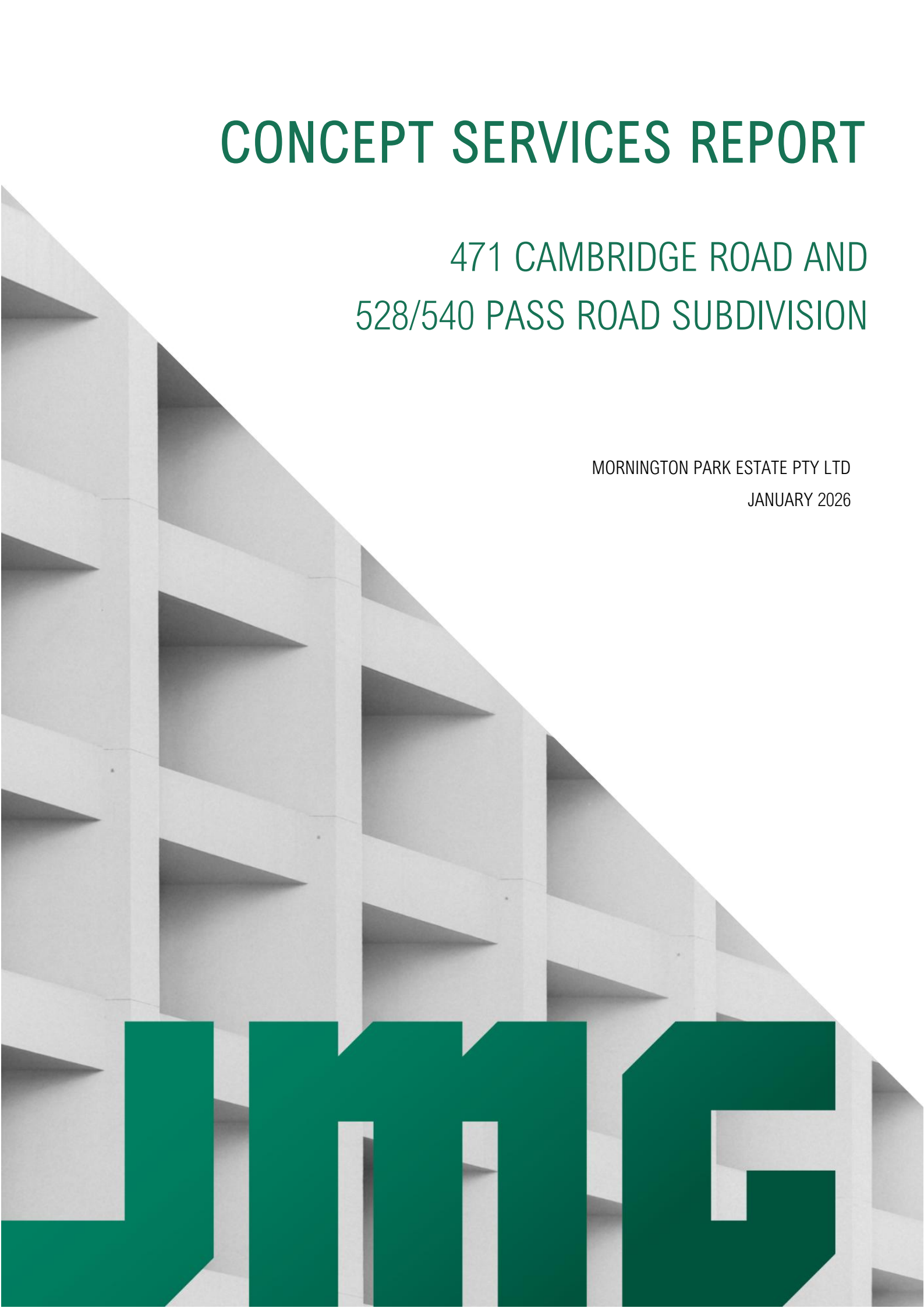


CONCEPT SERVICES REPORT

471 CAMBRIDGE ROAD AND
528/540 PASS ROAD SUBDIVISION

MORNINGTON PARK ESTATE PTY LTD

JANUARY 2026



JMG

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Appendix A - JMG Drawings

Appendix B - TasWater Sewerage Advice

Appendix C - TasWater Water Supply Infrastructure Plan and Advice

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1. Introduction

The project site encompasses 471 Cambridge Road (CT 37975/1) and 528 and 540 Pass Road, Cambridge (CT 131423/2 & CT 53672/1) and lies within the Urban Growth Boundary, with the west boundary of 471 Cambridge Road adjacent to the boundary of this residential area.

The proposal seeks to rezone this land for future development, which will require the preparation and approval of a Special Area Plan (SAP). This report outlines the key elements of the SAP, including the proposed road layouts, public open space allocations, and how essential services such as stormwater, sewerage, and water supply would be accommodated for the development.

The report also addresses the infrastructure proposed for the first stage of development, which is essentially focused around the large Public Open Space land parcel.

2. Inspection

The site was inspected on 22 May 2023 and on numerous subsequent occasions. A watercourse runs primarily east to west through the lower section of the site. Most of the land slopes to the northeast, with natural grades varying from 18% in the southern area to 5% near the watercourse. The northern and eastern boundaries are bordered by Cambridge Road and Pass Road, respectively, while the southern boundary adjoins a quarry at 165 Mornington Road, a private rural residential property at 520 Pass Road, and a disused petrol station at 526 Pass Road.

There are two existing dwellings located on 528 and 540 Pass Road, along with several sheds and outbuildings. The property at 471 Cambridge Road remains vacant.

3. Roads

There is a mixture of road types and reservation widths throughout the development (refer Drawings in Appendix A and Traffic Impact Assessment).

3.1 Road Widths

In general, road widths and their reservations comply with Council By-Law No. 2 Table 1 (2014), which states that local through roads require an 8.9m road width in an 18m wide reservation. Exceptions are as follows:

- Road 5 has been reduced to 6.9m wide in a 15m reservation as there are only properties on one side requiring access and servicing. The unit development to the north (downhill) of Road 5 will be accessed from Road 1 and Road 3. A reduced road width through this section will deter through traffic and promote the use of Road 3 to exit the development via Pass Road.
- Road 2 is a 6.9m wide road with additional 2.4m wide parking bays and landscaping features adjacent to the park. The reservation width is 18m to accommodate the required underground services. This road is effectively 9.3m wide if the parking bays are included and therefore exceeds the minimum requirements of Councils By-Law No. 2. The narrower carriageway will discourage through traffic, which is desirable for this local access road.

3.2 Geometry and Overland Flow Paths

Roads crossing the contour are generally flat with maximum 5% grade except in localised areas to facilitate intersection requirements. These will be one-way crossfall to limit cut and fill.

Road 1 runs straight up the hill, with grades reaching up to 17%, in compliance with Clause 31(5) of the Council's By-Law No. 2 (2014).

Along the first 100 metres of Road 1, the crossfall varies to accommodate storm events (such as a 5% 1% AEP+CC flood). Overland flows enter the site from its upstream boundaries, predominantly the eastern boundary adjacent 526 Pass Road and the northern boundary along Pass Road at Road 3 and from a sag point near Cambridge Road.



Figure 1 - Overland Flow Paths

Footpaths are provided on all roads, in accordance with Council Standards, as shown in the drawings. These footpaths will be constructed to the standard of 100mm thick reinforced concrete and adhere to IPWEA Specifications (TSD-R11-v1), as detailed in the Civil Drawings.

3.3 Driveway Accesses

Typical cross-sections have been modelled for key areas where roads traverse steep terrain, including Road 1 around chainage (CH) 300, Road 4 around CH 80, and Road 5 (southern side) at CH 60. These sections represent the critical areas across the site and demonstrate that dwellings can be designed to accommodate the topographic constraints of the property accesses.

4. Stormwater

4.1 Minor and Major Drainage

Stormwater considerations for the proposed development have been subject to detailed assessment, including pre-development and post-development scenarios, climate change allowances, and downstream system constraints along Cambridge Road.

Given the complexity of the existing drainage network, multiple design iterations, and ongoing coordination with Clarence City Council, the stormwater assessment has been developed as a standalone technical report to allow for a clear and transparent presentation of modelling assumptions, scenarios, and outcomes.

This Concept Services Report therefore provides a high-level overview only. Full details of the stormwater analysis, including hydrological and hydraulic modelling, detention assessment, and flood hazard evaluation, are documented in:

- JMG - Stormwater Assessment Report - 471 Cambridge Road.

4.2 Quality Control

Water quality treatment will be provided in accordance with Council requirements at detailed design stage. At concept level, treatment is anticipated to be achieved through a combination of measures such as rain gardens, tree planters and/or GPT devices, subject to Council confirmation of the accepted treatment approach and sizing criteria.

A preliminary MUSIC assessment has previously been undertaken to test a representative treatment train; however, the final treatment measures will be confirmed once Council's preferred approach is provided and the detailed drainage layout is finalised.

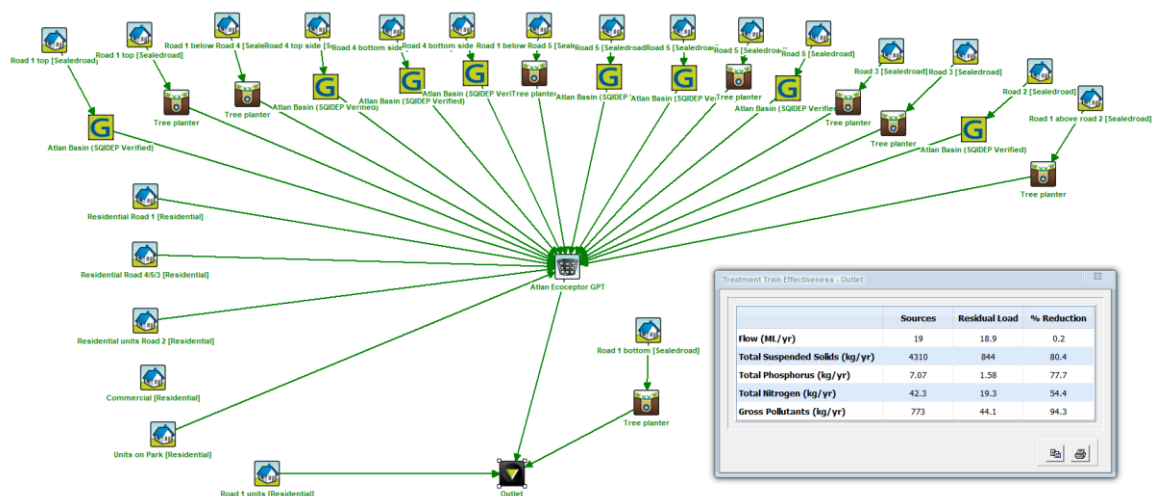


Figure 2 - MUSIC model and treatment train effectiveness showing compliance with Council requirements

The preliminary modelling indicates that the proposed treatment approach can be configured to meet the required pollutant reduction targets, subject to confirmation at detailed design stage.

5. Sewerage

TasWater have provided comprehensive advice on sewerage servicing issues. Refer Appendix B for detail and below for a summary.

The site is serviced by a DN150 gravity sewer on the northern side of Cambridge Road. This pipe continues as DN150 until 400 Cambridge Road, where it increases to DN225 and continues all the way to the Rosny Sewage Treatment Plant (STP), refer **Figure 3**.

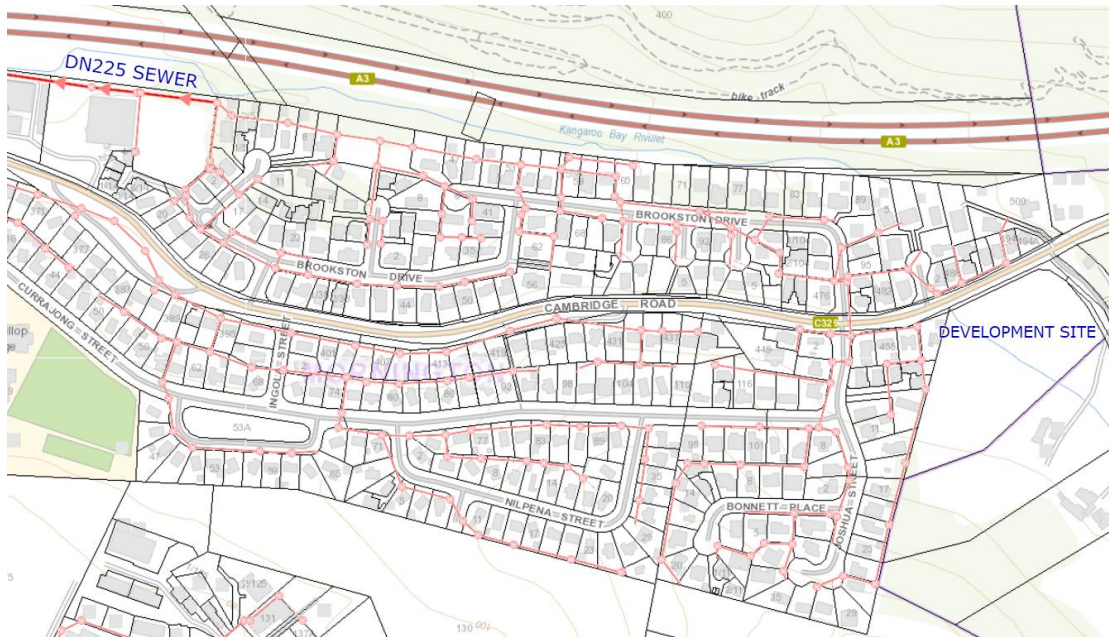


Figure 3 - Gravity sewer pipes in the vicinity of the development site

TasWater modelling indicates that the network is currently undersized with spills at five locations between the development site and the STP. This increases to six locations when an additional 50 Equivalent Tenements (ET's) enter the system and seven locations when 75 or more ET's enter the system.

TasWater standards require that:

- For design of peak wet weather flow (PWWF), TasWater allows existing sewers to be surcharged by 300mm above the obvert of the pipe. Sewers may be surcharged beyond 300mm and up to 1000mm as long as there remains at least 1000mm of freeboard available at all maintenance holes and 'spill points'.

With 25 ET's entering the system there are still three other locations that don't meet the freeboard requirements.

TasWater modelled potential mitigation measures. It was found that 25 additional ET's could be accommodated before any augmentation would be required. However, at this point, approximately 770m of sewer would require upsizing to DN225. The extent of augmentation is shown in **Figure 4**.

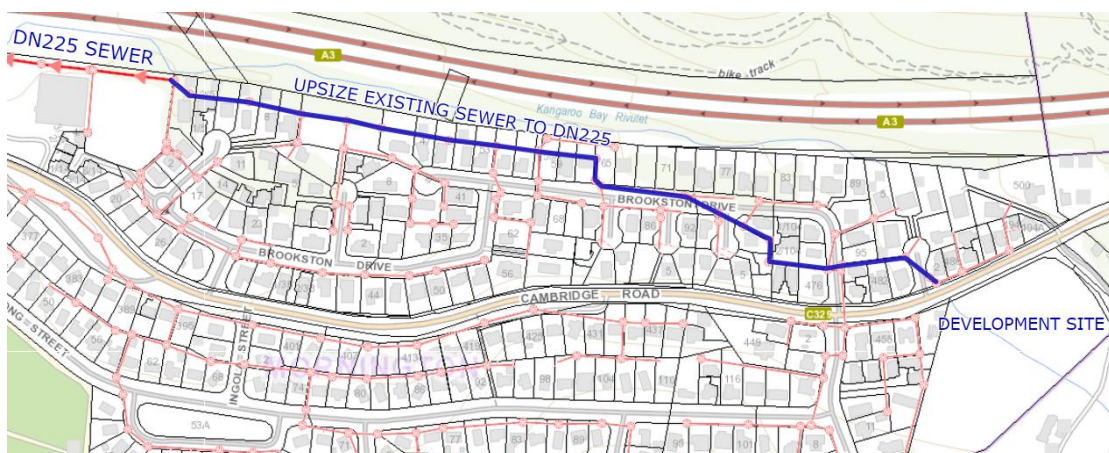


Figure 4 - Extent of sewer upgrade required upon development of 25 ET's

6. Water

TasWater have provided advice on servicing the proposed development with water. Refer Appendix C for detail and summary below.

The site currently abuts two water supply zones (refer Appendix C). There is a DN200 main running down Pass Road, which is serviced by the Tunnel Hill Reservoir; and a DN150 main running down Cambridge Road serviced by the Mornington High Level Reservoir. Both zones have a similar operating pressure with a top water level of 164m.

TasWater request that the development is to be serviced from the Mornington High Level Zone (CLW10) and have provided boundary conditions as follows.

Table 1 - Boundary Water Supply Total Head Conditions

Location	H.G.L. Peak hour (m)	H.G.L Peak day + 10 l/s fire flow (m)
A249377 (150 NB)	157.1	155.9

The maximum elevation within the development is at the top of Road 1, with an elevation of 120m. Lots have a slope of 18%, requiring a lot connection pressure of 25m in accordance with TasWater Standards (Table 2.5.3.3). The Hydraulic Grade Line (HGL) will therefore have to be in excess of 145m at the top of Road 1 to be compliant. Given the boundary HGL of 157.1m, this allows 12m headloss, which can be readily achieved.

Likewise, the most hydraulically disadvantaged fire plug will be at the top of Road 1.

A residual pressure of 25m is required with a demand of 10l/s (Table 3.1.5), requiring 145m of total head. This allows approximately 10m headloss from the connection point to the top of Road 1, which can readily be achieved with a DN100 water main.

A network model will be developed during future design stages to verify compliance, however no issues are expected.

TasWater have also stated that they would like a second connection to the development area (as shown in **Figure 5**) to provide operation flexibility. This connection would not be required in the initial stages but needs to be allowed for as the development progresses.

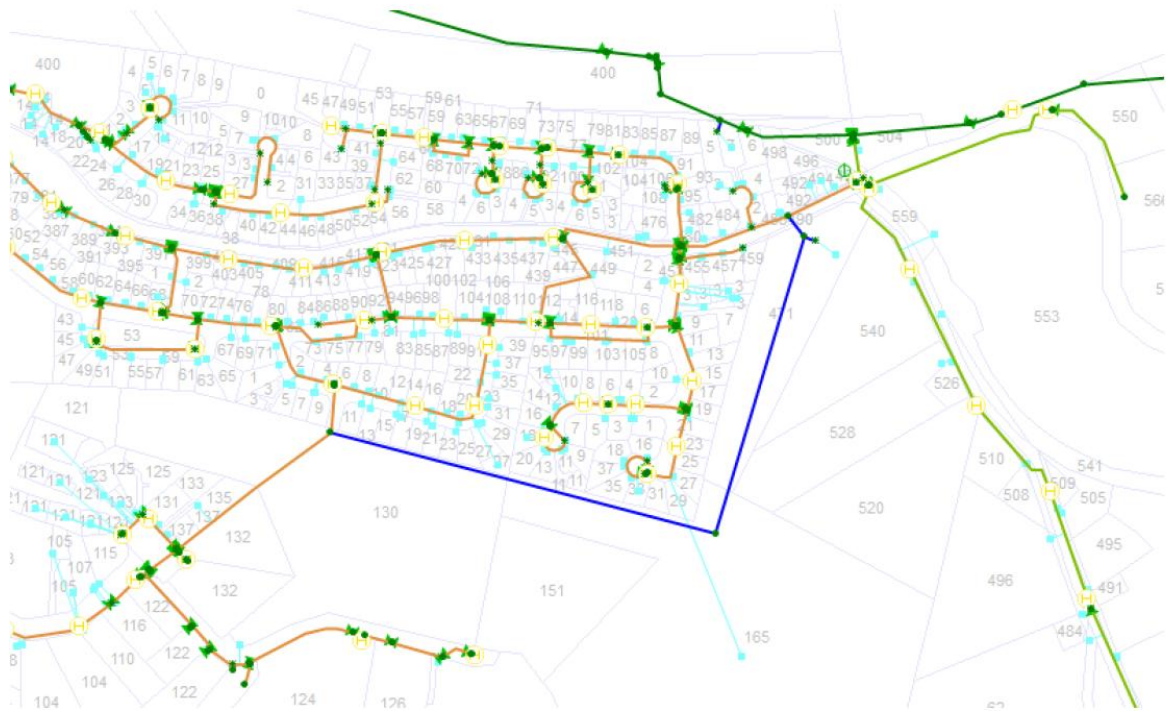


Figure 5 - Future second water supply (shown blue)

7. Stage 1 Subdivision

The initial stage of the development involves the creation of a 5-lot subdivision as depicted by Drawing J220646PL - C08 in Appendix A. These works will be confined to the existing properties at 471 Cambridge Road and 540 Pass Road, while excluding 528 Pass Road. The existing residence at 540 Pass Road, along with the associated buildings, will remain intact during this stage and continue to operate with its current services. Stage 1 will include all necessary infrastructure to service the four new lots, as detailed below.

7.1 Roads and Access

During Stage 1, the existing residence at 540 Pass Road will retain access via its existing driveway from Pass Road. The newly created lots will gain access via Cambridge Road, with Road 101 extended to the Balance Lot. A temporary offset circular cul-de-sac will be constructed at the end of Road 101 in accordance with IPWEA Standard Drawing TSD-R07.

Road 101 will eventually form Road 1 of the larger subdivision and is designed with an 8.9m carriageway within an 18m wide road reserve.

7.2 Services

The four new lots will be serviced with stormwater, water, and sewer connections, along with the downstream infrastructure required to support these services as outlined below (refer to Drawing J220646PL - C08 in Appendix A for further details).

Existing services for the properties at 540 and 528 Pass Road will remain unchanged during Stage 1.

Stormwater

Stage 1 will require the stormwater upgrades to the existing Cambridge Road network detailed in JMG - Stormwater Assessment Report - 471 Cambridge Road.

Sewer

A new sewer main will be connected from the existing DN150 main in Cambridge Road, with a new manhole constructed at 2 Solandra Court and extended to the end of Road 101. A temporary end-of-line arrangement will be provided at the end of this new sewer main to allow for future extensions in later development stages. Upgrades to the existing sewer network downstream of the site, as outlined in Section 5, will not be required during Stage 1, as fewer than 25 ETs will connect to the network.

Water

A new water main will be extended from the existing DN150 main in Cambridge Road to the end of Road 101, terminating with a temporary end-of-line arrangement. This main will also be extended in future development stages to provide water services to additional properties.

8. Conclusion and Recommendations

This report has assessed the site at 471 Cambridge Road and 528 and 540 Pass Road with respect to its development potential and the key infrastructure considerations required to support future urban development. The review of the site's natural features, existing services, and surrounding environment has informed the proposed concept design, including road layout, public open space provision, and servicing strategies.

