4. Nature of Certificate

The following requirements are applicable to the proposed use and development:

☐	**E1.4 / C13.4 – Use or development exempt from this Code**	
	Compliance test	**Compliance Requirement**
☐	E1.4(a) / C13.4.1(a)	Insufficient increase in risk.

☐	**E1.5.1 / C13.5.1 – Vulnerable Uses**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.5.1 P1 / C13.5.1 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.***
☐	E1.5.1 A2 / C13.5.1 A2	Emergency management strategy
☐	E1.5.1 A3 / C13.5.1 A2	Bushfire hazard management plan

☐	**E1.5.2 / C13.5.2 – Hazardous Uses**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.5.2 P1 / C13.5.2 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.***
☐	E1.5.2 A2 / C13.5.2 A2	Emergency management strategy
☐	E1.5.2 A3 / C13.5.2 A3	Bushfire hazard management plan

☒	**E1.6.1 / C13.6.1 Subdivision: Provision of hazard management areas**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.6.1 P1 / C13.6.1 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.***
☐	E1.6.1 A1 (a) / C13.6.1 A1(a)	Insufficient increase in risk.
☒	E1.6.1 A1 (b) / C13.6.1 A1(b)	Provides BAL-19 for all lots
☐	E1.6.1 A1(c) / C13.6.1 A1(c)	Consent for Part 5 Agreement

☒	**E1.6.2 / C13.6.2 Subdivision: Public and fire fighting access**	
	Acceptable Solution	**Compliance Requirement**
☒	E1.6.2 P1 / C13.6.2 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.*** *Performance criteria addressed for cul-de-sac turning heads.*
☐	E1.6.2 A1 (a) / C13.6.2 A1 (a)	Insufficient increase in risk.
☐	E1.6.2 A1 (b) / C13.6.2 A1 (b)	Access complies with relevant Tables

☒	**E1.6.3 / C13.1.6.3 Subdivision: Provision of water supply for fire fighting purposes**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.6.3 A1 (a) / C13.6.3 A1 (a)	Insufficient increase in risk.
☒	E1.6.3 A1 (b) / C13.6.3 A1 (b)	Reticulated water supply complies with relevant Table
☐	E1.6.3 A1 (c) / C13.6.3 A1 (c)	Water supply consistent with the objective
☐	E1.6.3 A2 (a) / C13.6.3 A2 (a)	Insufficient increase in risk.
☐	E1.6.3 A2 (b) / C13.6.3 A2 (b)	Static water supply complies with relevant Table
☐	E1.6.3 A2 (c) / C13.6.3 A2 (c)	Static water supply consistent with the objective

Received
23.05.2023

5. Bushfire Hazard Practitioner

Name:	James Stewart	**Phone No:**	0467 676 721
Postal Address:	PO BOX 593, Mowbray, Tas, 7248	**Email Address:**	james@woolcottsurveys.com.au
Accreditation No:	BFP – 157	**Scope:**	1, 2, 3B, 3C

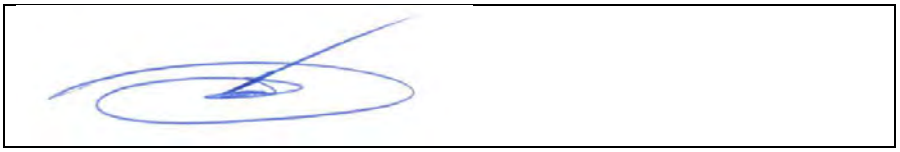
6. Certification

I certify that in accordance with the authority given under Part 4A of the *Fire Service Act 1979* that the proposed use and development:

☐ Is exempt from the requirement Bushfire-Prone Areas Code because, having regard to the objective of all applicable standards in the Code, there is considered to be an insufficient increase in risk to the use or development from bushfire to warrant any specific bushfire protection measures, or

☒ The Bushfire Hazard Management Plan/s identified in Section 3 of this certificate is/are in accordance with the Chief Officer's requirements and compliant with the relevant **Acceptable Solutions** identified in Section 4 of this Certificate.

Signed:
certifier



Name: James Stewart **Date:** 23/05/2023

Certificate Number: WS-118
(for Practitioner Use only)

Annexure 4 – Bushfire Fencing Advice from Roger Fenwick BFP 162

Received
23.05.2023

Roger Fenwick Bush Fire Consultant
PO Box 86B
Kettering Tas 7155

James Stewart
Woolcott Surveys
james@woolcottsurveys.com.au

Dear James,

Performance calculations for proposed subdivision
7a William St, Campbell Town

The first table below shows the limiting combinations of metal fence height and setback (HMA width) for proposed lots adjoining defined unmanaged grassland, to satisfy BAL-19 specifications. A second table shows some BAL-12.5 combinations, and the third table indicates approximately what may be possible as a post-subdivision application to build to BAL-29 specifications.

I'm aware of and have adopted your preference for a 2.4m high fence beside the railway line, and for no more than 2.1m high fences beside the private property to the south, and (if necessary at all) beside the pedestrian footpaths. Those footpaths will be on what will become Council land, and therefore on Council's mowing schedule. As managed land the vegetation on them will be Low Threat, and only the flames in the adjoining unmanaged grass visible through the 4m wide gap in the 2.4m fence on the eastern side will be an issue.

Any fire within the unmanaged grass to the south of Lot 7 will project less than 50% of the radiant heat of a full 100m wide front on to a structure on Lot 6. With a 6m setback on Lot 6, the 100m wide radiant heat load would be 29.53kWm^{-2}, half of which is near enough to 15, safely within the BAL-19 limit. Thus there is no necessity to extend the southern fence beyond the western side of Lot 7.

A fire approaching the 4m wide gap in the fence where the footpath between Lots 11 & 12 is proposed would radiate 8.3kWm^{-2} directly ahead of it at a distance of 7.5m (and slightly less as measured to each side of central). This is 4.83 more than would be experienced with a full-width fence, ie 13.52 + 4.83 = 18.35. This is within the BAL-19 target, and shows that a house on Lot 11 or Lot 12 7.5m from their eastern boundary would meet BAL-19 specifications.

A fire approaching the NE corner of the site from the northeast would project one half of its radiant heat load at and over the 2.4m high metal fence, and one half directly at a structure on Lot 13 visible 'around the corner' of the fence. An HMA 6m in width beside the eastern side of the fence would be 6 x 1.4 = 8.4m in effective width relative to a direct fire approach. Half of the heat received over the fence, plus half of the heat received around the edge of the fence, is 0.5*((21.35-9.24) + 21.35) = 16.73. This is less than the specified 19kWm^{-2} limit, and therefore no additional radiant heat protection is necessary beyond the northern end of Lots 12/13.

roger@bushfire-consultant.com.au 0411 609 906

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23.05.2023

Roger Fenwick Bush Fire Consultant
PO Box 86B
Kettering Tas 7155

Table 1 BAL-19 setbacks (DtS = 10m)

Setback (m)	Heat flux (no fence)	Heat flux blocked by 2.1m high fence	Net heat flux	Heat flux blocked by 2.4m high fence	Net heat flux
8.4	21.35			9.24	21.11
7.5	23.89			10.37	13.52
7.5, 4m wide	8.3			3.47	+4.83
7	25.55	9.63	15.92	11.12	14.38
6	29.53	11.2	18.33	12.99	16.56
5.5	31.94	12.17	19.79	14.12	17.82

Table 2 BAL-12.5 setbacks (DtS = 14m)

Setback (m)	Heat flux (no fence	Heat flux blocked by 2.1m high fence	Net heat flux	Heat flux blocked by 2.4m high fence	Net heat flux
11	16.18	6.07	10.11		
9	19.29	7.47	11.82		
8.5	21.11	7.92	13.18	9.13	11.98

Table 3 BAL-29 setbacks (DtS = 6m)

Setback (m)	Heat flux (no fence	Heat flux blocked by 2.1m high fence	Net heat flux	Heat flux blocked by 2.4m high fence	Net heat flux
5	34.7	13.33	21.4		
4	41.47	16.23	25.24	19.01	22.46
3	50.23	20.43	29.8	24.26	25.97

In summary, for BAL-19, the proposed subdivision should feature a 2.1m high metal (Colorbond or similar) fence along the southern boundary of lots 6 – 10, and a 2.4m high metal fence along the eastern boundary, apart from opposite the footpath between lots 11 & 12. The building setbacks adjoining unmanaged land to the south should be 6m for lots 6 – 10. Setbacks to the east must be 5.5m for Lot 10, 7.5m for lots 11 & 12., and 6m for Lot 13.

For BAL-12.5, with a 2.1m fence, the setbacks from the southern boundary are 9m. From the eastern boundary, Lots 10 & 13 require 9m setbacks and a 2.4m high fence. Lots 11 &

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12 require a 10.5m setback and a 2.4m high fence to compensate for the additional radiant heat flux through the 4m wide footpath opening.

