

APPENDIX D

Engineering & Stormwater Management Report

Prepared by:

STP Consultants

STRUCTURAL
CIVIL
ELECTRICAL
MECHANICAL
HYDRAULIC
FIRE
VERTICAL
TRANSPORT
SEISMIC



Lakeside Drive Mixed Use Development

286 LAKESIDE DRIVE, OONOONBA QLD 4811

DA ENGINEERING & STORMWATER MANAGEMENT REPORT



OONOONBA PROJECT PTY LTD

STP26-0222

DOCUMENT STATUS

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1. Introduction

STP Consultants (STP) have been engaged to prepare a DA Engineering Report and Stormwater Management Plan to comply with the Townsville City Council (TCC) Planning Scheme, associated policies and development guidelines to support a new mixed use development at 286 Lakeside Drive in Oonoonba.

1.1 Project Understanding

Verve Design Group have prepared plans for the site that includes one (1) service station with attached food and drink outlet with drive through facility, and one (1) stand-alone fast food with drive through facility.

Refer Appendix A for Architectural Plans.

The objective of this report is to indicate the likely levels of stormwater quantity discharge and associated pollutants discharging from the subject site during the operation of the proposed development, site servicing through Townsville City Council infrastructure, and the extent of earthworks within the site. The following report has been prepared in accordance with the following:

- Townsville City Council Planning Scheme and associated policies,
- Water by Design's Water Sensitive Urban Design Guidelines (WSUD),
- The Department of Environment and Resource Management State Planning Policy for Healthy Waters,
- CTM Water Alliance Design & Construction Code, and,
- SEQ Code – Water Supply and Sewerage design and construction standards (where referenced within the CTM Code).



Figure 1.1 - Proposed site layout on Aerial Imagery (Qld Globe/ Verve Design Group, 2026)

1.2 Limitations

The following report assumes that all existing information provided by the client and consultant team is accurate and current at time of writing.

2. Site Description

2.1 Location and Zoning

The development is proposed at 286 Lakeside Drive, Oonoonba, also described as Lot 6000 on SP302846, located approximately 4.5km South of the Townsville City Centre with a total site area of approximately 0.864ha. The proposed development is bounded by the North Coast Line rail easement to the East, and Lakeside Drive to the North and West. The proposed development will be accessed via Lakeside Drive, defined as an arterial road within Townsville City Council under State Control (DTMR). There is one rail level crossing to the northeast of the site.

The site is zoned as Community Facilities, within the Oonoonba Priority Development Area. Currently, there is a 10m wide easement that runs generally West to East, over an existing sewer rising main and drainage channel.



Figure 2.1 - TownsvilleMAPS zone overlay map (2026)

Refer Appendix A for architectural plans and Refer Appendix B for site survey information.

2.2 Topography

The site has 3 clearly defined building pads, with two channels. One channel traverses the site from West to East, and the second channel extends from the southern boundary to approximately midway through the West-East channel. Each pad has been graded at approximately 1:200 from the centre to the outer edges, ensuring there is no ponding, with the existing channels having an approximate longitudinal slope of 1:100.

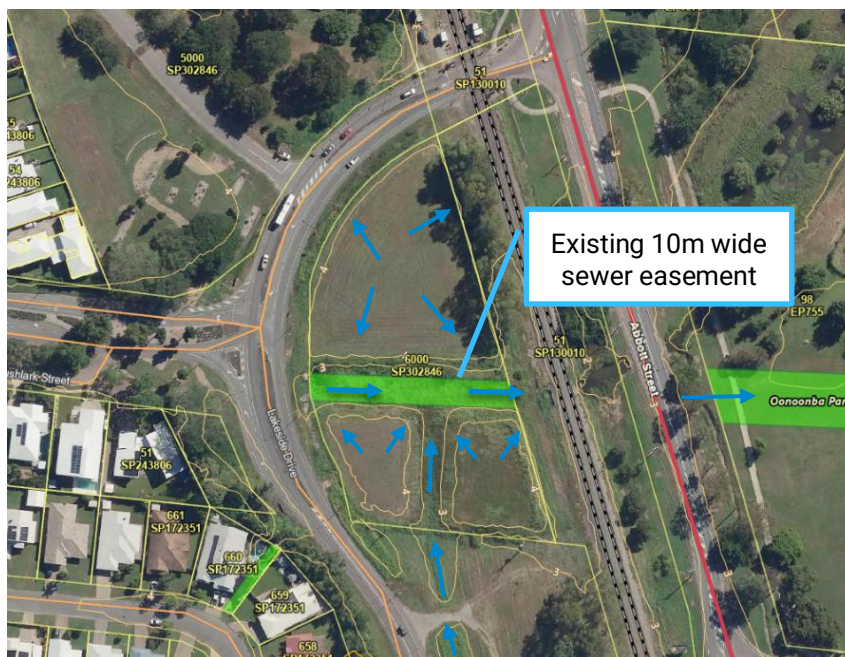


Figure 2.2 - Site Aerial with contours and falls (Qld Globe, 2026)

2.3 Flood Impacts and Overland Flow

As shown below, the proposed site is considered impacted by flood.

This engineering report is to be read in conjunction with the Flood Study Report completed by Stormflood Engineering. The Defined Flood Event peak flood level is estimated to be approximately RL3.57mAHD, using the updated TCC Flood Information Portal website.

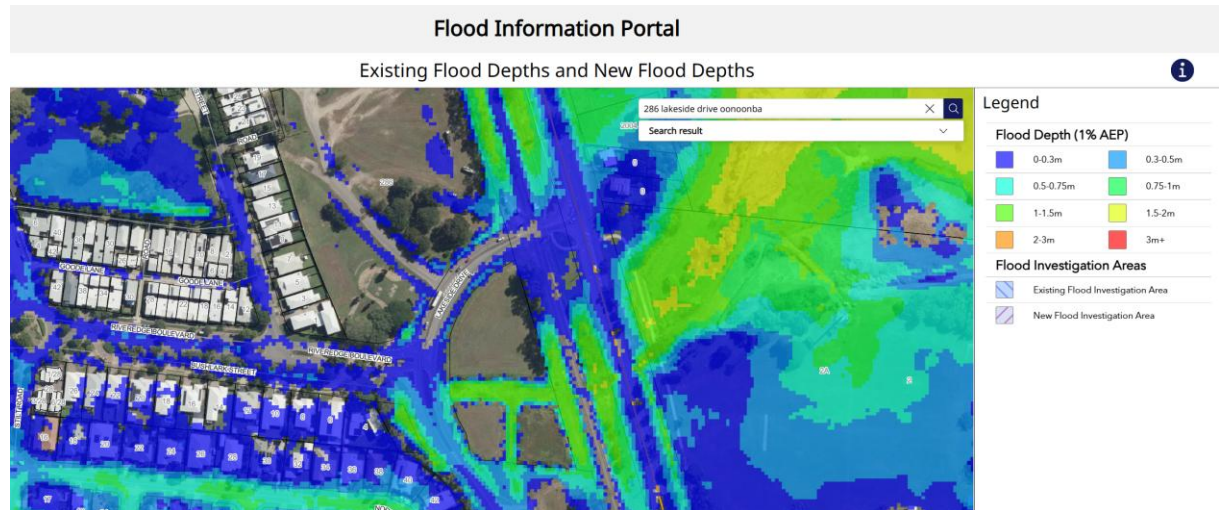


Figure 2.3 - TownsvilleMAPS Flooding (2026)

The site is shown as impacted by overland flow emanating from the northwest, with runoff leaving the site as overland flow to the East.

2.4 Existing Stormwater Infrastructure

Currently, the site accepts stormwater outlets from two (2) custom structures within the property boundary on the Lakeside Drive frontage, with runoff exiting the site to be captured within an existing culvert through Queensland Rail land on the East.

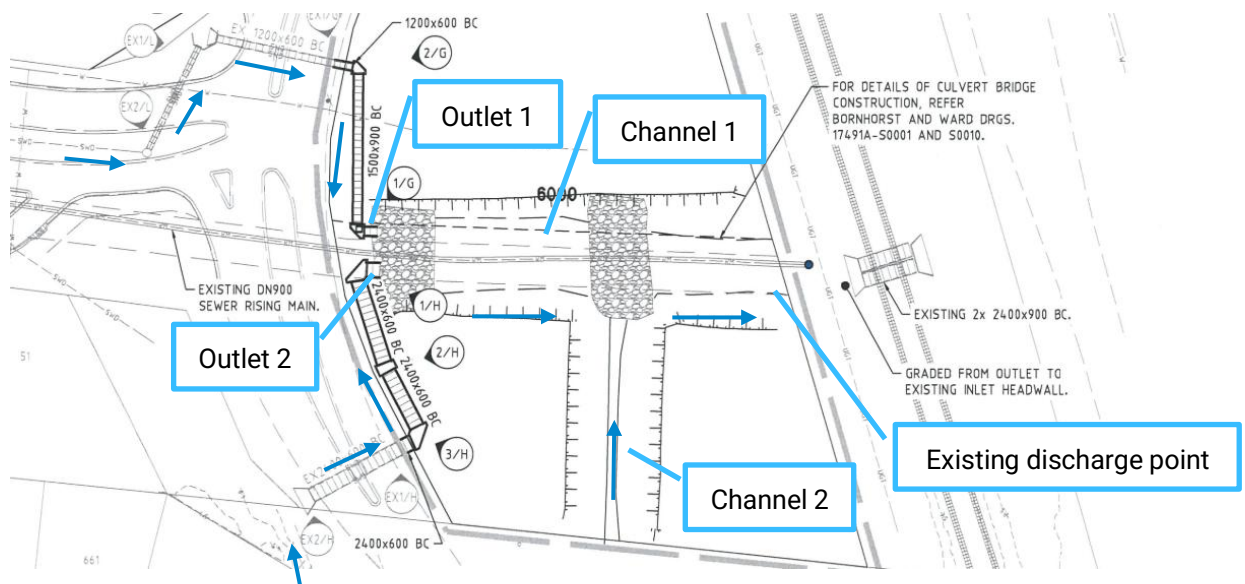


Figure 2.4 - Stormwater Drainage As Constructed Plan (Calibre Consulting, 2019)

- Channel 1: 10m wide channel within an existing easement with 1 in 2 to 1 in 3 batters, and,
- Channel 2: 1.2m wide channel flowing from the South to intersect with Channel 1, with 1 in 3 to 1 in 4 batters.

2.5 Existing Sewer and Water Reticulation

Currently, there are no sewer or water connections to TCC infrastructure.

Using existing information available, there appears to be:

- An existing 250mm diameter water main from Riveredge Boulevard traversing the subject site, with survey information terminating on the Riveredge Blvd side of Lakeside Drive,
- An existing manhole with 150mm diameter sewer reticulation main on the corner of Riveredge Blvd and Darter Street, and,
- An existing 900mm diameter rising main that traverses the site that was not able to be located and therefore assumed to be more than 3m deep.

Figure 2.5 shows a compiled, indicative plan of information sourced by TownsvilleMAPS, ArcGIS, and survey information provided by the project team.

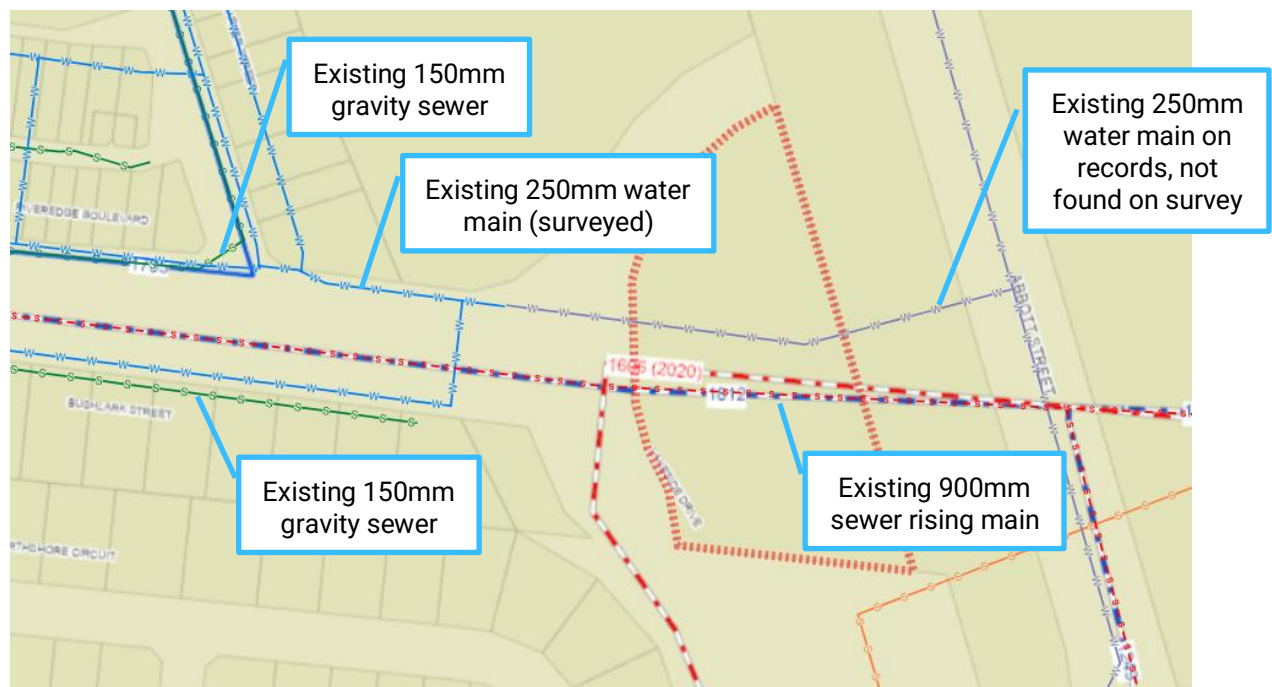


Figure 2.5 - Existing Sewer and Water Infrastructure (TownsvilleMAPS, 2026)

Refer Appendix B for survey information.

2.6 Existing Electrical and Telecommunications

Online mapping for Ergon shows an existing site connection from the southeast provided as part of previous stages of works, branched off an existing High Voltage overhead line.

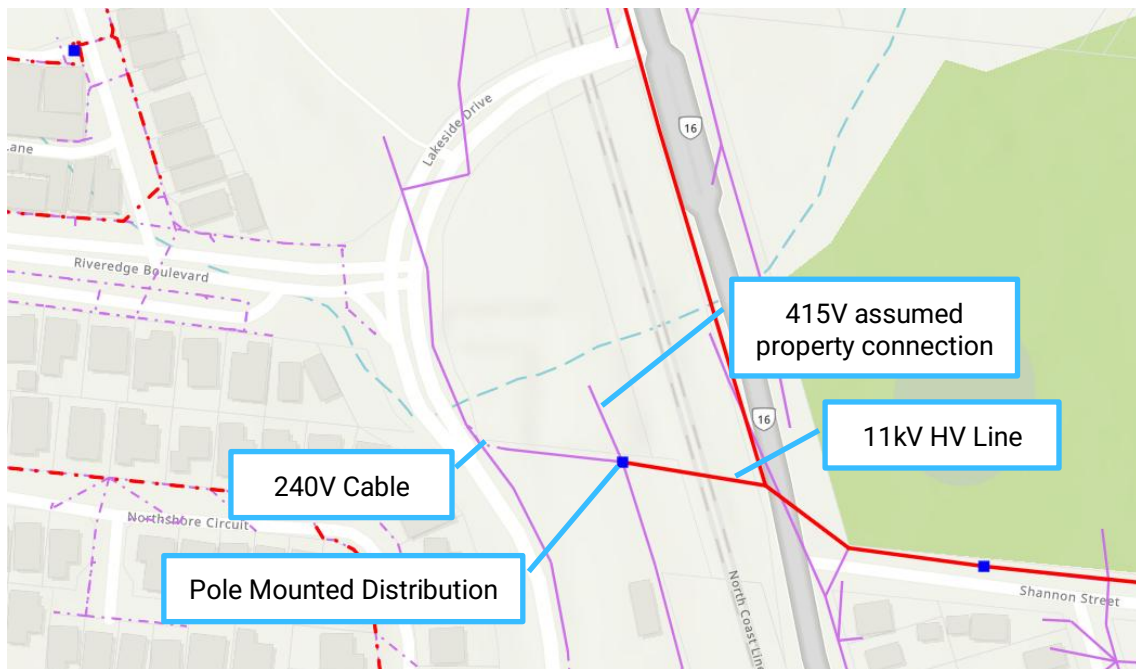


Figure 2.6 - Ergon Energy Network, arcgis map (2026)

BYDA information shows existing Telstra conduits to the North of the site within Lot 5000 on SP302846, and NBN Co conduits and pits within Riveredge Blvd and Lot 5000 on SP302846.

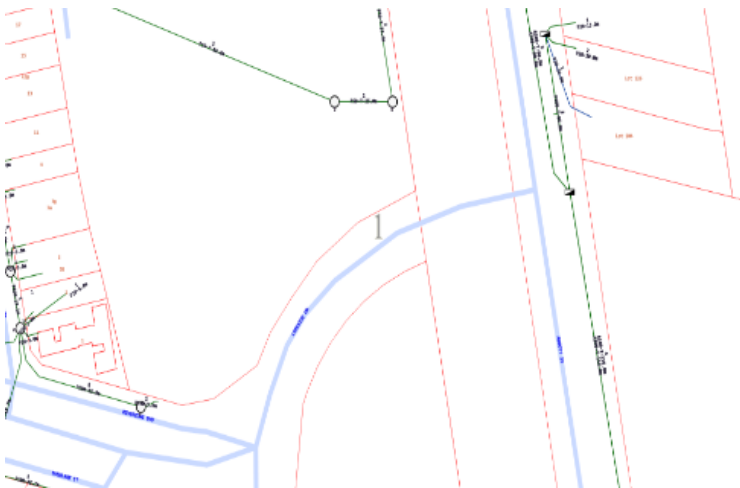


Figure 2.7 - BYDA NBN Co plan (BYDA, 2026)

Refer Appendix B for survey information.

