hydrology across the subject site was performed using the non-linear runoff routing program XP-SWMM.

5.2 Objective

The following objective has been set for post-development stormwater discharge from the site:

- No net increase in peak flows from the subject site (up to the 1% AEP event), for all design storm events, during the post-developed scenario.

This objective shall be demonstrated via a suitable hydrologic and hydraulic modelling package, by detaining site runoff from the subject site within proposed detention basins.

5.3 XP-SWMM Model

To assess the pre and post-development hydrographs, the industry standard modelling software XP-SWMM has been selected for the analysis. Details of the model set-up and results are summarised in the following sections for the sites LPOD's.

5.3.1 Model Set Up

Rainfall data for the subject site has been obtained from the Australian Bureau of Meteorology's 2016 Design IFD Rainfall System. The data has been extracted for the nearest grid cell at Latitude 27.8625 (S) and Longitude 153.2875 (E). The IFD data and average rainfall intensities used in this report are in accordance with the procedures outlined in IEAust, Australian Rainfall and Runoff (AR&R) 2019. Storm suites for a range of durations from 10 minutes to 360 minutes were simulated in the XP-SWMM model analysis to determine design flow estimations for all events up to and including the 1% AEP.

Initial Loss (IL) and Continuing Losses (CL) were applied to the XP-SWMM model in accordance with Australian Rainfall and Runoff (AR&R) 2019. These values are also varied for the impervious and pervious portions of the catchment. The following loss rates were adopted:

Table 21: Initial Loss (IL) and Continuing Losses (CL)

Storm Losses (XP-SWMM)		
Sub catchment Type	**Initial Loss (mm/hr)**	**Continuing Loss (mm/hr)**
Impervious	0.5	0
Pervious	25	2.3

Note: The loss rates were maintained for all design storm events up to the 1% AEP event.

5.3.2 Hydrologic Roughness

Hydrologic roughness in the form of Manning's n values was applied to represent the undeveloped and developed portions of the catchment. The following values were adopted:

- Impervious Catchment n = 0.015; and
- Pervious Catchment n = 0.040.

5.3.3 Catchment Set Up and Parameters

The XP-SWMM model has been set up to match the proposed earthworks (lot and road grading) and stormwater drainage for the development and also accounting for external catchments and bypass areas where applicable.

There will be no bypass areas for Catchment A with all flows (up to the 1% AEP event) from the catchment draining into the detention basin.

Catchment B has been set up to account for External Catchment A that discharges flows south-east onto the subject site. It is proposed to convey the flows from External Catchment A to the proposed road reserve between Lots 22 and 23 via two swales (refer Section 4.5 for further information) with all external catchment flows (up to the 1% AEP event) ultimately conveyed into the detention basin via a combination of pipe and overland flow. The proposed park area (1.058ha) will bypass the proposed detention basin and discharge directly to the existing waterway. There will also be a small amount of bypass from Lots 43-53 (0.507ha) with only the major roof water flows to be conveyed into the detention basin with the remaining area of the lots (0.232ha) to bypass and discharge directly to the existing waterway.

Catchment C will have a small amount of bypass which will account for the proposed swale along the northern and eastern boundaries (0.247ha) that conveys the flows (up to the 1% AEP event) from External Catchment B around the site and into the existing swale along Baileys Mountain Road with the remainder of the site to drain into the basin.

The adopted sub-catchment areas for the site, slopes and fraction imperviousness, for the pre and post-development have been tabulated in *Table 22*.

Table 22: Adopted Sub-catchment Parameters

Pre-Development Sub-Catchments			
XP-SWMM Sub-Catchment ID	**Total Area (ha)**	**Slope (%)**	**Fi (%)**
Pre A	2.445	4.41%	4.65
Pre B	4.226	6.68%	5.30
Pre C	3.086	7.41%	0.00
Ext A	1.236	6.68%	11.33
Post-Development Sub-Catchments			
XP-SWMM Sub-Catchment ID	**Total Area (ha)**	**Slope (%)**	**Fi (%)**
Post A	2.445	2.50%	64.96
Post B	4.226	4.00%	48.26
Post C	3.086	4.00%	59.60
Ext A	1.236	6.68%	11.33

Note: Slopes have been adopted based on detailed survey and aerial imagery for the pre-developed scenario and detailed survey and proposed bulk earthworks levels for the post-development scenario.

5.3.4 Hydrologic Modelling Results

A comparison of the peak median discharges from the site for the individual pre and post-developed catchments are detailed in Tables 23-25.

Catchment A

Table 23: Anticipated Peak Discharge Rate Catchment A – Extracted from XP-SWMM Model (m^3/s)

Scenario	63% AEP	39% AEP	18% AEP	10% AEP	5% AEP	2% AEP	1% AEP
Pre-Development A	0.165	0.257	0.370	0.511	0.610	0.765	0.893
Storm Event	2hr_8	1.5hr_7	1hr_4	45min_7	30min_3	30min_1	30min_4
Post-Development A	0.470	0.589	0.738	0.830	0.959	1.102	1.240
Storm Event	10min_7	10min_7	10min_7	15min_1	15min_10	10min_8	15min_2
Change in Peak Flow Rate (m^3/s)	**+0.305**	**+0.332**	**+0.368**	**+0.319**	**+0.349**	**+0.337**	**+0.347**

The XP-SWMM analysis confirms the post-development flow rates discharging to the existing waterway through the site (LPOD A) within the western part of the site are higher than the pre-development flow rates and therefore formal detention structures will be required for Catchment A of the development.

Further details on the detention requirements for Catchment A has been provided in Section 5.3.6.

Catchment B

Table 24: Anticipated Peak Discharge Rate Catchment B – Extracted from XP-SWMM Model (m^3/s)

Scenario	63% AEP	39% AEP	18% AEP	10% AEP	5% AEP	2% AEP	1% AEP
Pre-Development B + Ext A	0.412	0.620	0.876	1.226	1.479	1.864	2.114
Storm Event	1.5hr_1	1.5hr_7	1hr_4	45min_6	30min_4	30min_1	30min_1
Post-Development B + Ext A	0.641	0.809	1.008	1.277	1.525	2.014	2.299
Storm Event	10min_8	10min_7	10min_7	45min_6	30min_4	30min_8	30min_8
Change in Peak Flow Rate (m^3/s)	**+0.229**	**+0.189**	**+0.132**	**+0.051**	**+0.046**	**+0.150**	**+0.185**

The XP-SWMM analysis confirms the post-development flow rates discharging to the existing waterway through the site (LPOD B) within the south-eastern part of the site are higher than the pre-development flow rates and therefore formal detention structures will be required for Catchment B of the development.

Further details on the detention requirements for Catchment B has been provided in Section 5.3.7.

Catchment C

Table 25: Anticipated Peak Discharge Rate Catchment C – Extracted from XP-SWMM Model (m^3/s)

Scenario	63% AEP	39% AEP	18% AEP	10% AEP	5% AEP	2% AEP	1% AEP
Pre-Development C	0.238	0.355	0.511	0.713	0.859	1.056	1.225
Storm Event	1.5hr_7	1.5hr_7	1hr_4	45min_5	30min_8	30min_1	25min_8
Post-Development C	0.554	0.698	0.868	0.981	1.130	1.297	1.493
Storm Event	10min_7	10min_7	10min_7	15min_1	15min_2	10min_8	15min_9
Change in Peak Flow Rate (m^3/s)	**+0.316**	**+0.343**	**+0.357**	**+0.268**	**+0.271**	**+0.241**	**+0.268**

The XP-SWMM analysis confirms the post-development flow rates discharging to the existing swale along Baileys Mountain Road (LPOD C) along the site's eastern boundary are higher than the pre-development flow rates and therefore formal detention structures will be required for Catchment C of the development.

Further details on the detention requirements for Catchment C has been provided in Section 5.3.8.

5.3.5 Flow Rate Result Variability

It is noted that throughout the prior calculation of peak flow rates using XP-SWMM, in comparison to the Rational Method calculation results provided in Section 4, there is a variable level of difference between the two. The majority of the pre and post-development results for both the Rational Method and XP-SWMM model are comparable, however the is some deviation in the results and his can be attributed to the methodology behind each form of assessment. The Rational Method is used to estimate the peak flow of a catchment only and is only typically used for a preliminary calculation and hydraulic model (XP-SWMM) verification to detect gross errors. The XP-SWMM calculation uses a non-linear runoff routing method to calculate actual temporal patterns across a multitude of different storm burst events and durations. As such, it is more accurate to utilise peak flow calculations from this method.

5.3.6 Catchment A Detention Basin Parameters & Results

5.3.6.1 Detention Basin Sizing

It is proposed to construct a combined bio-retention/detention basin to mitigate the post-developed discharge and provide water quality treatment for Catchment A.

The following have been utilised in the design of the detention basins:

- Design of basin to be undertaken using hydrological assessment model (XP-SWMM);
- Provide stormwater attenuation to ensure all total peak flows from Catchment A are not increased by the development for any storm event up to and including the 1% AEP (Q100);
- Allowance for the 0.30m extended detention depth for the water quality component (refer Section 6 for further details);
- Allowance for minimum 0.30m freeboard; and
- The combined bio-retention and detention basin is proposed to be located in the western part of the site;

The following table shows a summary of the basin's characteristics with details of the basin's stage/area relationship for the detention component below.

Table 26: Catchment A Detention Basin Characteristics

Low Level Outlet	Ø300mm low flow orifice at 0.50% grade at approximately RL 30.40m AHD. Orifice invert level coincides with the invert level of the 900mm x 900mm field inlet within the basin. The top of the 900mm x 900mm field inlet coincides with the top of the extended detention zone (at 0.30m above basin floor).
Intermediate Outlet	Ø450mm pipe at 1.50% grade at approximately RL 32.25m AHD, 0.35m above extended detention zone (at 0.65m above basin floor)
High Level Outlet	10m wide spillway weir at approximately RL 32.71m AHD, 0.81m above extended detention zone (1.11m above basin floor)
Dimensions	Base area (bottom of detention zone) = 484m^2 Base area (top of detention zone) = 992m^2 Basin Depth = 1.20m
Maximum Water Depth within Detention Zone of Basin (m)	63% AEP (Q1) = 0.334 39% AEP (Q2) = 0.449 18% AEP (Q5) = 0.577 10% AEP (Q10) = 0.661 5% AEP (Q20) = 0.742 2% AEP (Q50) = 0.825 1% AEP (Q100) = 0.867

Table 27: Catchment A Detention Basin – Stage/Area Relationship

Stage (m)*	Detention Area (m^2)	Detention Storage (m^3)
0	484	0.0
0.1	526	51
0.2	569	105
0.3	611	164
0.4	653	227
0.5	696	295
0.6	738	367
0.7	780	443
0.8	823	523
0.9	865	607
1	907	696
1.1	950	789
1.2	992	886

**Note: The stage is from the start of the detention zone and excludes the 0.3m extended detention depth of the water quality component of the basin.*

5.3.6.2 Mitigation Effect of Detention Basin A

A comparison of the peak median discharges for the pre and mitigated post-developed cases for Catchment A is detailed in Table 28.

Table 28: Comparison of Mitigated Flows at Outlet (Catchment A)

Outlet	Storm	Pre-Developed (m^3/s)	Post-Developed Mitigated (m^3/s)	Difference (m^3/s)	Difference (%)
Existing Waterway through the site (LPOD A) within the western part of the site.	63%	0.165	0.162	-0.003	-2.18
	39%	0.257	0.204	-0.053	-20.69
	18%	0.370	0.346	-0.024	-6.52
	10%	0.511	0.460	-0.051	-9.87
	5%	0.610	0.541	-0.069	-11.30
	2%	0.765	0.616	-0.149	-19.51
	1%	0.893	0.848	-0.045	-5.12

The above table demonstrates the proposed detention basin will ensure the post-development flows discharging from the Catchment A are attenuated to equal or below the pre-development rates.

The hydrograph for the critical duration of the Mitigated 1% AEP storm event compared against the pre and post-development is shown in *Figure 3.*

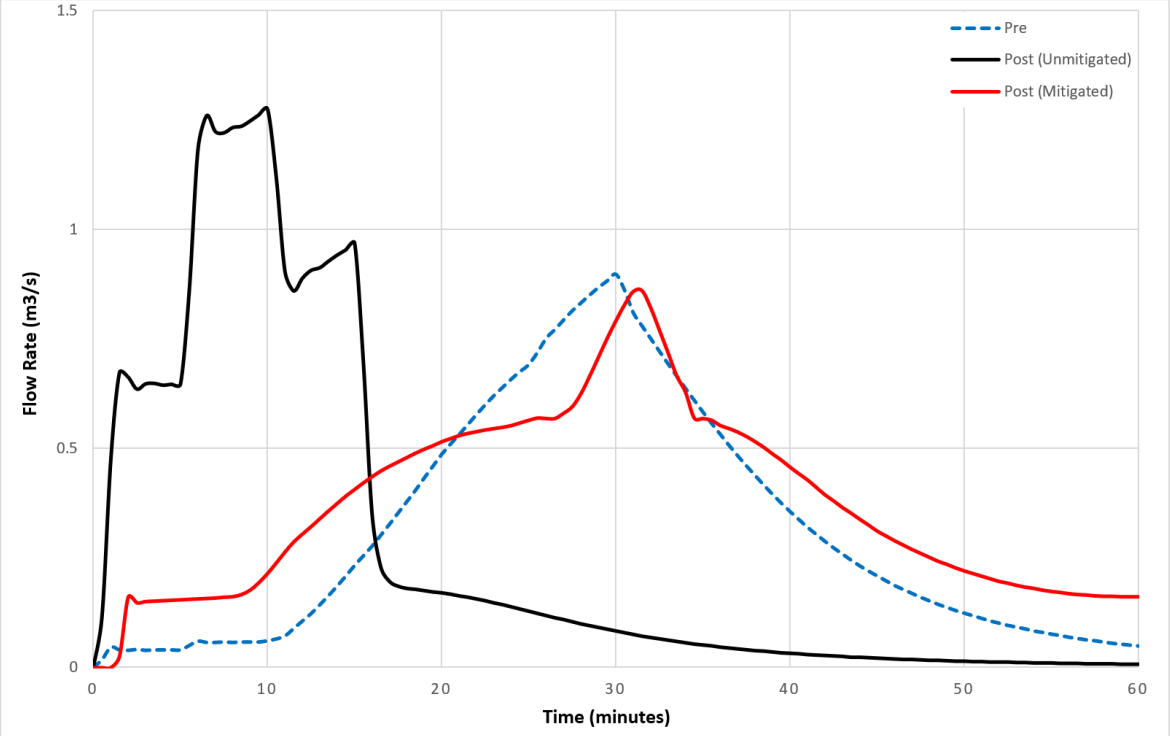


Figure 3: Pre, Post and Mitigated Flow Rates for the 1% AEP Design Storm Event (Catchment A)

The results in the tables and graphs above confirm that the proposed detention basin effectively mitigates the runoff to equal or less than pre-developed flows for the full range of storms up to the 6hr event for Catchment A.

The hydraulic analysis using the XP-SWMM model has determined that a minimum detention basin volume of approximately 886m^3 for the detention basin is required to mitigate the increase in stormwater flow rates due to the development in Catchment A. The detention basin is to be fitted with an outlet configuration as detailed in Table 26 to satisfy the mitigation requirements. It is concluded that the proposed detention basin effectively mitigates the runoff to equal or less than pre-developed flows for all events up to the 1% AEP event for Catchment A.

Refer OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521/P003/D), Conceptual Stormwater Management Details (Ref: OSK6521/P006/B), Preliminary Services Layout Plan – Sheet 1 of 2 (Ref: OSK6521/P040/B) & Preliminary Services Layout Plan – Sheet 2 of 2 (Ref: OSK6521/P041/B) within Appendix E for further details.

5.3.7 Catchment B Detention Basin Parameters & Results

5.3.7.1 Detention Basin Sizing

It is proposed to construct a combined bio-retention/detention basin to mitigate the post-developed discharge and provide water quality treatment for Catchment B.

The following have been utilised in the design of the detention basins:

- Design of basin to be undertaken using hydrological assessment model (XP-SWMM);
- Provide stormwater attenuation to ensure all total peak flows from Catchment B are not increased by the development for any storm event up to and including the 1% AEP (Q100);
- Allowance for the 0.30m extended detention depth for the water quality component (refer Section 6 for further details);
- Allowance for minimum 0.30m freeboard; and
- The combined bio-retention and detention basin is proposed to be located in the south-eastern part of the site;

The following table shows a summary of the basin's characteristics with details of the basin's stage/area relationship for the detention component below.

Table 29: Catchment B Detention Basin Characteristics

Low Level Outlet	Ø360mm low flow orifice at 1.00% grade at approximately RL 24.90m AHD. Orifice invert level coincides with the invert level of the 900mm x 900mm field inlet within the basin. The top of the 900mm x 900mm field inlet coincides with the top of the extended detention zone (at 0.30m above basin floor).
Intermediate Outlet	Ø450mm pipe at 2.00% grade at approximately RL 26.65m AHD, 0.25m above extended detention zone (at 0.55m above basin floor)
High Level Outlet	10m wide spillway weir at approximately RL 27.20m AHD, 0.80m above extended detention zone (1.10m above basin floor)
Dimensions	Base area (bottom of detention zone) = 606m^2 Base area (top of detention zone) = 1171m^2 Basin Depth = 1.20m
Maximum Water Depth within Detention Zone of Basin (m)	63% AEP (Q1) = 0.191 39% AEP (Q2) = 0.318 18% AEP (Q5) = 0.500 10% AEP (Q10) = 0.622 5% AEP (Q20) = 0.728 2% AEP (Q50) = 0.853 1% AEP (Q100) = 0.900

Table 30: Catchment B Detention Basin – Stage/Area Relationship

Stage (m)*	Detention Area (m^2)	Detention Storage (m^3)
0	606	0
0.1	653	63
0.2	700	131
0.3	747	203
0.4	794	280
0.5	841	362
0.6	889	448
0.7	936	540
0.8	983	635
0.9	1030	736
1	1077	841
1.1	1124	951
1.2	1171	1066

**Note: The stage is from the start of the detention zone and excludes the 0.3m extended detention depth of the water quality component of the basin.*

5.3.7.2 Mitigation Effect of Detention Basin B

A comparison of the peak median discharges for the pre and mitigated post-developed cases for Catchment B is detailed in Table 31.

Table 31: Comparison of Mitigated Flows at Outlet (Catchment B)

Outlet	Storm	Pre-Developed (m^3/s)	Post-Developed Mitigated (m^3/s)	Difference (m^3/s)	Difference (%)
Existing waterway through the site (LPOD B) within the south-eastern part of the site.	63%	0.412	0.392	-0.020	-4.79
	39%	0.620	0.463	-0.157	-25.44
	18%	0.876	0.803	-0.073	-8.31
	10%	1.226	1.061	-0.165	-13.51
	5%	1.479	1.179	-0.300	-20.31
	2%	1.864	1.531	-0.333	-17.85
	1%	2.114	1.978	-0.136	-6.43

The above table demonstrates the proposed detention basin will ensure the post-development flows discharging from the Catchment B are attenuated to equal or below the pre-development rates.

The hydrograph for the critical duration of the Mitigated 1% AEP storm event compared against the pre and post-development is shown in *Figure 4.*

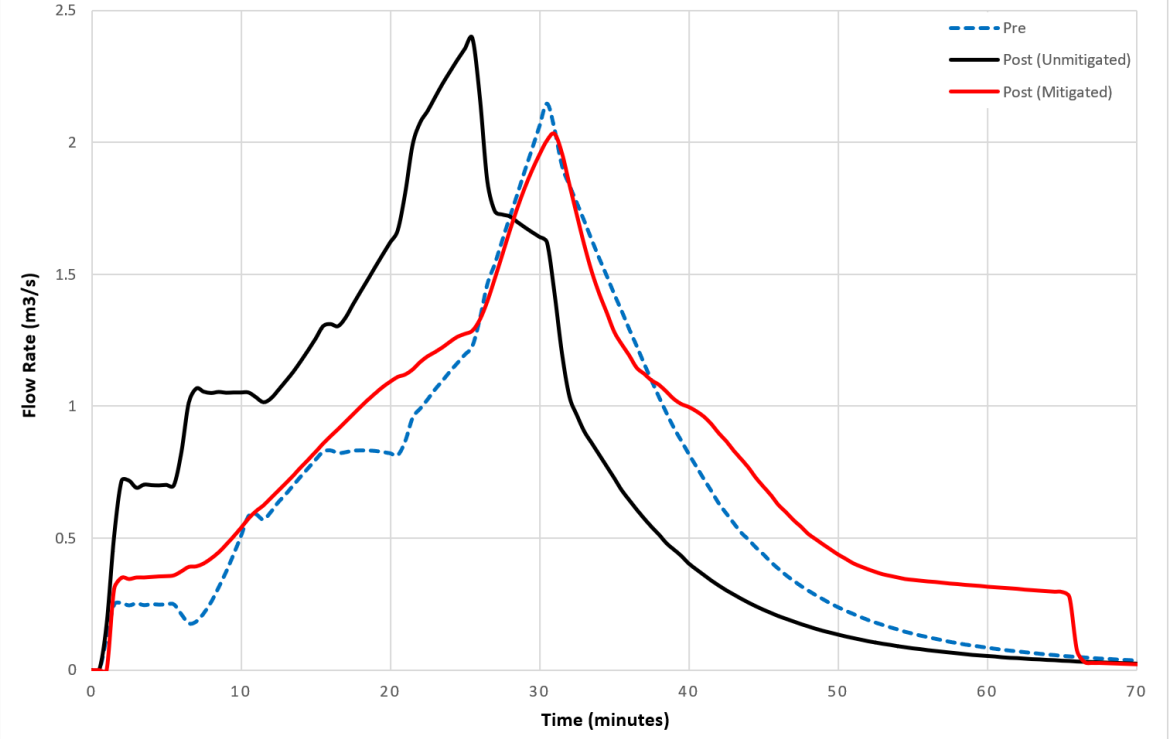


Figure 4: Pre, Post and Mitigated Flow Rates for the 1% AEP Design Storm Event (Catchment B)

The results in the tables and graphs above confirm that the proposed detention basin effectively mitigates the runoff to equal or less than pre-developed flows for the full range of storms up to the 6hr event for Catchment B.

The hydraulic analysis using the XP-SWMM model has determined that a minimum detention basin volume of approximately $1066m^3$ for the detention basin is required to mitigate the increase in stormwater flow rates due to the development in Catchment B. The detention basin is to be fitted with an outlet configuration as detailed in Table 29 to satisfy the mitigation requirements. It is concluded that the proposed detention basin effectively mitigates the runoff to equal or less than pre-developed flows for all events up to the 1% AEP event for Catchment B

Refer OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521/P003/D), Conceptual Stormwater Management Details (Ref: OSK6521/P006/B), Preliminary Services Layout Plan – Sheet 1 of 2 (Ref: OSK6521/P040/B) & Preliminary Services Layout Plan – Sheet 2 of 2 (Ref: OSK6521/P041/B) within Appendix E for further details.

5.3.8 Catchment C Detention Basin Parameters & Results

5.3.8.1 Detention Basin Sizing

It is proposed to construct a combined bio-retention/detention basin to mitigate the post-developed discharge and provide water quality treatment for Catchment C.

The following have been utilised in the design of the detention basins:

- Design of basin to be undertaken using hydrological assessment model (XP-SWMM);
- Provide stormwater attenuation to ensure all total peak flows from Catchment C are not increased by the development for any storm event up to and including the 1% AEP (Q100);
- Allowance for the 0.30m extended detention depth for the water quality component (refer Section 6 for further details);
- Allowance for minimum 0.30m freeboard; and
- The combined bio-retention and detention basin is proposed to be located in the eastern part of the site;

The following table shows a summary of the basin's characteristics with details of the basin's stage/area relationship for the detention component below.

Table 32: Catchment C Detention Basin Characteristics

Low Level Outlet	Ø275mm low flow orifice at 0.75% grade at approximately RL 26.70m AHD. Orifice invert level coincides with the invert level of the 900mm x 900mm field inlet within the basin. The top of the 900mm x 900mm field inlet coincides with the top of the extended detention zone (at 0.30m above basin floor).
Intermediate Outlet	Ø450mm pipe at 1.50% grade at approximately RL 28.525m AHD, 0.325m above extended detention zone (at 0.625m above basin floor)
High Level Outlet	10m wide spillway weir at approximately RL 29.00m AHD, 0.80m above extended detention zone (1.10m above basin floor)
Dimensions	Base area (bottom of detention zone) = 453m^2 Base area (top of detention zone) = 1048m^2 Basin Depth = 1.20m
Maximum Water Depth within Detention Zone of Basin (m)	63% AEP (Q1) = 0.304 39% AEP (Q2) = 0.430 18% AEP (Q5) = 0.556 10% AEP (Q10) = 0.659 5% AEP (Q20) = 0.746 2% AEP (Q50) = 0.839 1% AEP (Q100) = 0.877

Table 33: Catchment C Detention Basin – Stage/Area Relationship

Stage (m)*	Detention Area (m^2)	Detention Storage (m^3)
0	453	0
0.1	503	48
0.2	552	101
0.3	602	158
0.4	651	221
0.5	701	288
0.6	751	361
0.7	800	439
0.8	850	521
0.9	899	609
1	949	701
1.1	998	798
1.2	1048	901

**Note: The stage is from the start of the detention zone and excludes the 0.3m extended detention depth of the water quality component of the basin.*

5.3.8.2 Mitigation Effect of Detention Basin C

A comparison of the peak median discharges for the pre and mitigated post-developed cases for Catchment C is detailed in Table 34.

Table 34: Comparison of Mitigated Flows at Outlet (Catchment C)

Outlet	Storm	Pre-Developed (m^3/s)	Post-Developed Mitigated (m^3/s)	Difference (m^3/s)	Difference (%)
Existing Swale along Baileys Mountain Road (LPOD C) along the site's eastern boundary.	63%	0.238	0.236	-0.002	-0.67
	39%	0.355	0.289	-0.066	-18.56
	18%	0.511	0.473	-0.038	-7.42
	10%	0.713	0.623	-0.090	-12.60
	5%	0.859	0.711	-0.148	-17.18
	2%	1.056	0.933	-0.123	-11.63
	1%	1.225	1.192	-0.033	-2.68

The above table demonstrates the proposed detention basin will ensure the post-development flows discharging from the Catchment C are attenuated to equal or below the pre-development rates.

The hydrograph for the critical duration of the Mitigated 1% AEP storm event compared against the pre and post-development is shown in *Figure 5.*

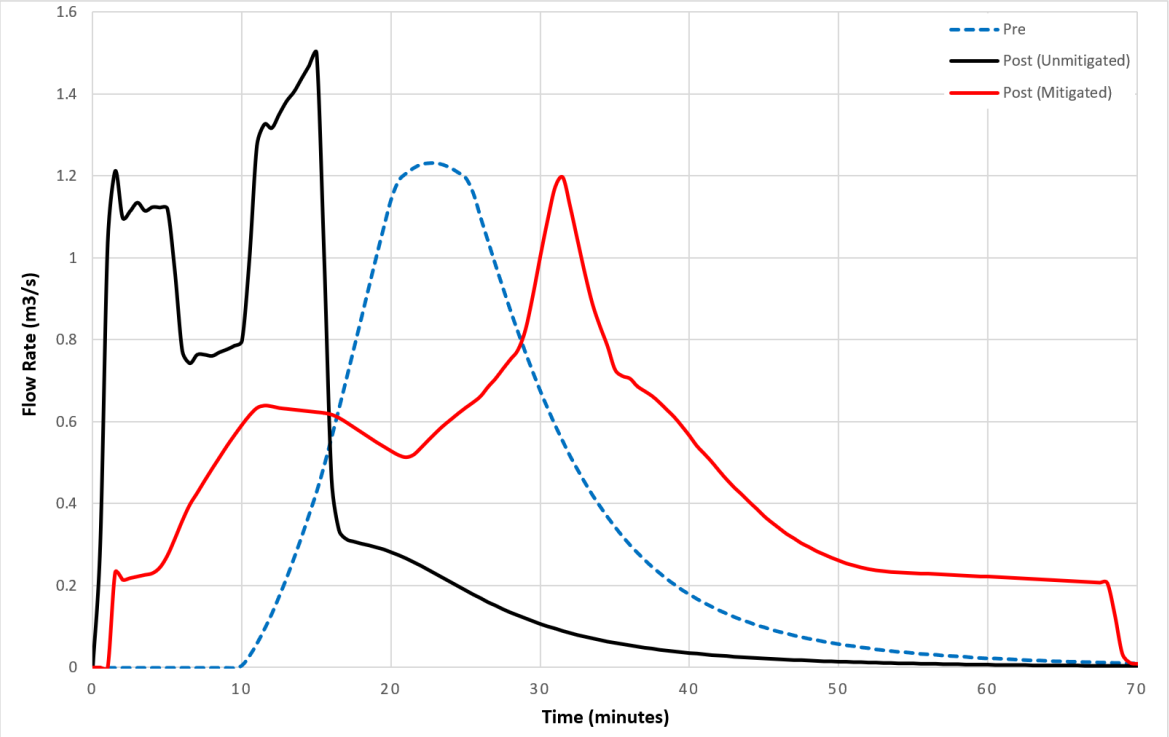


Figure 5: Pre, Post and Mitigated Flow Rates for the 1% AEP Design Storm Event (Catchment C)

The results in the tables and graphs above confirm that the proposed detention basin effectively mitigates the runoff to equal or less than pre-developed flows for the full range of storms up to the 6hr event for Catchment C.

The hydraulic analysis using the XP-SWMM model has determined that a minimum detention basin volume of approximately 901m^3 for the detention basin is required to mitigate the increase in stormwater flow rates due to the development in Catchment C. The detention basin is to be fitted with an outlet pipe configuration as detailed in Table 32 to satisfy the mitigation requirements. It is concluded that the proposed detention basin effectively mitigates the runoff to equal or less than pre-developed flows for all events up to the 1% AEP event for Catchment C.

Refer OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521/P003/D), Conceptual Stormwater Management Details (Ref: OSK6521/P006/B), Preliminary Services Layout Plan – Sheet 1 of 2 (Ref: OSK6521/P040/B) & Preliminary Services Layout Plan – Sheet 2 of 2 (Ref: OSK6521/P041/B) within Appendix E for further details.

A copy of the XP-SWMM model used in this report can be made available to Council upon request.

6.0 STORMWATER QUALITY ASSESSMENT

6.1 Background

The development of the land has the potential to increase the pollutant loads within stormwater runoff and downstream watercourses. During the construction phase of the development, disturbances to the existing ground have the potential to significantly increase sediment loads entering downstream drainage systems and watercourses. The operational phase of the development will potentially increase the amount of sediments and nutrients washing from the site.

The following sections describe the construction and operational phase controls and water quality modelling of the proposed treatment train in compliance with Council guidelines.

6.2 Construction Phase

A high risk of stormwater pollution will occur from the site during the construction phase due to erosion and sediment transportation off-site to the receiving environment. The majority of this risk results from construction activities disturbing the site and exposing areas of soil to the direct erosive influence of the environment.

The following section outlines the procedures necessary to minimise erosion and control sediment during construction in accordance with the International Erosion Control Association (IECA) Best Practice ESC Document.

6.2.1 Key Pollutants

The key pollutants have been identified for the Construction Phase of this development.

Table 35: Key Pollutants, Construction Phase

Pollutant	Sources
Litter	Paper, construction packaging, food packaging, cement bags, material offcuts.
Sediment	Exposed soils and stockpiles during earthworks and building works.
Hydrocarbons	Fuel and oil spills, leaks from construction equipment and temporary car park areas.
Toxic Materials	Cement slurry, asphalt primer, solvents, cleaning agents, and wash waters (e.g., from tile works).
Acids or Alkaline substances	Acid sulphate soils, cement slurry and wash waters.

6.2.2 Sediment and Erosion Controls

Sediment and Erosion Control devices (S&EC) employed on the site shall be designed and constructed in accordance with the International Erosion Control Association (IECA) Best Practice ESC Document as shown on OSKA Consulting Group, Sediment and Erosion Control Plan – Sheet 1 of 2 (Ref: OSK6521/P050/B), Sediment and Erosion Control Plan – Sheet 2 of 2 (Ref: OSK6521/P051/B) & Sediment and Erosion Control Details (Ref: OSK6521/P052/B) included as Appendix F.

Pre-Construction

- Stabilised site access/exit onto Courtney Drive to the north and Baileys Mountain Road to the east;
- Sediment fences to be located around the perimeter of the site;
- Sediment trap to be installed if required;
- Dust fencing to be installed if required; and
- Educate site personnel to the requirements of Erosion and Sediment Control Plan.

Initial Construction

- Maintain construction access/exit, sediment fencing, dust fences and all other existing controls as required;
- Construct diversion drains to convey disturbed site run-off to the temporary sediment traps; and
- Confine construction activities to stages to minimise areas of disturbance at any given time.

Second Stage Construction

- Maintain construction access/exit, sediment fencing, dust fences, diversion drain and all other existing controls as required;
- Progressively revegetate finished areas where applicable;
- Divert runoff from undisturbed areas around disturbed areas; and
- Drainage structure protection around field inlets and gully pits.

During construction, all areas of exposed soils allowing dust generation are to be suitably treated. Treatments will include covering the soil and watering. Road accesses are to be regularly cleaned to prevent the transmission of soil on vehicle wheels and eliminate any build-up of typical road dirt and tyre dust from delivery vehicles.

Adequate waste disposal facilities are to be provided and maintained on the site to cater for all waste materials such as litter, hydrocarbons, toxic materials, acids or alkaline substances.

6.2.3 Water Quality Monitoring and Inspections

To ensure that the water quality objectives are being met during the construction phase of the development, water quality monitoring shall be conducted. Water quality monitoring shall use a calibrated probe or sampling and testing at a NATA registered laboratory.

Location: Monitoring Stations shown on OSKA Consulting Group, *Sediment and Erosion Control Plan - Sheet 1 of 2* (Ref: OSK6521/P050/B) & OSKA Consulting Group, *Sediment and Erosion Control Plan - Sheet 2 of 2* (Ref: OSK6521/P051/B).

Parameters: Site discharge criteria.

Frequency: Following at least 10mm of rainfall in a 24-hour period.

The contractor shall be responsible for the inspection and maintenance of all sediment and erosion control devices. Additional controls and review of existing controls shall be undertaken in response to the results of the above-mentioned monitoring program.

6.2.4 Reporting

An inspection report shall be written by a suitably qualified and experienced scientist/engineer following each water quality monitoring episode. The report shall include at least the following information:

- Name, address and real property description for the development site;
- Council file reference number (if known);
- Monitoring locations;
- Performance criteria;
- Results for each monitoring location, identifying any breaches of performance criteria;
- Recommended corrective actions to be taken and additional sediment and erosion controls, if required; and
- Inspection reports shall be provided to the contractor for their action and compilation in an on-site register.

If the above-mentioned performance criteria are exceeded and results from the downstream monitoring stations show significant deterioration from upstream results (if applicable), the contractor shall implement all recommendation of the inspection report within one (1) working day of receipt of the report.

6.3 Operational Phase

The following sections provide details of the Stormwater Quality Improvement Devices (SQID's) proposed for the operational phase of the development. OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521/P003/D), Conceptual Stormwater Management Details (Ref: OSK6521/P006/B), Preliminary Services Layout Plan – Sheet 1 of 2 (Ref: OSK6521/P040/B) & Preliminary Services Layout Plan – Sheet 2 of 2 (Ref: OSK6521/P041/B) in Appendix E illustrates the size and location of the proposed SQID's.

6.3.1 Stormwater Quality Objectives

To protect the water quality of the downstream watercourses the following Water Quality Objectives (WQO's) have been applied to stormwater runoff from the site in accordance with CoGC SC6.12.4.5.4.2 Stormwater quality objectives (operational phase) and the criteria of the CoGC Healthy Waters Code as addressed in OSKA Consulting Group, Response to Healthy Waters Code (Ref: OSK6521-0004) included as Appendix G.

Best Management Practices (BMP) are required to be demonstrated for all Development Applications within the City of Gold Coast and are recommended to be implemented by the developer. Where practicable, methods such as first flush devices, and discharging stormwater to landscaped/grassed areas prior to discharge to the LPOD, are to be incorporated into the site's stormwater strategy, where the opportunity is available.

The following load reduction targets must be achieved when assessing the post-development treatment train (comparison of unmitigated developed case versus developed mitigated case).

- 80% reduction in Total Suspended Sediment (TSS).
- 60% reduction in Total Phosphorus (TP).
- 45% reduction in Total Nitrogen (TN).
- 90% reduction in litter (sized 5 mm or greater).

6.3.2 Post-Development MUSIC Modelling

To assess the potential quantities of pollutants anticipated to be discharged from the site, the water quality modelling package 'Model for Urban Stormwater Improvement Conceptualisation' (MUSIC) V6.3 by eWATER has been applied. MUSIC Modelling Parameters and delineated data have been sourced from Water by Design, MUSIC Modelling Guidelines, and where possible, via online MUSIC Link data.

Rainfall data has been sourced from Rainfall Station 40584, (Hinze Dam) using a date range from 1974 to 2010 and a 6 Minute Time Step, in accordance with CoGC requirements.

6.3.3 Stormwater Quality Improvement Devices

A Water Sensitive Urban Design (WSUD) approach has been adopted for the site with all stormwater runoff from the site being treated by three separate bio-retention basins located throughout the site. The bio-retention basins will treat runoff from the subject site as it is deemed more suitable for the proposed site use. To ensure there are no bypass areas from the development, rear allotment drainage has been proposed for Lots 43-53 and Lots 135-138 to ensure all minor flows (up to Q3 month) are directed into the proposed basin with localised grading to occur directing all ground flows into the pits.

As previously mentioned, and in accordance with the stormwater quantity modelling in the sections above, only the larger developed areas have been included within the quantity and quality analysis within this report. Any small grouping of lots (less than 5) are not considered to cause any adverse impacts (quality or quantity) to the receiving system or downstream properties. As such, the four (4) smaller grouping of lots that includes Lots 139-140, 141-143, 144-147 and 148-149 have been excluded from the quantity and quality analysis within this report. All four of the smaller grouping of lots that have been excluded from the MUSIC modelling discharge into the existing waterway through the site at least 150m upstream from the site boundary and the existing waterway will assist in treating the bypass flows.

The proposed SQID's have been provided for modelling purposes only and is subject to Council approval. Accordingly, similar alternative devices may be adopted with Council review and approval.

The adopted MUSIC catchment areas for the subject site are as follows:

Table 36: Adopted MUSIC Catchment Areas

Catchment	Surface Type	Area (m^2)	% Impervious
A	Roof (Residential)	9,074	100
	Road (Residential)	5,671	75
	Ground (Residential)	9,701	25*
B	Roof (Residential)	11,653	100
	Road (Residential)	7,283	75
	Ground (Residential)	12,746	24*
C	Roof (Residential)	10,511	100
	Road (Residential)	6,570	75
	Ground (Residential)	11,316	24*
	TOTAL Site	**84,525**	

*The ground area in the developable area of the site (e.g. excluding parks and basins) has been assumed as 30% impervious with the basin extents assumed to be 0% impervious.
Note all lots that grade to the rear will have rear allotment drainage that is to capture minor flows (up to Q3 month) and convey to the proposed basins.

All stormwater runoff captured from the developed area of the site will be conveyed to the proposed pit and pipe network and conveyed directly to one of the proposed bio-retention basins. The proposed park area (10,577m^2) within Catchment B and the proposed swale/park area within Catchment C (2,467m^2) have been excluded from the water quality analysis as the area are to be entirely pervious consisting of grassed areas and vegetation, similar to the existing scenario and is not anticipated to cause any adverse impacts to the receiving waterway.

An illustration of the MUSIC model of the adopted operational treatment train for the post-development site has been provided in Figure 6.

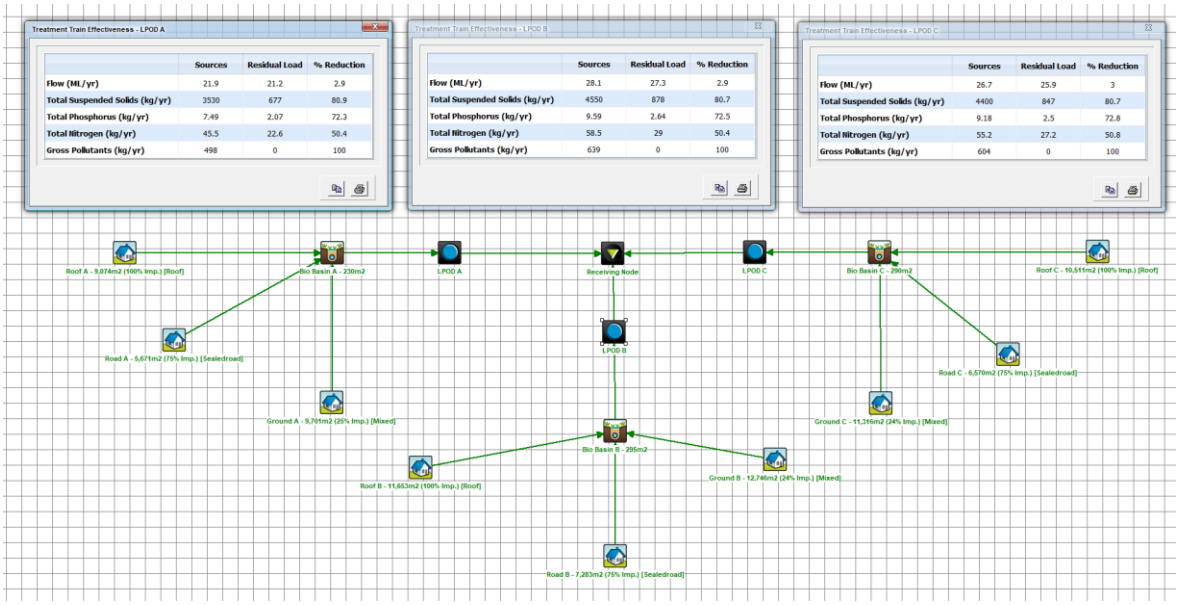


Figure 6: Operational Phase Treatment Train (Source: MUSIC model)

6.3.4 Design Parameters of the Stormwater Quality Improvement System

Detailed design of the stormwater treatment train shall be in accordance with the Water Sensitive Urban Design (WSUD), Technical Design Guidelines for South East Queensland – Version 1 (June 2006).

BIO-RETENTION BASIN

A bio-retention basin is designed to pond stormwater allowing it to percolate through a layer of filter media, typically sandy loam. Runoff passing through the filter media is collected with a perforated pipe discharging to the downstream drainage infrastructure. The bio-retention basin shall be located to treat all stormwater from the development area. A bund will be constructed to separate the bio-retention system and the open detention basin. This will ensure that the filter and surface area relationship detailed below is achieved.

The bio-retention basins have been modelled with the following properties:

- Filter media — Sandy Loam;
  5 – 10% Organic Content in accordance with AS1289.4.1.1;
  Average D_{50} 0.45 mm;
  K_{sat} 200 mm/hr;
  TN Content = 400 mg/kg
  Orthophosphate Content = 30 mg/kg
- Filter media depth — 0.70 m
- Drainage layer — Varies (0.40-50m);
- Extended detention depth — 0.30 m;
- Seepage — 0 mm/hr;
- Filter Area — Varies (230-295m^2);
- Surface Area — Varies (255-325m^2).

6.3.5 Post-Development Modelling Results - Mitigated

The modelled Stormwater Quality Improvement Devices (SQID) have demonstrated a reduction in the amount of sediments and nutrients discharging from the proposed residential subdivision. Tables 37-39 illustrate the effectiveness of the SQID's in the treatment train for the individual catchments.

Table 37: Treatment Train Effectiveness at Receiving Node (Catchment A

Parameter	Post	Post Mitigated	Reduction	Water Quality Objectives
Flow (ML/yr)	21.9	21.2	**2.9 %**	-
TSS (kg/yr)	3530	677	**80.9 %**	80 %
TP (kg/yr)	7.49	2.07	**72.3 %**	60 %
TN (kg/yr)	45.5	22.6	**50.4 %**	45 %
Gross Pollutants (kg/yr)	498	0	**100 %**	90 %

Table 38: Treatment Train Effectiveness at Receiving Node (Catchment B)

Parameter	Post	Post Mitigated	Reduction	Water Quality Objectives
Flow (ML/yr)	28.1	27.3	**2.9 %**	-
TSS (kg/yr)	4550	878	**80.7 %**	80 %
TP (kg/yr)	9.59	2.64	**72.5 %**	60 %
TN (kg/yr)	58.5	29.0	**50.4 %**	45 %
Gross Pollutants (kg/yr)	639	0	**100 %**	90 %

Table 39: Treatment Train Effectiveness at Receiving Node (Catchment C)

Parameter	Post	Post Mitigated	Reduction	Water Quality Objectives
Flow (ML/yr)	26.7	25.9	**3.00 %**	-
TSS (kg/yr)	4400	847	**80.7 %**	80 %
TP (kg/yr)	9.18	2.50	**72.8 %**	60 %
TN (kg/yr)	55.2	27.2	**50.8 %**	45 %
Gross Pollutants (kg/yr)	604	0	**100 %**	90 %

The results demonstrate that the proposed SQID's meet the intended Water Quality Objectives for Gross Pollutants, Suspended Solids, Phosphorous and Nitrogen levels, in accordance with the City of Gold Coast Requirements.

7.0 OPERATIONAL PHASE MAINTENANCE REQUIREMENTS

The proposed stormwater management devices will require maintenance and monitoring to ensure that they function as designed. The following section provides an outline of the necessary maintenance tasks for the proposed devices.

7.1 Bio-retention Basin Maintenance

The most intensive period of maintenance is during the plant establishment period (first two years) when weed removal and replanting may be required. It is also the time when large loads of sediments could impact on plant growth particularly in developing catchments with poor building controls.

Maintenance is primarily concerned with:

- Maintenance of flow to and through the bio-retention basin;
- Maintaining vegetation;
- Preventing undesired overgrowth vegetation from taking over the bio-retention basin;
- Removal of accumulated sediments; and
- Litter and debris removal.

Vegetation maintenance will include:

- Fertilising plants;
- Removal of noxious plants or weeds; and
- Re-establishment of plants that die.

Sediments accumulated at the inlets need to be monitored. Depending on the catchment activities the deposition of sediment can tend to smother plants and reduce the ponding volume available. Should excessive sediment build-up it will impact on the plant health and require removal before it reduces the infiltration rate of the filter media. The proposed SQID's will require regular maintenance and monitoring to ensure that it functions as designed.

Table 40: Bio-retention Basin Maintenance Schedule

Bio-retention Basin Maintenance Checklist			
Inspection Frequency: 3 Monthly	**Date of Visit:**		
Location:			
Description:			
Site Visibility:			
Inspection Items	**Yes**	**No**	**Action Required (Details)**
Sediment accumulation at inflow points?			
Litter basin?			
Erosion at inlet or other key structures (e.g. crossovers)?			
Traffic damage present?			
Evidence of dumping (Building waste, oils etc)?			
Vegetation condition satisfactory (density, weeds etc)?			
Replanting required?			
Mowing required?			
Clogging of drainage points (sediment or debris)?			
Evidence of ponding?			
Damage/vandalism to structures present?			
Surface clogging visible?			
Drainage system inspected?			
Resettling of system required?			
Comments:			

8.0 ASSET HANDOVER

The proposed stormwater management devices shall be dedicated to owner/body corporate/Council following the time of practical completion for the proposed development. An Asset Handover Checklist is provided as Table 41 as a guideline for the necessary steps to be taken prior to the end of the maintenance period.