Yours sincerely,

Roger Fenwick
6 April 2023

roger@bushfire-consultant.com.au 0411 609 906

Annexure 5 – TFS advice re cul-de-sac

From: Bushfire Practitioner <bfp@fire.tas.gov.au>
Sent: Thursday, 27 April 2023 3:00 PM
To: James Stewart <james@woolcottsurveys.com.au>
Cc: Bushfire Practitioner <bfp@fire.tas.gov.au>
Subject: RE: BFP 157 -15 Lot Subdivision, 7a William Street, Campbell Town - Report for Review

Hi James,

In response to section 7, we support the variation to reduce the size of the cul-de-sac turning heads, we don't think that the variation will significantly impact firefighter safety or operations. We note that the report recommends no standing signage in the eastern cul-de-sac and no parking signage in carriageways less than 7m wide. We would also like to see the signage requirements for the cul-de-sac included in section 7 as well.

Let me know if you have any further questions

Regards
Chris

Chris Moore
Planning & Assessment Officer
Bushfire Risk Unit

Tasmania Fire Service

Service | Professionalism | Integrity | Consideration

Northern Region Office | 339 Hobart Road Youngtown Tasmania 7249
Mobile 0418 336 446
bfp@fire.tas.gov.au | www.fire.tas.gov.au

Please note that I work Tuesday-Friday

Received
10/07/2023

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Devonport

5 April 2023

Michelle Schleiger
Planner
Woolcott Surveys
10 Goodman Court
INVERMAY Tasmania 7248

Dear Michelle

Re: 7a William Street, Campbell Town - Railway Noise Assessment Rev1

This noise assessment has been prepared to support a development application for a proposed residential subdivision at 7a William Street, Campbell Town, (Title Reference: 43080/4). It is required as part of the proposed development falls within the 50m attenuation zone of the TasRail South Line.

Planning Scheme Requirements

The site, shown in Figure 1 below, is zoned as "General Residential" under the *Tasmanian Planning Scheme – Northern Midlands*, with one small section of "Open Space". Due to its location in the attenuation area, the development must meet the performance criteria P1 of the *Road and Railway Assets Code C3.7.1 Subdivision for sensitive uses within a road or railway attenuation zone*, reproduced below:

P1
A lot, or a lot proposed in a plan of subdivision, intended for sensitive uses within a road or railway attenuation area, must be sited, designed or screened to minimise the effects of noise, vibration, light and air emissions from the existing or future major road or rail network, having regard to:

(a) the topography of the site;
(b) any buffers created by natural or other features;
(c) the location of existing or proposed buildings on the site;
(d) the frequency of use of the rail network;
(e) the speed limit and traffic volume of the road;
(f) any noise, vibration, light and air emissions from the rail network or road;
(g) the nature of the road;
(h) the nature of the intended uses;
(i) the layout of the subdivision;
(j) the need for the subdivision;
(k) any traffic impact assessment;
(l) any mitigating measures proposed;
(m) any recommendations from a suitably qualified person for mitigation of noise; and
(n) any advice received from the rail or road authority.

Table C3.2 of the Code defines acceptable external noise levels for habitable buildings within a railway attenuation area to be a 24 hour L_{eq} noise level of 65 dB(A) and a L_{max} noise level of 87 dB(A) assessed as a single event maximum sound pressure level". The L_{eq}, relates to the equivalent continuous or "logarithmically averaged" noise level over a specified time period (in this case 24hours) and the L_{max} level relates to the maximum noise level recorded.

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10/07/2023

On-Site Noise Logging

Unattended noise logging was conducted between the 9th and 20th of March 2023, at a location on the eastern fence line of the site, approximately 31m from the centreline of the railway, using a Rion NL-42 noise logger, setup and operated in accordance with the *DEPHA Noise Measurement Procedures Manual, 2nd edition, 2008*.

Normally 6 trains pass the site, every day in each direction, between about 8pm and 5am, Monday to Friday. During the measurement period $L_{eq,24hr}$ values ranged between 45.2 and 54.2dB(A). This meets the $L_{eq,24hr}$ requirement of the Code by a wide margin.

L_{max} noise peaks at times when trains might be expected ranged between around 80 dB(A) and a maximum recorded L_{max} of 90.8dB(A). This exceeds the Code L_{max} limit of 87 dB(A) by about 4 dB(A).

Recommended Noise Mitigation Measures

The L_{max} noise level on the site can be reduced sufficiently to meet the code limit if a 2.4 metre solid fence is constructed along the full length of the eastern boundary facing the railway, with a break for a footpath between Lots 11 and 12. This could be built from heavy duty Colorbond steel, timber or masonry, but must be free from of any gaps or cracks, including between the fencing panels and the ground. All joints must be well sealed.

Ground Vibration

Levels of ground vibration from trains operating on the Tasmanian rail network are normally relatively low and diminish quickly with distance from the track. Vibration levels are unlikely to be sufficient to adversely affect residential amenity on the proposed subdivision site.

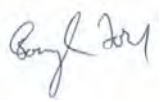
Conclusions

On this basis it may be concluded that residents of the proposed subdivision will not be adversely impacted by noise and vibration from the railway and the requirements of Clause C3.7.1 of the planning scheme will be met.

Please do not hesitate to get in contact if you have any further queries.

Yours sincerely,

Alexander Seen
Graduate Mechanical Engineer



Douglas Ford
Principal Mechanical Engineer/Noise Specialist

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10/07/2023

Figure 1 - Aerial image of site (Blue boundary) and surrounding area (base image from theList).

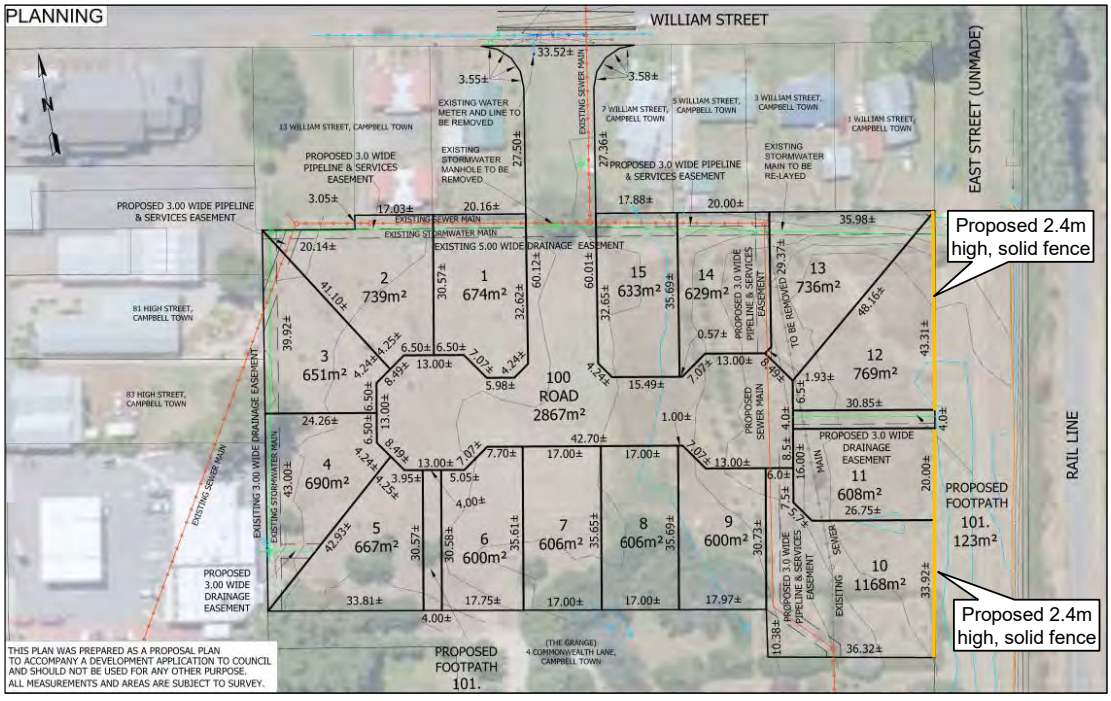

Figure 2 – Subdivision Plan, extracted from project drawings.

Request for Additional Information

For Planning Authority Notice

Council Planning Permit No.	PLN-23-0085	**Application date**	6/06/2023
TasWater details			
TasWater Reference No.	TWDA 2023/00730-NMC	**Date of response**	9/06/2023
TasWater Contact	Shaun Verdouw **Phone No.**	0467 901 425	
Response issued to			
Council name	NORTHERN MIDLANDS COUNCIL		
Contact details	Planning@nmc.tas.gov.au		
Development details			
Address	7A WILLIAM ST, CAMPBELL TOWN	**Property ID (PID)**	9240372
Description of development	18 Lot Subdivision (15 Residential, 1 Road Lot, 2 Footway Lots)	**Stage No.**	

Additional information required

Additional information is required to process your request. To enable assessment to continue please provide amended concept servicing plan for sewer services which shows the following:

1. The sewer main noted as being S-2 cannot be DN225 and connect back in to an existing DN150 further downstream. Please change it back to DN150 and correct the minimum fall that can be achieved which is 1 in 180, or 0.56% due to the amount of catchment upstream.