Stormwater management for the site has been the subject of detailed investigation, including consideration of climate change, pre-development and post-development conditions, and integration with the downstream Council drainage network along Cambridge Road. Due to the complexity of the assessment and the extent of modelling undertaken, stormwater has been documented in a standalone technical report. This Concept Services Report therefore presents a high-level summary only, with full details provided in the JMG - Stormwater Assessment Report - 471 Cambridge Road, which forms part of the overall development documentation.

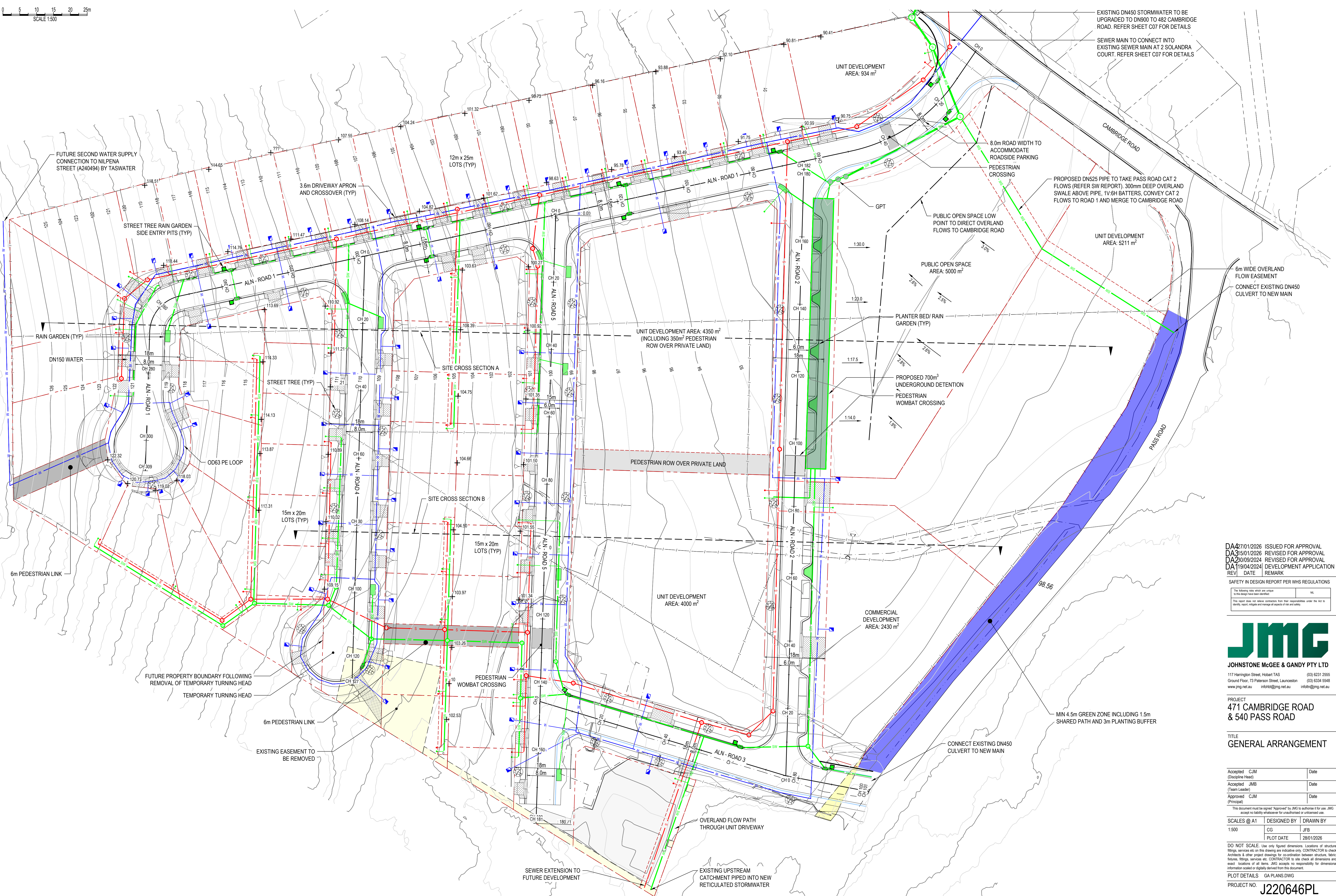
Sewerage and water servicing requirements have been reviewed in consultation with TasWater. The investigations have identified the extent of existing network constraints, potential staging limitations, and the infrastructure upgrades that may be required to support future development, while maintaining compliance with TasWater Standards.

In summary, the proposed concept layout and servicing strategy demonstrate that the land can be developed in a staged manner, subject to the implementation of appropriate infrastructure works and authority approvals. The findings of this report, together with the accompanying Stormwater Assessment Report, provide a sound basis to progress the rezoning and Special Area Plan process.

APPENDIX A

JMG Drawings





SAFETY IN DESIGN REPORT PER WHS REGULATIONS	
The following risks which are unique to this design have been identified:	NIL
This report does not relieve contractors from their responsibilities under the Act to identify, report, mitigate and manage all aspects of risk and safety.	

PROJECT
471 CAMBRIDGE ROAD
& 540 PASS ROAD

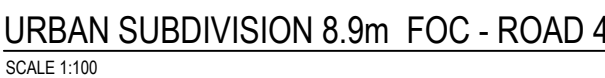
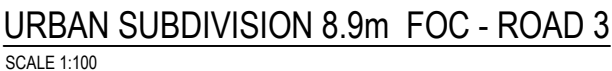
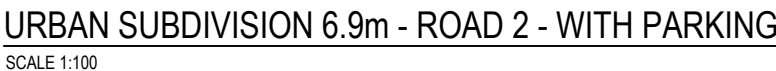
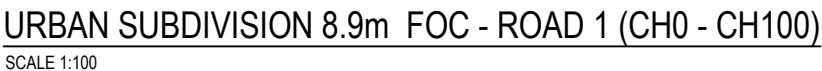
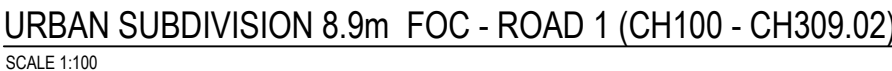
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 Ground Floor, 73 Paterson Street, Launceston (03) 6334 5544
www.jmg.net.au infohbt@jmg.net.au info{lng@jmg.net.au

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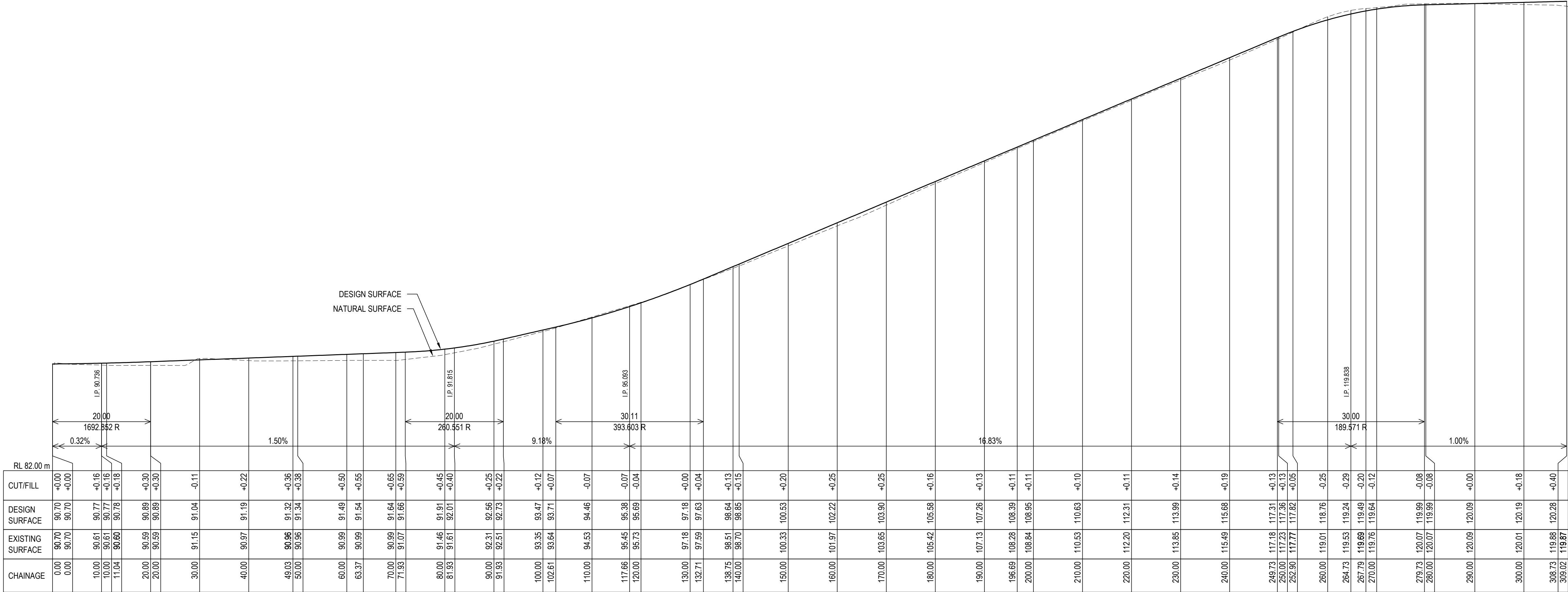
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LOT DETAILS ROAD PROFILES.DWG

WG NO.	REVISION
C02	DA

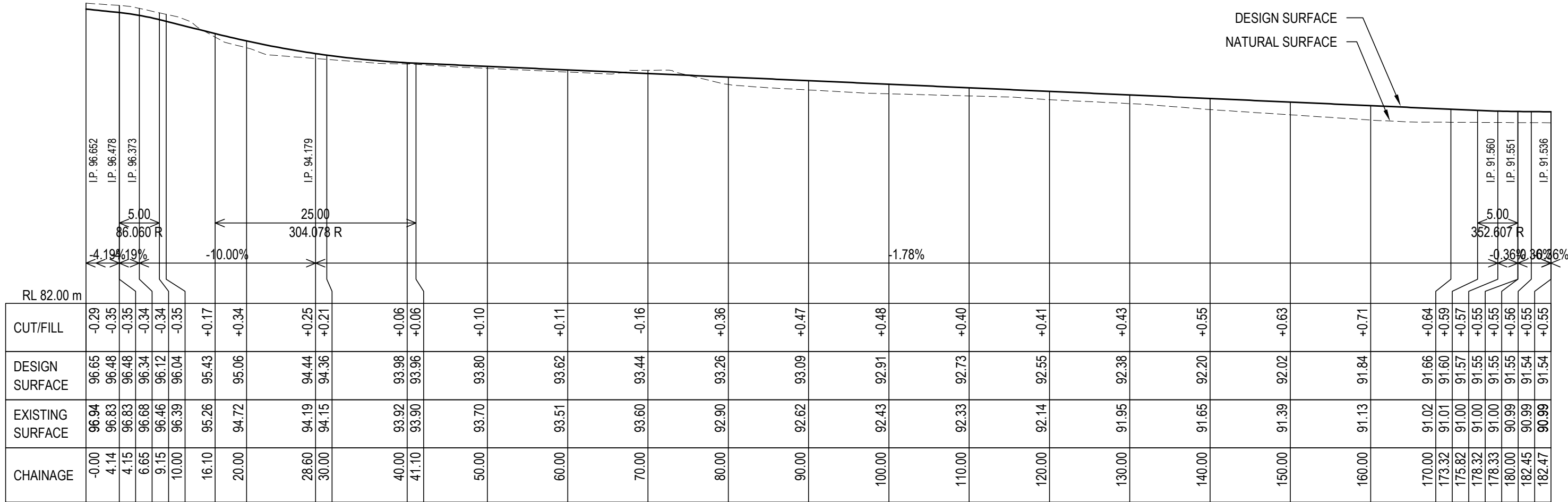
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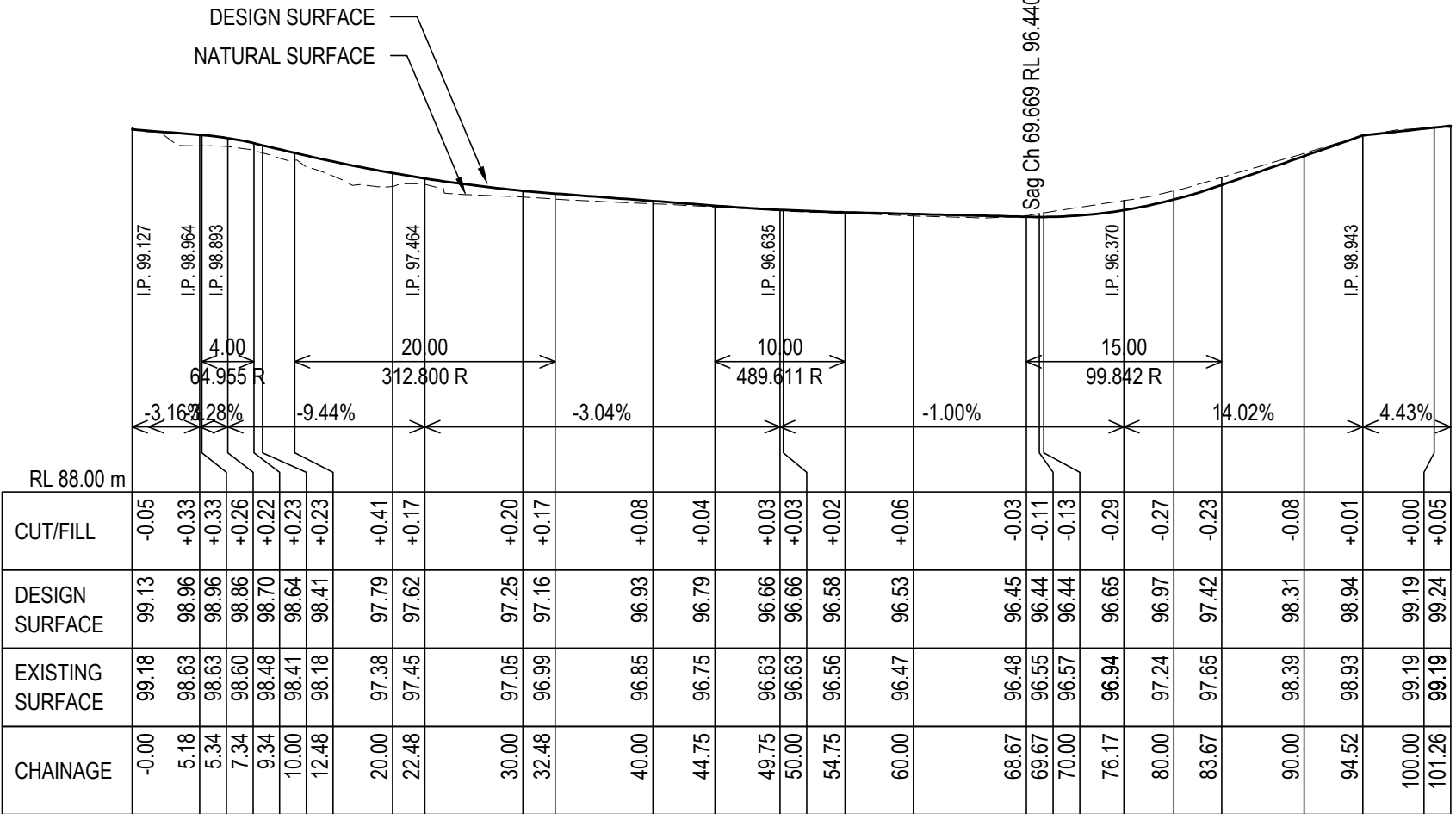
Road 1 PROFILE FROM CH 0.000m TO CH 309.023m
SCALES: 1:500(H) 1:200(V)

Road 1



Road 2 PROFILE FROM CH 0.000m TO CH 182.466m
SCALES: 1:500(H) 1:200(V)

Road 2



Road 3 PROFILE FROM CH 0.000m TO CH 101.262m
SCALES: 1:500(H) 1:200(V)

Road 3

DA2009/2024 FOR APPROVAL
DA19/04/2024 DEVELOPMENT APPROVAL
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117 Harrington Street, Hobart TAS (03) 6331 2555
Ground Floor, 73 Palston Street, Launceston (03) 6334 5548
www.jmg.net.au info@jmg.net.au info@jmg.net.au

PROJECT
471 CAMBRIDGE ROAD
& 540 PASS ROAD

TITLE
ROAD PROFILE
SHEET 1

Accepted C/M (Discipline Head)	Date
Accepted JMB (Team Leader)	Date
Approved C/M (Principal)	Date

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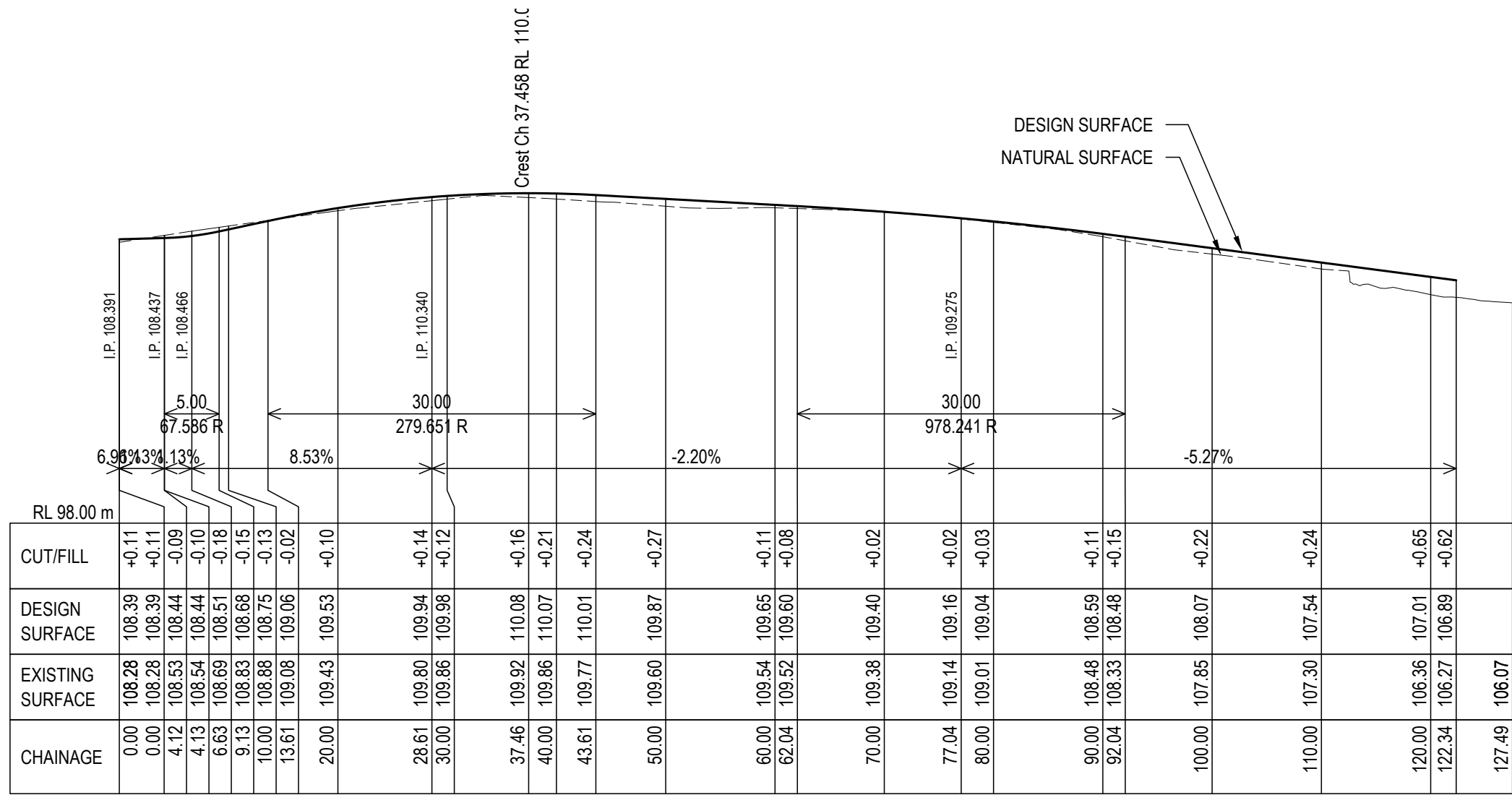
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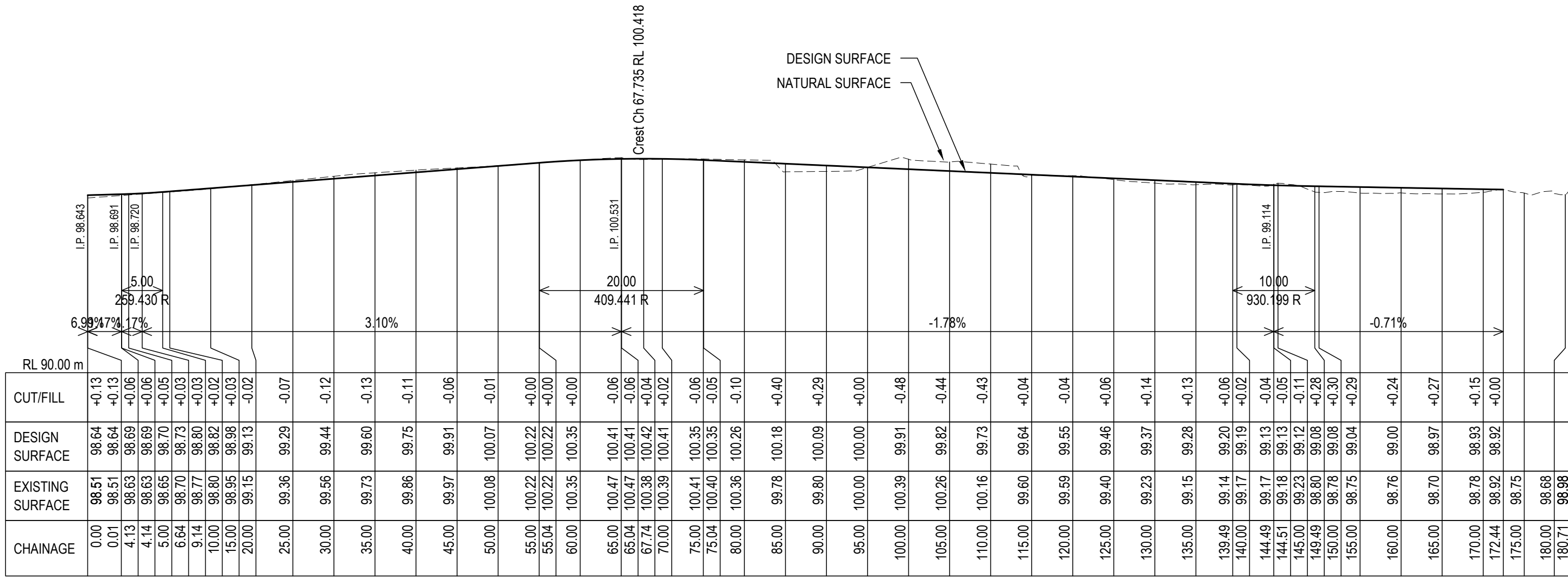
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Road 4 PROFILE FROM CH 0.000m TO CH 127.486m
SCALES: 1:500(H) 1:200(V)