3. Earthworks

3.1 Existing Geotechnical Conditions

A geotechnical site investigation has yet to be undertaken on this project and will be completed for detailed design. It is confirmed that the pads were filled by BMD under Level 1 supervision of Construction Sciences.

The site is not located in any recorded Acid Sulfate Soils areas and is located below 5.0mAHN in the Townsville City Council overlay map.

An Acid Sulfate Soil (ASS) investigation shall be performed by a qualified Geotechnical Engineer prior to the start of works. In the event ASS is present, necessary measures will be implemented in the form of a management plan in accordance with the current TCC Planning Scheme.

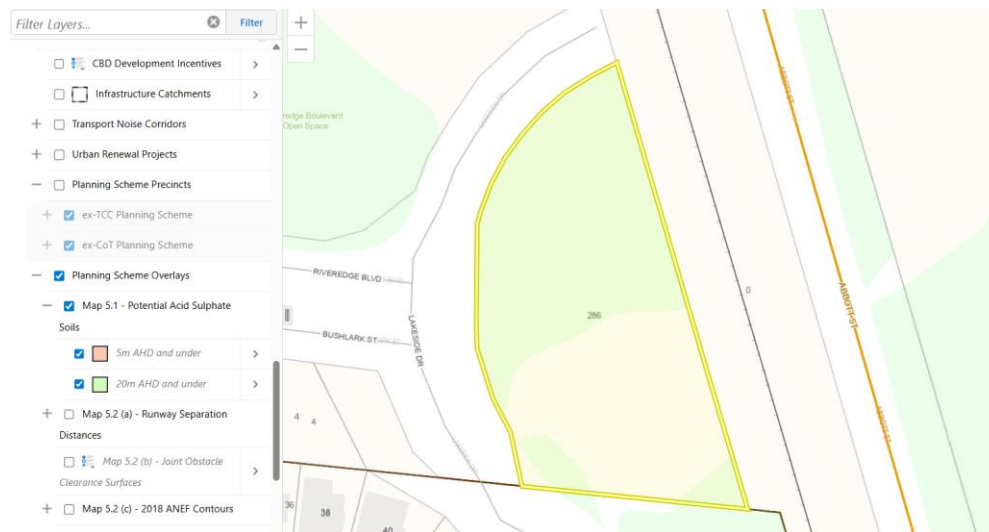


Figure 3.1 - TownsvilleMAPS Potential Acid Sulfate overlay map (2026)

No major earthworks are proposed within the existing 10m wide sewer easement; however, it is proposed that the easement be re-graded and maintained to ensure the surface is free draining. This will result in up to 0.7m deep of material (mainly alluvial and organic) to be removed within the easement to suit the existing stormwater infrastructure.

3.3 Retaining and Structures

The existing sewer was potholed in 2021, with no pipework found to a depth of 3.0m. Due to the estimated depth of the pipe, and horizontal distance from the retaining walls, it is assumed that the construction of a retaining structure will not impact or load the sewer pipe. It is proposed that the existing 900mm diameter rising main be physically located prior to the start of works to confirm its depth and location.

REV C17

4. Stormwater Management - Quantity

Stormwater exiting the site is currently conveyed through the existing stormwater channels overland and exits the site through an existing 2No. 2400x900mm box culverts to the East.

Water from the subject site travels approximately 740m East into the Ross River before eventually joining the coastal waters of the Great Barrier Reef, South of Townsville. The site forms part of a larger stormwater system, with the West-East channel conveying water from the West of Lakeside Drive to the East through the existing railway corridor and Abbott Street.

4.1 Proposed Stormwater Drainage

Due to the extent of the properties shown to be affected by the 1% AEP rain event, and location of the proposed site within the greater catchment, no onsite detention has been designed or proposed for this development. After review of the Flood Study report and as constructed information available, it has been assumed that any onsite mitigation would have the peak flows of the site coincide with the regional catchment, therefore having negative impacts on upstream roads, infrastructure, and properties.

It is proposed that the site will utilise a traditional pit and pipe system that will outlet directly to existing Channel 1 within the sewer easement.

Survey information provided shows that Channel 1 has had potential sediment build up throughout the site, therefore it is proposed that the channel within the easement be re-graded to suit a minimum 1:250 longitudinal slope and be maintained with low grass to ensure the area is free draining. To assist in capturing the sediment and velocity of water flowing through the site, it is proposed that Channel 1 have a concrete base from the proposed culverts acting as a bridge between the northern and southern portions of the site, with 200mm high baffles.

Channel 2 was constructed as a 1m wide base grassed channel with 1 in 3 battered sides and is proposed to be replaced with a 2400mm x 900mm high Box Culvert that outlets to the concrete based portion of Channel 1.

Refer Stormflood Engineering Flood Study Report and Appendix C for concept civil engineering plans.

4.2 External Stormwater Catchment Management

As noted Section 2.3 of this report, the site is impacted by flooding and overland flow, with upstream catchments from the West and South traversing the site, flowing East.

To ensure the proposed development does not negatively impact upstream catchments, it is proposed that large box culverts with concrete slab bases be constructed to allow runoff to continue flowing through the site.

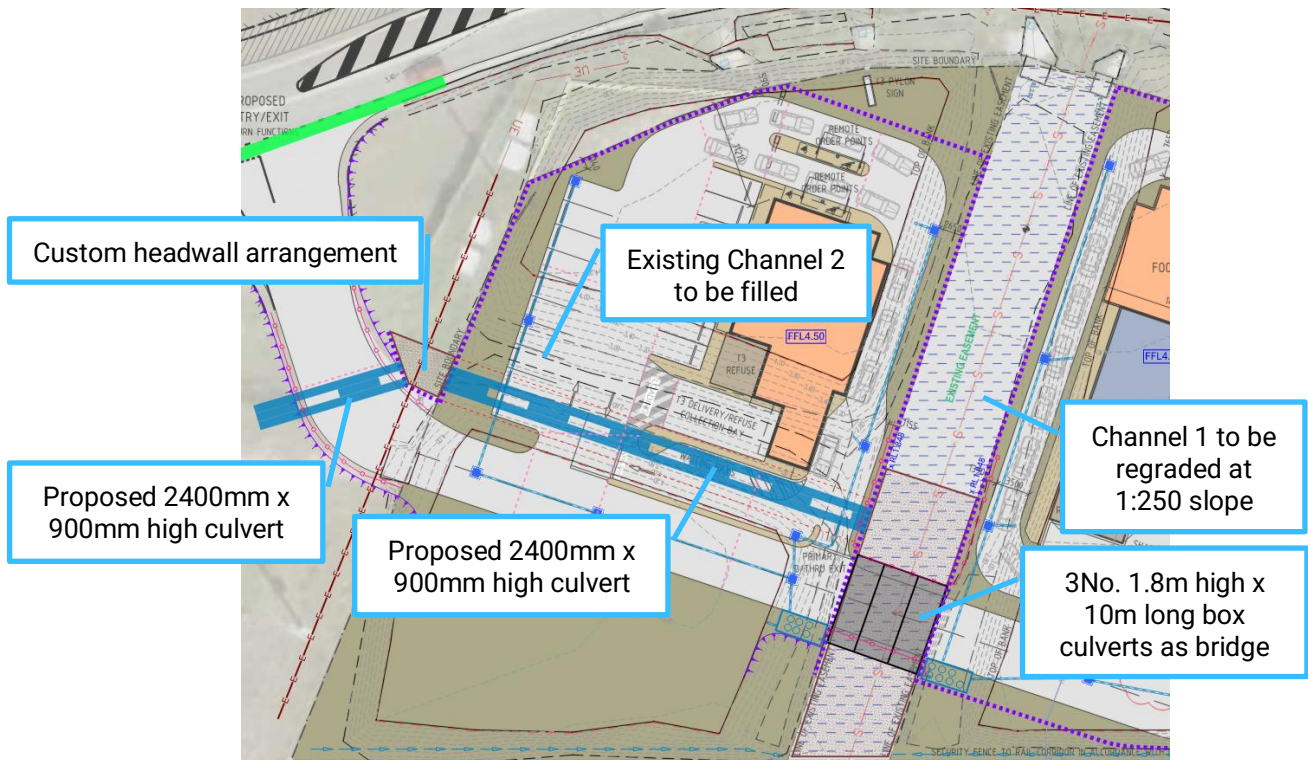


Figure 4.1 - Proposed External Catchment Management

Refer Stormflood Engineering Flood Study Report and Appendix C for concept civil engineering plans.

5. Stormwater Management - Quality

According to the State Planning Policy: SPP (2017) and adhering to the Townsville City Council Planning Scheme Policy, the proposed development will need to implement a site-based stormwater quality management plan due to the development fulfilling the set criteria outlined in Table B found in Appendix 2 of the SPP.

Due to the need of the site-based management plan, and to achieve the stormwater management design objectives identified in the State Planning Policy, a MUSIC model analysis is presented in the following sections of this report, detailing the achieved reductions in the total pollutant load.

Table B: Post construction phase – stormwater management design objectives

Application:

(1) A material change of use for an urban purpose that involves premises 2500 metres² or greater in size and:

(a) will result in six or more dwellings; or

(b) an impervious area greater than 25 per cent of the net developable area.

(2) Reconfiguring a lot for urban purposes that involves premises 2500 metres² or greater in size and will result in six or more lots.

Climatic region	Design objectives				
	Reductions in mean annual load from unmitigated development (%)				
	Total suspended solids (TSS)	Total phosphorus (TP)	Total nitrogen (TN)	Gross pollutants >5mm	Waterway stability management
South East Queensland	80	60	45	90	Limit the peak 1-year ARI event discharge within the receiving waterway to the pre-development peak 1-year ARI discharge
Central Queensland (south)	85	60	45	90	
Central Queensland (north)	75	60	40 ¹⁵	90	
Cape York ¹⁴ , wet tropics and dry tropics	80	60 ¹⁶	40	90	
Western Queensland ¹⁴	85	60	45	90	

Notes:

- Mapping of climatic regions is available on the State Planning Policy Interactive Mapping System.
- In lieu of modelling, the default bio-retention treatment area to comply with load reduction targets for all Queensland regions in 1.5 per cent of the contributing catchment area.
- Water stability objective applies if development drains to an unlined waterway within or downstream of the site where a risk of increased erosion exists due to changes in hydrology. Local government may also require application of the waterway stability objective where there are planned future rehabilitation works to return a lined channel to a natural channel design.
- The SPP Water quality guidance material provides advice on the measures that demonstrate compliance with table B.

¹⁴ Note: Applies to population centres greater than 25,000 persons.

¹⁵ Note: Mackay Regional Council has adopted a 35 per cent reduction for TN.

¹⁶ Note: Townsville City Council has adopted a 65 per cent reduction for TP.

Figure 5.1 - SPP 2017 Table B - stormwater management design objectives

5.1 Model Development

In order to assess the effects on urban water quality that may results from the subject site, the post-developed site was modelled in MUSIC in accordance with the *WaterbyDesign MUSIC Modelling Guidelines (2018)*.

Runoff from the proposed development shall be collected by a private drainage system comprising of a series of field inlet pits and roof water drainage, conveyed to an end-of-line water quality tank upstream of the proposed detention. All new field inlets shall be fitted with Atlan 'Stormsacks' on this project to act as primary treatment, and full height Atlan 'Atlanfilter' cartridges within tanks as tertiary treatment.

MUSIC models the proposed treatment train as a series of 'source', 'treatment' and 'other' nodes. In this instance, the source nodes are sub-catchments determined from proposed surface topographical analysis, and the treatment nodes are proprietary treatment devices. The treatment train source nodes (catchment nodes) were modelled as 'commercial' catchments in accordance with the *WaterbyDesign MUSIC Modelling Guidelines (2018)*. The catchments were further split into sub-catchments representing the type of surface and likely pollutant concentration expected when discharged.

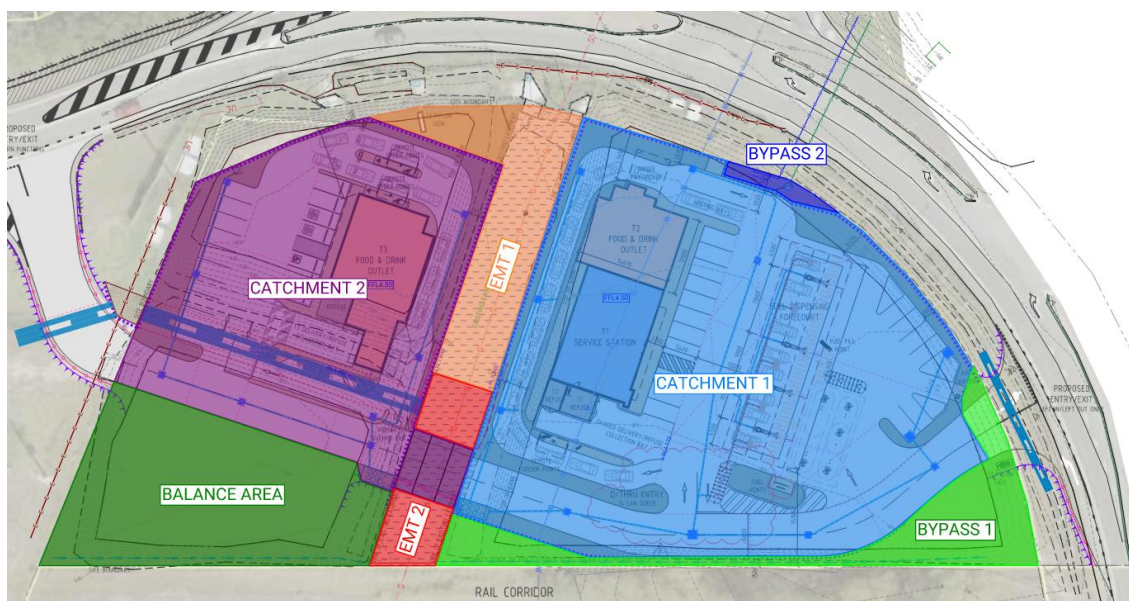


Figure 5.2 - Stormwater Treatment Catchment Layout

Table 5.1 - MUSIC Post-Developed Catchments Summary

Catchment	Roof	Road	Ground
Catchment 1 (0.445ha)	0.085	0.355	0.035 (100% pervious)
Catchment 2 (0.419ha)	0.039	0.192	0.032 (100% pervious)
EMT 1 (0.056ha)	-	-	0.056 (100% pervious)
EMT 2 (0.020ha)	-	-	0.020 (100% impervious)
Bypass 1 (0.004ha)	-	-	0.004 (100% pervious)
Bypass 2 (0.052ha)	-	-	0.054 (100% pervious)

5.2 Proposed Treatment Train

To ensure the SPP 2017 and Townsville City Council requirements are met, it is proposed that the following treatment be implemented:

Table 5.2 - MUSIC Proposed Treatment Summary

Catchment	Primary	Tertiary
Catchment 1	12No. 600x600 Atlan Stormsacks	6No. full height Atlan Filter Cartridges
Catchment 2	8No. 600x600 Atlan Stormsacks	4No. full height Atlan Filter Cartridges
Balance Area	45m x 1m wide x 1.0% slope grassed swale	-
EMT 1	25m x 1m wide x 0.4% slope grassed swale	-
EMT 2	-	-
Bypass 1	80m x 1m wide x 0.5% slope swale	-
Bypass 2	-	-

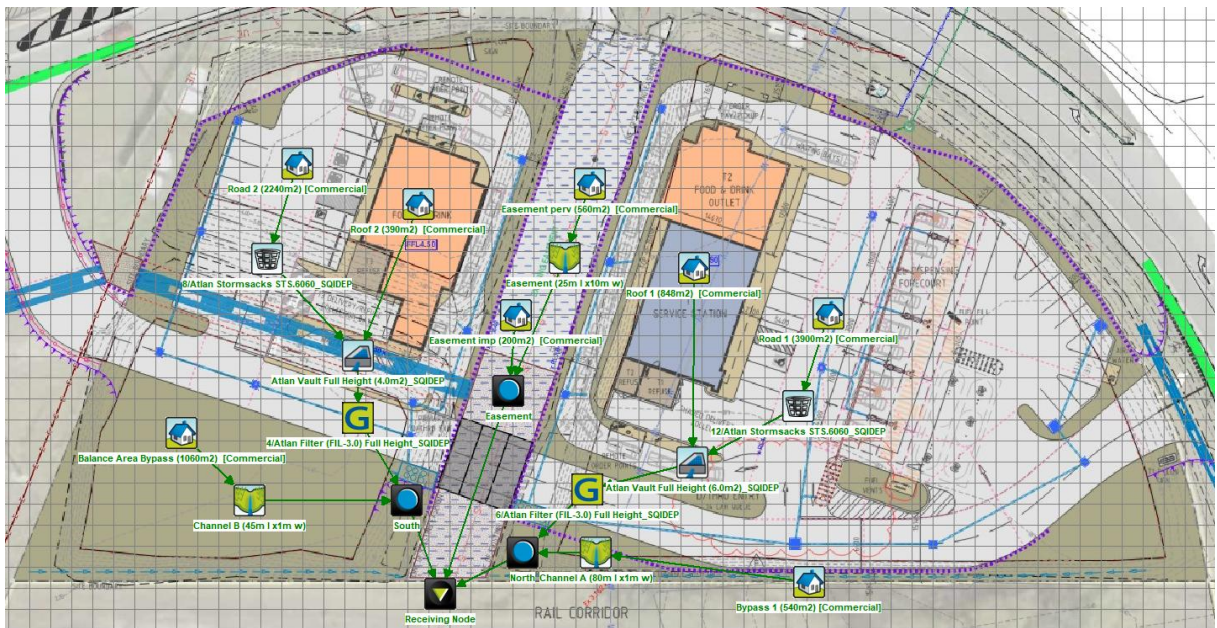


Figure 5.3 - MUSIC Model Proposed Treatment Train

	Sources	Residual Load	% Reduction
Flow (ML/yr)	8.38	8.39	0
Total Suspended Solids (kg/yr)	2600	507	80.5
Total Phosphorus (kg/yr)	4.88	1.26	74.2
Total Nitrogen (kg/yr)	26.8	12.7	52.5
Gross Pollutants (kg/yr)	137	3.7	97.3

Figure 5.4 - MUSIC Model Results

As shown above in Figure 5.3 and Figure 5.4, the proposed treatment train meets, and exceeds, the State Planning Policy (SPP) 2017 targets.