TABLE 5.6

MAXIMUM AND MINIMUM ET FOR GRAVITY SEWERS FOR VARIOUS LOCATIONS

		MINIMUM LOTS / AREA		MAXIMUM LOTS / AREA	
		Min Residential ET (Lots)	Min Ind / Comm Ha	Melbourne Max Residential ET (Lots	Melbourne Max Ind / Comm Ha
$I_{1,2}$	mm/h			18.4	18.4
Grade					
DN 100 (only 1 in 60 grade is acceptable for DN 100 pipework)					
1 in 60	1.67%	1	N/A	2	N/A
DN 150 (minimum grade for DN 150 is 1 in 180)					
1 in 180	0.56%	9	N/A	155	N/A
1 in 170	0.59%	8	N/A	160	N/A
1 in 160	0.63%	6	N/A	166	N/A
1 in 150	0.67%	5	N/A	173	N/A
1 in 140	0.71%	5	N/A	180	N/A
1 in 130	0.77%	4	N/A	188	N/A
1 in 120	0.83%	3	N/A	198	N/A
1 in 110	0.91%	2	N/A	208	N/A
1 in 100	1.00%	2	N/A	221	N/A
1 in 90	1.11%	1	N/A	235	N/A
1 in 80	1.25%	1	N/A	252	N/A
1 in 70	1.43%	1	N/A	273	N/A
1 in 60	1.67%	1	N/A	299	N/A
1 in 50	2.00%	1	N/A	334	N/A
1 in 40	2.50%	1	N/A	381	N/A

2. In the meantime, I will request boundary conditions from our modelling team to check the water at the entrance to the property.

Advice

Service Locations

Please note that the developer is responsible for arranging to locate the existing TasWater infrastructure and clearly showing it on the drawings. Existing TasWater infrastructure may be located by a surveyor and/or a private contractor engaged at the developers cost to locate the infrastructure.

- A permit is required to work within TasWater's easements or in the vicinity of its infrastructure. Further information can be obtained from TasWater
- TasWater has listed a number of service providers who can provide asset detection and location services should you require it. Visit https://www.taswater.com.au/building-and-development/service-locations for a list of companies
- Sewer drainage plans or Inspection Openings (IO) for residential properties are available from your local council.

To view our assets, all you need to do is follow these steps:

1) Open up webpage - http://maps.thelist.tas.gov.au/listmap/app/list/map
2) Click 'Layers'
3) Click 'Add Layer'
4) Scroll down to 'Infrastructure and Utilities' in the Manage Layers window, then add the appropriate layers.
5) Search for property
6) Click on the asset to reveal its properties

TASWATER CONTACT DETAILS			
Email	development@taswater.com.au	Web	www.taswater.com.au
Mail	GPO Box 1393 Hobart TAS 7001		

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17/07/2023

HYDRODYNAMICA

44 Penquite Road
LAUNCESTON TAS 7250
M: 0431 208 450
E: cameron.oakley@h-dna.com.au
ABN: 169 442 993 50

MEMO **14 July 2023**

Re: 7a William Street Subdivision Flood Prone Area Code Response Memo

1. Introduction:

Grange Vista Pty Ltd is proposing a subdivision of 7a William Street, Campbell Town, which will create 15 new residential lots. Figure 1 shows the proposed layout:

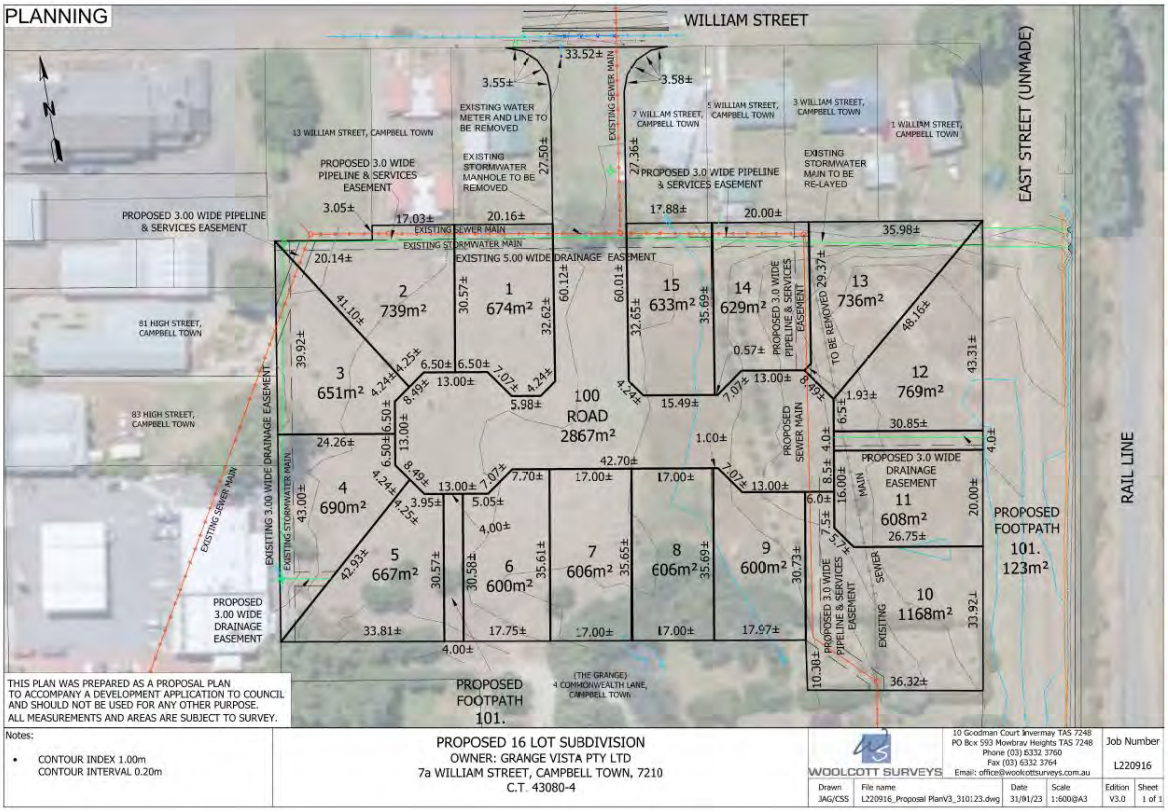

Figure 1. Proposed residential subdivision (ref. Woolcott Surveys L220916 Proposal Plan 310123 V3)

Northern Midlands Council (NMC) provided the following RFI:

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Council's Stormwater System Flood and Risk Study, available at https://mapping.nmc.tas.gov.au/IntraMaps99/ shows that part of 7A William Street and the stormwater discharge points in East Street adjacent to the railway are subject to flooding. It is therefore reasonably believed, in accordance with clause C12.2.5, that the land is subject to risk from flood and has the potential to cause increased risk from flood. Please provide a flood hazard report in accordance with clause C12.2.3. The flood hazard report is to:

- Show the flood extent on the plan of subdivsion.
- Demonstrate compliance with clause C12.6.1 P1.1 and P1.2.
- Demonstrate compliance with clause C12.7.1 P1 for each lot proposed in the plan of subdivision within the flood prone hazard area.

I note that clause C12.6.1 P1.2 (a) requires the flood hazard report to demonstrate that the works will not cause or contribute to flood on adjacent land or public infrastructure.

Council's urban flood mapping layer is shown below, which is derived from the North Campbell Town Stormwater System Flood and Risk Study (H-DNA, 2020):

Figure 2. NMC urban flood mapping layer

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2. Pre-development Assessment:

Figure 3 shows the original modelling results contained in the North Campbell Town Stormwater System Flood and Risk Study (H-DNA, 2020) from which the urban flood mapping layer for this area was derived. It shows the following flood depths on the eastern side of undeveloped 7a William Street:

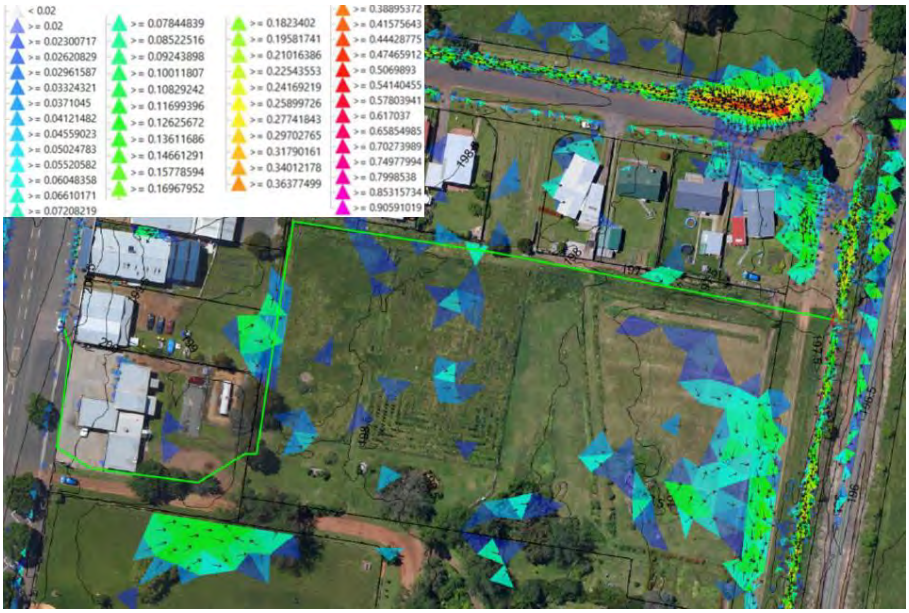

Figure 3. NMC urban flood mapping layer

This modelling displays 1% AEP flooding, with predicted flood depths of 200mm and under.