Table 41: Asset Handover Checklist

Asset Location:		
Construction By:		
Maintenance Period:		
Treatment:	**Y**	**N**
Actual treatment performance equivalent to design:		
Maintenance:		
Maintenance Plans Provided:		
Inspection and maintenance undertaken as per maintenance plan:		
Inspection and maintenance forms provided:		
Asset inspected for defects:		
Asset Information:		
Design assessment checklist provided:		
As constructed plans provided:		
Copies of all permits provided:		
Digital files provided:		

9.0 CONCLUSIONS

OSKA Civil Consultants has been commissioned by Norfolk Estates Pty Ltd to prepare a Conceptual Stormwater Management Plan (CSWMP) to support a Development Application (DA) to the City of Gold Coast (CoGC) for the proposed residential subdivision situated at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera. This CSWMP intends to provide an optimised stormwater management system that would be compatible and readily integrated into the proposed site use.

This CSWMP details the conceptual planning, layout and design of the stormwater management infrastructure for both the construction and operational phases of this development and satisfies the requirements of the City of Gold Coast's Land Development Guidelines.

A hydrological analysis demonstrated that the anticipated post-development peak flow rates discharging from Catchments A, B and C are higher than the pre-development flow rates. A hydraulic model was built using the XP-SWMM software program, to estimate the required detention volume and arrangement. This report and stormwater management plan defined the layout of the proposed detention arrangement, which is to be provided in the form of three (3) combined bio-retention and detention basins with approximate detention volumes between 886-1066m^3 at depths at 1.20m in conjunction with the water quality aspect of the basins. This strategy demonstrates no adverse or actionable nuisance associated with the increased runoff rate on surrounding properties and infrastructure.

OSKA Civil Consultants has adopted a Water Sensitive Urban Design (WSUD) approach, in accordance with the State Planning Policy, to managing the stormwater runoff from the proposed development by treating stormwater runoff within three (3) proposed bio-retention basins with filter areas between 230-295m^2. The SQID's utilised within the MUSIC model have been adopted to demonstrate a potential treatment system, pending Council approval.

A monitoring and maintenance plan for the proposed infrastructure has been included. A concept sediment and erosion control plan is provided for the construction phase of the development and shall be implemented by the contractor and developer.

This stormwater quality strategy has defined the preliminary requirements and layout of the proposed development to demonstrate compliance with the State Planning Policy 2017 and the CoGC Planning Scheme Stormwater Quality Management requirements.

APPENDIX

A

LandPartners, Detail Survey (Ref: BRJD8528-00-12-1)

COURTNEY DRIVE

BAILEYS MOUNTAIN ROAD

182
RP156422

183
RP156432

184
RP173727

185
RP173727

186
RP173728

187
RP173728

188
RP173728

58
SP191940

57
SP214370

56
RP162858

Emt B SP205586

Emt C SP214374

Emt A SP205586

RESERVE ROAD

75
SP174234

RICHARDSON CRES

900
SP205578

Emt A SP205578

Emt B SP205578

Emt C SP205578

1
SP205578

2
SP205578

3
SP205578

WRIGHT COURT

BRJD8528-000-12-1
Eden - Upper Coomera
Detail Survey
Contour Interval - 0.5m
10/09/2024

10 0 20 50 110m

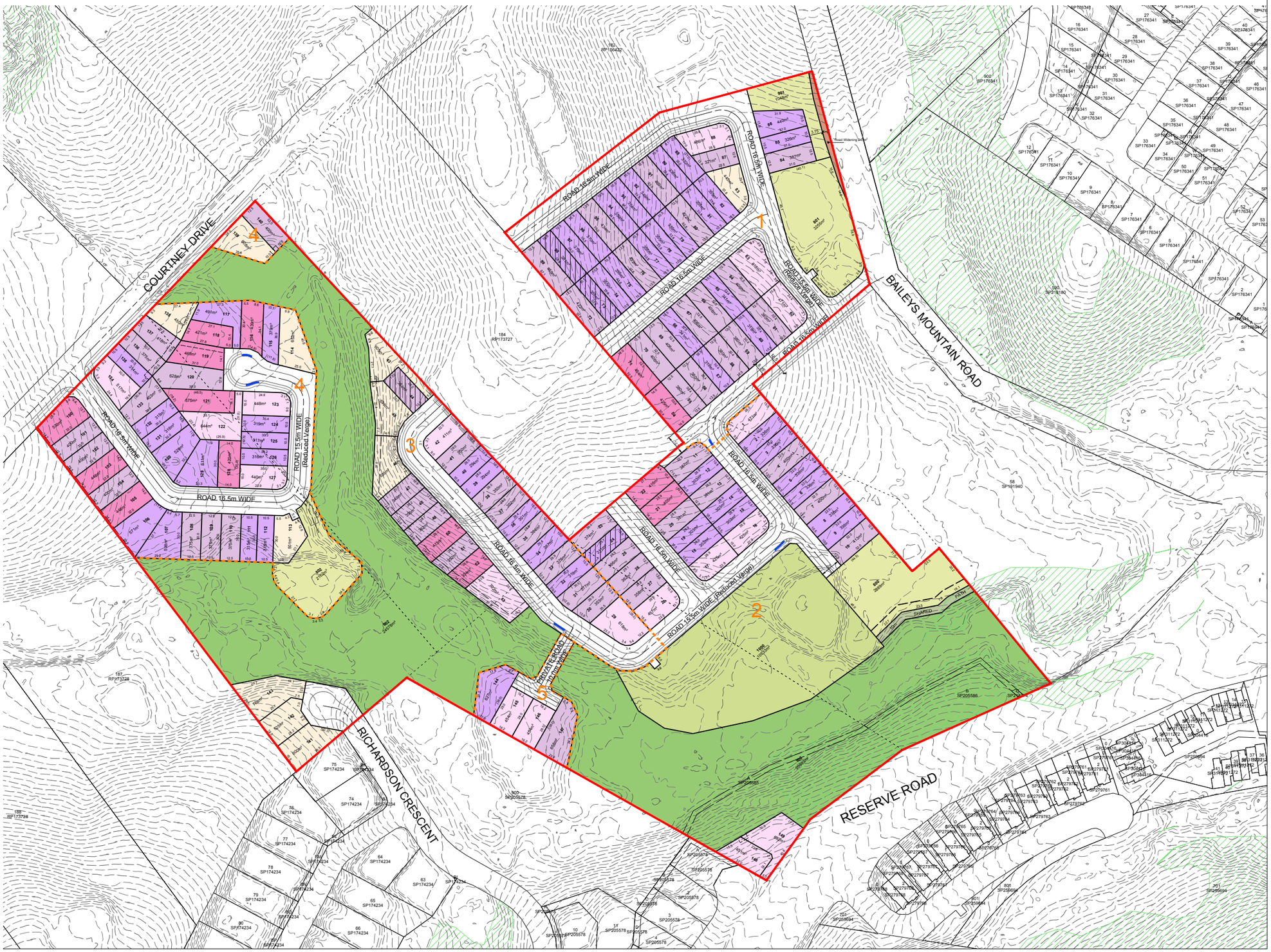
SCALE BAR

APPENDIX

B

Saunders Havill Group, Proposal Plan (Ref: 11694 P 06)

PROPOSAL PLAN



NOT TO BE USED FOR ENGINEERING DESIGN OR CONSTRUCTION

NOTES

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

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

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

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

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

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

PROJECTION: GDA2020 MGA56

SUBJECT BOUNDARIES: LOT CALCULATIONS BY LANDPARTNERS DATED 25/11/2024

LEGEND

- Site Boundary
- Major Contour (1.0m interval)
- Minor Contour (0.5m interval)
- Vegetation Management
- Temporary Turnaround Lot
- Stage Boundary
- 1 Stage No.
- Indicative Bin Pad location
- Easement

DEVELOPMENT STATISTICS			
RESIDENTIAL ALLOTMENTS	**No. Lots**	**%**	**Net Area**
10.5m - 12.49m Frontage	54	36.2%	1.954 ha
12.5m - 13.99m Frontage	52	34.9%	2.056 ha
14m - 14.99m Frontage	14	9.4%	0.623 ha
> 15m Frontage	18	12.1%	0.917 ha
Irregular Frontage	11	7.4%	0.639 ha
Total Residential Allotments	**149**	**100.0%**	**6.189 ha**
Land Budget	**Area (Ha)**	**%**	
Area of Subject Site / Stage	15.251 ha	—	
Net Residential Area (no roads)	6.189 ha	40.6%	
Detention / Drainage	0.935 ha	6.1%	
Local Park	1.053 ha	6.9%	
Environmental Open Space	4.557 ha	29.9%	
Pedestrian Links	0.035 ha	0.2%	
Road Widening	0.025 ha	0.2%	
Road Areas	2.457 ha	16.1%	
Total	**15.251 ha**	**100.0%**	

RP DESCRIPTION: Lot 185 on RP173727, Lot 186 on RP173728, Lot 57 on SP214370 & Lot 56 on RP162858, Lot 58 on SP191940

SCALE @A1 1:1250 @A3 1:2500 - LENGTHS ARE IN METRES

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

saunders havill group

NORFOLK ESTATES PTY LTD ATF SOLANDER INVESTMENT UNIT TRUST

41 - 53 COURTNEY DRIVE , UPPER COOMERA • 10/12/2024 • 11694 P 06 Rev A - CON 01

APPENDIX

C

OSKA Consulting Group, Pre-Development Catchment Plan (Ref: OSK6521/P001/C)

LEGEND

- STORMWATER CATCHMENT BOUNDARY
- (A) INTERNAL STORMWATER CATCHMENT I.D.
- [A] EXTERNAL STORMWATER CATCHMENT I.D.
- 80.0 EXISTING SURFACE CONTOURS
- ● LPOD LAWFUL POINT OF DISCHARGE
- FLOW DIRECTION
- SITE BOUNDARY

EXISTING SERVICES LEGEND

- S EXISTING SEWER MAIN
- W EXISTING WATER MAIN
- SWD EXISTING STORMWATER PIPE
- T EXISTING TELECOMMUNICATIONS CABLE
- E EXISTING ELECTRICAL CABLE

STORMWATER CATCHMENT TABLE	
STORMWATER CATCHMENT I.D.	AREA (ha)
A	2.445
B	4.226
C	3.086
EXT A1	0.824
EXT A2	0.412
EXT B	4.375
TOTAL	15.3680

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED



ISSUE No.	DATE	AMENDMENT
C	11-12-24	ISSUED FOR APPROVAL
B	06-12-24	ISSUED FOR REPORT
A	20-11-23	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
BG	BG	DC

TITLE: PRE-DEVELOPMENT CATCHMENT PLAN

SCALE: 1:1250 AT A1, 1:2500 AT A3 — 0 50 100m

PROJECT NO.: OSK6521

DWG NO.: P001

ISSUE: C

APPENDIX

D

OSKA Consulting Group, Post-Development Catchment Plan (Ref: OSK6521/P002/C) & External Catchment Plan (Ref: OSK6521/P005/B)

LEGEND

- STORMWATER CATCHMENT BOUNDARY
- (A) INTERNAL STORMWATER CATCHMENT I.D.
- [A] EXTERNAL STORMWATER CATCHMENT I.D.
- 80.0 FINISHED SURFACE CONTOURS
- 80.0 EXISTING SURFACE CONTOURS
- ● LPOD LAWFUL POINT OF DISCHARGE
- PROPOSED FLOW DIRECTION
- SITE BOUNDARY

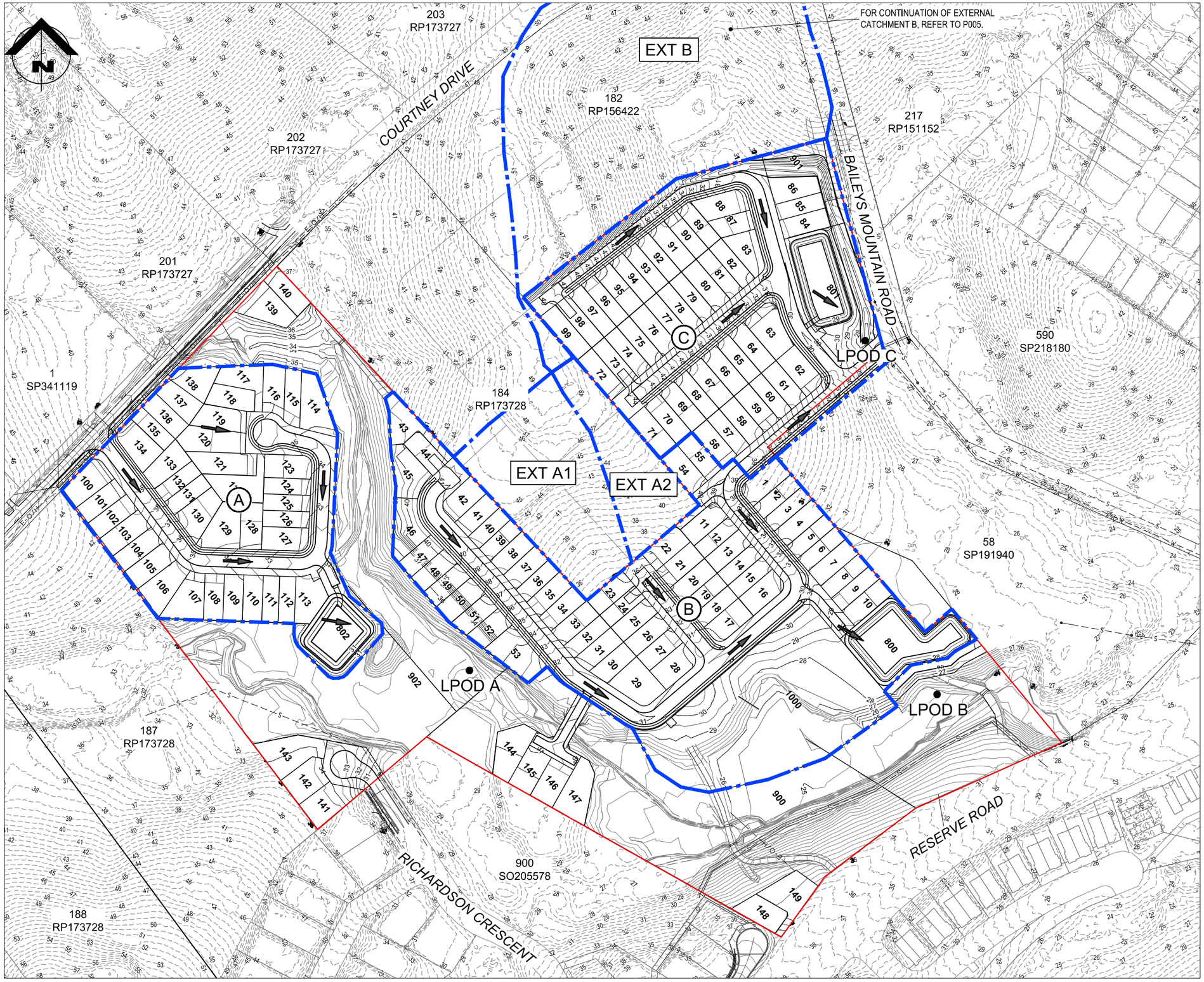
EXISTING SERVICES LEGEND

- S EXISTING SEWER MAIN
- W EXISTING WATER MAIN
- SWD EXISTING STORMWATER PIPE
- T EXISTING TELECOMMUNICATIONS CABLE
- E EXISTING ELECTRICAL CABLE

STORMWATER CATCHMENT TABLE	
STORMWATER CATCHMENT I.D.	AREA (ha)
A	2.445
B	4.226
C	3.086
EXT A1	0.824
EXT A2	0.412
EXT B	4.375
TOTAL	15.3680

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED



ISSUE No.	DATE	AMENDMENT
C	11-12-24	ISSUED FOR APPROVAL
B	06-12-24	ISSUED FOR INFORMATION
A	20-11-23	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
BG	BG	DC

TITLE: POST-DEVELOPMENT CATCHMENT PLAN

SCALE: 1:1250 AT A1, 1:2500 AT A3 (0, 50, 100m)

PROJECT NO.: OSK6521

DWG NO.: P002

ISSUE: C

LEGEND

- STORMWATER CATCHMENT BOUNDARY
- (A) INTERNAL STORMWATER CATCHMENT I.D.
- [A] EXTERNAL STORMWATER CATCHMENT I.D.
- 80.0 EXISTING SURFACE CONTOURS
- ● LPOD LAWFUL POINT OF DISCHARGE
- FLOW DIRECTION
- SITE BOUNDARY

EXISTING SERVICES LEGEND

- S EXISTING SEWER MAIN
- W EXISTING WATER MAIN
- SWD EXISTING STORMWATER PIPE
- T EXISTING TELECOMMUNICATIONS CABLE
- E EXISTING ELECTRICAL CABLE

STORMWATER CATCHMENT TABLE	
STORMWATER CATCHMENT I.D.	AREA (ha)
A	2.445
B	4.226
C	3.086
EXT A1	0.824
EXT A2	0.412
EXT B	4.375
TOTAL	15.3680

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

APPROVAL ISSUE
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B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
BG	BG	DC

TITLE: EXTERNAL CATCHMENT PLAN

SCALE: 1:2000 AT A1, 1:4000 AT A3 (0, 50, 100, 150, 200m)

PROJECT NO.: OSK6521

DWG NO.: P005

ISSUE: B

APPENDIX

E

OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521/P003/D), Conceptual Stormwater Management Details (Ref: OSK6521/P006/B), Preliminary Services Layout Plan – Sheet 1 of 2 (Ref: OSK6521/P040/B) & Preliminary Services Layout Plan – Sheet 2 of 2 (Ref: OSK6521/P041/B)

LEGEND

- STORMWATER CATCHMENT BOUNDARY
- 80.0 — EXISTING SURFACE CONTOURS
- ● LPOD — LAWFUL POINT OF DISCHARGE
- SWD — PROPOSED STORMWATER DRAINAGE
- PROPOSED SWALE
- PROPOSED FLOW DIRECTION
- SITE BOUNDARY
- PROPOSED BIO-RETENTION & DETENTION BASIN
- PROPOSED BIO-RETENTION BASIN FILTER AREA



CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

APPROVAL ISSUE
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ISSUE No.	DATE	AMENDMENT
D	11-12-24	ISSUED FOR APPROVAL
C	06-12-24	ISSUED FOR INFORMATION
B	12-12-23	ISSUED FOR INFOMRATION
A	20-11-23	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
BG	BG	DC

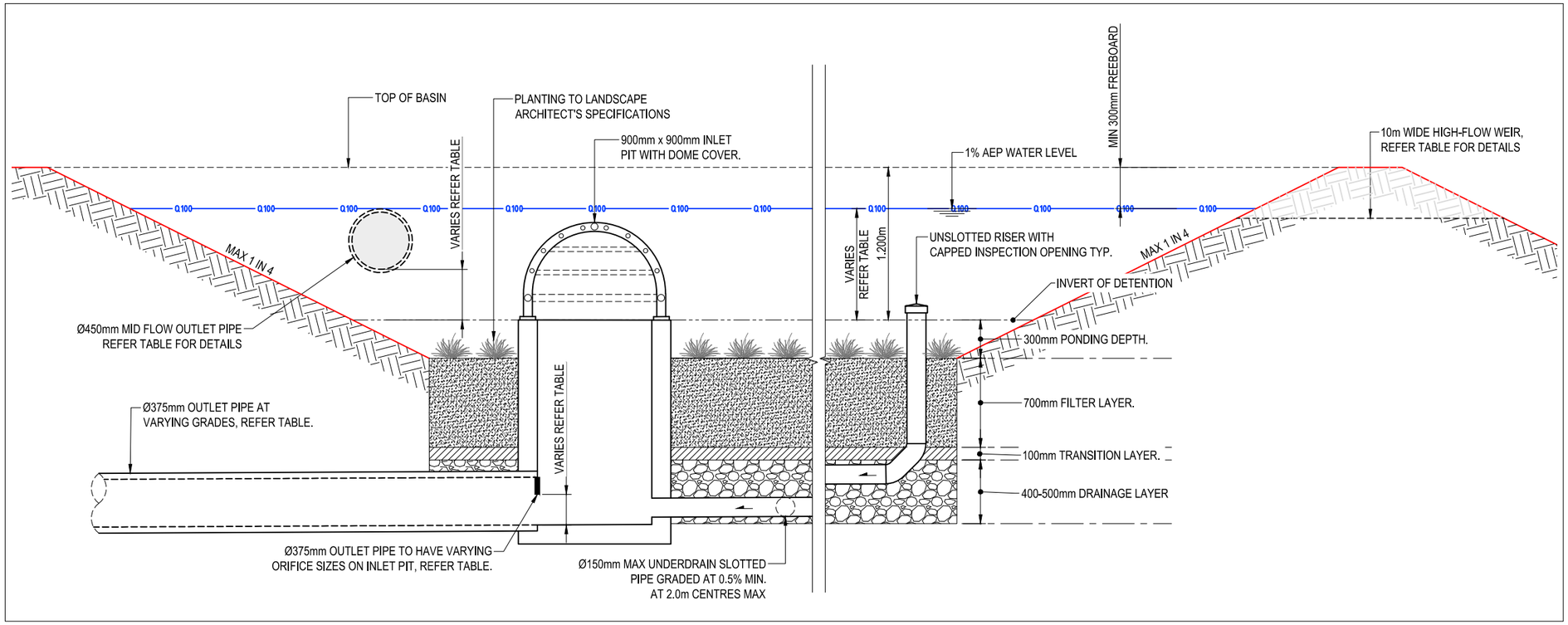
TITLE: CONCEPTUAL STORMWATER MANAGEMENT PLAN

SCALE: 1:1250 AT A1, 1:2500 AT A3 (0 — 50 — 100m)

PROJECT NO.: OSK6521

DWG NO.: P003

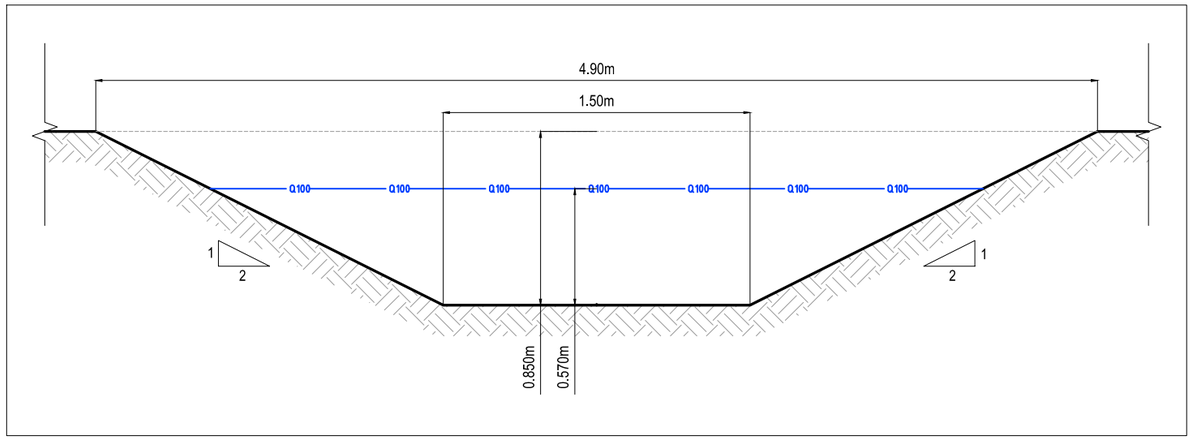
ISSUE: D



BIO-RETENTION BASIN - TYPICAL SECTION

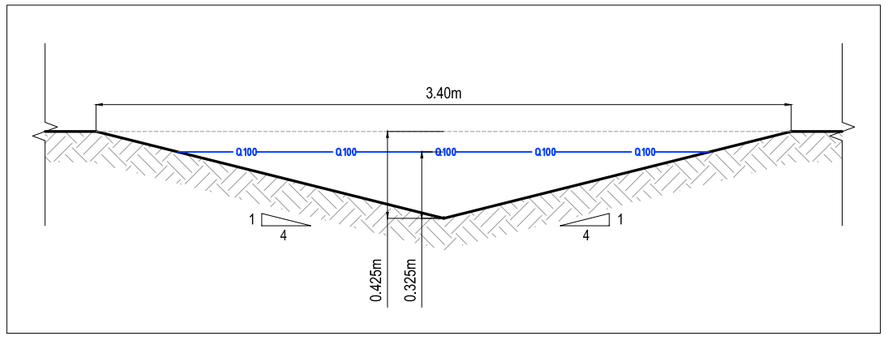
NTS

STORMWATER OUTLET ARRANGEMENT	
STORMWATER OUTLET LOCATION	STORMWATER STRUCTURE
BIO-RETENTION & DETENTION BASIN A	
LOW FLOW OUTLET	Ø300mm ORIFICE ON Ø375mm OUTLET PIPE AT 0.50% GRADE AT INVERT OF INLET PIT
MID FLOW OUTLET	Ø450mm PIPE AT 1.50% GRADE AT 0.35m ABOVE DETENTION INVERT
HIGH FLOW OUTLET	10m WIDE WEIR at 0.81m ABOVE DETENTION INVERT
1% AEP WATER LEVEL	0.867m
BIO-RETENTION & DETENTION BASIN B	
LOW FLOW OUTLET	Ø360mm ORIFICE ON Ø375mm OUTLET PIPE AT 1.00% GRADE AT INVERT OF INLET PIT
MID FLOW OUTLET	Ø450mm PIPE AT 2.00% GRADE AT 0.25m ABOVE DETENTION INVERT
HIGH FLOW OUTLET	10m WIDE WEIR at 0.80m ABOVE DETENTION INVERT
1% AEP WATER LEVEL	0.900m
BIO-RETENTION & DETENTION BASIN C	
LOW FLOW OUTLET	Ø275mm ORIFICE ON Ø375mm OUTLET PIPE AT 0.75% GRADE AT INVERT OF INLET PIT
MID FLOW OUTLET	Ø450mm PIPE AT 1.50% GRADE AT 0.325m ABOVE DETENTION INVERT
HIGH FLOW OUTLET	10m WIDE WEIR at 0.80m ABOVE DETENTION INVERT
1% AEP WATER LEVEL	0.877m



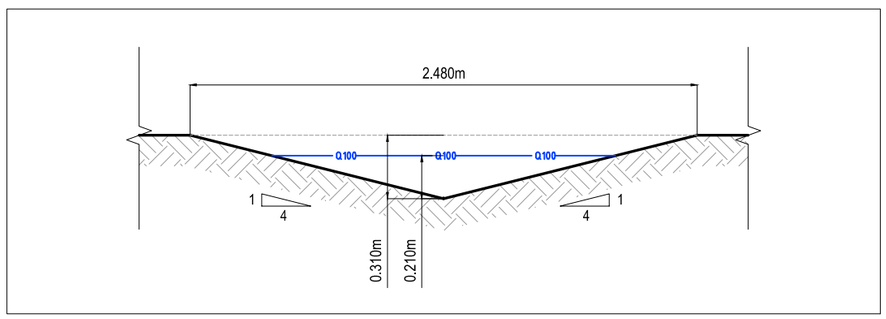
PROPOSED SWALE 3 - TYPICAL DETAIL

SCALE 1:15 (A1)



PROPOSED SWALE 1 (LOT 23) - TYPICAL DETAIL

SCALE 1:15 (A1)



PROPOSED SWALE 2 (LOT 22) - TYPICAL DETAIL

SCALE 1:15 (A1)

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CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
BG	BG	DC

TITLE: CONCEPTUAL STORMWATER MANAGEMENT DETAILS

SCALE: 1:15 AT A1, 1:30 AT A3 (0, 0.5m, 1.0m, 1.5m)

PROJECT NO.: OSK6521

DWG NO.: P006

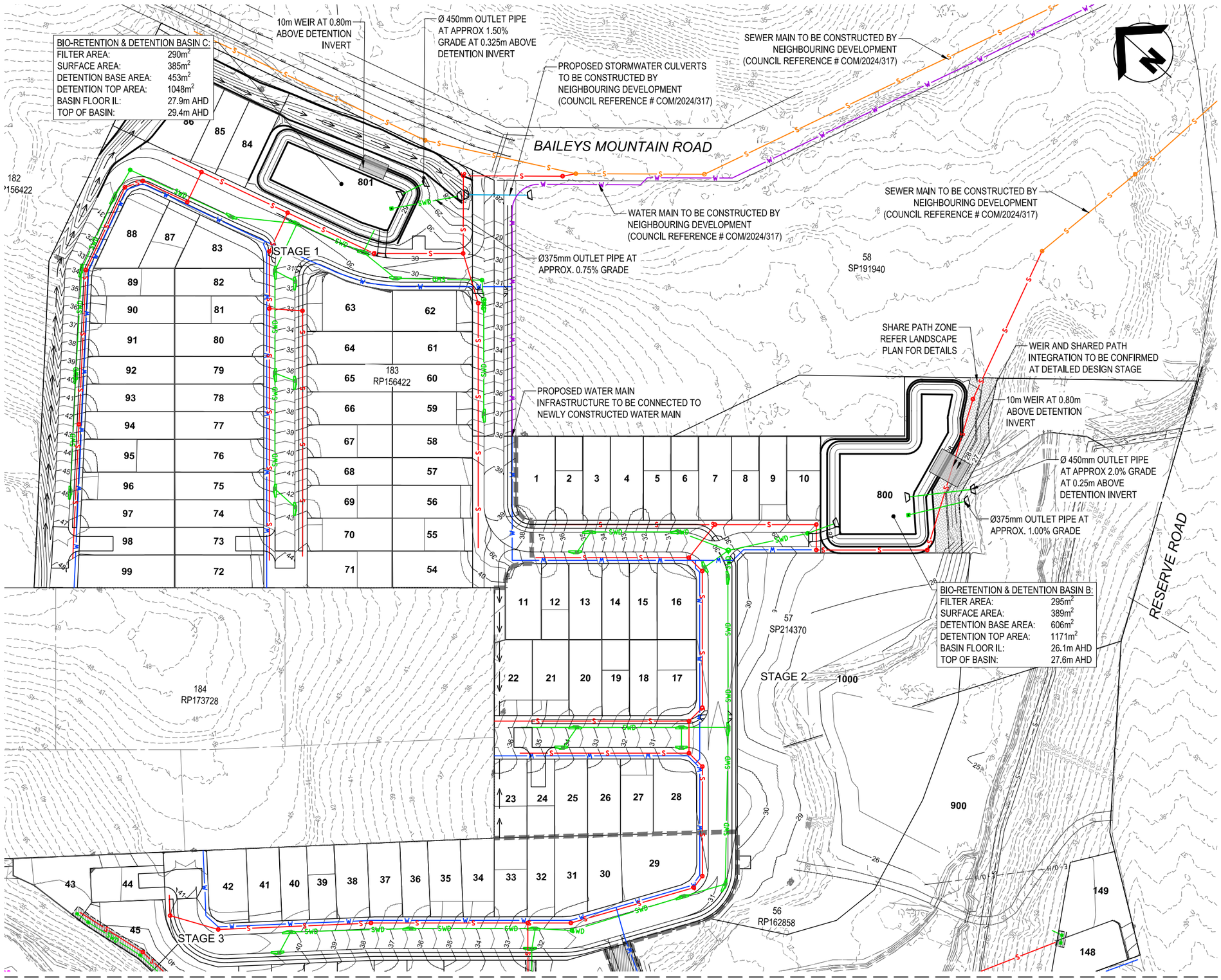
ISSUE: B

LEGEND

- PROPOSED SEWER MAIN
- PROPOSED TRUNK SEWER MAIN
- PROPOSED WATER MAIN
- PROPOSED STORMWATER DRAINAGE
- FINISHED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- STAGE BOUNDARY
- PROPOSED SEWER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED WATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED STORMWATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED SERVICE EASEMENTS

EXISTING SERVICES LEGEND

- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- EXISTING STORMWATER PIPE
- EXISTING TELECOMMUNICATIONS CABLE
- EXISTING ELECTRICAL CABLE



APPROVAL ISSUE
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CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

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OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY SERVICES LAYOUT PLAN - SHEET 1 OF 2

SCALE: 1:750 AT A1, 1:1500 AT A3 (0, 15, 30, 45, 60m)

PROJECT NO. OSK6521

DWG NO. P040

ISSUE B

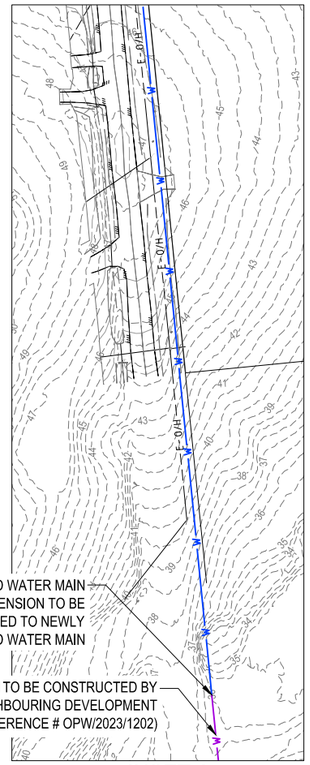
LEGEND

- PROPOSED SEWER MAIN
- PROPOSED TRUNK SEWER MAIN
- PROPOSED WATER MAIN
- PROPOSED STORMWATER DRAINAGE
- FINISHED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- STAGE BOUNDARY
- PROPOSED SEWER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED WATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED STORMWATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED SERVICE EASEMENTS

EXISTING SERVICES LEGEND

- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- EXISTING STORMWATER PIPE
- EXISTING TELECOMMUNICATIONS CABLE
- EXISTING ELECTRICAL CABLE

FOR CONTINUATION REFER SHEET 1



INSET A
SCALE 1:750 AT A1

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

REFER INSET A

EXISTING CULVERTS AND HEADWALLS TO BE EXTENDED TO ACCOMDATE FOR PROPOSED ROAD WIDENING WORKS

Ø 450mm OUTLET PIPE AT APPROX 1.50% GRADE AT 0.35m ABOVE DETENTION INVERT

Ø375mm OUTLET PIPE AT APPROX. 0.50% GRADE

10m WEIR AT 0.81m ABOVE DETENTION INVERT

Ø 225 TRUNK SEWER MAIN TO BE CONSTRUCTED BY NEIGHBOURING DEVELOPMENT (COUNCIL REFERENCE # OPW/2024/987)

PROPOSED CULVERT AND HEADWALL WORKS IN ACCORDANCE WITH FLOOD REPORT

TRUNK SEWER WORKS TO CONNECT INTO Ø225 STUB CONNECTION PROVIDE AS A PART OF THE ONGOING SEWER OPW APPLICATION (COUNCIL REFERENCE # OPW/2024/987)

BIO-RETENTION & DETENTION BASIN A:

FILTER AREA:	230m²
SURFACE AREA:	333m²
DETENTION BASE AREA:	484m²
DETENTION TOP AREA:	992m²
BASIN FLOOR IL:	31.6m AHD
TOP OF BASIN:	33.1m AHD

COURTNEY DRIVE

RICHARDSON CRESCENT

STAGE 2 · STAGE 3 · STAGE 4 · STAGE 5

184 RP173728 · 185 RP173728 · 186 RP173728 · 19 · 57 SP214370 · 56 RP162858 · 900 SO205578 · 75 SP174234

APPROVAL ISSUE
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ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY SERVICES LAYOUT PLAN - SHEET 2 OF 2

SCALE: 1:750 AT A1 · 1:1500 AT A3 · 0 15 30 45 60m

PROJECT NO. OSK6521

DWG NO. P041

ISSUE B

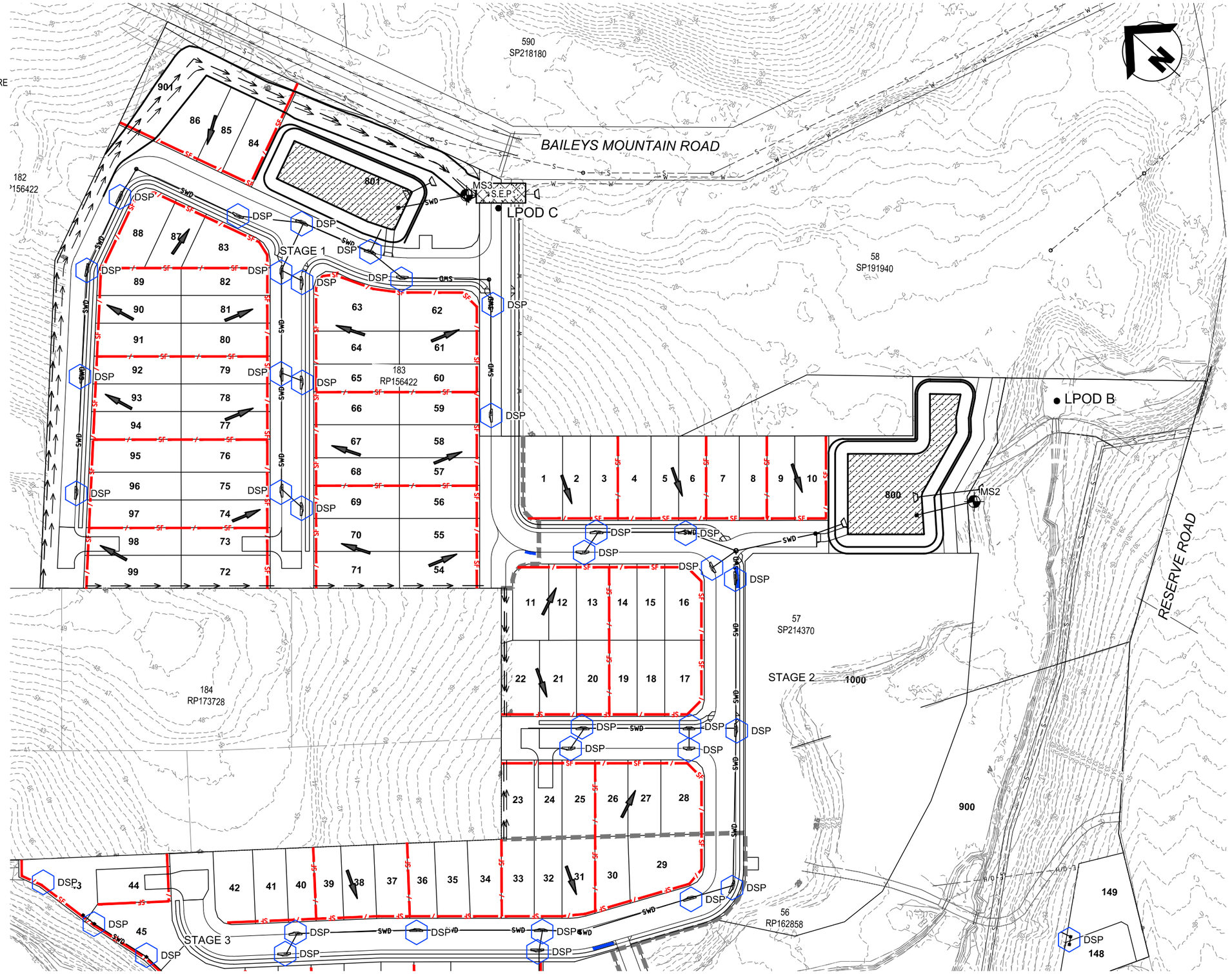
APPENDIX

F

OSKA Consulting Group, Sediment and Erosion Control Plan – Sheet 1 of 2 (Ref: OSK6521/P050/B), Sediment and Erosion Control Plan – Sheet 2 of 2 (Ref: OSK6521/P051/B) & Sediment and Erosion Control Details (Ref: OSK6521/P052/B)

SEDIMENT & EROSION CONTROL LEGEND

- SF — SEDIMENT FENCE
- TEMPORARY DIVERSION DRAIN
- TEMPORARY SEDIMENT PONDS WITHIN FUTURE BIO RETENTION BASINS
- S.E.P — LOCATION OF STABILISED ENTRY/EXIT POINT
- DSP — DRAINAGE STRUCTURE PROTECTION
- MS1 — WATER QUALITY MONITORING STATION
- FLOW ARROW
- LPOD — LAWFUL POINT OF DISCHARGE
- 80.0 — EXISTING SURFACE CONTOURS
- SWD — PROPOSED STORMWATER PIPE
- STAGE BOUNDARY



FOR CONTINUATION REFER SHEET 2

CONCEPT ONLY

IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ADEQUATE SEDIMENT & EROSION CONTROL DURING ALL PHASES OF CONSTRUCTION TO THE SATISFACTION OF BOTH THE SUPERINTENDENT AND COUNCIL.

APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: SEDIMENT AND EROSION CONTROL PLAN - SHEET 1 OF 2

SCALE: 1:750 AT A1 / 1:1500 AT A3 (0, 15, 30, 45, 60m)

PROJECT NO.: OSK6521

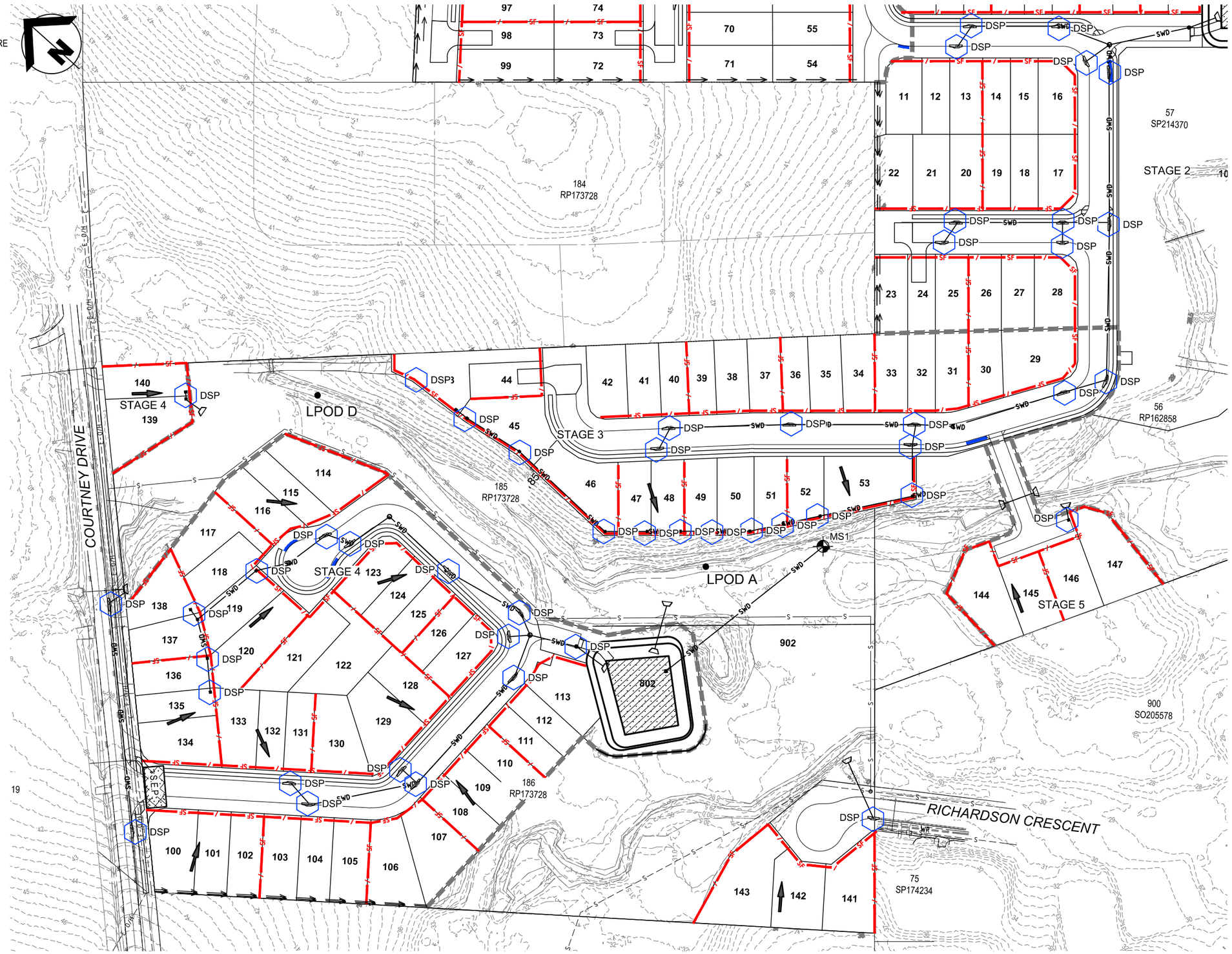
DWG NO.: P050

ISSUE: B

SEDIMENT & EROSION CONTROL LEGEND

- SF — SEDIMENT FENCE
- TEMPORARY DIVERSION DRAIN
- TEMPORARY SEDIMENT PONDS WITHIN FUTURE BIO RETENTION BASINS
- S.E.P — LOCATION OF STABILISED ENTRY/EXIT POINT
- DSP — DRAINAGE STRUCTURE PROTECTION
- MS1 — WATER QUALITY MONITORING STATION
- FLOW ARROW
- LPOD — LAWFUL POINT OF DISCHARGE
- 80.0 — EXISTING SURFACE CONTOURS
- SWD — PROPOSED STORMWATER PIPE
- STAGE BOUNDARY

FOR CONTINUATION REFER SHEET 1



CONCEPT ONLY

IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ADEQUATE SEDIMENT & EROSION CONTROL DURING ALL PHASES OF CONSTRUCTION TO THE SATISFACTION OF BOTH THE SUPERINTENDENT AND COUNCIL.

APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

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PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: SEDIMENT AND EROSION CONTROL PLAN - SHEET 2 OF 2

SCALE: 1:750 AT A1, 1:1500 AT A3 (0 15 30 45 60m)

PROJECT NO.: OSK6521

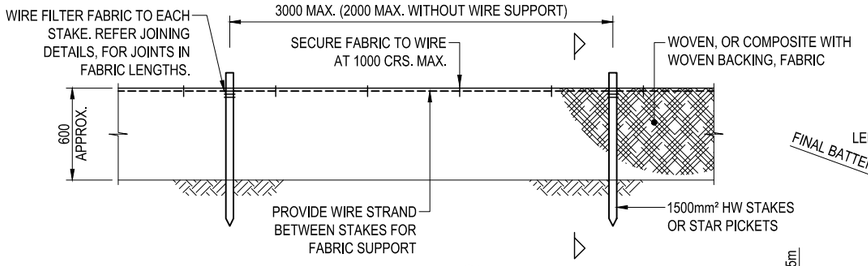
DWG NO.: P051

ISSUE: B

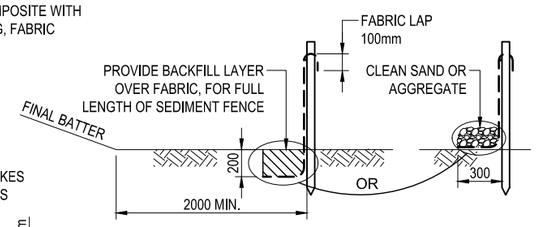
APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

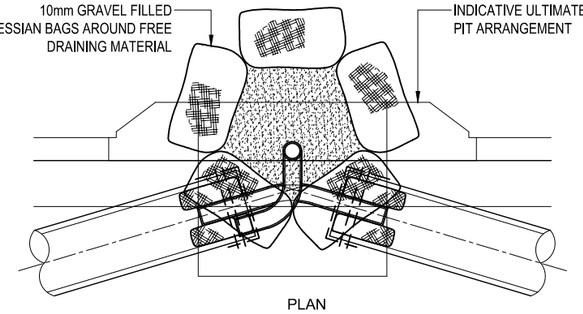
CONCEPT ONLY
IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ADEQUATE SEDIMENT & EROSION CONTROL DURING ALL PHASES OF CONSTRUCTION TO THE SATISFACTION OF BOTH THE SUPERINTENDENT AND COUNCIL.