6. Site Servicing

6.1 Sewer Reticulation

It is proposed that a new portion of sewer reticulation main is constructed from the existing manhole on the corner of Darter Street and Riveredge Blvd to service the proposed mixed-use development. Construction of this sewer will require traversing existing water reticulation mains, water services, and will be in proximity to an existing headwall structure on the corner of Riveredge Blvd and Lakeside Drive.

To service the site, a new manhole will be constructed with one 150mm diameter uPVC property connection within the subject site.

As previously noted in chapter 2.5, online mapping shows an existing 900mm diameter sewer rising main and potential future 900mm sewer rising main. Potholing for the services was undertaken in 2020 and 2021, however, the pipes were not found and therefore assumed to be more than 3m deep. No works are proposed to interfere with the existing rising main, and the pipe will be appropriately protected during the construction phase of the development.

Refer Appendix C for Civil Engineering Plans.

6.2 Water Reticulation

As discussed in chapter 2.5, an existing 250mm water main is shown crossing through the site and connecting with the existing water main East of the existing rail corridor. Survey information provided with services locating shows that the 250mm water reticulation terminates on the intersection of Riveredge Blvd and Lakeside Drive on the northern verge.

To facilitate the construction of this development, it is intended that a new 150mm diameter PVC water main extension be constructed to cross Lakeside Drive and service the site.

The service will likely include a single 150mm property connection, providing:

- One (1) 100mm metered potable service, and
- One (1) 150mm metered dedicated fire service.

Refer Appendix C for Civil Engineering Plans.

6.3 Electrical and Telecommunications

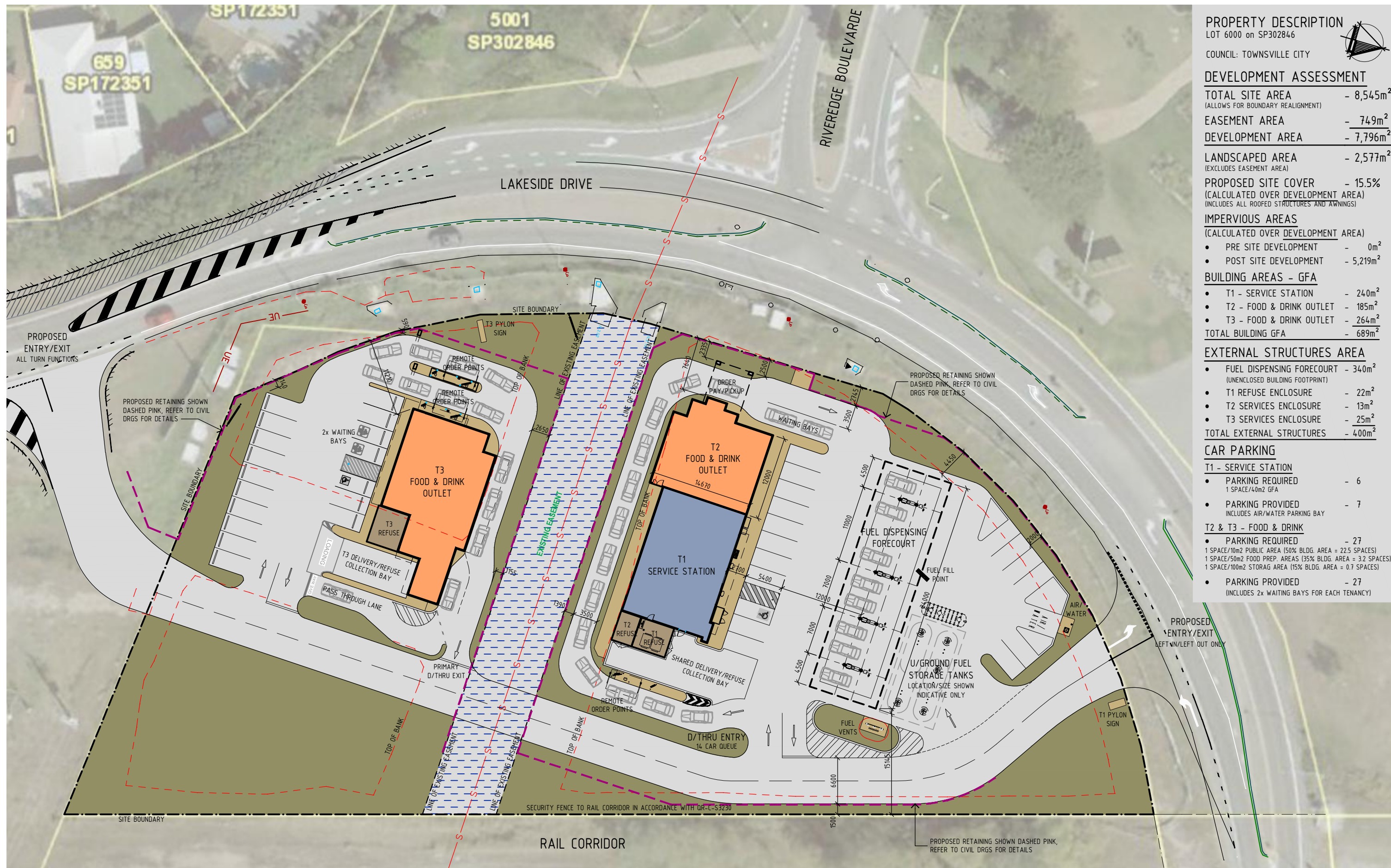
For the purposes of this report, it is considered the existing infrastructure will have sufficient capacity to service this development with the detailed design to be completed by a qualified electrical and telecommunications consultant.

7. Discussion and Conclusions

It is demonstrated in this report that the construction of the proposed mixed use development at 286 Lakeside Drive, Oonoonba, will not result in negative stormwater impacts to surrounding roads, properties, or downstream waterways by capturing runoff and providing onsite treatment facilities.

The site is able to be adequately serviced by Townsville City Council sewer and water infrastructure without major upgrades and disrupting the services of surrounding properties.

Appendix A: Architectural Plans



PROPERTY DESCRIPTION

LOT 6000 on SP302846

COUNCIL: TOWNSVILLE CITY

DEVELOPMENT ASSESSMENT

TOTAL SITE AREA - 8,545m²
(ALLOWS FOR BOUNDARY REALIGNMENT)EASEMENT AREA - 749m²DEVELOPMENT AREA - 7,796m²LANDSCAPED AREA - 2,577m²
(EXCLUDES EASEMENT AREA)PROPOSED SITE COVER - 15.5%
(CALCULATED OVER DEVELOPMENT AREA)
(INCLUDES ALL ROOFED STRUCTURES AND AWNINGS)

IMPERVIOUS AREAS

(CALCULATED OVER DEVELOPMENT AREA)

- PRE SITE DEVELOPMENT - 0m²
- POST SITE DEVELOPMENT - 5,219m²

BUILDING AREAS - GFA

- T1 - SERVICE STATION - 240m²
- T2 - FOOD & DRINK OUTLET - 185m²
- T3 - FOOD & DRINK OUTLET - 264m²
- TOTAL BUILDING GFA - 689m²

EXTERNAL STRUCTURES AREA

- FUEL DISPENSING FORECOURT - 340m²
(UNENCLOSED BUILDING FOOTPRINT)
- T1 REFUSE ENCLOSURE - 22m²
- T2 SERVICES ENCLOSURE - 13m²
- T3 SERVICES ENCLOSURE - 25m²
- TOTAL EXTERNAL STRUCTURES - 400m²

CAR PARKING

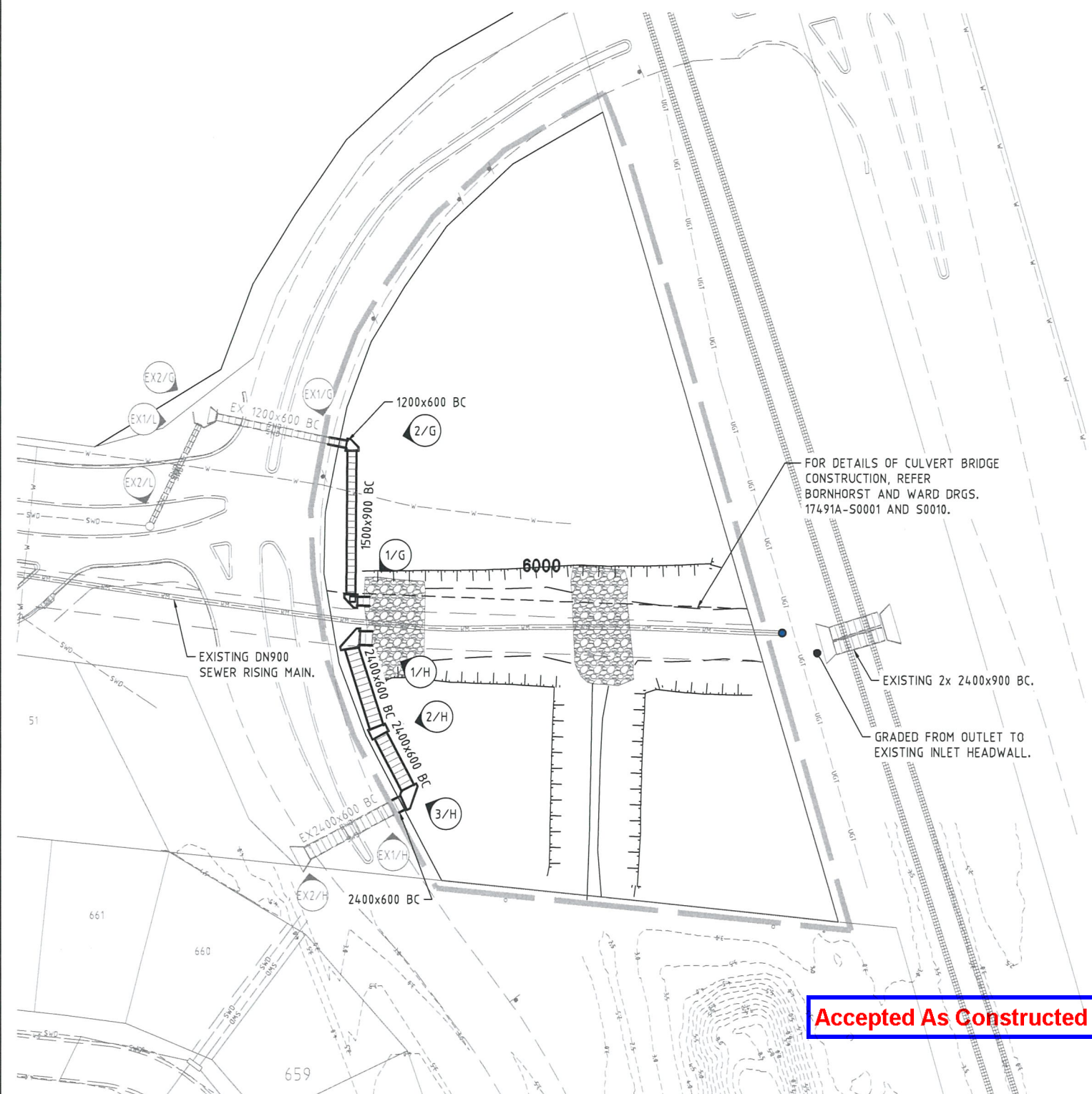
T1 - SERVICE STATION

- PARKING REQUIRED - 6
1 SPACE/40m² GFA
- PARKING PROVIDED - 7
INCLUDES AIR/WATER PARKING BAY

T2 & T3 - FOOD & DRINK

- PARKING REQUIRED - 27
1 SPACE/10m² PUBLIC AREA (50% BLDG. AREA = 22.5 SPACES)
1 SPACE/50m² FOOD PREP. AREAS (35% BLDG. AREA = 3.2 SPACES)
1 SPACE/100m² STORAGE AREA (15% BLDG. AREA = 0.7 SPACES)
- PARKING PROVIDED - 27
(INCLUDES 2x WAITING BAYS FOR EACH TENANCY)

Appendix B: Survey Information



- LEGEND**
- STAGE BOUNDARY
 - EXISTING LAYBACK KERB AND CHANNEL
 - EXISTING LAYBACK KERB ONLY
 - STORMWATER DRAINAGE
 - DESIGN SURFACE CONTOUR (0.25m INTERVALS)
 - EXISTING SURFACE CONTOUR (0.5m INTERVALS)
 - SEWER RETICULATION
 - SWALE DRAIN
 - EXISTING SEWER RETICULATION
 - EXISTING SEWER RISING MAIN
 - WATER RETICULATION
 - EXISTING WATER RETICULATION
 - EXISTING STORMWATER DRAINAGE

- ROOFWATER NOTES**
- SET OUT POINT FOR DRAINAGE STRUCTURES IS TO THEIR GEOMETRIC CENTRE.
 - ROOFWATER HOUSE CONNECTIONS AND SETOUT REFER T.C.C. STANDARDS
 - UNLESS SHOWN OTHERWISE. FOR ROOFWATER PIT DETAILS REFER T.C.C. STORMWATER DRAINAGE DESIGN MANUAL D5.10.
 - ROOFWATER ALIGNMENT 0.6m OFF PROPERTY BOUNDARY UNLESS SHOWN OTHERWISE.
 - ROOFWATER DRAINLINES BEDDED AND SURROUNDED WITH SAND TO 100mm ABOVE THE CROWN OF PIPE.
 - HOUSE CONNECTIONS EXTEND A MINIMUM OF 1.0m PAST ADJACENT SEWER LINES.
 - ROOFWATER DRAINAGE PIPES MIN uPVC CLASS SN6, RCP OR FRC CLASS 2 WITH RUBBER RING JOINTS.
 - MINIMUM COVER TO PIPES 450mm AND TO SUIT FINISHED SURFACE LEVEL.
 - ENDS OF PIPES AND STUBS CAPPED.

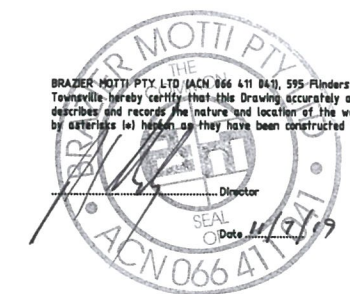
- ROADWORKS AND DRAINAGE NOTES**
- ALL WORKS SHALL CARRIED OUT IN ACCORDANCE WITH CURRENT T.C.C. STANDARD DRAWINGS AND METHODS.
 - LEVELS FOR KERB AND CHANNELING CONSTRUCTION ARE AT EQUAL INTERVALS AT LIP OF CHANNEL UNLESS SHOWN OTHERWISE.
 - SIDE DRAINS CONSTRUCTED UNDER ALL KERBS AND ALL KERB AND CHANNEL AND IN LOCATIONS DIRECTED BY THE SUPERINTENDENT IN ACCORDANCE WITH T.C.C. STANDARDS.
 - ALL STORMWATER PIPES UNDER ROADWAYS AND FOOTPATHS RCP OR FRC CLASS 2.
 - ALL STORMWATER PIPES UP TO AND INCLUDING 600Ø R.R.J. STORMWATER PIPES GREATER THAN 600Ø INTERNAL FLUSH JOINTED WITH PROPRIETARY EXTERNAL BAND.
 - STEPIRONS ARE PROVIDED IN STORMWATER MANHOLES AND GULLIES GREATER THAN 1.20m DEEP.
 - STORMWATER PIPE BEDDING IN ACCORDANCE WITH T.C.C. STANDARDS.
 - CONDUITS IN ACCORDANCE WITH AS 3725 & AS 2032
 - ALL DIMENSIONS ARE IN METRES UNLESS SHOWN OTHERWISE.
 - ALL FOOTPATH PRAM RAMPS COMPLY TO COUNCILS STANDARD DRAWINGS AND LOCATED CLEAR OF FUTURE DRIVEWAYS
 - FOOTPATHS AND BATTERS HAVE MINIMUM OF 75mm TOPSOIL (AND GRASSING IF ORDERED).
 - ALL EXCAVATION AND FILLING COMPACTED TO THE REQUIREMENTS OF AS3798-2007 IN ACCORDANCE WITH THE LOCAL AUTHORITY REQUIREMENTS. LEVEL 1 SUPERVISION WAS REQUIRED.
 - THE STORMWATER PIPE CLASSES HAVE BE DESIGNED FOR SERVICE LOADS ONLY, AND THE CONTRACTOR SHALL ACCESS ANTICIPATED CONSTRUCTION LOADS AND UPGRADE THE PIPE CLASSES IF NECESSARY, IN ACCORDANCE WITH AS3725-2007.
 - RETAINING WALL SUBSOIL DRAINS CONNECT TO KERB AND CHANNEL SUBSOIL OR STORMWATER DRAINAGE STRUCTURES.