In order to provide better resolution of this flooding this same model was updated, with mesh sizing reduced to a maximum 1 m^2 per triangle. The 2017 digital elevation model (DEM) which was used in the original urban flood modelling was used in the pre-development scenario. Hydrology was the same as that described in the North Campbell Town Stormwater System Flood and Risk Study. 1D subcatchments for the surrounding residential and commercial properties were also updated.

The modelled 1% AEP rainfall was also updated to be inclusive of climate change. Australian Rainfall and Runoff (ARR) Data Hub interim climate change factors for the RCP8.5 scenario to 2090 give a 16.3% increase in rainfall depths. The Pitt and Sherry *Climateasyst* tool gives a 28.32% difference in rainfalls in 2085 compared to those in 2025. The larger *Climateasyst* climate change factor was therefore adopted.

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The revised pre-development results are shown in Figure 4, with a depth key provided:

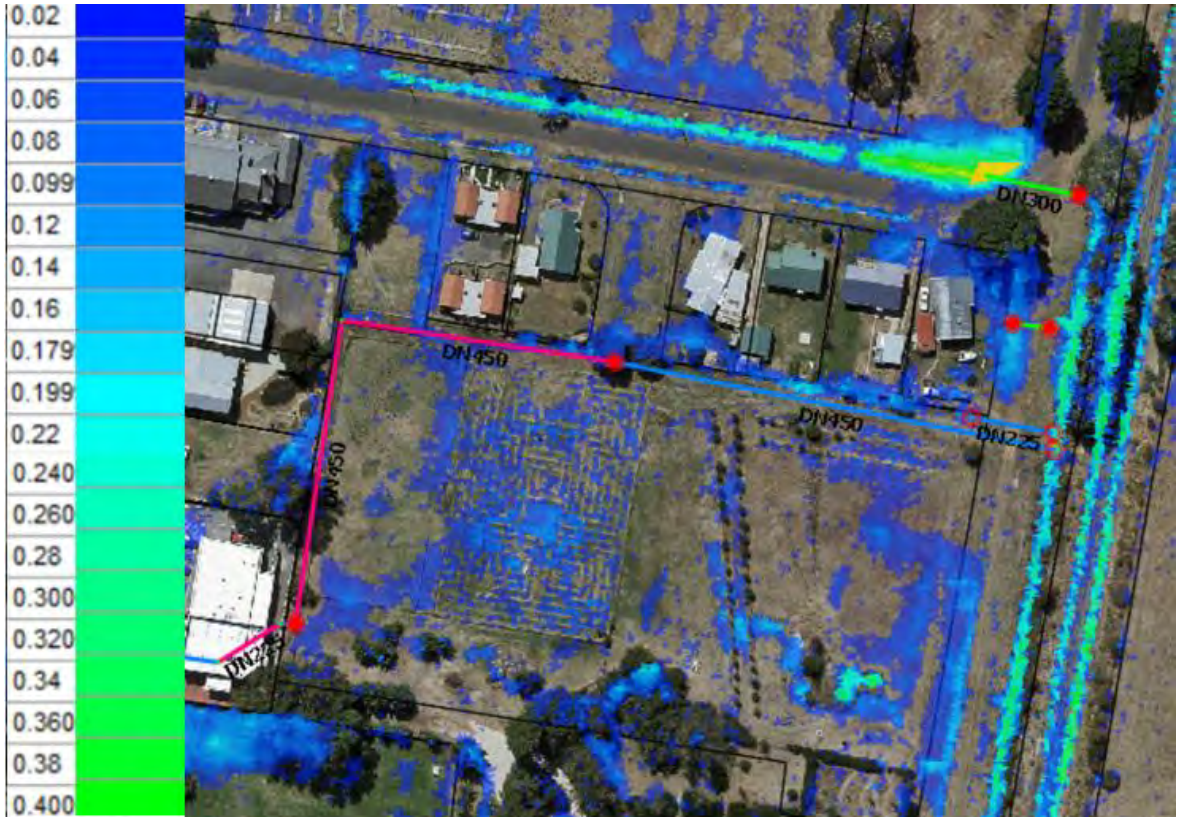

Figure 4. Updated pre-development results (1% AEP climate change)

Some ponding is noted on the site, peaking at 344mm deep in the small depression near the south-eastern corner of the property. Flooding over the remainder of the site peaks at 207mm. All flooding is in the H1 Hazard Vulnerability Classification which is 'generally safe for vehicles, people, and buildings' (Australian Rainfall and Runoff, 2019).

3. Post-development Assessment:

The pre-development model was updated to include the proposed stormwater works infrastructure changes, earthworks, and developed surfaces. Refer to Rare's Development Approval drawing series 231007 Revision A. The propose earthworks, including road formation, were patched into the latest base 1m DEM available on ELVIS (https://elevation.fsdf.org.au/) which dates to 2019.

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The new lots were assumed to be 60% impervious, with road and verges a combined 80% impervious. Hydrology was otherwise the same as in the pre-development model.

The post-development results are shown in Figure 5:

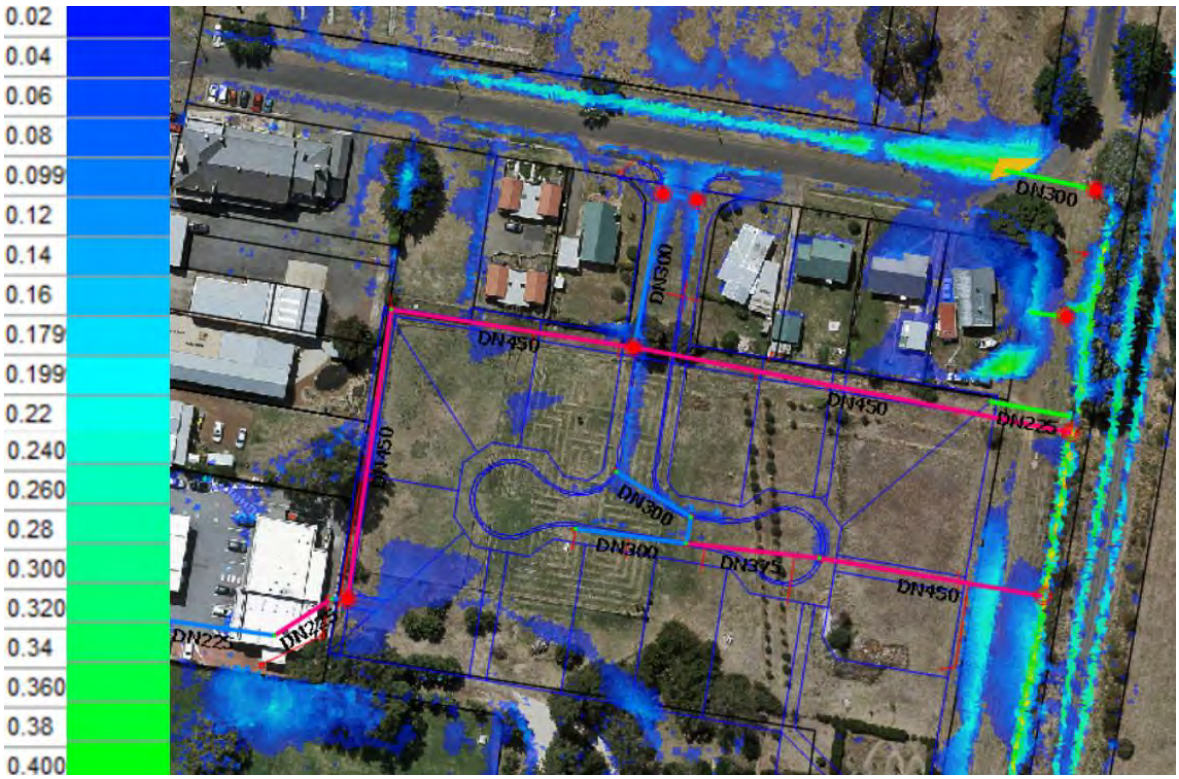

Figure 5. Post-development results (1% AEP climate change)

The post-development results show less surface water within the development footprint due to direct plumbing to the proposed stormwater network and storage within the proposed roadway.