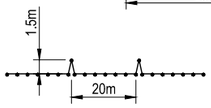
ELEVATION



SECTION



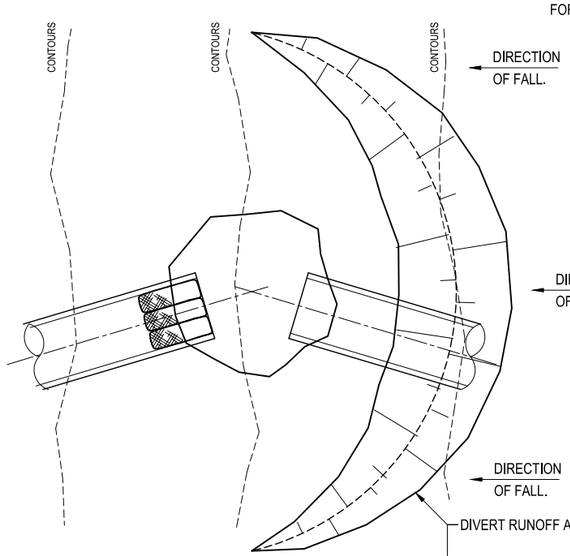
PLAN



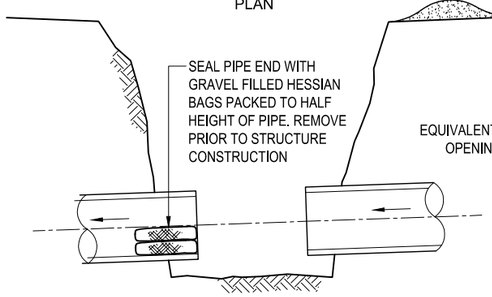
NOTE: INSTALL 1.5m (MIN.) DEEP 'RETURNS' AT 20m SPACING (MAX.) ON UPSLOPE SIDE OF FENCELINE (5-10m MAX SPACING IF FENCE ALIGNED AT ANGLE TO CONTOUR). EG:

SEDIMENT FENCE DETAILS

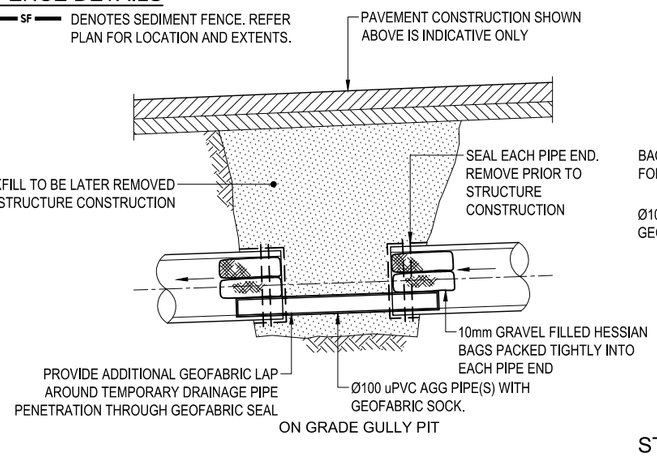
N.T.S. —— / —— SF —— DENOTES SEDIMENT FENCE. REFER PLAN FOR LOCATION AND EXTENTS.



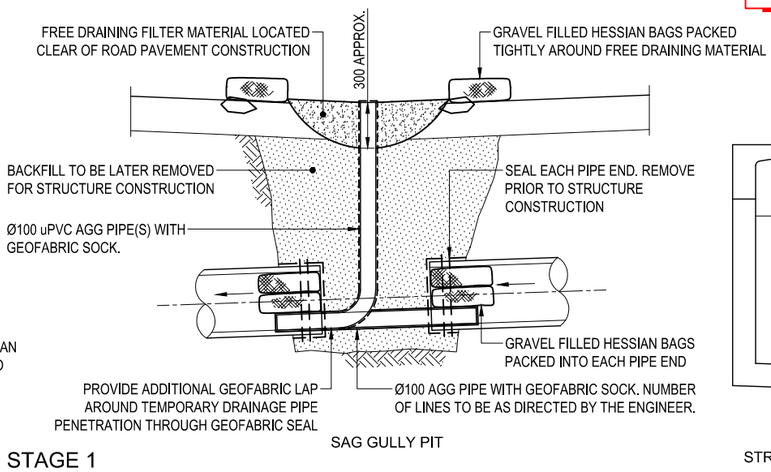
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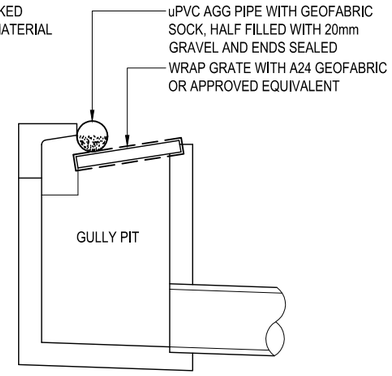
STAGE 1
EXCAVATION AND PIPE INSTALLATION



ON GRADE GULLY PIT



SAG GULLY PIT



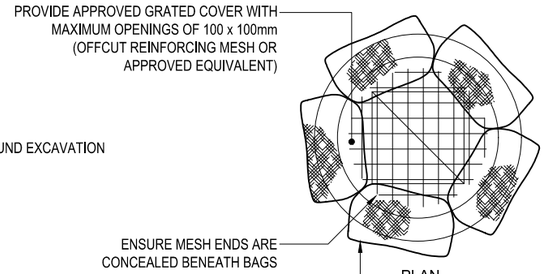
STAGE 2
STRUCTURE COMPLETE

STAGE 1
EXCAVATION, PIPE INSTALLATION AND INTERIM BACKFILLING

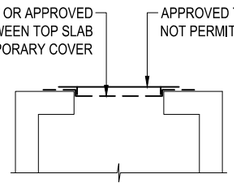
ROADWAY GULLY PIT

DSP DENOTES DRAINAGE STRUCTURE PROTECTION. REFER PLAN FOR LOCATION & EXTENTS.

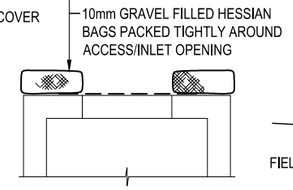
N.T.S.



PLAN

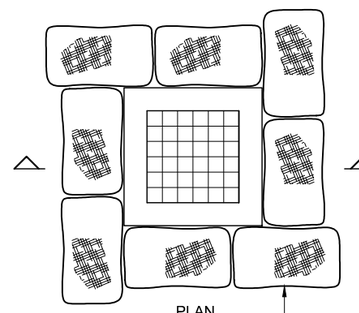


ACCESS CHAMBER



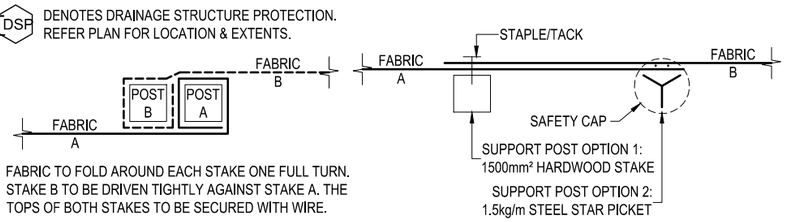
INLET STRUCTURE

STAGE 2



PLAN
INLET STRUCTURE

STAGE 3

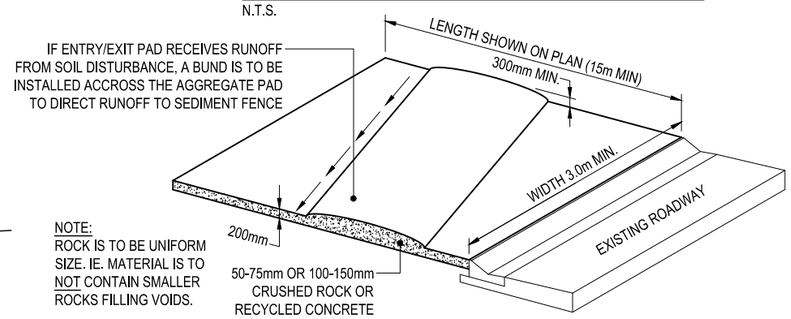


FABRIC TO FOLD AROUND EACH STAKE ONE FULL TURN. STAKE B TO BE DRIVEN TIGHTLY AGAINST STAKE A. THE TOPS OF BOTH STAKES TO BE SECURED WITH WIRE.

METHOD 1 METHOD 2

SEDIMENT FENCE FABRIC JOINING DETAILS

N.T.S.



NOTE: ROCK IS TO BE UNIFORM SIZE. IE. MATERIAL IS TO NOT CONTAIN SMALLER ROCKS FILLING VOIDS.

STABILISED ENTRY/EXIT POINT

N.T.S. OR APPROVED EQUIVALENT

SEP DENOTES STABILISED ENTRY/EXIT POINT, REFER PLAN FOR LOCATIONS.

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OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: SEDIMENT AND EROSION CONTROL DETAILS

SCALE:

PROJECT NO. OSK6521

DWG NO. P052

ISSUE B

APPENDIX

G

OSKA Consulting Group, Response to Healthy Waters Code (Ref: OSK6521-0004)

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

Note: In accordance with Section 2.1 of City Plan, an assessment against State interest - Water quality (policies 4 and 5) of the State Planning Policy 2017 is required as the Healthy water development code does not fully integrate this State interest. A response table for policies 4 and 5 have been included below.

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

9.4.5 Healthy waters code

9.4.5.3 Specific benchmarks for assessment

PART B – ASSESSABLE DEVELOPMENT BENCHMARKS

Table 9.4.5-3: Healthy waters code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
Erosion and sediment control			
PO1 Stormwater discharge from a development site achieves the construction phase water quality objectives of **SC6.12 City Plan policy – Land development guidelines**, **Section 4 – Stormwater drainage and water sensitive urban design standards**.	**AO1** No acceptable outcome provided.	**PO** The stormwater discharge from the development extent achieves the construction phase water quality objectives of SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards. Refer to OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera for further details on the proposed treatment system.	
PO2 Erosion, sediment and dust is appropriately managed during the construction phase.	**AO2** The level of risk for soil erosion and sediment pollution to the environment is determined by an erosion hazard assessment, completed by a suitably-qualified person in accordance with the criteria in **Table 9.4.5-4: Erosion hazard assessment**. Where the erosion hazard assessment has a risk score of: (a) less than or equal to 10: A deemed to comply report is prepared by a suitably qualified person for Council approval, including conceptual location and	**AO** An erosion hazard assessment was completed for the development in accordance with Table 9.4.5-4 and the proposed development totalled a risk score of 13. A sediment and erosion control plan is included in OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera. A detailed sediment and erosion plan will be required as part of the detailed design phase to ensure the plan addresses devices and management measures to control erosion and sediment for the pre-construction, construction and post-construction phases of the development, in accordance with the Best Practice	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets **either** the performance outcome or overall outcome	Internal use
	design drawings of each treatment measure in plan and section views, in accordance with the *Best Practice Erosion and Sediment Control: International Erosion Control Association, (IECA) 2008, Australasia Chapter 2008.* (b) greater than 10 or developments involving multiple stages of disturbance or more than 1.25 ha of land: (i) For material change of use or reconfiguring a lot, a conceptual erosion and sediment control plan (ESCP) is prepared by a suitably-qualified person for Council approval in accordance with **SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards**, and the *Best Practice Erosion and Sediment Control: International Erosion Control Association (IECA) 2008, Australasia Chapter 2008*.	Erosion and Sediment Control: International Erosion Control Association, (IECA) 2008.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
	(ii) For operational work, a detailed ESCP is prepared by a suitably-qualified person in accordance with **SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards**, and *Best Practice Erosion and Sediment Control: International Erosion Control Association (IECA) 2008, Australasia Chapter 2008*. The ESCP is to detail appropriate treatment measures for the construction phase of development, demonstrating how the minimum design objectives in **Table 9.4.5-5: Stormwater design objectives** are achieved, including: (a) measures to ensure the release of sediment-laden stormwater for the nominated design storm are minimised when the design storm is exceeded; (b) detailed design, installation, construction, monitoring and maintenance requirements of all approved proprietary products in accordance with local conditions and manufacturer's recommendations; and (c) details of how the ESCP aligns with the approved development staging plan.		
Stormwater quality			
PO3	**AO3.1** For post developed sites, the following minimum pollutant reduction targets are	**AO**	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Development appropriately manages stormwater quality to: (a) protect natural ecosystems; (b) protect water quality; (c) reduce runoff and peak flows; and (d) meet the water quality objectives and environmental values for Queensland waters. **Note: Water quality objectives and environmental values for Queensland waters are contained within *Schedule 1* of the *Environmental Protection (Water) Policy 2009*. Water quality objectives are locally specific and vary between and within river catchments.** **Note: A stormwater quality management plan prepared by a suitably qualified person in accordance with SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards, is Council's preferred method for addressing this performance outcome.**	achieved: (a) Gross pollutants (>5mm) – 90%; (b) Total Suspended Solids (TSS) – 80%, (c) Total Phosphorus (TP) – 60%; and (d) Total Nitrogen (TN) – 45%.	A Conceptual Stormwater Management Plan (CSWMP) has been prepared for the proposed Residential Subdivision situated at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera. The CSWMP details the proposed treatment measures to be implemented to ensure compliance with SC6.12 City Plan policy – Land development guidelines. Refer to the OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera for further information.	
	AO3.2 For development on land less than 1.25ha, a deemed to comply solution for stormwater quality is achieved in accordance with **Table 9.4.5-6: Stormwater quality deemed to comply solutions**.	**N/A**	
	AO3.3 For development on land greater than 1.25ha, a stormwater quality management plan is to be prepared by a suitably qualified person in accordance with **SC6.12 City Plan policy – Land development guidelines**, **Section 4 – Stormwater drainage and water sensitive urban design standards**, is required.	**AO** A Conceptual Stormwater Management Plan (CSWMP) has been prepared for the proposed Residential Subdivision situated at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera. The CSWMP details the proposed treatment measures to be implemented to ensure compliance with SC6.12 City Plan policy – Land development guidelines. Refer to the OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera for further information.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets **either** the performance outcome or overall outcome	Internal use
Waterway stability			
PO4 In-stream erosion, downstream of urban development is prevented by controlling the rate (or magnitude) and duration of sediment transporting flows.	**AO4** Post-development peak 0.632 Annual Exceedance Probability (AEP) event discharge within receiving waterway is limited to pre-development peak 0.632 AEP event discharge and is in accordance with **SC6.12 City Plan policy – Land development guidelines**, **Section 4 – Stormwater drainage and water sensitive urban design standards.**	**AO** The development proposes detention basins to ensure post development flow rates are mitigated to pre-development rates for the 63.2% AEP event in accordance with SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards. Refer to the OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera for further details.	
Stormwater quantity control			
PO5 Stormwater quantity management outcomes demonstrate no adverse impact on stormwater flooding or the drainage of properties external to the subject site.	**AO5** The following is achieved external to the development site: (a) no increase in peak flood flow rate from the development site for all events up to and including the 1% AEP; (b) no increase in peak flood velocities from the development site for all events up to and including the 1% AEP; (c) no increase in peak flood level from the development site for all events up to and including the 1% AEP; and (d) stormwater outfalls or discharge is located to avoid conflict with existing usage of downstream land or impacts on existing watercourse or drainage.	**AO** The development proposes detention basins to ensure post development flow rates are mitigated to pre-development rates and that there is no increased runoff on downstream properties in accordance with SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards. Refer to the OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera for further details.	
Lawful point of discharge			

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
PO6 Development ensures the stormwater systems are designed to not cause actionable nuisance that would adversely affect adjoining (upstream or downstream) properties.	**AO6** A lawful point of discharge must be identified and demonstrated that all discharge point/s from the development are in accordance with **SC6.12 City Plan policy – Land development guidelines**, **Section 4 – Stormwater drainage and water sensitive urban design standards**.	**AO** The development proposed to discharge all flows to the existing waterway within the site which is a Lawful Point of Discharge in accordance with SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards. Refer to the OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera for further details.	
Overland flow paths			
PO7 Development must not obstruct free open surface flow of stormwater through a site.	**AO7** Overland flowing stormwater is allowed free open surface flow between the street and any waterway at the rear or sides of a property, in accordance with the provisions of the *Building Code of Australia.*	**N/A**	
Whole of life costs			
PO8 Stormwater infrastructure is designed and constructed to: (a) remain fit for purpose for the life of the development and maintains full functionality in the design flood event; (b) be cost effective to maintain; and (c) ensure no structural damage to existing stormwater infrastructure.	**AO8** No acceptable outcome provided.	**PO** The proposed stormwater infrastructure for the development has been designed to be fit for purpose for the development and is a cost effective solution. A Maintenance Management Plan will be required during the detailed design phase to ensure sufficient maintenance of the treatment system throughout the life of the development. Any damages that occur to the existing Council infrastructure during construction will be rectified. Refer to the OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
		Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera for further details.	
Landscape integration			
PO9 Stormwater treatment devices and stormwater infrastructure are designed to: (a) integrate with the urban design and landscape outcomes of the development; (b) complement natural environments, wetlands and watercourses; (c) protect environmental values; (d) enhance visual amenity; and (e) incorporate CPTED principles in accordance with **SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards**.	**AO9.1** Where stormwater treatment devices and stormwater infrastructure are integrated into public open space, a Statement of Landscape Intent is to be prepared by a suitably qualified person, for approval by Council. The plan is to demonstrate that the operation of stormwater infrastructure does not compromise the function of any co-located uses and reflect the design principles within **SC6.12 City Plan policy – Land development guidelines**, **Section 4 – Stormwater drainage and water sensitive urban design standards.** **Note: A Statement of landscape intent is to be prepared in accordance with SC6.13 City Plan policy – Landscape work.**	**PO** The proposed stormwater treatment devices and stormwater infrastructure have been designed to be incorporated within the landscape outcomes, enhance visual amenity and to protect the environment in accordance with SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards. Refer to the OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera for further details.	
	AO9.2 Stormwater treatment devices are located offline to any upstream catchment. **Note: This provision relates to the integration of stormwater treatment devices and stormwater infrastructure into the landscape. Development identified on the Environmental significance – wetlands and watercourse overlay map will still require assessment against the Environmental significance overlay code.**	**AO** The development has an existing waterway through the site which conveys external/upstream catchment flows however all proposed treatment devices will be located offline to the existing waterway. Refer to the OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera for further details.	
	AO9.3 All stormwater outlets that are located adjacent to watercourses, creeks and drainage paths are aligned at a maximum	**AO**	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
	of 45 degrees to the downstream direction of flow, and energy dissipation measures installed to minimise scour.	All stormwater outlets will be constructed to minimise scour on the receiving waterway. Further details will be provided at the detail design phase. Refer to the OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera for further information on the location of the stormwater outlets.	
Public safety			
PO10 Stormwater treatment devices and stormwater infrastructure minimise impacts on public health and safety.	**AO10** All stormwater quantity control measures are designed in accordance with **SC6.12 City Plan policy – Land development guidelines**, **Section 4 – Stormwater drainage and water sensitive urban design standards**.	**AO** The development proposes detention basins to ensure post development flow rates are mitigated to pre-development rates and that there is no increased runoff on downstream properties in accordance with SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards. Refer to the OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera for further details.	
Maintenance access			
PO11 Maintenance access is provided for all stormwater management systems and considers:	**AO11.1** All weather vehicle access is to be provided to inlet zones of the stormwater treatment systems in accordance with **Table 9.4.5-7: Maintenance access requirements (slope).**	**AO**	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets **either** the performance outcome or overall outcome	Internal use
(a) the type of vehicle or machinery needed to service particular assets; and (b) the need to ensure a safe working environment for maintenance personnel and the public.		A Conceptual Stormwater Management Plan (CSWMP) has been prepared for the proposed Residential Subdivision situated at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera. The CSWMP details the proposed treatment measures to be implemented to ensure compliance with SC6.12 City Plan policy – Land development guidelines. Refer to the OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera for further information.	
	AO11.2 Maintenance access is to be provided around the perimeter of all stormwater treatment systems in accordance with **Table 9.4.5-8: Maintenance access requirements (size).**	**AO** Maintenance access has been provided around the perimeter of all proposed basins in accordance with Table 9.4.5-8: Maintenance access requirements (size). Refer to the OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera for further information.	
	AO11.3 A maintenance buffer is provided around the perimeter of all stormwater treatment devices and adjoining private property equal to: (a) 1m in width; or (b) the width of a perimeter maintenance access, as delivered in AO11.2, plus 0.5m. The maintenance buffer is measured from the adjacent allotment boundary to the top	**N/A**	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
	of batter around the treatment measure. The maximum slope on the maintenance buffer is 1 in 10.		
Fauna movement			
PO12 Stormwater conveyance structures and channels are designed to ensure the safe movement of native fauna and provide for terrestrial and aquatic passage.	**AO12.1** Stormwater drainage structures and channels minimise impacts on aquatic fauna and associated habitats and provide opportunities for beneficial habitat uses of structures in accordance with the *Department of Primary Industries and Fisheries – Fisheries guidelines for Fish-friendly structures (2006).*	**N/A**	
	AO12.2 Stormwater drainage structures allow for the safe movement of terrestrial fauna in accordance with: (a) the Queensland Government Fauna Sensitive Road Design Manual Volume 2: Preferred Practices; and (b) the Queensland Government Koala-Sensitive Design Guidelines.	**N/A**	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Wastewater management			
PO13 Development does not discharge wastewater to receiving waters or areas external to the site unless demonstrated to be the best-practice environmental management for that site and takes into consideration: (a) the applicable water quality objectives for the receiving waters; and (b) the potential adverse impact on ecosystem health of receiving waters.	**AO13** Where the development involves the discharge of wastewater, a Wastewater Management Plan (WWMP) is prepared, demonstrating compliance with the performance outcome, by a suitably qualified person and submitted to the Council, detailing all of the following: (a) wastewater type; (b) climatic conditions; (c) water quality objectives; (d) best-practice environmental management; (e) waste management hierarchy; and (f) the WWMP provides for the management of wastewater in accordance with a wastewater management hierarchy that: (i) avoids wastewater discharge to watercourses; or (ii) if wastewater discharge to the environment cannot practicably be avoided wastewater discharge to watercourses is minimised through re-use, recycling, recovery and treatment for disposal to sewer, surface water and groundwater.	**N/A** The proposed development does not propose to discharge wastewater into receiving waters. All wastewater will be discharged appropriately into Council's sewerage network.	
Dewatering management			
PO14 Dewatering occurs in accordance with an	**AO14** No acceptable outcome provided.	**N/A**	

approved Dewatering management plan.			
Woongoolba flood mitigation catchment area			
PO15 In the Woongoolba flood mitigation catchment area, shown on the **Water catchments and dual supply system area overlay map**, peak outflow and its timing for Q2, Q5 and Q10 for rainfall events up to 72 hours does not change as a result of development.	**AO15** No acceptable outcome provided.	**N/A**	

State Planning Policy July 2017

Policies	Demonstrate how the proposal meets the policy?	Internal use
State interest – water quality		
ASSESSMENT BENCHMARK 4 (POLICY 4): At the construction phase, development achieves the applicable stormwater management design objectives in table A (appendix 2) of the State Planning Policy.	A sediment and erosion control plan is included in OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera. The plan addresses devices and management measures to control erosion and sediment for the pre-construction, construction and post-construction phases of the development, in accordance with the Best Practice Erosion and Sediment Control: International Erosion Control Association, (IECA) 2008 to ensure compliance with Assessment Benchmark 4 (Policy 4) of the State Planning Policy.	
ASSESSMENT BENCHMARK 5 (POLICY 5): (5) At the post-construction phase, development: a) achieves the applicable stormwater management design objectives on-site, as identified in table B (appendix 2) of the State Planning Policy; or b) achieves an alternative locally appropriate solution off-site that achieves an equivalent or improved water quality outcome to the relevant stormwater management design objectives in table B (appendix 2) of the State Planning Policy.	A Conceptual Stormwater Management Plan (CSWMP) has been prepared for the Proposed Residential Subdivision situated at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera. The CSWMP details the proposed treatment measures to be implemented to ensure compliance with Assessment Benchmark (Policy 5) of the State Planning Policy. Refer to OSKA Consulting Group, Conceptual Stormwater Management Plan (Ref: OSK6521-0003) prepared for 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera.	

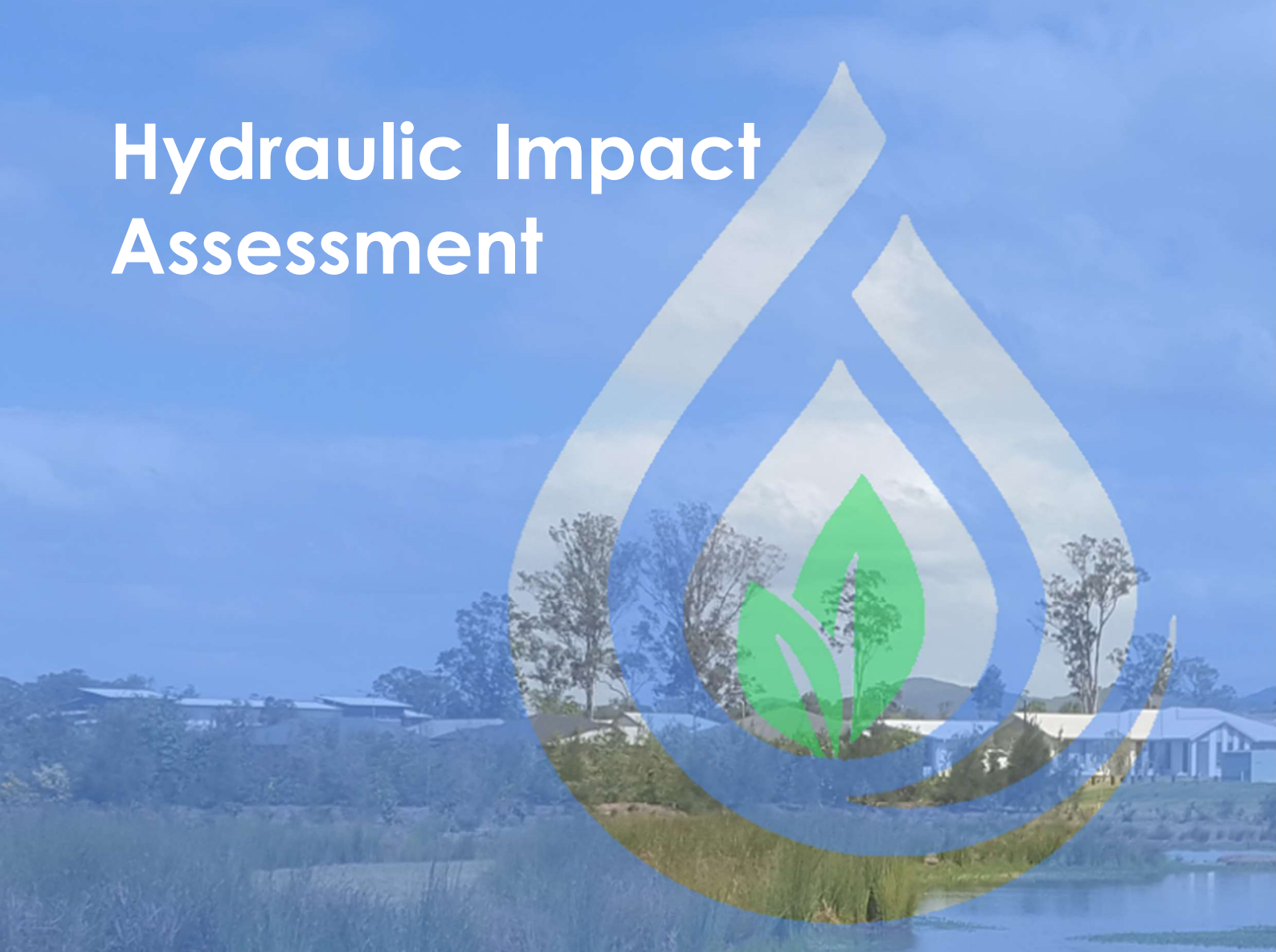
Table 9.4.5-3: Erosion hazard assessment

Controlling factor	Points	Score
Average slope of the whole site prior to operational works		
Slope less than 2%	0	
More than or equal to 2% but less than 5%	1	
More than or equal to 5% but less than 10%	2	2
More than or equal to 10% but less than 15%	4	
More than or equal to 15%	5	
Soil type (to be disturbed)		
Gravels and sandy soils	1	
Sandy loam	2	2
Clays on flood plains	3	
Shallow soils on slopes	4	
Clays on slopes greater than 5%/imported fill or untested fill	5	
Anticipated duration of site disturbance		
Duration less than 2 weeks	0	
More than 2 weeks but less than 3 months	2	
More than 3 months but less than 6 months	4	
More than 6 months	5	5
Anticipated erosive rainfall risk during site disturbance		
Low (monthly average rainfall less than 45 mm)	0	
Moderate (monthly average rainfall 46 - 100 mm)	1	
High (monthly average rainfall 101 - 225 mm)	2	2
Very high (monthly average rainfall 226 - 1500 mm)	4	
Extreme (monthly average rainfall more than 1500 mm)	5	

Off-site sediment control (down-slope of the soil disturbance)		
Score 1 point if there is no purpose-built sediment trap (e.g. sediment basin, gross pollutant trap or purpose-built wetland).	1	0
Run-off entering the site		
Score 1 point if stormwater run-off is not diverted from entering the site or away from soil disturbance.	1	0
Extent of site disturbance		
Score 2 points if the building works requires reshaping of the ground surface.	2	2
Total Score **Note: High erosion risk - if score 11 or greater, or five for any factor.**		13

This Erosion Hazard Assessment form is adapted from the *Best Practice Erosion and Sediment Control, International Erosion Control Association (Australasia), IECA 2008 Appendix H - Building Sites, the Brisbane City Council Erosion Hazard Assessment Form* and *Attachment 2 to the QDC Draft Part 16 Erosion and Sediment Control*.

Hydraulic Impact Assessment



41-53 Courtney Drive, Upper Coomera

Norfolk Estates Pty Ltd

December 2024
BC-23170

BIOME
WATER AND ENVIRONMENTAL CONSULTING

Document Control

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1 Introduction

This Hydraulic Impact Assessment has been prepared on behalf of Norfolk Estates Pty Ltd and presents a hydraulic assessment of flooding at 41-53 Courtney Drive, Upper Coomera (Subject Site).

This report has been prepared to accompany a development application for a residential subdivision in order to:

- analyse any change to flood characteristics external to the site as a result of the proposed works; and
- ensure that the development does not result in an increase in peak flood levels of velocities external to the site that would cause adverse offsite impacts.

1.1 Site Location

The location of the site is in Upper Coomera and consists of five (5) parcels of land with frontage to Courtney Drive, Reserve Road, and Baileys Mountain Road. Yaun Creek traverses the site from west to east discharging toward the roundabout at the intersection of Reserve Road and Baileys Mountain Road. The location is displayed on Figure 1.1.

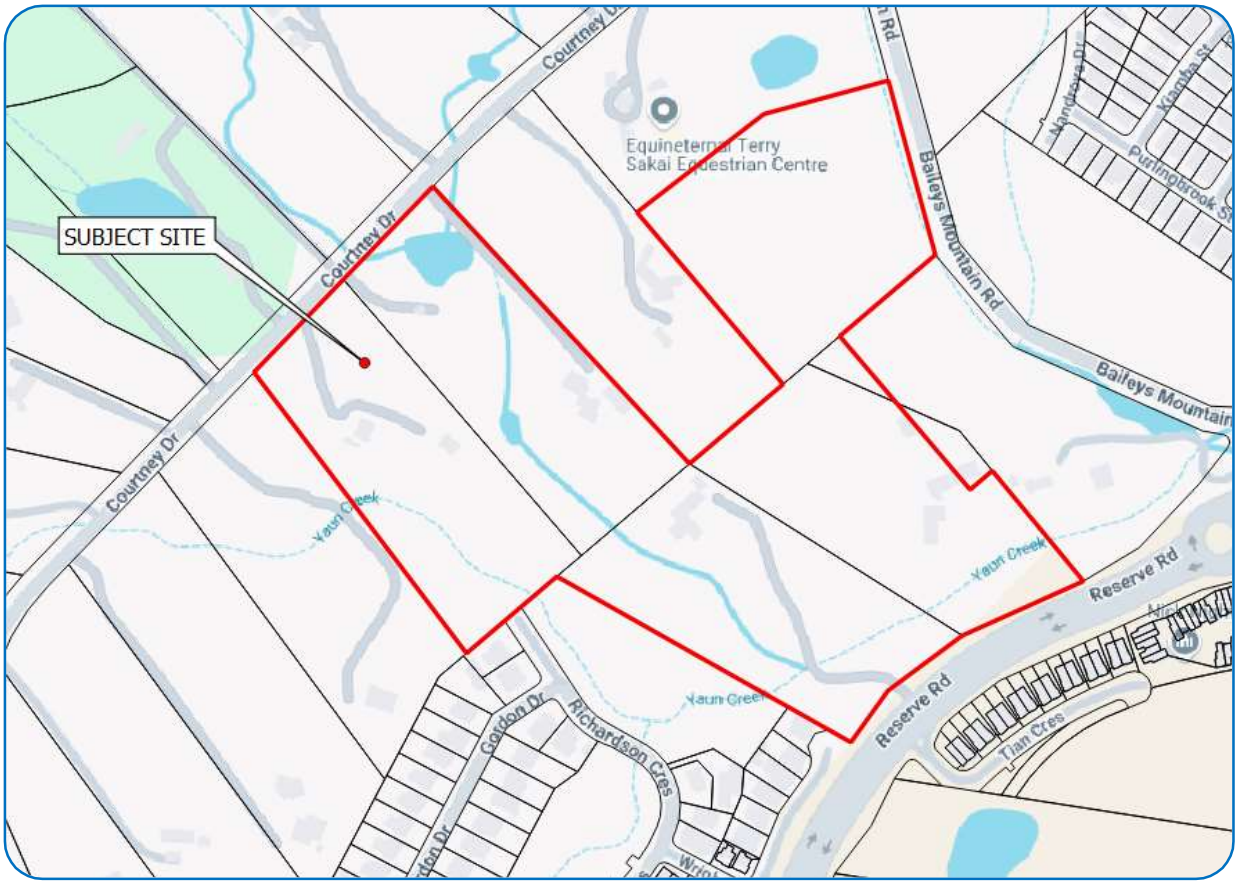


Figure 1.1 Site Location

2 Hydrological Assessment

WBNM hydrological software has been utilised to generate hydrographs to represent the contributing catchments to Yaun Creek. *WBNM* is a software package which calculates flood runoff from rainfall hyetographs, utilising sub-catchments and flow routings to estimate flood flows at various points within the catchment.

2.1 Catchment Characteristics

The catchment upstream of the site is some 250 ha in size and extends towards the south-west. The catchment is predominantly dense bushland in the upper reaches with low density residential land in the lower reaches. The site itself is currently rural residential. There are several small towns along the river, however the overall imperviousness is very low. Thirty-five (35) sub-catchments have been digitised based on terrain and landuse, which are summarised below in Table 2.1. Figure 2.1 shows the extent of each sub-catchment.

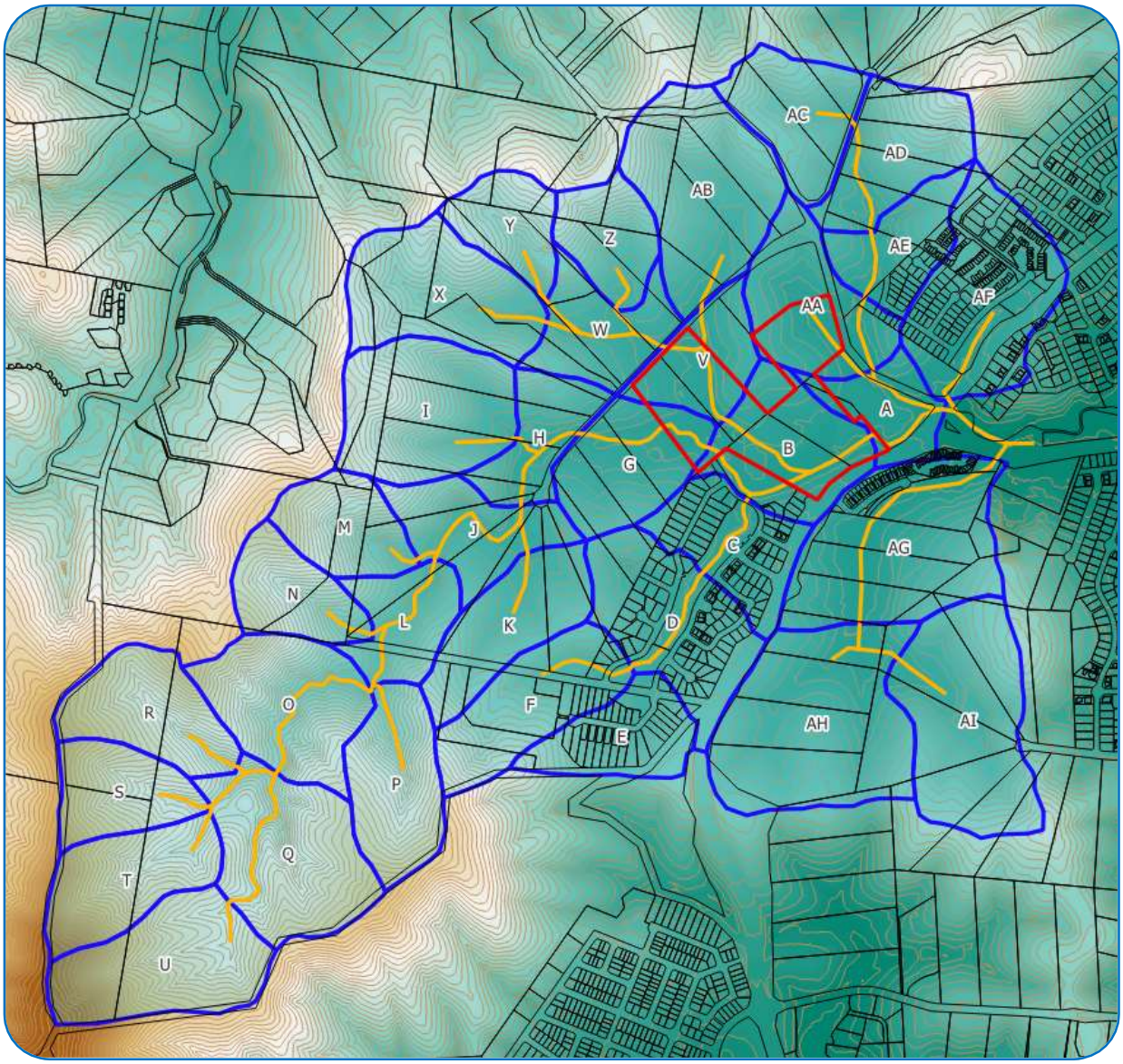


Figure 2.1 Sub-Catchments

Table 2.1 Catchment Parameters

Sub-Catchment Name	Area (ha)	Impervious (%)
A	5.53	23.9
B	10.75	17.3
C	8.51	30.6
D	13.00	21.6
E	7.28	11.1
F	10.37	5.7
G	9.38	65.0
H	6.26	15.5
I	13.68	5.3
J	8.00	15.1
K	9.27	60.0
L	6.46	6.6
M	6.88	3.9
N	6.61	3.3
O	11.99	0.0
P	9.57	0.0
Q	14.05	0.0
R	9.28	3.1
S	7.14	3.7
T	9.46	3.0
U	12.93	1.3
V	6.74	18.4
W	7.59	16.0
X	12.56	3.6
Y	5.75	5.0
Z	6.19	7.1
AA	10.61	27.5
AB	15.19	9.5
AC	8.59	4.5
AD	9.36	12.2
AE	6.77	51.8
AF	14.63	49.0
AG	17.90	29.7
AH	19.80	36.7
AI	16.34	5.0

2.2 Design Rainfall

Rainfall intensity has been determined from Bureau of Meteorology data and applied using AR&R 2019 temporal patterns. Rainfall intensities have been increased by 20% as an allowance for climate change.

2.3 Temporal Patterns

Temporal patterns applied to the rainfall data have been extracted from the Australian Rainfall and Runoff Data Hub for the North East Coast region. Storm durations between 10 minutes and 24 hours have been analysed for each AEP. An ensemble of 10 temporal patterns for each duration has been analysed.

2.4 Design Storm Events

This report has analysed a range of storm events which simulate the rainfall from hypothetical storms based on an Average Exceedance Probability (AEP). Table 2.2 lists each modelled AEP storm event and the corresponding Average Occurrence Interval (ARI) and description.

Table 2.2 Design Storm Events

Annual Exceedance Probability (AEP)	Average Occurrence Interval (ARI)	Storm Description
0.5EY	2 years	Storm rainfall total has a probability of 0.5 exceedances in any one year
0.2EY	5 years	Storm rainfall total has a probability of 0.2 exceedances in any one year
10%	10 years	Storm rainfall total has a 9.5% probability of being exceeded in any one year
5%	20 years	Storm rainfall total has a 4.9% probability of being exceeded in any one year
2%	50 years	Storm rainfall total has a 2% probability of being exceeded in any one year
1%	100 years	Storm rainfall total has a 1% probability of being exceeded in any one year

2.5 Land Uses

The land use within the catchment has been determined in accordance with the planning scheme and aerial photography. The majority of the catchment is comprised of pervious surfaces.

2.6 Infiltration Losses

Infiltration losses in accordance with AR&R data hub values have been utilised (25 mm initial loss and 2.3 mm/hr continuing loss). The median pre-burst rainfall has been subtracted from the initial losses to represent rainfall prior to a design event. Impervious areas have initial and continuing losses of 0 mm and 0 mm/hr respectively.

2.7 Peak Flow Duration Analysis

An analysis of flows through the catchment has been undertaken for each duration, for an ensemble of 10 temporal patterns. Statistical analysis of the peak flows at the site have been used to identify the design storm for each AEP. The selected temporal pattern is the pattern which produces a peak flow closest to the median of all patterns while being above the median value. The selected design storms summarised in Table 2.3.

Table 2.3 Selected Design Storms

Annual Exceedance Probability (AEP)	Storm Duration	Temporal Pattern	Peak Flow (m^3/s)
0.5EY	180 minutes	9	25.74
0.2EY	90 minutes	2	37.25
10%	45 minutes	6	45.32
5%	45 minutes	6	57.52
2%	45 minutes	5	70.07
1%	45 minutes	5	79.72

The peak flow duration analysis for the 1% AEP is provided below in Figure 2.3 as a sample.

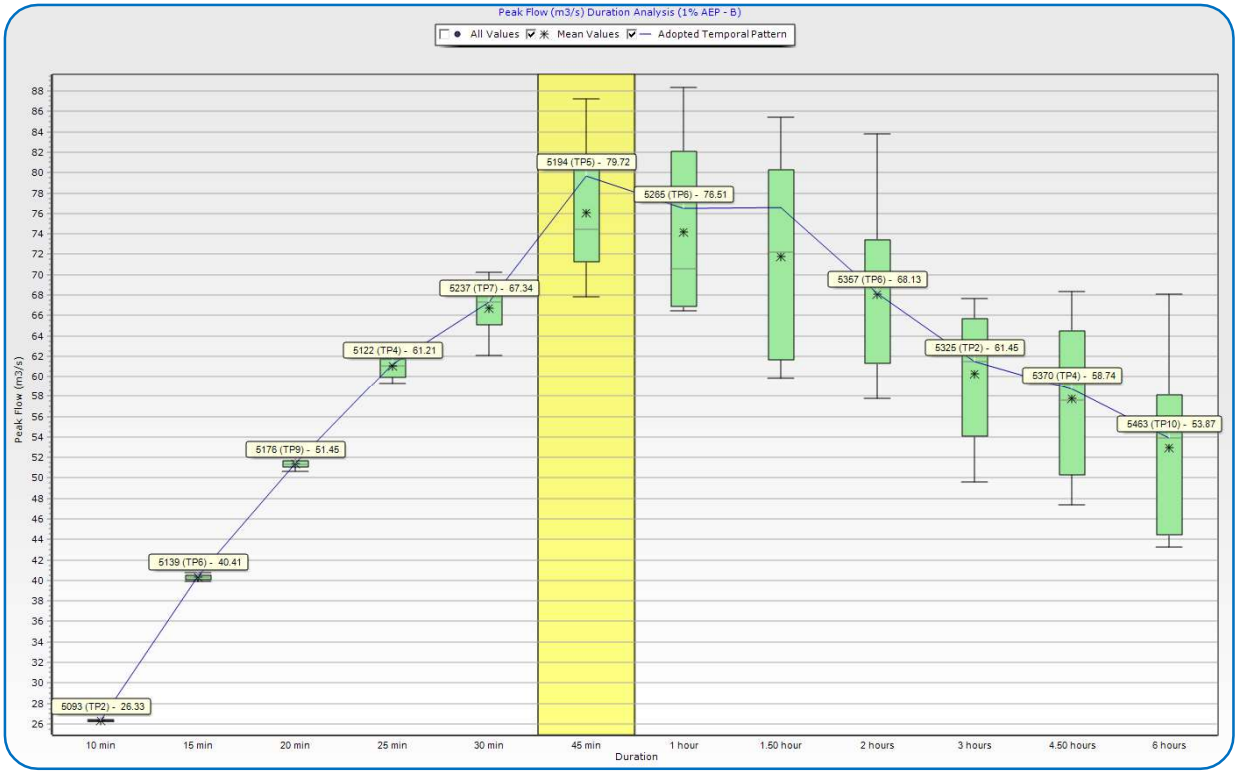


Figure 2.2 1% AEP Peak Flow Duration Analysis

3 Hydraulic Assessment - TUFLOW

The 1D - 2D hydrodynamic flood model *TUFLOW* has been utilised to route the WBNM inflows through the catchment in order to quantify flood characteristics at the site and analyse the proposed bridge.

3.1 Digital Terrain Model

The following digital terrain model (DTM) form the basis of the hydraulic assessment:

- LiDAR data obtained from the DNRM;
- Design surface of the development upstream; and
- Site survey over the site.

To accurately represent this DTM within the *TUFLOW* model, a grid size of 2 m has been set with sub-grid sampling enabled.

3.2 Model Extent

The extent of the *TUFLOW* model has been selected to accurately represent the flooding behaviour within the area of interest. The model extent is illustrated in Figure 3.1 and extends 400 m downstream of the bridge and approximately 1.8 km upstream.

3.3 Downstream Boundary Condition

The downstream end of the model has been set well downstream of the site to eliminate boundary effects from the results.