NOTE:
REFER DRG. No. 15-003077-513 TO 519 FOR STORMWATER MANHOLE SETOUT AND DETAILS.

AS CONSTRUCTED DETAILS
I CERTIFY ON BEHALF OF CALIBRE CONSULTING THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

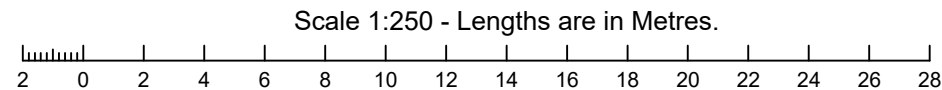
SIGNED..... DATE.....

DANIEL COLLINS RPEQ 18631



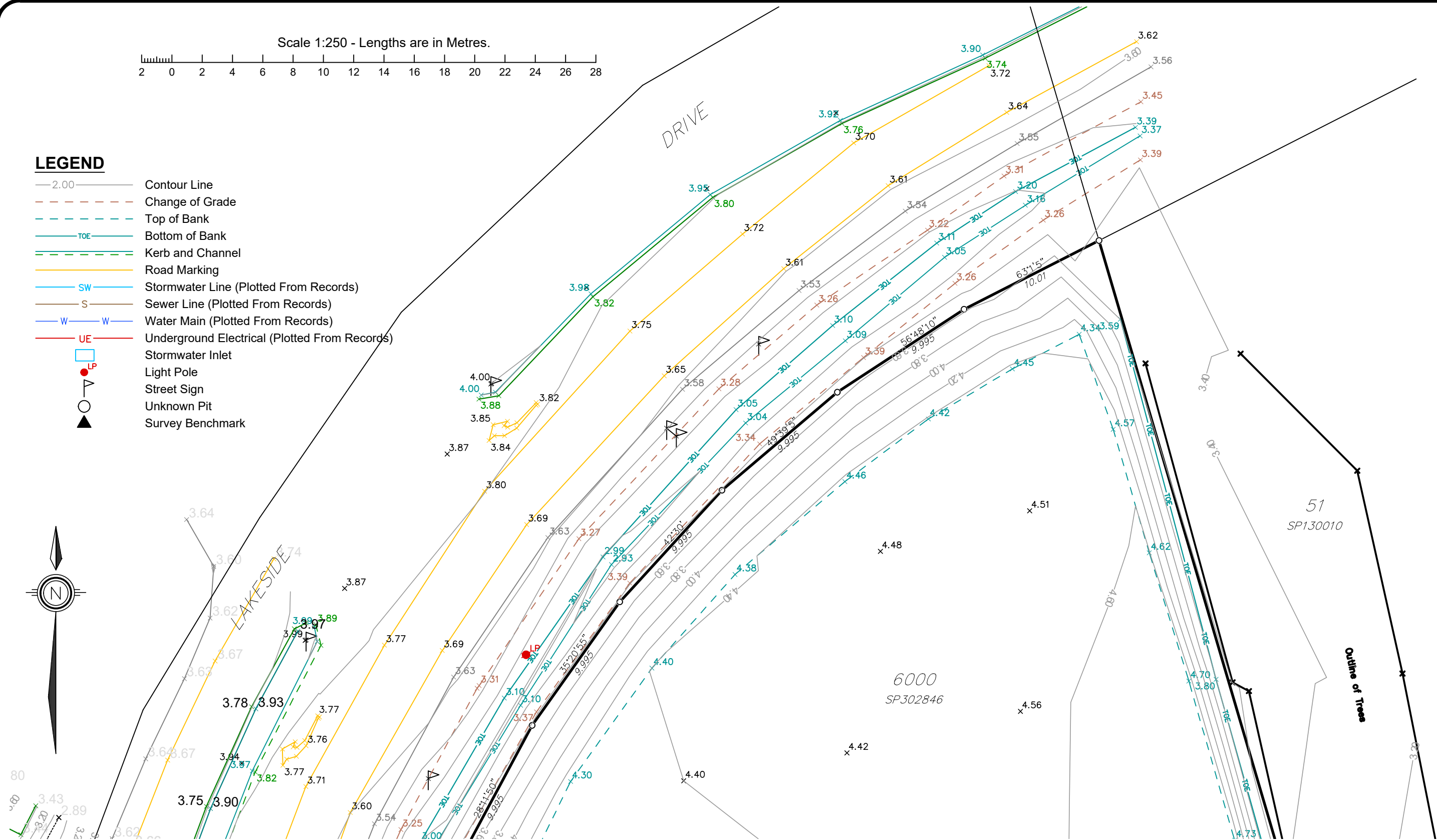
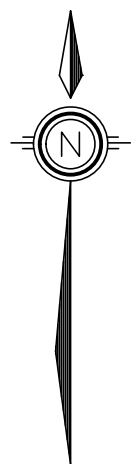
Accepted As Constructed

REV	DATE	BY	DESCRIPTION	DESIGN CHECK	SCALE (METRES)	MICROFILM No.	SURVEYOR: BRAZIER MOTTI 595 FLINDERS ST, TOWNSVILLE QLD 4810 P: (07) 4772 1144 E: townsville@braziermotti.com.au	CLIENT ECONOMIC DEVELOPMENT QUEENSLAND	PROJECT THE VILLAGE TOWNSVILLE FUEL SITE	DRAWING TITLE ROADWORKS AND DRAINAGE LAYOUT PLAN	DRAWING NUMBER 15-003077-501	ISSUE 4
1	14.03.16	LS	CULVERT ALIGNMENT REVISED, WATER DEPTH AND ALIGNMENT REVISED		1:500							
2	30.03.17	AA	SWALE DRAIN ADDED		1:1000							
3	25.11.17	AA	DRAINAGE LINE J ADDED, BOX CULVERT SIZE REVISED									
4	09.02.18	AA	ISSUED FOR CONSTRUCTION									
5	24.05.18	AA	AS CONSTRUCTED ISSUE									



LEGEND

- 2.00— Contour Line
- - - Change of Grade
- - - Top of Bank
- TOE— Bottom of Bank
- - - Kerb and Channel
- Road Marking
- SW— Stormwater Line (Plotted From Records)
- S— Sewer Line (Plotted From Records)
- W—W— Water Main (Plotted From Records)
- UE— Underground Electrical (Plotted From Records)
- Stormwater Inlet
- LP Light Pole
- Street Sign
- Unknown Pit
- ▲ Survey Benchmark



Rev	Description	Drawn	Checked	Date
B	Additional Survey and Services Investigation - see Sheets 4 and 5	DL	DL	04/11/2021
A	QR Culvert Added	DL	DL	08/06/2021
-	Original Issue	NL	DL	23/05/2021

This plan is prepared from a combination of field survey and existing records for the purpose of designing new constructions on the land and should not be used for any other purpose. The title boundaries shown hereon were not marked by the author at the time of survey and have been determined by plan dimensions only and not by field measurement. Services shown hereon have been located where possible by field survey. If not able to be located, services may have been plotted from the records of relevant authorities where available. Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services and detailed locations of all services. This note is an integral part of this plan.

CONTOUR & DETAIL PLAN

PROJECT: Site Survey

LOCATION: 286 Lakeside Drive, Oonoonba

Real Property Description: Lot 6000 on SP302846

CLIENT: Spring Projects

Horiz. Datum: SP302846

Vert. Datum: AHD vide PM 191469 RL3.565m

Local Authority: Townsville City

Contour Interval: 0.20m



Airlie Beach | Mackay | Townsville | Rockhampton | Brisbane | Gold Coast

E : admin@visionsurveysqld.com.au

P : 13000VISION

Scale: 1 : 250 @ A3

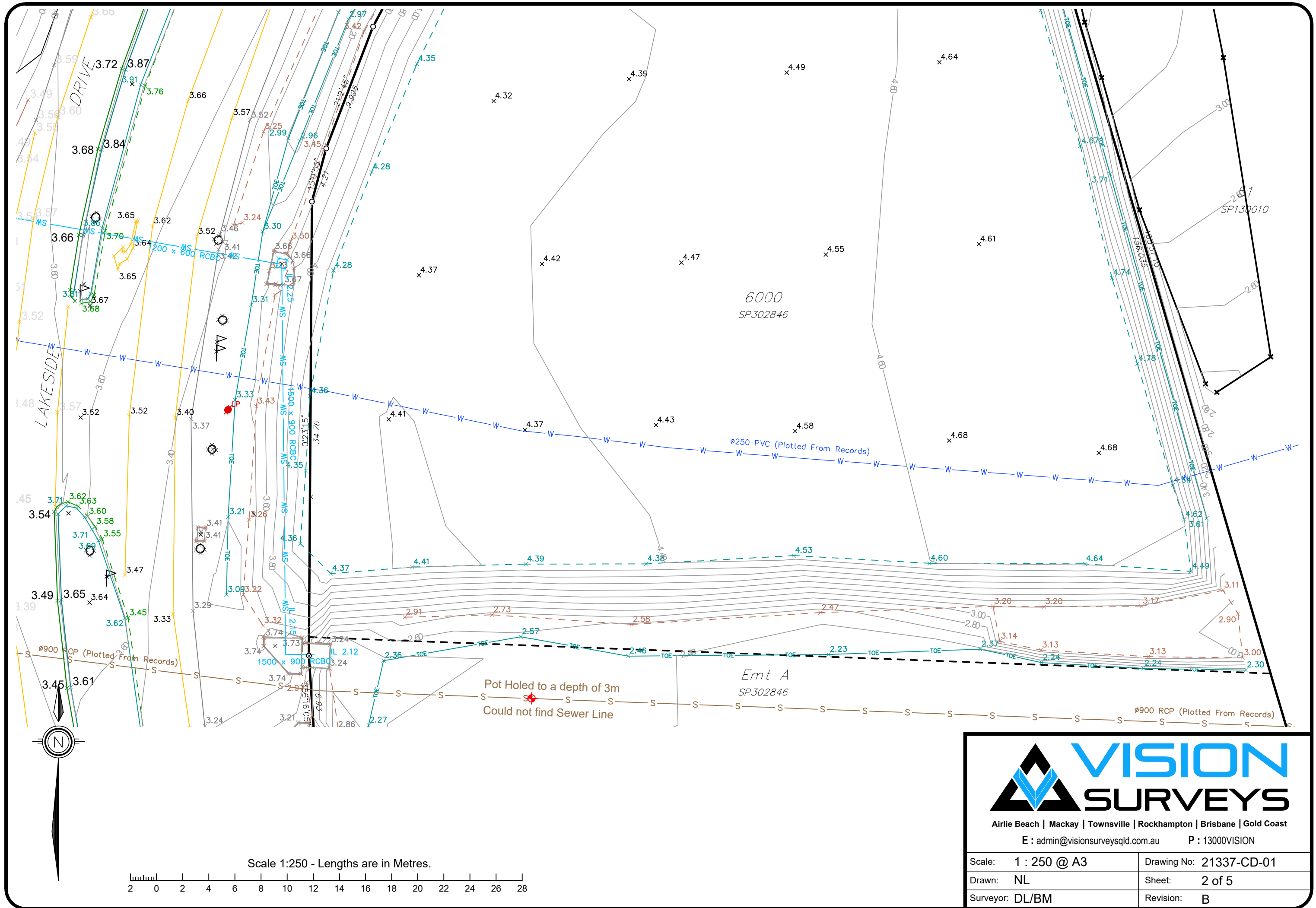
Drawing No: 21337-CD-01

Drawn: NL

Sheet: 1 of 5

Surveyor: DL/BM

Revision: B



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P : 13000VISION

Scale: 1 : 250 @ A3

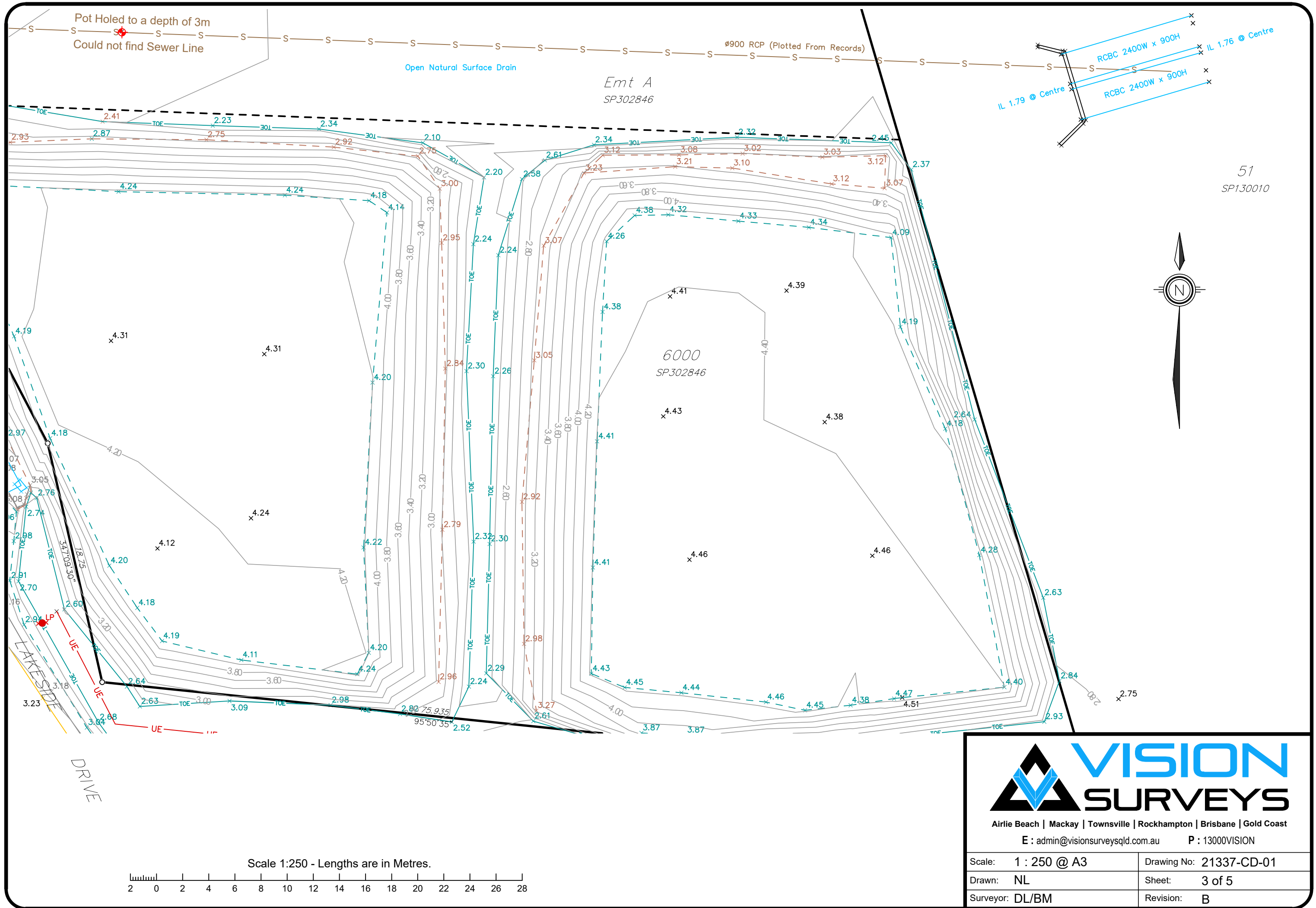
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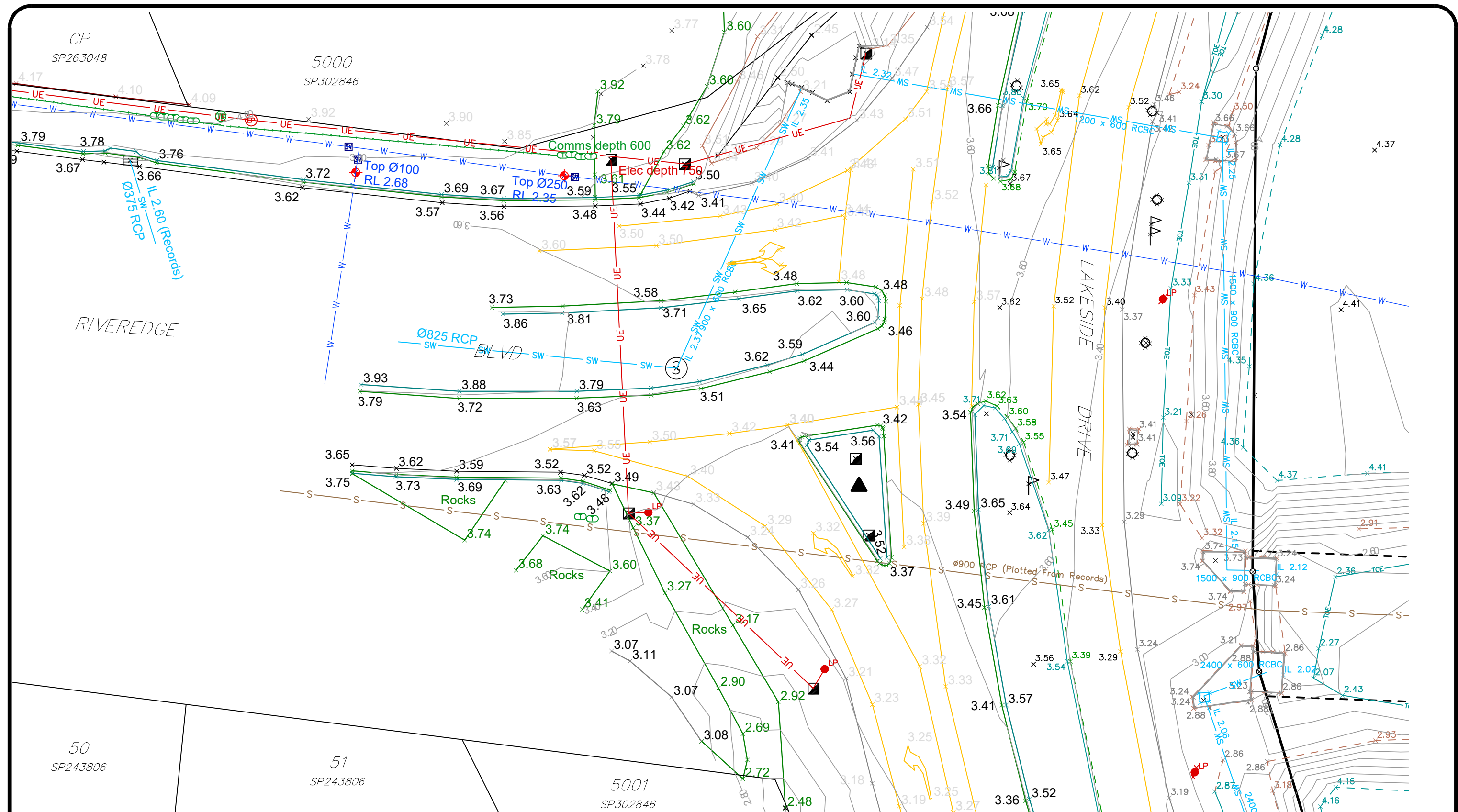
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Sheet: 2 of 5

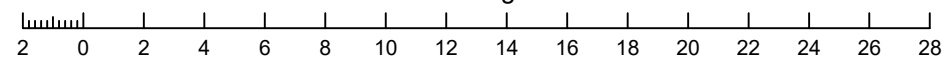
Surveyor: DL/BM

Revision: B





Scale 1:250 - Lengths are in Metres.