Road 4



road 5 PROFILE FROM CH 0.000m TO CH 180.706m
SCALES: 1:500(H) 1:200(V)

road 5

DA230/09/2024 FOR APPROVAL
DA119/04/2024 DEVELOPMENT APPROVAL
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SAFETY IN DESIGN REPORT PER WHS REGULATIONS	
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117 Harrington Street, Hobart TAS (03) 6331 2555
Ground Floor, 73 Paterson Street, Launceston (03) 6334 5548
www.jmg.net.au infohkg@jmg.net.au infohkg@jmg.net.au

PROJECT
471 CAMBRIDGE ROAD
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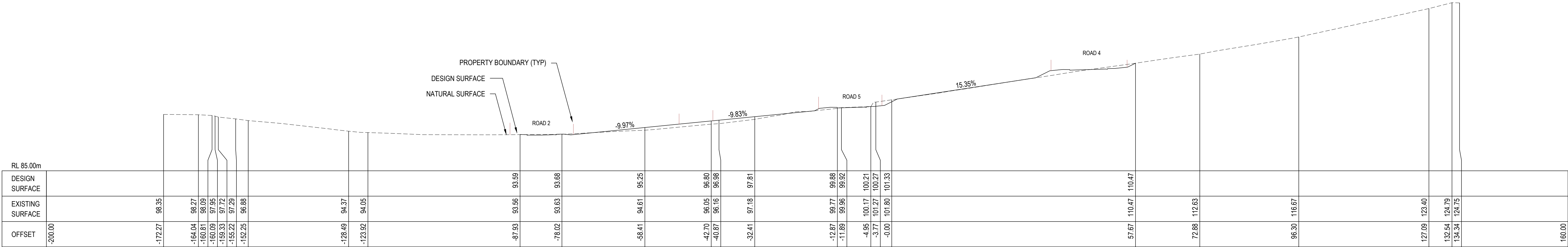
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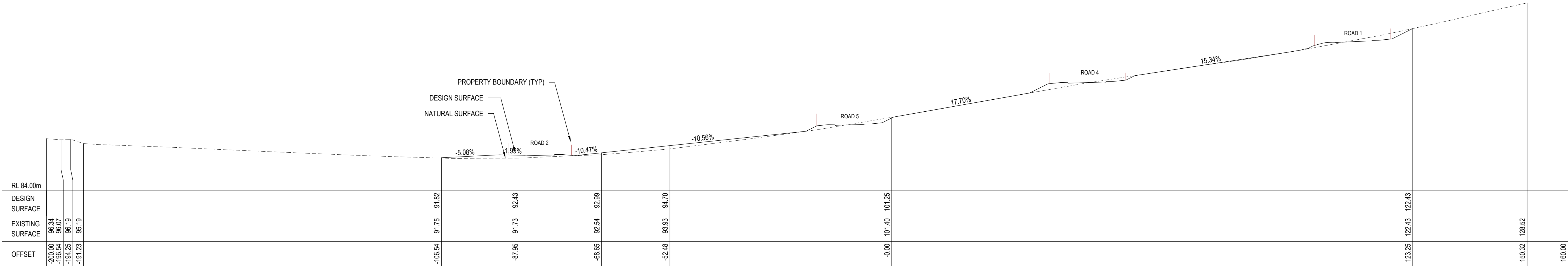
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SITE CROSS SECTION A
SCALES: 1:500(H) 1:500(V)

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117 Harrington Street, Hobart TAS (03) 6331 2555
Ground Floor, 73 Paterson Street, Launceston (03) 6334 5548
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PROJECT
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SITE CROSS SECTIONS
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Approved CJM (Principal)	Date

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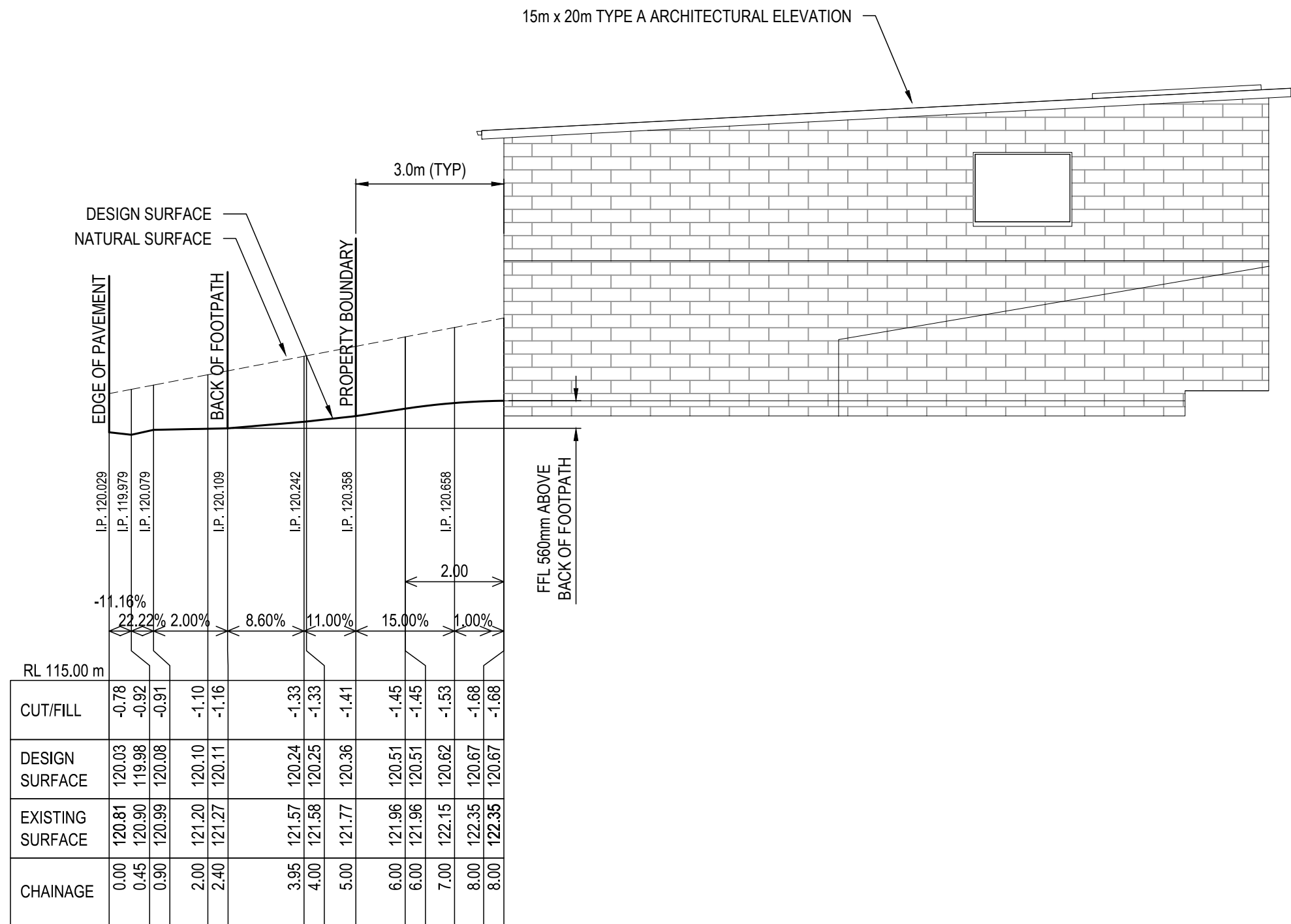
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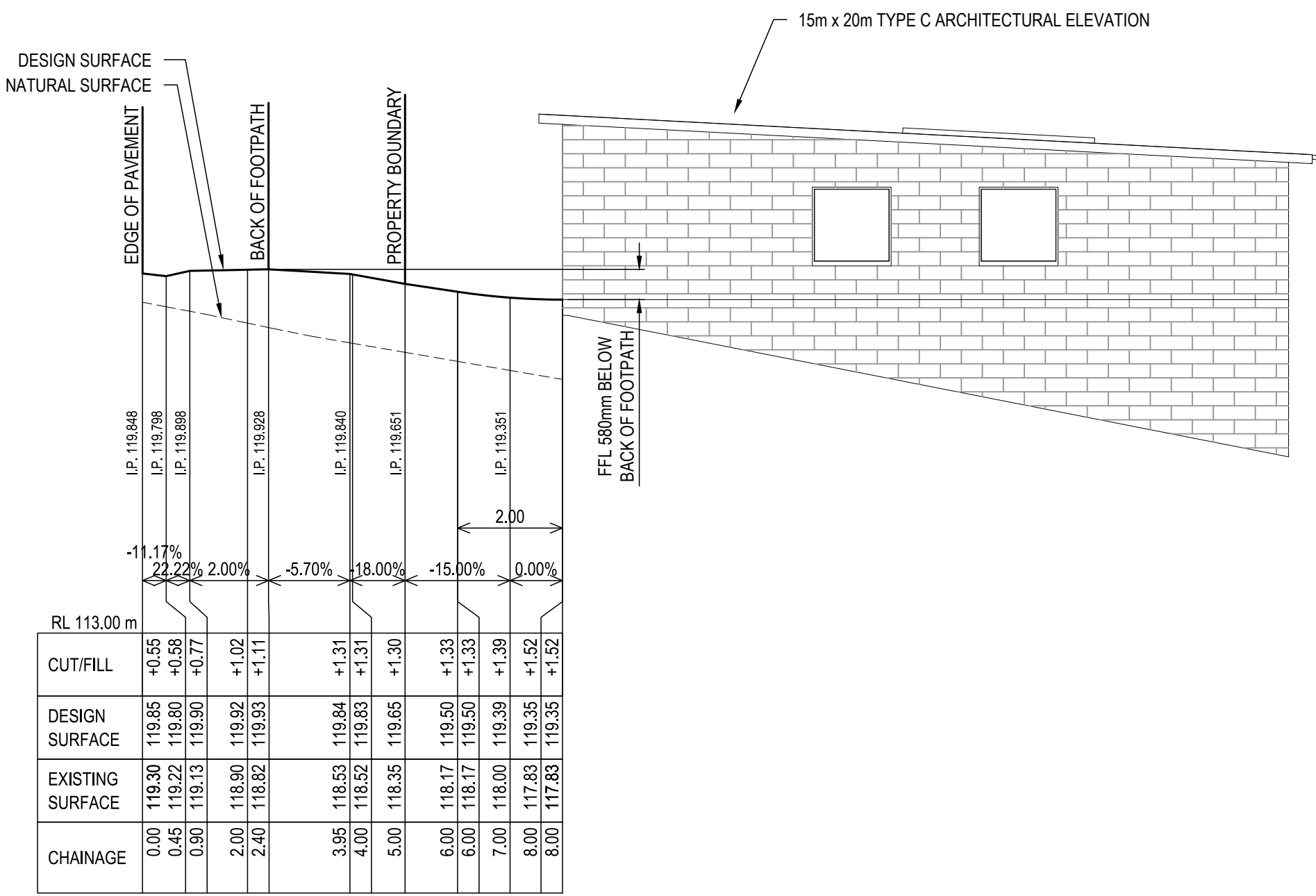
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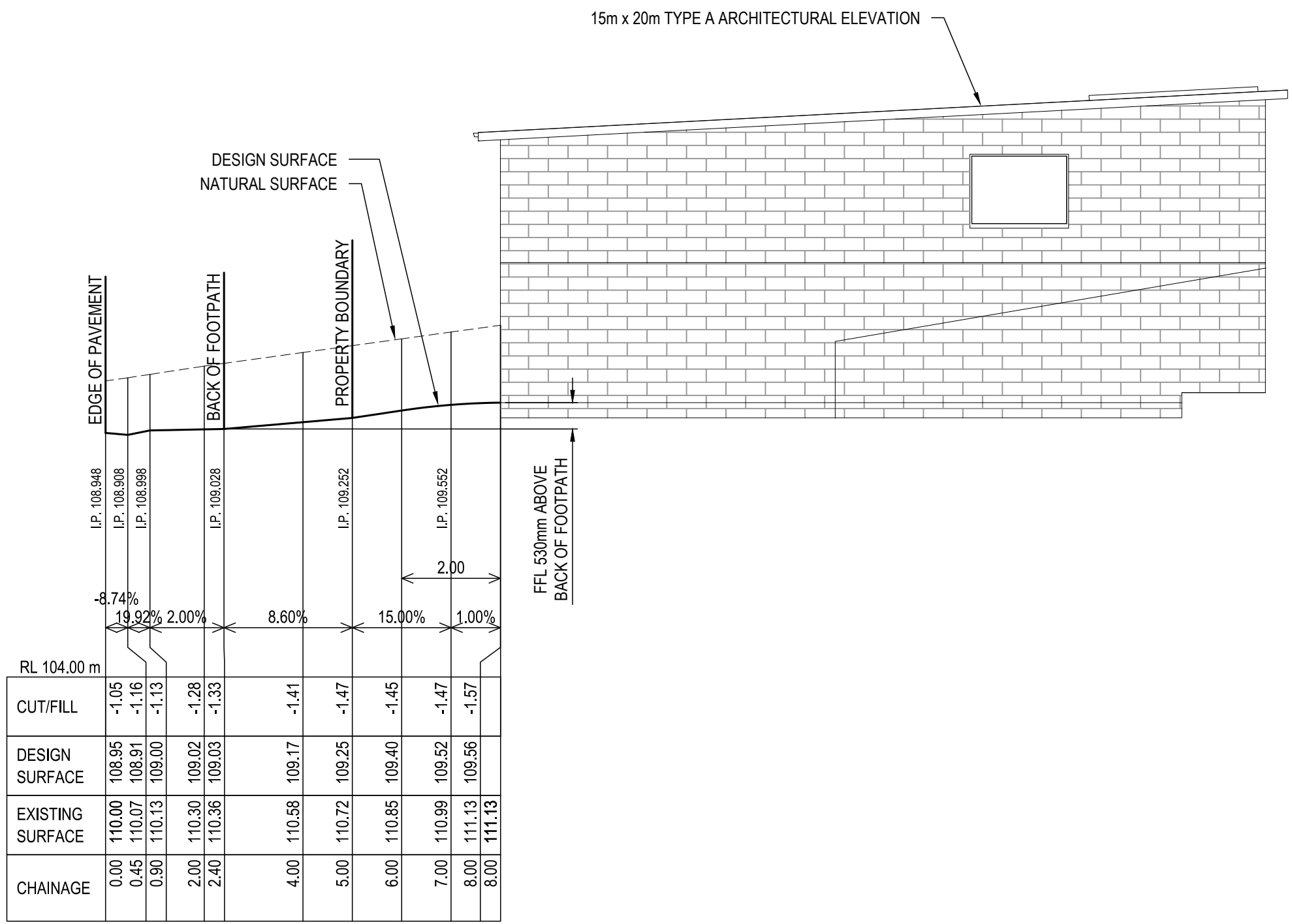
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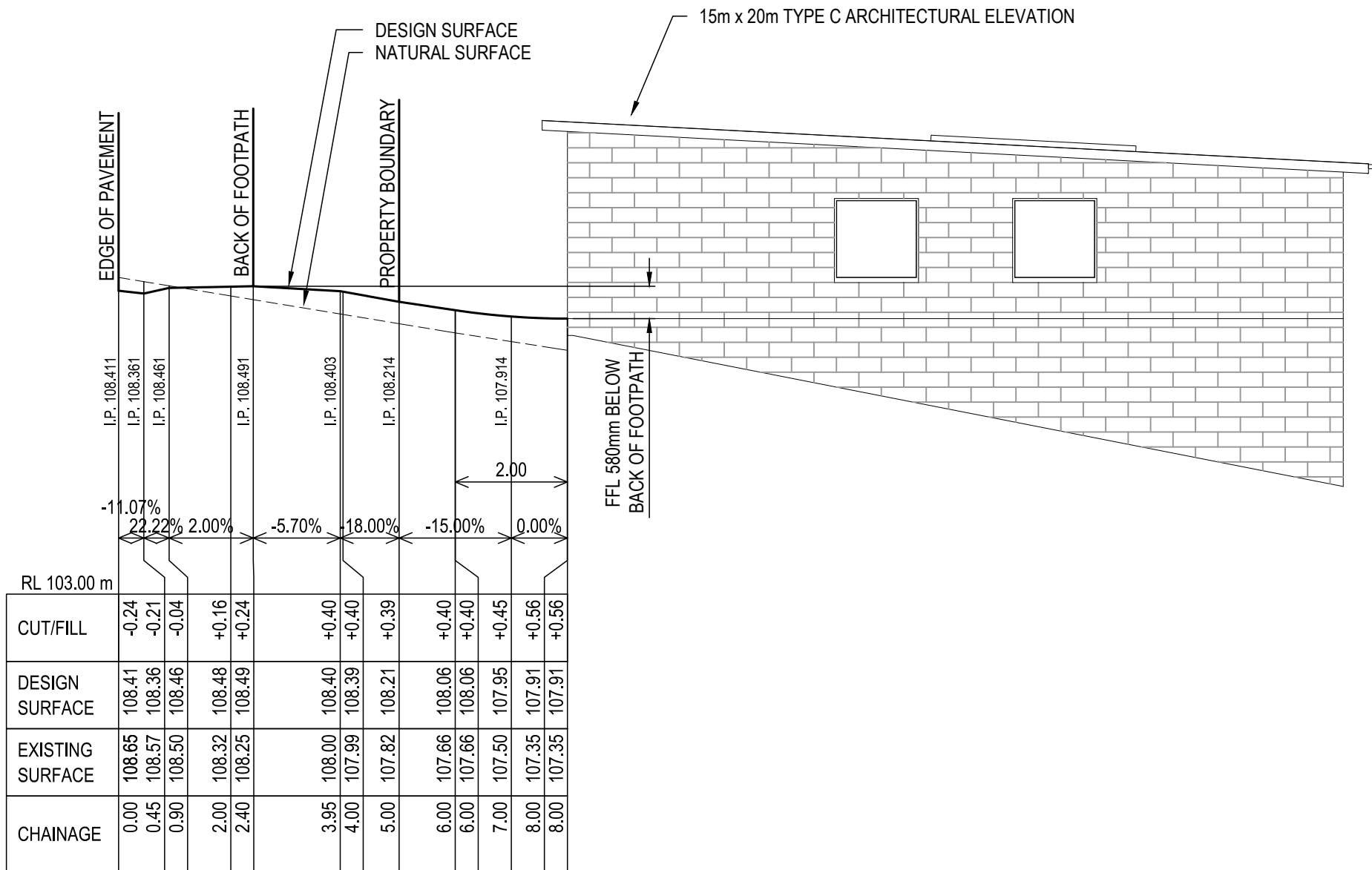
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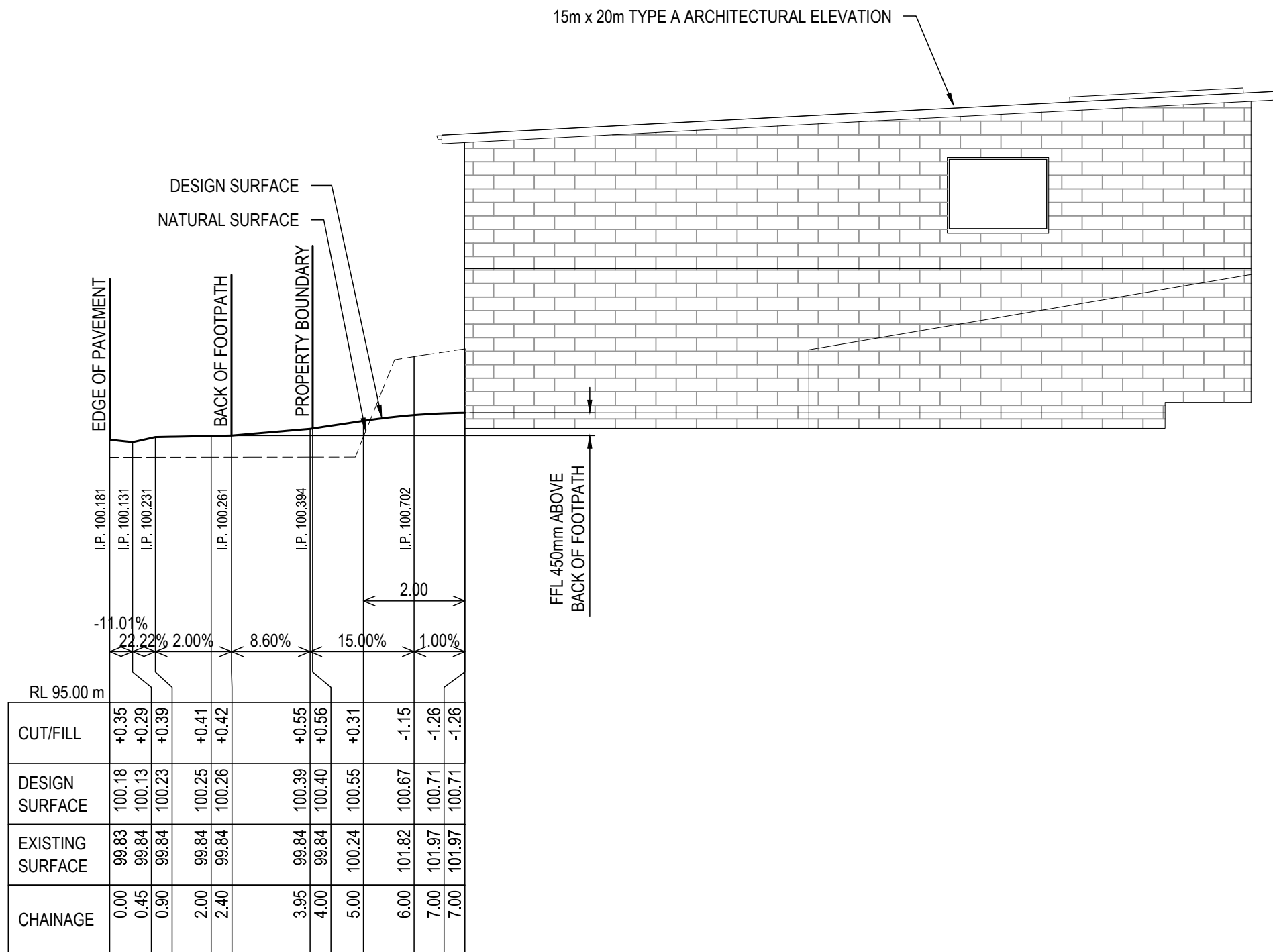
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SCALES: 1:100(H) 1:100(V)