3.4 Manning's Coefficient

Based on recommendations from; *Chow. V. T, (1959) Open Channel Hydraulics*, *Main Roads Drainage Design Manual (1999),* orthographic photographs, the following Manning Coefficients were applied:

- Concrete/Road: 0.020
- Open water: 0.030
- Grassed areas: 0.050
- Light Vegetation : 0.060
- Dense Vegetation: 0.080

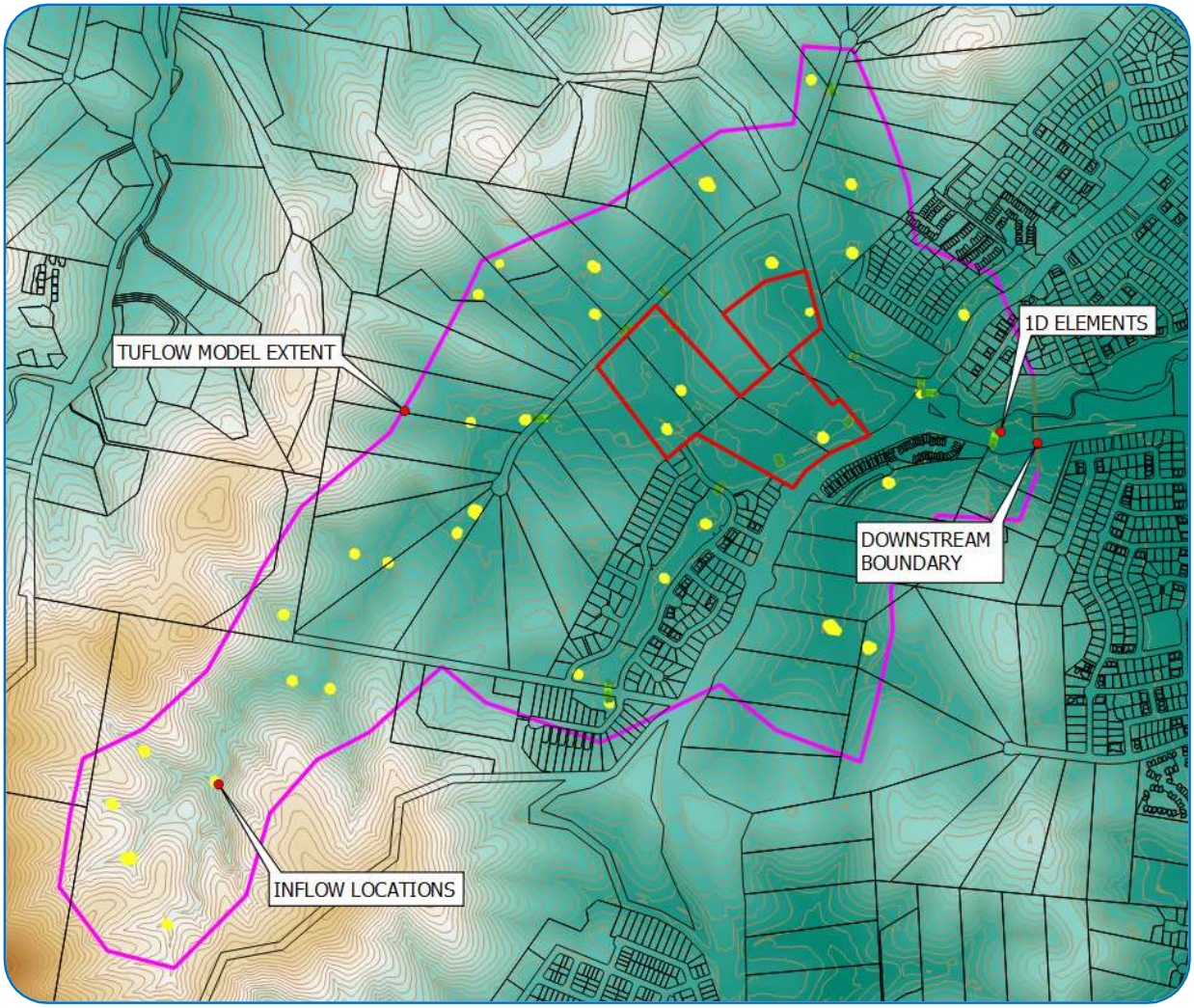


Figure 3.1 TUFLOW Model Layout

4 Modelling Results – Existing Scenario

The flooding behaviour within the catchment is characterised by largely channelised flow within well-defined watercourses. Yaun Creek enters the western side of the site and merges with two smaller flowpaths from the north and south-west. This flow splits around a high-spot in the site and flows into a low-lying flatter area parallel to Reserve Road. Several existing small bunds and pipes control flow through this area before discharging toward the Reserve Road roundabout.

Flood depths within the main channels are up to 3.5 m in the 1% AEP storm event.

The existing scenario depth plots for the 1% AEP, 10% AEP, and 0.5EY events are shown below on Figures 4.1 - 4.3.

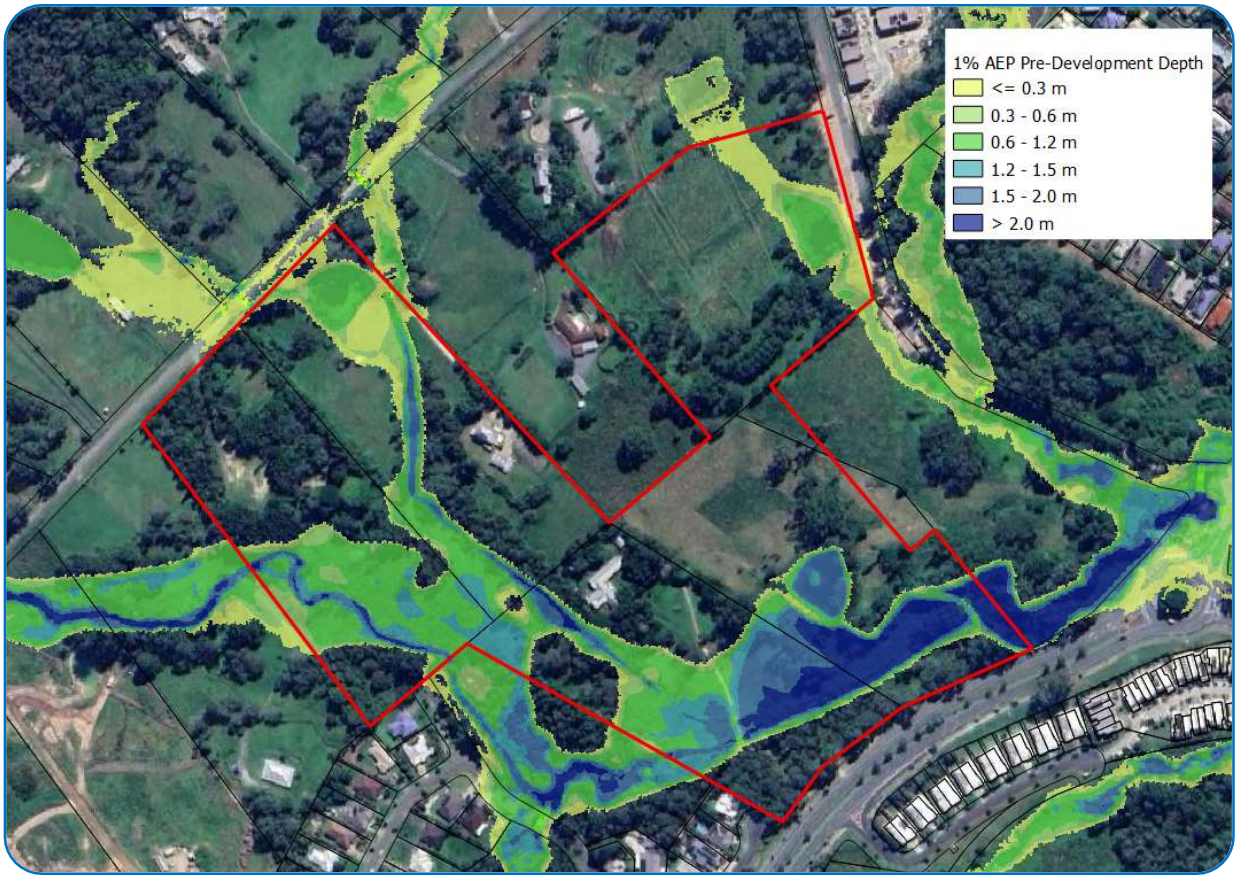


Figure 4.1 1% AEP Existing Flood Depth



Figure 4.2 10% AEP Existing Flood Depth



Figure 4.3 0.5EY Existing Flood Depth

Peak velocity within the site is up to 2.5 m/s in the steeper sections of the watercourse as shown on Figure 4.4.



Figure 4.4 1% AEP Existing Velocity

5 Proposed Works

The proposed development includes the construction of 149 residential allotments located generally between the existing flowpaths. Earthworks adjacent to the waterways have been designed to ensure 1% AEP immunity to lots including a provision for 300 mm freeboard. There is an area of compensatory cut in the lower portion of the site to offset the filling of a dam to create a recreational park area.

The development layout by Saunders Havill Group is presented in Figure 5.1 and the civil works associated with the proposal prepared by OSKA are detailed on Figure 5.2 below.

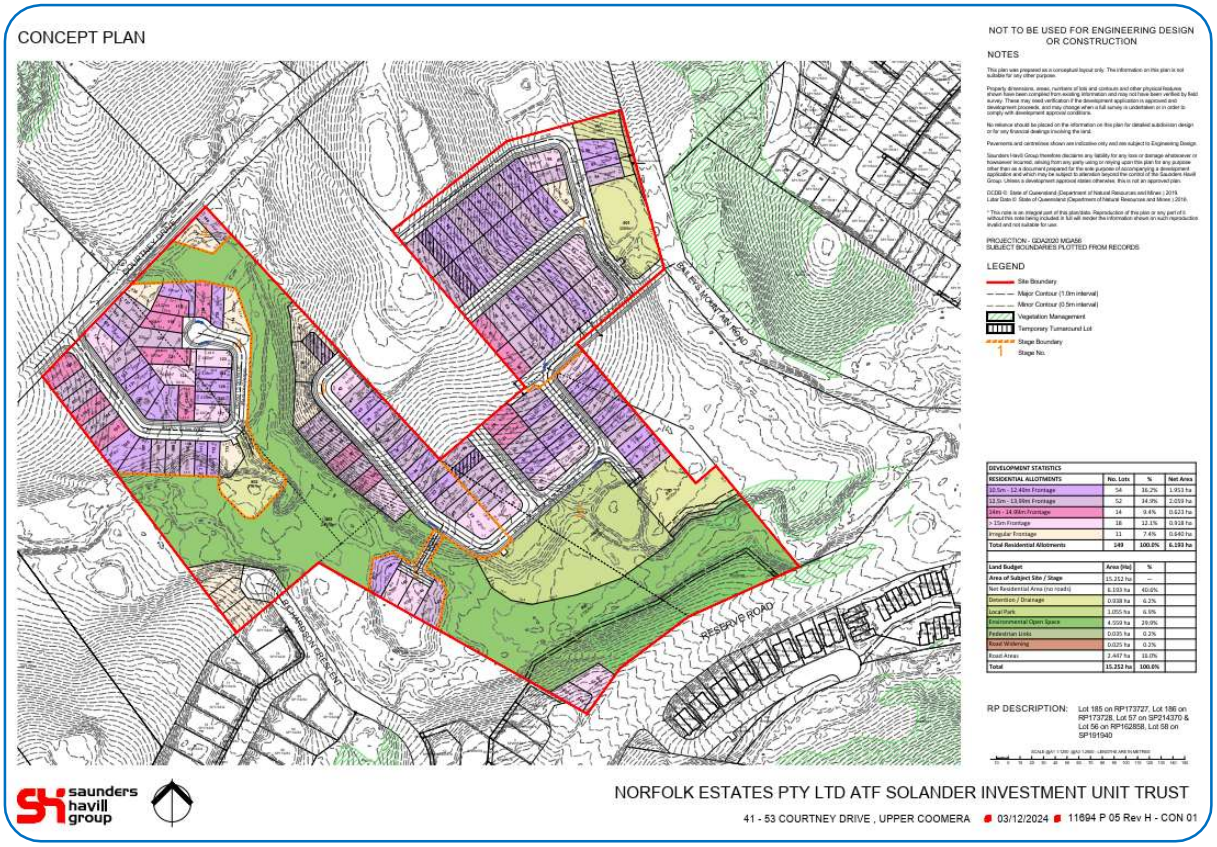


Figure 5.1 Proposed Layout



Figure 5.2 Proposed Civil Works

6 Modelling Results – Post-Development Scenario

The post-development model scenario incorporates the proposed works as outlined on the OSKA civil drawings. The flooding behaviour is largely similar to the pre-development scenario, and the proposed works provide 1% AEP flood immunity to all lots including 300 mm freeboard. The diversion channel in the north-east of the site conveys flow around the eastern boundary to a new culvert under the main access road. The access road to the lots in the south of the site provides 1% AEP immune access with peak flow during this event conveyed via 5 x 3,000 x 2,100 RCBC.

The post-development scenario depth plots for the 1% AEP, 10% AEP, and 0.5EY events are shown below on Figures 6.1 - 6.3.

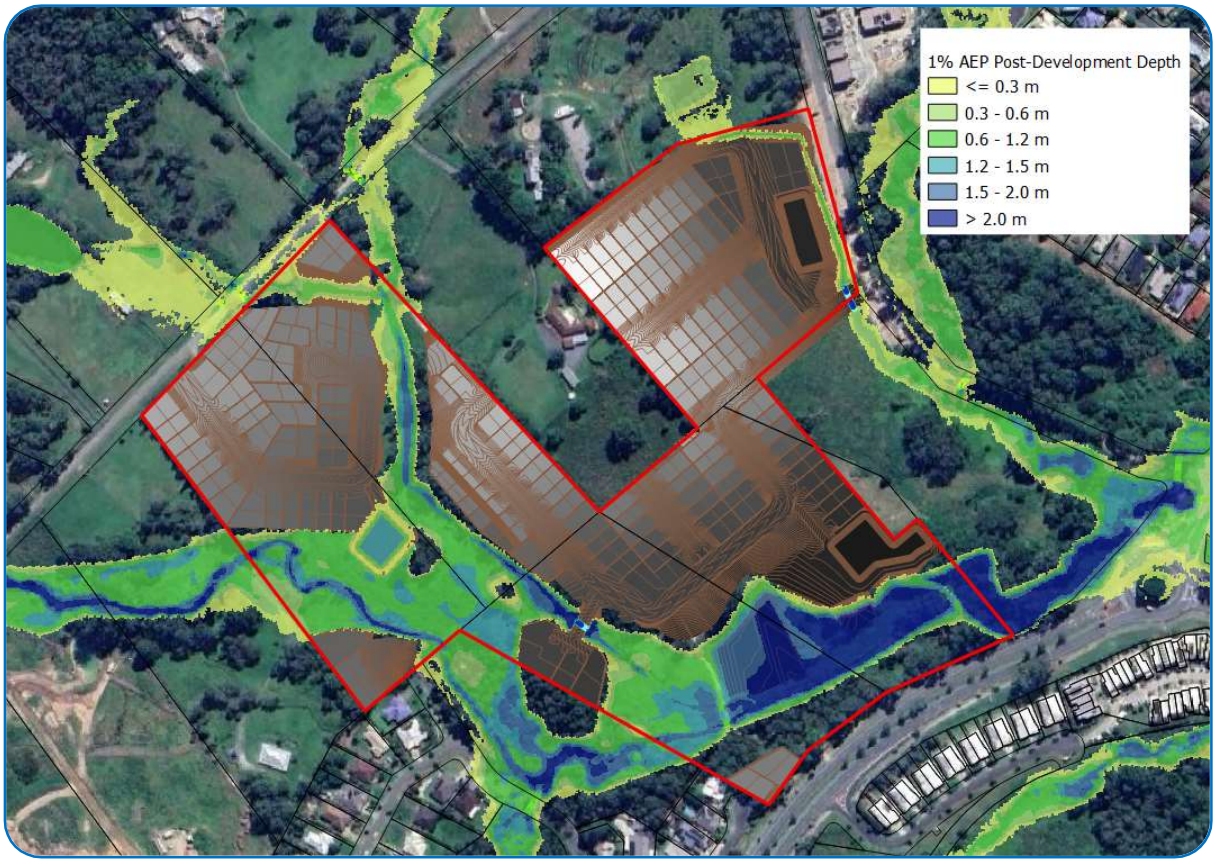


Figure 6.1 1% AEP Post-Development Flood Depth

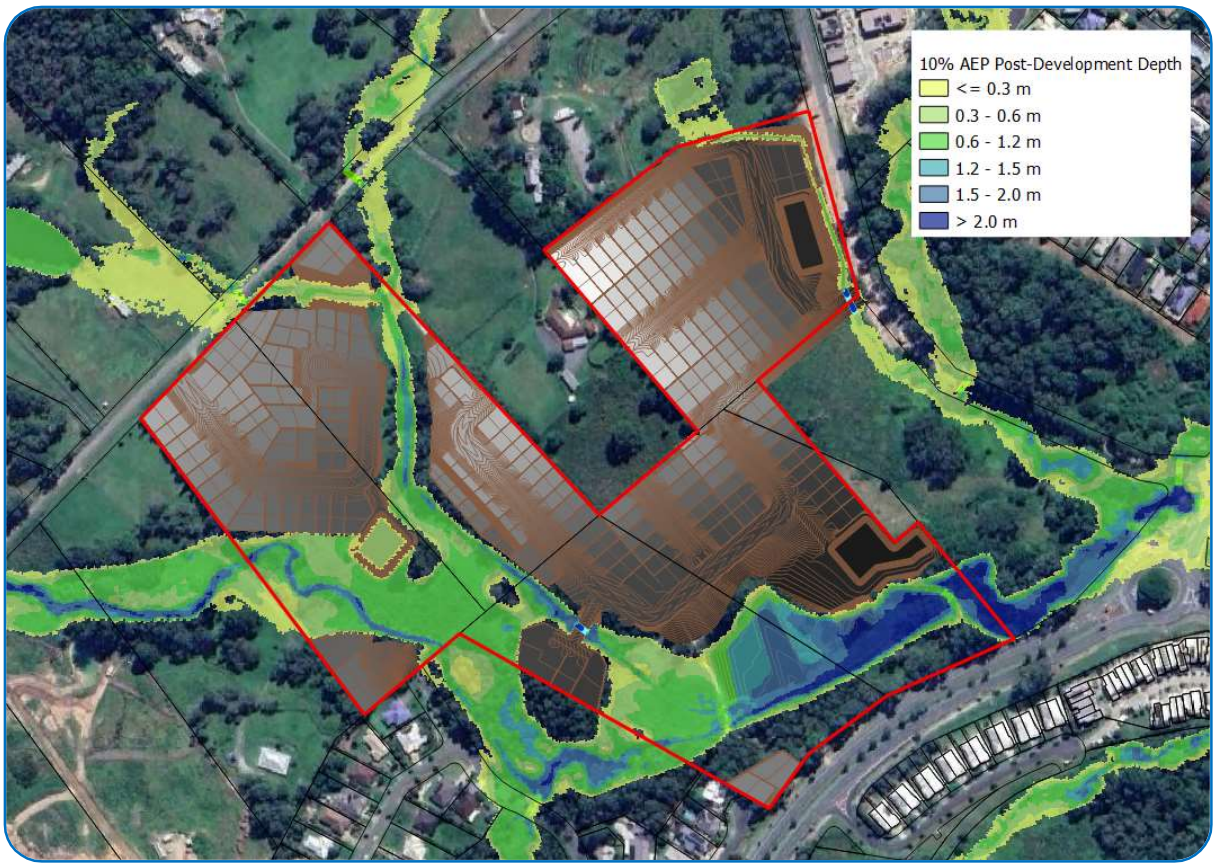


Figure 6.2 10% AEP Post-Development Flood Depth

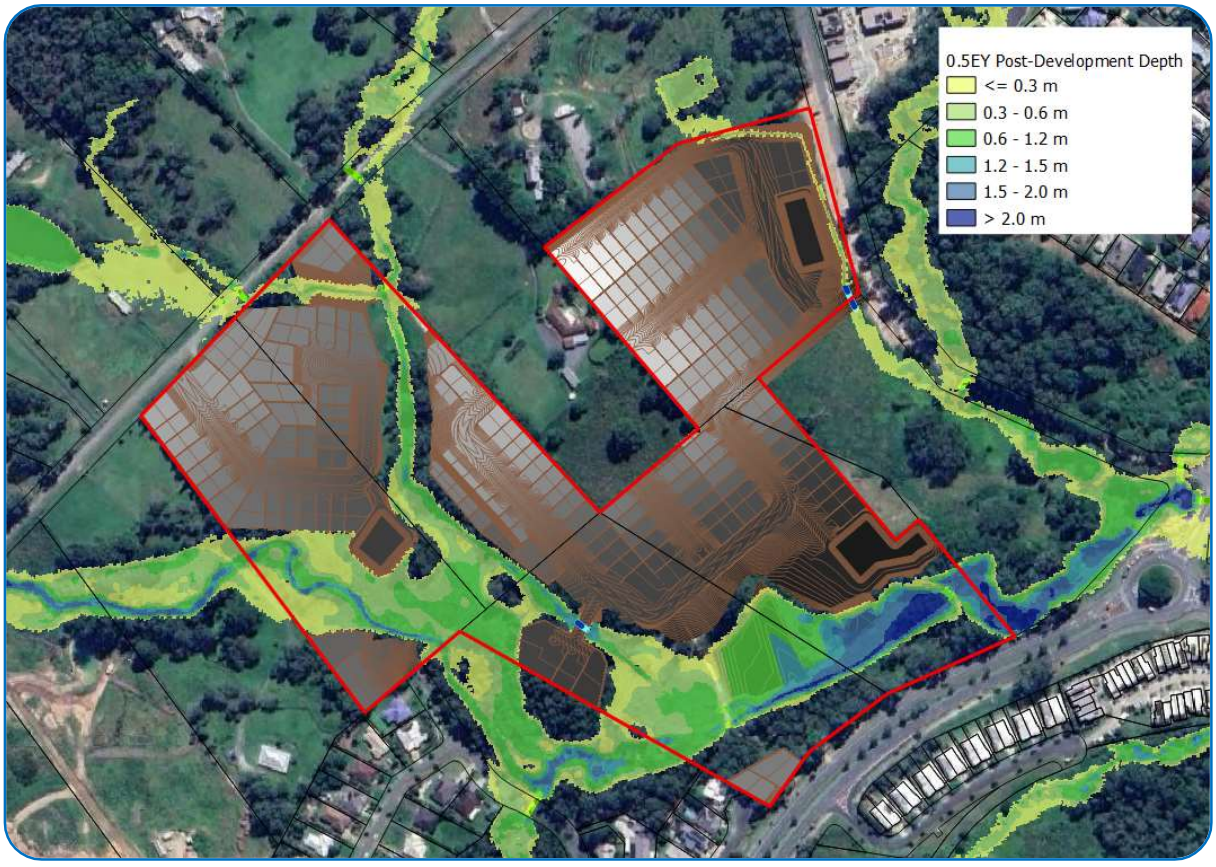


Figure 6.3 0.5EY Post-Development Flood Depth

6.1 Design Velocity

The design scenario velocity for the 1% AEP is presented below in Figure 6.4. There are areas of high velocity (>2 m/s) within the constructed channels which will require adequate scour protection during the detailed design phase.

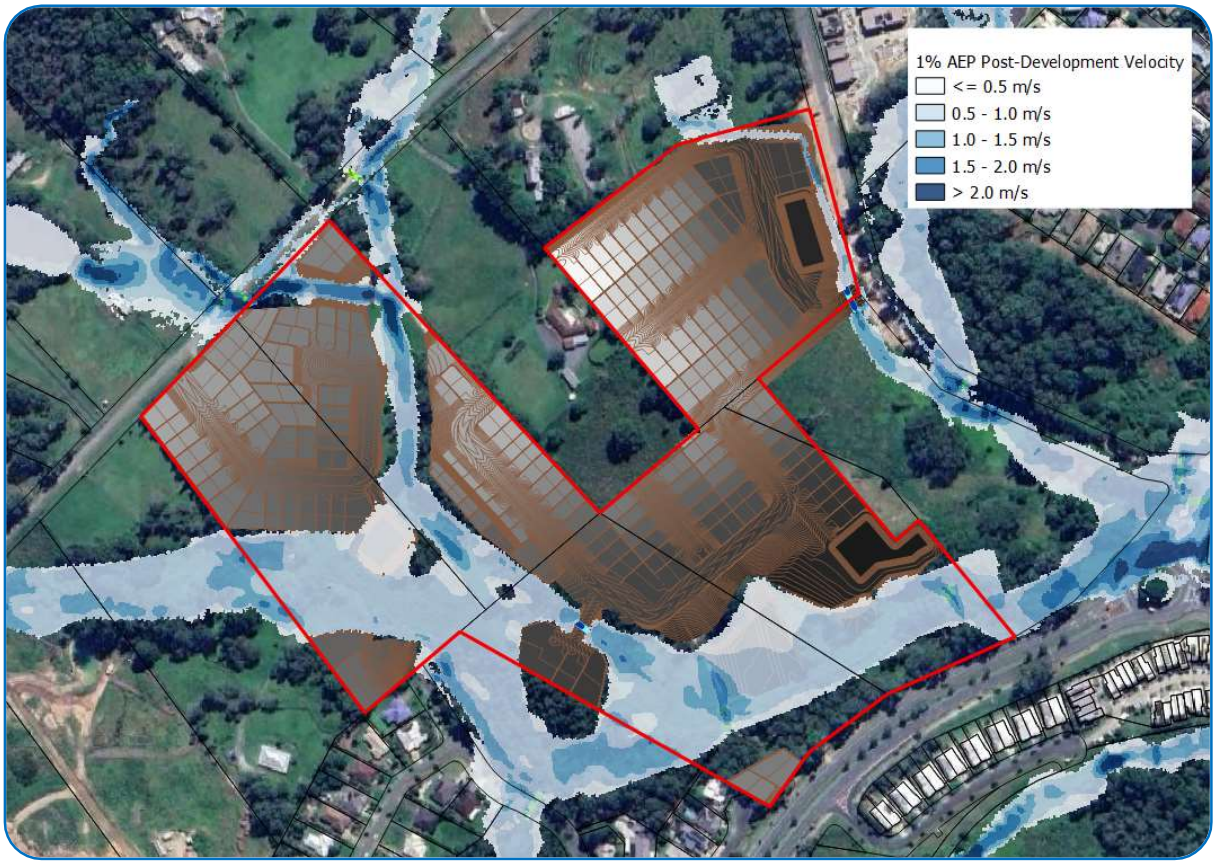


Figure 6.4 1% AEP Design Velocity

7 Impact Assessment

To quantify the impact of the proposed development on peak flood levels, a spatial analysis of the pre and post-development results has been prepared.

The results of the modelling indicate that the proposed works will not significantly impact on the peak water levels external to the subject site (Figures 7.1 – 7.3). This is largely due to the design of the earthworks which have limited within existing flood extents and as a result of the compensatory works undertaken in the lower reaches.

An isolated area of increased flood depth is noted over a small area of the neighbouring lot to the west. It is understood that the applicant has received permission from the landowner for this increase.

Figure 7.4 also indicates that there are no impacts to peak velocity in the 1% AEP.

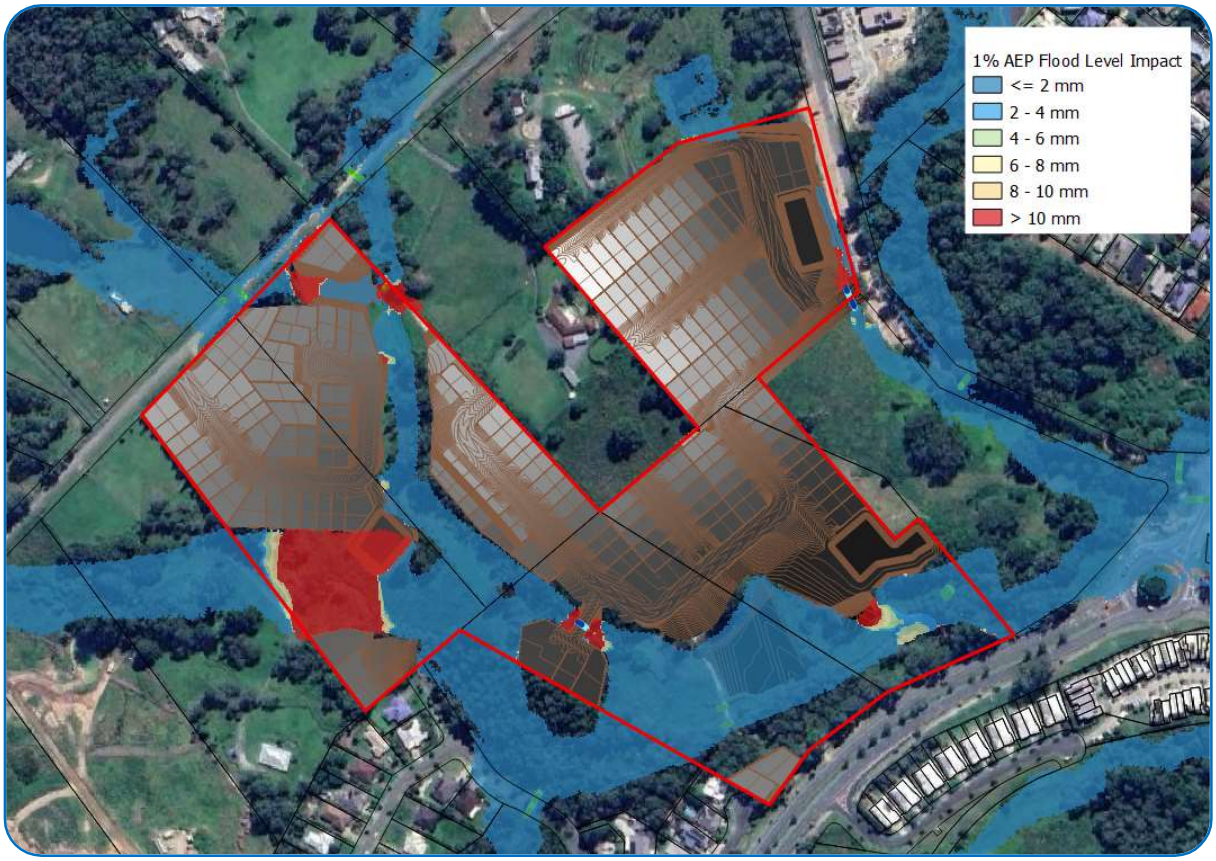


Figure 7.1 1% AEP Flood Level Impact

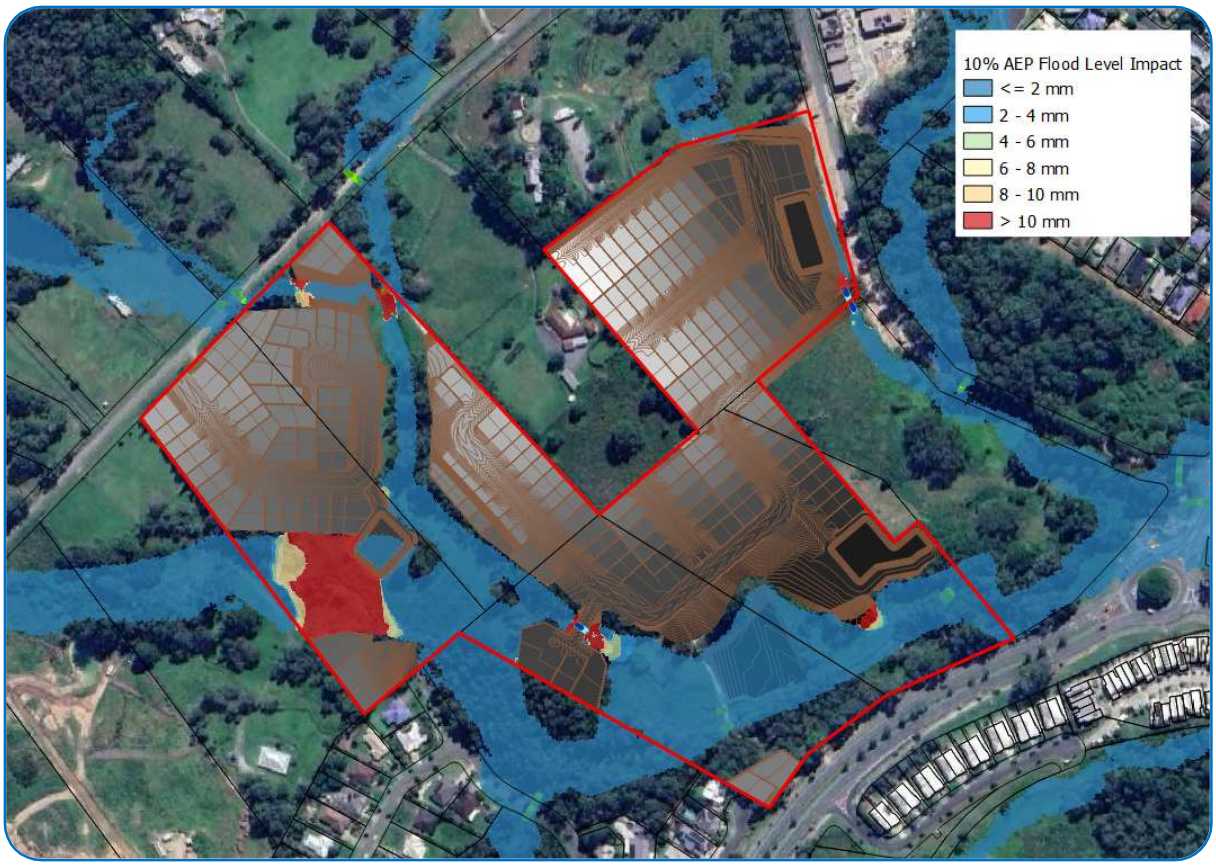


Figure 7.2 10% AEP Flood Level Impact



Figure 7.3 0.5EY Flood Level Impact



Figure 7.4 1% AEP Velocity Impact

8 Conclusions

The hydraulic behaviour of Yuan Creek and its tributaries has been analysed based on a TUFLOW flood model with WBNM hydrologic inflows for the upstream catchment. The civil works designed by OSKA have been incorporated into the post-development scenario.

The results of the modelling indicate:

- The watercourses through the site are generally confined to steep-side flowpaths with wide conveyance paths. The peak depth of flooding during the 1% AEP is up to 3.5 m;
- Flow enters the subject site at several locations and discharges toward the roundabout at Reserve Road;
- The proposed civil works include earthworks which provide 1% AEP immune allotments incorporating 300 mm freeboard.; and
- Spatial analysis of results indicates that impacts to peak flood levels are limited to the site itself and a small area upstream of the western boundary. It ius understood that the applicant has an agreement in place with the landowner to accept these impacts.

It is noted that high velocities (>2 m/s) are predicted within areas of the constructed channels. During the detailed design phase adequate scour protection will be required within this areas.

WATER AND WASTEWATER ASSESSMENT

Proposed Residential Subdivision

41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera

Lots 185 & 186 on SP173728, Lot 183 on RP156422, Lot 58 on SP191940, Lot 56 on RP162858 & Lot 57 on SP214370

For Norfolk Estates Pty Ltd

12 December 2024

File No: OSK6521-0005

DOCUMENT CONTROL SHEET

Title:	Water and Wastewater Assessment
Document No:	OSK6521 -0005
Original Date of Issue:	12 December 2024
Project Manager:	Daley Curran
Author:	Andrew Rickert
Applicant:	Norfolk Estates Pty Ltd
Client:	QM Properties
Client Contact:	Richard Sefton
Client Reference:	41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera
Synopsis:	This *Water and Wastewater Assessment* describes the site investigations completed and determines the impacts of the proposed development on the local water and wastewater networks and ensure the development can be serviced while satisfying relevant design criteria.

Reviewed by RPEQ	Reg. No.	Signed	Date
Joel Wilson	26606		11/1282024

Revision/Checking History			
Revision No	**Date**	**Checked By**	**Issued By**
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APPENDICES

Appendix A Water Supply Booster Pump Design (Infowater)

Appendix B SEQ WS&S D&C Code Failures (water supply)

Appendix C Proposed Internal Water Supply and Sewer Layout

Appendix D 77-79 Courtney Drive – Water Network Modelling Results Summary

Appendix E Downstream Gravity Network for Ultimate (2066) Planning Horizon as per (Existing WSSIP 2019 With Approved DA's)

1.0 INTRODUCTION

OSKA Civil Consultants have been engaged by Norfolk Estates Pty Ltd to prepare a water and wastewater network investigation to support a Development Application for the proposed residential subdivision development situated at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera.

The objective of this investigation is to determine the impacts of the proposed Residential Subdivision on the local water and wastewater network and ensure the development can be serviced while satisfying relevant design criteria. Water and wastewater infrastructure have been adopted in accordance with the City of Gold Coast's (City's) Water Supply and Sewerage Infrastructure Plan 2019 (WSSIP) master planning servicing strategies.

1.1 Site Location

The subject site is located at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera. The site fronts Courtney Drive to the north, Baileys Mountain Road to the east, Reserve Road and Richardson Crescent to the south and has existing residential properties to the north, east and west. The site covers a total combined area of 15.251ha, as illustrated in Figure 1. The development is within the City's local government area who act as the responsible distributor-retailer water authority.



Figure 1: Approximate location of Eden Upper Coomera proposed development

2.0 ASSUMPTIONS

This section details key assumptions made in the proposed development water and wastewater analysis.

2.1 Development Demands

The ultimate Equivalent Person (EP) demand for the proposed Eden Upper Coomera development has been nominated as 416 EP for both wastewater and water supply loadings. The proposed development summary produced by Saunders Havill Group was used as the basis to calculate the demand value adopted for the purposes of this assessment and is summarised in Table 1.

Table 1: Adopted development demand rates

Development Type	Demand Equivalent Conversion Rate	Quantity[1]	Demand (EP)[2]
Detached Dwelling	2.79 EP / Dwelling	149	416
		TOTAL	**416**

Notes: 1) Yields adopted as per development summary produced by Saunders Havill Group (November 2024)

The City has further requested that the impacts of additional ultimate (2066) demand from nearby approved development applications be assessed in the wastewater network analyses (approximately 85 EP & 340 EP respectively).

2.2 Desired Standards of Service

Key Design Standards of Service (DSS) adopted from the SEQ Water Supply and Sewerage Design & Construction Code (SEQ WS&S D&C Code) for water and wastewater are presented in Table 2.

Table 2: Key DSS adopted for water supply and wastewater

Design Criteria	Summary
Water Supply (adopted in accordance with the SEQ WS&S D&C Code)	
Average Day Demand (AD)	220 L/EP/day
Estimated Non-Revenue Water (NRW)	20 L/EP/day
Maximum allowable velocity (m/s)	2.5 m/s at peak hour (PH) demand
Minimum service pressure under normal operating conditions[2]	22 m in the main adjoining the Property boundary
Emergency fire operating conditions[2]	12 m min at the main at the hydrant
Urban Fire Fighting	Residential: 15 L/s for 2 hours Commercial / Industrial: 30 L/s for 4 hours
Minimum Operating Level (MOL)	15% depth maintained in all tanks
Wastewater (adopted in accordance with the SEQ WS&S D&C Code)	
Average Dry Weather Flow (ADWF)	200 L/EP/d up to 2041 and 180 L/EP/d thereafter
Peak Wet Weather Flow (PWWF)	5 x ADWF
Emergency storage	4 hours at ADWF
Total pump station capacity	PWWF
Required pump station operating volume	0.9*Q/N
Gravity sewer performance criteria (Existing / New)	>1 m freeboard at PWWF / PWWF within 75% d/D
Rising main recommended velocities (Max. / Min.)	3 m/s / 0.75 m/s

3.0 WATER SUPPLY NETWORK ASSESSMENT

The water supply network analysis has been undertaken in accordance with the 2019 WSSIP master planning service strategies.

3.1 Extent of Assessment

The existing primary connection point and adjacent water supply network servicing the proposed development can be seen in Figure 2.

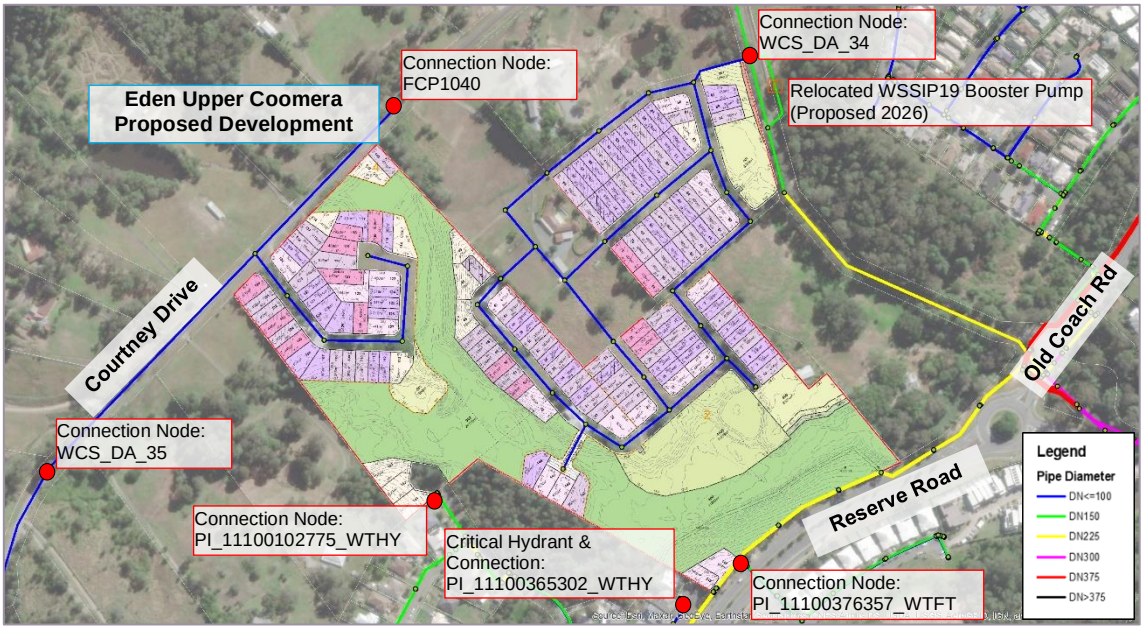


Figure 2: Existing external water supply infrastructure servicing the proposed development

The proposed development has been connected to the existing WSSIP19 network via the following connection nodes:

- WCS_DA_35 (new connection) located on a proposed DN100 running on Courtney Drive. It should be noted that advice from City of Gold Coast assumes the developer would be responsible for construction of water main along Courtney Drive from the existing connection point fronting 79 Courtney Drive.
- WCS_DA_34 (new connection) located on the existing DN150 running along Baileys Mountain Road, downstream of the relocated booster pump.
- FCP1040 located on the proposed DN100 running on Courtney Drive.
- PI_11100365302_WTHY (also critical nearby existing hydrant for fire flow analysis) located on the existing DN200 running on Reserve Road.
- PI_11100102775_WTHY located on the existing DN150 running on Richardson Crescent.

The internal network analysis is addressed separately in Section 3.4.

The proposed development is gravity supplied by the Peanba Park Road tanks (47 ML) approximately 1.5 km to the southeast. Figure 3 illustrates the extent of the greater Worongary Low Level Zone (LLZ) assessed.



Figure 3: Extent of greater Old Coach Road DMA area assessed (highlighted in green)

3.2 Flow Projections

The following water flow projections have been estimated in accordance with the SEQ WS&S D&C Code. These projections have been compared to the City's 2019 WSSIP predicted demands and are presented in Table 3.

Table 3: Daily water flow projections

Site Loading	Land Use	Demand (EP)	Average Day (kL/d)	MDMM (kL/d)	Peak Day (kL/d)	Peak Hour (L/s)
Existing (2021) WSSIP Demand	Multi-Residential	0	0.0	0.0	0.0	0.00
Proposed DA	Multi-Residential	416	99.8	168.4	202.2	6.48
Total Increase		**416**	**99.8**	**168.4**	**202.2**	**6.48**
Approved DAs	Tourist	85	20.4	34.6	48.6	1.32

The daily water flow projections indicate that the proposed development is expected to increase the existing (2021) peak hour demand by approximately 6.48 L/s. However, beyond the intermediate (2041) planning horizon, calculated flow projections decrease as the proposed development has lower demand (EP) than the WSSIP projections associated with the site.

It should also be noted that previously approved development demands within the greater Old Coach Road DMA area assessed are expected to increase the ultimate (2066) peak hour demand by approximately 1.3 L/s.

3.3 Existing Network Modelling

Hydraulic modelling of the water supply network was undertaken using the InfoWater model for the City's southern potable water network (Northern v95_WSSIP_2019) provided by the City. The hydraulic modelling was completed to evaluate system performance under existing (2021) through to the intermediate (2041) planning horizon flow conditions, both with and without the proposed development loading.

It should be noted that beyond the intermediate (2041) planning horizon, desktop analysis shows the proposed development demands will lead decrease in overall EP compared to the existing network demands. Therefore, no modelling was undertaken for the ultimate (2066) planning horizon.

3.3.1 Reservoir Analysis

To ensure the Peanba Park Road Tanks achieve the City's DSS recommended minimum operating level of 15% depth, a 3 day extended simulation was run in accordance with SEQ WS&S D&C Code recommendations using the Maximum Day (MD) demand scenario within the network model.

Modelling results indicate that the existing (2021) through ultimate (2066) network demands do not deplete the Peanba Park Road Tanks below the DSS of 15%.

3.3.2 Baileys Mountain Road Booster Pump Relocation

Email advice from City of Gold Coast, stated that the location of WSSIP19 booster pump (proposed for 2026) at corner of Reserve Road and Old Coach Road is to be changed to 155 Baileys Mountain Road. For the purposes of this assessment, the booster pump was relocated in the model and designed to adequately service existing Ultimate (2066) WSSIP19 demands (including approved developments) for all lots along Courtney Drive, with updated design specifications noted in Table 4 and Table 5.

Table 4: Daily water flow projections at Peak Hour

Booster Pump Details	Minimum Design Requirement	WCS Model Design[1,2]
Peak Hour Flow (L/s)	11.10	11.10
Pump Head (m)	9.83	11.83

Note: [1]Booster pump modelled using InfoWater 3-point exponential curve type as shown in **Appendix A.**
[2]Detailed design may incorporate a variable frequency drive to limit downstream pressure within target DSS.

Table 5: Daily water flow projections at Fire Flow

Booster Pump Details	Minimum Design Requirement	WCS Model Design[1]
Fire Flow (L/s)	22.33	20.75
Pump Head (m)	12.87	18.65

Note: Fire flow booster pump design for 2/3 peak hour time noted in model (11am).

3.3.3 Peak Hour Analysis

To determine peak hour minimum pressures and maximum network velocities, a 3-day standard flow analysis was run using the MD scenario within the network model.

It should be noted that beyond the intermediate (2041) planning horizon, desktop analysis shows the proposed development demands will not lead to an increase in demands compared to the existing network demands. Therefore, no modelling was undertaken for the ultimate (2066) planning horizon.

The results from the network peak hour analysis are detailed in Table 6 and Table 7.

Table 6: Peak hour minimum pressures modelled at connection node and greater Old Coach Road DMA

Planning Horizon	Location	Peak Hour Minimum Pressure (m)					
		Existing	Failures	w/ Approved DAs	Failures	w/ Approved DAs & Proposed Development	Failures
2021	PI_11100365302_WTHY	38.3	-	37.9	-	37.0	-
	OLD COACH ROAD DMA	21.4	**1**	**21.1**	**3**	**20.5**	**3**
2026	PI_11100365302_WTHY	36.0	-	35.5	-	34.4	-
	OLD COACH ROAD DMA	23.1	-	22.6	-	**21.6**	**1**
2031	PI_11100365302_WTHY	41.9	-	41.6	-	41.0	-
	OLD COACH ROAD DMA	29.1	-	28.8	-	28.2	-
2036	PI_11100365302_WTHY	38.7	-	38.4	-	38.1	-
	OLD COACH ROAD DMA	25.9	-	25.6	-	25.2	-
2041	PI_11100365302_WTHY	27.2	-	26.7	-	26.3	-
	OLD COACH ROAD DMA	**14.4**	**8**	**13.9**	**11**	**13.5**	**17**

Modelling results indicate that the existing (2021) through intermediate (2041) network have sufficient capacity to service the proposed development under peak hour demands while satisfying the SEQ WS&S D&C Code recommended minimum pressure of 22 m. However, several loading nodes within the Old Coach Road DMA fall below the recommended minimum pressure in the existing (2021) and intermediate (2026 & 2041) network scenarios (Refer to **Appendix B**). Failures were found to occur under existing WSSIP19 demands or are not significantly worsened by the proposed development demand.

Table 7: Maximum velocities modelled within Old Coach Road DMA

Planning Horizon	Location	Peak Hour Maximum Velocity (m/s)					
		Existing	Failures	w/ Approved DAs	Failures	w/ Approved DAs & Proposed Development	Failures
2021	Old Coach Road DMA	1.8	-	1.8	-	1.8	-
2026		1.1	-	1.8	-	1.8	-
2031		2.0	-	2.0	-	2.0	-
2036		2.2	-	2.2	-	2.2	-
2041		2.2	-	2.2	-	2.2	-

Note: No water mains under 10 m in length were considered as part of this assessment

Modelling results indicate that the existing (2021) through ultimate (2066) network have sufficient capacity to service the proposed development under peak hour demands while satisfying the SEQ WS&S D&C Code recommended maximum velocity of 2.5 m/s.