Again, all surface water on the site is in the H1category. Roadway ponding peaks at 171mm near the proposed intersection of the new road with William Street, private property surface water peaks at 108mm at the southern boundary of proposed lots 7 and 8.

No special requirements are necessary for the dwellings on the subdivision, assuming finished floor levels (FFLs) are 100mm above the finished surface level (FSL) as per the Building Code. The

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exception are proposed Lots 7 and 8, which are recommended FFLs a minimum of 150mm above FSL.

4. Comparison of Pre and Post-development Results:

When comparing Figures 4 and 5 there are three observed differences. The first of these is around and in the open drain on the northern side of William Street and nos. 1 and 3 William Street. The footprint is larger in the post-development scenario, refer to Figure 6:

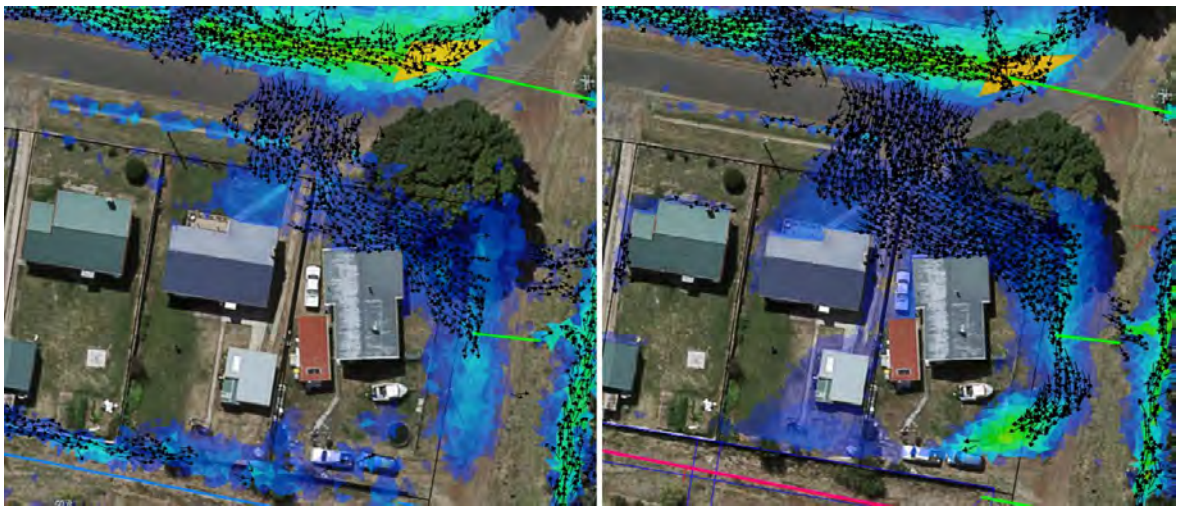

Figure 6. Pre and post-development comparison

Upon examination this is not due to the development, but is an artefact of the modelling. No subdivision runoff is directed to this open drain Flooding escaping the open drain and passing towards 1 and 3 William Street peaks at 71 L/S in the pre-developed scenario. This increases to 136 L/S in the post-development scenario, despite not being influenced by the development. This must be due to changes to the upstream catchment influencing the operation of the pre-development model, which used a 2017 DEM compared to the post-development model, which used a 2019 DEM.

The second difference is the deeper flood depth near the south-east corner of no. 1 William Street. The surface level at its deepest point is 197.44m AHD in the pre-development (2017 DEM) mesh. This compares to a surface level of 196.86m AHD in the post-development (2019 DEM). This is a difference of 580mm. Obviously, some alteration in the landform has occurred in the time between the two DEMs were captured and is certainly not a byproduct of the proposed development.

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ABN: 169 442 993 50

This third difference is a larger footprint within unmade East Street, refer to Figure 7. Breakout from the existing open drain occurs, however the only impact is a larger flood footprint in the road easement. No impacts are noted on the rail line.

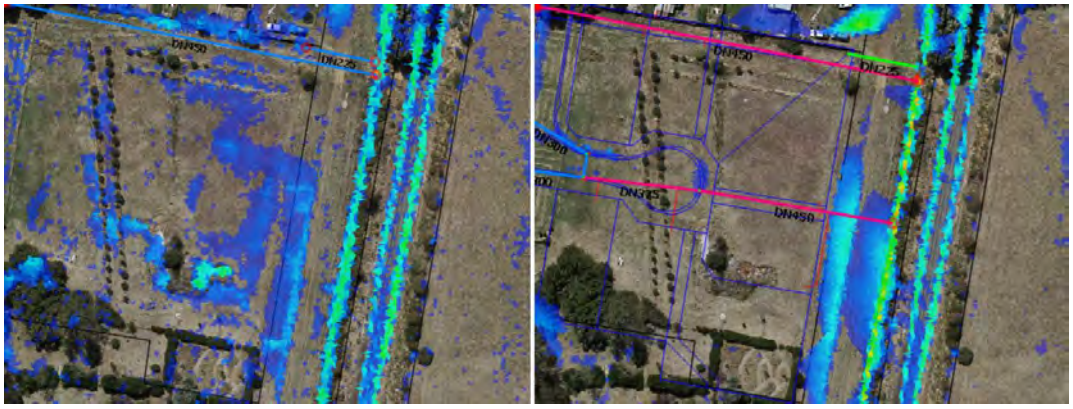

Figure 7. Pre and post-development comparison

It is understood NMCs Works and Infrastructure Department have plans to undertake an upgrade of this existing open drain. This will help reduce flooding in the unmade road easement in the 1% AEP climate change event. Breakout flooding from the open drain has a H1 Hazard Vulnerability Classification, and so is tolerable in the unmade road in the 1% climate change event, refer to Figure 8:

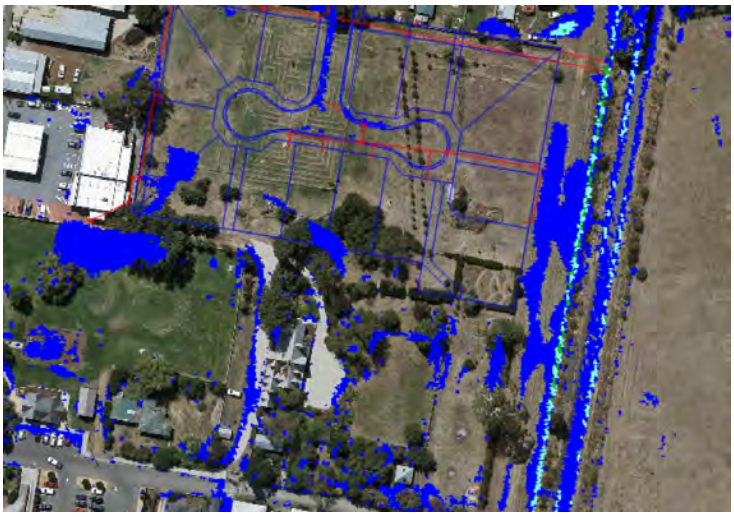

Figure 8. Post-development Hazard (H1=dark blue, H2=cyan, H3 = green)

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Peak flooding in unmade East Street occurs during the 15 minute storm event. Flooding in the unmade road has significantly retracted within 45 minutes of the completion of the storm, see Figure 9:

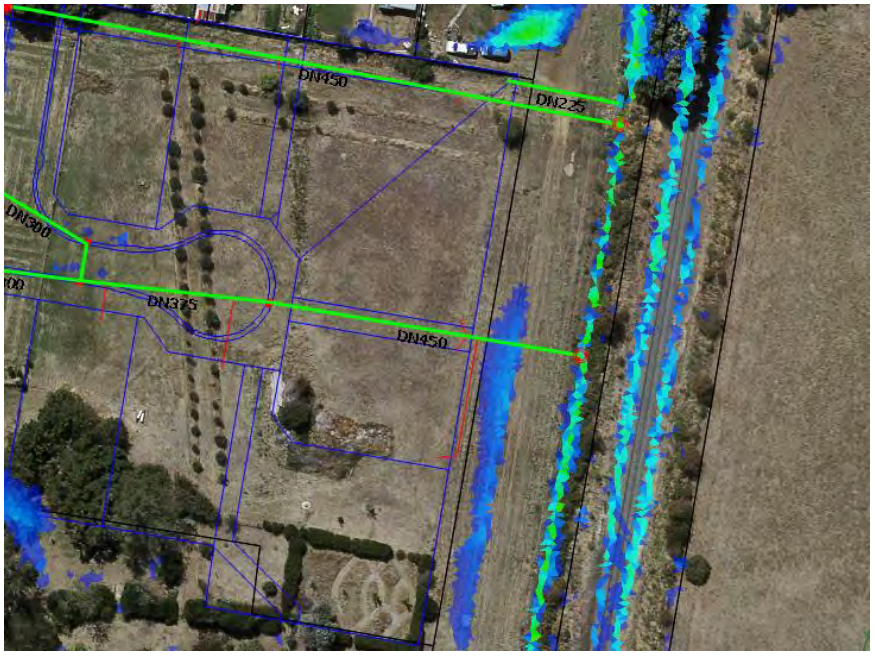

Figure 9. Post-development comparison, 45 minutes after storm completion

5. Flood Prone Areas Hazard Code Assessment

C12.6.1 is the appropriate code for a proposed subdivision:

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C12.6.1 Buildings and works within a flood-prone hazard area

Objective:	That: (a) building and works within a flood-prone hazard area can achieve and maintain a tolerable risk from flood; and (b) buildings and works do not increase the risk from flood to adjacent land and public infrastructure.