TYPICAL ROAD 4 SOUTHERN DRIVEWAY PROFILE
SCALES: 1:100(H) 1:100(V)



TYPICAL ROAD 4 NORTHERN DRIVEWAY PROFILE
SCALES: 1:100(H) 1:100(V)



TYPICAL ROAD 5 SOUTHERN DRIVEWAY PROFILE
SCALES: 1:100(H) 1:100(V)

DA130/09/2024	FOR APPROVAL
REV	DATE
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PROJECT
471 CAMBRIDGE ROAD
& 540 PASS ROAD

TITLE
DRIVEWAY PROFILES

Accepted CJM (Discipline Head)	Date
Accepted JMB (Team Leader)	Date
Approved CJM (Principal)	Date

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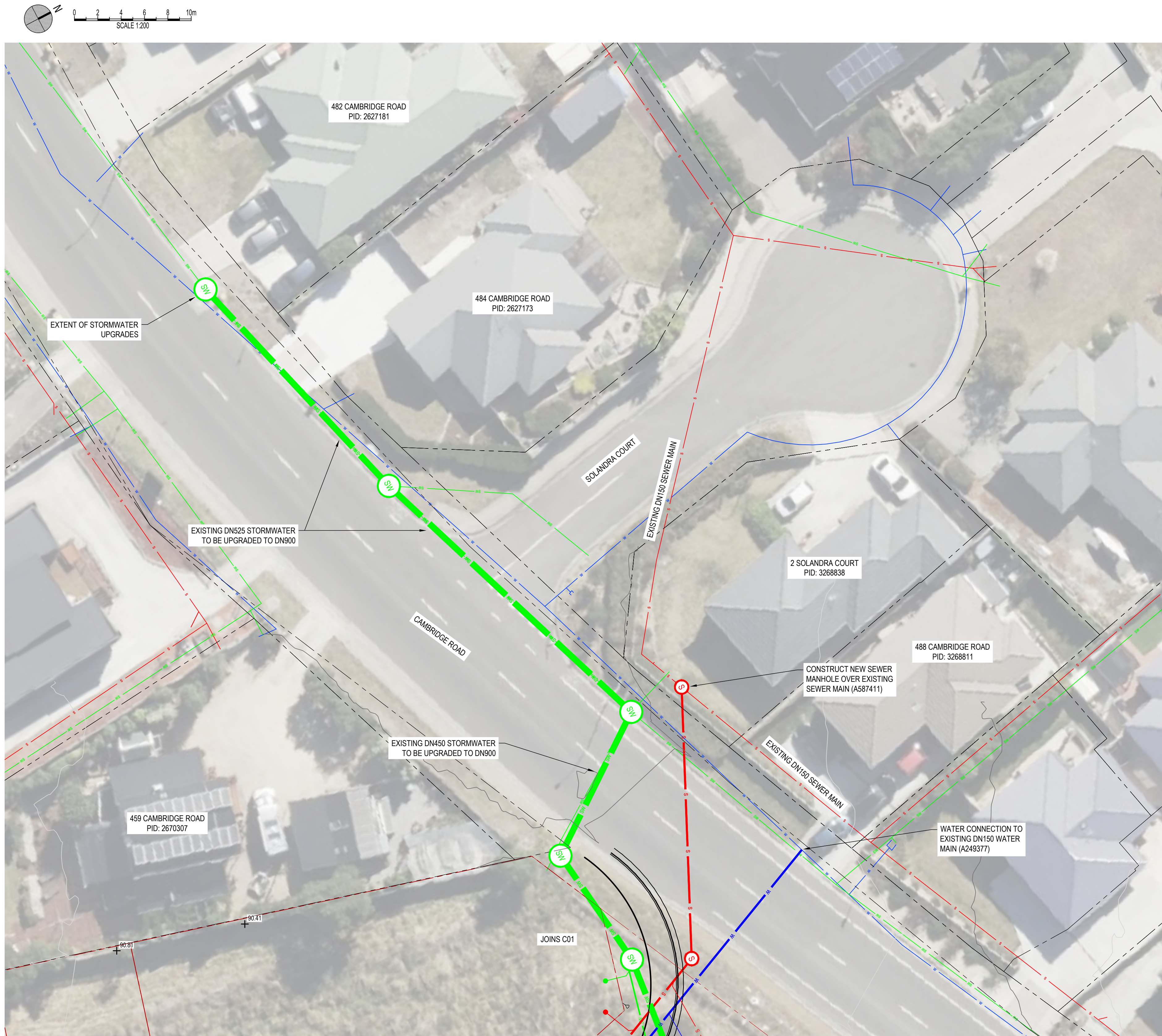
PLOT DETAILS ROAD PROFILES.DWG

PROJECT NO. J220646PL

DWG NO.	REVISION
C06	DA1

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DA130/09/2024	REVISED FOR APPROVAL
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117 Harrington Street, Hobart TAS (03) 6331 2555
Ground Floor, 73 Paterson Street, Launceston (03) 6334 5548
www.jmg.net.au info@jmg.net.au info@jmg.net.au

PROJECT
471 CAMBRIDGE ROAD
& 540 PASS ROAD

TITLE
SERVICES CONNECTIONS
PLAN

Accepted C/M (Discipline Head)	Date
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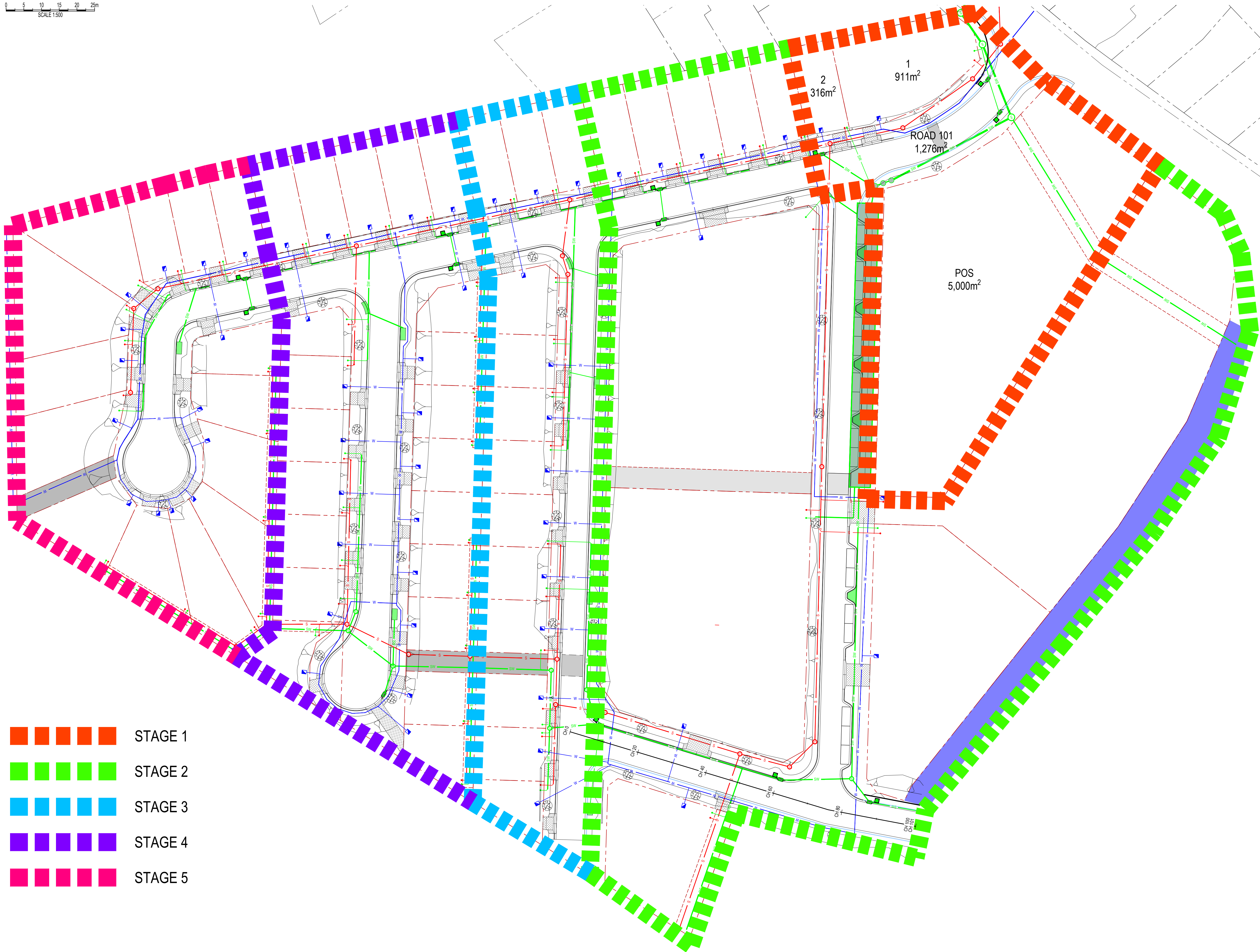
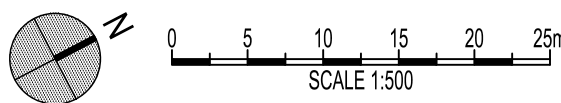
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PROJECT NO. J220646PL

DWG NO.	REVISION
C07	DA2

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- STAGE 1
- STAGE 2
- STAGE 3
- STAGE 4
- STAGE 5

REV	DATE	REMARK
DA129/01/2026		DEVELOPMENT APPLICATION
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Ground Floor, 73 Palston Street, Launceston (03) 6334 5548
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PROJECT
471 CAMBRIDGE ROAD
& 540 PASS ROAD

TITLE
GENERAL ARRANGEMENT

Accepted C/M (Discipline Head)	Date
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APPENDIX B

TasWater Sewerage Advice

Justin Boock

From: Cengia, Anthony <Anthony.Cengia@taswater.com.au>
Sent: Monday, 19 June 2023 9:57 AM
To: Justin Boock
Cc: Matthew Clark
Subject: Sewer Advice: 471 CAMBRIDGE RD, MORNINGTON | SI 2023/00353-CCC [Filed 19 Jun 2023 13:25]
Attachments: image072.emz; image075.emz; Copy of HMR - 1291 - Dev - 471 Cambridge Rd Mornington - SI - analysis.xlsx
Categories: Filed by Mail Manager

Hi Justin,

Advice has now come back for the sewer side of things. The information is pretty comprehensive.

The subdivision was modelled discharging to A585811 in 25 ET increments to assess the impact on the Rosny sewer system. The additional load is transferred via gravity all the way to the STP. The modelling indicates the development will exacerbate existing constraints in the network and cause additional issues. These issues are discussed below.

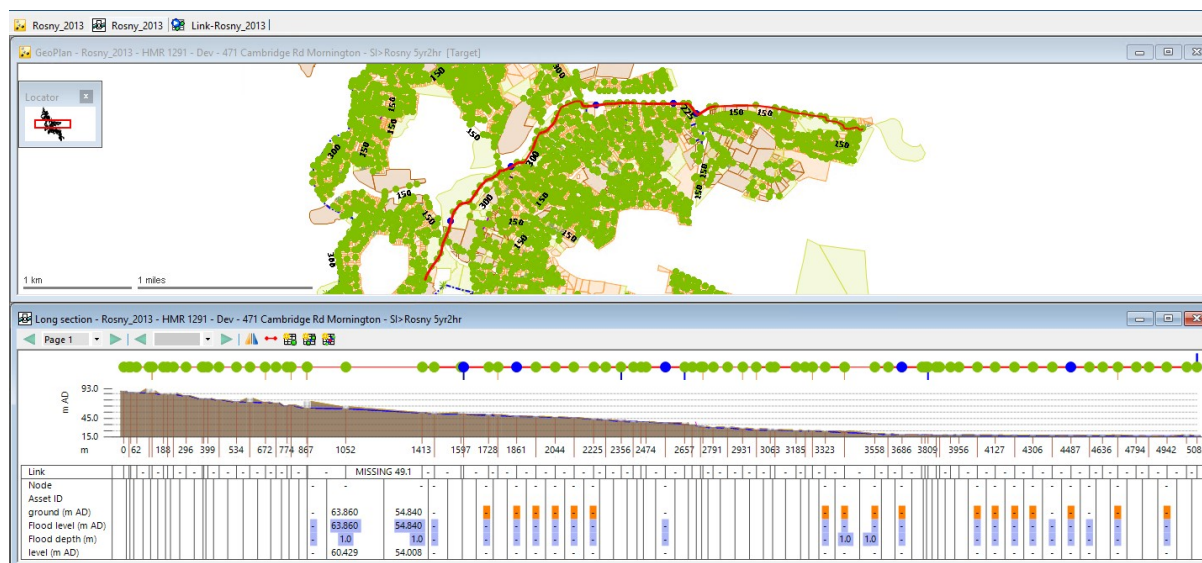


Figure 1 Base scenario log section

Spills and surcharging

Modelling indicates prior to the development there are spills at five locations within the network. This increases to six locations when 50 ET enter the system and seven locations when 75 or more ET enter the system. The maximum volume lost is shown in Table 1. and screenshots of the spill locations are shown later in this document.

Table 1 Spill locations and volumes

Node ID	Asset ID	Base Max Volume lost (m3)	25 ET Max Volume lost (m3)	50 ET Max Volume lost (m3)	75 ET Max Volume lost (m3)	100 ET Max Volume lost (m3)
RSZ15MH22870	A585811	0	0	0	4.8	14.1

RSZ15MH23220	A585989	0	0	0.9	3.9	6.8
RSZ15MH23269	A586019	1.8	9.9	14.7	16	16.8
RSZ15MH25797	A586222	11.9	15.6	18.8	20.1	20.5
RSZ15MH23452	A586074	1.6	1.9	2.1	2.4	2.9
RSZ7MH22064	A592795	20.3	21.4	22.8	23.2	23.5
RSZ15MH20826	A585321	132.3	141.6	151.9	160.8	167.2

TAMGDL05 Water and Sewerage Network Capacity Guidelines state:

For design or peak wet weather flow (PWWF), TW allows existing sewers to be surcharged by 300mm above the obvert of the pipe. Sewers may be surcharged beyond 300mm and up to 1000mm as long as there remains at least 1000mm of freeboard available at all maintenance holes and 'spill points'.

The freeboard of the gravity network was assessed. Modelling indicates there are numerous locations within the network that do not meet the capacity criteria during the base scenario. An additional three locations do not meet the surcharge criteria with 25 ET entering the system. This increases by a further four locations (plus spills) with 50 ET, and one additional location surcharged with 75 or more ET. This is shown in Table 2

Table 2 *Surcharge assessment*

Node ID	Asset ID	Pipe diameter (m)	Freeboard if 300 mm surcharge	Base Freeboard	25 ET Freeboard	50 ET Freeboard	75 ET Freeboard	100 ET Freeboard
RSZ15MH22870	A585811	0.15	0.45	0.855	0.781	0.151	0 (spill)	0 (spill)
RSZ15MH22882	A585817	0.15	0.45	0.857	0.795	0.241	0.09	0.083
RSZ15MH22937	A585841	0.15	0.59	0.993	0.929	0.553	0.447	0.442
RSZ15MH22925	A585833	0.15	0.45	0.827	0.75	0.47	0.38	0.37
RSZ15MH23121	A585933	0.15	0.45	0.826	0.628	0.399	0.357	0.352
RSZ15MH23220	A585989	0.15	0.45	0.825	0.776	0 (spill)	0 (spill)	0 (spill)
RSZ15MH23421	A586067	0.225	0.375	0.471	0.367	0.328	0.318	0.315
RSZ15MH23269	A586019	0.225	0.635	0 (spill)	0 (spill)	0 (spill)	0 (spill)	0 (spill)
RSZ15MH25797	A586222	0.225	0.576	0 (spill)	0 (spill)	0 (spill)	0 (spill)	0 (spill)
RSZ15MH23491	A586086	0.225	1.042	0.821	0.82	0.82	0.82	0.819
RSZ15MH23500	A586090	0.225	0.877	0.901	0.872	0.864	0.838	0.797
RSZ15MH23510	A586092	0.225	1.825	0.135	0.104	0.098	0.073	0.032
RSZ15MH23490	A586085	0.225	1.201	0.141	0.118	0.113	0.095	0.064
RSZ15MH23484	A586085	0.225	0.909	0.479	0.461	0.458	0.443	0.42
RSZ15MH23481	A586081	0.225	0.815	0.706	0.692	0.689	0.678	0.659
RSZ15MH23452	A586074	0.225	0.375	0 (spill)	0 (spill)	0 (spill)	0 (spill)	0 (spill)
RSZ15MH21985	A585477	0.4	0.68	0.562	0.562	0.562	0.562	0.562
RSZ15MH21901	A585457	0.4	0.185	0.074	0.074	0.073	0.073	0.073
RSZ15MH21889	A585454	0.4	0.48	0.336	0.336	0.336	0.336	0.335
RSZ15MH21827	A585430	0.4	0.7	0.466	0.466	0.465	0.465	0.465
RSZ15MH21807	A585426	0.4	1.07	0.716	0.716	0.716	0.716	0.715
RSZ15MH21655	A585391	0.4	1.14	0.718	0.718	0.718	0.718	0.718
RSZ15MH21445	A585368	0.4	1.022	0.58	0.58	0.58	0.58	0.58
RSZ15MH21254	A585346	0.4	0.96	0.475	0.475	0.475	0.475	0.475
RSZ15MH21214	A585340	0.4	0.87	0.383	0.383	0.383	0.383	0.383

Node ID	Asset ID	Pipe diameter (m)	Freeboard if 300 mm surcharge	Base Freeboard	25 ET Freeboard	50 ET Freeboard	75 ET Freeboard	100 ET Freeboard
RSZ15MH21050	A585328	0.4	0.7	0.296	0.296	0.296	0.296	0.296
RSZ15MH20826	A585321	0.4	0.53	0 (spill)	0 (spill)	0 (spill)	0 (spill)	0 (spill)
RSZ15MH20614	A585316	0.4	1.45	0.742	0.742	0.742	0.742	0.742
RSZ15MH20470	A585309	0.4	1.7	0.877	0.877	0.877	0.877	0.877
RSZ15MH20126	A585304	0.4	1.05	0.06	0.06	0.06	0.06	0.06
RSZ15MH20033	A585303	0.4	0.803	-0.277*	-0.277*	-0.278*	-0.277*	-0.277*
RSZ15MH19881	A585301	0.4	0.42	-0.758*	-0.758*	-0.758*	-0.758*	-0.758*
RSZ15MH19604	A585297	0	2.318	0.544	0.544	0.544	0.544	0.544

* Negative freeboard is due to sealed manholes

Mitigation

Modelling indicates that to mitigate the impact of the development, approximately 770m of DN150 pipe will need to be upgraded from the discharge point at A585811 to A586053, where GIS indicates the pipe continues at DN225 or greater. The modelling indicates that 25 ET could be accommodated before this upgrade would be required. This is because although spills aren't indicated until the load increases to 75 ET, unacceptable surcharge is indicated for 50 ET or more.

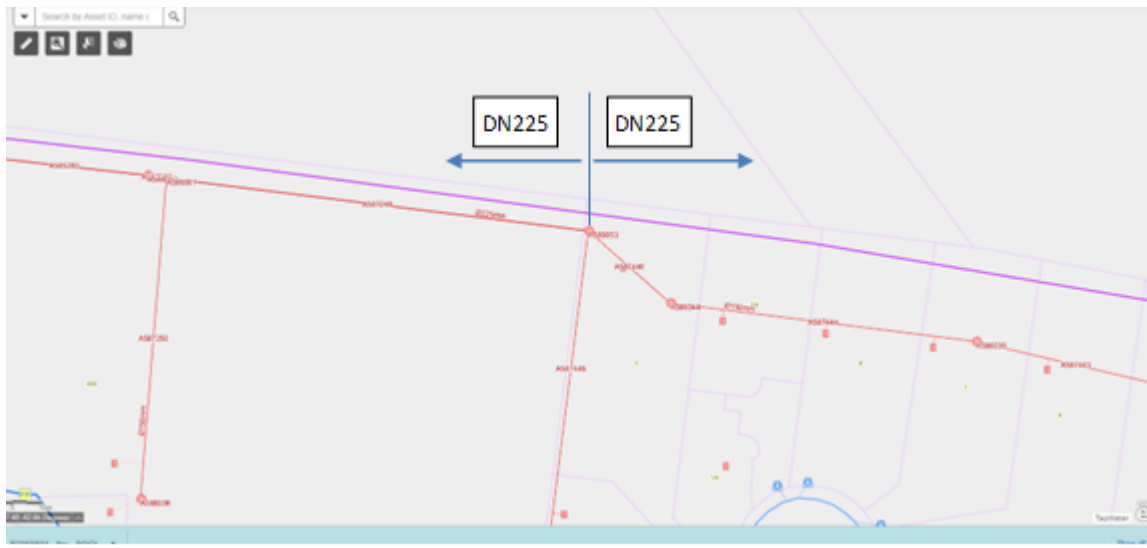


Figure 2 Change in pipe diameters, as indicated by GIS

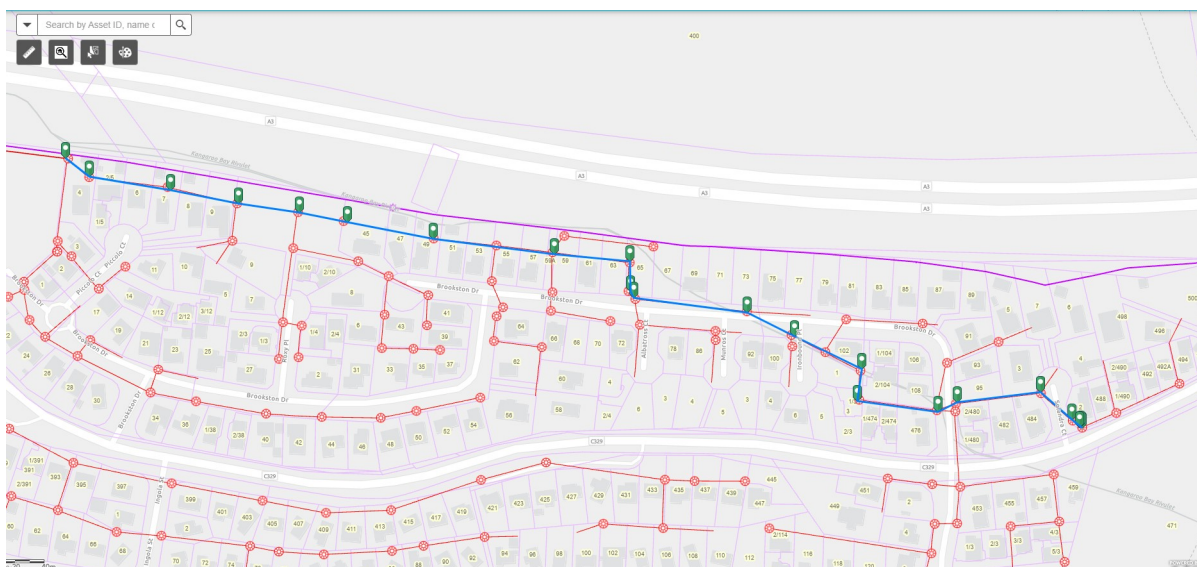


Figure 3 Length of main to blue mitigation (approx. 770 m)

Different lengths of DN225 upsizing were modelled to minimise the length of upgrade required, but each time the model indicated either unacceptable surge in the network, or spills at the point of discharge for loads greater than 25 ET. This is shown in the tables below.