3.3.4 Fire Flow Analysis

Fire flow simulations were completed using the InfoWater Fireflow simulator and the 2/3 PH time noted in the model. Minimum fire flow residual pressures modelled at the nearest hydrant to the proposed development and greater Old Coach Road DMA are summarised in Table 8.

Table 8: Fire flow minimum residual pressures modelled at nearest hydrant and greater Old Coach Road DMA

Planning Horizon	Location	Fire Flow Minimum Residual Pressure (m)					
		Existing	Failures	w/ Approved DAs	Failures	w/ Approved DAs & Proposed Development	Failures
2021	PI_11100365302_WTHY	32.6	-	32.5	-	32.1	-

Planning Horizon	Location	Fire Flow Minimum Residual Pressure (m)					
		Existing	Failures	w/ Approved DAs	Failures	w/ Approved DAs & Proposed Development	Failures
	OLD COACH ROAD DMA	16.1	-	15.9	-	15.7	-
2026	PI_11100365302_WTHY	31.1	-	31.0	-	30.6	-
	OLD COACH ROAD DMA	12.9	-	12.7	-	12.5	-
2031	PI_11100365302_WTHY	33.6	-	33.5	-	33.3	-
	OLD COACH ROAD DMA	14.4	-	14.3	-	14.2	-
2036	PI_11100365302_WTHY	31.8	-	31.7	-	31.6	-
	OLD COACH ROAD DMA	12.7	-	12.6	-	12.5	-
2041	PI_11100365302_WTHY	25.0	-	24.8	-	24.7	-
	OLD COACH ROAD DMA	**5.6**	**5**	**5.4**	**5**	**5.3**	**5**

Note: 1) Fire flow pressure calculated in accordance with SEQ WS&S D&C Code recommendations at 2/3 PH demand (11:00) with 15 L/s adopted at the proposed development hydrant

The fire flow analysis indicates that the existing (2021) through ultimate (2066) networks have sufficient capacity to service the proposed development for fire flow demands with the nearest hydrant (PI_11100365302_WTHY) having adequate capacity to satisfy SEQ WS&S D&C Code recommended 12 m minimum residual pressure.

Within the greater Old Coach Road DMA, there are five hydrant failures under the 2041 planning horizon (See **Appendix B**). These failures occur both with and without demands from the proposed development and are therefore considered existing failures.

3.4 Internal Network Modelling

The internal water network analysis was undertaken using an InfoWater model developed using the proposed water layout attached in **Appendix C**. Internal modelled nodes have adopted surface RL levels from the Gold Coast 2014 LGA 1m Digital Elevation Model. All demands from the proposed Breakwater Road development have been allocated evenly across the modelled internal nodes. The analysis has been undertaken in accordance with SEQ WS&S D&C Code recommendations with connections points to the existing network model as outlined in Figure 2. Model scenarios were run with and without the relocated booster pump operational for all planning horizons.

It should be noted that the proposed lots on 41 & 53 Courtney Drive have been nominated to connect into the Upper Coomera HLZ via a new water main adjacent to 79 Courtney Drive (currently in operational works), which was not included in the WSSIP19 model received. The omitted water network between Wimmera Crescent and Courtney Drive was requested from City of Gold Coast, however to date was not provided. Based on the results shown in the water network analysis completed for 79-99 Courtney Drive development (see **Appendix D**, it is expected that there will be ample pressure to service the proposed lots on 41 & 53 Courtney Drive.

3.4.1 Internal network modelling results

The internal network model was run under peak hour and fire flow demands under the previously mentioned assumptions and design standards of service, with key results detailed in Figure 4 through Figure 9. Network modelling results indicate that the existing (2021) through ultimate (2066) networks have sufficient capacity to service the proposed development while satisfying SEQ WS&S D&C Code recommendations under both peak hour and fire flow conditions. However, from the intermediate (2041) planning horizon, the booster pump is

required to be operational to meet peak hour demands while satisfying SEQ WS&S D&C Code recommendations for minimum pressure.

It should be noted that in addition to modelled pressures, the internal network also satisfied SEQ WS&S D&C Code recommendations for maximum velocity (2.5 m/s) and maximum headloss (5 m/km).



Figure 4: Peak hour internal network modelling results under existing (2021) planning horizon (no booster pump).



Figure 5: Peak hour internal network modelling results under intermediate (2041) planning horizon (booster pump operational).



Figure 6: Peak hour internal network modelling results under ultimate (2066) planning horizon (booster pump operational).



Figure 7: Fire flow internal network modelling results under existing (2021) planning horizon (no booster pump).



Figure 8: Fire flow internal network modelling results under intermediate (2041) planning horizon (booster pump operational).



Figure 9: Fire flow internal network modelling results under ultimate (2066) planning horizon (booster pump operational).

3.4.2 Conclusion and Recommendations

Analysis of the water supply network has concluded that there is sufficient capacity in the existing (2021) through ultimate (2066) network to service the proposed development during peak hour and fire flow demand while satisfying SEQ WS&S D&C Code recommendations. Within the greater Old Coach Road DMA, there are several locations where modelled water infrastructure supply does not meet the SEQ WS&S D&C Code recommendations. However, these failures occur prior to the addition of demands associated with the proposed development and are not significantly worsened by the proposed development. The ultimate (2066) planning horizon existing network has been assumed to be able to service the proposed development as the WSSIP demands will decrease with the addition of the proposed development.

The water network analysis was adapted from the WSSIP19 network model provided by City of Gold Coast. The proposed lots on 41 & 53 Courtney Drive have been nominated to connect into the Upper Coomera HLZ via a new water main adjacent to 79 Courtney Drive (currently in operational works), which was not included in the model received. The omitted water network between Wimmera Crescent and Courtney Drive was requested from City of Gold Coast, however to date was not provided. Based on the results shown in the water network analysis completed for 79-99 Courtney Drive development, it is expected that there will be ample pressure to service the proposed lots on 41 & 53 Courtney Drive.

It is suggested that the proposed development of approximately 416 EP be approved with respect to adequate water supply network capacity, with the following recommendations:

- The developer is responsible for construction of the WSSIP19 proposed DN100 water main along Courtney Drive, connecting to the existing network via 79 Courtney Drive.
- The developer liaise with City of Gold Coast to confirm that in order to service the proposed development, the proposed timing and delivery of the WSSIP19 proposed booster pump (to be relocated to 155 Baileys Mountain Road) will not be later than 2041.

4.0 WASTEWATER NETWORK ASSESSMENT

The wastewater network analysis has been undertaken in accordance with the City's 2019 WSSIP master planning service strategies.

4.1 Extent of Assessment

The sewerage impact assessment included the gravity mains from the proposed development to the downstream sewage pumping station (SPS) PA01, as seen in Figure 10 and Figure 11. It should be noted that to service the approved and proposed developments along Courtney Drive, updates have been made to the WSSIP19 proposed sewer network. Specifically, sewer trunk line 1 is a reconfiguration the existing WSSIP19 proposed trunk sewer between 41 Courtney Drive and Richardson Crescent. The proposed trunk sewer configuration servicing the approved development at 79-99 Courtney Drive has also been incorporated into the current modelling. The decommissioned WSSIP19 proposed trunk sewers are dashed grey, as shown in Figure 11.



Figure 10: Wastewater infrastructure from the proposed development through to SPS PA01



Figure 11: Proposed Development wastewater loading locations.

As outlined in Figure 11, demands from the proposed development have been loaded to model nodes connected to proposed sewer reticulation discharge points (refer to **Appendix C** for detailed internal sewer servicing plan). The existing sewer network gravity feeds approximately 3 km to SPS PA01. Table 9 summarises the yields applied to respective loading nodes.

Table 9: Proposed Development Sewer Loading Summary

Loading Node	Demand (ET)	Demand (EP)	Trunk Line #
WCS_DA_02	27	75.3	1
WCS_DA_05	14	39.1	1
WCS_DA_07	4	11.2	1
SEMH_PA01_9000149364	3	8.4	2
SEMH_PA01_9000031633	2	5.6	3
SEMH_PA01_9000031643	53	147.9	3
GM_PA01_13AUG	46	128.3	4

4.2 Flow and Emergency Storage Projections

The wastewater flow and emergency storage (ES) projections for the Eden Upper Coomera development have been estimated in accordance with the SEQ WS&S D&C Code and are presented in Table 10.

Table 10: Wastewater flow and emergency storage projections

Site Loading	Demand (EP)	ADWF (L/s)	PWWF (L/s)	Additional ES Required (kL)
Existing (2021) WSSIP Demand	0	0.0	0.0	0.0
Proposed DA	416	0.9	4.3	12.5
Total Increase	**416**	**0.9**	**4.3**	**12.5**
Ultimate (2066) Approved DAs	340	0.71	3.5	10.2

Notes: 1) Proposed wastewater flow projections calculated in accordance with existing Conventional Sewer design criteria

The analysis indicates that the proposed development is expected to increase the existing (2021) PWWF demands of the SPS PA01 catchment by approximately 4.3 L/s. However, beyond the intermediate (2041) planning horizon, calculated PWWF projections decrease as the proposed development has lower demand (EP) than the WSSIP projections associated with the site. It should be noted that there is an additional ultimate (2066) demand of approximately 3.5 L/s PWWF from approved DAs in the SPS PA01 catchment. Regardless of the reduction in Ultimate (2066) demands with the proposed development, several sections of the Ultimate (2066) downstream gravity network require upgrade with the inclusion of approved DAs. **Appendix F** outlines the extent of necessary upgrades regardless of the proposed development.

4.3 Network Modelling

Hydraulic modelling of the wastewater network was undertaken using the InfoSWMM model for Pimpama (PI_WSSIP_2019) provided by the city. The hydraulic modelling was completed to evaluate system performance under existing (2021) through to the intermediate (2041) planning horizon flow conditions, including additional approved DAs, both with and without the proposed development loading.

It should be noted that beyond the intermediate (2041) planning horizon, desktop analysis shows the proposed development demands will lead to a decrease in overall EP compared to the existing network demands. Therefore modelling results were not presented for the ultimate (2066) planning horizon.

4.4 Impact Assessment

4.4.1 Gravity Mains

Key profiles of the gravity network immediately downstream of the proposed development to SPS PA01 can be seen in Figure 12 through Figure 19.

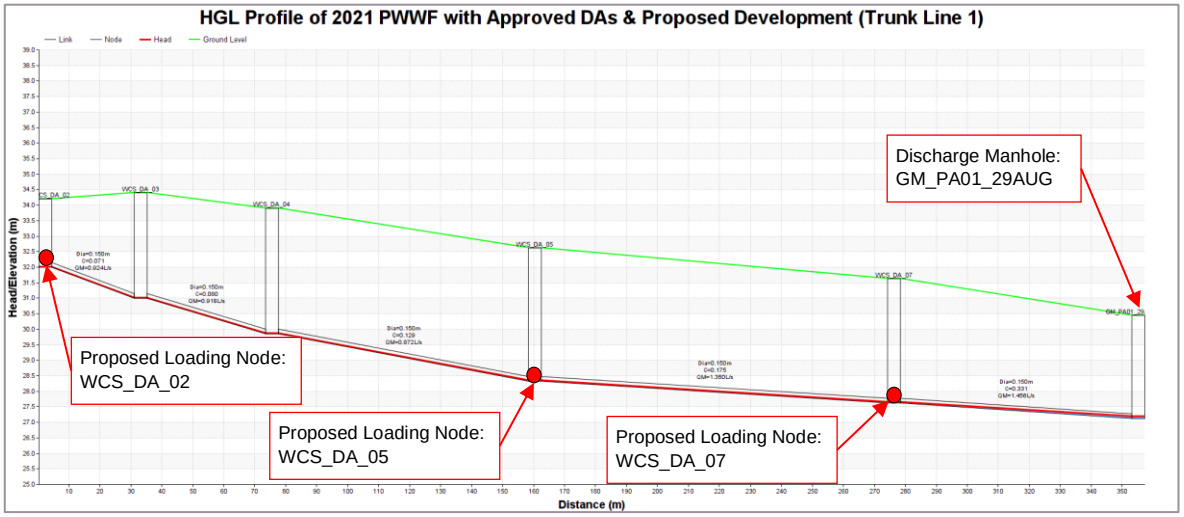


Figure 12: Reconfigured gravity network (traversing proposed development lots 185 on RP173727 and 186 on RP173728) under existing (2021) PWWF including demands from approved DAs and the proposed development

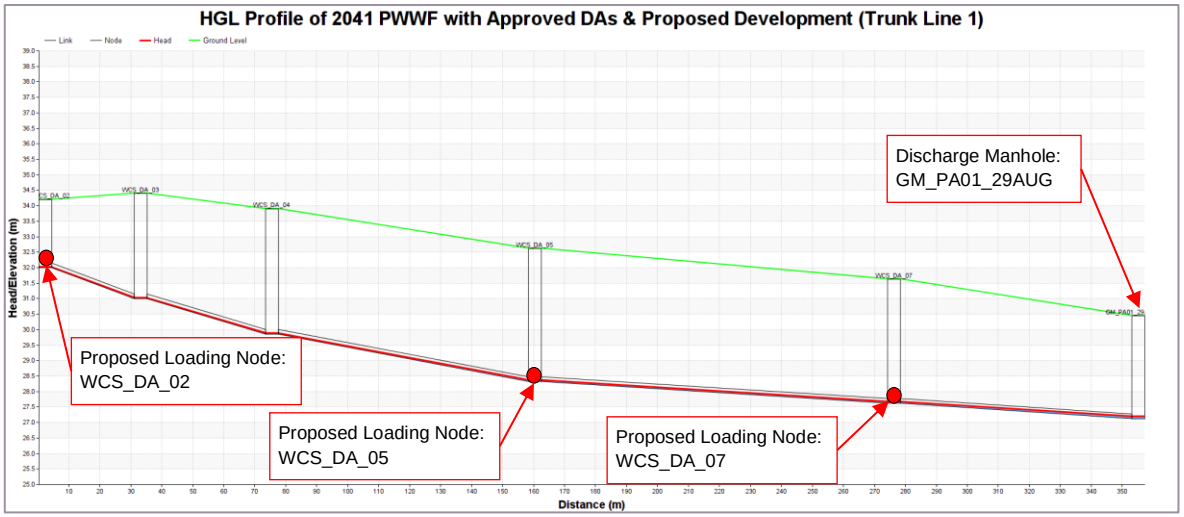


Figure 13: Reconfigured gravity network (traversing proposed development lots 185 on RP173727 and 186 on RP173728) under intermediate (2041) PWWF including demands from approved DAs and the proposed development

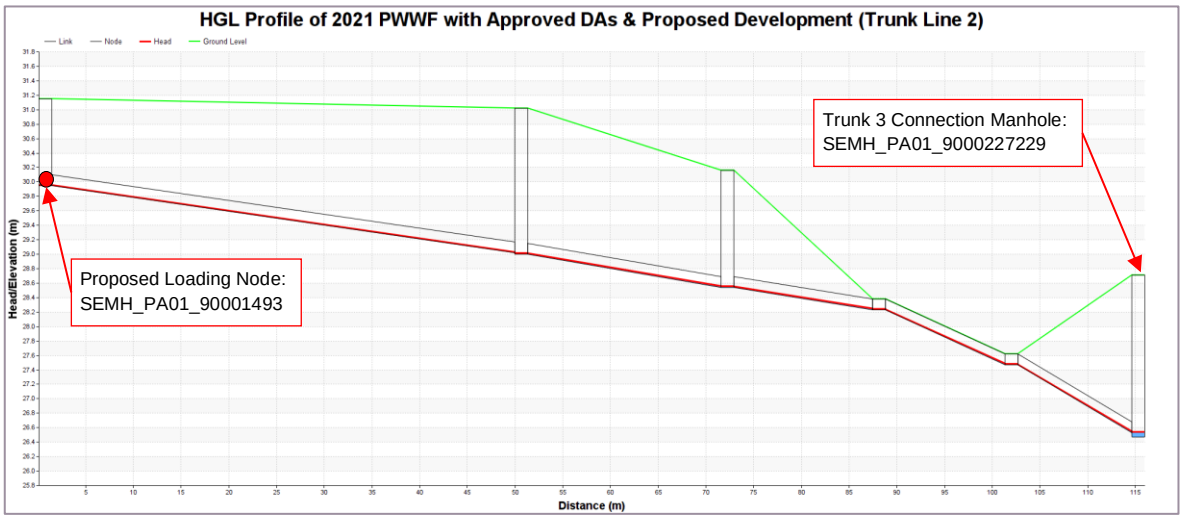


Figure 14: Trunk 2 gravity network under existing (2021) PWWF including demands from approved DAs and the proposed development

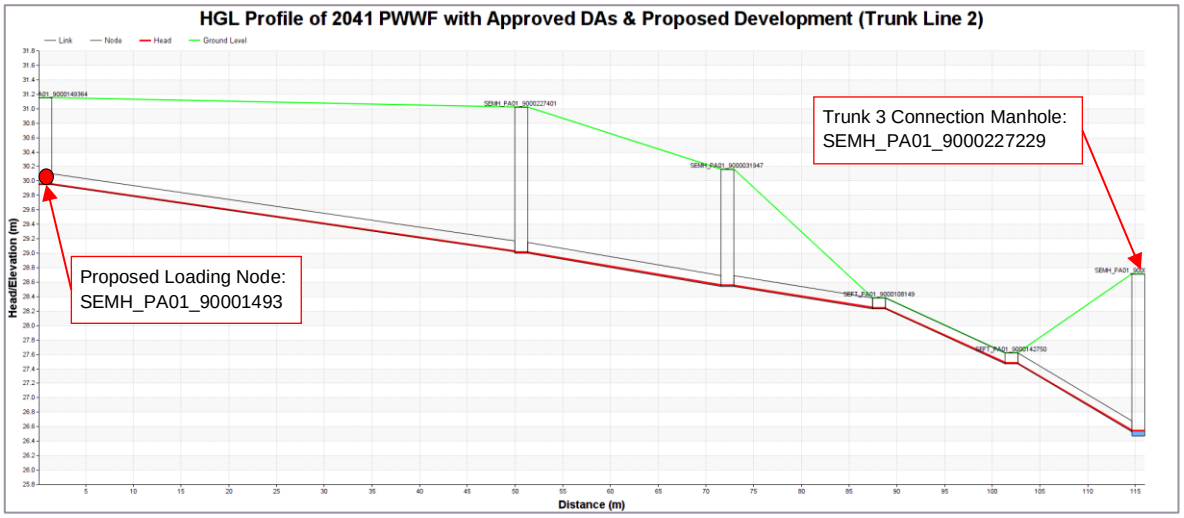


Figure 15: Trunk 2 gravity network under intermediate (2041) PWWF including demands from approved DAs and the proposed development

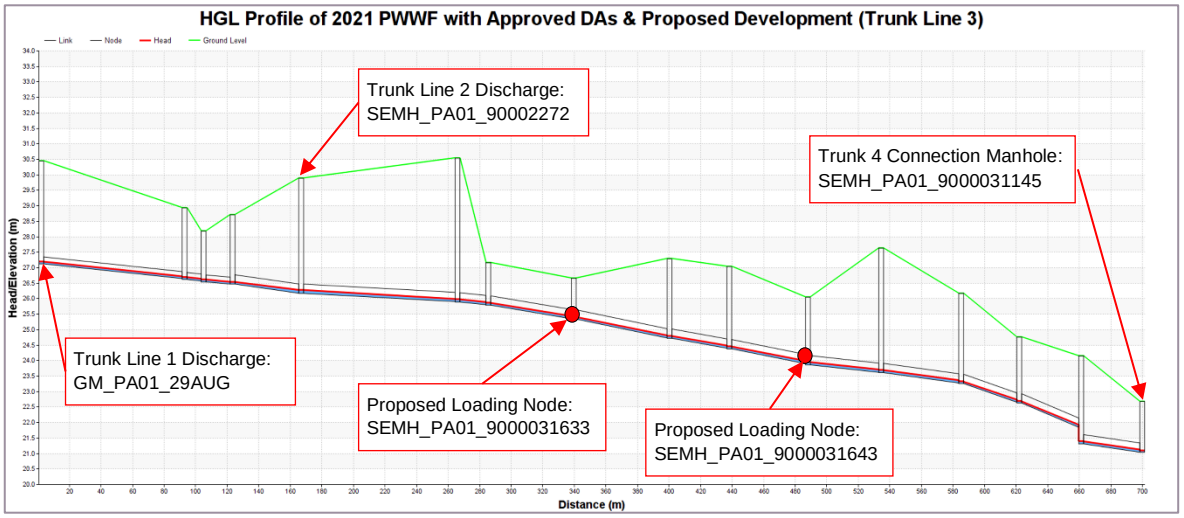


Figure 16: Downstream gravity network under existing (2021) PWWF including demands from approved DAs and the proposed development

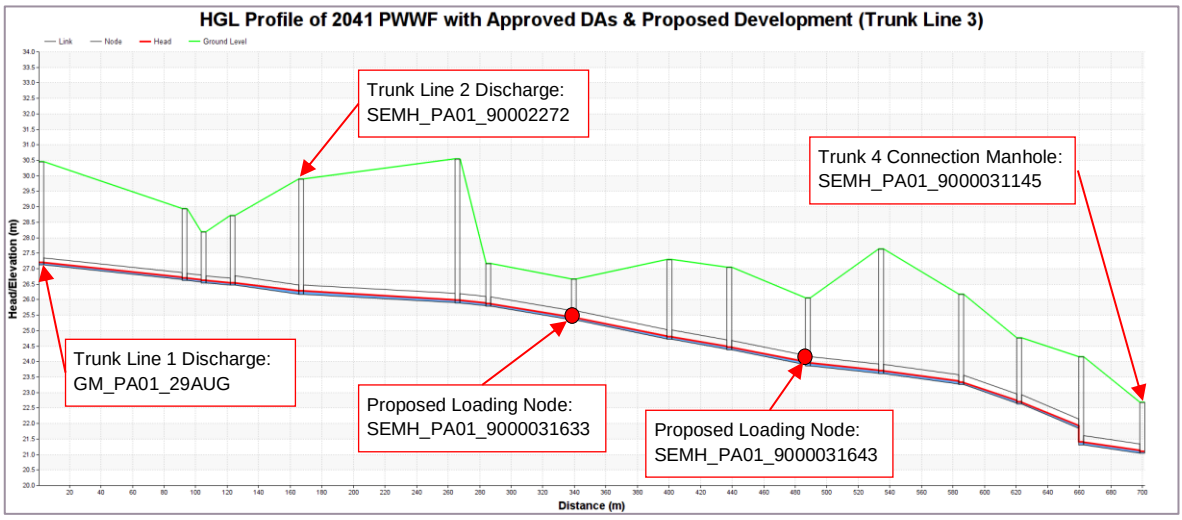


Figure 17: Trunk 3 gravity network under existing intermediate (2041) including demands from approved DAs and the proposed development

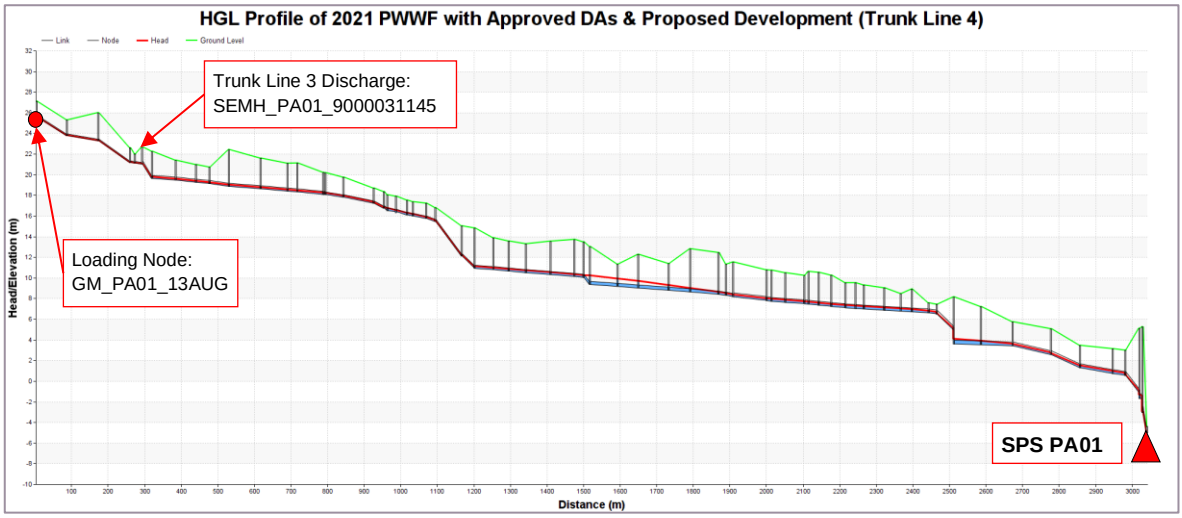


Figure 18: Trunk 4 gravity network under existing (2021) PWWF including demands from approved DAs and the proposed development

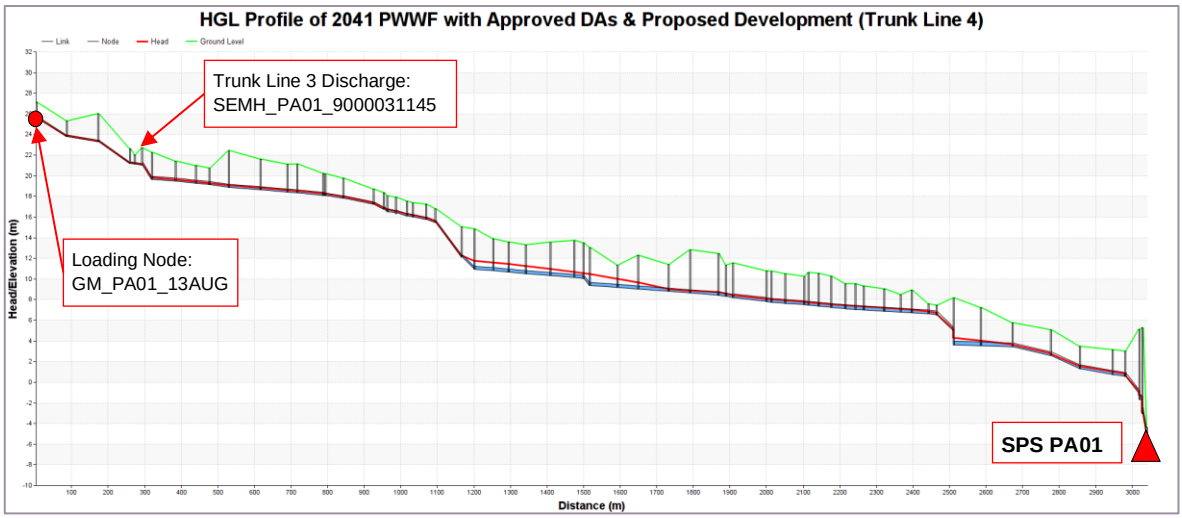


Figure 19: Trunk 4 gravity network under intermediate (2041) PWWF including demands from approved DAs and the proposed development

As illustrated in the gravity main profiles for the 2021 (existing) through intermediate (2041) planning horizons, modelling confirms that the downstream sewer network adequately satisfies the City of Gold Coast's adopted requirement of 1m freeboard at PWWF. Although the outcome of the modelling is not affected, with reference to in Figure 14 and Figure 15, it should be noted that the ground elevation appears very close to the sewer obvert at manholes SEFT_PA01_900010814 and SEFT_PA01_9000108150. These levels are from the existing WSSIP19 network model and should be verified by City of Gold Coast.

4.4.2 Sewage Pumping Station

A desktop assessment was completed using the demands nominated in the Pimpama wastewater network model (PI_WSSIP_2019), to ensure that the proposed development could be adequately serviced by the existing pump station (SPS PA01) and is summarised in the following sections:

4.4.2.1 Pump Capacity

Table 11: Flow requirements versus existing capacity

Planning Horizon	Maximum Capacity[1] (L/s)	PWWF (L/s)		
		Existing 2019 WSSIP[2]	With Approved DAs	With Approved DAs & Proposed Development
Existing (2021)	253.5	165.0	173.8	178.6
2026		169.0	176.4	181.2
2031		182.1	188.8	193.6
2036		192.7	198.8	203.6
2041		202.2	208.0	212.8

Note: 1) SPS PA01 existing dual pumps capacity obtained from email received from the City of Gold Coast
2) Demands for PWWF calculations obtained from the *CO_WSSIP_2019* network models.

4.4.2.2 Operating volume

Table 12: Operating volume requirements versus existing capacity

Planning Horizon	Existing Capacity[1] (L/s)	Operating Volume Required (m^3)		
		Existing 2019 WSSIP[2]	With Approved DAs	With Approved DAs & Proposed Development
Existing (2021)	**15.6**	8.7	9.1	9.4
2026		8.9	9.3	9.5
2031		9.6	9.9	10.2
2036		10.1	10.4	10.7
2041		10.6	10.9	11.2

Note: 1) SPS PA01 existing operating storage volume obtained from email received from the City of Gold Coast
2) Demands for PWWF calculations obtained from the *CO_WSSIP_2019* network models.

4.4.2.3 Rising Main

Table 13: Rising main velocities

Planning Horizon	Rising Main Internal Diameter[1] (mm)	Velocity @ Ultimate (2066) PWWF (m/s)		
		Existing 2019 WSSIP	With Approved DAs	With Approved DAs & Proposed Development
Existing (2021)	**375**	1.5	1.6	1.6
2026		1.5	1.6	1.6
2031		1.6	1.7	1.8
2036		1.7	1.8	1.8

Planning Horizon	Rising Main Internal Diameter[1] (mm)	Velocity @ Ultimate (2066) PWWF (m/s)		
		Existing 2019 WSSIP	With Approved DAs	With Approved DAs & Proposed Development
2041		1.8	1.9	1.9

Note: 1) Diameters obtained from the *CO_WSSIP_2019* network model

4.4.2.4 Emergency Storage

Table 14: Emergency storage requirements versus existing capacity

Planning Horizon	Available Emergency Storage[1] (kL)	Emergency Storage Required for 4hrs @ADWF (kL)		
		Existing 2019 WSSIP[2]	With Approved DAs	With Approved DAs & Proposed Development
Existing (2021)	**394.0**	**413.4**	**438.8**	**452.6**
2026	**393.5**	**431.8**	**452.9**	**466.8**
2031	**392.1**	**464.1**	**483.4**	**497.3**
2036	**391.0**	**490.2**	**507.7**	**521.6**
2041	**390.4**	**512.3**	**529.0**	**542.8**

Note: 1) SPS PA01 existing available emergency storage volume obtained from email received from the City of Gold Coast
2) Demands for PWWF calculations obtained from the *CO_WSSIP_2019* network models.

The desktop assessment of SPS PA01 has concluded that the pump station has sufficient capacity to service the proposed development under existing (2021) demands through to the ultimate (2066) planning horizon.

However, assessment of the PA01 emergency storage required based on modelled demands compared with available storage identified by the City of Gold Coast revealed that there was insufficient capacity to satisfy the SEQ WS&S D&C Code recommendation of 4 hours at ADWF. The failure occurs under all planning horizons both with and without demand from the approved developments and proposed development and is therefore considered an existing failure.

The PA01 catchment has been identified as having insufficient capacity under existing (2021) demands and requiring an immediate upgrade to accommodate approximately 153 kL for future demands. The additional emergency storage requirements from the proposed development of approximately 12.5 kL account for approximately 2% of the required upgrade. Therefore, the additional emergency storage capacity required from the proposed development for the PA01 catchment is unlikely to significantly impact the timing or cost of the upgrade required.

Hydraulic analysis was undertaken using full network model runs for all scenarios to substantiate the desktop assessment findings and capacities noted within. Network modelling results confirm that SPS PA01 has sufficient capacity to service the proposed development through to the ultimate (2041) planning horizon.

4.5 CONCLUSION AND RECOMMENDATIONS

Analysis of the wastewater gravity network has concluded that there is currently sufficient capacity in the existing (2021) through intermediate (2041) planning horizons to service the proposed development while satisfying SEQ WS&S D&C Code recommendations. However, the greater PA01 catchment was found not to have adequate emergency storage availability for all planning horizons both with and without proposed demands.

It should be further noted that in the ultimate (2066) planning horizon, several sections of the gravity sewer network downstream from the proposed development require upgrade under the existing network with approved DAs.

It is suggested that the proposed development of approximately 416 EP be approved with respect to adequate wastewater network capacity under the following recommendations:

- The City of Gold Coast consider the additional 12.5 kL of emergency storage required from the proposed development when designing any future upgrade to emergency storage within the PA01 catchment.

APPENDIX A: WATER SUPPLY BOOSTER PUMP DESIGN (INFOWATER)

PUMP: WCS_BOOST

(ID)	WCS_BOOST
Description	
Geometry	
X	528075.514892578
Y	6917807.952697750
Modeling	
Type	2: Exponential 3-Point Curv
Elevation (m)	43.84380
Diameter (mm)	200.00000
Constant Power (kw)	0.00000
Shutoff Head (m)	14.00000
Design Head (m)	12.00000
Design Flow (lps)	10.00000
High Head (m)	10.00000
High Flow (lps)	25.00000
Curve	WCS_BOOST
NPSH Curve	

APPENDIX B: SEQ WS&S D&C CODE FAILURES (WATER SUPPLY)

Peak Hour Minimum Pressure

2021 Existing WSSIP	
ID	Residual Pressure (m)
PI_11100447557_WTHY	21.40

2021 w/ Additional DAs	
ID	Residual Pressure (m)
PI_11100080757_WTHY	21.80
PI_11100230646_WTHY	21.80
PI_11100447557_WTHY	21.10

2021 w/ Additional DAs & Proposed Development	
ID	Residual Pressure (m)
PI_11100080757_WTHY	21.10
PI_11100230646_WTHY	21.10
PI_11100447557_WTHY	20.50

2041 Existing WSSIP	
ID	Residual Pressure (m)
PI_11100244190_WTFT	21.50
PI_11100238405_WTHY	21.50
PI_11100102745_WTHY	21.30
PI_11100098541_WTHY	21.10
PI_11100372283_WTHY	19.30
PI_11100383708_WTFT	19.30
PI_11100246607_WTHY	18.20
PI_11100365441_WTHY	14.40

2041 w/ Additional DAs	
ID	Residual Pressure (m)
PI_11100447240_WTHY	21.80
PI_11100105623_WTFT	21.80
PI_11100365408_WTHY	21.70
PI_11100244190_WTFT	21.20
PI_11100238405_WTHY	21.20
PI_11100102745_WTHY	20.80
PI_11100098541_WTHY	20.60
PI_11100372283_WTHY	18.80

2041 w/ Additional DAs	
ID	Residual Pressure (m)
PI_11100383708_WTFT	18.80
PI_11100246607_WTHY	17.60
PI_11100365441_WTHY	13.90

2041 w/ Additional DAs & Proposed Development	
ID	Residual Pressure (m)
PI_11100255849_WTFT	21.90
PI_11100447240_WTHY	21.60
PI_11100105623_WTFT	21.40
PI_11100365408_WTHY	21.30
PI_11100244190_WTFT	20.90
PI_11100238405_WTHY	20.90
PI_11100102745_WTHY	20.30
PI_11100098541_WTHY	20.20
PI_11100372283_WTHY	18.40
PI_11100383708_WTFT	18.40
PI_11100246607_WTHY	17.20
PI_11100365441_WTHY	13.50

Fire Flow Residual Pressure

2041 Existing WSSIP	
ID	Residual Pressure (m)
PI_11100081917_WTHY	11.66
PI_11100372283_WTHY	10.36
PI_11100446101_WTHY	10.05
PI_11100230646_WTHY	6.98
PI_11100080757_WTHY	5.58

2041 w/ Additional DAs	
ID	Residual Pressure (m)
PI_11100081917_WTHY	11.52
PI_11100372283_WTHY	10.16
PI_11100446101_WTHY	9.94
PI_11100230646_WTHY	6.83
PI_11100080757_WTHY	5.44

2041 w/ Additional DAs & Proposed Development	
ID	Residual Pressure (m)
PI_11100081917_WTHY	11.41
PI_11100372283_WTHY	10.06
PI_11100446101_WTHY	9.86
PI_11100230646_WTHY	6.73
PI_11100080757_WTHY	5.33

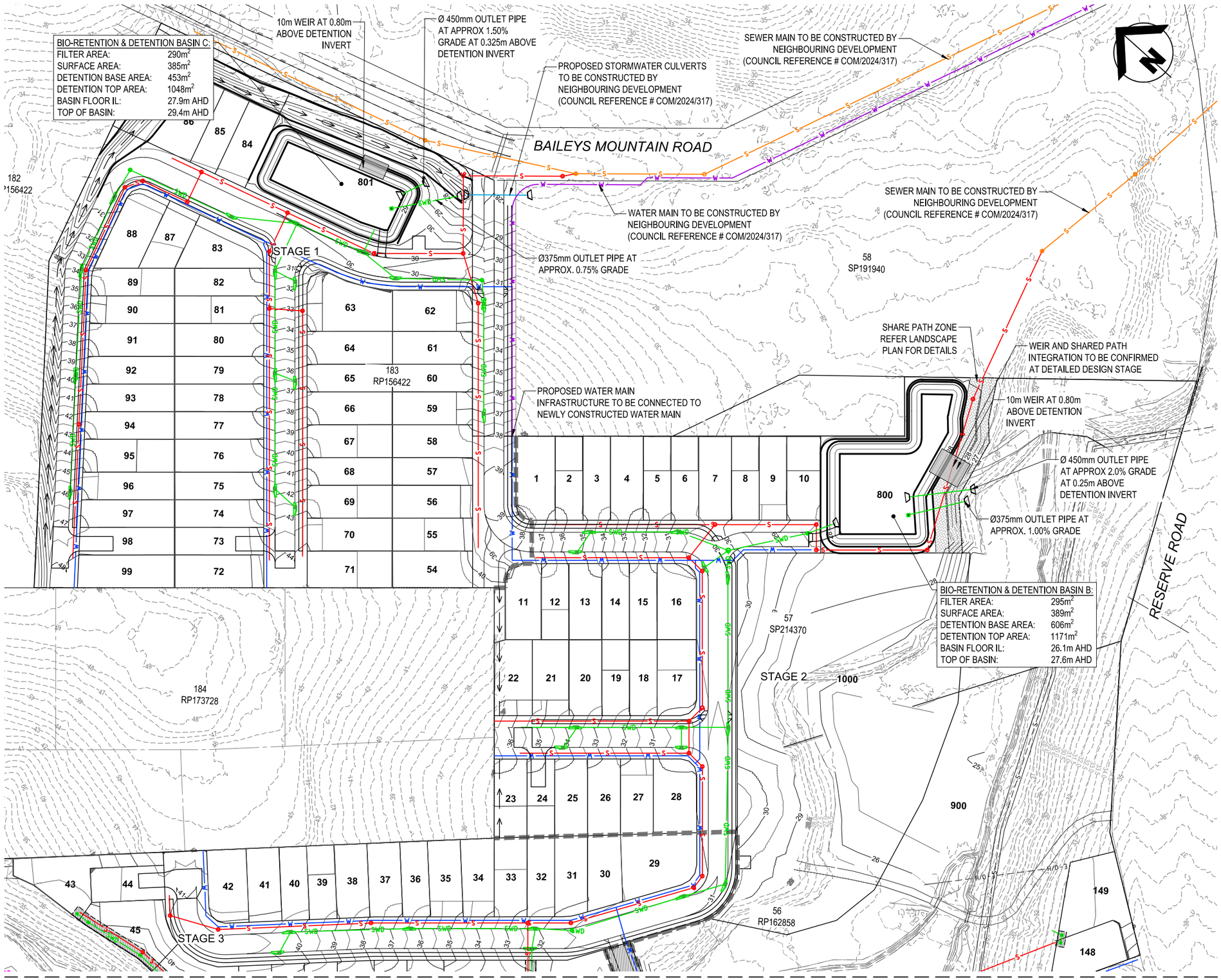
APPENDIX C: PROPOSED INTERNAL WATER SUPPLY AND SEWER LAYOUT

LEGEND

- PROPOSED SEWER MAIN
- PROPOSED TRUNK SEWER MAIN
- PROPOSED WATER MAIN
- PROPOSED STORMWATER DRAINAGE
- FINISHED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- STAGE BOUNDARY
- PROPOSED SEWER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED WATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED STORMWATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED SERVICE EASEMENTS

EXISTING SERVICES LEGEND

- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- EXISTING STORMWATER PIPE
- EXISTING TELECOMMUNICATIONS CABLE
- EXISTING ELECTRICAL CABLE



APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY SERVICES LAYOUT PLAN - SHEET 1 OF 2

SCALE: 1:750 AT A1, 1:1500 AT A3 (0, 15, 30, 45, 60m)

PROJECT NO. OSK6521

DWG NO. P040

ISSUE B

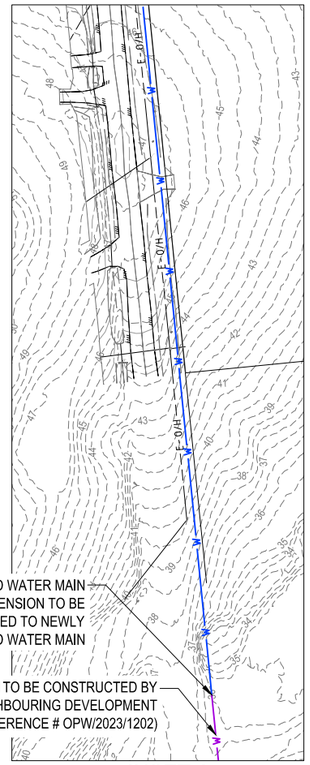
LEGEND

- PROPOSED SEWER MAIN
- PROPOSED TRUNK SEWER MAIN
- PROPOSED WATER MAIN
- PROPOSED STORMWATER DRAINAGE
- FINISHED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- STAGE BOUNDARY
- PROPOSED SEWER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED WATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED STORMWATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED SERVICE EASEMENTS

EXISTING SERVICES LEGEND

- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- EXISTING STORMWATER PIPE
- EXISTING TELECOMMUNICATIONS CABLE
- EXISTING ELECTRICAL CABLE

FOR CONTINUATION REFER SHEET 1



INSET A
SCALE 1:750 AT A1

CONTRACTOR TO DETERMINE AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS

REFER INSET A

EXISTING CULVERTS AND HEADWALLS TO BE EXTENDED TO ACCOMDATE FOR PROPOSED ROAD WIDENING WORKS

Ø 450mm OUTLET PIPE AT APPROX 1.50% GRADE AT 0.35m ABOVE DETENTION INVERT

Ø375mm OUTLET PIPE AT APPROX. 0.50% GRADE

10m WEIR AT 0.81m ABOVE DETENTION INVERT

Ø 225 TRUNK SEWER MAIN TO BE CONSTRUCTED BY NEIGHBOURING DEVELOPMENT (COUNCIL REFERENCE # OPW/2024/987)

PROPOSED CULVERT AND HEADWALL WORKS IN ACCORDANCE WITH FLOOD REPORT

TRUNK SEWER WORKS TO CONNECT INTO Ø225 STUB CONNECTION PROVIDE AS A PART OF THE ONGOING SEWER OPW APPLICATION (COUNCIL REFERENCE # OPW/2024/987)

BIO-RETENTION & DETENTION BASIN A:

FILTER AREA:	230m²
SURFACE AREA:	333m²
DETENTION BASE AREA:	484m²
DETENTION TOP AREA:	992m²
BASIN FLOOR IL:	31.6m AHD
TOP OF BASIN:	33.1m AHD

COURTNEY DRIVE

RICHARDSON CRESCENT

STAGE 2 · STAGE 3 · STAGE 4 · STAGE 5

184 RP173728 · 185 RP173728 · 186 RP173728 · 19 · 57 SP214370 · 56 RP162858 · 900 SO205578 · 75 SP174234

APPROVAL ISSUE
NOT FOR CONSTRUCTION UNLESS STAMPED

ISSUE No.	DATE	AMENDMENT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION

OSKA CONSULTING GROUP

CLIENT: QM PROPERTIES PTY LTD

PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
41-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	DC

TITLE: PRELIMINARY SERVICES LAYOUT PLAN - SHEET 2 OF 2

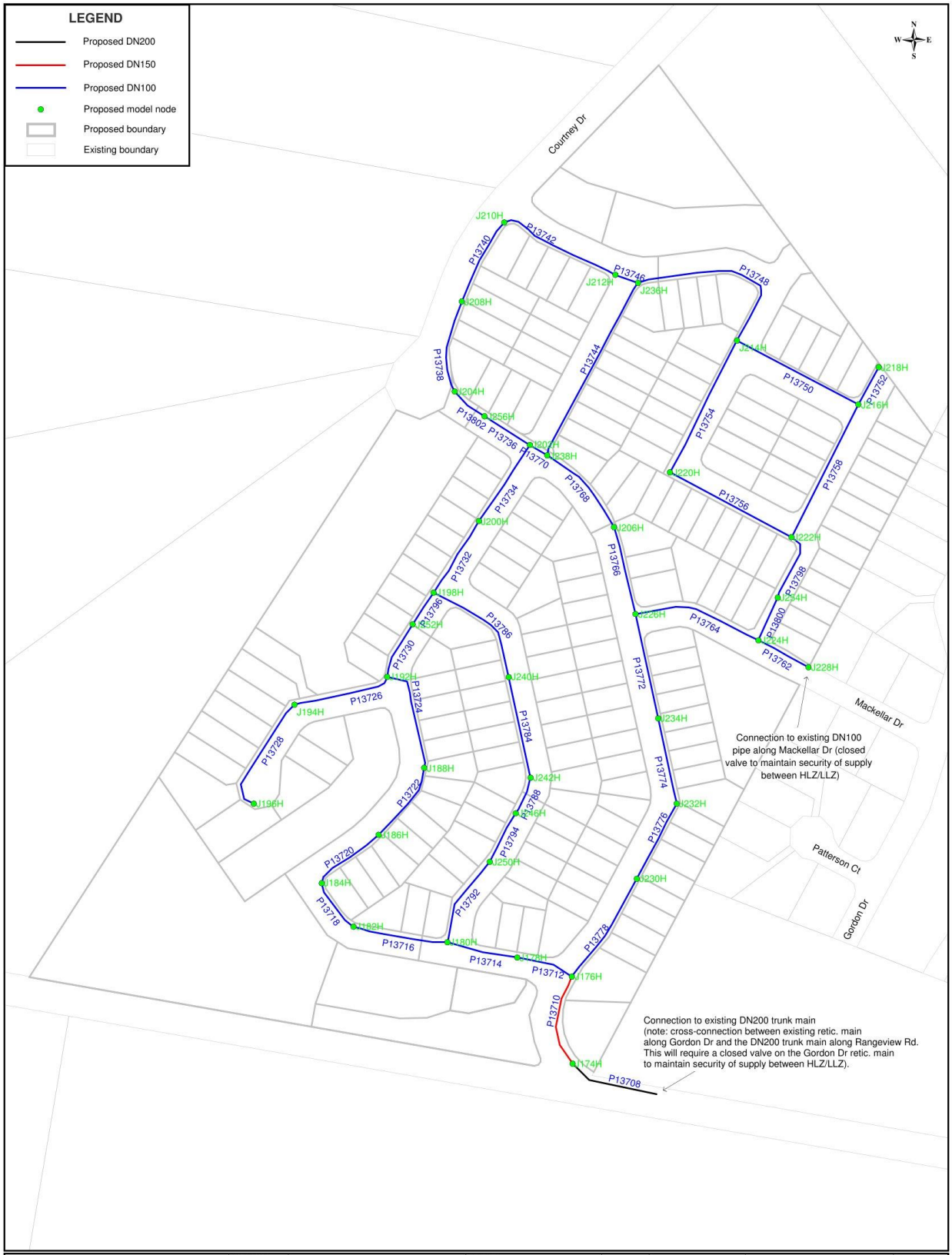
SCALE: 1:750 AT A1 · 1:1500 AT A3 · 0 15 30 45 60m

PROJECT NO. OSK6521

DWG NO. P041

ISSUE B

APPENDIX D: 77-79 COURTNEY DRIVE - WATER NETWORK MODELLING RESULTS SUMMARY



H2ONE

H2One Pty Ltd
PO Box 290
IPSWICH Q 4305
P: 07 5463 9538
E: Info@H2One.com.au
W: h2one.com.au

Important Notice!
This map is not a precise survey document. Accurate locations can only be determined by a survey on the ground.