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Scale: 1 : 250 @ A3

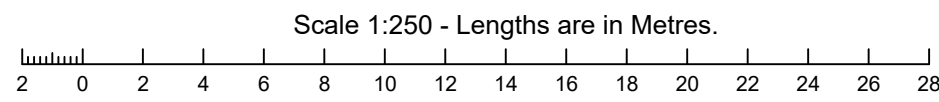
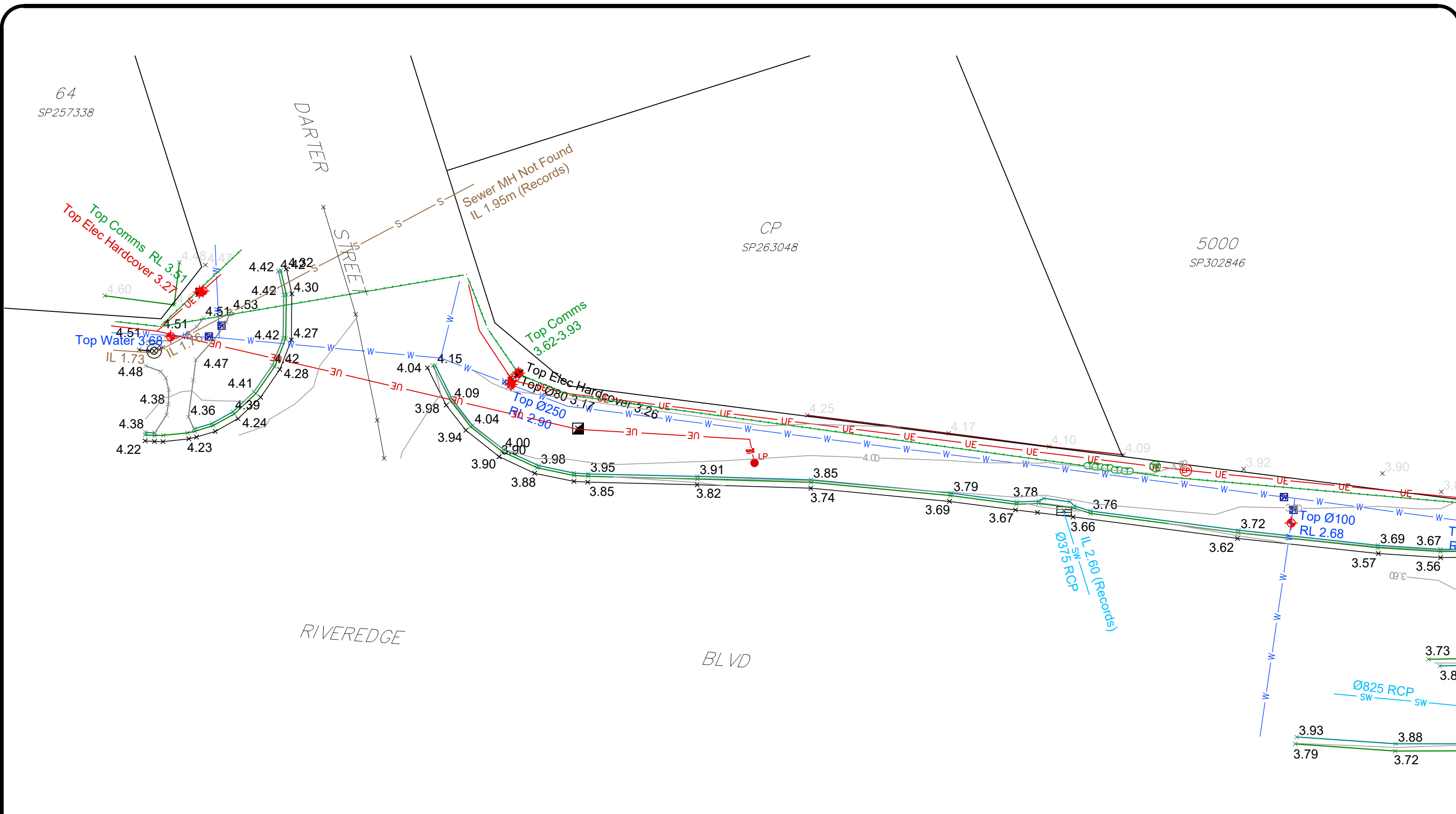
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Drawn: NL

Sheet: 4 of 5

Surveyor: DL/BM

Revision: B





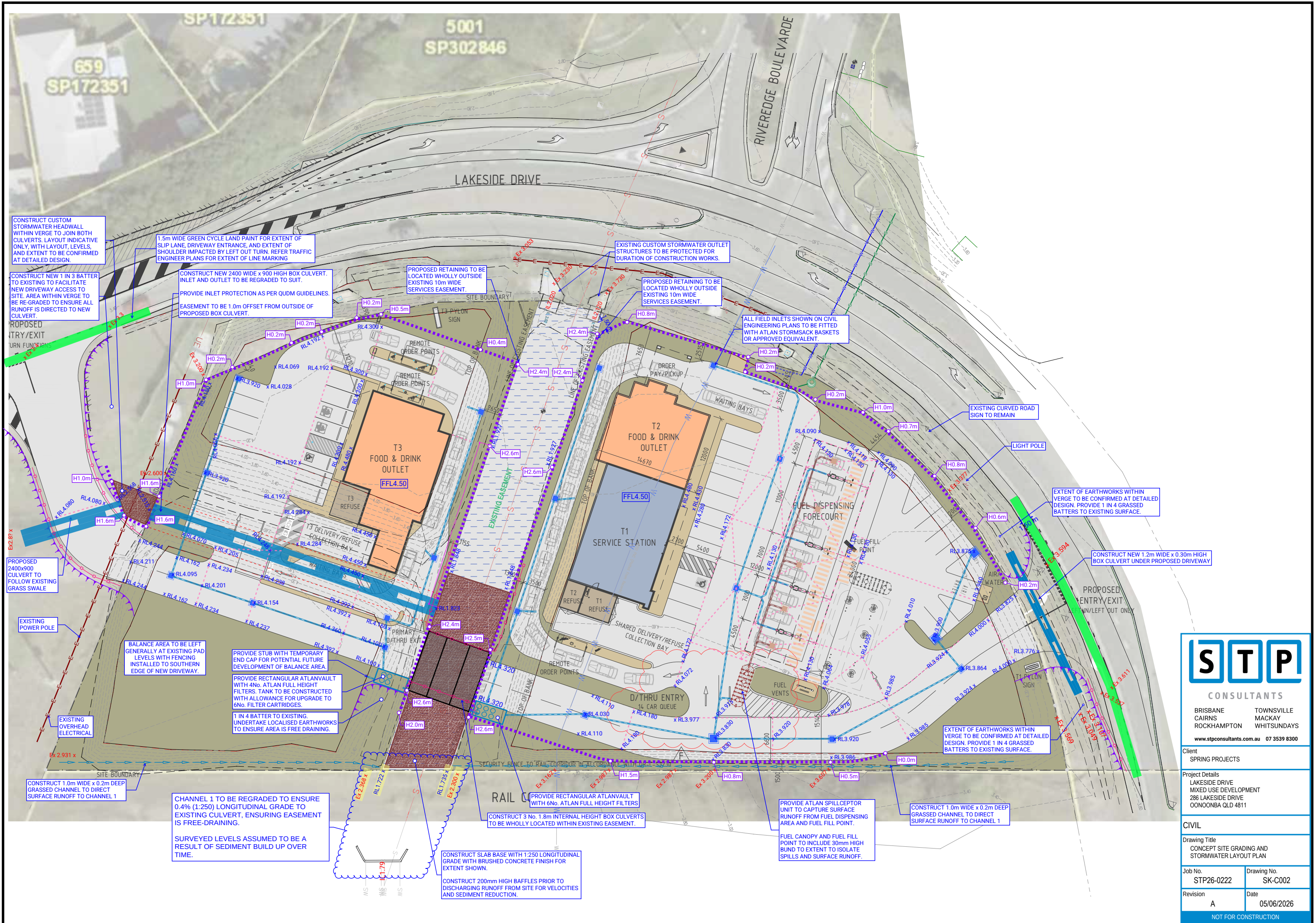
VISION
SURVEYS

Airlie Beach | Mackay | Townsville | Rockhampton | Brisbane | Gold Coast

E : admin@visionsurveysqld.com.au P : 13000VISION

Scale: 1 : 250 @ A3	Drawing No: 21337-CD-01
Drawn: NL	Sheet: 5 of 5
Surveyor: DL/BM	Revision: B

Appendix C: Civil Engineering Plans



CONSULTANTS

BRISBANE
CAIRNS
ROCKHAMPTON

TOWNSVILLE
MACKAY
WHITSUNDAYS

www.stpconsultants.com.au 07 3539 8300

Client
SPRING PROJECTS

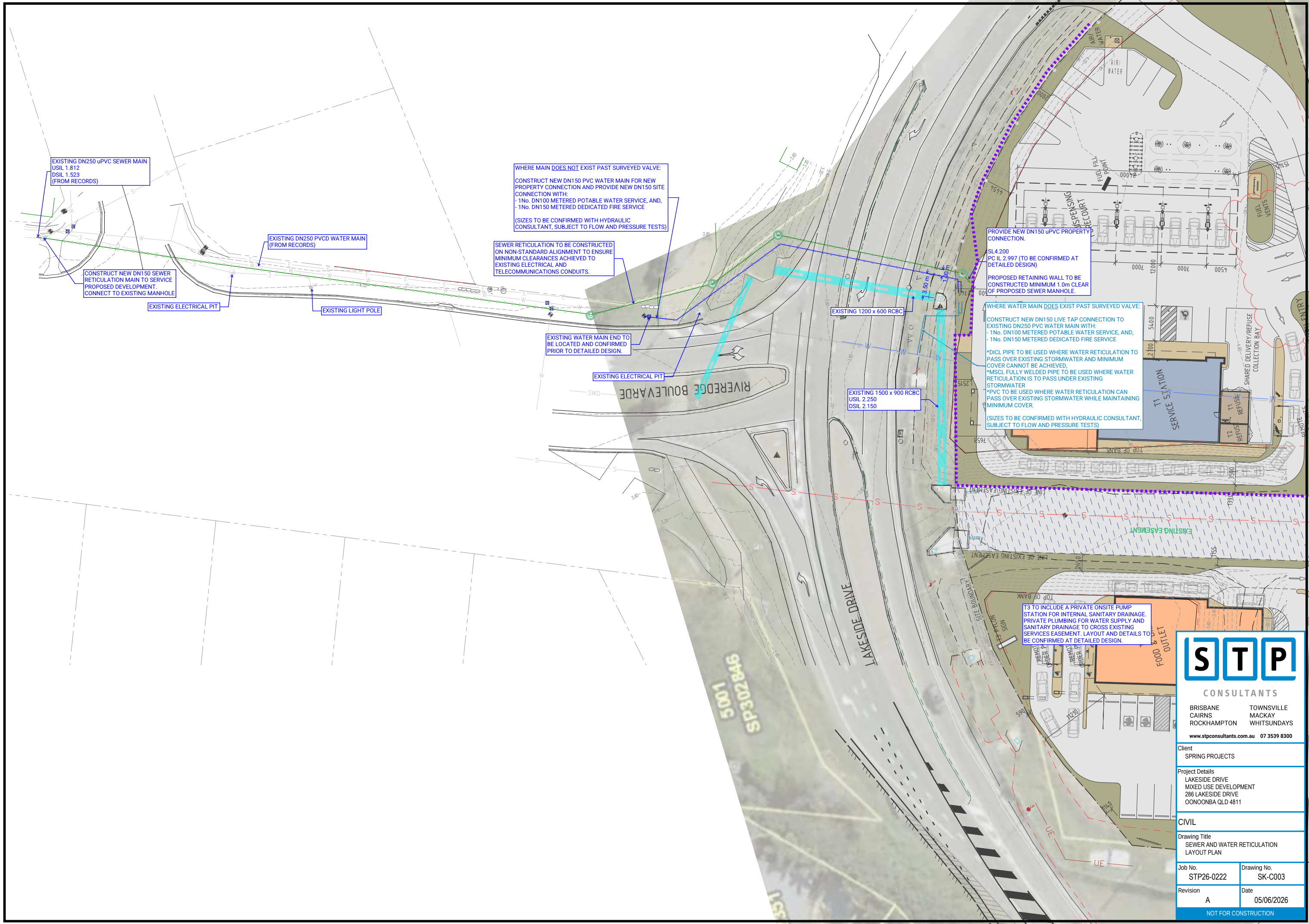
Project Details
LAKESIDE DRIVE
MIXED USE DEVELOPMENT
286 LAKESIDE DRIVE
OONOOBA QLD 4811

CIVIL

Drawing Title
CONCEPT SITE GRADING AND
STORMWATER LAYOUT PLAN

Job No. STP26-0222	Drawing No. SK-C002
Revision A	Date 05/06/2026

NOT FOR CONSTRUCTION



EXISTING DN250 uPVC SEWER MAIN
USIL 1.812
DSIL 1.523
(FROM RECORDS)

CONSTRUCT NEW DN150 SEWER
RETICULATION MAIN TO SERVICE
PROPOSED DEVELOPMENT.
CONNECT TO EXISTING MANHOLE

EXISTING ELECTRICAL PIT

EXISTING DN250 PVCD WATER MAIN
(FROM RECORDS)

EXISTING LIGHT POLE

SEWER RETICULATION TO BE CONSTRUCTED
ON NON-STANDARD ALIGNMENT TO ENSURE
MINIMUM CLEARANCES ACHIEVED TO
EXISTING ELECTRICAL AND
TELECOMMUNICATIONS CONDUITS.

WHERE MAIN DOES NOT EXIST PAST SURVEYED VALVE:
CONSTRUCT NEW DN150 PVC WATER MAIN FOR NEW
PROPERTY CONNECTION AND PROVIDE NEW DN150 SITE
CONNECTION WITH:
- 1No. DN100 METERED POTABLE WATER SERVICE, AND,
- 1No. DN150 METERED DEDICATED FIRE SERVICE
(SIZES TO BE CONFIRMED WITH HYDRAULIC
CONSULTANT, SUBJECT TO FLOW AND PRESSURE TESTS)

EXISTING WATER MAIN END TO
BE LOCATED AND CONFIRMED
PRIOR TO DETAILED DESIGN.

EXISTING ELECTRICAL PIT

EXISTING 1200 x 600 RCB

EXISTING 1500 x 900 RCB
USIL 2.250
DSIL 2.150

PROVIDE NEW DN150 uPVC PROPERTY
CONNECTION.
SL4.200
PC IL 2.997 (TO BE CONFIRMED AT
DETAILED DESIGN)
PROPOSED RETAINING WALL TO BE
CONSTRUCTED MINIMUM 1.0m CLEAR
OF PROPOSED SEWER MANHOLE.