Table 3 – Mitigation trial 1 surge results (DN225 is the mitigation pipe)

Node ID	Asset ID	Pipe diameter (m)	Freeboard if 300 mm surge (m)	25 ET Mitigation trial 1 - Freeboard	50 ET Mitigation trial 1 - Freeboard	75 ET Mitigation trial 1 - Freeboard	100 ET Mitigation trial 1 - Freeboard
RSZ15MH22900	A585824	0.15	0.45	0.872	0.872	0.872	0.872
RSZ15MH22870	A585811	0.15	0.45	0.781	0.151	0	0
RSZ15MH22882	A585817	0.15	0.45	0.795	0.241	0.09	0.083
RSZ15MH22937	A585841	0.15	0.59	0.929	0.553	0.447	0.442
RSZ15MH22920	A585831	0.15	6.24	6.626	6.6	6.594	6.594
RSZ15MH22908	A585827	0.15	3.95	4.254	4.091	3.926	3.906
RSZ15MH22925	A585833	0.15	0.45	0.75	0.47	0.38	0.37
RSZ15MH22977	A585862	0.15	2.66	2.965	2.71	2.658	2.652
RSZ15MH23008	A585877	0.15	2.55	2.915	2.89	2.886	2.886
RSZ15MH23087	A585913	0.15	0.45	0.832	0.794	0.781	0.779
RSZ15MH23109	A585926	0.15	0.45	0.815	0.543	0.485	0.479
RSZ15MH23121	A585933	0.15	0.45	0.628	0.399	0.357	0.352
RSZ15MH23173	A585966	0.15	1	1.203	1.169	1.165	1.165
RSZ15MH23197	A585977	0.15	0.45	0.823	0.798	0.795	0.794
RSZ15MH23220*	A585989*	0.225*	0.375	0.81*	0.79*	0.788*	0.787*
RSZ15MH23257	A586010	0.225	5.975	6.411	6.391	6.388	6.388
RSZ15MH23300	A586032	0.225	1.075	1.514	1.495	1.493	1.492
RSZ15MH23320	A586039	0.225	0.375	0.846	0.837	0.835	0.835

Node ID	Asset ID	Pipe diameter (m)	Freeboard if 300 mm surcharge (m)	25 ET Mitigation trial 1 - Freeboard	50 ET Mitigation trial 1 - Freeboard	75 ET Mitigation trial - Freeboard	100 ET Mitigation trial 1 - Freeboard
RSZ15MH23340	A586044	0.225	0.375	0.812	0.793	0.79	0.79
RSZ15MH23370	A587446?	0.225	2.165	2.623	2.612	2.61	2.61

* Spill eliminated from this location

Table 4 – Mitigation trial 1 spill results (DN225 is the mitigation pipe)

Node ID	Asset ID	Pipe diameter (m)	25 ET Mitigation trial 1 - Max Volume lost (m3)	50 ET Mitigation trial 1 - Max Volume lost (m3)	75 ET Mitigation trial - Max Volume lost (m3)	100 ET Mitigation trial 1 - Max Volume lost (m3)
RSZ15MH22900	A585824	0.15	0	0	0	0
RSZ15MH22870	A585811	0.15	0	0	4.8	14.1
RSZ15MH22882	A585817	0.15	0	0	0	0
RSZ15MH22937	A585841	0.15	0	0	0	0
RSZ15MH22920	A585831	0.15	0	0	0	0
RSZ15MH22908	A585827	0.15	0	0	0	0
RSZ15MH22925	A585833	0.15	0	0	0	0
RSZ15MH22977	A585862	0.15	0	0	0	0
RSZ15MH23008	A585877	0.15	0	0	0	0
RSZ15MH23087	A585913	0.15	0	0	0	0
RSZ15MH23109	A585926	0.15	0	0	0	0
RSZ15MH23121	A585933	0.15	0	0	0	0
RSZ15MH23173	A585966	0.15	0	0	0	0
RSZ15MH23197	A585977	0.15	0	0	0	0
RSZ15MH23220*	A585989*	0.225*	0	*0	*0	0*
RSZ15MH23257	A586010	0.225	0	0	0	0
RSZ15MH23300	A586032	0.225	0	0	0	0
RSZ15MH23320	A586039	0.225	0	0	0	0
RSZ15MH23340	A586044	0.225	0	0	0	0
RSZ15MH23370	A587446?	0.225	0	0	0	0

* Spill eliminated from this location

Table 5 – Mitigation trial 2 results (DN225 is the mitigation pipe)

Node ID	Asset ID	Pipe diameter (m)	Freeboard if 300 mm surcharge (m)	50 ET Mitigation trial 2 - Freeboard	75 ET Mitigation trial 2 - Freeboard	100 ET Mitigation trial 2 - Freeboard	50 ET Mitigation trial 2 - Max Volume lost (m3)	75 ET Mitigation trial 2 - Max Volume lost (m3)	100 ET Mitigation trial 2 - Max Volume lost (m3)
RSZ15MH22900	A585824	0.15	0.45	0.872	0.872	0.872	0	0	0
RSZ15MH22870	A585811	0.15	0.45	0.151	0	0	0	4.8	14.1
RSZ15MH22882	A585817	0.15	0.45	0.241	0.09	0.083	0	0	0
RSZ15MH22937	A585841	0.15	0.59	0.553	0.447	0.442	0	0	0

Node ID	Asset ID	Pipe diameter (m)	Freeboard if 300 mm surcharge (m)	50 ET Mitigation trial 2 - Freeboard	75 ET Mitigation trial 2 - Freeboard	100 ET Mitigation trial 2 - Freeboard	50 ET Mitigation trial 2 - Max Volume lost (m3)	75 ET Mitigation trial 2 - Max Volume lost (m3)	100 ET Mitigation trial 2 - Max Volume lost (m3)
RSZ15MH22920	A585831	0.15	6.24	6.6	6.594	6.594	0	0	0
RSZ15MH22908	A585827	0.225	3.875	4.31	4.308	4.308	0	0	0
RSZ15MH22925	A585833	0.225	0.375	0.79	0.786	0.785	0	0	0
RSZ15MH22977	A585862	0.225	2.585	3.001	2.998	2.997	0	0	0
RSZ15MH23008	A585877	0.225	2.475	2.916	2.913	2.913	0	0	0
RSZ15MH23087	A585913	0.225	0.375	0.829	0.827	0.827	0	0	0
RSZ15MH23109	A585926	0.225	0.375	0.824	0.822	0.822	0	0	0
RSZ15MH23121	A585933	0.225	0.375	0.788	0.783	0.783	0	0	0
RSZ15MH23173	A585966	0.225	0.925	1.365	1.362	1.362	0	0	0
RSZ15MH23197	A585977	0.225	0.375	0.82	0.818	0.818	0	0	0
RSZ15MH23220	A585989	0.225	0.375	0.788	0.784	0.783	0	0	0
RSZ15MH23257	A586010	0.225	5.975	6.388	6.385	6.384	0	0	0
RSZ15MH23300	A586032	0.225	1.075	1.493	1.489	1.489	0	0	0
RSZ15MH23320	A586039	0.225	0.375	0.835	0.834	0.833	0	0	0
RSZ15MH23340	A586044	0.225	0.375	0.79	0.786	0.786	0	0	0
RSZ15MH23370	A587446?	0.225	2.165	2.609	2.607	2.607	0	0	0

Table 6 – Mitigation trial 3 results (DN225 is the mitigation pipe)

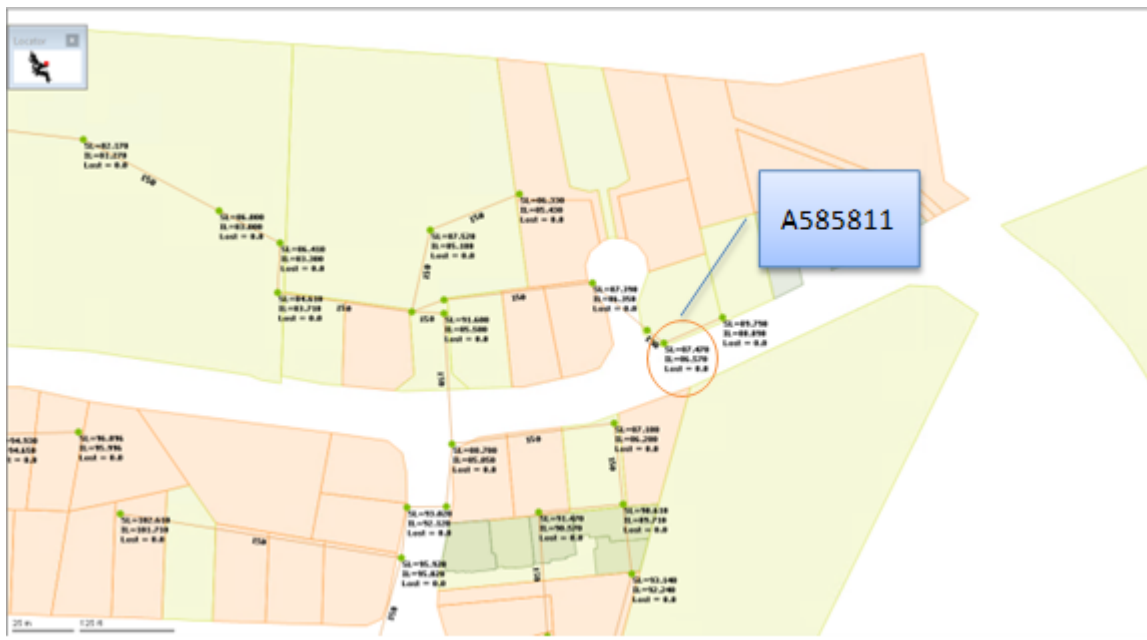
Node ID	Asset ID	Pipe diameter (m)	Freeboard if 300 mm surcharge (m)	50 ET Mitigation trial 3- Freeboard	75 ET Mitigation trial 3- Freeboard	100 ET Mitigation trial 3- Freeboard	50 ET Mitigation trial 3- Max Volume lost (m3)	75 ET Mitigation trial 3- Max Volume lost (m3)	100 ET Mitigation trial 3- Max Volume lost (m3)
RSZ15MH22900	A585824	0.15	0.45	0.872	0.872	0.872	0	0	0
RSZ15MH22870	A585811	0.225	0.375	0.78	0.74	0.69	0	0	0
RSZ15MH22882	A585817	0.225	0.375	0.788	0.757	0.72	0	0	0
RSZ15MH22937	A585841	0.225	0.515	0.928	0.893	0.831	0	0	0
RSZ15MH22920	A585831	0.225	6.165	6.617	6.603	6.392	0	0	0
RSZ15MH22908	A585827	0.225	3.875	4.308	4.292	4.237	0	0	0
RSZ15MH22925	A585833	0.225	0.375	0.786	0.747	0.711	0	0	0
RSZ15MH22977	A585862	0.225	2.585	2.998	2.961	2.927	0	0	0
RSZ15MH23008	A585877	0.225	2.475	2.913	2.899	2.888	0	0	0
RSZ15MH23087	A585913	0.225	0.375	0.828	0.816	0.808	0	0	0
RSZ15MH23109	A585926	0.225	0.375	0.822	0.81	0.8	0	0	0
RSZ15MH23121	A585933	0.225	0.375	0.784	0.752	0.724	0	0	0
RSZ15MH23173	A585966	0.225	0.925	1.362	1.348	1.297	0	0	0
RSZ15MH23197	A585977	0.225	0.375	0.818	0.805	0.795	0	0	0
RSZ15MH23220	A585989	0.225	0.375	0.784	0.759	0.738	0	0	0

Node ID	Asset ID	Pipe diameter (m)	Freeboard if 300 mm surcharge (m)	50 ET Mitigation trial 3- Freeboard	75 ET Mitigation trial 3- Freeboard	100 ET Mitigation trial 3- Freeboard	50 ET Mitigation trial 3- Max Volume lost (m3)	75 ET Mitigation trial 3- Max Volume lost (m3)	100 ET Mitigation trial 3- Max Volume lost (m3)
RSZ15MH23257	A586010	0.225	5.975	6.385	6.361	6.341	0	0	0
RSZ15MH23300	A586032	0.225	1.075	1.489	1.456	1.424	0	0	0
RSZ15MH23320	A586039	0.225	0.375	0.834	0.824	0.817	0	0	0
RSZ15MH23340	A586044	0.225	0.375	0.786	0.758	0.734	0	0	0
RSZ15MH23370	A587446?	0.225	2.165	2.607	2.595	2.586	0	0	0

Spill location screen shots

Asset ID: A585811 (Legacy ID RSZ15MH22870)

Modelling indicates manhole asset ID A58511 spills when 75 ET enter the system. The spill volume increases when 100 ET enter the system. Surcharging also increases in the network with the increased load.



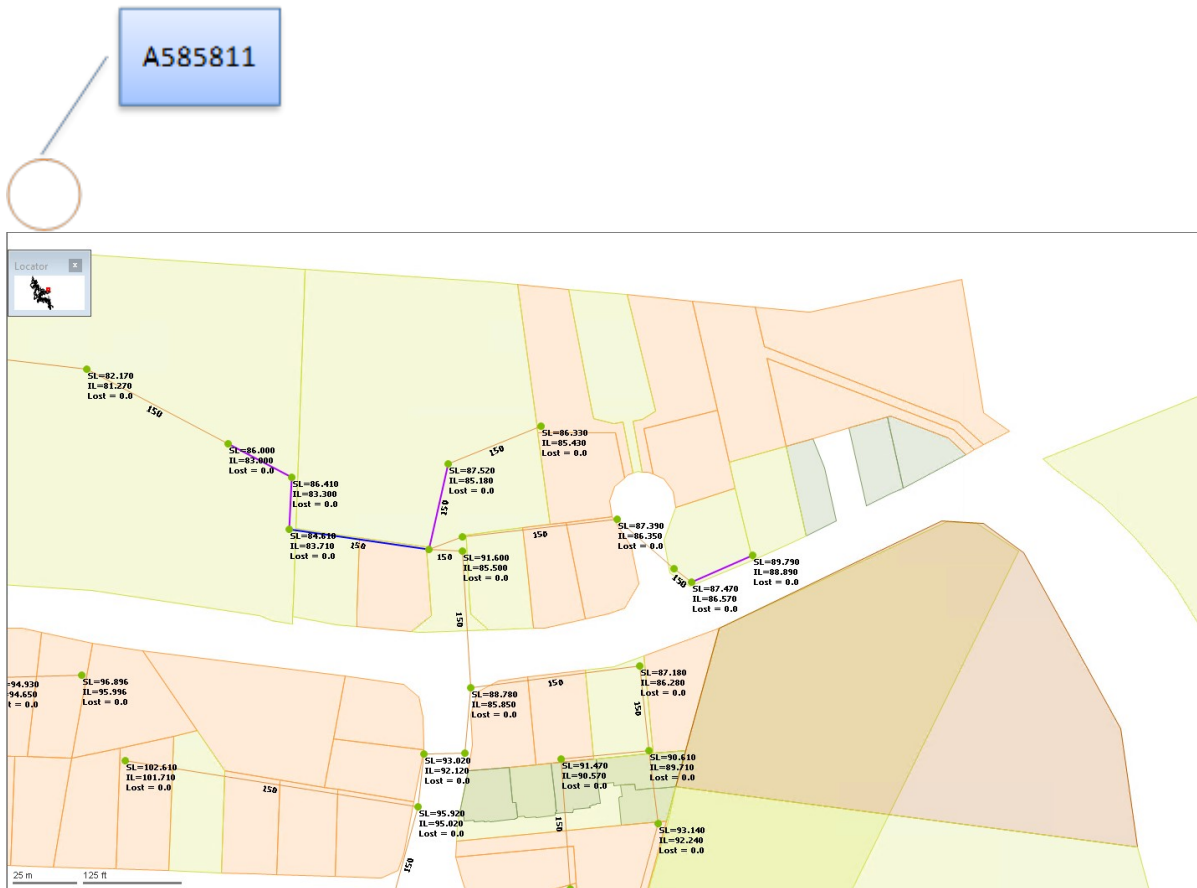


Figure 6: 25 ET

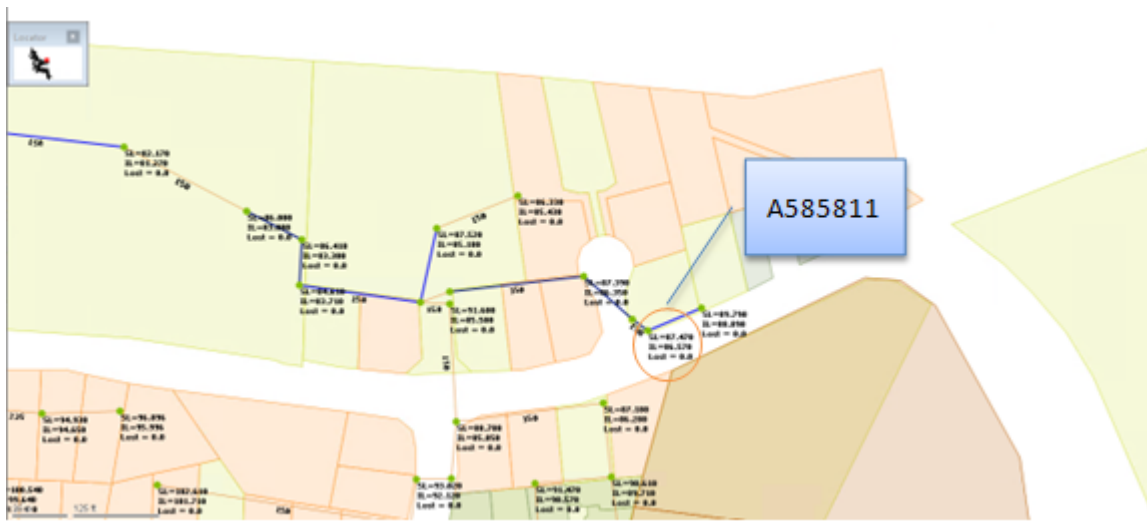


Figure 7: 50 ET

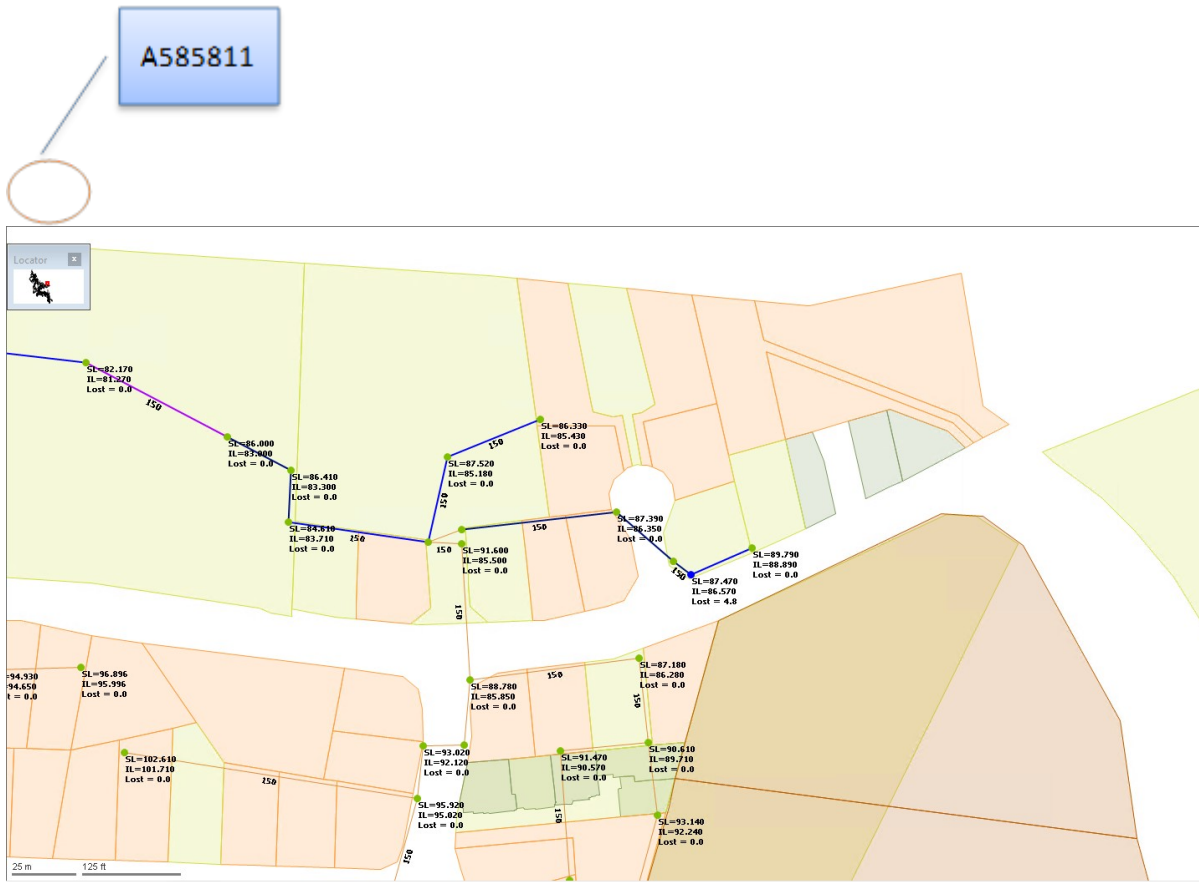


Figure 8: 75 ET - spill

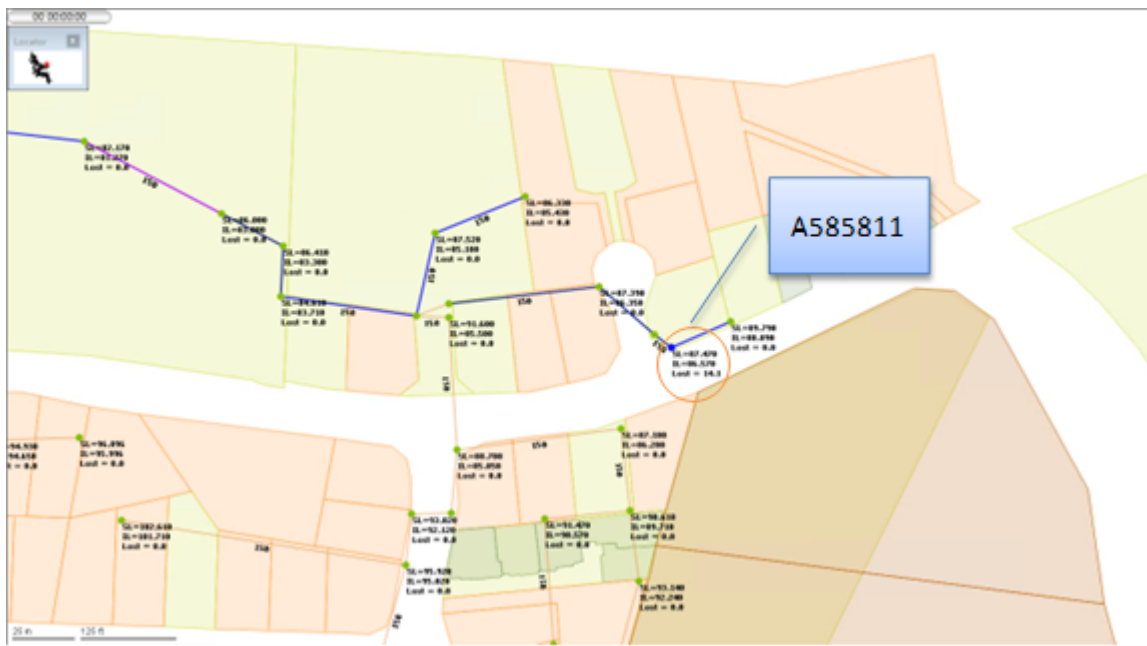


Figure 9: 100 ET - spill

Asset ID: A585989 (legacy ID RSZ15MH23220)

Modelling indicates that manhole asset ID A585989 spills when 50 ET enter the system. The spill volume increases with each subsequent increase of 25 ET. Surcharging in the network also increases with the increased load.