H2One Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data.

DESIGNED:	D Colledge
DRAWN:	D Colledge
CHECKED:	J May
APPROVED:	J May
CLIENT PM:	
H2ONE PM:	J May

NOTE: DESIGN NOT TO BE AMENDED WITHOUT H2ONE PTY LTD ACCEPTANCE

No.	REVISION	APPROVED
E	REVISED ISSUE - 30 MAY 2022	
D	REVISED ISSUE - 13 APR 2022	
C	REVISED ISSUE - 19 NOV 2020	
B	REVISED ISSUE - 26 OCT 2020	
A	ORIGINAL ISSUE - 4 NOV 2019	

DATUM:
HORIZ: MGA94 (ZONE 56)
HEIGHT: AHD

SCALE:
0 35 70
Metres

SURVEYED BY / DATE: SURVEY CHECKED:

PROJECT NO: 1804245

FILE REF:

CAD FILE:

CITY OF GOLDCOAST.

CITY OF GOLD COAST
PO BOX 5042, GCMC QLD 9729

79-99 Courtney Dr
Upper Coomera QLD 4209
Water Supply and Sewerage Hydraulic Analysis

Appendix 12. Water supply hydraulic model pipe layout

MAY, 2022

DATE SCANNED:

DRG No: REV:

H2ONE

Appendix 14. Modelling results for water supply reticulation layout

Pipes

Develop. Stage	ID	Diameter (DN)	HW Co-efficient	Length (m)	SF PH Flow Rate (L/s)	SF PH Velocity (m/s)	SF PH Head Loss (m/km)
Stage 1	P13708	200	110	80.4	1.5	0.05	0.03
	P13710	150	100	39.2	1.4	0.08	0.12
	P13712	100	100	40.8	0.5	0.06	0.12
	P13714	100	100	46.7	0.4	0.05	0.08
	P13762	100	100	40.2	0.1	0.01	0.01
	P13764	100	100	80.9	0.3	0.04	0.05
	P13766	100	100	57.8	0.1	0.01	0.01
	P13772	100	100	69.2	0.5	0.06	0.12
	P13774	100	100	58.6	0.6	0.08	0.18
	P13776	100	100	53.0	0.7	0.09	0.23
	P13778	100	100	76.7	0.8	0.10	0.30
	P13792	100	100	65.0	0.2	0.03	0.02
	P13794	100	100	35.8	0.1	0.01	0.01
	P13800	100	100	31.3	0.1	0.01	0.01
Stage 2	P13708	200	110	80.4	2.2	0.07	0.00
	P13710	150	100	39.2	2.1	0.12	0.01
	P13712	100	100	40.8	1.0	0.13	0.02
	P13714	100	100	46.7	0.9	0.12	0.02
	P13732	100	100	55.0	0.2	0.03	0.00
	P13734	100	100	59.4	0.1	0.02	0.00
	P13736	100	100	34.5	0.1	0.01	0.00
	P13762	100	100	40.2	0.1	0.01	0.00
	P13764	100	100	80.9	0.3	0.04	0.00
	P13766	100	100	57.8	0.3	0.03	0.00
	P13768	100	100	64.2	0.2	0.02	0.00
	P13770	100	100	13.1	0.1	0.01	0.00
	P13772	100	100	69.2	0.7	0.09	0.01
	P13774	100	100	58.6	0.8	0.10	0.02
	P13776	100	100	53.0	0.9	0.11	0.02
	P13778	100	100	76.7	1.0	0.13	0.03
	P13784	100	100	66.4	0.5	0.07	0.01
	P13786	100	100	76.7	0.4	0.05	0.01
	P13788	100	100	25.5	0.6	0.08	0.00
	P13792	100	100	65.0	0.8	0.10	0.02
	P13794	100	100	35.8	0.7	0.09	0.01
	P13796	100	100	24.7	0.1	0.01	0.00
	P13800	100	100	31.3	0.1	0.01	0.00
Stage 3	P13708	200	110	80.4	2.9	0.09	0.09
	P13710	150	100	39.2	2.8	0.16	0.41
	P13712	100	100	40.8	1.6	0.20	1.03
	P13714	100	100	46.7	1.5	0.19	0.91
	P13716	100	100	60.8	0.7	0.09	0.22
	P13718	100	100	38.2	0.6	0.08	0.16
	P13720	100	100	47.5	0.5	0.06	0.12
	P13722	100	100	54.7	0.4	0.05	0.08
	P13724	100	100	72.1	0.3	0.04	0.04
	P13726	100	100	71.3	0.2	0.03	0.02
	P13728	100	100	74.8	0.1	0.01	0.01
	P13730	100	100	38.6	0.0	0.00	0.00
	P13732	100	100	55.0	0.1	0.01	0.00
	P13734	100	100	59.4	0.0	0.00	0.00
	P13736	100	100	34.5	0.1	0.01	0.01
	P13762	100	100	40.2	0.1	0.01	0.01
	P13764	100	100	80.9	0.3	0.04	0.05
	P13766	100	100	57.8	0.4	0.05	0.08
	P13768	100	100	64.2	0.3	0.04	0.05
	P13770	100	100	13.1	0.2	0.03	0.02
	P13772	100	100	69.2	0.8	0.10	0.30
	P13774	100	100	58.6	0.9	0.12	0.37
	P13776	100	100	53.0	1.0	0.13	0.45
	P13778	100	100	76.7	1.1	0.14	0.54

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	P13784	100	100	66.4	0.4	0.05	0.08
	P13786	100	100	76.7	0.3	0.04	0.05
	P13788	100	100	25.5	0.5	0.06	0.12
	P13792	100	100	65.0	0.7	0.09	0.22
	P13794	100	100	35.8	0.6	0.08	0.17
	P13796	100	100	24.7	0.1	0.02	0.01
	P13800	100	100	31.3	0.1	0.01	0.01
Stage 4	P13708	200	110	80.4	4.6	0.11	0.13
	P13710	150	100	39.2	4.5	0.20	0.61
	P13712	100	100	40.8	2.5	0.25	1.54
	P13714	100	100	46.7	2.4	0.24	1.39
	P13716	100	100	60.8	1.1	0.11	0.34
	P13718	100	100	38.2	1.0	0.10	0.27
	P13720	100	100	47.5	0.9	0.09	0.21
	P13722	100	100	54.7	0.8	0.07	0.16
	P13724	100	100	72.1	0.7	0.06	0.11
	P13726	100	100	71.3	0.2	0.03	0.02
	P13728	100	100	74.8	0.1	0.01	0.01
	P13730	100	100	38.6	0.4	0.02	0.02
	P13732	100	100	55.0	1.0	0.06	0.10
	P13734	100	100	59.4	0.9	0.05	0.07
	P13736	100	100	34.5	0.6	0.06	0.10
	P13738	100	100	59.4	0.4	0.03	0.03
	P13740	100	100	57.4	0.3	0.01	0.00
	P13742	100	100	79.2	0.1	0.01	0.00
	P13744	100	100	126.8	0.6	0.04	0.05
	P13746	100	100	16.9	0.0	0.02	0.02
	P13762	100	100	40.2	0.1	0.01	0.01
	P13764	100	100	80.9	0.9	0.04	0.05
	P13766	100	100	57.8	0.6	0.09	0.22
	P13768	100	100	64.2	0.5	0.08	0.16
	P13770	100	100	13.1	0.1	0.02	0.02
	P13772	100	100	69.2	1.6	0.14	0.52
	P13774	100	100	58.6	1.7	0.15	0.61
	P13776	100	100	53.0	1.8	0.17	0.71
	P13778	100	100	76.7	1.9	0.18	0.82
	P13784	100	100	66.4	0.9	0.08	0.16
	P13786	100	100	76.7	0.8	0.06	0.12
	P13788	100	100	25.5	1.0	0.09	0.22
	P13792	100	100	65.0	1.2	0.11	0.35
	P13794	100	100	35.8	1.1	0.10	0.28
	P13796	100	100	24.7	0.3	0.01	0.00
	P13800	100	100	31.3	0.7	0.01	0.01
	P13802	100	100	25.2	0.5	0.07	0.14
Stage 5	P13708	200	110	80.4	4.6	0.15	0.21
	P13710	150	100	39.2	4.5	0.26	1.00
	P13712	100	100	40.8	2.5	0.32	2.37
	P13714	100	100	46.7	2.4	0.31	2.20
	P13716	100	100	60.8	1.1	0.14	0.55
	P13718	100	100	38.2	1.0	0.13	0.46
	P13720	100	100	47.5	0.9	0.12	0.38
	P13722	100	100	54.7	0.8	0.11	0.31
	P13724	100	100	72.1	0.7	0.09	0.24
	P13726	100	100	71.3	0.2	0.03	0.02
	P13728	100	100	74.8	0.1	0.01	0.01
	P13730	100	100	38.6	0.4	0.05	0.09
	P13732	100	100	55.0	1.0	0.13	0.43
	P13734	100	100	59.4	0.9	0.11	0.35
	P13736	100	100	34.5	0.6	0.08	0.19
	P13738	100	100	59.4	0.4	0.05	0.09
	P13740	100	100	57.4	0.3	0.04	0.04
	P13742	100	100	79.2	0.1	0.02	0.01
	P13744	100	100	126.8	0.6	0.07	0.15
	P13746	100	100	16.9	0.0	0.00	0.00
	P13748	100	100	119.4	0.4	0.06	0.10
	P13750	100	100	88.1	0.2	0.02	0.02
	P13752	100	100	27.7	0.2	0.03	0.02

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	P13754	100	100	98.6	0.0	0.01	0.00
	P13756	100	100	86.6	0.2	0.02	0.02
	P13758	100	100	98.5	0.2	0.03	0.03
	P13762	100	100	40.2	0.1	0.01	0.01
	P13764	100	100	80.9	0.9	0.12	0.38
	P13766	100	100	57.8	0.6	0.08	0.17
	P13768	100	100	64.2	0.5	0.06	0.12
	P13770	100	100	13.1	0.1	0.02	0.01
	P13772	100	100	69.2	1.6	0.21	1.09
	P13774	100	100	58.6	1.7	0.22	1.22
	P13776	100	100	53.0	1.8	0.23	1.35
	P13778	100	100	76.7	1.9	0.25	1.50
	P13784	100	100	66.4	0.9	0.11	0.33
	P13786	100	100	76.7	0.8	0.10	0.26
	P13788	100	100	25.5	1.0	0.12	0.40
	P13792	100	100	65.0	1.2	0.15	0.58
	P13794	100	100	35.8	1.1	0.14	0.49
	P13796	100	100	24.7	0.3	0.04	0.05
	P13798	100	100	43.5	0.6	0.08	0.18
	P13800	100	100	31.3	0.7	0.09	0.24
	P13802	100	100	25.2	0.5	0.07	0.14

Note 1: "SF" is "standard flow" and "PH" is "peak hour"

Note 2: Peak hour occurred at 7 am.

Nodes

Develop. Stage	ID	Demand (EP)	RL AHD (m)	SF PH Demand (L/s)	SF PH Pressure (m)	Fire Flow (L/s)	FF 2/3 PH Pressure (m)
Stage 1	J174H	12.0	57.5	0.1	38.8	15	32.4
	J176H	12.0	59.5	0.1	36.7	15	29.9
	J178H	12.0	59.2	0.1	36.9	15	28.0
	J180H	12.0	62.3	0.1	33.7	15	23.2
	J206H	12.0	55.9	0.1	40.0	15	26.0
	J224H	12.0	48.1	0.1	47.8	15	32.2
	J226H	12.0	57.7	0.1	38.2	15	24.9
	J228H	12.0	42.9	0.1	53.0	15	34.7
	J230H	12.0	61.3	0.1	34.8	15	24.7
	J232H	12.0	60.8	0.1	35.2	15	23.7
	J234H	12.0	59.4	0.1	36.6	15	24.0
	J246H	12.0	62.3	0.1	33.7	15	20.8
	J250H	12.0	61.9	0.1	34.1	15	21.7
	J254H	12.0	49.6	0.1	46.3	15	30.2
Stage 2	J174H	12.0	57.5	0.1	38.8	15	32.4
	J176H	12.0	59.5	0.1	36.7	15	29.9
	J178H	12.0	59.2	0.1	36.9	15	28.0
	J180H	11.5	62.3	0.1	33.7	15	23.2
	J198H	11.5	52.5	0.1	43.4	15	31.0
	J200H	11.5	52.2	0.1	43.7	15	30.7
	J202H	12.0	51.1	0.1	44.8	15	31.3
	J206H	12.0	55.9	0.1	40.0	15	26.0
	J224H	12.0	48.1	0.1	47.8	15	32.2
	J226H	12.0	57.7	0.1	38.2	15	24.9
	J228H	12.0	42.9	0.1	53.0	15	34.7
	J230H	12.0	61.3	0.1	34.8	15	24.7
	J232H	12.0	60.8	0.1	35.2	15	23.7
	J234H	11.5	59.4	0.1	36.6	15	24.0
	J238H	11.5	51.9	0.1	44.0	15	30.5
	J240H	11.5	57.1	0.1	38.8	15	25.7
	J242H	12.0	61.8	0.1	34.2	15	21.1
	J246H	12.0	62.3	0.1	33.7	15	20.8
	J250H	11.5	61.9	0.1	34.1	15	21.7
	J252H	12.0	52.7	0.1	43.2	15	30.4
	J254H	11.5	49.6	0.1	46.3	15	30.2
	J256H	12.0	48.4	0.1	47.5	15	32.8
Stage 3	J174H	12.0	57.5	0.1	38.8	15	32.4
	J176H	12.0	59.5	0.1	36.7	15	29.9
	J178H	12.0	59.2	0.1	36.9	15	28.0

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	J180H	12.0	62.3	0.1	33.7	15	23.2
	J182H	12.0	63.2	0.1	32.8	15	20.3
	J184H	12.0	61.3	0.1	34.7	15	21.5
	J186H	12.0	60.2	0.1	35.8	15	22.1
	J188H	12.0	58.0	0.1	37.9	15	24.1
	J192H	12.0	53.3	0.1	42.6	15	29.2
	J194H	12.0	55.0	0.1	40.9	15	22.8
	J196H	12.0	59.1	0.1	36.8	15	13.7
	J198H	11.5	52.5	0.1	43.4	15	31.0
	J200H	11.5	52.2	0.1	43.7	15	30.7
	J202H	11.5	51.1	0.1	44.8	15	31.3
	J206H	12.0	55.9	0.1	40.0	15	26.0
	J224H	12.0	48.1	0.1	47.8	15	32.2
	J226H	12.0	57.7	0.1	38.2	15	24.9
	J228H	12.0	42.9	0.1	53.0	15	34.7
	J230H	12.0	61.3	0.1	34.8	15	24.7
	J232H	12.0	60.8	0.1	35.2	15	23.7
	J234H	12.0	59.4	0.1	36.6	15	24.0
	J238H	11.5	51.9	0.1	44.0	15	30.5
	J240H	11.5	57.1	0.1	38.8	15	25.7
	J242H	11.5	61.8	0.1	34.2	15	21.1
	J246H	12.0	62.3	0.1	33.7	15	20.8
	J250H	12.0	61.9	0.1	34.1	15	21.7
	J252H	11.5	52.7	0.1	43.2	15	30.4
	J254H	12.0	49.6	0.1	46.3	15	30.2
	J256H	11.5	48.4	0.1	47.5	15	32.8
Stage 4	J174H	12.0	57.5	0.1	38.8	15	32.4
	J176H	12.0	59.5	0.1	36.7	15	29.9
	J178H	12.0	59.2	0.1	36.9	15	28.0
	J180H	12.0	62.3	0.1	33.7	15	23.2
	J182H	12.0	63.2	0.1	32.8	15	20.3
	J184H	12.0	61.3	0.1	34.7	15	21.5
	J186H	12.0	60.2	0.1	35.8	15	22.1
	J188H	12.0	58.0	0.1	37.9	15	24.1
	J192H	12.0	53.3	0.1	42.6	15	29.2
	J194H	12.0	55.0	0.1	40.9	15	22.8
	J196H	12.0	59.1	0.1	36.8	15	13.7
	J198H	11.5	52.5	0.1	43.4	15	31.0
	J200H	11.5	52.2	0.1	43.7	15	30.7
	J202H	11.5	51.1	0.1	44.8	15	31.3
	J204H	15.6	46.5	0.1	49.4	15	34.1
	J206H	12.0	55.9	0.1	40.0	15	26.0
	J208H	15.6	43.6	0.1	52.3	15	36.2
	J210H	15.6	40.0	0.1	55.9	15	39.7
	J212H	15.6	40.6	0.1	55.3	15	39.9
	J224H	12.0	48.1	0.1	47.8	15	32.2
	J226H	12.0	57.7	0.1	38.2	15	24.9
	J228H	12.0	42.9	0.1	53.0	15	34.7
	J230H	12.0	61.3	0.1	34.8	15	24.7
	J232H	12.0	60.8	0.1	35.2	15	23.7
	J234H	12.0	59.4	0.1	36.6	15	24.0
	J236H	15.6	40.6	0.1	55.3	15	40.3
	J238H	11.5	51.9	0.1	44.0	15	30.5
	J240H	11.5	57.1	0.1	38.8	15	25.7
	J242H	11.5	61.8	0.1	34.2	15	21.1
	J246H	12.0	62.3	0.1	33.7	15	20.8
	J250H	12.0	61.9	0.1	34.1	15	21.7
	J252H	11.5	52.7	0.1	43.2	15	30.4
	J254H	12.0	49.6	0.1	46.3	15	30.2
	J256H	11.5	48.4	0.1	47.5	15	32.8
Stage 5	J174H	12.0	57.5	0.1	38.8	15	32.4
	J176H	12.0	59.5	0.1	36.7	15	29.9
	J178H	12.0	59.2	0.1	36.9	15	28.0
	J180H	12.0	62.3	0.1	33.7	15	23.2
	J182H	12.0	63.2	0.1	32.8	15	20.3
	J184H	12.0	61.3	0.1	34.7	15	21.5
	J186H	12.0	60.2	0.1	35.8	15	22.1

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	J188H	12.0	58.0	0.1	37.9	15	24.1
	J192H	12.0	53.3	0.1	42.6	15	29.2
	J194H	12.0	55.0	0.1	40.9	15	22.8
	J196H	12.0	59.1	0.1	36.8	15	13.7
	J198H	11.5	52.5	0.1	43.4	15	31.0
	J200H	11.5	52.2	0.1	43.7	15	30.7
	J202H	11.5	51.1	0.1	44.8	15	31.3
	J204H	15.6	46.5	0.1	49.4	15	34.1
	J206H	12.0	55.9	0.1	40.0	15	26.0
	J208H	15.6	43.6	0.1	52.3	15	36.2
	J210H	15.6	40.0	0.1	55.9	15	39.7
	J212H	15.6	40.6	0.1	55.3	15	39.9
	J214H	25.1	46.8	0.2	49.0	15	32.5
	J216H	25.1	51.9	0.2	43.9	15	26.1
	J218H	25.1	49.4	0.2	46.4	15	26.8
	J220H	25.1	53.4	0.2	42.4	15	24.6
	J222H	25.1	53.6	0.2	42.2	15	25.8
	J224H	12.0	48.1	0.1	47.8	15	32.2
	J226H	12.0	57.7	0.1	38.2	15	24.9
	J228H	12.0	42.9	0.1	53.0	15	34.7
	J230H	12.0	61.3	0.1	34.8	15	24.7
	J232H	12.0	60.8	0.1	35.2	15	23.7
	J234H	12.0	59.4	0.1	36.6	15	24.0
	J236H	15.6	40.6	0.1	55.3	15	40.3
	J238H	11.5	51.9	0.1	44.0	15	30.5
	J240H	11.5	57.1	0.1	38.8	15	25.7
	J242H	11.5	61.8	0.1	34.2	15	21.1
	J246H	12.0	62.3	0.1	33.7	15	20.8
	J250H	12.0	61.9	0.1	34.1	15	21.7
	J252H	11.5	52.7	0.1	43.2	15	30.4
	J254H	12.0	49.6	0.1	46.3	15	30.2
	J256H	11.5	48.4	0.1	47.5	15	32.8

Note 1: Red text denotes minimum pressure (critical pressure point) within the network.

Note 2: Peak hour occurred at 7 am and 2/3 peak hour at 7 pm.

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Appendix 15. Modelling results for water supply network capacity assessment

Standard Flow

Provision	2016		2021		2026		2031		2036		2066	
	Post-develop.	Pre-develop.	Post-develop.	Pre-develop.	Post-develop.	Pre-develop.	Post-develop.	Pre-develop.	Post-develop.	Pre-develop.	Post-develop.	Pre-develop.
Connection point (*CD_1_HY*) min. pressure (m)	38.7	40.0	39.4	40.7	38.9	40.1	38.9	40.1	38.9	40.1	39.4	39.9
Network min. pressure (m)	19.7	19.8	20.8	20.8	20.0	20.1	20.0	20.1	20.0	20.1	20.0	19.6
Network no. failures	2	2	2	2	2	2	2	2	2	2	2	2
Tank min. water level (%)	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
Max. pipe velocity (m/s)	1.9	1.4	2.0	1.6	2.0	1.6	2.0	1.6	2.0	1.6	1.8	1.4
Network min. pressure ID	HE_11100514189_WTHY											

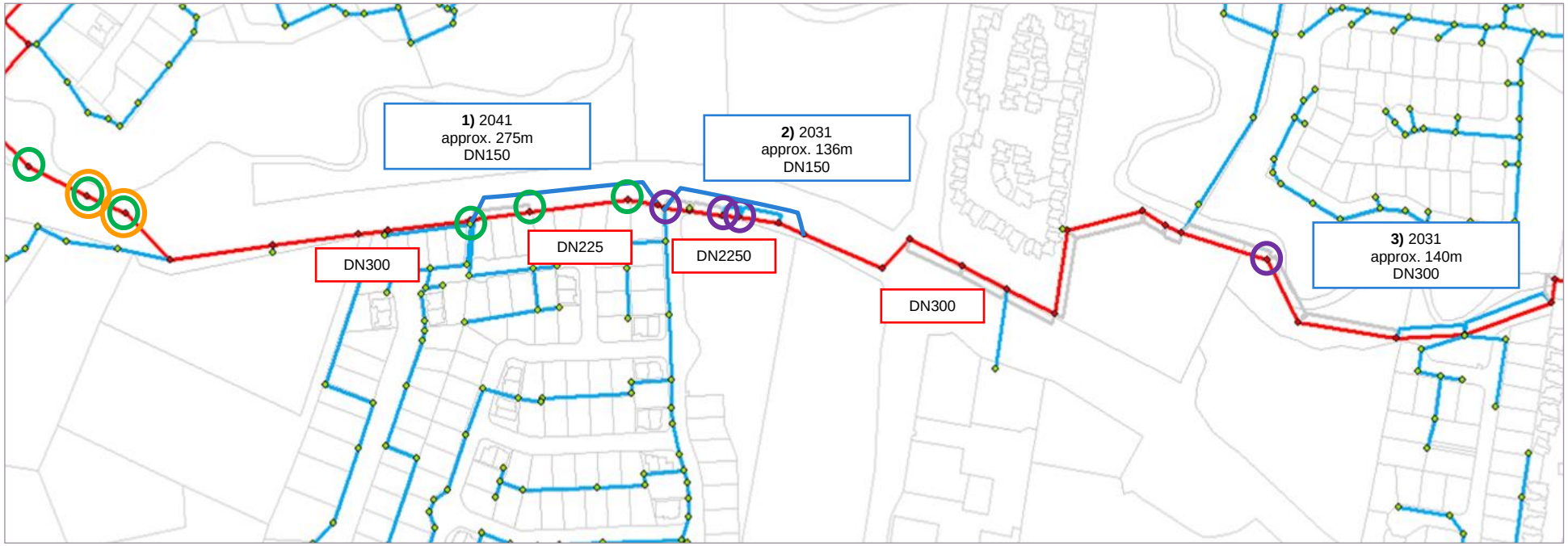
Fire Flow

Scenario		2016		2021		2026		2031		2036		2066	
		Post-develop.	Pre-develop.	Post-develop.	Pre-develop.	Post-develop.	Pre-develop.	Post-develop.	Pre-develop.	Post-develop.	Pre-develop.	Post-develop.	Pre-develop.
Peak Hour	Site hydrant (*CD_1_HY*) min. pressure (m)	29.6	32.7	30.1	33.3	29.7	32.9	29.7	32.9	29.7	32.8	30.7	32.7
	Network hydrant min. pressure (m)	13.6	13.9	14.6	15.0	14.0	14.4	14.0	14.4	14.0	14.3	14.3	13.9
	Network hydrant no. failures	0	0	0	0	0	0	0	0	0	0	0	0
	Min. pressure node ID	HE_11100010870_WTHY											
2/3 Peak Hour	Site hydrant (*CD_1_HY*) min. pressure (m)	32.6	34.5	32.8	34.6	32.8	34.2	32.8	34.2	32.8	34.2	33.4	35.0
	Network hydrant min. pressure (m)	14.6	14.8	15.0	15.2	14.9	14.6	15.0	14.6	14.9	14.6	15.1	15.3
	Network hydrants no. failures	0	0	0	0	0	0	0	0	0	0	0	0
	Min. pressure node ID	HE_11100010870_WTHY											

Note: Peak hour occurred at 7 am and 2/3 peak hour occurred at 7 pm.

APPENDIX E: DOWNSTREAM GRAVITY NETWORK FOR ULTIMATE (2066) PLANNING HORIZON AS PER (EXISTING WSSIP 2019 WITH APPROVED DA'S)

- Purple rings: freeboard failures that occur under 2031 PWWF
- Orange rings: freeboard failures that occur under 2041 PWWF
- Green rings: freeboard failures that occur under 2066 PWWF



Source: 203 Bailey's Mountain Road Water & Wastewater Assessment (WCS Engineering, July 2021).

Road Traffic Noise Assessment Report

Proposed Residential Subdivision

At 41-53 Courtney Drive, Upper Coomera

On behalf Norfolk Estates Pty Ltd

24GCA0136 R01_0



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Revision Record

No.	Author	Reviewed/Approved	Description	Date
A.	J. Fox		Internal review	02/12/2024
0.	J. Fox		Issued to client	02/12/2024
1.				

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Executive Summary

Colliers conducted a road traffic noise assessment for the proposed residential subdivision located at 41-53 Courtney Drive, Upper Coomera.

Noise measurements were undertaken to establish the existing road traffic noise levels. Road traffic noise levels were assessed at the development considering a 10-year planning horizon. Compliance with the private outdoor criteria is predicted to be achieved at all lots with the inclusion of acoustic barriers. QDC MP4.4 Noise Categories were recommended to achieve the internal criteria for noise affected lots. The building treatment requirements range from QDC Noise Category 0 to 3.

Compliance with the noise criteria is predicted to be achieved based on the implementation of the recommendations outlined in Section 7 of this report.

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1 Introduction

1.1 Background

Colliers was engaged by Norfolk Estates Pty Ltd to undertake a road traffic noise assessment for the proposed residential subdivision located at 41-53 Courtney Drive, Upper Coomera. This report will form part of the application for consideration by the City of Gold Coast Council.

1.2 References

The assessment is based on the following:

- City of Gold Coast *City Plan, Version 11*;
- Queensland Development Code *MP4.4 Buildings in a Transport Noise Corridor* (August, 2015);
- Development plans *Saunders Havill Group,* Rev 5 dated 14/11/2024;
- Site inspection, noise measurements, analysis and calculations conducted by TTM.

1.3 Scope

The assessment includes the following:

- Description of the site and proposal;
- Measurement of existing road traffic noise levels;
- Statement of assessment criteria relating to road traffic noise intrusion;
- Prediction of road traffic noise impacts on the development;
- Analysis of predicted noise levels;
- Details of noise control recommendations to be incorporated to achieve predicted compliance.

2 Site Description

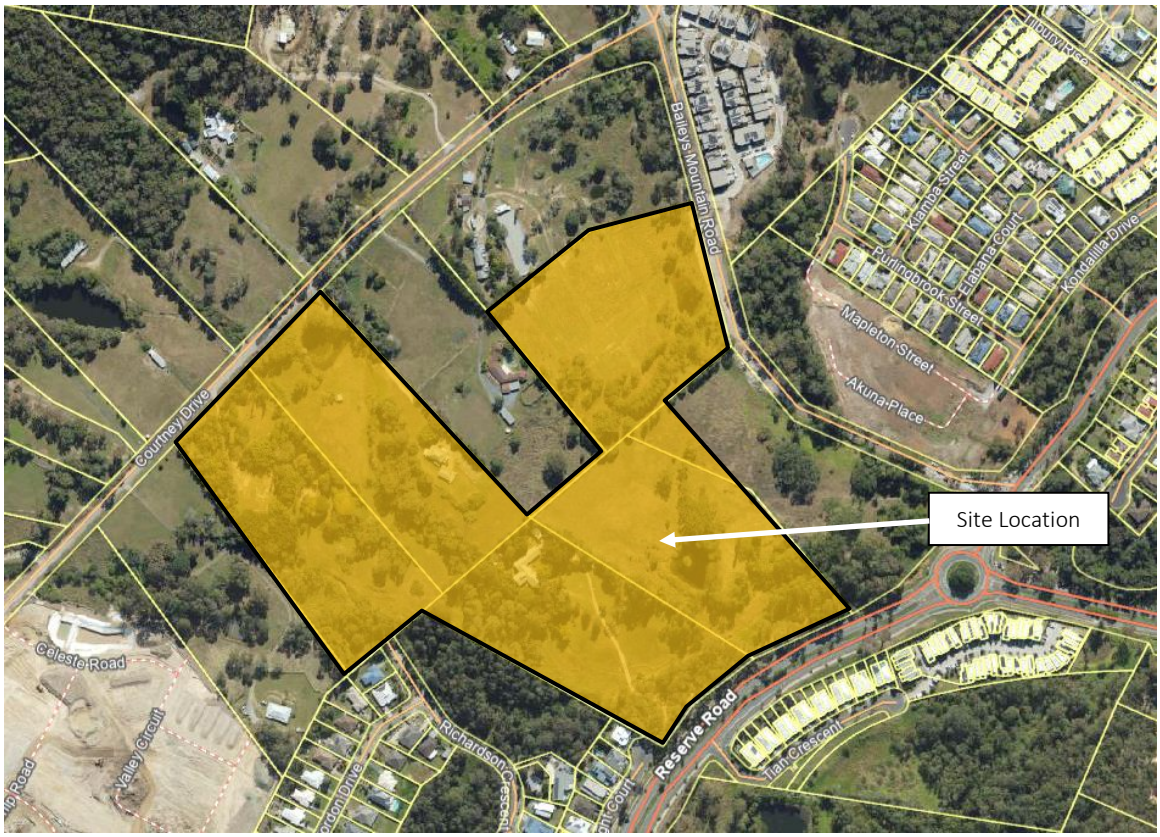
2.1 Site Location

The site is described by the following:

- Lot 185 on RP173727, Lot 186 on RP173728, Lot 57 on SP214370, Lot 56 on RP162858 and Lot 58 on SP191940
- Courtney Drive, Baileys Mountain Road and Reserve Road, Upper Coomera

The site locality is shown in Figure 1.

Figure 1: Site Locality



2.2 Description of Surrounding Area

The site is bound by Courtney Drive to the north, Baileys Mountain Road to the east, Reserve Road to the south and existing residential to the west. The current acoustic environment at the site is primarily comprised of road traffic noise from Baileys Mountain Road to and Reserve Road, as well as natural environmental sources such as wind in vegetation and birds chirping.

3 Proposed Development

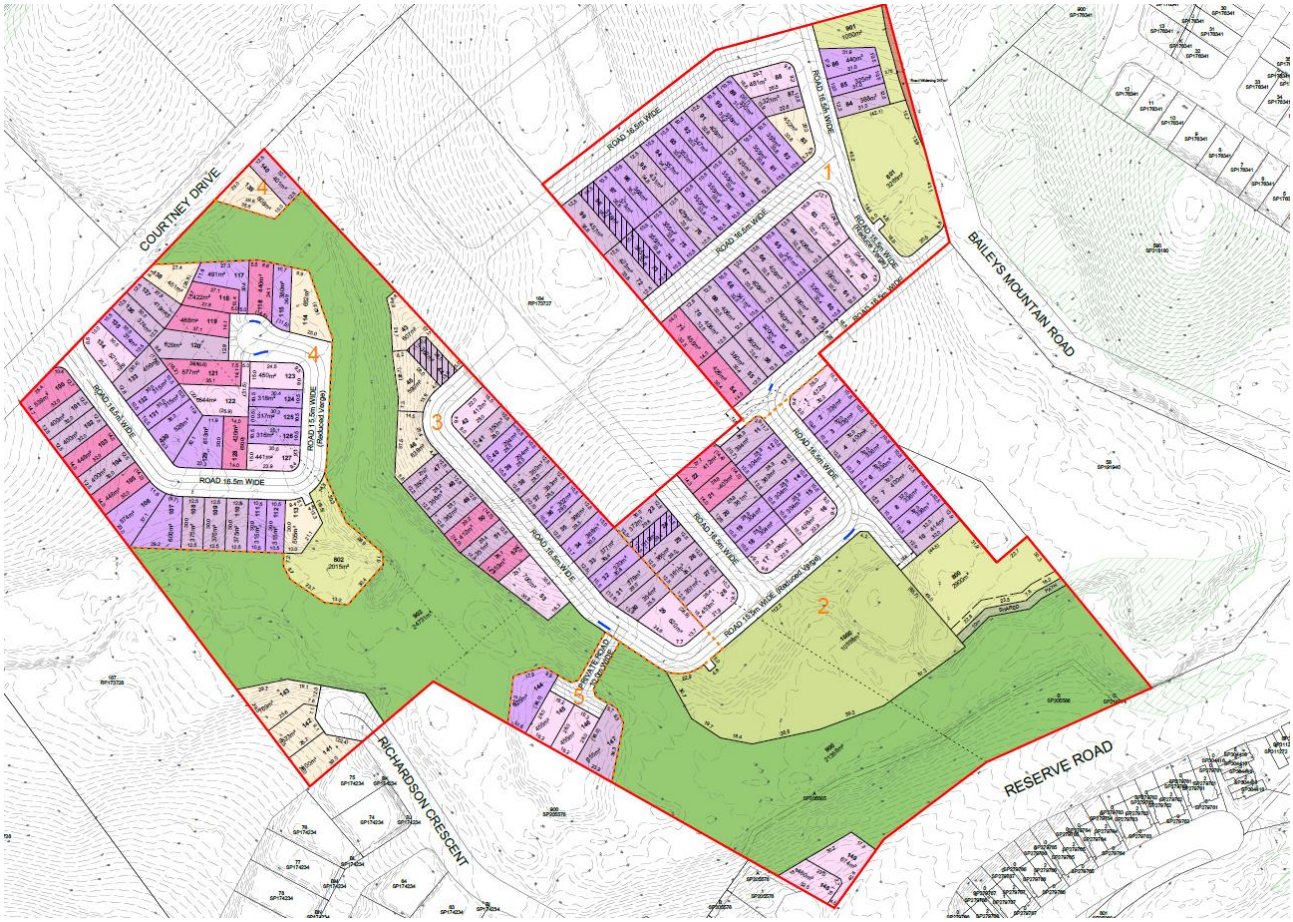
3.1 Development Description

The proposal is for a residential subdivision comprising approximately 149 lots.

Access to the subdivision will be from Baileys Mountain Road, Courtney Drive, Richardson Crescent and Wright Court. No access is proposed from Reserve Road.

The assessment is based on the development plans shown in Appendix A. The site plan of the proposed development is shown in Figure 2.

Figure 2: Development Site Plan



4 Noise Measurements

4.1 Equipment

The following equipment was used to measure existing noise levels:

- ARL EL316 environmental noise monitor (Serial number: 16-707-040).
- Norsonic Nor140 sound level meter (Serial number: 1406506).
- Casella Acoustical Calibrator (Serial number: 045246).

All equipment was calibrated by a National Association of Testing Authorities (NATA) accredited laboratory. The equipment was calibrated before and after the measurement session. No significant drift from the reference signal was recorded.

4.2 Unattended Noise Monitoring

Unattended noise monitoring was conducted to establish the existing road traffic noise levels between Thursday 3rd October and Wednesday 9th October 2024.

The noise monitor was located on the southern boundary of the site, approximately 14m from the nearest lane of Reserve Road, as shown in Figure 3 below. The microphone was in a free-field location approximately 1.4m above ground level. Road traffic noise monitoring could not be conducted on Baileys Mountain Road due to closure for construction works.

Figure 3: Unattended Noise Monitoring Location



The microphone was in free-field location and 1.5m above ground level. The noise monitor was set to measure statistical noise levels in 'A'-weighting, 'Fast' response, over 60-minute intervals. Road traffic noise levels were measured in accordance with Australian Standard AS2702[1].

Weather during the noise monitoring period was generally fine. The temperature range was between 14-30°C (source: Bureau of Meteorology, Gold Coast Seaway weather station).

4.3 Results of Measurements

4.3.1 Road Traffic Noise Levels

Table 1 presents the measured road traffic noise levels from Reserve Road.

Table 1: Measured Road Traffic Noise Levels

Day and Date	Road Traffic Noise Descriptor	Time Period	Measured Level, dB(A)
Average of measurement days 4th and 8th October 2024.	$L_{A10,18\ hour}$	6am to midnight	66.1
	Noisiest daytime $L_{Aeq,1\ hour}$	4pm to 5pm	66.4
	Noisiest night time $L_{Aeq,1\ hour}$	5am to 6am	59.2
	$L_{Aeq,24\ hour}$	Midnight to midnight	60.1
	$L_{A90,18\ hour}$	6am to midnight	50.6
	$L_{A90,8\ hour}$	10pm to 6am	35.1

Graphical presentation of the measured levels is shown in Appendix B.

[1] Australian Standard *AS2702:1984 Acoustics – Methods for the Measurement of Road Traffic Noise*

5 Noise Criteria

5.1 Road Traffic Noise

The development site is situated adjacent to Reserve Road and Baileys Mountain Road which are local Council controlled roads, and therefore the City of Gold Coast Council *Regional Infrastructure Overlay Code* is applied.

5.1.1 City of Gold Coast Council

Table 8.2.14-3: Design level – road and rail noise criteria of the City of Gold Coast Council *Regional Infrastructure Overlay Code* outlines the external and internal noise criteria for residential uses. The noise assessment requirements are summarised in Table 2.

Table 2: The City of Gold Coast Council *Regional Infrastructure Overlay Code* – Road Traffic Noise Criteria

Development Type	Measurement Location	Design Level Road Noise Criteria
Accommodation Activities	External (1m in front of the most exposed part of a proposed sensitive land use)	≤60 dB(A) L_{10} (18h) façade corrected (where the measured L_{90} (8h) free field between 10pm and 6am ≤40dB(A))
		≤63 dB(A) L_{10} (18h) façade corrected (where the measured L_{90} (8h) free field between 10pm and 6am >40dB(A))
		Where the above criteria cannot be met, internal maximum design criterion levels specified in Table 1 of AS2107 apply, particularly for buildings greater than 1 storey high.
	External (Balconies and formal external open space)	≤57 dB(A) L_{10} (18h) free field (where the measured L_{90} (18h) free field between 6am and 12 midnight ≤45dB(A))
		≤60 dB(A) L_{10} (18h) free field (where the measured L_{90} (18h) free field between 6am and midnight >45dB(A))

5.1.2 Queensland Development Code MP4.4

The Queensland Development Code Part MP 4.4 - 'Buildings in a Transport Noise Corridor' August 2015 (QDC) specifies Noise Categories to ensure that habitable rooms of residential buildings are adequately protected from transport noise.

The Noise Categories list the minimum acoustic R_W ratings for each building component to comply with the indoor sound levels of AS2107[2]. Internal noise levels specified in Table 1 of AS2107 are expressed as L_{Aeq} levels and are reproduced in Table 3 below.

[2] Australian Standard *AS2107:2016 Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors*

Table 3: Indoor Design Sound Levels for Residential Dwellings from AS2107

Type of Occupancy 7. Residential Buildings	Recommended Design Sound Level $L_{Aeq,t}$, dB(A)
Living areas	35 - 45
Sleeping areas (night time)	35 - 40

It is expected that compliance with AS2107 would be achieved through implementation of the Noise Category building treatment recommendations specified by QDC MP4.4.

The triggers for each noise category are summarised in Table 4. Details regarding the noise categories and acceptable forms of construction can be found within Schedule 1 and 2 of the QDC document.

Table 4: Road Traffic Noise Category Levels - QDC MP4.4 (Schedule 3)

Noise Category	Level of Transport Noise* $L_{A10,\ 18Hour}$ for State-Controlled Roads and Designated Local Government Roads
Category 4	≥ 73 dB(A)
Category 3	68 – 72 dB(A)
Category 2	63 – 67 dB(A)
Category 1	58 – 62 dB(A)
Category 0	≤ 57 dB(A)

*Measured at 1m from the façade of the proposed or existing building.

6 Road Traffic Noise Assessment

An assessment of road traffic noise from Reserve Road and Baileys Mountain Road was conducted to determine the extent of acoustic treatments necessary for compliance with the assessment criteria.

6.1 Assessment Criteria

Based on the measured background noise levels detailed in Table 1 and the criteria outlined in Section 5.1, the following external road traffic noise limits apply to the development:

- Façades: An external noise level of 60 dB(A) $L_{A10\,(18\,hour)}$ façade corrected.
- Private Open Space: An external noise level of 60 dB(A) $L_{A10\,(18\,hour)}$ free-field.

6.2 Traffic Volumes

Table 5 presents the existing traffic volumes for Reserve Road and Baileys Mountain Road which were obtained from the City of Gold Coast Council (Open Data website). Forecast traffic volumes for Reserve Road were based a compound growth rate of 3.5%, which is considered reasonable for a well-established road. A 5% compound growth rate was applied for Baileys Mountain Road given the potential traffic growth from future development west of the site.

Heavy vehicle percentage was not available from the Open Data website. Therefore, a heavy vehicle percentage of 5% and 2% was estimated for Reserve Road and Baileys Mountain Road respectively.

Table 5: Traffic Volumes used in the Noise Model

Road	Traffic Volumes (AADT)				Heavy Vehicles (%)	Avg. Growth Rate (%)
	2021	2022	2024	2036		
Reserve Road	-	11,829	12,672	19,148	5.0	3.5
Baileys Mountain Road	1,223	1,284	1,416	2,421	2.0	5.0

The 18-hour traffic volumes used in the noise model are taken to be 95% of the AADT (Annual Average Daily Traffic).

6.3 Road Traffic Noise Model

6.3.1 Noise Modelling Parameters

Road traffic noise predictions were conducted using 'SoundPLAN v9.0', a CoRTN based modelling program. The basis of the 'SoundPLAN' model is as follows:

Table 6: Road Traffic Noise Modelling Parameters

Description	Value
Noise modelling standard	CoRTN

Description	Value
Angle increment	1 ^{O}
Grid spacing (noise maps)	2m squares
Road surface type	Impervious (+0dB(A))
Ground contours	QM Properties DWG file: *11694 P 05 Rev G* (received 14/11/2024)
Reserve Road speed limit	70km/h
Baileys Mountain Road speed limit	60km/h
Noise source height above grade	0.5m
Receiver heights	Ground: 1.8m above building pad level First: 4.6m above building pad level
Free-field calibration factor	-0.7 dB(A) adjustment as per Table 4.3.2.1 of TMR Code of Practice
Receiver (façade corrected) calibration factor	-1.7 dB(A) adjustment as per Table 4.3.2.1 of TMR Code of Practice
Façade correction	+2.5dB(A)

6.3.2 Noise Model Verification

To verify the road traffic noise model, the $L_{A10,\ 18\ Hour}$ noise level was modelled and compared to the measured levels presented in Table 1. As the noise monitor was in a free-field location, the predicted noise level is also shown as free-field. Details of the noise model verification are shown in Table 7. The SoundPLAN prediction is shown in Appendix C.

Table 7: Comparison between measured and modelled road traffic noise level

Logger Location	Measured $L_{A10,\ 18\ Hour}$	Predicted $L_{A10,\ 18\ Hour}$	Model Adjustment
14m from Reserve Road	66.1	66.1	0

The modelled levels are within the allowable tolerance of 2dB(A) of the measured level and no correction is required.

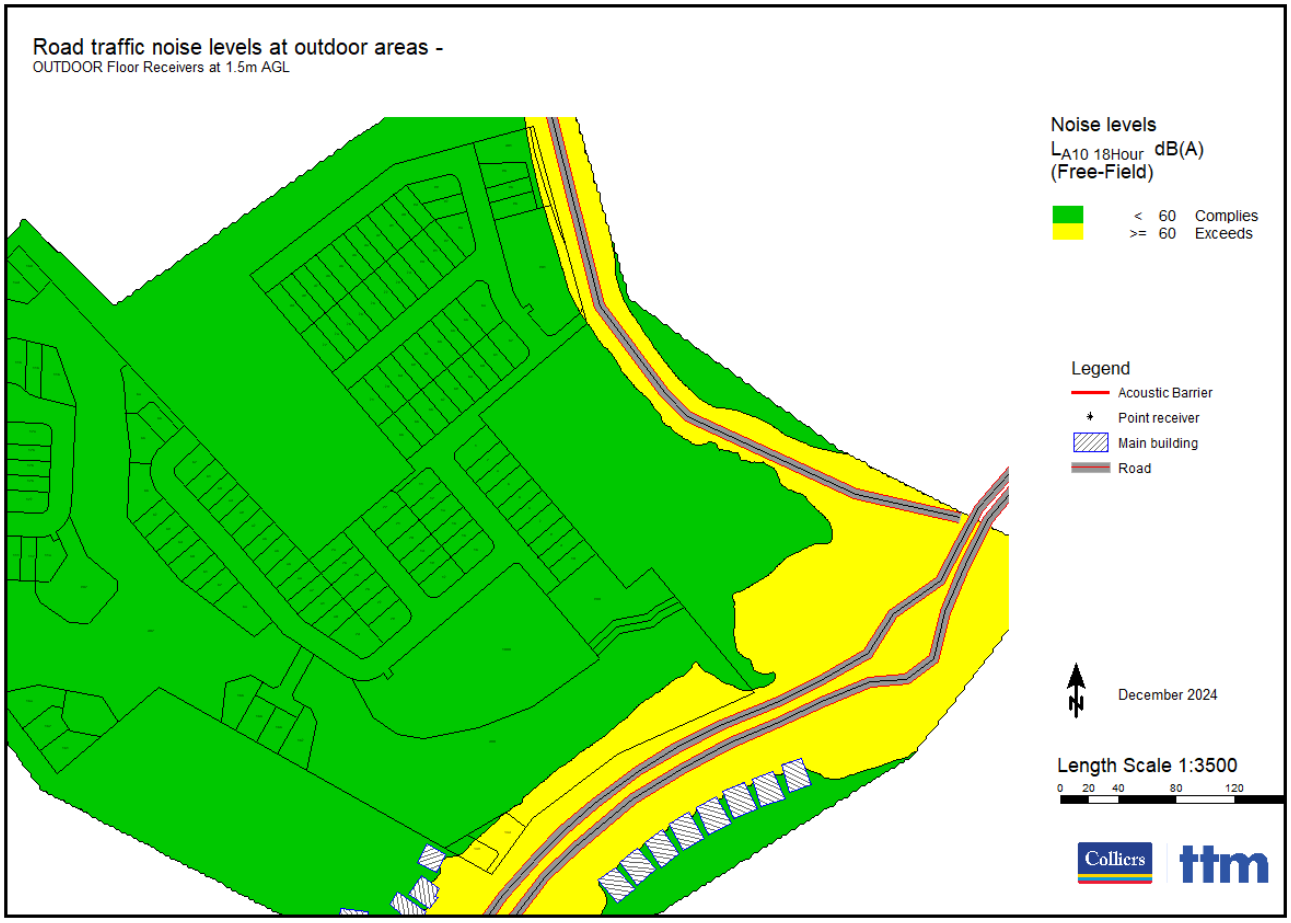
6.4 Predicted Road Traffic Noise Levels

Modelling was conducted to determine the road traffic noise levels at the development in the 10-year planning horizon to year 2036. The predicted noise contour results are presented in the sections below.