WHERE WATER MAIN DOES EXIST PAST SURVEYED VALVE:
CONSTRUCT NEW DN150 LIVE TAP CONNECTION TO
EXISTING DN250 PVC WATER MAIN WITH:
- 1No. DN100 METERED POTABLE WATER SERVICE, AND,
- 1No. DN150 METERED DEDICATED FIRE SERVICE
*DICI PIPE TO BE USED WHERE WATER RETICULATION TO
PASS OVER EXISTING STORMWATER AND MINIMUM
COVER CANNOT BE ACHIEVED.
*MSCL FULLY WELDED PIPE TO BE USED WHERE WATER
RETICULATION IS TO PASS UNDER EXISTING
STORMWATER
*PVC TO BE USED WHERE WATER RETICULATION CAN
PASS OVER EXISTING STORMWATER WHILE MAINTAINING
MINIMUM COVER.
(SIZES TO BE CONFIRMED WITH HYDRAULIC CONSULTANT,
SUBJECT TO FLOW AND PRESSURE TESTS)

T3 TO INCLUDE A PRIVATE ONSITE PUMP
STATION FOR INTERNAL SANITARY DRAINAGE.
PRIVATE PLUMBING FOR WATER SUPPLY AND
SANITARY DRAINAGE TO CROSS EXISTING
SERVICES EASEMENT. LAYOUT AND DETAILS TO
BE CONFIRMED AT DETAILED DESIGN.



BRISBANE
CAIRNS
ROCKHAMPTON

TOWNSVILLE
MACKAY
WHITSUNDAYS

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Client
SPRING PROJECTS

Project Details
LAKESIDE DRIVE
MIXED USE DEVELOPMENT
286 LAKESIDE DRIVE
OONONBA QLD 4811

CIVIL

Drawing Title
SEWER AND WATER RETICULATION
LAYOUT PLAN

Job No. STP26-0222	Drawing No. SK-C003
Revision A	Date 05/06/2026

NOT FOR CONSTRUCTION

Appendix D: Townsville City Council Property Information

286 Lakeside Drive, Oonoonba, Acid Sul...

Legend

EXT_CORE

CORE - Properties



CORE - Road Corridor Centreline

Main Road

Trafficable Road

CORE - Suburbs



EXT_CityPlanningScheme_Superseded

District Boundaries



Local Area



Residential Precinct

Neighbourhood Residential

Traditional Residential

General Precinct

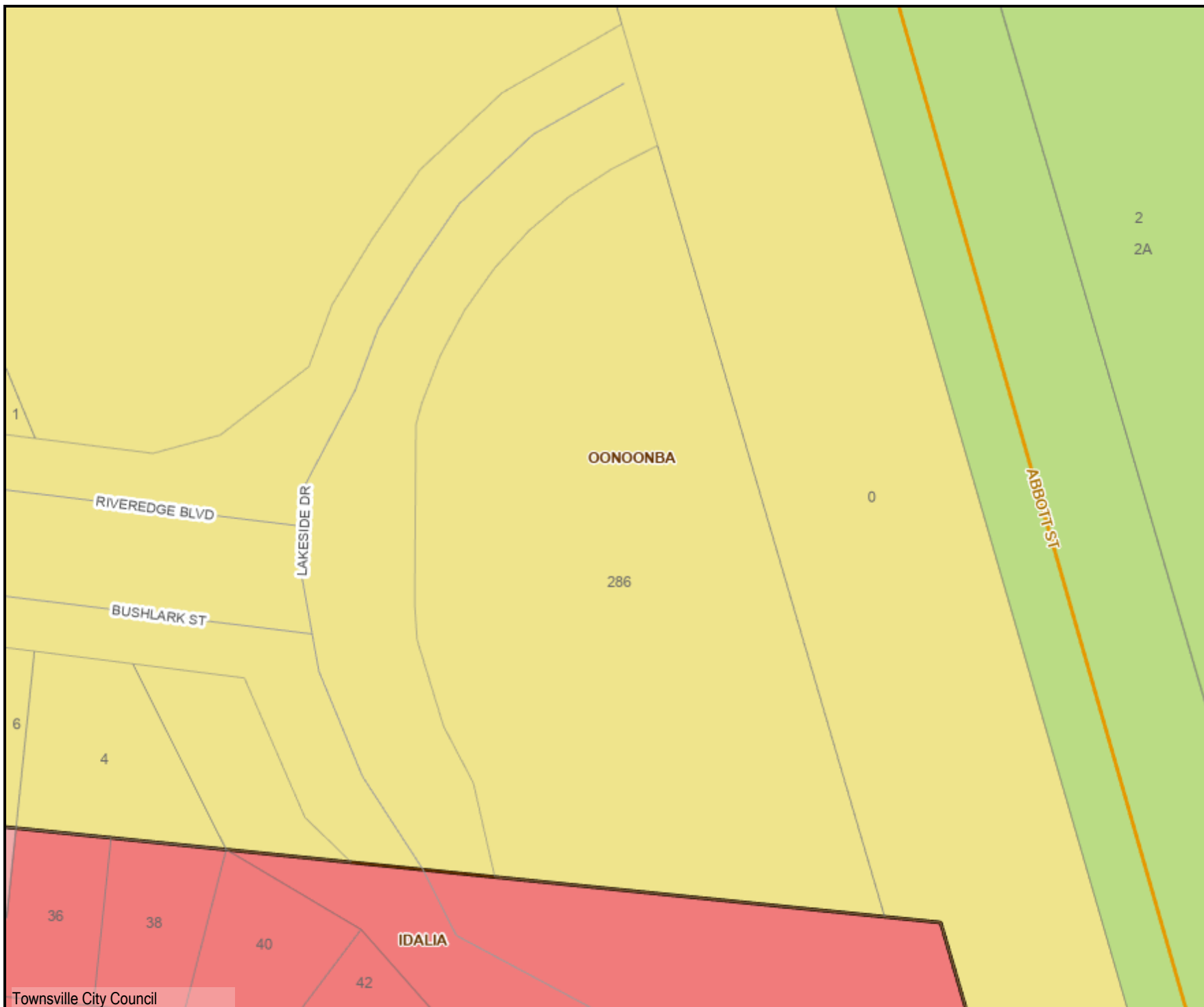


0 10 20
m

Scale 1: 1000

DISCLAIMER

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286 Lakeside Drive, Oonoonba, Infrastructure Plan

Legend

 Properties	1% AEP & 2% AEP DEPTH (1:250 - 1:5,000)
 Suburbs	 Water Depth: 0.01 - 0.3m
 November 2014 to Present	 Water Depth: 0.3 - 0.5m
WATER HEIGHT (1:250 - 1:5000)	 Water Depth: 0.5 - 0.75m
 2% AEP Height	 Water Depth: 0.75 - 1.0m
 1% AEP Height	 Water Depth: 1.0 - 1.5m
	 Water Depth: 1.5 - 2.0m
	 Water Depth: 2.0 - 3.0m
	 Water Depth: 3.0 - 25.0m



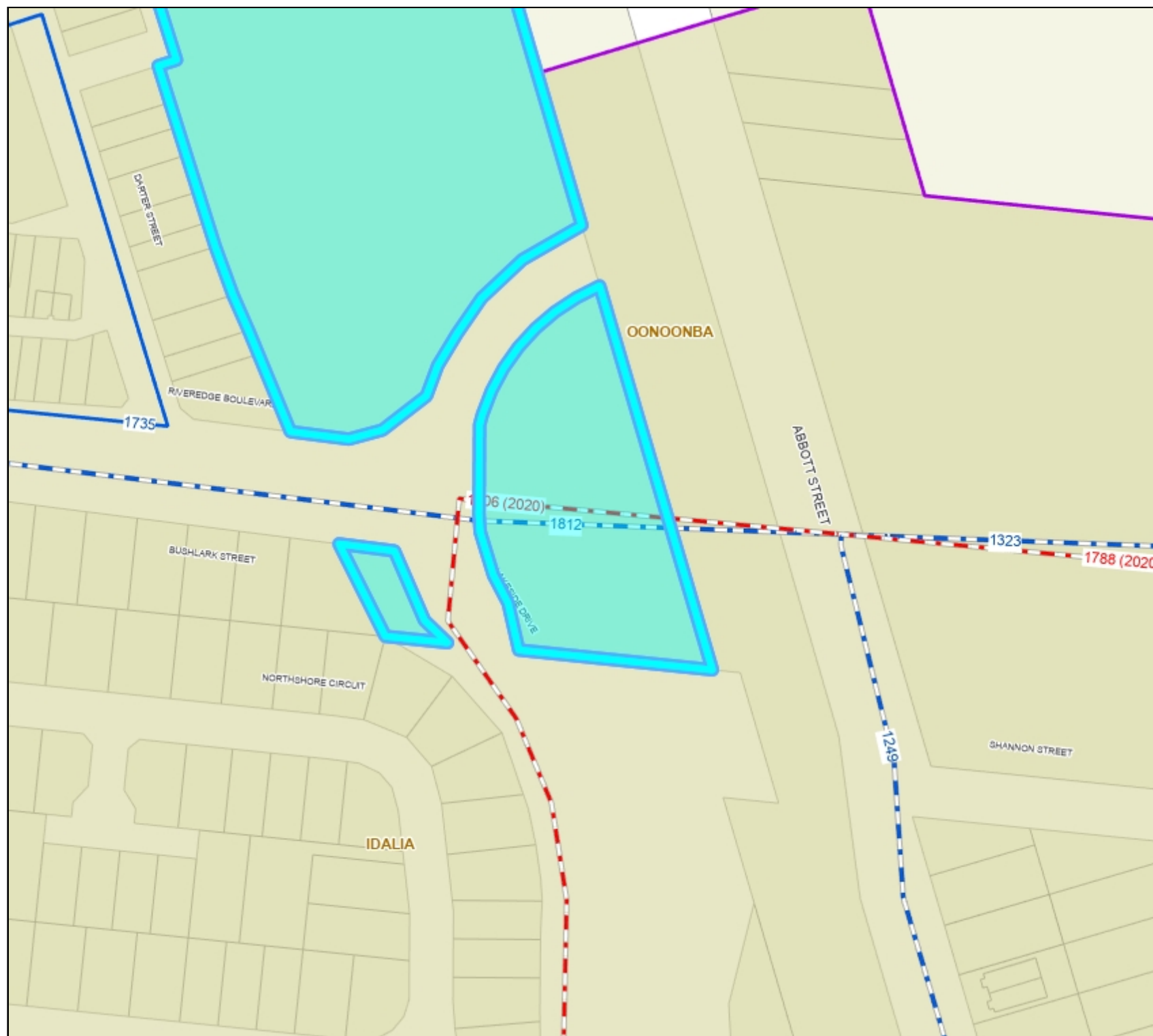
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Meters

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Scale 1: 2,000

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DISCLAIMER: Visible Scale - 1: 250 - 1: 5,000. The flooding contained in this map does not in itself indicate whether any particular property has or has not been affected by floods. The flooding information depicted shows inundation resulting from rainfall of river flows resulting from rainfall and does not include inundation due to Storm Tide. The council considers that the information presented in the map is the best available at the time of preparation. However the modelling results contained in this map are based upon projections, assumptions and analysis about circumstances that may not eventuate, or may eventuate in different combinations and with different outcomes. Because of that, the information in the map is not provided with the intention that persons will rely upon its accuracy or completeness for the purpose of making decisions with financial or legal implications. Neither the council nor its officers will be liable in contract, negligence or otherwise for the consequences of any deficiency, inaccuracy or error in the map or for the consequences of any person relying upon the map. The Flood Study Areas layer indicates the date of the flood study that has generated the flood map data. Infrastructure constructed since the completion of a flood study has the potential to alter flood levels and extents to those shown.



286 Lakeside Drive, Oonoonba, Flood Map

Legend

Properties	1% AEP & 2% AEP DEPTH (1:250 - 1:5,000)
Suburbs	Water Depth: 0.01 - 0.3m
November 2014 to Present	Water Depth: 0.3 - 0.5m
FLOOD STUDY AREAS	Water Depth: 0.5 - 0.75m
WATER HEIGHT (1:250 - 1:5000)	Water Depth: 0.75 - 1.0m
2% AEP Height	Water Depth: 1.0 - 1.5m
1% AEP Height	Water Depth: 1.5 - 2.0m
	Water Depth: 2.0 - 3.0m
	Water Depth: 3.0 - 25.0m



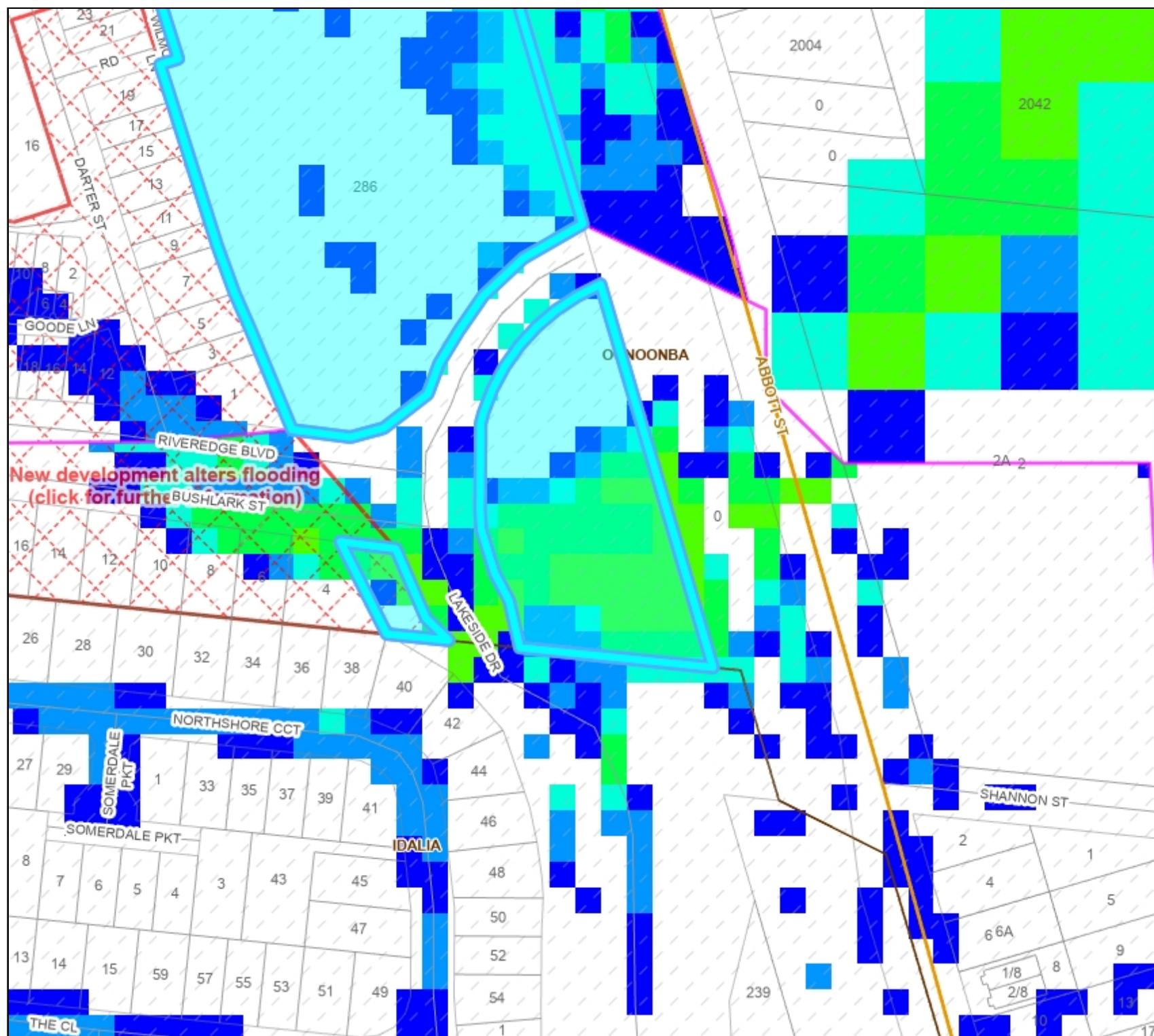
0 25.4 50.80
Meters

Date: 5/6/2026 4:25 PM

Scale 1: 2,000

DISCLAIMER: The information shown on this map has been produced from the Townsville City Council's digital database. There is no warranty implied or expressed regarding the accuracy or completeness of the data. The data has been compiled for information and convenience only, and it is the responsibility of the user to verify all information before placing reliance on it. For accurate service locations please contact the Customer Service Centre on 13 48 01. This is not a legal document and is published for information and convenience only. The Townsville City Council takes no responsibility for any errors or omissions herein or for any acts that may occur due to its use.