Figure 10: Base

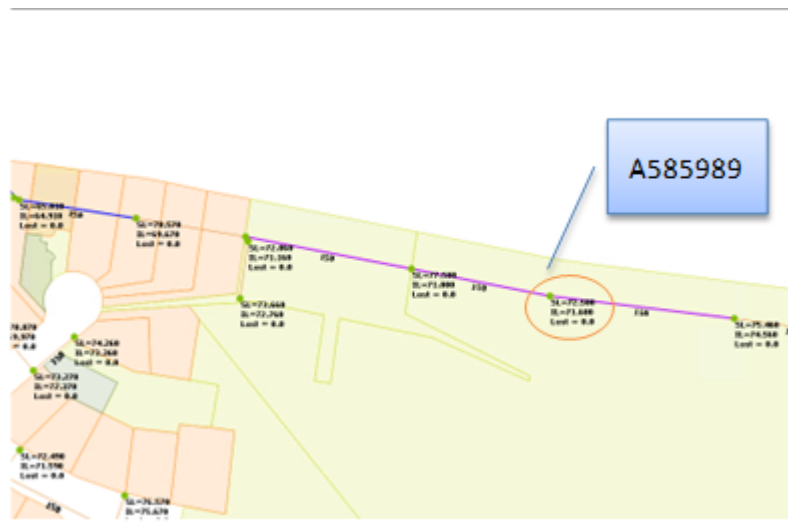


Figure 11: 25 ET

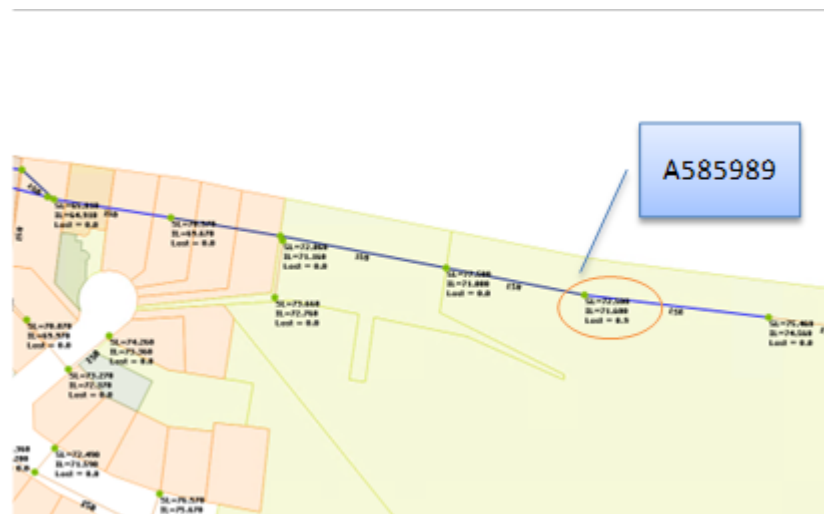


Figure 12: 50 ET – spill (just)



Figure 13: 75 ET – spill

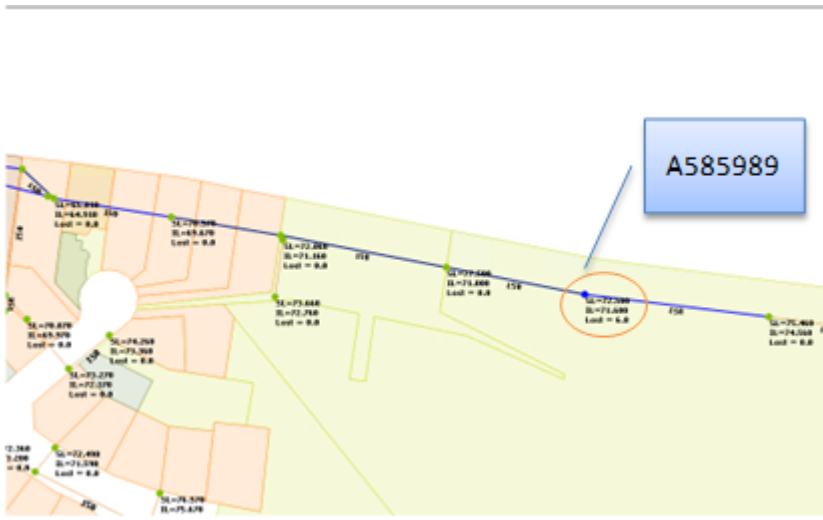


Figure 14: 100 ET – spill

Asset ID Asset ID A586019 (legacy ID RSZ15MH23269) and A586222 (legacy ID RSZ15MH25797)

Modelling indicates that both manhole asset ID A586067 and A586019 spill during the base case scenario. The spill volume increases with each subsequent increase of 25 ET. Surcharging in the network also increases with the increased load.

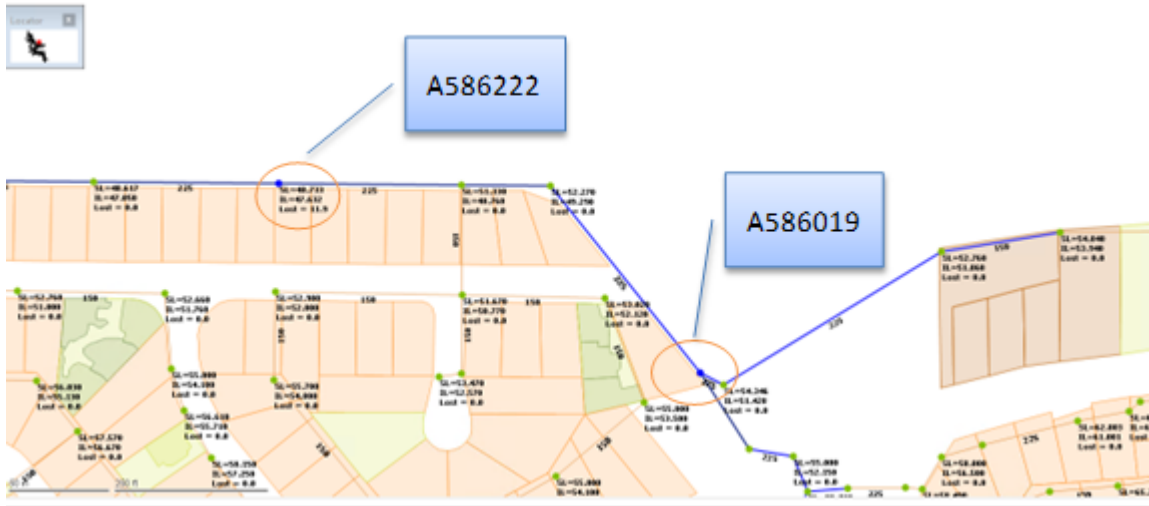


Figure 15: Base – spill

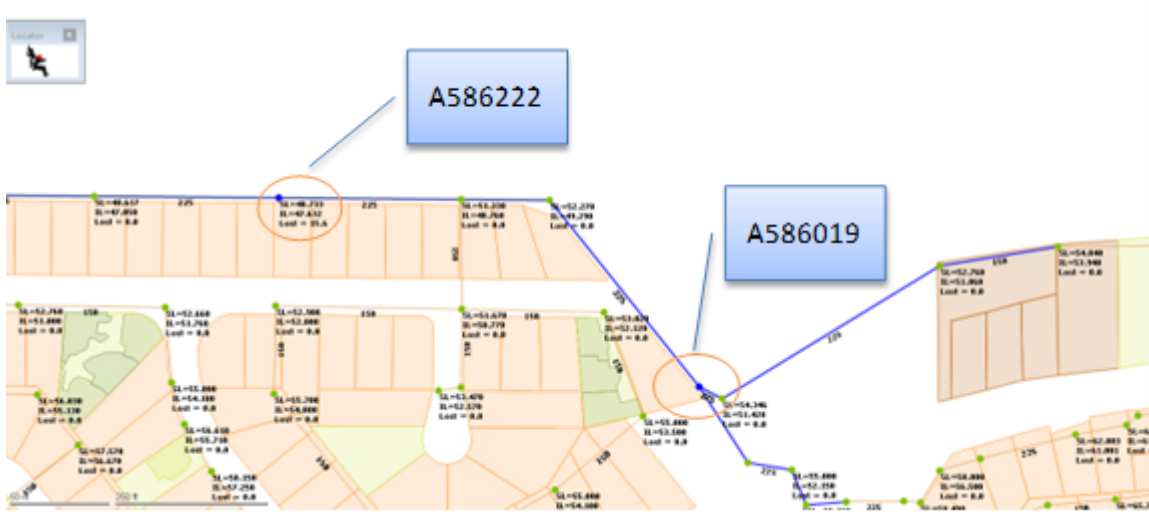


Figure 16: 25 ET – spill

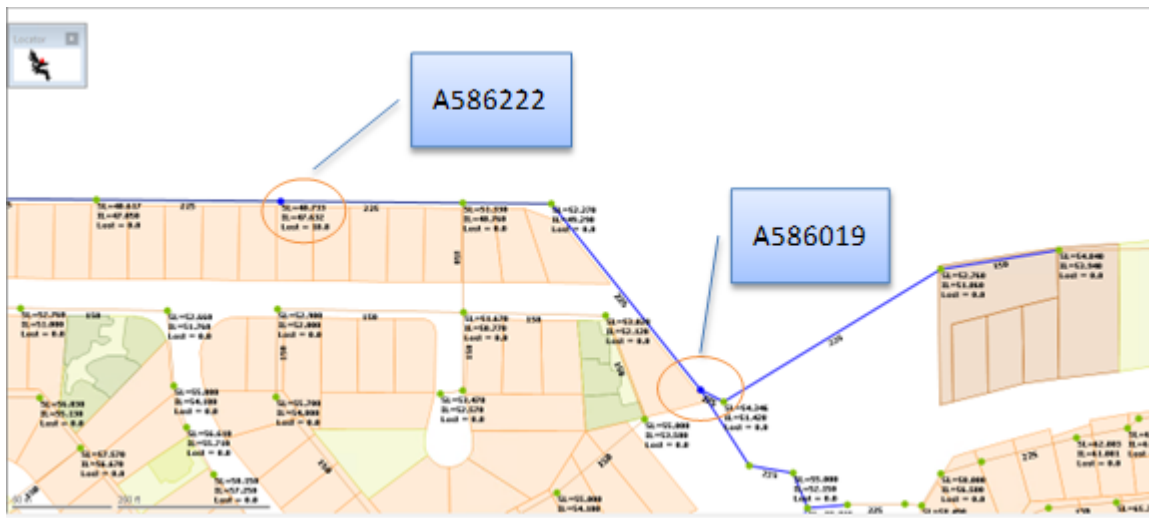


Figure 17: 50 ET – spill

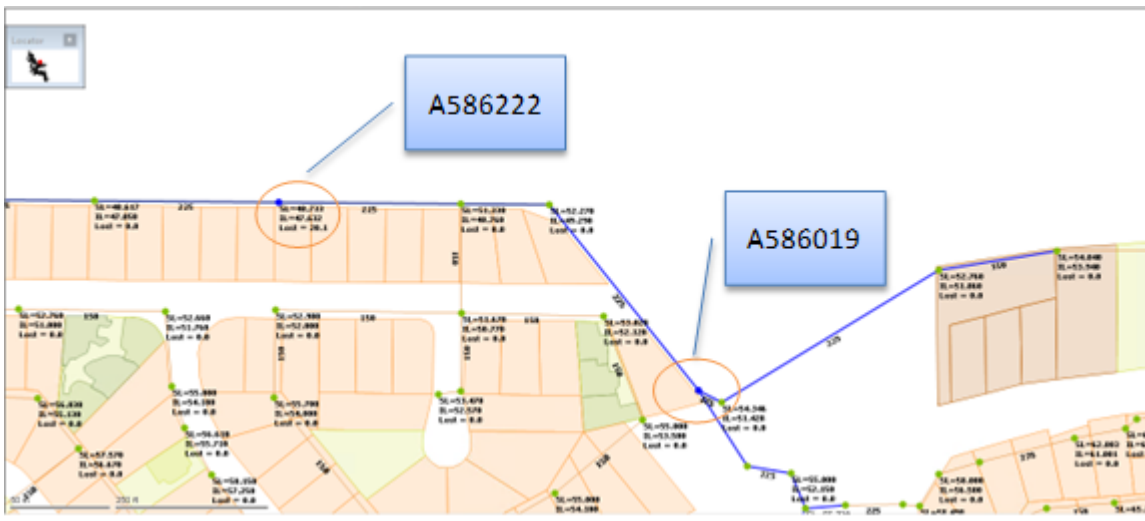


Figure 18: 75 ET – spill

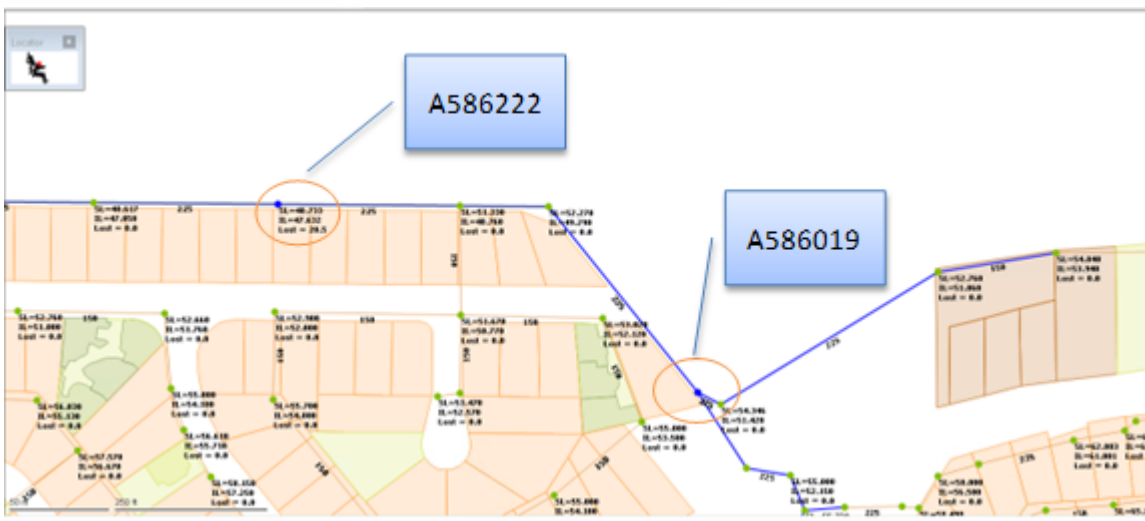


Figure 19: 100 ET - spill

Asset ID Asset ID A586074 (legacy ID RSZ15MH23452)

Modelling indicates that manhole asset ID A586074 spills during the base case scenario. The spill volume increases with each subsequent increase of 25 ET. Surcharging in the network also increases with the increased load.