6.4.1 Private Outdoor Space

Figure 4 below presents the predicted road traffic noise levels compared to the free-field assessment criteria of 60 dB(A) to determine whether acoustic barriers are necessary for the development.

Figure 4: Predicted Road Traffic Noise Levels Compared to Outdoor Criteria



Without an acoustic barrier, road traffic noise levels are predicted to exceed the free-field noise criteria at Lot 148 and Lot 149 in the southern corner of the site. Acoustic barriers will be recommended along the lot boundaries to achieve compliance. Road traffic noise levels at the closest lots to Baileys Mountain Road are predicted to comply without the need for acoustic treatment.

The predicted noise levels inclusive of the recommended acoustic barriers are shown in Figure 5 below.

Figure 5: Predicted Road Traffic Noise Levels Compared to the Outdoor Criteria – With Acoustic Barriers

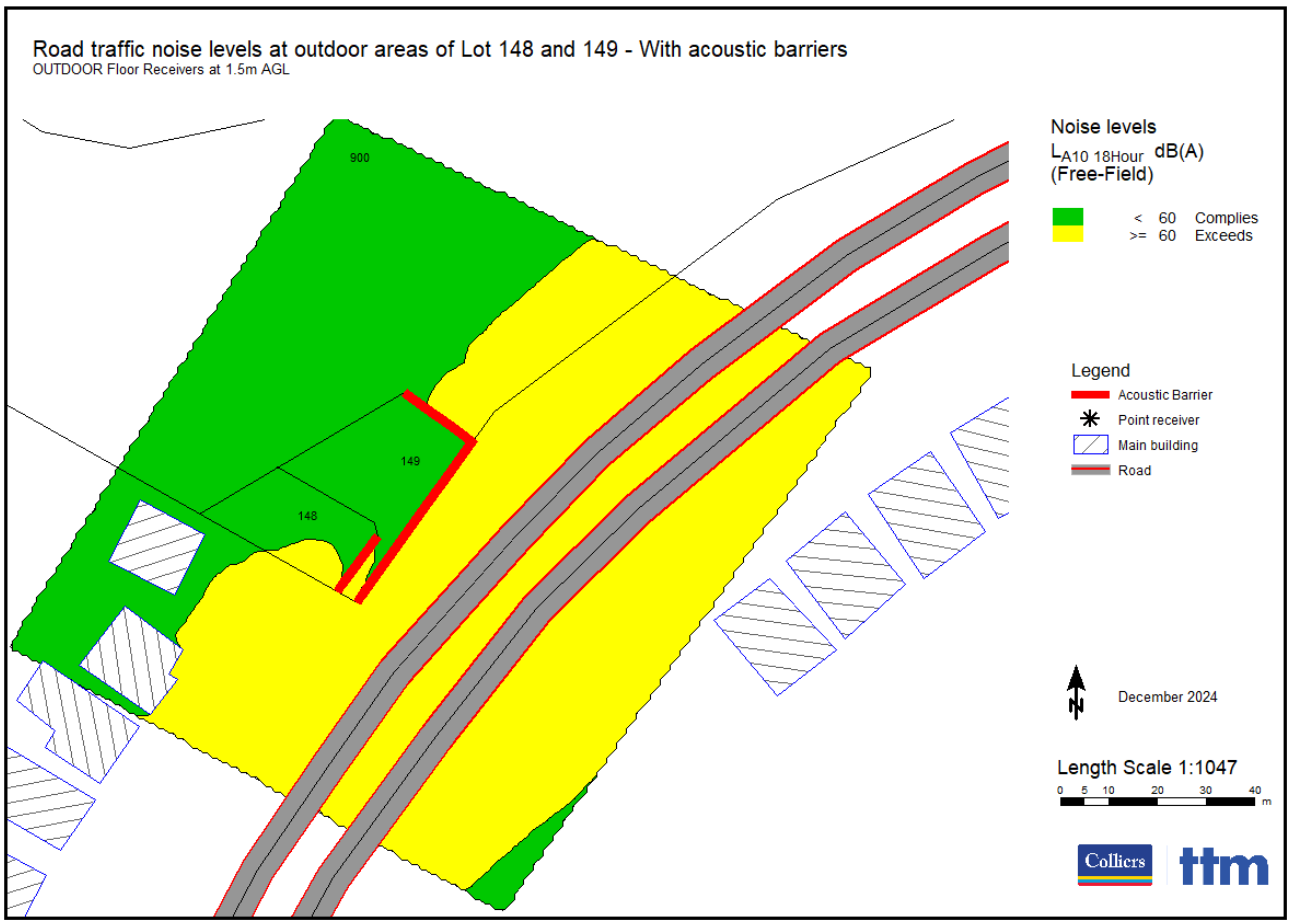


Figure 5 above shows that with inclusion of acoustic barriers, road traffic noise levels are generally predicted to comply with the free-field noise criteria at all lots. A minor exceedance is predicted at Lot 148. The exceedance occurs at the driveway entry point of the lot and therefore acoustic barriers are not a reasonable noise mitigation measure in this instance. Compliance is achieved for a large part of the lot and further noise reduction will be achieved once the dwelling is constructed. Therefore, compliance is predicted to be achieved. Details of the recommended acoustic barriers are provided in Section 7.1.1.

Compliance with the internal noise criteria will be met by application of building treatments in accordance with the Queensland Development Code MP4.4.

The predicted QDC MP4.4 road traffic noise contours at ground and first floor level facades are presented in Figure 6 and Figure 7. The QDC MP4.4 road traffic noise contours are inclusive of the receiver calibration factor described in Section Table 6**.** Noise levels are compared to the criteria of QDC MP4.4 for the purposes of determining the acoustic building treatment requirements for noise affected lots.

6.4.2 Building Façade

The road traffic noise contours at ground and first floor levels of the development are presented in the figures below.

Figure 6: Predicted Road Traffic Noise Levels at Facades – Ground Floor

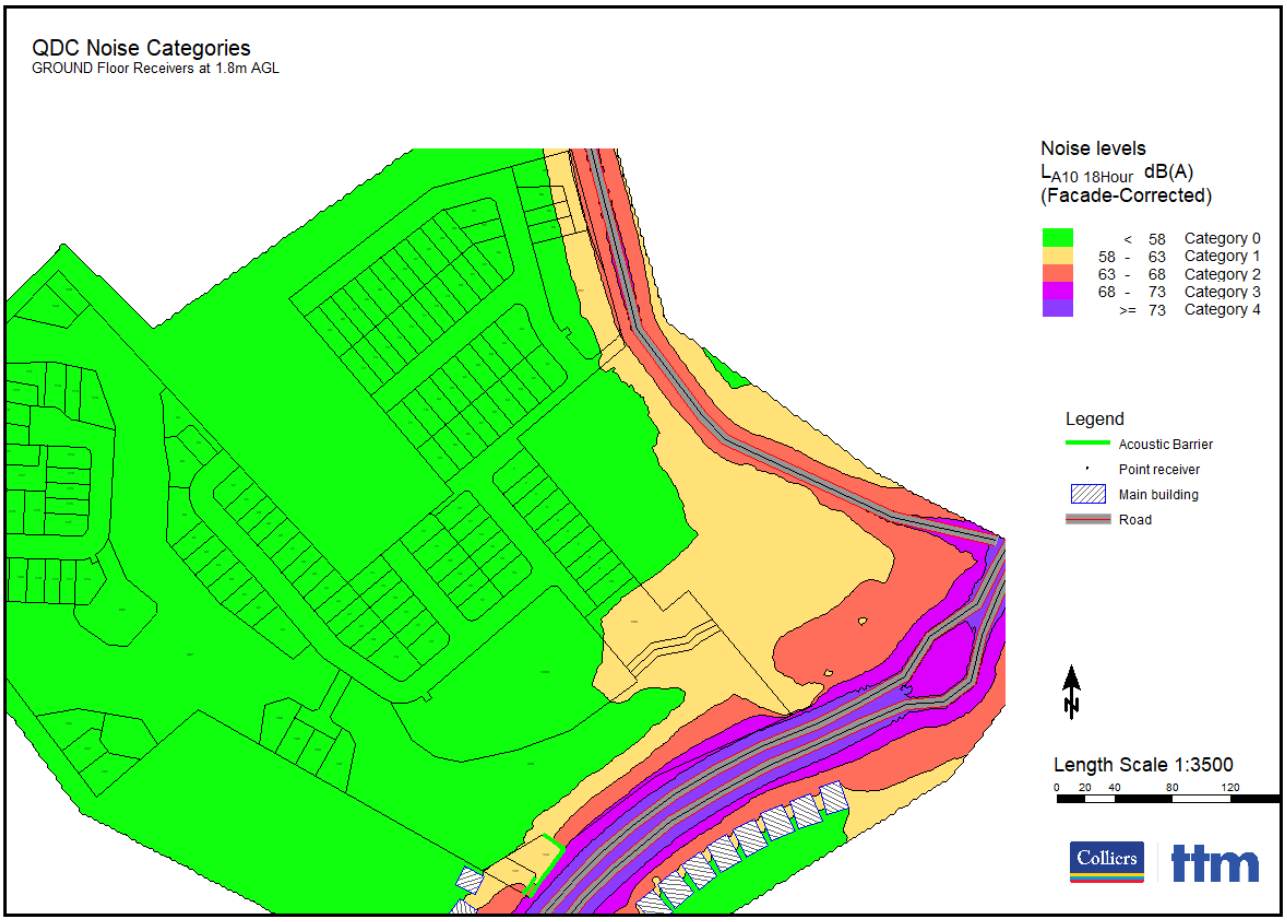
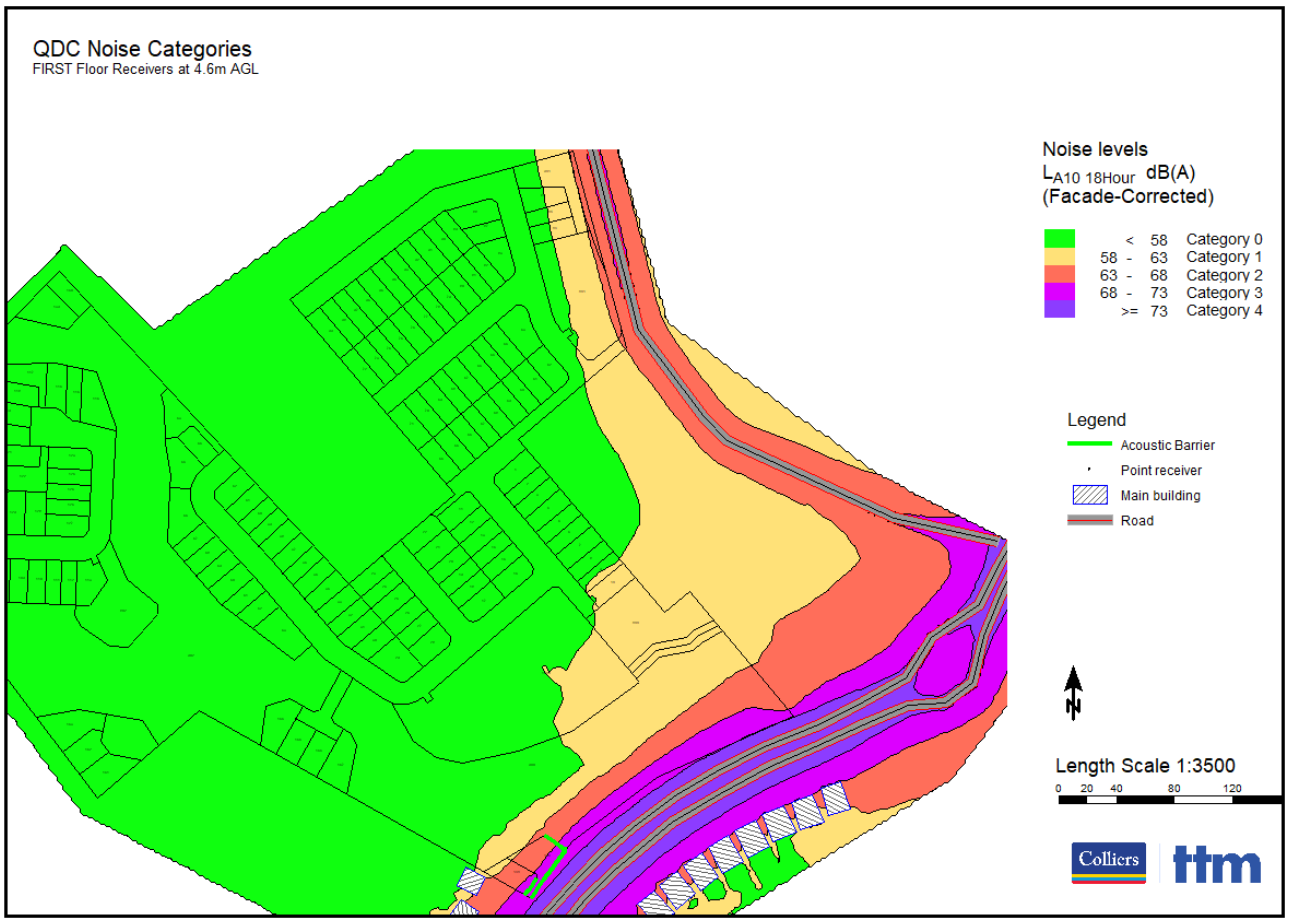


Figure 7: Predicted Road Traffic Noise Levels at Facades – First Floor



Road traffic noise levels at the development range from QDC MP4.4 Noise Category 0 to Noise Category 3. Further acoustic treatment will be required to achieve compliance with recommended internal sound levels.

Details of future construction requirements in accordance with QDC MP4.4 are outlined in Section 7.

7 Recommendations

The recommended acoustic treatments are presented in the sections below to achieve predicted compliance with the relevant assessment criteria.

7.1 Road Traffic Noise

7.1.1 Acoustic Barriers

Acoustic barriers are required to achieve predicted compliance with the private outdoor space criteria. The location and extent of the acoustic barriers are shown in Figure 8 below.

The barrier recommendations are as follows:

a. The acoustic barrier on Lot 149 (shown by red colour) must be minimum 2.0m high, relative to the natural ground level of the boundary;

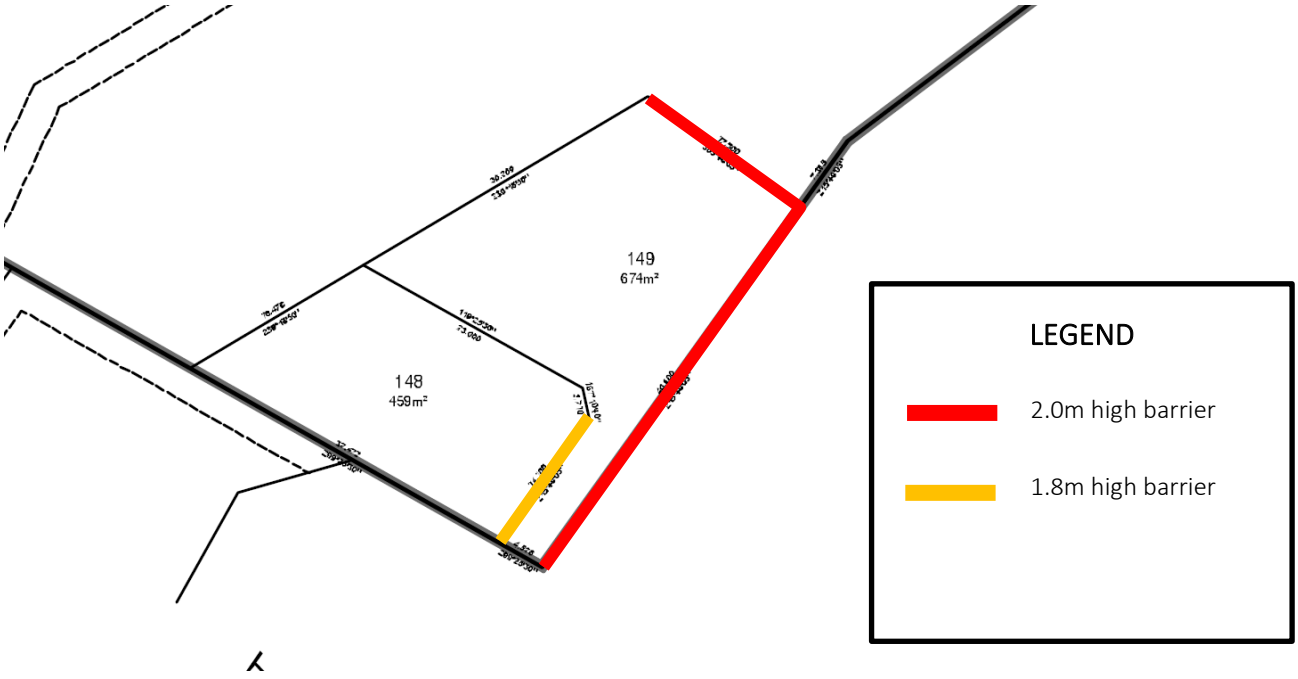
b. The acoustic barrier on Lot 148 (shown by orange colour) must be minimum 1.8m high, relative to the natural ground level of the boundary;

d. The barriers must be constructed of a material with a surface mass of at least 12kg/m^2;

e. Suitable materials may include lapped timber palings (with minimum 40% overlap), masonry, glass, modular wall panels, plywood, fibre cement sheeting, or a combination of materials if desired;

f. No gaps or holes should be evident in the barrier construction for the extents shown.

Figure 8: Recommended Acoustic Barriers



7.1.2 Building Facades

The QDC MP4.4 requires that habitable rooms in residential buildings located in a transport noise corridor are adequately protected from transport noise to safeguard occupant's health and amenity.

In order to achieve the performance requirements of the QDC MP4.4, the external building envelope of habitable rooms must comply with the minimum R_W for each building component specified in Schedule 1 to achieve a minimum transport noise reduction level for the relevant noise category by either one of the following:

a. Using materials specified in Schedule 2 of the QDC MP4.4;

   OR

b. Using materials with manufacturer's specifications that, in combination, achieve the minimum R_W value for the relevant building component and applicable noise category.

For application of Point (b), possible alternative constructions can be determined by the glazier (for glazing) and construction manuals such as 'The Red Book' by CSR (for walls and roof/ceiling).

Noise Categories applicable to lots of the development are listed in Table 8. The QDC MP4.4 requirements are specified based on the highest noise category within each proposed lot. Any lots not shown in Table 8 are Noise Category 0 and have no acoustic requirements.

Table 8: QDC MP4.4 Noise Categories Applicable to the Development

Lot	QDC MP4.4 Noise Category (Ground floor)	QDC MP4.4 Noise Category (First floor)
9	0	1
10	0	1
84	1	1
85	1	1
86	1	1
148	2	3
149	1	3
All other lots (Not noise affected)	0	0

Details regarding QDC noise categories and associated sound reduction rating (R_w) requirements for habitable rooms can be found within Schedule 1 of the QDC MP4.4. Schedule 1 is summarised in Table 9.

Table 9: QDC Noise Category Levels and Associated Sound Reduction Rating (R_w) Requirements for Habitable Rooms (QDC MP4.4 - Schedule 1)

QDC Noise Category	Required Acoustic Rating (RW) for Habitable Rooms			
	Glazing > 1.8m2*	Glazing ≤ 1.8m2*	External Walls	Roof and Ceiling
Category 4	R_W 43	R_W 43	R_W 52	R_W 45
Category 3	R_W 38	R_W 35	R_W 47	R_W 41
Category 2	R_W 35	R_W 32	R_W 41	R_W 38
Category 1	R_W 27	R_W 24	R_W 35	R_W 35
Category 0	None	None	None	None

*Total glazing area for room

QDC MP 4.4 Schedule 1 and 2 which includes acceptable forms of construction for each noise category is provided in Appendix D of this report.

Dwellings on noise affected lots may be constructed in accordance with the QDC noise category construction requirements for the nominated lot. However, as the QDC requirements are conservative and apply to all facades equally, it is recommended that an individual acoustic assessment be conducted (in accordance with AS3671 and AS2107) for each noise affected dwelling, once building plans are available, to optimise acoustic treatments for quality and cost savings. A site-specific report is generally recommended for QDC Noise Category 2 or higher.

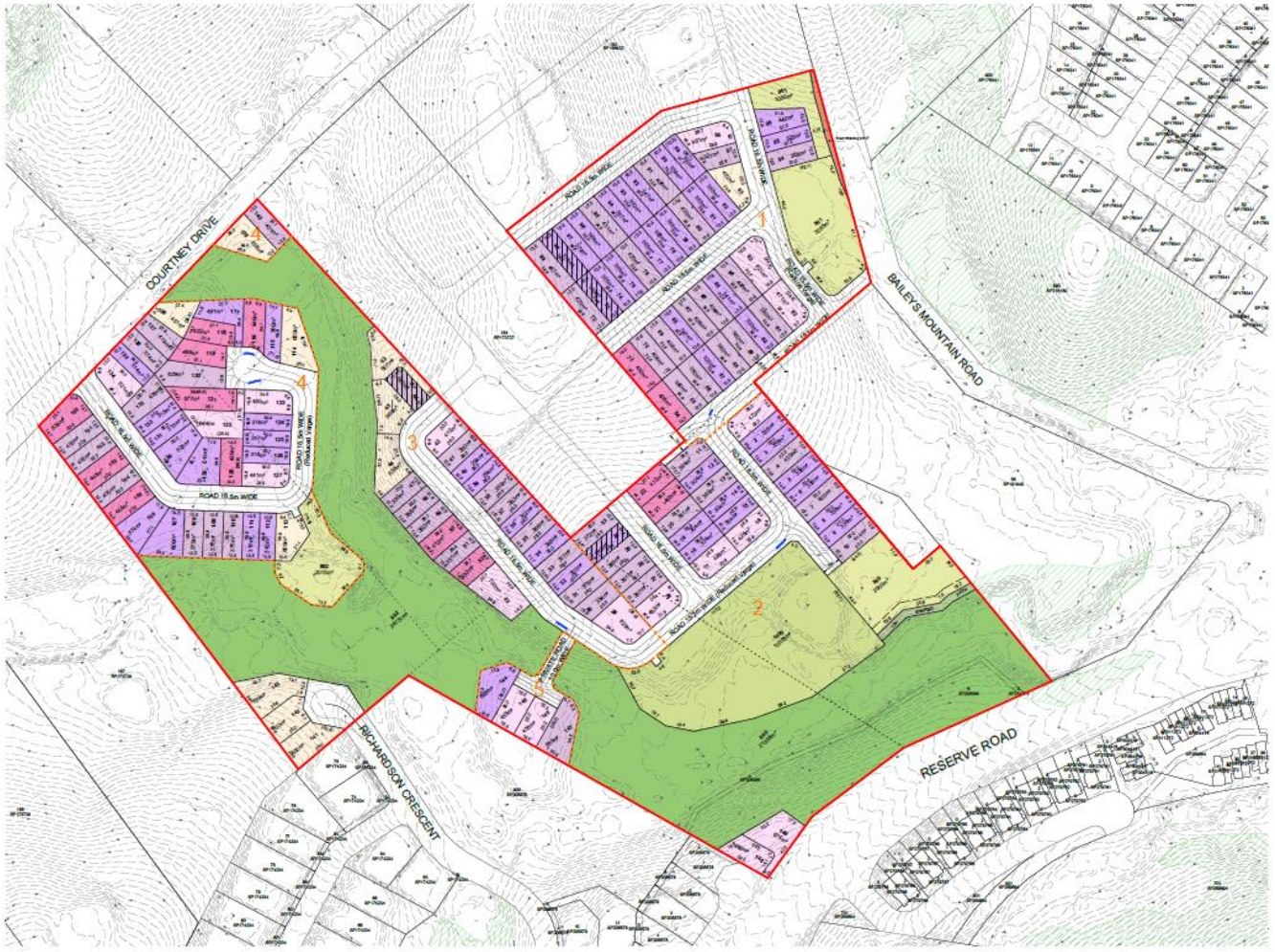
8 Conclusion

A road traffic noise assessment was undertaken for the proposed residential subdivision located at 41-53 Courtney Drive, Upper Coomera.

Compliance with the criteria outlined in Section 5 is predicted to be achieved based on the implementation of the recommendations outlined in Section 7 of this report.

Appendix A Development Plans

CONCEPT PLAN



NOT TO BE USED FOR ENGINEERING DESIGN OR CONSTRUCTION

NOTES

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

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

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

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

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PROJECTION - GDA2020 MGA56
SUBJECT BOUNDARIES PLOTTED FROM RECORDS

LEGEND

- Site Boundary
- Major Contour (1.0m Interval)
- Minor Contour (0.5m Interval)
- Vegetation Management
- Temporary Turnaround Lot
- Stage Boundary
- 1 Stage No.

DEVELOPMENT STATISTICS			
RESIDENTIAL ALLOTMENTS	**No. Lots**	**%**	**Net Area**
10.5m - 12.49m Frontage	54	36.2%	1.953 ha
12.5m - 13.99m Frontage	52	34.9%	2.059 ha
14m - 14.99m Frontage	14	9.4%	0.623 ha
> 15m Frontage	18	12.1%	0.918 ha
Irregular Frontage	11	7.4%	0.640 ha
Total Residential Allotments	**149**	**100.0%**	**6.193 ha**

Land Budget	**Area (Ha)**	**%**	
Area of Subject Site / Stage	15.252 ha	—	
Net Residential Area (no roads)	6.193 ha	40.6%	
Detention / Drainage	0.923 ha	6.1%	
Local Park	1.055 ha	6.9%	
Environmental Open Space	4.574 ha	30.0%	
Pedestrian Links	0.035 ha	0.2%	
Road Widening	0.025 ha	0.2%	
Road Areas	2.447 ha	16.0%	
Total	**15.252 ha**	**100.0%**	

RP DESCRIPTION: Lot 185 on RP173727, Lot 186 on RP173726, Lot 57 on SP214370 & Lot 56 on RP162858, Lot 58 on SP191940

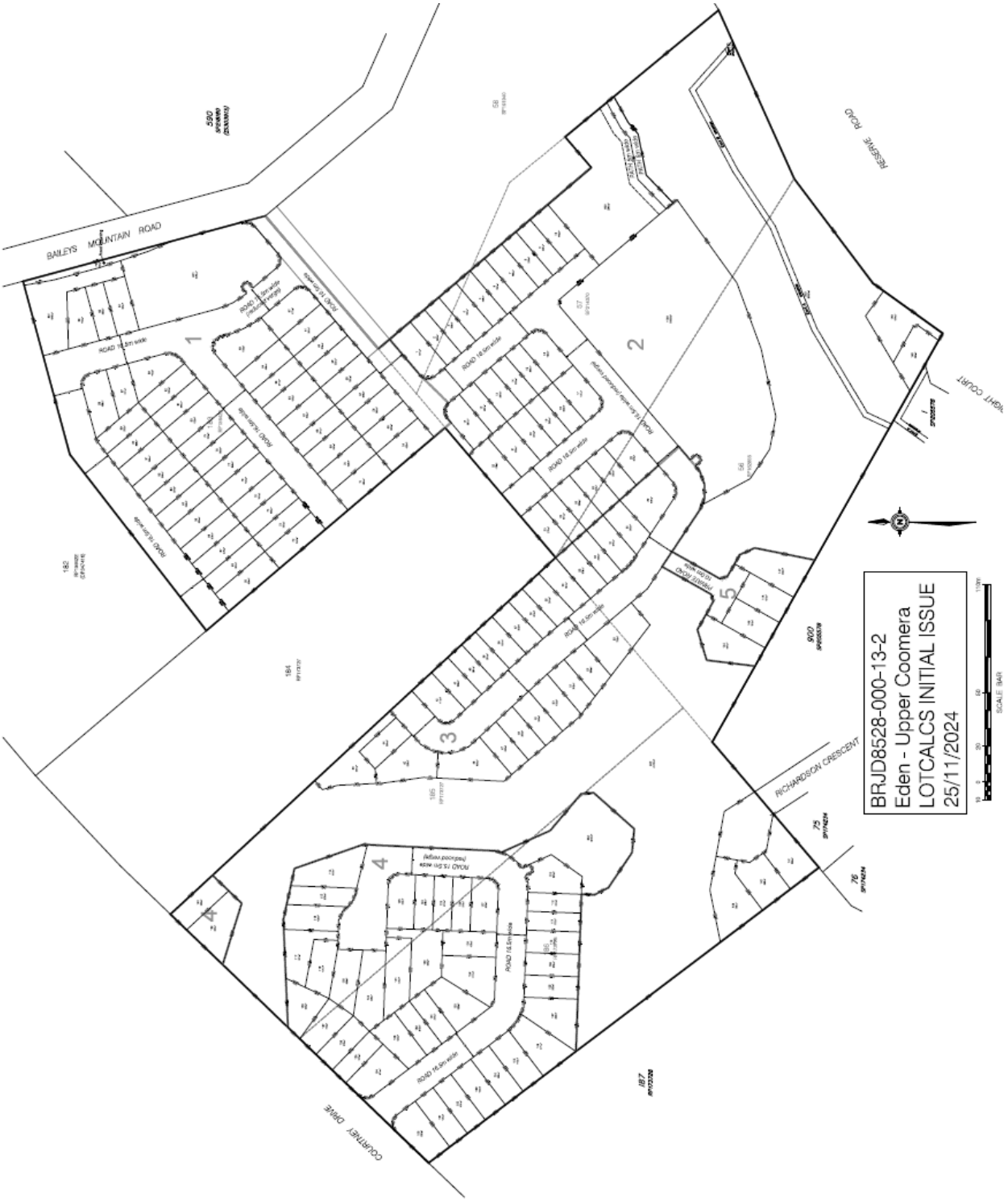
SCALE @A1 1:250 @A3 1:500 - LENGTHS ARE IN METRES
10 5 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

saunders havill group

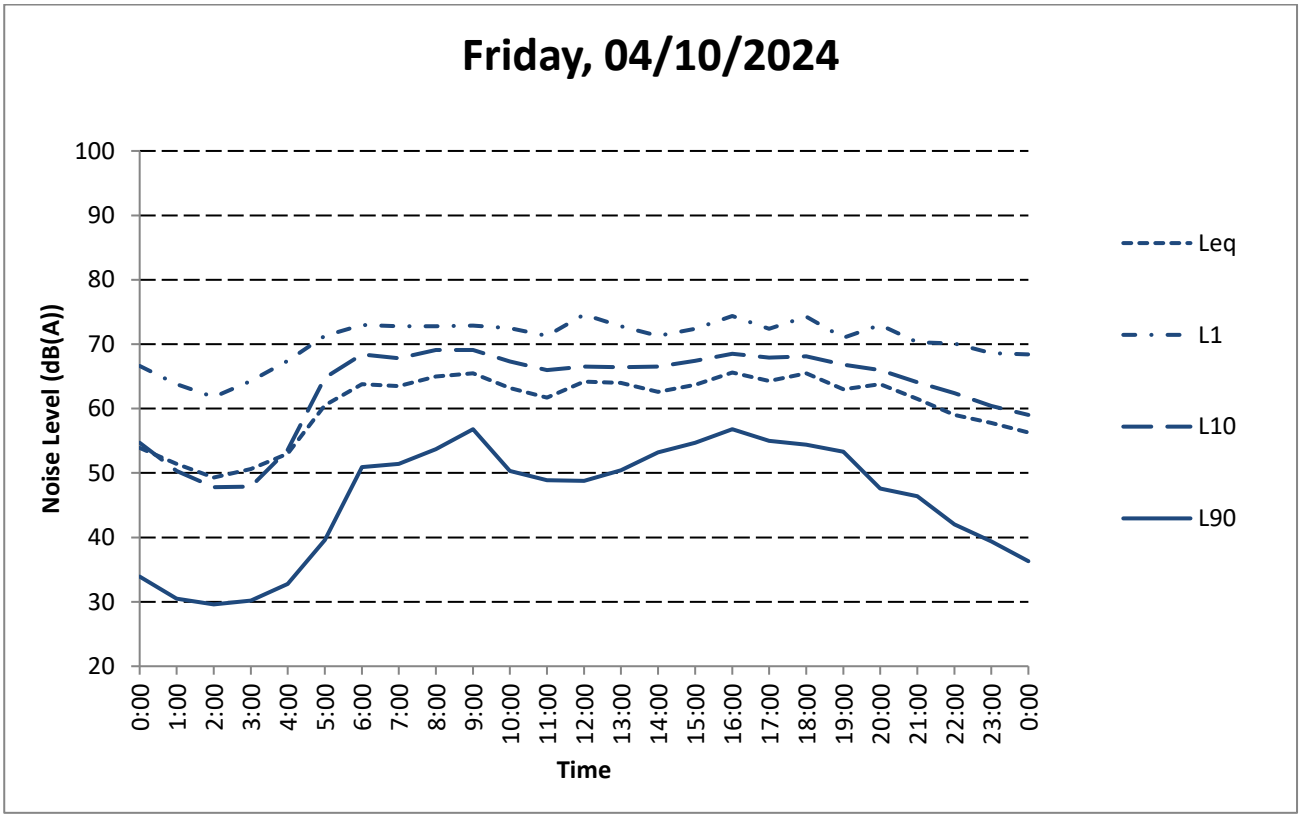
NORFOLK ESTATES PTY LTD ATF SOLANDER INVESTMENT UNIT TRUST

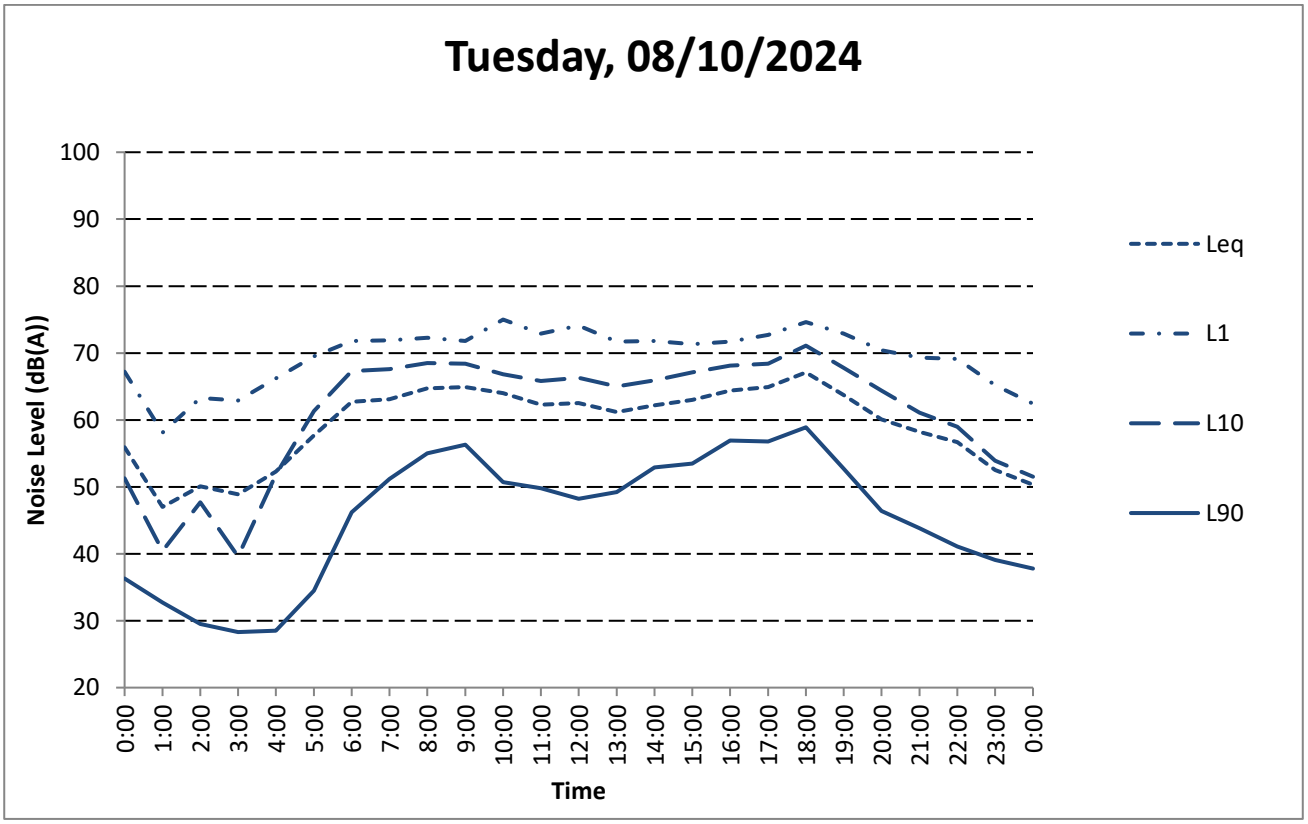
41 - 53 COURTNEY DRIVE , UPPER COOMERA ■ 14/11/2024 ■ 11694 P 05 Rev G - CON 01

Colliers


BAILEYS MOUNTAIN ROAD
RESERVE ROAD
COURTNEY DRIVE
RICHARDSON CRESCENT
BRJD8528-000-13-2
Eden - Upper Coomera
LOTCALCS INITIAL ISSUE
25/11/2024

Appendix B Unattended Noise Monitoring Graphs


Friday, 04/10/2024
Noise Level (dB(A))
100
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
Leq
L1
L10
L90


Tuesday, 08/10/2024
Noise Level (dB(A))
100
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time
Leq
L1
L10
L90

Appendix C SoundPLAN Noise Model Outputs

24GCA0136 Upper Coomera SoundPLAN
M02 - Logger Verification

Receiver	Fl	Ground Height m	L10(18h) dB(A)
Logger 66.1dB(A)	GF	37.39	66.1

Appendix D Schedule 1 & 2 of QDC MP4.4

Schedule 1

Noise category	Minimum *transport noise reduction* (*dB (A)*) required for *habitable rooms*	Component of building's *external envelope*	Minimum R_w required for each component
Category 4	40	Glazing	43
		External walls	52
		Roof	45
		Floors	51
		Entry doors	35
Category 3	35	Glazing	38 (where total area of glazing for a *habitable room* is greater than 1.8m²)
			35 (where total area of glazing for a *habitable room* is less than or equal to 1.8m²)
		External walls	47
		Roof	41
		Floors	45
		Entry doors	33

Noise category	Minimum *transport noise reduction* (*dB (A)*) required for *habitable rooms*	Component of building's *external envelope*	Minimum R_w required for each component
Category 2	30	Glazing	35 (where total area of glazing for a *habitable room* is greater than 1.8m²)
			32 (where total area of glazing for a *habitable room* is less than or equal to 1.8m²)
		External walls	41
		Roof	38
		Floors	45
		Entry doors	33
Category 1	25	Glazing	27 (where total area of glazing for a *habitable room* is greater than 1.8m²)
			24 (where total area of glazing for a *habitable room* is less than or equal to 1.8m²)
		External walls	35
		Roof	35
		Entry Doors	28
Category 0	No additional acoustic treatment required – standard building assessment provisions apply.		

Schedule 2

Component of building's *external envelope*	Minimum R_w	Acceptable forms of construction
Glazing	43	Double glazing consisting of two panes of minimum 5mm thick glass with at least 100mm air gap and full perimeter *acoustically rated seals*.
	38	Minimum 14.38mm thick laminated glass, with full perimeter *acoustically rated seals*; OR Double glazing consisting of one pane of minimum 5mm thick glass and one pane of minimum 6mm thick glass with at least 44mm air gap, and full perimeter *acoustically rated seals*
	35	Minimum 10.38mm thick laminated glass, with full perimeter *acoustically rated seals*.
	32	Minimum 6.38mm thick laminated glass with full perimeter *acoustically rated seals*.
	27	Minimum 4mm thick glass with full perimeter *acoustically rated seals*
	24	Minimum 4mm thick glass with standard weather seals

Component of building's *external envelope*	Minimum R_w	Acceptable forms of construction
External walls	52	Two leaves of clay brick masonry, at least 270mm in total, with subfloor vents fitted with noise attenuators.
	47	Two leaves of clay brick masonry at least 110mm thick with: (i) cavity not less than 50mm between leaves; and (ii) 50mm thick mineral insulation or 50mm thick glass wool insulation with a density of 11kg/m³ or 50mm thick polyester insulation with a density of 20kg/m³ in the cavity. OR Two leaves of clay brick masonry at last 110mm thick with: (i) cavity not less than 50mm between leaves; and (ii) at least 13mm thick cement render on each face OR Single leaf of clay brick masonry at least 110mm thick with: (i) a row of at least 70mm x 35mm timber studs or 64mm steel studs at 600mm centres, spaced at least 20mm from the masonry wall; and (ii) Mineral insulation or glass wool insulation at least 50mm thick with a density of at least 11 kg/m³ positioned between studs; and (iii) One layer of plasterboard at least 13mm thick fixed to outside face of studs. OR Single leaf of minimum 150mm thick masonry of hollow, dense concrete blocks, with mortar joints laid to prevent moisture bridging.

Component of building's *external envelope*	Minimum R_w	Acceptable forms of construction
	41	Two leaves of clay brick masonry at least 110mm thick with cavity not less than 50mm between leaves OR Single leaf of clay brick masonry at last 110mm thick with: (i) a row of at least 70mm x 35mm timber studs or 64mm steel studs at 600mm centres, spaced at least 20mm from the masonry wall; and (ii) mineral insulation or glass wool insulation at least 50mm thick with a density of at least 11 kg/m³ positioned between studs; and (iii) One layer of plasterboard at least 10mm thick fixed to outside face of studs OR Single leaf of brick masonry at least 110mm thick with at least 13mm thick render on each face OR Concrete brickwork at least 110mm thick OR In-situ concrete at least 100mm thick OR Precast concrete at least 100mm thick and without joints.

Component of building's *external envelope*	Minimum R_w	Acceptable forms of construction
	35	Single leaf of clay brick masonry at least 110mm thick with: (i) a row of at least 70mm x 35mm timber studs or 64mm steel studs at 600mm centres, spaced at least 20mm from the masonry wall; and (ii) One layer of plasterboard at least 10mm thick fixed to outside face of studs OR Minimum 6mm thick fibre cement sheeting or weatherboards or plank cladding externally, minimum 90mm deep timber stud or 92mm metal stud, standard plasterboard at least 13mm thick internally.
Roof	45	Concrete or terracotta tile or sheet metal roof with sarking, *acoustically rated plasterboard* ceiling at least 13mm thick fixed to ceiling joists, cellulose fibre insulation at least 100mm thick with a density of at least 45kg/m³ in the cavity. OR Concrete or terracotta tile or sheet metal roof with sarking, 2 layers of *acoustically rated plasterboard* at least 16mm thick fixed to ceiling joists, glass wool insulation at least 50mm thick with a density of at least 11kg/m³ or polyester insulation at least 50mm thick with a density of at least 20kg/m³ in the cavity.
	41	Concrete or terracotta tile or metal sheet roof with sarking, plasterboard ceiling at least 10mm thick fixed to ceiling joists, glass wool insulation at least 50mm thick with a density of at least 11kg/m³ or polyester insulation at least 50mm thick with a density of at least 20kg/m³ in the cavity. OR Concrete suspended slab at least 100mm thick.
	38	Concrete or terracotta tile or metal sheet roof with sarking, plasterboard ceiling at least 10mm thick fixed to ceiling cavity, mineral insulation or glass wool insulation at least 50mm thick with a density of at least 11 kg/m³.

Component of building's *external envelope*	Minimum R_w	Acceptable forms of construction
	35	Concrete or terracotta tile or metal sheet roof with sarking, plasterboard ceiling at least 10mm thick fixed to ceiling cavity.
Floors	51	Concrete slab at least 150mm thick.
	45	Concrete slab at least 100mm thick OR Tongued and grooved boards at least 19mm thick with: (i) timber joists not less than 175mm x 50mm; and (ii) mineral insulation or glass wool insulation at least 75mm thick with a density of at least 11kg/m³ positioned between joists and laid on plasterboard at least 10mm thick fixed to underside of joists; and (iii) mineral insulation or glass wool insulation at least 25mm thick with a density of at least 11kg/m³ laid over entire floor, including tops of joists before flooring is laid; and (iv) secured to battens at least 75mm x 50mm; and (v) the assembled flooring laid over the joists, but not fixed to them, with battens lying between the joists.
Entry Doors	35	Solid core timber not less than 45mm thick, fixed so as to overlap the frame or rebate of the frame by not less than 10mm, with full perimeter *acoustically rated seals*.
	33	Fixed so as to overlap the frame or rebate of the frame by not less than 10mm, fitted with full perimeter *acoustically rated seals* and constructed of - (i) solid core, wood, particleboard or blockboard not less than 45mm thick; and/or (ii) acoustically laminated glass not less than 10.38mm thick.

Component of building's *external envelope*	Minimum R_w	Acceptable forms of construction
	28	Fixed so as to overlap the frame or rebate of the frame, constructed of - (i) Wood, particleboard or blockboard not less than 33mm thick; or (ii) Compressed fibre reinforced sheeting not less than 9mm thick; or (iii) Other suitable material with a mass per unit area not less than 24.4kg/m²; or (iv) Solid core timber door not less than 35mm thick fitted with full perimeter *acoustically rated seals*.

BUSHFIRE MITIGATION REPORT
FM 6789-1
for
Q M PROPERTIES
at
31-53 COURTNEY DRIVE,
176 BAILEYS MOUNTAIN ROAD,
288 RESERVE ROAD
UPPER COOMERA

PREPARED BY
ELDON BOTTCHER ARCHITECT PTY LTD
145 VARSITY PARADE
VARSITY LAKES
PH 07 55920082
EMAIL bushfires@eb-a.com.au
25/11/2024

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DISCLAIMER

Experienced fire fighters with extensive knowledge of building have prepared this Report. Their practical knowledge of fire fighting has been backed up by academic study.

However, fire is an element of nature. Small natural occurrences can disastrously affect the outcome of the best planning. Human actions similarly can have disastrous results.

Whilst every care has been taken in the formulation of this management report, there can be no guarantee that even the strictest adherence to its recommendations can guarantee safety of life and property.

The authors of this report accept no responsibility for any damage to life or property caused by fire or any other cause to persons using land or structures, which could in any way be construed to be the subject of this report.

The report has been commissioned as the land falls within an area deemed a fire risk by the local authority.

As such, it must be recognized that structures upon this land and those using the structures could be deemed at risk.

Logo by LogoInstant

Very Important Note;

This report is valid for the following periods;

a) A maximum time of 5 years from date of preparation.
b) The currency of the legislation referred to in Section 1 Report Brief
c) Changes to any legislation generally that may impact on the report outcomes.
d) Changes to vegetation, both on and off site, which may impact on the results of this report.
e) Any other changes that may impact on the report in any manner.

THE COPYRIGHT ACT AND MORAL RIGHTS ACT PROTECT THIS REPORT.

IRRESPECTIVE OF THIS REPORT APPEARING ON A COUNCIL PD OR OTHER ONLINE SITE, THERE IS NO PERMISSION IMPLIED OR GIVEN TO ANY PARTY TO DOWNLOAD OR TO USE OR COPY THIS REPORT IN WHOLE OR IN PART IN ANY MANNER OTHER THAN THAT FOR WHICH IT WAS ORIGINALLY PREPARED.
ANY SUCH USE WILL BE PROSECUTED TO THE FULL EXTENT OF THE LAW.