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286 Lakeside Drive, Oonoonba, Zone Map

Legend

EXT_CORE

CORE - Properties



CORE - Road Corridor Centreline

Main Road

Trafficable Road

CORE - Suburbs



EXT_CityPlanningScheme_Current

Zoning

Low density residential

Sport and recreation

Community facilities



Scale 1: 1000

DISCLAIMER

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Appendix E: Townsville City Council Code Responses (Civil Engineering only)

9.3.2 Healthy Waters Code

Stormwater management – protecting water quality

Performance Outcomes	Acceptable Outcomes	Compliance	Justification for Compliance
P01 Development contributes to the protection of environmental values and water quality objectives of receiving waters to the extent practicable. Editor's note - The environmental values and water quality objectives are established under the Environmental Protection (Water and Wetland Biodiversity) Policy (2019). Catchment-specific Environmental Values (EVs) and Water Quality Objectives (WQOs) have been prepared for some catchments (including the Ross River and Black River catchments).	No acceptable outcome is nominated. Editor's note—Applicants should refer to the Development manual planning scheme policy SC6.4 - SC6.4.8.10 Stormwater Management Plans; and SC6.4.10.2 Water Sensitive Urban Design.	Yes	Stormwater treatment shall be implemented in line with TCC and SPP 2017 requirements.
P02 High environmental value waters and slightly disturbed waters (shown on Figure 9.1 – High environmental value waters and slightly disturbed waters) are protected from the impacts of development within their catchments. Existing water quality, habitat and biota values, flow regimes and riparian areas are maintained or enhanced.	No acceptable outcome is nominated. Editor's note—Refer to the Queensland Water Quality Guidelines (QWQG) for details on how to establish a minimum water quality data set for these areas.	Yes	Stormwater treatment shall be implemented in line with TCC and SPP 2017 requirements.
P03 The entry of contaminants into, and transport of contaminants in, stormwater is avoided or minimised.	No acceptable outcome is nominated. Editor's note—Applicants should refer to the Development manual planning scheme policy SC6.4 - SC6.4.8.10 Stormwater Management Plans; and SC6.4.10.2 Water Sensitive Urban Design.	Yes	Stormwater treatment shall be implemented in line with TCC and SPP 2017 requirements.
P04 Within the areas identified as potential acid sulfate soils on Figure 9.2 – Acid sulfate soils, the generation or release of acid and metal contaminants into the environment from acid sulfate soils is avoided by: a) not disturbing acid sulfate soils when excavating or otherwise removing soil or sediment, draining or extracting groundwater, excluding tidal water or filling land; or b) where disturbance of acid sulfate soils cannot be avoided, development: i. neutralises existing acidity and prevents the generation of acid and metal contaminants; and ii. prevents the release of surface or groundwater flows containing acid and metal contaminants into the environment.	A04.1 Development does not: a) involve excavating or removing 100m³ or more of soil and sediment at or below 5m AHD; or b) permanently or temporarily drain or extract groundwater or exclude tidal water resulting in the aeration of previously saturated acid sulfate soils; or c) involve filling with 500m³ or more with an average depth of 0.5m or greater that results in: i. actual acid sulfate soils being moved below the water table; or ii. previously saturated acid sulfate soils being aerated. OR A04.2 Development manages waters so that: a) all disturbed acid sulfate soils are adequately treated and/or managed so that they can no longer release acid or heavy metals;	Yes	Geotechnical reporting shall be completed for detailed design. Proposal will comply with Acceptable Outcomes applicable, in line with geotechnical engineer advice.

	b) the pH of all site any water including discharges and seepage to groundwater, is maintained between 6.5 and 8.5 (or an agreed pH in line with natural background); c) waters on the site, including discharges and seepage to groundwater, do not contain elevated levels of soluble metals; d) there are no visible iron stains, flocs or sums in discharge water; e) all reasonable preparations and actions are undertaken to ensure that aquatic health is safeguarded; and f) infrastructure such as buried services, pipes, culverts and bridges are protected from acid attack. Editor's note—Where works are proposed within the areas identified as potential acid sulfate soils on Figure 9.2 - Acid sulfate soils, the applicant is required to undertake an on-site acid sulfate investigation. The reason for undertaking an acid sulfate soils investigation is to determine the presence of acid sulfate soil in order to avoid disturbance. Where acid sulfate soils cannot reasonably be avoided, investigation results assist in the planning of treatment and remedial activities and must be undertaken in accordance with the <i>Queensland Acid Sulfate Soil Technical Manual</i> and relevant State Planning Policy. Applicants should also refer to the <i>Guidelines for Sampling Analysis of Lowland Acid Sulfate Soils in Queensland</i>, <i>Acid Sulfate Soils Laboratory Methods Guidelines</i> or <i>Australian Standard 4969</i>. It is highly recommended that the applicant develop a practical Acid Sulfate Soil Management Plan for use in monitoring and treating acid sulfate soils.		
P05 Construction activities for the development avoid or minimise adverse impacts on stormwater quality or hydrological processes.	No acceptable outcome is nominated. Editor's note—Applicants should refer to the Development manual planning scheme policy SC6.4 - SC6.4.8.10 Stormwater Management Plans, SC6.4.23.1 Construction Management; and SC6.4.10.2 - Water Sensitive Urban Design.	Yes	An erosion and sediment control plan will be provided at detailed design for operational works submission.

Hydrological processes

Performance Outcomes	Acceptable Outcomes	Compliance	Justification for Compliance
P06 The stormwater management system: a) retains natural waterway corridors and drainage paths; and b) maximises the use of natural channel design in constructed components.	A06.1 All existing waterways and overland flow paths are retained.	Yes	All existing waterways and overland flow paths are retained, with replacement with culverts where relevant.
	A06.2 The stormwater management system is designed in accordance with the Development manual planning scheme policy no. SC6.4 – SC6.4.10.2 Water Sensitive Urban Design.	Yes	Proposal will comply with AO
P07 The development is designed to minimise run-off and peak flows by: a) minimising large areas of impervious material; and b) maximising opportunities for capture and reuse.	No acceptable outcome is nominated. Editor's note—Applicants should refer to the Development manual planning scheme policy SC6.4 - SC6.4.8.10 Stormwater Management Plans; and SC6.4.10.2 Water Sensitive Urban Design.	Yes	Proposal will comply with PO
P08 Stormwater management is designed to: a) protect in-stream ecosystems from the significant effects of increased run-off frequency by capturing the initial portion of run-off from impervious areas; and b) create conditions such that the frequency of hydraulic disturbance to in-stream ecosystems in developed catchments is similar to pre-development conditions. Editor's note—Frequent flow management is distinct from flood management purposes, which is concerned with the management of less frequent, more extreme stormwater flows. The latter is an important part of integrated stormwater management and should in no way be compromised in pursuit of the management of more frequent flows for waterway health enhancement.	A08 The stormwater management system is designed in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.8 Stormwater Management, SC6.4.9 Stormwater Quantity and SC6.4.10 Stormwater Quality.	Yes	Proposal will comply with PO
P09 Stormwater management is designed to prevent exacerbated in-stream erosion downstream of a development site by controlling the magnitude and duration of sediment-transporting, erosion-causing flows.	A09 The stormwater management system is designed in accordance with the Development manual planning scheme policy no. SC6.4 – SC6.4.10.2 Water Sensitive Urban Design and SC6.4.8.10 Stormwater Management Plans .	Yes	Proposal will comply with AO

Stormwater drainage generally

Performance Outcomes	Acceptable Outcomes	Compliance	Justification for Compliance
P010 The proposed stormwater management system or site works does not adversely affect flooding or drainage characteristics of properties that are upstream, downstream or adjacent to the development site.	A010.1 The development does not result in an increase in flood level or flood duration on upstream, downstream or adjacent properties.	Yes	Proposal will comply with A010.1. Refer civil engineering plans for layout and details.
	A010.2 The stormwater management system is designed and constructed in accordance with the Development manual planning scheme policy SC6.4 – SC6.4.8 Stormwater Management , SC6.4.9 Stormwater Quantity ; and SC6.4.10 Stormwater Quality .	Yes	Proposal will comply with A010.2. Refer civil engineering plans for layout and details.
P011 Development does not cause ponding, or changes in flows and velocities such that the safety, use and enjoyment of nearby properties are adversely affected.	A011 The stormwater management system is designed and constructed in accordance with the Development manual planning scheme policy SC6.4 – SC6.4.8 Stormwater Management, SC6.4.9 Stormwater Quantity; and SC6.4.10 Stormwater Quality.	Yes	Proposal will comply with A011. The proposed works include maintenance and upgrades to the existing stormwater channel within the site. Refer civil engineering plans for layout and details.
P012 The drainage network has sufficient capacity to safely convey stormwater run-off from the site.	A012 Development is undertaken in accordance with the Development manual planning scheme policy SC6.4 – SC6.4.8 Stormwater Management, SC6.4.9 Stormwater Quantity; and SC6.4.10 Stormwater Quality.	Yes	Proposal will comply with A012. Refer civil engineering plans for layout and details.
P013 The stormwater management system: a) provides for safe access and maintenance; and b) where relevant, provides for safe recreational use of stormwater management features.	No acceptable outcome is nominated. Editor's note —Applicants should refer to the Development manual planning scheme policy SC6.4 - SC6.4.8 Stormwater Management, SC6.4.9 Stormwater Quantity; and SC6.4.10 Stormwater Quality.	Yes	Proposal will comply with P013. Refer civil engineering plans for layout and details.

Point source waste water management (other than contaminated stormwater and sewage)

Performance Outcomes	Acceptable Outcomes	Compliance	Justification for Compliance
P014 Waste water is managed in accordance with a waste management hierarchy that: a) avoids waste water discharge to waterways; or b) if waste water discharge to waterways cannot practicably be avoided, minimises waste water discharge to waterways by re-use, recycling, recovery and treatment for disposal to sewer, surface water and groundwater. Editor's note—To meet this outcome, a waste water management plan (WWMP) should be prepared by a suitably qualified person. The WWMP is to account for the waste water type, climatic conditions, Water Quality Objective (WQOs) and best practice environmental management.	No acceptable outcome is nominated.	Yes	The proposal includes a connection point to TCC sewer reticulation. Wastewater/ trade waste documentation will be completed at detailed design by a suitably qualified hydraulic consultant.
P015 Any treatment and disposal of waste water to a waterway: a) protects the applicable water quality objectives for the receiving waters; and b) avoids adverse impact on ecosystem health of receiving waters.	No acceptable outcome is nominated.	N/A	No waste water is proposed to be treated on site for waterway discharge.
P016 Development avoids or minimises and appropriately manages soil disturbance or altering natural hydrology in nutrient hazardous areas.	No acceptable outcome is nominated.	Yes	The proposal will comply with P016
P017 Waste water discharge to waterways is managed to avoid or minimise the release of nutrients of concern so as to minimise the occurrence, frequency and intensity of coastal algal blooms. Editor's note—Compliance with this outcome can be demonstrated by following the management advice in the Implementing Policies and Plans for Managing Nutrients of Concern for Coastal Algal Blooms in Queensland and associated technical guideline.	No acceptable outcome is nominated.	N/A	No waste water is proposed to be treated on site for waterway discharge.

Constructed lakes and artificial waterways

PO 18 to PO 28 have been excluded from this response document as they are not relevant to the proposal.

Efficiency and whole of life cycle cost

Performance Outcomes	Acceptable Outcomes	Compliance	Justification for Compliance
P029 Life cycle costs are minimised, taking into account acquisition, construction, establishment, operation, monitoring, maintenance, replacement and disposal costs.	No acceptable outcome is nominated. Editor's note —Applicants should refer to the Development manual planning scheme policy SC6.4 for assistance in demonstrating this outcome.	Yes	Proposal complies with P029.
P030 The design of the development allows for sufficient site area to accommodate an effective stormwater management system.	No acceptable outcome is nominated. Editor's note —Applicants should refer to the Development manual planning scheme policy SC6.4 for assistance in demonstrating this outcome.	Yes	Proposal complies with P030
P031 The proposal provides for the orderly development of stormwater infrastructure within a catchment, having regard to: a) existing capacity of stormwater infrastructure and ultimate catchment conditions; b) discharge for existing and future upstream development; and c) protecting the integrity of adjacent and downstream development.	No acceptable outcome is nominated. Editor's note —Applicants should refer to the Development manual planning scheme policy SC6.4 for assistance in demonstrating this outcome.	Yes	Proposal complies with P031
P032 Proposed stormwater infrastructure remains fit for purpose for the life of the development.	No acceptable outcome is nominated. Editor's note —Applicants should refer to the Development manual planning scheme policy SC6.4 for assistance in demonstrating this outcome.	Yes	Proposal complies with P032
P033 Proposed stormwater infrastructure can be easily accessed and can be maintained in a safe and cost effective way.	A033 The stormwater management system is designed in accordance with the Development manual planning SC6.4.8 Stormwater Management , SC6.4.9 Stormwater Quantity ; and SC6.4.10 Stormwater Quality .	Yes	Proposal complies with P033

Water management in reconfiguring a lot

PO 34 has been excluded from this response document as it is not relevant to the proposal

Ship-sourced pollutants

PO 35 to PO 38 have been excluded from this response document as they are not relevant to the proposal.

9.3.6 Works Code

Access and Parking

Performance Outcomes	Acceptable Outcomes	Compliance	Justification for Compliance
P01 Access arrangements are appropriate for: a) the capacity of the parking area; b) the volume, frequency and type of vehicle usage; and c) the function and characteristics of the access road and adjoining road network.	A01 Access is provided in accordance with Australian Standard AS2890.1.	Yes	Accesses shall be designed and provided as per AS2890.1.
P02 Provision is made for on-site vehicle parking to meet the demand likely to be generated by the development and to avoid on street parking where that would adversely impact on the safety or capacity of the road network or unduly impact on local amenity.	A02.1 Parking and queuing spaces associated with a use are provided in accordance with the standards identified in the Parking rates planning scheme policy no. SC6.10. OR A02.2 Where an existing lawful premises, the existing number of on-site parking spaces is retained or increased where: a) the Use includes a drive-through facility and queuing spaces are provided in accordance with the standards identified in the Parking rates planning scheme policy no. SC6.10; and b) the uses not more than 5% or 50m2 (whichever is the greater) of additional gross floor area.	Yes	Parking shall be provided in accordance with AOs, refer architectural plans and traffic engineer reporting for further information.
P03 Parking areas are designed to: a) be clearly defined, marked and signed; b) be convenient and accessible; c) be safe for vehicles, pedestrians and cyclists; and d) provide spaces which meet the needs of people with disabilities.	A03.1 Parking areas are designed in accordance with Australian Standard AS2890.1. OR A03.2 Where an existing lawful premises and involves not more than 5% or 50m2 (whichever is the greater) of additional gross floor area, the existing standard of on-site parking is maintained or improved.	Yes	Parking shall be provided in accordance with AOs, refer architectural plans and traffic engineer reporting for further information.
P04 Landscaping is provided to soften the visual impact of parking areas and to provide shading.	A04.1 Shade trees within parking areas are provided at the following rate: a) in single sided, angle or parallel bays - 1 tree per 3 parking spaces; and b) in double sided, angle or parallel bays - 1 tree per 6 parking spaces. Editor's note—The Development manual planning scheme policy no. SC6.4 - SC6.4.12 Landscaping and Open Space sets out guidance on tree species and planting standards. OR	Yes	Landscaping shall be provided in accordance with AOs, refer architectural plans for further information. Detailed landscaping plans will be completed after DA approval is received.

	A04.2 Where an existing lawful premises and involves not more than 5% or 50m2 (whichever is the greater) of additional gross floor area, the existing standard of landscaping is maintained or improved.		
P05 Provision is made for the on-site loading, unloading, manoeuvring and access by service vehicles that: a) is adequate to meet the demands generated by the development; b) is able to accommodate the design service vehicle requirements; c) is wholly contained within the site; and d) does not unduly impede vehicular, cyclist and pedestrian safety and convenience within the site.	A05.1 Servicing areas are provided and designed in accordance with Australian Standard AS2890.2. OR A05.2 Where an existing lawful premises and involves not more than 5% or 50m2 (whichever is the greater) of additional gross floor area, the existing provision for service vehicles is maintained or improved.	Yes	Loading areas are to be provided in accordance with the AOs, refer architectural plans and traffic consultant reporting for further information.

Services and utilities

Performance Outcomes	Acceptable Outcomes	Compliance	Justification for Compliance
P06 A potable water supply is provided that is adequate for the needs of the intended use.	A06.1 The development is connected to council's reticulated water supply system in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.11.2 Water Supply Planning and Design Guidelines and SC6.4.3 Standard Drawings . Editor's note —If a main exists, then an application for a water meter will be required.	Yes	The proposal shall be connected to TCC water reticulation mains that are to be extended across Lakeside Drive from Riveredge Boulevard
	A06.2 Water supply systems and connections are designed and constructed in accordance with Development manual planning scheme policy no. SC6.4 - SC6.4.11.2 Water Supply Planning and Design Guidelines and SC6.4.3 Standard Drawings.	Yes	Proposal shall comply with A06.2.
P07 Wastewater treatment and disposal is provided that is appropriate for the level of demand generated, protects public health and avoids environmental harm.	A07.1 The development is connected to council's reticulated sewerage system via an existing sewer connection to the site.	Yes	The proposal shall be connected to TCC sewer reticulation mains that are to be extended along Riveredge Boulevard and across Lakeside Drive.
	A07.2 Waste water systems and connections are designed and constructed in accordance with Development manual planning scheme policy no. SC6.4 - SC6.4.11.2 Water Supply Planning and Design Guidelines, SC6.4.11.4 Sewerage Planning and Design Guidelines and SC6.4.3 Standard Drawings.	Yes	Proposal shall comply with A07.2.
P08 Provision is made for waste management that is appropriate to the use, protects the health and safety of people and the environment. Editor's note —Applicants should also be aware that any provision for disposal of any trade waste is to be made in accordance council's Trade Waste Policy supporting the Water Act 2000, Plumbing and Drainage Act 2018 and the Standard Plumbing Regulation 2003	A08.1 The development provides a bin container storage area that has an imperviously sealed pad and is screened to the height of the bins.	Yes	Refer architectural plans for conceptual bin storage locations and design.
	A08.2 On sites in an industrial zone that are greater than 2,000m ² in area, provision is made for refuse collection vehicles to access the collection area, undertake the collection activity and to enter and leave the site in a forward direction without having to make more than a 3 point turn.	N/A	Site is not in an industrial zone, or to be used for industrial purposes.
P09 The proposed stormwater management system or site works does not adversely affect flooding or drainage characteristics of properties that are upstream, downstream or adjacent to the development site.	A09.1 The development does not result in an increase in flood level or flood duration on upstream, downstream or adjacent properties.	Yes	
	A09.2 Roof and surface water is conveyed to the kerb and channel or an inter-allotment drainage system in accordance with Australian Standard AS/NZS3500.3:2003.	N/A	All roof water and surface runoff is conveyed to onsite treatment structures, prior to being outlet to the existing services easement, as per the existing stormwater situation.
P010 The drainage network has sufficient capacity to safely convey stormwater run-off from the site and development does not cause a drainage nuisance to a downstream or adjoining property.	A010 Post development discharge of stormwater from the subject land does not exceed predevelopment peak flows and no change to flows across a downstream or adjoining property is created.		