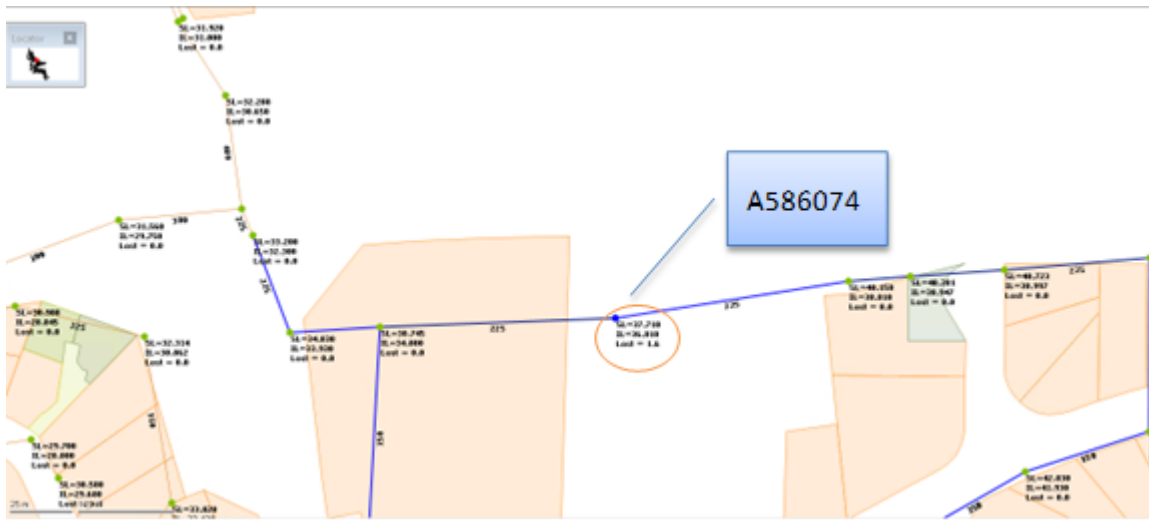


Figure 20: Base – spill

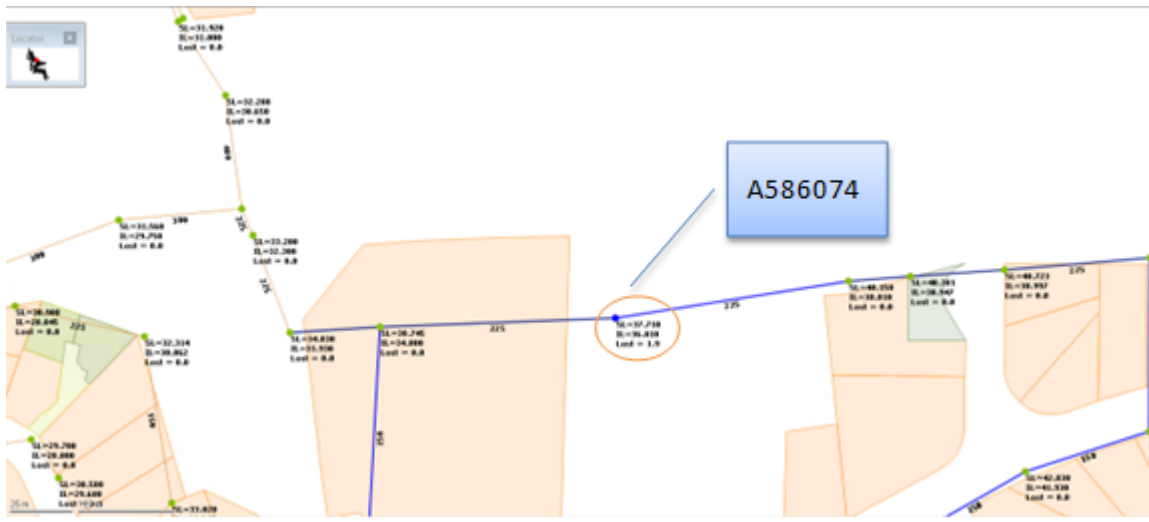


Figure 21: 25 ET – spill

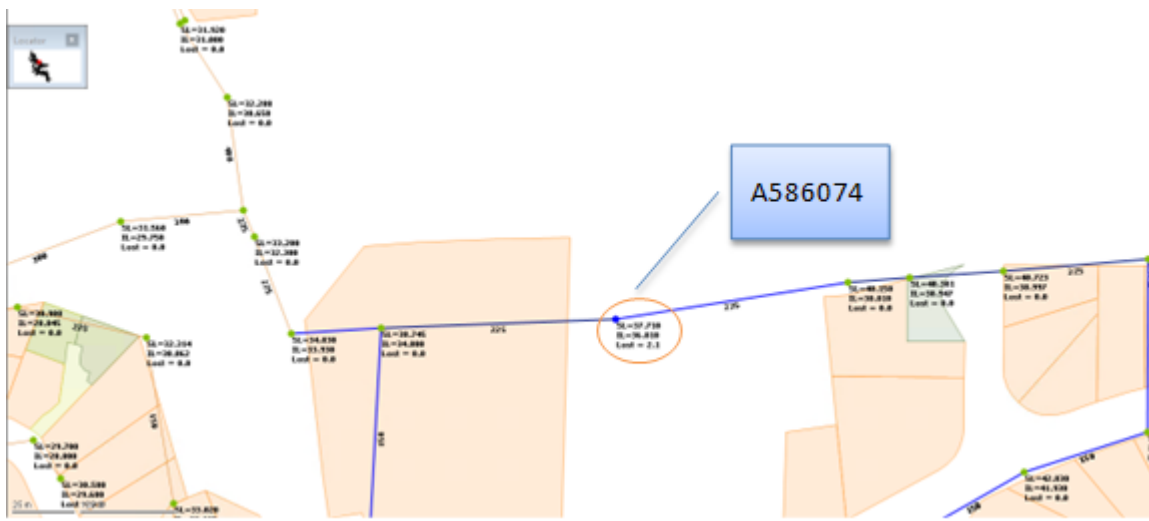


Figure 22: 50 ET – spill

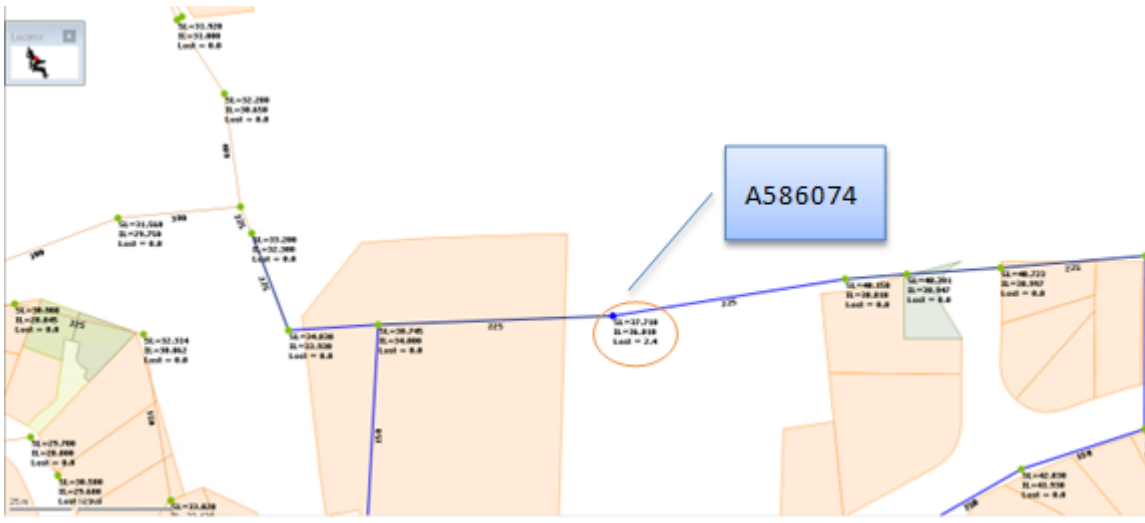


Figure 23: 75 ET – spill

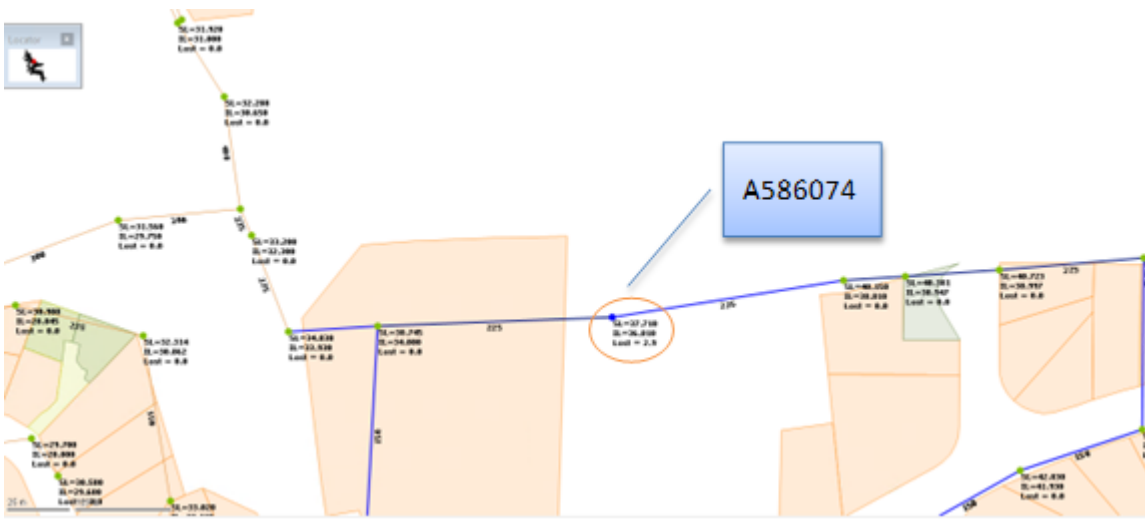


Figure 24: 100 ET - spill

Asset ID A592795 (Legacy ID RSZ7MH22064)

Modelling indicates that manhole asset ID A592795 spills during the base case scenario. The spill volume increases with each subsequent increase of 25 ET. Surcharging in the network also increases with the increased load.

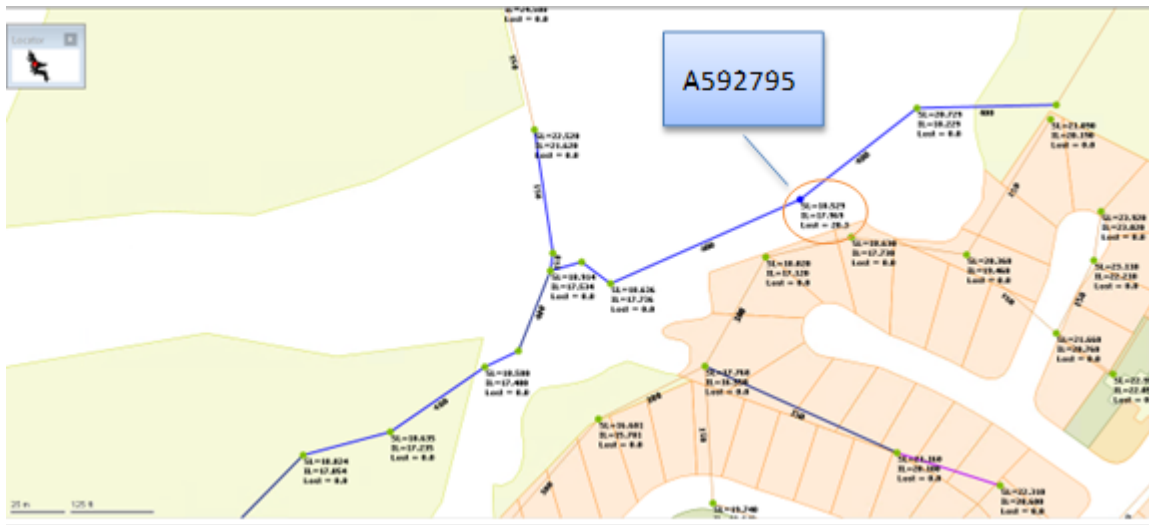


Figure 25: Base – spill

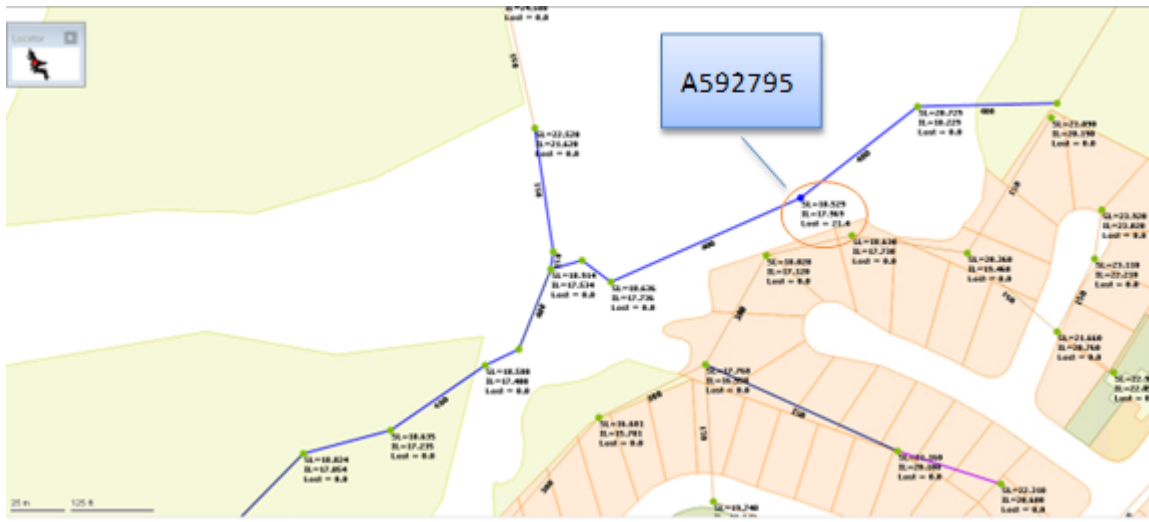


Figure 26: 25 ET – spill

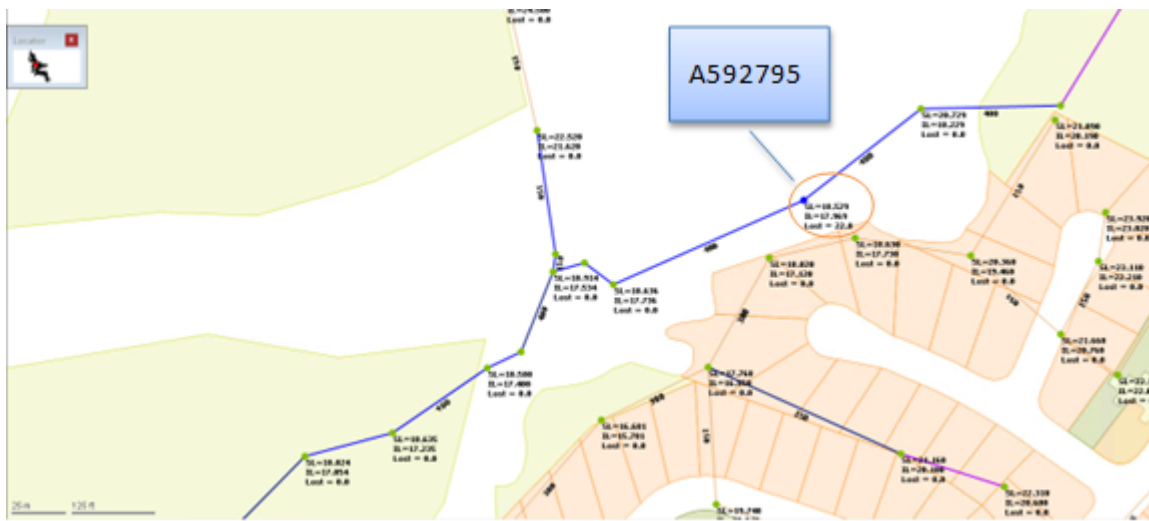


Figure 27: 50 ET – spill

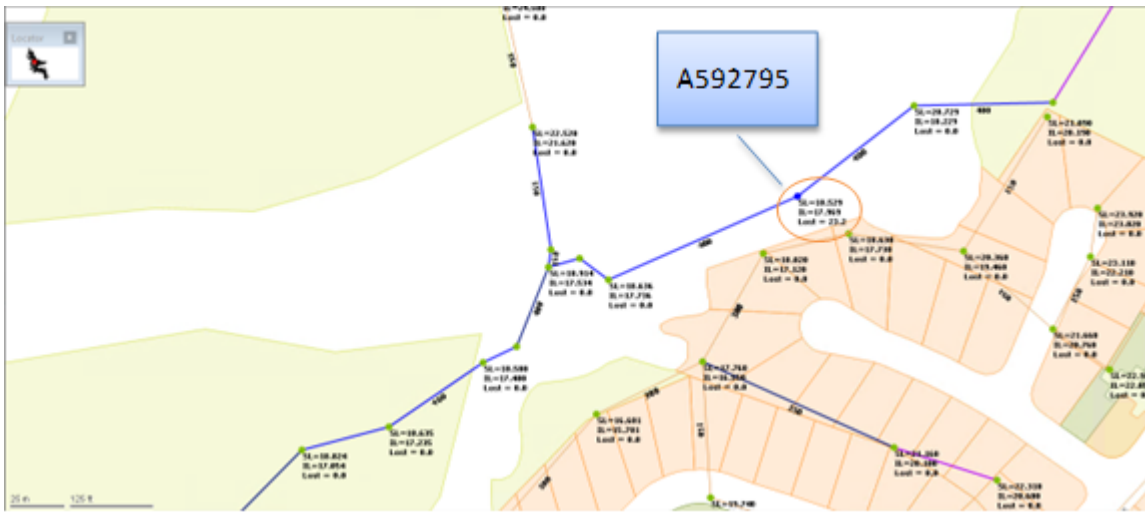


Figure 28: 75 ET – spill

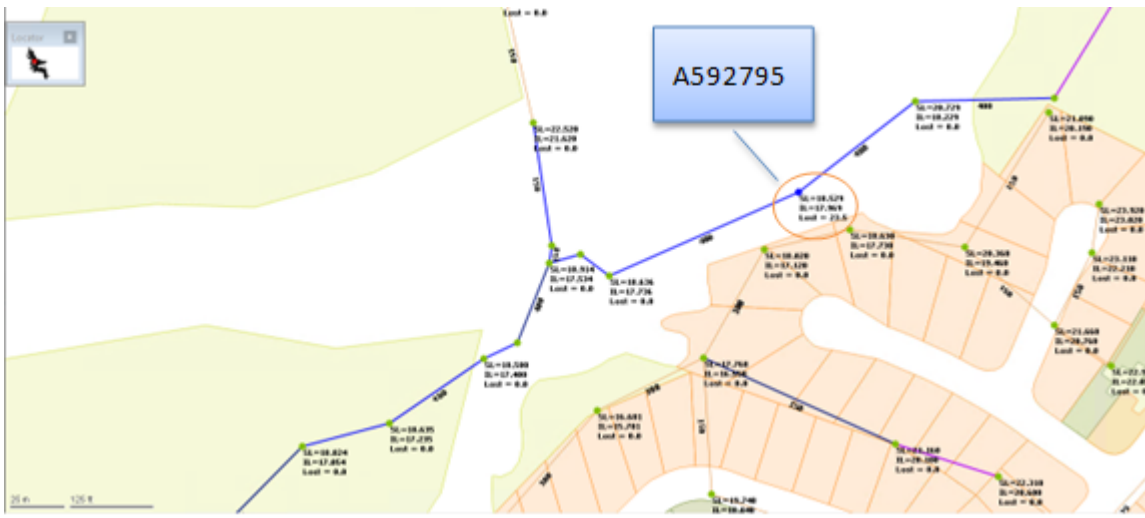


Figure 29: 100 ET - spill

Asset ID A585321 (Legacy ID RSZ15MH20826)

Modelling indicates that manhole asset ID A585321 spills during the base case scenario. The spill volume increases with each subsequent increase of 25 ET. Surcharging in the network also increases with the increased load.

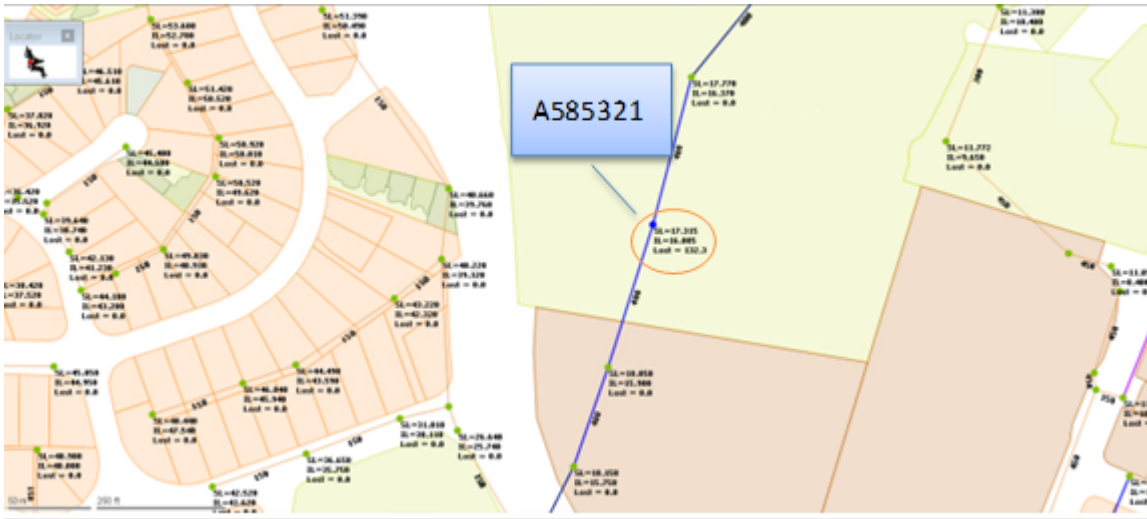


Figure 30: Base – spill

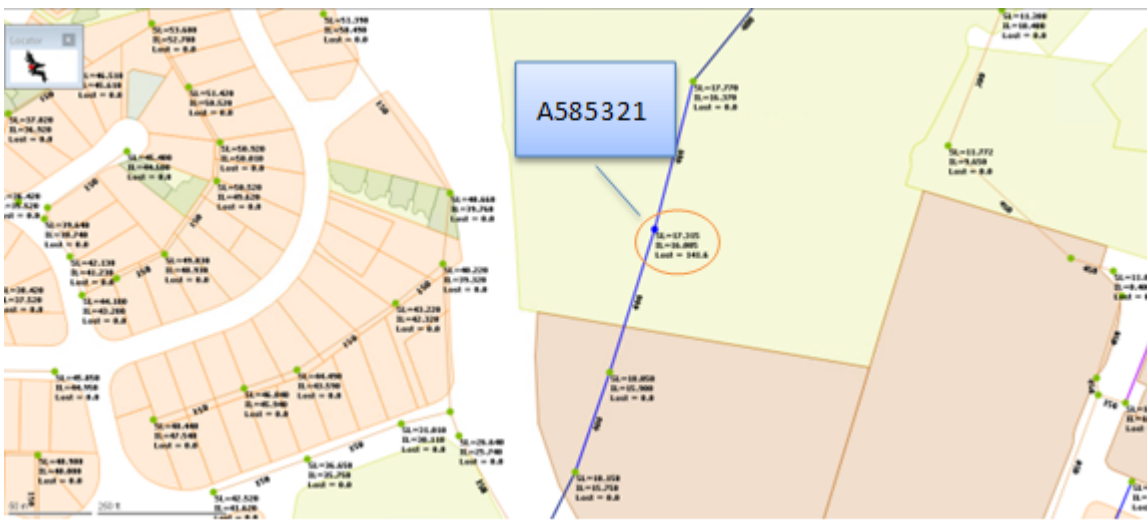


Figure 31: 25 ET – spill

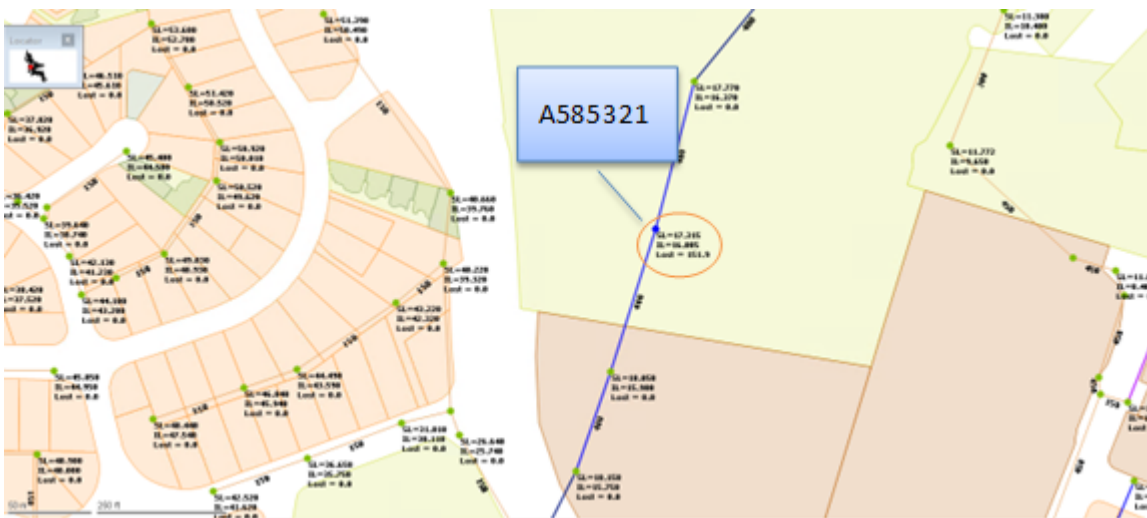


Figure 32: 50 ET – spill

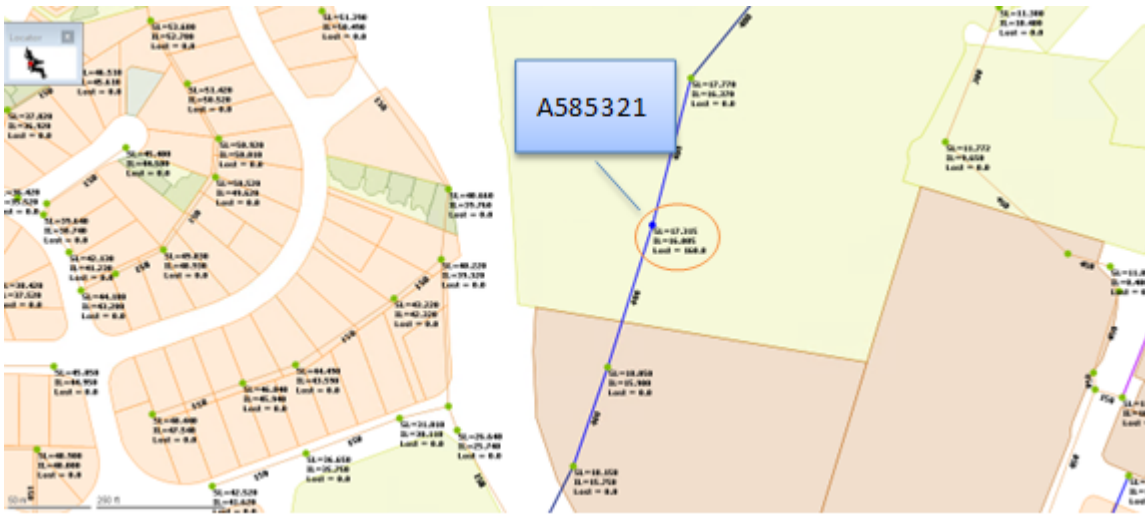


Figure 33: 75 ET – spill

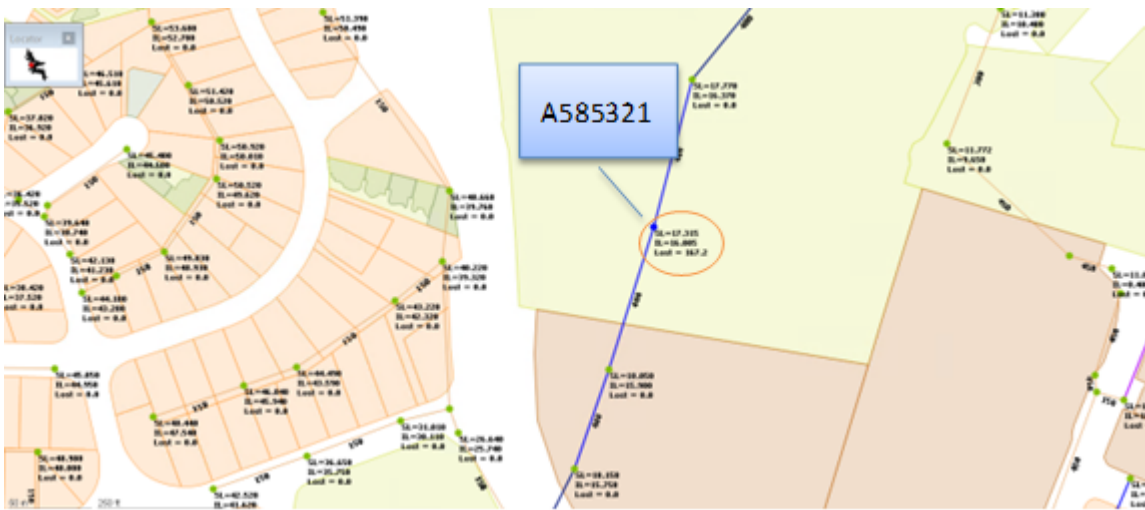


Figure 34: 100 ET - spill

The subdivision was modelled discharging to A585811 in 25 ET increments to assess the impact on the Rosny sewer system. The additional load is transferred via gravity all the way to the STP. The modelling indicates the development will exacerbate existing constraints in the network and cause additional issues. These issues are discussed below. It will be a requirement of the developer to design the necessary upgrades of the downstream network to cater for the development and in sequence with the ET trigger points. Obviously we made things simplistic with ¼ ET points, but this will hopefully provide enough information for the developer to target their staging to suit necessary cash flow etc.