THIS REPORT RELIES ON THE AS 3959 FOR THE CALCULATION OF CONSTRUCTION LEVELS.
ANY POSSIBLE ERRORS IN THE STANDARD ARE NOT THE RESPONSIBILITY OF THE AUTHOR.

THIS REPORT IS ONLY TO BE USED AND DISTRIBUTED AS A COMPLETE REPORT CONTAINING AS A MINIMUM SECTIONS 1,2,3,4 AND 5 (SECTIONS 5.1 & 5.2)

THIS REPORT IS NOT TO BE AMENDED IN ANY WAY BY ANY PERSONS OTHER THAN THE ORIGINAL AUTHOR.

THIS REPORT IS ONLY TO BE USED FOR PROJECTS IDENTIFIED IN THE REPORT AND REPRESENTED ON THE SITE PLAN ACCOMPANYING THE REPORT.

INTRODUCTION

This Fire Management Report has been written for the benefit of future occupants of this proposed site and developed in accordance with the requirements of;

- The Gold Coast City Council Town Plan,
- SPP 07/2017.
- Queensland Planning Act 2016
- "Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest" Natural Hazards, Risk and Resilience-Bushfire" published by QFES and Queensland Government.
- Natural hazards, risk and resilience-Bushfire State Planning Policy-state interest guidance material published by Queensland Government
- Bushfire Resilient Building Guidance for Queensland Homes published by CSIRO and Queensland Government
- The National Construction Code
- Queensland Bushfire Plan published by Queensland Government prepared by QFES.
- Australian Standard AS3959,
- International Fire Safety Engineering Guidelines
- Australian Fire Engineering Guidelines

The report has been prepared as supporting documentation for a Material Change of Use (Building) /Reconfiguration of Lot Application, and has been amended form the original by the inclusion of an amended site plan.

1.1. Address:
31-53 Courtney Drive,
176 Baileys Mountain Road,
288 Reserve Road Upper Coomera.

1.2. Local Authority
Gold Coast City Council

1.3. R.P.D.
Lot 183 on RP156422,
Lot 57 on SP214370,
Lot 56 on RP205578,
Lot 186 on RP173728 and
Lot 185 on RP173727

1.4. Responsible Fire Authority
QFD for all fires.

1.5. Potential Bushfire Hazard Rating.
The hazard rating maps prepared for the Council show the ratings on this property ranging from Low to Medium and being in a Bushfire Hazard Buffer Area.
The draft risk rating maps prepared for the State Government show the ratings on this property ranging from Low to Medium and being in a Bushfire Hazard Buffer Area.

It must be noted that State Government is currently revising the mapping and there may be changes to mapped areas.

1.6. Land tenure.
Freehold

1.7. Adjoining owners are:
Freehold

1.8. Current Land Use:
Rural residential

1.9. Fire danger Index.
FDI 40 (nominated by AS 3959 as advised by Queensland Government Dept. of Housing and Public Works)

1.10. Topography
Rolling Hills

1.11. Predominant Wind Direction

The predominate wind direction is from the South East. In times of severe fire weather, the wind direction will be from the North West. The Topography will create microclimates, which will cause swirling, which will modify the apparent wind direction according to primary direction and velocity.

1.12. Slope

9^0

1.13. Aspect

East

1.14. Fuel Type and location

LOT	REGIONAL ECOSYSTEM	VHC	VHC DESCRIPTION	COMMENTS
182 RP156422	12.11.24 (12.11.5a)	9.2	Moist to dry eucalypt woodland on coastal lowlands and ranges	Vegetation mass does not constitute a threat due to general site management and Low vegetation mass. EBA did the BFM for the subdivision on this site
590 SP219180	12.11.24 (12.11.5a)	9.2	Moist to dry eucalypt woodland on coastal lowlands and ranges	Vegetation is self-rehabilitating to a Riverine Rainforest status and does not constitute a threat due to this. EBA did the BFM for the subdivision on this site
58 SP191940	12.11.24 (12.11.5a)	9.2	Moist to dry eucalypt woodland on coastal lowlands and ranges	Vegetation mass is not adequate to constitute a threat EBA did the BFM for the proposed development on this site
57 SP214370	12.3.11	8.2	Wet eucalypt tall woodland	Vegetation mass is not adequate to constitute a threat
56 RP162858	No mapped Regional Ecosystem			Mapped threat vegetation no longer exists
187 RP173728	No mapped Regional Ecosystem			Vegetation mass is not adequate to constitute a threat
201 RP173727	12.11.24 (12.11.5a)	9.2	Moist to dry eucalypt woodland on coastal lowlands and ranges	Threat vegetation is more than 100m from the subject site
202 RP173727	12.11.24 (12.11.5a)	9.2	Moist to dry eucalypt woodland on coastal lowlands and ranges	Threat vegetation is more than 100m from the subject site
203 RP173727	12.11.24 (12.11.5a)	9.2	Moist to dry eucalypt woodland on coastal lowlands and ranges	Threat vegetation is more than 100m from the subject site

1.15. Fire History

There is no evidence of a recent fire event.

1.16. Location of Access Tracks

The site is served by a sealed road system.

1.17. Location of Fire Breaks

There are no formal firebreaks. Managed and Low threat vegetation combined with a sealed road system forms effective fire breaks more than 100m wide in all directions.

1.18. Location of existing firefighting Infrastructure

There is no formal firefighting infrastructure to the Courtney Drive sites, whist the sites fronting Baileys Mountain Road and Reserve Road are Vegetation mass is not adequate to constitute a threat served by a reticulated water supply.

1.19. Historical and Cultural Sites

There is no evidence of Historical and Cultural sites on the property.

1.20. Koala Habitat

The site is in a Koala Habitat area and there are specific requirements in relation to bushfire management.

.

2. SITE AND HAZARD ASSESSMENT

2.1. Discussion with Responsible Fire Authority
The fires management report has not been discussed with the Fire Brigade.

2.2. Vegetation Types
The vegetation type predominate to this site are as scheduled in section 1.14.

2.3. Potential Bushfire Hazard Rating.
Site inspection and assessment against the State Planning Policy indicates a rating of LOW across the whole of the undeveloped site- see Section 1.14.

2.4. Building Construction
All proposed building envelopes are not in a Designated Risk Area when calculated in accordance with the SPP.
Construction is not required to be in accordance with Australian Standard AS 3959 2018 Construction of Buildings in Bush Fire-Prone Areas as the site is not in a Designated Bushfire Prone Area .

Building Class requirements AS 3959

2.4.1.	FDI	40
2.4.2.	Vegetation Classification	B
2.4.3.	Land slope	Downslope >5 to 10 degrees

Distance of building from Predominate vegetation class (m) (Vegetation Management Zone)	**Primary Bushfire Attack Level**
50-	BAL-LOW

Note:
The levels shown above are based on Method 1 of the AS 3959.

Construction Levels are shown as part of a comprehensive Bushfire Management Plan.

They are provided for the end user of the land and its eventual occupants.

THEY ARE NOT PROVIDED FOR ASSESSMENT BY THE LOCAL AUTHORITY, IN ACCORDANCE WITH THE PLANNING ACT 2016, THE STATE PLANNING POLICY, AND THE BUILDING ACT 1975.

The Planning Act 2016 Section 8 What are Planning Instruments (5) and (6) state;

(5) A local planning instrument must not include provisions about building work, to the extent the building work is regulated under the building assessment provisions, unless permitted under the Building Act.
(6) To the extent a local planning instrument does not comply with subsection (5), the local planning instrument has no effect.

The Building Act 1975, Section 31 states;

"(4) A local law, local planning instrument or local government resolution must not include provisions about building work, to the extent the building work is regulated under a code under subsection (3).
(5) To the extent a local law, local planning instrument or local government resolution does not comply with subsection (4), the local law; local planning instrument or local government resolution is of no effect.
(6) Subsections (3) to (5) are subject to sections 32 and 33."

2.5. Ecological Requirements
The site is in a Koala Habitat Area and there is specific restriction in relation to vegetation management.

Note;
The Category of Bushfire Attack referred to in the Australian Standard is different to the Hazard/Risk area referred to above.

Extensive modification of the existing vegetation types including that on adjoining sites could result in a change of Category of Bushfire Attack and therefore variation in the Level of construction required.

It is the responsibility of the owner of each individual site to ensure that plantings after their occupation of the site do not reduce the safety of their buildings in a manner, which could require a higher level of Construction than that originally utilised.

3. RISK MANAGEMENT PLAN

3.1. Agencies / Persons Responsible

The responsible Fire Authority is the Queensland Fire Department being responsible for all Fires
It is the responsibility of the Developers and Owners of the properties to ensure that the relevant measures required by this Management Report are in place prior to inspection by the Council and the Building Certifier and to ensure that those measures are in place prior to the occupation of any buildings, which are the subject of this report. It is the responsibility of Council and Building Certifiers to ensure that relevant measures within their responsibility are in place prior to the issuance of any certification.

3.2. Bushfire Safety Objective

The objective of this report is to minimise potential risk to life and property by protecting the buildings from the effects of bushfire.

3.3. Aims

The aims to achieve this objective are to mitigate the effect of the bushfire attack mechanisms of: -

3.3.1. Radiant Heat
3.3.2. Direct Flame Contact
3.3.3. Wind
3.3.4. Ember Attack
3.3.5. Smoke

3.4. Functional Requirements

The functional requirements to achieve this objective are: -

3.4.1. The provision of safe conditions for fire fighters
3.4.2. The provision of safe conditions for residents
3.4.3. Ensure adequate and safe access to and from the property.
3.4.4. Ensure adequate and safe water supply to the property and the establishment of firefighting water reserves.
3.4.5. Provide a system of fire breaks and trails to protect the building component.
3.4.6. Remove vegetation that is considered dangerous and a hazard in Fire Conditions
3.4.7. To ascertain the required standard of construction of the buildings in accordance with the requirements of the National Construction Code and the Australian Standard for Construction in Bushfire Prone Areas or the provision of a satisfactory alternative solution
3.4.8. Facilitate the return to “normalcy “

3.5. Proposed Fire Fighting Infrastructure

3.5.1. The proposed buildings are to be served by a reliable reticulated water supply. This is to always have sufficient flow and pressure characteristics for fire-fighting purposes with a minimum pressure of 200kpa and a minimum flow rate of 10l per second in accordance with “Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots” published by QFES and Qld Government.

3.6. Street Numbering

Numbering is to be installed in accordance with the current Street Numbering System at time of completion of building.

3.7. Less Flammable Landscaping

Any new landscaping within the Development area is to be Less Flammable, in accordance with the list enclosed as an Appendix at the rear of this Report, rainforest species, or cultivated gardens, and comply with the requirements of *“ Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest” Natural Hazards , Risk and Resilience-Bushfire”* published by QFES and Queensland Government, and “Natural hazards, risk and resilience-Bushfire-Assessment Benchmark 5” which cite a maximum Fuel Load of 8t/ha for revegetation or rehabilitation within bushfire prone areas.
“Bushfire Resilient Building Guidance for Queensland Homes” published by Qld State Government provides a schedule of species in Appendix E.
https://www.qra.qld.gov.au/bushfireguideline

3.8. Insurance

Failure to comply with this management report may have a detrimental effect upon the Insurance of the subject Buildings.

3.9. Emergency Response Procedures

In the event of Fire Emergency, assistance is to be obtained by dialling 000.

3.9.1. The owner should read thoroughly the brochures contained and those recommended at the rear of this report. They contain valuable information that could assist in the saving of lives and property in a fire event!

3.10. Community Awareness Strategies

3.10.1. Each subsequent owner is to be provided with a copy of this Fire Management report with an alert placed on either Title or Council Rate searches that the Report is in existence and is to be made available to ensuing owners.

3.11. Administering Staff

It is the responsibility of the developers and owners to ensure compliance with this Report and the Town Plan, and to ensure that each of the new owners is provided with a copy of this report.

It is the responsibility of the Council and the Building Certifier to ensure that the relevant measures required by this management report are in place prior to the final completion stage inspection of any buildings on any sites which are the subject of this report as noted in Clause 3.1 of this report.

It is the responsibility of the ensuing owners of the properties to maintain the properties in the conditions outlined in this report.

4. FIRE MANAGEMENT ACTION SUMMARY AND SCHEDULE

DEVELOPMENT REQUIREMENTS	BUILDING REQUIREMENTS	MAINTENANCE
	Buildings not required to comply with the National Construction Code/Building Code of Australia.	Rehabilitation and revegetation as required in Section 3.7. Building materials are to be maintained in "as new "condition to preserve the integrity of the relevant materials.

5. APPENDICES

5.1. Form 15
5.2. Site Plans
5.3. Supporting Information:

Note. These items below are referenced for information purposes only and are not to be construed as being part of the management report.
This information is generic and not provided for approval purposes.
It is only provided for end user knowledge and only included within the report hardcopy.

5.3.1. Planning Regulation Fact Sheet December 2019
5.3.2. Prepare. Act. Survive
5.3.3. Rural property Fire Management Guide 2010
5.3.4. Notes for Landholders
5.3.5. Bushfire Action Guide
5.3.6. Bushfire Safety in Urban Fringe Areas
5.3.7. Water + Power -Vital for Fire fighting
5.3.8. Less Flammable Vegetation
5.3.9. Fire Retardant Native Plants
5.3.10. Tree selection for Fire-Prone Areas
5.3.11. Bushfire Resilient Building Guidance for Queensland Homes Appendix E
5.3.12. First Draft (specifying timber in bush fire zones)
5.3.13. External water spray system
5.3.14. Fire Retardant Coating Solutions
5.3.15. Archicentre Bushfire Design Guide
5.3.16. Section 3.8 Sign Types - Fire Trail Signage of the GCCC Natural Areas Management Unit Signage Guidelines (Page 16)
5.3.17. Trail Number and Key Point signage
5.3.18. Bushfire Hydrant detail
5.3.19. Tank detail
5.3.20. Recycled Water for Firefighting
5.3.21. Sample Easement Document
5.3.22. Bushfire Windows and Shutters
5.3.23. A guide to retrofit your home for better protection from a bushfire.
5.3.24. FireFly BAL-FZ System
5.3.25. Bushfire Planning and Design Certification Scheme Update
5.3.26. Eaves Water System
5.3.27. Aussi Ember Guard
5.3.28. The Australian “False Alarm: the great rainforest fire that wasn’t”.
5.3.29. Hijacking Australian 2019 Bushfire Tragedies to Fearmonger Climate Change
5.3.30. Bushfires have been in Australia for over 60 million years.

We also recommend that the landholder obtains and reads the following;

5.3.31. Bushfire Hazard Planning in Queensland
5.3.32. Protecting your home against Bushfire
Both available from the Dept. of Local Government and Planning, and

5.3.33. Fire in Bushland Conservation
Available from Queensland Heritage Trust.

5.3.34. Bushfire Resilient Building Guidance for Queensland Homes
https://www.qra.qld.gov.au/bushfireguideline

Signed

E J Bottcher

……..
Eldon Bottcher
Grad. Dip. DBPA (UWS) Dip. Arch. (QIT), Cert. R.F.M. (USQ), F.R.A.I.A., M.A.I.E.S. AIFireE
Architect
BPAD-L3 Practitioner

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

APPENDIX 5.1
FORM 15

Form 15 Compliance certificate for building design or specification

Queensland Government

This form is to be used by an appointed competent person for the purposes of section 10 of the *Building Act 1975* and sections 73 and 77 of the Building Regulation 2021(Design-specification certificate) stating that an aspect of building work or specification will, if installed or carried out a stated in this form, comply with the building assessment provisions.

Additional explanatory information is included in the Appendix at the end of this form.

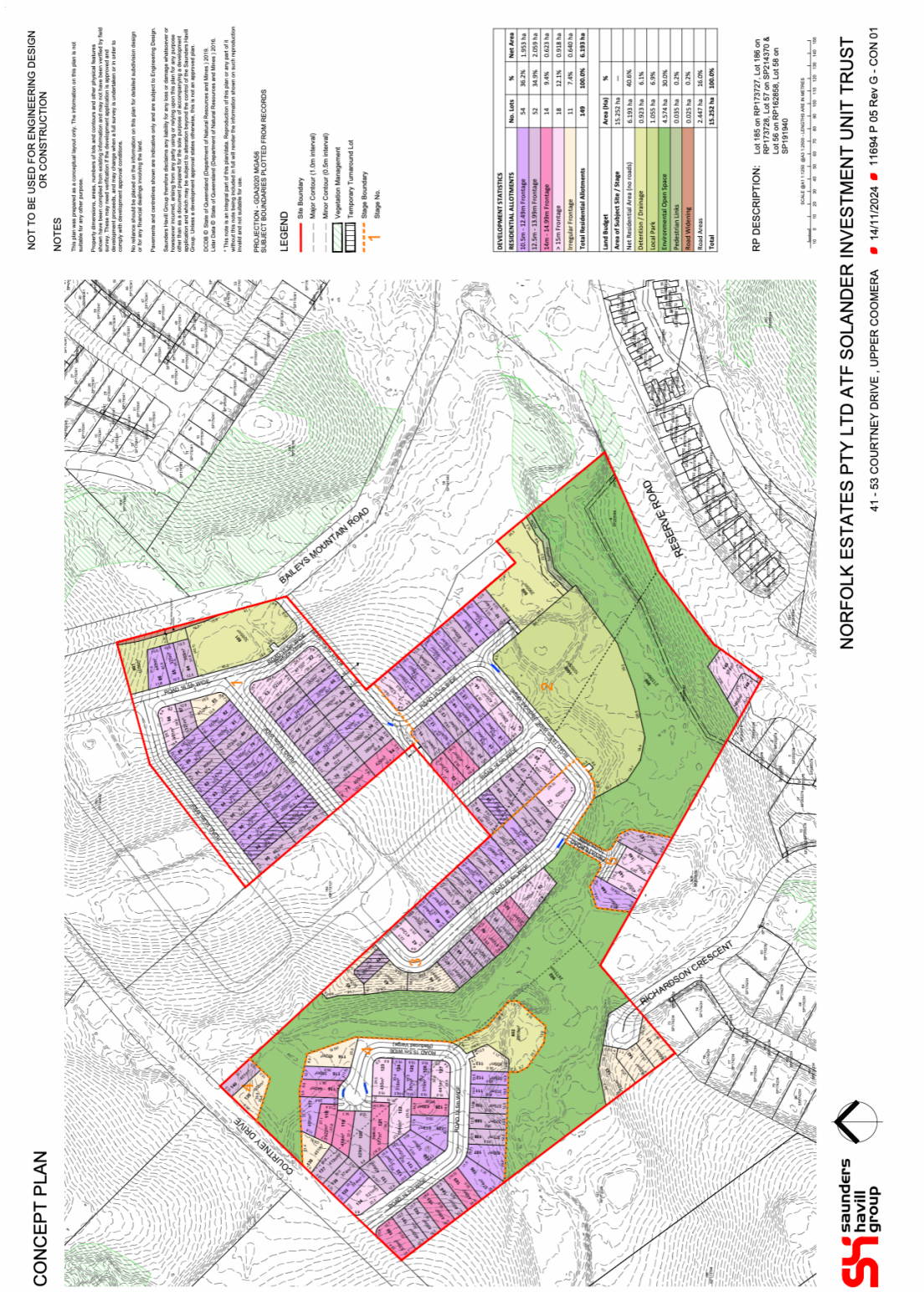
1. Property description This section need only be completed if details of street address and property description are applicable. E.g., in the case of (standard/generic) pool design/shell manufacture and/or patio and carport systems this section may not be applicable. The description must identify all land the subject of the application. The lot and plan details (e.g., SP/RP) are shown on title documents or rates notice. If the plan is not registered by title, provide previous lot and plan details.	Street address (*include no., street, suburb/locality, and postcode)* 31-53 Courtney Drive, 176 Baileys Mountain Road, 288 Reserve Road Upper State **QLD** Postcode Lot and plan details (*attach list if necessary*) Lot 183 on RP156422, Lot 57 on SP214370, Lot 56 on RP205578, Lot 186 on RP173728 and Lot 185 on RP173727 Local government area the land is situated in. Gold Coast City Council
2. Description of aspect/s certified Clearly describe the extent of work covered by this certificate, e.g., all structural aspects of the steel roof beam.	Work as required for bushfire mitigation purposes as set out in the Bushfire Management Report FM 6789-1 prepared by Eldon Bottcher Architect Pty Ltd including assessment of Construction Levels assessed under AS 3959 and nominated in Section 2.4 of the report as BAL Low.
3. Basis of certification Detail the basis for giving the certificate and the extent to which tests, specifications, rules, standards, codes of practice and other publications were relied upon.	Compliance with the Bushfire Management Report FM 6789-1 prepared by Eldon Bottcher Architect Pty Ltd **No certification of components covered by The Building Act 1975, The building Code of Australia or AS 3959.** Gold Coast City Council Town Plan Bushfire Management Constraint code.
4. Reference documentation Clearly identify any relevant documentation, e.g., numbered structural engineering plans.	Bushfire Mitigation Report FM 6789-1

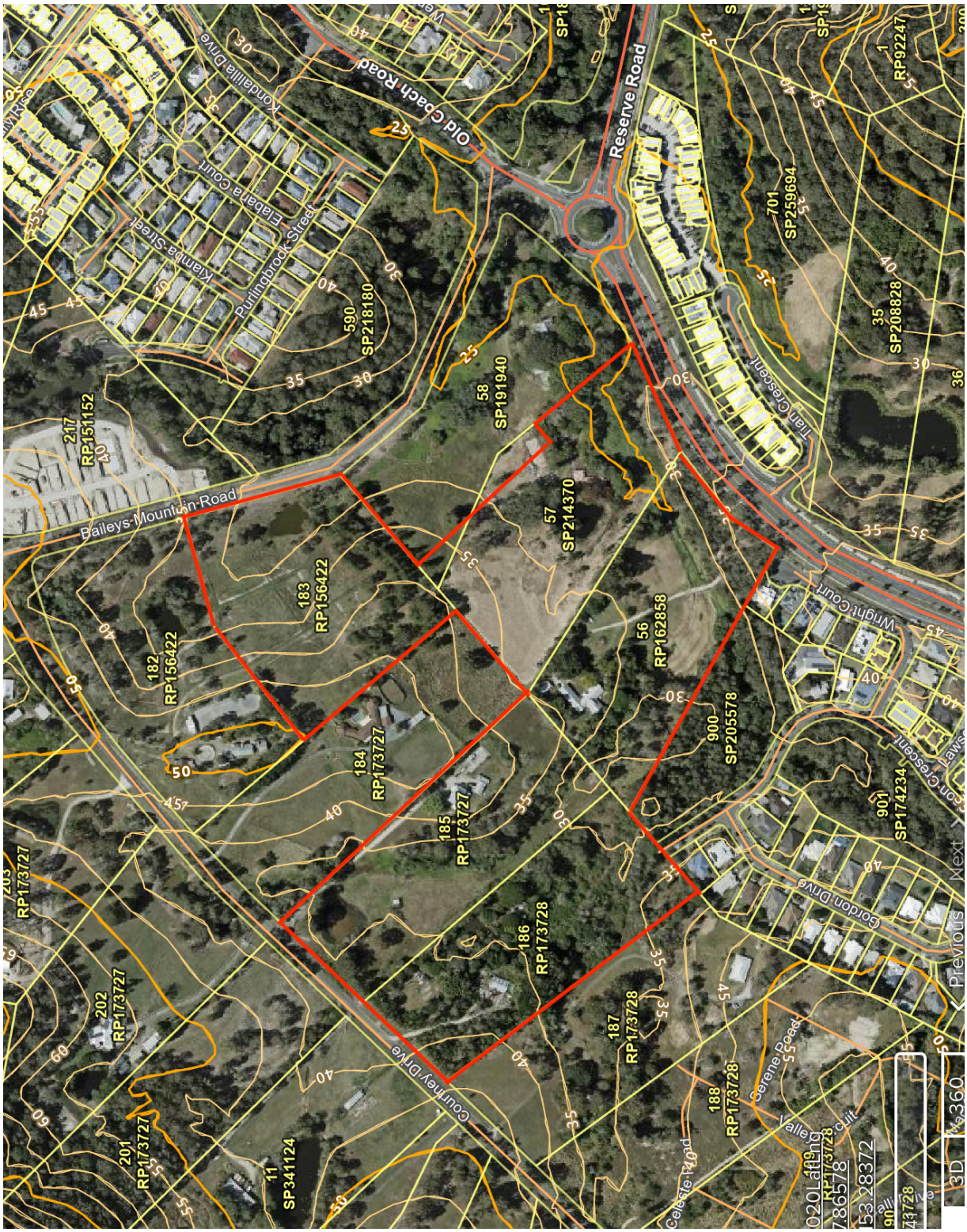
5. Building certifier reference number and building development application number	Building certifier reference number Building development application number *(if available)* Not Available
6. Appointed Competent person details. Under Part 6 of the Building Regulation a person must be assessed as a competent for the type of work (design - specification) by the relevant building certifier.	Name *(in full)* Eldon John Bottcher Company name *(if applicable)* **Eldon Bottcher Architect Pty Ltd** Contact person **Eldon Bottcher** Business phone number 07 55920082 Mobile number 0412434134 Email address. **bushfires@eb-a.com.au** Postal address P.O. Box 3606 Robina Town Centre **Postcode 4230** Licence Class or registration type *(if applicable)* ……. Licence or registration number *(if applicable)* Reg Architect Qld 1325 FPA Australia BPAD Level 3 practitioner 16935
7. Signature of appointed competent person This certificate must be signed by the individual assessed and appointed by the building certifier as competent to give design-specification help.	**Signature** *E J Bottcher* …… **Date** 25 November 24

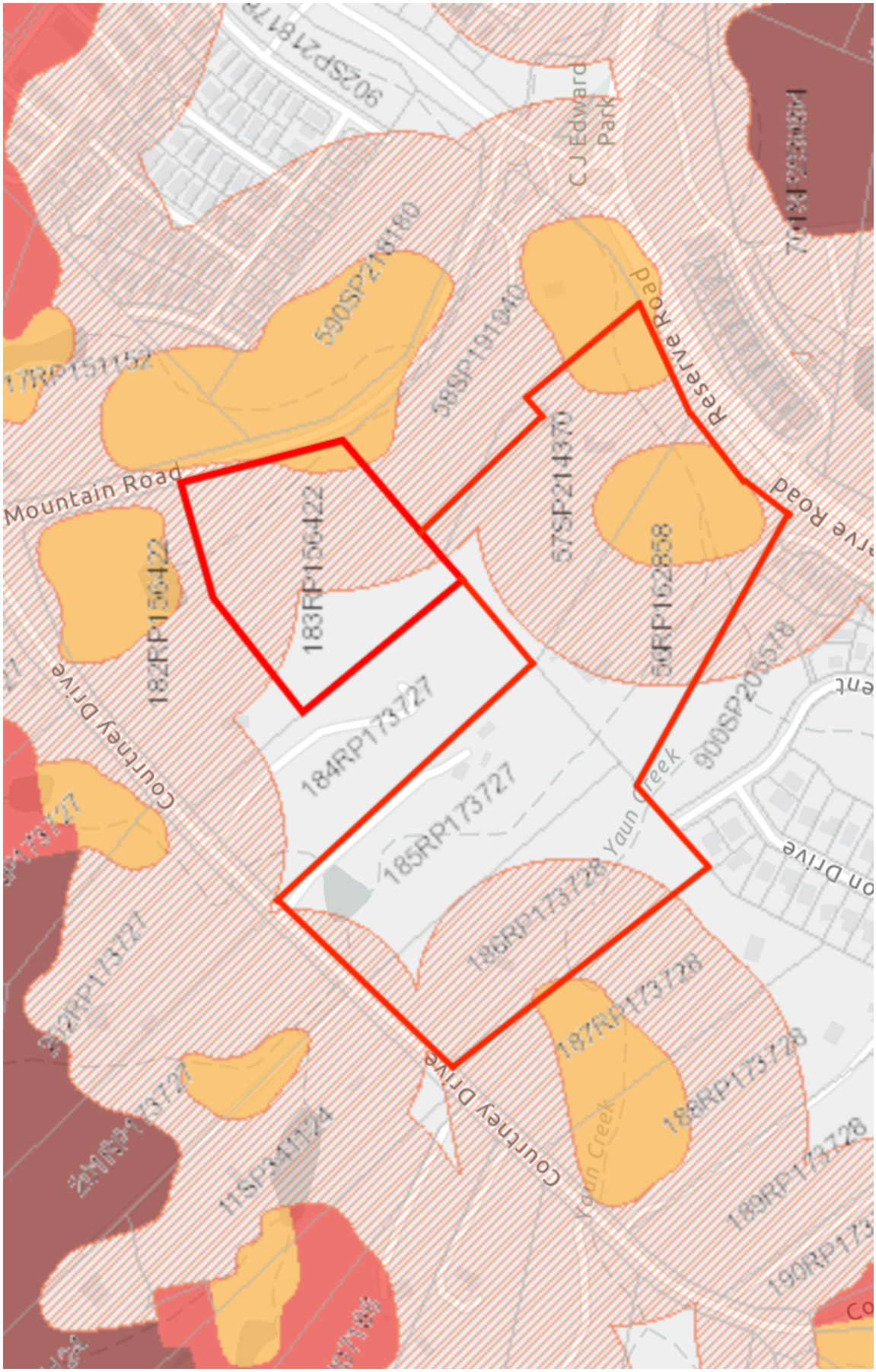
LOCAL GOVERNMENT USE ONLY

Date received		**Reference Number/s**	

APPENDIX 5.2
SITE PLANS


CONCEPT PLAN
NOT TO BE USED FOR ENGINEERING DESIGN OR CONSTRUCTION
NOTES
This plan was prepared as a conceptual layout only. The information on this plan is not suitable for any other purpose.
Property dimensions, areas, numbers of lots and contours and other physical features shown on this plan are approximate only and are subject to change when a detailed survey is carried out. 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 conditions of any development approval.
No reliance should be placed on the information on this plan for detailed subdivision design or for any financial dealings involving the land.
Pavements and centrelines shown are indicative only and are subject to Engineering Design.
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* This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.
PROJECTION - GDA2020 MGA56
SUBJECT BOUNDARIES PLOTTED FROM RECORDS
LEGEND
Site Boundary
Major Contour (1.0m interval)
Minor Contour (0.5m interval)
Vegetation Management
Temporary Turnaround Lot
Stage Boundary
Stage No.
DEVELOPMENT STATISTICS
RESIDENTIAL ALLOTMENTS
No. Lots
%
Net Area
30.5m - 12.49m Frontage
54
36.2%
1.993 ha
12.5m - 13.99m Frontage
52
34.9%
2.059 ha
14m - 14.99m Frontage
14
9.4%
0.623 ha
> 15m Frontage
18
12.1%
0.918 ha
Irregular Frontage
11
7.4%
0.640 ha
Total Residential Allotments
149
100.0%
6.193 ha
Land Budget
Area (Ha)
%
Area of Subject Site / Stage
15.252 ha
—
Net Residential Area (no roads)
6.193 ha
40.6%
Detention / Drainage
0.923 ha
6.1%
Local Park
1.055 ha
6.9%
Environmental Open Space
4.574 ha
30.0%
Pedestrian Links
0.035 ha
0.2%
Road Widening
0.025 ha
0.2%
Road Areas
2.447 ha
16.0%
Total
15.252 ha
100.0%
RP DESCRIPTION:
Lot 185 on RP 737727, Lot 186 on RP 737727, Lot 57 on SP 271570 & Lot 56 on RP 162858, Lot 58 on SP191940
BAILEYS MOUNTAIN ROAD
RESERVE ROAD
COURTNEY DRIVE
RICHARDSON CRESCENT
saunders havill group
NORFOLK ESTATES PTY LTD ATF SOLANDER INVESTMENT UNIT TRUST
41 - 53 COURTNEY DRIVE, UPPER COOMERA
14/11/2024
11694 P 05 Rev G - CON 01


Old Dash Road
Reserve Road
Baileys Mountain Road
Purlingbrook Street
Elabana Court
Kondalilla Drive
Kamba Street
Titan Crescent
Wright Court
Gordon Drive
Courtney Drive
Serene Road
Celeste Road
Valley Cl
Lawson Crescent
Previous
Next
3D
SP218180
SP191940
SP214370
SP259694
SP208828
SP205578
SP174234
SP341124
RP151152
RP156422
RP162858
RP173727
RP173728
RP92247

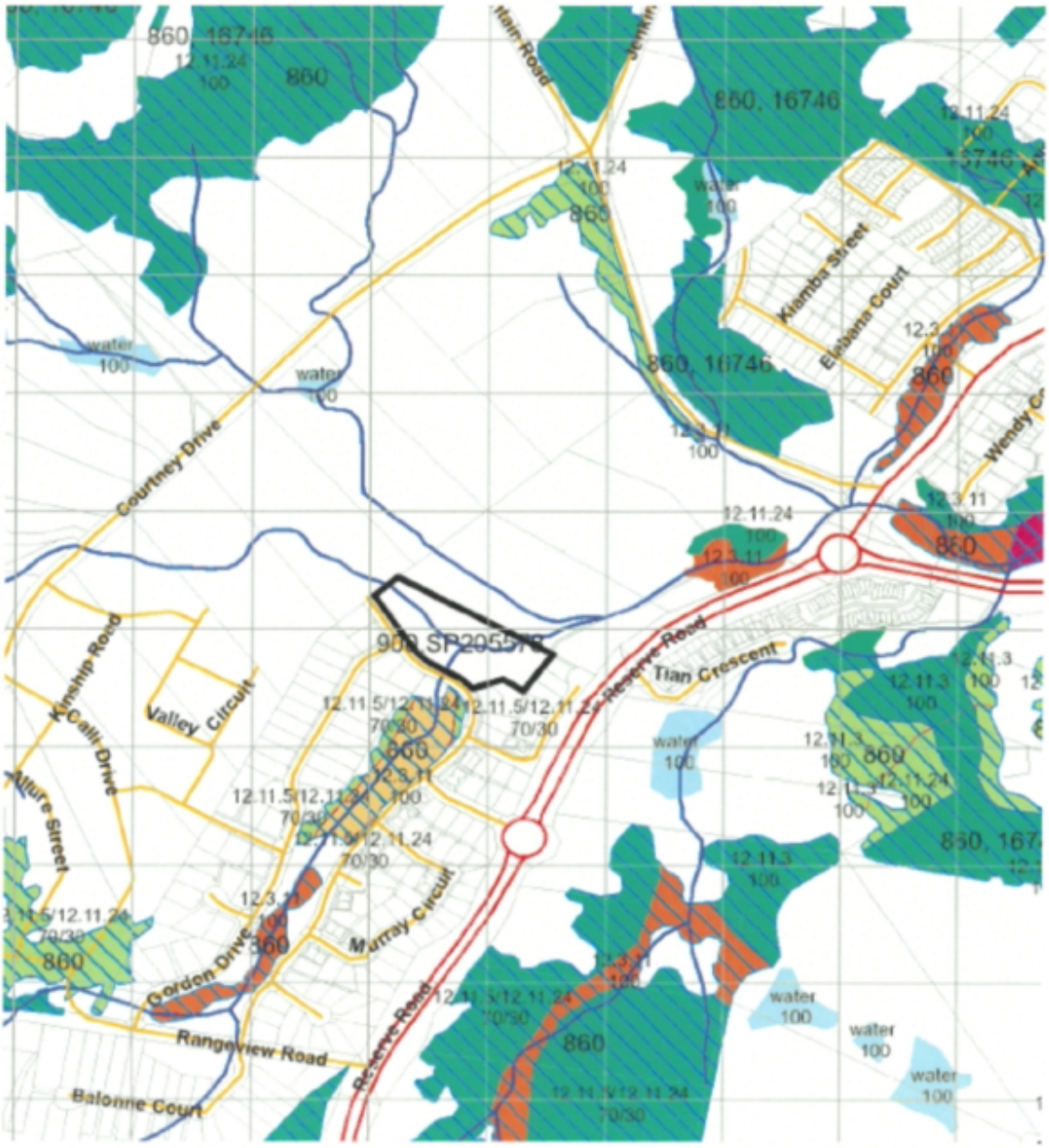

Mountain Road
Reserve Road
Courtney Drive
Courtney Drive
C J Edward Park
Yaun Creek
Yaun Creek
183RP156422
182RP156422
184RP173727
185RP173727
186RP173728
187RP173728
188RP173728
189RP173728
57SP214370
56RP162858
590SP218160
585SP191040
902SP218178
900SP206578
111SP344124

APPENDIX 5.3
SUPPORTING INFORMATION

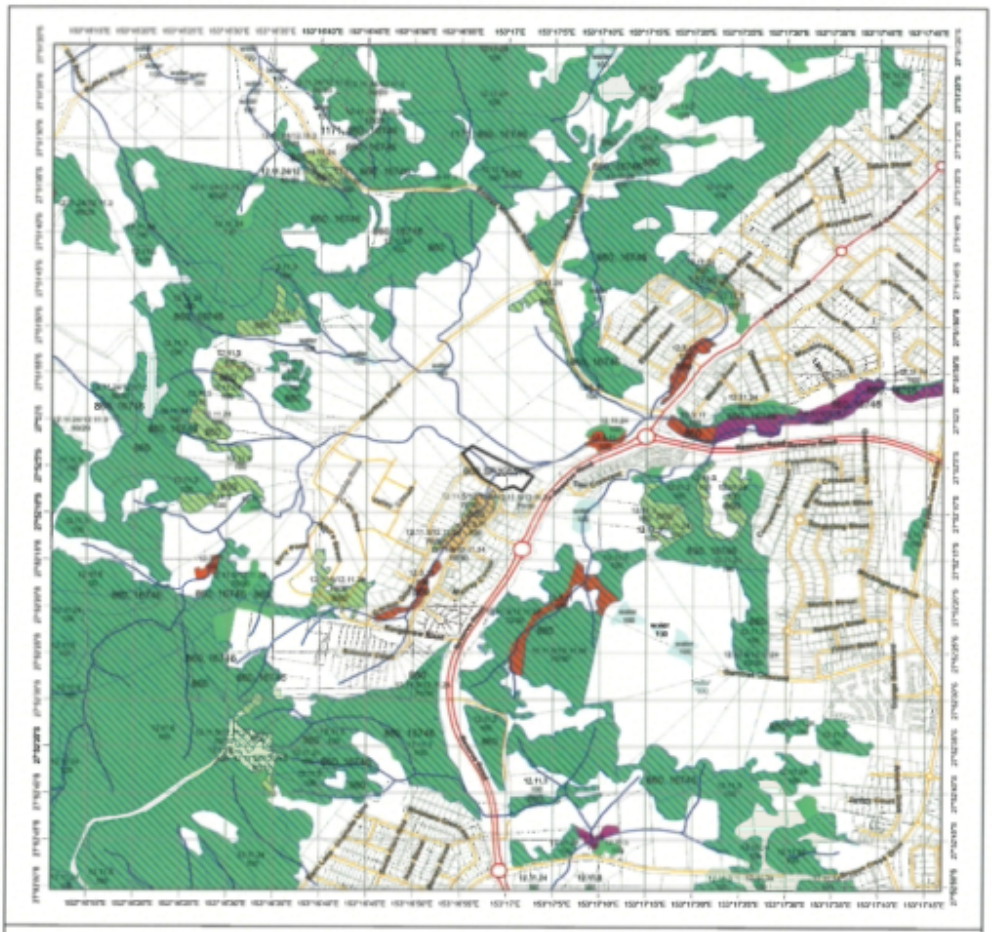
(NOTE: SOME OF THIS INFORMATION IS GENERIC AND NOT PROVIDED FOR APPROVAL PU



RPOSES. IT IS ONLY PROVIDED FOR END USER KNOWLEDGE)


860, 16746
860
water
100
Courtney Drive
Kinship Road
Callit Drive
Valley Circuit
Allure Street
Gordon Drive
Murray Circuit
Rangeview Road
Balonne Court
Reserve Road
Tian Crescent
Kiamba Street
Elabana Court
Wendy
12.11.24
12.11.5/12.11.24
70/30
12.3.11
12.11.3

Lot: 900 Plan: SP205578 23/07/2024 18:08:55



Vegetation Management Supporting Map

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 or R area containing endangered regional ecosystems
Category C or R area containing of concern regional ecosystems
Category C or R area that is a least concern regional ecosystem
Category X area
Water
Wetland on the vegetation management wetlands map
Essential habitat on the essential habitat map
Essential habitat species record
Watercourses and drainage features on the vegetation management watercourse and drainage features map
(Stream order shown as black number against stream where available)
Highway
Connector
Street/Local Road
National Parks, State Forest and other reserves
Other land parcel boundaries
Selected Lot and Plan

Queensland Government

LOCALITY DIAGRAM

N

0 110 220 330 440 550 m

This product is displayed in: GDA2020

Labels for Essential Habitat are centred on the area of enquiry.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/- 100 metres.

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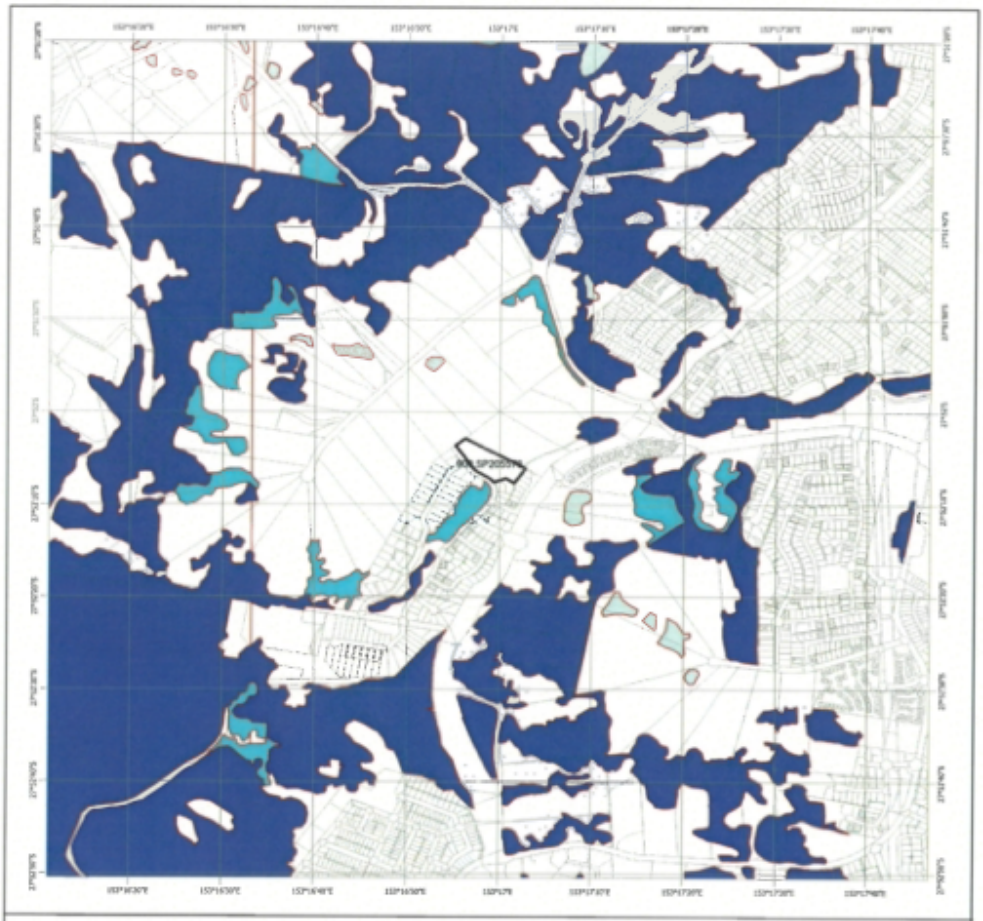
Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.resources.qld.gov.au or contact the Department of Resources.

Digital data for the vegetation management watercourse and drainage feature map, vegetation management wetlands map, essential habitat map and the vegetation management remnant and regional ecosystem map are available from the Queensland Spatial Portal at http://www.information.qld.gov.au/

Land parcel boundaries are provided as locational aid only.

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Lot: 900 Plan: SP205578 23/07/2024 18:08:55



Regulated Vegetation Management Map

Category A area (Vegetation offsets/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 (Exempt clearing work on Freehold, Indigenous and Leasehold land)
Water
Other land parcel boundaries
Selected Lot and Plan

LOCALITY DIAGRAM

N

0 160 320 480 640 800 m

This product is displayed in: GDA2020

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Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.resources.qld.gov.au or contact the Department of Resources.

Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at http://www.information.qld.gov.au/

Land parcel boundaries are provided as locational aid only.

This map is updated on a monthly basis to ensure new PMWs are included as they are approved.

Queensland Government

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ELDON BOTTCHER

EDUCATION AND QUALIFICATIONS
Graduate Diploma in Design in Bushfire Prone Areas
University of Western Sydney
Diploma in Architecture
Queensland Institute of Technology
Certificate of Rural Fire Management
University of Southern Queensland
Registered Architect
Queensland
A+ Architect
Australian Institute of Architects
FPA Australia Certified Practitioner (BPAD-Level 3-16935)
Bushfire Planning and Design (BPAD-LEVEL 3), Alternate Solutions & DTS

PROFESSIONAL MEMBERSHIPS
Fellow
Australian Institute of Architects
Member
Australian Institute of Emergency Services
Member
Australian Institute of Engineers Society of Fire Safety
Member
Queensland Environmental Law Association.
Member Board of Experts
Bushfire Building Council of Australia
Associate Member
Institution of Fire Engineers
Corporate Member
Fire Protection Association of Australia

PROFESSIONAL EXPERIENCE
Director
Eldon Bottcher Architect Pty Ltd since 1978

Bushfire Assessment and Planning Consultant since 1998 with Involvement in more than 6,000 Bushfire Mitigation Projects ranging from single dwellings to major subdivisions, burn plans and general mitigation advice.

Group Officer
Albert Rural Fire Brigades Group
Queensland Fire and Rescue Service
Group Officer
Gold Coast Rural Fire Brigades Group
Queensland Fire and Rescue Service
Group Officer
South East Regional Support Group
Queensland Fire and Rescue Service
Planning Officer
Gold Coast Rural Fire Brigades Group
Queensland Fire and Rescue Service

Life Member
Guanaba Rural Fire Brigade
Member
Clagiraba Rural Fire Brigade

Member Practice Committee AIA Qld Chapter

AIA delegate to Building Industry and Research Consultation Panel on Bushfire Hazard advising Queensland State Bushfire Committee

BBCA representation to Australian Standards Committee FP20 (AS 3959 & AS 5414)

Research Consultant to Queensland University of Technology Scenic Rim Black Saturday Recovery Project

OTHER BUSHFIRE RELATED COURSES AND TRAINING
I.C.S./AIIMS (40 hr. course) in Incident Command Systems
Certificate 4 (Workplace Training and Assessment)
RFSQ Level 1
RFSQ Level 2 (Officer)
RFSQ Fire Management 1
RFSQ Crew Leader
Certificate II in Public Safety (Firefighting Operations)
Fire Weather 1
QELA Expert Witness Workshop 2020

BUSHFIRE RELATED AWARDS
National Planning Award
State Planning Award
Planning Institute of Australia
Gold Coast Bushfire Management Strategy
(Co-Initiator and Member of Preparation Committee)

Australian Government
National Medal
Long and Distinguished Service to Fire fighting
Queensland Fire and Rescue Service
Diligent and Ethical Service Medal + Clasp
Service to Fire fighting

Queensland Government
Australia Day Medallion
Services to Rural Fire Fighting
Queensland Government
Year of the Volunteer Medallion
Services to Fire fighting
UDIA
Best Consultancy Team Award in 2007.

SERVICES OFFERED

Bushfire management Reports

Bushfire Safety Engineering

Bushfire Planning and Design

Bushfire Hazard Assessment

Alternative Solutions

Expert Witnessing
(See Planning and Environment Court of Queensland Determination
File No. BD 624 of 2005 sections 28 to 35)

Continuing Professional Development Lectures

Tertiary Education Lectures and Tutorials

Town Planning Bushfire Codes for Local Authorities

Bushfire Burn Planning

General consultancy relating to all aspects of Bushfire

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