Acceptable Solutions	Performance Criteria
A1 No Acceptable Solution.	**P1.1** Buildings and works within a flood-prone hazard area must achieve and maintain a tolerable risk from a flood, having regard to: (a) the type, form, scale and intended duration of the development; (b) whether any increase in the level of risk from flood requires any specific hazard reduction or protection measures; (c) any advice from a State authority, regulated entity or a council; and (d) the advice contained in a flood hazard report. **P1.2** A flood hazard report also demonstrates that the building and works: (a) do not cause or contribute to flood on the site, on adjacent land or public infrastructure; and (b) can achieve and maintain a tolerable risk from a 1% annual exceedance probability flood event for the intended life of the use without requiring any flood protection measures.

Performance Criteria P1.1:

a) Modest reshaping of the site ensures that the 1% AEP climate change storm events have a very limited impact on the subdivision site. Surface water, which is expected over significant proportions of the catchment in this extreme event, is shallow, safe, and tolerable. Acceptable.
b) No specific hazard reduction measures are required, other than finished floor levels (FFLs) of future dwellings on Lots 7 and 8 being to be a minimum 150mm above the finished surface level (FSL). Acceptable.
c) No advice. Acceptable.
d) No further advice. Acceptable.

Performance Criteria P1.2:

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a) The subdivision, when fully developed, will contribute to modest flooding of unmade East Street. As per Figures 8 and 9 the resultant flooding is safe, and will not be present for extended periods. No impacts are predicted on the rail line. Acceptable.
b) The evidence provided in this report shows a tolerable risk is present and maintained for the life of the development. Acceptable.

The proposed development is therefore acceptable under C12.6.1 P1.1 and P1.2.

C12.7.1 is the appropriate code for a proposed subdivision:

C12.7.1 Subdivision within a flood-prone hazard area

Objective:	That subdivision within a flood-prone hazard area does not create an opportunity for use or development that cannot achieve a tolerable risk from flood.

Acceptable Solutions	Performance Criteria
A1 Each lot, or a lot proposed in a plan of subdivision, within a flood-prone hazard area, must: (a) be able to contain a building area, vehicle access, and services, that are wholly located outside a flood-prone hazard area; (b) be for the creation of separate lots for existing buildings; (c) be required for public use by the Crown, a council or a State authority; or (d) be required for the provision of Utilities.	**P1** Each lot, or a lot proposed in a plan of subdivision, within a flood-prone hazard area, must not create an opportunity for use or development that cannot achieve a tolerable risk from flood, having regard to: (a) any increase in risk from flood for adjacent land; (b) the level of risk to use or development arising from an increased reliance on public infrastructure; (c) the need to minimise future remediation works; (d) any loss or substantial compromise by flood of access to the lot, on or off site; (e) the need to locate building areas outside the flood-prone hazard area; (f) any advice from a State authority, regulated entity or a council; and (g) the advice contained in a flood hazard report.

Performance Criteria P1:

a) 1% AEP climate change flooding on the adjacent unmade road increases, however this is contained within the road easement and has a safe H1 Hazard Vulnerability Classification. This is a tolerable risk and there is no increased risk to private property or to the rail line. Acceptable.
b) As per P1(a). Acceptable.
c) There is no need for future remediation works, however it is understood NMC have plans to improve the existing open drain, which will help reduce the flood footprint. Acceptable.

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d) Access to lots is unaffected. Acceptable.
e) No need for buildings to be located outside flood-prone hazard area. Dwellings on Lots 7 and 8 to have FFLs a minimum 150mm above FSL. Acceptable.
f) No advice.
g) No further advice provided. Acceptable.

The proposed development is therefore acceptable under C12.7.1 P1.

Cameron Oakley

CONSULTING ENGINEER

B.Tech, B.Eng (Hons), MBA

Licensed Building Services Provider No. 949718126

Exhibited

This planning application is open for public comment until 18 August 2023

Reference no	**PLN-23-0085**
Site	**7A WILLIAM STREET & WILLIAM ST & EAST ST CAMPBELL TOWN**
Proposed Development	**15 residential lot subdivision incl. filling of land, & 1 road lot & 2 footway lots, 2.4m high fence along East St boundary & infrastructure works in William St and East St**
Zone	**8.0 General Residential**
Use class	**Residential - Subdivision**
Development Status	**Discretionary**

Written representations may be made during this time to the General Manager;
mailed to PO Box 156, Longford, Tasmania 7301,
delivered to Council offices or
a pdf letter emailed to planning@nmc.tas.gov.au

(no special form required)

Exhibited

PLANNING APPLICATION

Proposal

Description of proposal: Subdivision - 18 lots (15 residential)

(attach additional sheets if necessary)

If applying for a subdivision which creates a new road, please supply three proposed names for the road, in order of preference:

1..... 2..... 3.....

Site address: 7A WILLIAM ST CAMPBELL TOWN TAS 7210

CT no: CT.43080/4

Estimated cost of project $ NA subdivision *(include cost of landscaping, car parks etc for commercial/industrial uses)*

Are there any existing buildings on this property? Yes / No
If yes – main building is used as .....

If variation to Planning Scheme provisions requested, justification to be provided:

(attach additional sheets if necessary)

Is any signage required? .....
(if yes, provide details)

FOLIO PLAN

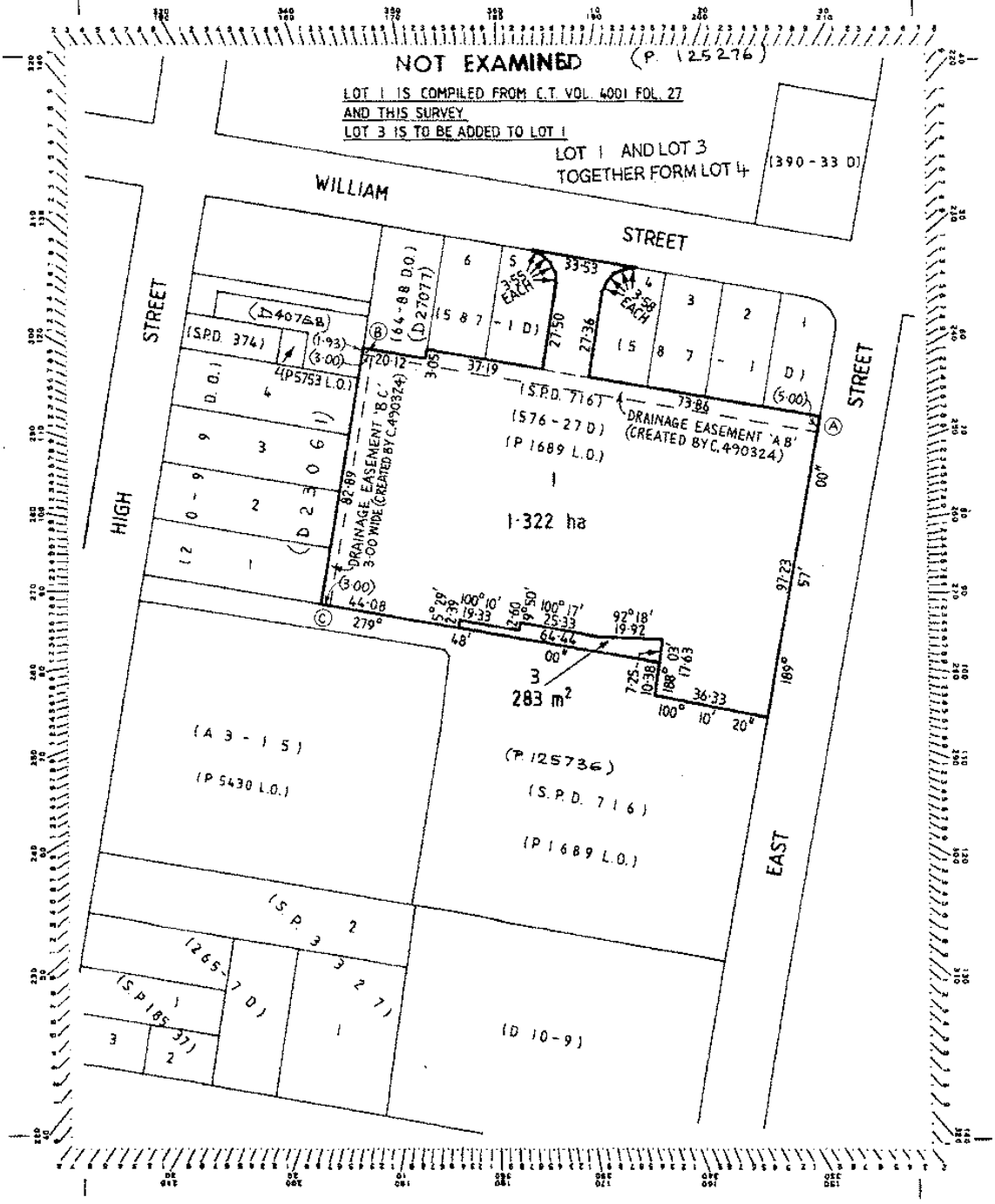
RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Exhibited