Approx 770 m of main will need upsizing from DN150 to DN225, from the point the development discharges into our system at DN150 to where the pipe increases to DN225 . We modelled two scenarios with shorter lengths being upsized, but it wasn't enough to mitigate the full impact of the development.

Regards,

Anthony Cengia

Development Engineering Technical Specialist

M 0474 933 293
F 1300 862 066
A GPO Box 1393, Hobart TAS 7001
169 Main Road, Moonah, TAS 7009
E anthony.cengia@taswater.com.au
W <http://www.taswater.com.au/>

Have I been helpful? Please provide feedback by clicking [here](#).



From: Justin Boocock <jboocock@jmg.net.au>
Sent: Thursday, June 1, 2023 11:36 AM
To: Cengia, Anthony <Anthony.Cengia@taswater.com.au>
Subject: RE: 471 CAMBRIDGE RD, MORNINGTON | SI 2023/00353-CCC

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Thanks Anthony,
Appreciated.

Justin Boocock | Associate / Senior Civil Engineer
JMG ENGINEERS & PLANNERS

117 Harrington Str. Hobart Tas 7000
E: jboocock@jmg.net.au
P: 03 6231 2555
M: 0427 244 736

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From: Cengia, Anthony <Anthony.Cengia@taswater.com.au>
Sent: Thursday, June 1, 2023 10:23 AM
To: Justin Boocock <jboocock@jmg.net.au>
Cc: Matthew Clark <mclark@jmg.net.au>
Subject: RE: 471 CAMBRIDGE RD, MORNINGTON | SI 2023/00353-CCC

Hi Justin,

Our water modelling advice has come back now.

The analysis indicates there is capacity in the existing network at 471 Cambridge Drive to supply this proposed development without impacting adversely on the existing infrastructure or customers.

We would still want the developer to produce a water model as part of their application.

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Total boundary heads (HGL), not pressures, at the proposed connection point(s) are:

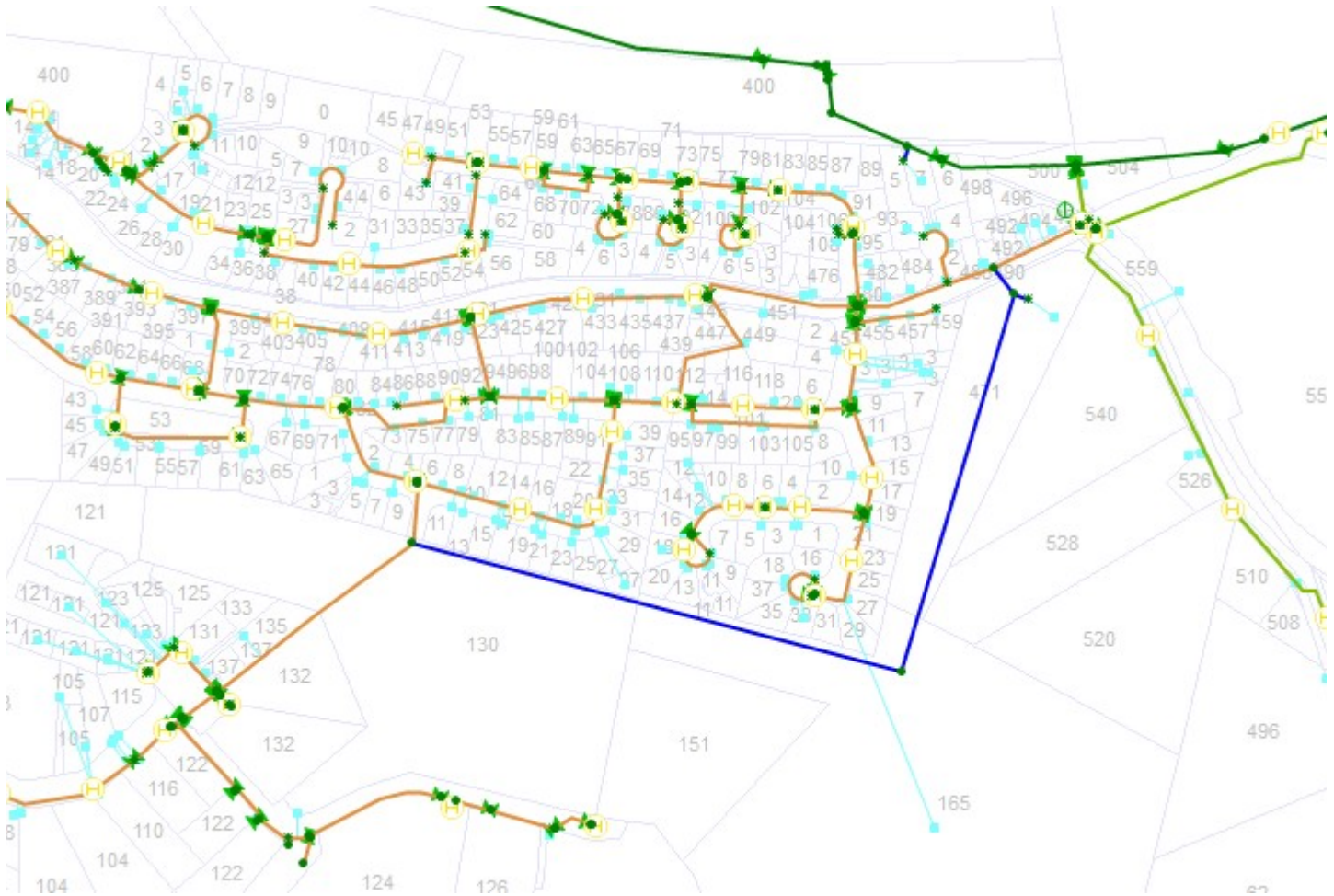
Location	H.G.L. Peak hour (m)	H.G.L Peak day + 10 l/s fire flow (m)
----------	----------------------	---------------------------------------

A249377 (150 NB)	157.1	155.9

It should be noted that these are the boundary heads in the water main itself at the proposed connection point and do not include losses through the actual connection or associated pipework.

As direction, we would prefer this site to be added to the Mornington High level zone (CLW10). In the medium to long term development in this area connected to the site will have two points of connection, but this is not immediately essential.

Dual connections have been modelled as shown schematically below (the dark blue pipe) and increased the available pressure but more significantly the looped connections provide water security and operational flexibility. The land needed for dual connections should be investigated under any proposal.



M 0474933293
F 1300 862 066
A GPO Box 1393, Hobart TAS 7001
169 Main Road, Moonah, TAS 7009
E anthony.cengia@taswater.com.au
W <http://www.taswater.com.au/>

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Despite anything else in the servicing advice TasWater reserves the rights regarding this proposal, when it is submitted for assessment as required by law under the Act.

From: Cengia, Anthony
Sent: Friday, May 19, 2023 1:49 PM
To: 'Justin Boocock' <jboocock@jmg.net.au>
Cc: Matthew Clark <mclark@jmg.net.au>
Subject: 471 CAMBRIDGE RD, MORNINGTON | SI 2023/00353-CCC

Hi Justin,
I just wanted to firstly acknowledge the email and make an initial response to you.
I've made some comments on an Infrastructure Plan, that might help.

I've made an internal asset management referral to get you some boundary conditions for water, and to get some detailed sewer advice. It's a bit too complex for me to see if we have any issues, I'll need some modelling to be done. As a side note for water, I'm pretty sure I've been told in the past that it was anticipated that further development along the Pass Road area would necessitate an upgrade of the 200mm main to ~250mm or thereabouts. It looks like some of the line on the GIS inside of 500 CAMBRIDGE RD, is only 150mm in size. I'll confirm what our requirements would be, but there may be a chance that the developer needs to construct a new DN250mm from the 450mm main (asset A628383) up to their connection point. That may or may not be a staged thing (in terms of when the trigger point is). But I'll get clarity on this.

Regards,
Anthony Cengia
Development Engineering Technical Specialist



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F 1300 862 066
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E anthony.cengia@taswater.com.au

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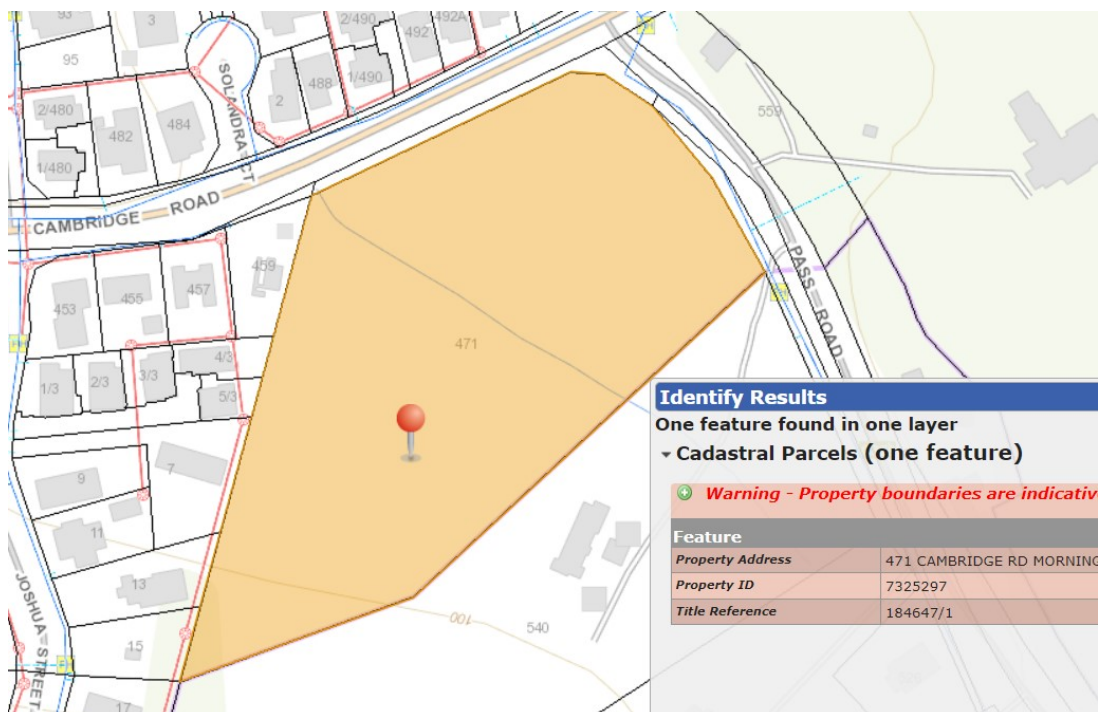
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From: Justin Boocock <jboocock@jmg.net.au>
Sent: Thursday, May 18, 2023 12:20 PM
To: TasWater Development Mailbox <Development@taswater.com.au>
Cc: Matthew Clark <mclark@jmg.net.au>
Subject: 471 Cambridge Road

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Hi TasWater,

We are currently working on a rezoning application for a land development project at 471 Cambridge Road, per the below screen shot and preliminary drawing attached.



The development is proposed to be a mix of high density and medium density residential properties with approximately 100ET's. The site drains to the north west and sewerage would likely be connected to the existing DN150 sewer in the vicinity of Solandra Court. Water supply could be from either (or both) the DN150 AC main in Cambridge Road or the DN200 AC main in Pass Road. Can you please consider this proposal and let me know if you foresee any issues that we will have to address throughout the design process. If you could also provide the water supply zone (name, TWL, BWL) details that would be appreciated.

As always, our client is keen for a compressed program and would like us to lodge with Council by 25th May. A timely response would be very much appreciated.

Thanks in advance,

Justin Boocock | Associate / Senior Civil Engineer
JMG ENGINEERS & PLANNERS

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M: [0427 244 736](tel:0427244736)



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APPENDIX C

TasWater Water Supply Infrastructure Plan and Advice



TasWater Infrastructure

- Water Reticulation Main
- Stormwater Rising Main
- Stormwater Gravity Reticulation Main
- Sewer Pressure Reticulation Main
- Sewer Rising Main
- Sewer Gravity Reticulation Main
- Recycled Water Distribution Main

Private Infrastructure

- Water Mains - Private
- Stormwater Gravity Main - Private
- Sewer Pressurised Mains - Private
- Sewer Gravity Mains - Private
- Recycled Water Mains - Private

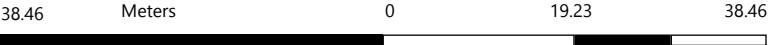
Abandoned Infrastructure

- Water Abandoned Line
- Sewer Abandoned Line
- Recycled Water Abandoned Line

NOTE:

The representation of the TasWater assets shown on this map was derived from data supplied by TasWater. TasWater makes no representation as to the accuracy or completeness of the assets shown on this map.

1:757



Justin Boock

From: Cengia, Anthony <Anthony.Cengia@taswater.com.au>
Sent: Thursday, 1 June 2023 10:23 AM
To: Justin Boock
Cc: Matthew Clark
Subject: RE: 471 CAMBRIDGE RD, MORNINGTON | SI 2023/00353-CCC [Filed 01 Jun 2023 11:36]

Categories: Filed by Mail Manager

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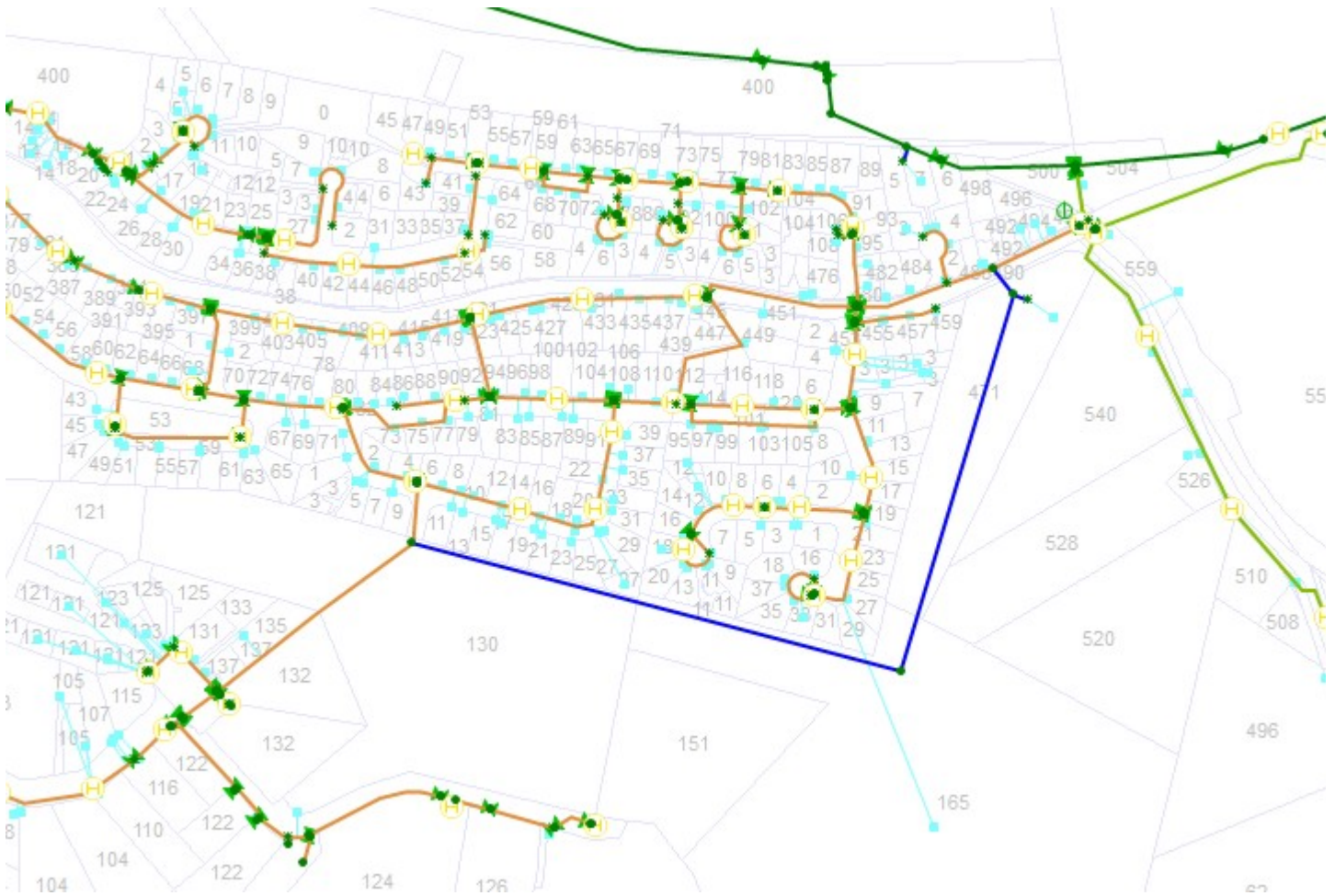
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I'm still waiting on sewer advice.

Regards,

[Anthony Cengia](#)

Development Engineering Technical Specialist



M 0474933293
F 1300 862 066
A GPO Box 1393, Hobart TAS 7001
 169 Main Road, Moonah, TAS 7009
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Sent: Thursday, May 18, 2023 12:20 PM

To: TasWater Development Mailbox <Development@taswater.com.au>

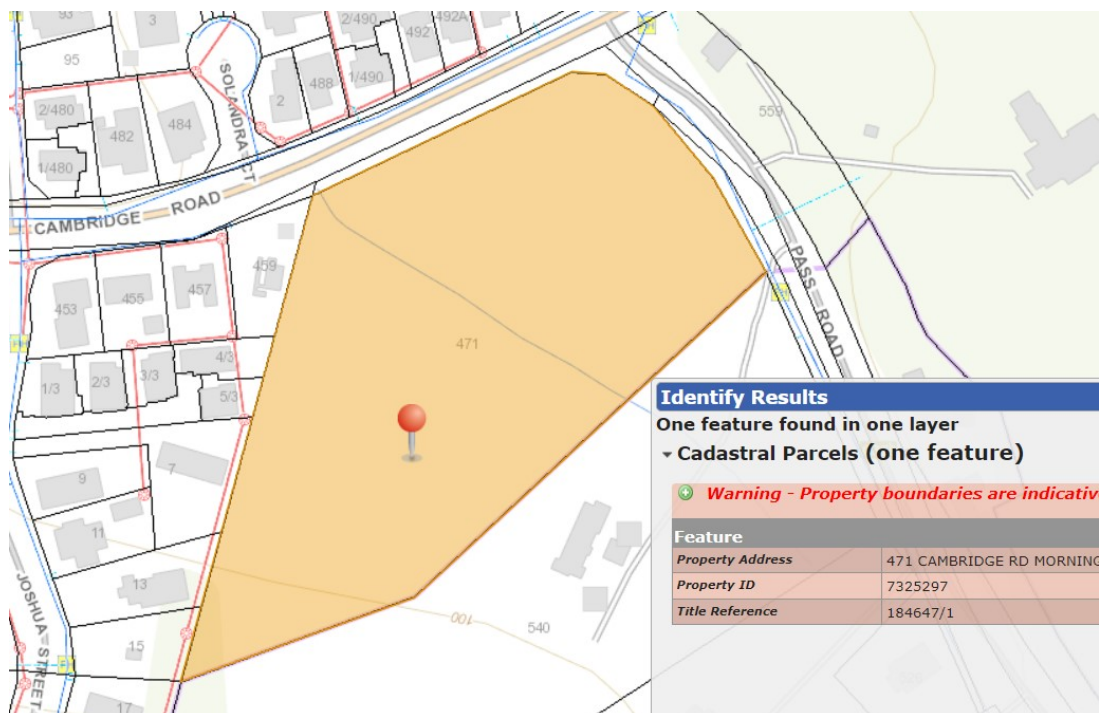
Cc: Matthew Clark <mclark@jmg.net.au>

Subject: 471 Cambridge Road

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Justin Boocock | Associate / Senior Civil Engineer
JMG ENGINEERS & PLANNERS

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Project Planning | Town Planning | Civil Engineering | Structural Engineering | Hydraulic Engineering
Mechanical Engineering | Electrical Engineering | Fire Engineering | Building Asset Management



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117 HARRINGTON STREET, HOBART (03) 6231 2555
GROUND FLOOR, 73 PATERSON STREET, LAUNCESTON (03) 6334 5548
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