Fire services in developments accessed by common private title

Performance Outcomes	Acceptable Outcomes	Compliance	Justification for Compliance
P011 – Installation of hydrants Fire hydrants are installed and located to enable QFES fire-appliance vehicles to access water safely, effectively and efficiently.	A011.1 Fire hydrant placement and technical requirements for residential streets and common access ways within common private title are in accordance with: a) Australian Standard (AS) 2419.1 – 2017 Fire hydrant installations; and/or b) QFES: Fire hydrant and vehicle access guidelines for residential, commercial and industrial lots.	Yes	The proposal includes a dedicated metered fire service; fire coverage within the site will be designed and certified by a qualified hydraulic consultant at detailed design.
	A011.2 Fire hydrant placement and technical requirements for commercial and industrial streets and common access ways within common private title are in accordance with: a) Australian Standard (AS) 2419.1 – 2017 Fire hydrant installations; and/or b) QFES: Fire hydrant and vehicle access guidelines for residential, commercial and industrial lots.	Yes	The proposal includes a dedicated metered fire service; fire coverage within the site will be designed and certified by a qualified hydraulic consultant at detailed design.
P012 - Road technical standards Road widths and construction within the development are adequate for fire-appliance vehicles to gain access to a safe working area close to buildings and near water supplies whether or not on street parking spaces are occupied.	A012.1 Infrastructure is provided in accordance with the Development manual planning scheme policy no. SC6.4 – SC6.4.4.1 Geometric road design, SC6.4.3.13 Townsville road hierarchy and SC6.4.3.14 Traffic impact assessment guidelines.	Yes	Proposed roadworks shall comply with A012.1

Services and utilities

Performance Outcomes	Acceptable Outcomes	Compliance	Justification for Compliance
P013 A potable water supply is provided that is adequate for the needs of the intended use.	A013.1 Where within an area designated for urban or rural residential development, the development is connected to council's reticulated water supply system in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.11.2 Water Supply Planning and Design Guidelines . OR A013.2 Otherwise, the development is provided with an on-site water supply in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.11.7 On-Site Water Supply .	Yes	Proposal includes a metered water connection from an extended TCC reticulation main. Refer civil engineering plans for concept water connection location and sizing, with sizing to be confirmed at detailed design with hydraulic consultant input.
	A013.3 Water supply systems and connections are designed and constructed in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.11.2 Water Supply Planning and Design Guidelines, SC6.4.11.3 Water Supply Construction and SC6.4.3 Standard Drawings .	Yes	Proposal will comply with A013.3
	A014.1 Where within an area designated for urban development, the development is connected to the council's reticulated sewerage system in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.11.2 Water Supply Planning and Design Guidelines. OR A014.2 Otherwise, on-site waste water treatment and disposal is provided which complies with the Development manual planning scheme policy no. SC6.4 - SC6.4.11.8 On-Site Sewerage Facilities .	Yes	Proposal will comply with A014.1
P014 Wastewater treatment and disposal is provided that is appropriate for the level of demand generated, protects public health and avoids adverse impacts on environmental values.	A014.3 Waste water systems and connections are designed and constructed in accordance with the Development manual planning scheme policy no. SC6.4-SC6.4.11.2 Water Supply Planning and Design Guidelines, SC6.4.11.3 Water and Sewerage Infrastructure, SC6.4.11.5 Sewerage System Constructions and SC6.4.3 Standard Drawings.	Yes	Proposal will comply with A014.3
	A015 Integrated water management practices and infrastructure are implemented in accordance with Development manual planning scheme policy no. SC6.4 - SC6.4.10 Stormwater Quality and SC6.4.10.2 Water Sensitive Urban Design .	Yes	Proposal will comply with A015
P015 The design and management of the development integrates water cycle elements having regard to: a) reducing potable water demand; b) minimising wastewater production; c) minimising stormwater peak discharges and run-off			

d) volumes; maintaining natural drainage lines and hydrological regimes as far as possible; e) reusing stormwater and greywater is encouraged where public safety and amenity will not be compromised; and f) efficient use of water.			
P016 The development is provided with an adequate energy supply which maintains acceptable standards of public health, safety, environmental quality and amenity.	A016 For other than the Rural zone, premises are serviced by: a) an underground electricity supply approved by the relevant energy authority; or b) an overhead supply approved by the relevant energy authority where in the Rural residential zone, Special purpose zone or High impact industry zone or where on a lot of less than 2,500m² within an area where the existing supply is overhead. Editor's note—Applicants should also have regard to the Development manual planning scheme policy no. SC6.4 - SC6.4.14.2 Public Lighting (Urban, Urban Residential and Rural) and SC6.4.14.3 Utility Services.	Yes	Proposal will comply with A016, with detailed electrical plans to be completed by the electrical and telecommunications consultant.
P017 Premises are connected to a telecommunications service approved by the relevant authority.	A017 The development is connected to telecommunications infrastructure in accordance with the standards of the relevant regulatory authority. Editor's note—The Development manual planning scheme policy no. SC6.4 - SC6.4.14.2 Public Lighting (Urban, Urban Residential and Rural) and SC6.4.14.3 Utility Services provides additional information regarding the supply of telecommunications.	Yes	Proposal will comply with A017, with detailed telecommunications plans to be completed by the electrical and telecommunications consultant.
P018 Provision is made for future telecommunications services (for example fibre optic cable).	No acceptable outcome is nominated.	N/A	The subject site is currently well bounded by telecommunications services at current.
P019 Where available, provision is made for reticulated gas.	A019 Design and provision of reticulated gas is undertaken in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.14.2 Public Lighting (Urban, Urban Residential and Rural) and SC6.4.14.3 Utility Services. Editor's note—Applicants should also have regard to the metering requirements of other relevant authorities.	N/A	
P020 Adequate access is provided to public services and utilities for future maintenance.	No acceptable outcome is nominated. Editor's note—The Development manual planning scheme policy no. SC6.4 provides additional information and requirements for applicants, including when council will require easements over public services and utilities.	Yes	Proposal will comply with P020

Earthworks

Editor's note—Applicants should be aware that some retaining walls constitute building works that are assessable under the Building Regulation 2021.

No approval is required under the Building Regulation 2021 for retaining walls if:

- a) there is no surcharge loading; and
- b) the height of wall or height of fill or excavation is not more than 1m; and
- c) the wall is no closer than 1.5m to a building, structure (e.g. a swimming pool) or other retaining wall. In these cases, the "applicable code" for the purposes of the Act is the Building Code of Australia (refer to BCA Volume 2, Part 3.1.1). Retaining walls not more than 1m in height may be constructed in accordance with an accepted industry standard publication (e.g. timber, concrete masonry or similar).

Editor's note—Applicants should note that council may request the submission of an engineering report undertaken by suitably qualified engineer to demonstrate compliance with the performance outcomes, particularly where alternative solutions are proposed.

Performance Outcomes	Acceptable Outcomes	Compliance	Justification for Compliance
P021 Filling and excavation does not result in contamination of land or pose a health and safety risk. Editor's note—Development does not involve: Excavation on land previously occupied by a notifiable activity or on land listed on the Environmental Management Register or the Contaminated Land Register. Editor's note—Where filling or excavation is conducted on land previously occupied by a notifiable activity or on land listed on the Environmental Management Register or the Contaminated Land Register, the relevant Queensland Government department should be contacted for advice and guidelines.	A021 Filling and excavation does not: a) use contaminated materials as fill; b) excavate contaminated material; and c) use waste material as fill. Editor's note—Applicants should refer to the Development manual planning scheme policy no. SC6.4 - SC6.4.7.4 Earthworks Construction and SC6.4.23.1 Construction Management.	Yes	Proposal will comply with A021
P022 Earthworks result in stable landforms and structures.	A022 Earthworks and the construction of retaining walls and batters are undertaken in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.7.3 Earthworks Design and SC6.4.7.4 Earthworks Construction.	Yes	Proposal will comply with A022
P023 Earthworks are undertaken in a manner that: a) maintains natural landforms as far as possible; and b) minimises height of retaining walls and batter faces.	A023.1 Earthworks are undertaken in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.7.3 Earthworks Design and SC6.4.7.4 Earthworks Construction.	Yes	Proposal will comply with A023.1
	A023.2 Retaining walls are designed and constructed: a) certified as stable by a Registered Professional Engineer of Queensland; and b) have a combined height of retaining wall and fence of not more than 2 metres. Editor's note – Applicants should be aware these acceptable outcomes do not apply to retaining walls that are Building Work as defined in the Building Act 1975.	No	Proposal will have retaining walls up to 1.6m high with fencing atop, resulting in a combined height over 2.0m. on the property boundary shared with the existing rail corridor. It is proposed that the retaining walls and fencing shall be designed in a way that ensures no negative impacts to visual and acoustic amenity to the surrounding properties.
P024 Earthworks do not unduly impact on amenity or privacy for occupants of the site or on adjoining land.	No acceptable outcome is nominated.	Yes	Proposal will comply with P024, with retaining wall finishes to be confirmed at detailed design.
P025 Earthworks do not cause environmental harm.	No acceptable outcome is nominated.	Yes	Proposal will comply with P025.
P026 Filling or excavation does not worsen any flooding or drainage problems on the site or on neighbouring properties.	A026 Earthworks are undertaken in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.7.3 Earthworks Design and SC6.4.7.4 Earthworks Construction.	Yes	Proposal will comply with A026. It is noted that the STP Consultants engineering report is to be read in conjunction with the Flood Impact Assessment by Stormflood engineers.

P027 Any structure used to restrain fill or excavation does not worsen drainage problems or cause surface water to be a nuisance to neighbouring properties.	A027 Earthworks are undertaken in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.7.3 Earthworks Design and SC6.4.7.4 Earthworks Construction.	Yes	Proposal ensures all existing channels and drainage capacities are maintained.
P028 Filling or excavation does not adversely affect sewer, stormwater or water utility infrastructure or access to them for maintenance purposes.	A028 Earthworks are undertaken in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.7.3 Earthworks Design and SC6.4.7.4 Earthworks Construction.	Yes	Proposal will comply with A028
P029 Filling or excavation does not prevent or create difficult access to any property.	A029 Earthworks are undertaken in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.7.3 Earthworks Design and SC6.4.7.4 Earthworks Construction.	Yes	Proposal will comply with A029
P030 Earthworks do not cause significant impacts through truck movements, dust or noise on the amenity of the locality in which the works are undertaken or along routes taken to transport the material and the transportation of materials minimises adverse impacts on the road network.	A030 Earthworks are undertaken in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.7.4 Earthworks Construction and SC6.4.23.1 Construction Management.	Yes	Proposal will comply with A030

Movement networks

Performance Outcomes	Acceptable Outcomes	Compliance	Justification for Compliance
P031 The following are provided along the full extent of the road frontage and to a standard that is appropriate to the function of the road or street and the character of the locality: a) paved roadway; b) appropriate pavement edging (including kerb and channel); c) pedestrian paths and cycleways; d) streetscaping and street tree planting; e) stormwater drainage; f) street lighting systems; and g) conduits to facilitate the provision of and other utility services.	A031 Design and construction of external road works are undertaken in accordance with the Development manual planning scheme policy no. SC6.4. Editor's note—Applicants should have regard to the following sub-sections of the Development manual planning scheme policy no. SC6.4 - SC6.4.14.2 Public Lighting (Urban, Urban Residential and Rural); SC6.4.14.3 Utility Services; SC6.4.8 Stormwater Management; SC6.4.9 Stormwater Quantity; SC6.4.10 Stormwater Quality; SC6.4.6.2 Pavement Design & Seal Design; SC6.4.4 Active Transport Infrastructure; SC6.4.12 Landscaping and Open Space; SC6.4.6.1 Geometric Road Design; SC6.4.20.1 Footpath Treatment Policy; and SC6.4.23 Construction Management, Quality Management, Inspection and Testing.	Yes	Proposal shall provide appropriate upgrades to the Lakeside Drive frontage to suit the proposed works. Refer traffic engineer plans and reports for Lakeside Drive functional layouts and details.
P032 Provision is made in the road reserve for streetscaping, pedestrians and cyclists in a manner consistent with: a) the current and projected level of usage; b) the desired streetscape character; and c) activities which are anticipated to occur within the verge.	A032 Streetscaping works, footpaths and cycle paths are provided in accordance with Development manual planning scheme policy no. SC6.4. Editor's note—Applicants should have regard to the following sub-sections of the Development manual planning scheme policy no. SC6.4 - SC6.4.20.1 Footpath Treatment Policy; SC6.4.6.1 Geometric Road Design; SC6.4.5.1 Townsville Road Hierarchy; SC6.4.4 Active Transport Infrastructure; SC6.4.12 Landscaping and Open Space; SC6.4.14.2 Public Lighting (Urban, Urban Residential and Rural); and SC6.4.14.3 Utility Services in demonstrating compliance.	Yes	Proposal shall provide appropriate upgrades to the Lakeside Drive frontage to suit the proposed works. Refer traffic engineer plans and reports for Lakeside Drive functional layouts and details.
P033 Parking areas are designed and constructed in a manner that is sufficiently durable for the intended function, maintains all weather access and ensures the safe passage of vehicles, pedestrians and cyclists.	A033 Parking area design and construction is undertaken in accordance with the Development manual planning scheme policy no. SC6.4 — SC6.4.5.3 Public Transport Facilities and SC6.4.5.4 Car Parking.	Yes	Proposal shall comply with A033 Refer architectural plans for parking layout and counts.
P034 Movement networks can be easily and efficiently maintained.	A034 Infrastructure is provided in accordance with the Development manual planning scheme policy no. SC6.4 — SC6.4.6.1 Geometric Road Design , SC6.4.5.1 Townsville Road Hierarchy and SC6.4.5.2 Traffic Impact Assessment (TIA) .	Yes	Proposal shall comply with A034 Refer architectural plans for the internal site layout, refer traffic engineer plans for site access layouts and details.

Waste Management

Performance Outcomes	Acceptable Outcomes	Compliance	Justification for Compliance
P035 Development provides adequate waste management facilities on site for the storage of waste and recyclable material in a manner which: - is of adequate size to accommodate the expected amount of refuse to be generated by the use; - is in a position that is conveniently accessible for collection at all times; - is able to be kept in a clean, safe and hygienic state at all times; and - minimises the potential for environmental harm, environmental nuisance and adverse amenity impacts.	A035 Waste management facilities are provided in accordance with the Development manual planning scheme policy no. SC6.4 – SC6.4.22 Waste Management. Editor's note—Applicants may be requested to prepare a Waste management plan in accordance with the Development manual planning scheme policy no.SC6.4-SC6.4.22 Waste Management.	Yes	Proposal will comply with A035 Refer architectural plans for site layout, including waste storage locations

Construction management

Performance Outcomes	Acceptable Outcomes	Compliance	Justification for Compliance
P036 Work is undertaken in a manner which does not cause unacceptable impacts on surrounding areas as a result of dust, odour, noise or lighting.	No acceptable outcome is nominated. Editor's note—Applicants should refer to the Development manual planning scheme policy no.SC6.4 for assistance in complying with this outcome.	Yes	Contractor shall compile a construction management plan that must be adhered to. The construction management plan will include items (but not limited to): - that works will not negatively impact the environment, neighbouring properties, roadways, etc, - the regularity of street sweeping, wetting down, etc, - how traffic management shall be implemented, - how existing and new infrastructure shall be maintained or protected during construction.
P037 While undertaking development works, the site and adjoining road are maintained in a tidy, safe and hygienic manner.	No acceptable outcome is nominated. Editor's note—Applicants should refer to the Development manual planning scheme policy no.SC6.4 for assistance in complying with this outcome.	Yes	
P038 Traffic and parking generated during construction are managed to minimise impact on the amenity of the surrounding area.	No acceptable outcome is nominated. Editor's note—Applicants should refer to the Development manual planning scheme policy no.SC6.4 for assistance in complying with this outcome.	Yes	
P039 Council's infrastructure is not damaged by construction activities.	No acceptable outcome is nominated. Editor's note—Applicants should refer to the Development manual planning scheme policy no.SC6.4 for assistance in complying with this outcome.	Yes	
P040 The integrity of new infrastructure is maintained.	No acceptable outcome is nominated. Editor's note—Applicants should refer to the Development manual planning scheme policy no.SC6.4 for assistance in complying with this outcome.	Yes	
P041 Construction activities and works are carried out in a manner which avoids damage to the environment, retained vegetation and impacts on fauna.	A041 Construction activities and works are undertaken in accordance with the Development manual planning scheme policy no. SC6.4 - SC6.4.23.1 Construction Management .	Yes	
P042 Vegetation cleared from a site is disposed of in a manner that maximises reuse and recycling and minimises impacts on public health and safety.	A042 Construction activities and works are carried out in accordance with Development manual planning scheme policy no. SC6.4 - SC6.4.7.1 Clearing and Grubbing . Editor's note—Applicants shall also refer to Development manual planning scheme policy no. SC6.4 for assistance in complying with this outcome.	Yes	

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