8-47

Owner: Lot 3, Ian Norman Carmichael Nicolson, Rosemary Ryan, John Hallowes Waterhouse & Lawrence Henry John Foster. Lot 1, Director-General of Housing and Construction.	**PLAN OF SURVEY** by Surveyor R.V. Tait of COHEN & ASSOCIATES PTY. LTD. of land situated in the TOWN OF CAMPBELL TOWN SECTION E	Registered Number: **D43080**
Title Reference: Lot 3, Conveyance No 40-819 Lot 1, C.T. Vol. 4001 Fol. 27		Approved Effective from: 24 JAN 1991
Grantee: Part of Sa. Or. Op. & part of Lot 8, la. 1r. 26p, gtd to John Helder Wedge & part of Lot 7, 0a. 3r. 39p, gtd to William Valentine.	SCALE 1:1250 MEASUREMENTS IN METRES	Recorder of Titles



WOOLCOTT SURVEYS

EAST COAST SURVEYING

PLANNING SUPPORTING REPORT

Application for subdivision of the land (15 residential lots)

7a William Street CAMPBELL TOWN

April 2023

Exhibited

Received
10/07/2023

Job Number: L220120
Prepared by: Michelle Schleiger (michelle@woolcottsurveys.com.au)
Town Planner
Reviewed by: James Stewart (james@woolcottsurveys.com.au)
Senior Planner

Rev. no	Description	Date
1	Draft	29 March 2023
2	Review	11 April 2023
3	Final	11 April 2023
4	RFI	6 July 2023
5	Final	10 July 2023

Launceston | St Helens | Hobart | Devonport
woolcottsurveys.com.au

Contents

1. Introduction

This report has been prepared in support of a planning permit application under Section 57 of the Land Use Planning and Approval Act 1993 (the 'Act') to develop land at 7a William Street, Campbell Town (the 'subject site'). This application is to be read in conjunction with the following supporting documentation:

Document	Consultant
Proposal Plan	Woolcott Surveys
Bushfire Hazard Assessment	Woolcott Surveys
TIA	Traffic and Civil Services
Noise and Vibration report	Pitt & Sherry
Civil design	Rare.

1.1 Application and site summary

Address	7A William Street, Campbell Town TAS 7210
Property ID	9240372
Title	43080/4
Land area	1.322ha
Planning Authority	Northern Midlands Council ('Council')
Covenant/Easements	Drainage easements
Application status	Discretionary application
Existing Access	Access from William Street
Proposed development	Subdivision to 18 lots – 15 residential lots; 1 road lot; 2 footway lots
Planning Controls	
Zone	General Residential
General Overlay	Campbell Town Specific Area Plan
Overlays	Bushfire Prone Areas; Priority vegetation area; Local heritage precinct; Airport obstacle limitation area.
Existing development	Vacant
Existing services and infrastructure	
Water	Available
Sewer	Available
Stormwater	Available

1.2 Images

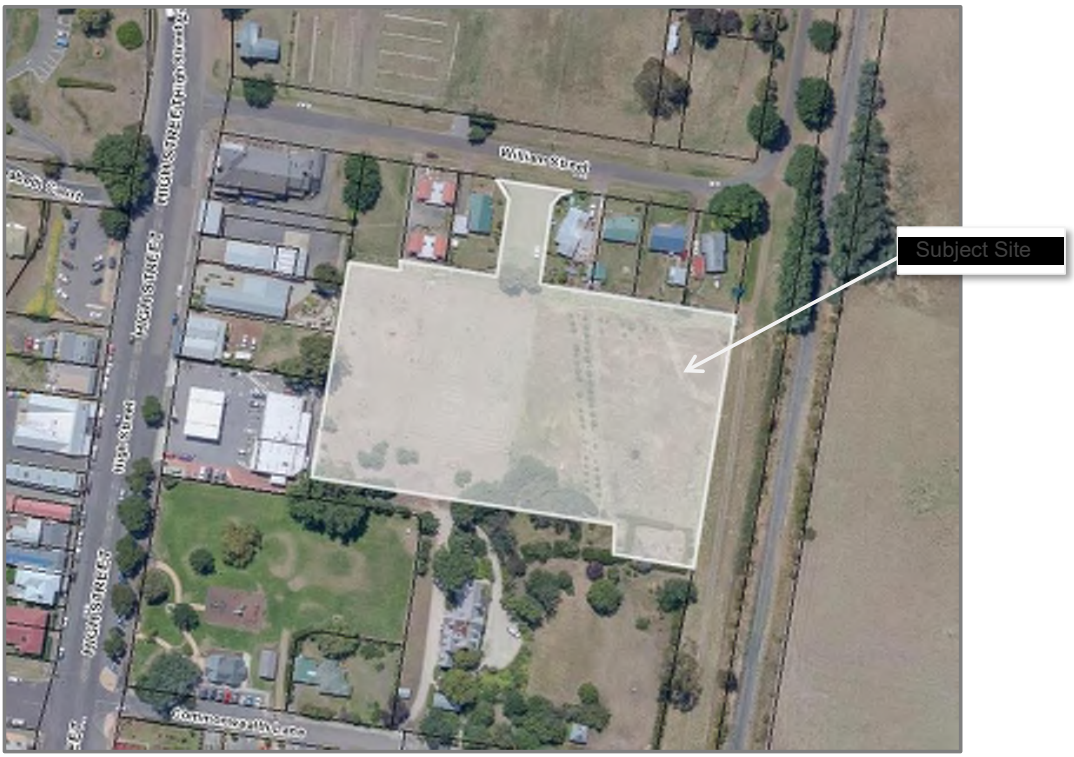


Figure 1 Aerial view of the subject site (Source: LISTMap)

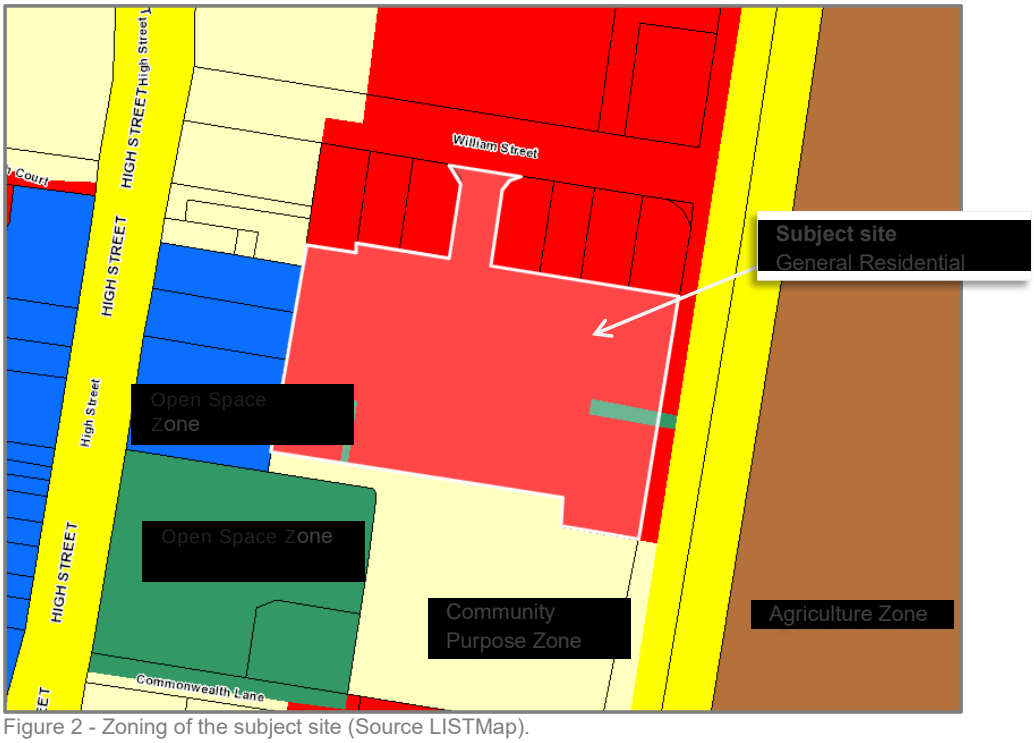


Figure 2 - Zoning of the subject site (Source LISTMap).

The site is within the area affected by the Campbell Town Specific Area Plan

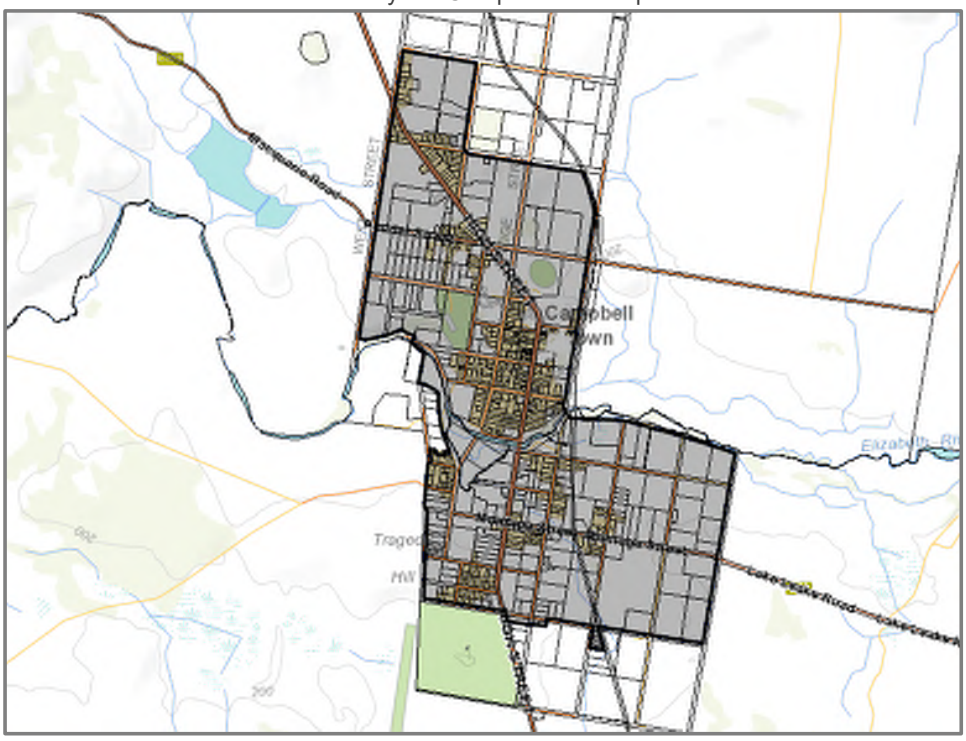


Figure 3 Specific Area Plan - Campbell Town; affected area (Source: LISTMap)

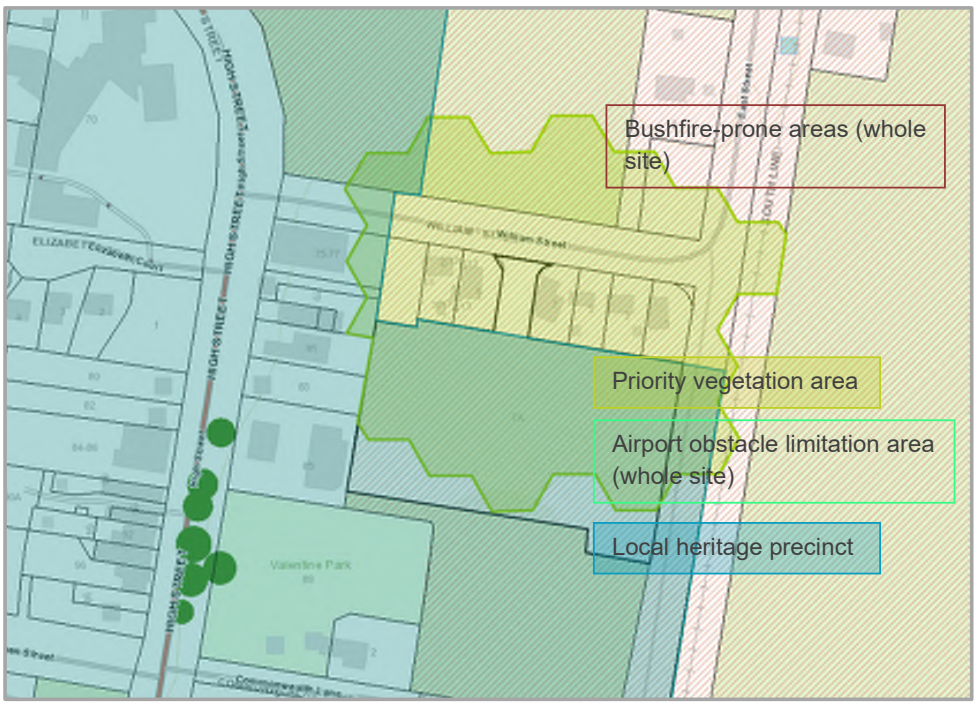


Figure 4 – Overlays affecting the subject site and surrounding areas (Source: LISTMap).

2. Planning Assessment

2.1 Planning Scheme Zone Assessment

NOR-S2.0 Campbell Town Specific Area Plan

NOR-S2.8 Development Standards for Subdivision

NOR-S2.8.1 Lot design in development precincts

Objective	
That each development precinct creates an efficient lot design that provides connectivity and optimal location for public open space compatible with the rural township character.	
Acceptable Solutions	**Performance Criteria**
A1 Each lot, or a lot proposed in a plan of subdivision, must be in accordance with the applicable lot layout shown in the precinct masterplans in Figures NOR-S2.2.2 and NOR-S2.2.3.	P1 Each lot, or a lot proposed in a plan of subdivision, must be consistent with the rural township character and provide an optimal location for public open space, having regard to: a) lot layout shown in the applicable precinct masterplans in Figures NOR-S2.2.2 and NOR-S2.2.3; b) the road network as north south grid; c) fronting new lots onto existing roads where possible; d) minimising cul-de-sacs; e) the provision of public open spaces that facilitate pedestrian loops around the town; f) creating connections between new and existing public open spaces; g) creating road frontages around public open spaces; h) using public open spaces for stormwater detention; i) the relevant requirements for development of buildings on the lots; j) the intended location of buildings on the lots; and k) the pattern of development existing on established properties within the area.

Response

P1 The proposed subdivision is within the land identified as NOR-S2.2.2. The lot layout is altered from the masterplan as there are more lots proposed than what is included in the masterplan. As such, the performance criteria are addressed.

The proposed subdivision is consistent with the public open space objectives:

a. the lot layout as proposed retains the public open space as included in the masterplan.

b. The road network as proposed is retained in accordance with the masterplan.
c. The subject site is an internal lot and a new road must be made. The road is in accordance with the masterplan.
d. Through roads are not achievable. The road design is in accordance with the masterplan.
e. The provision of public open space is in accordance with the masterplan.
f. Connections to public open spaces is included in the proposal plan, in accordance with the masterplan.
g. The public open space is in accordance with the masterplan and the proposed open space is accessible by the proposed road.
h. The public open space is used for stormwater easement, as shown on plan, no detention is proposed.
i. Each lot is capable of accommodating a residential building in accordance with the general residential zone.
j. The proposed lots will have adequate space for residential buildings with appropriate setbacks.
k. The proposed layout is sympathetic to the existing development on William Street, which is adjoining. The proposed lot layout generally mirrors the adjoining lots.

NOR-S2.8.2 Lot design

Objective	
That each lot: a) has an area and dimensions appropriate for the use and development; b) is provided with appropriate access to a road; c) contains areas which are suitable for development appropriate to the purpose of the zone and specific area plan, located to avoid natural hazards; and d) is oriented to provide solar access for future dwellings.	
Acceptable Solutions	Performance Criteria
A1 Each lot or a lot proposed in a plan of subdivision, must: a) have an area of not less than 600m2 and: i. be able to contain a minimum area of 10m x 15m with a gradient not steeper than 1 in 5, clear of: a. all setbacks required by clause 8.4.2 A1, A2 and A3, and 8.5.1 A1 and A2; and b. easements or other title restrictions that limit or restrict development; and ii. existing buildings are consistent with the setback required by clause 8.4.2 A1, A2 and A3, and 8.5.1 A1 and A2; or b) be required for public use by the Crown, a council or a State authority; or c) be required for the provisions of Utilities; or d) be for the consolidation of a lot with another lot provided each lot is within the same zone.	P1 Each lot, or a lot proposed in a plan of subdivision must have sufficient useable area and dimensions suitable for its intended use, having regard to: a) the relevant requirements for development of buildings on the lots; b) the intended location of buildings on the lots must not result in unreasonable shading on adjoining lots; c) the topography of the site; d) the presence of any natural hazards; e) adequate provision of private open space; and f) the pattern of development existing on established properties within the area.

Response

A1 The acceptable solution is achieved. Each lot is at least 600m^2 in area, appropriately dimensioned for dwelling development and easements are not restrictive to future development potential.

NOR-S2.8.3 Internal Lots

Objective	
That subdivision layout of land outside the precinct masterplans in Figures NOR-S2.2.2 and NOR-S2.2.3: a) minimises internal lots; b) is consistent with existing patterns of residential development in the surrounding area; and c) retains the rural township character.	
Acceptable Solutions	**Performance Criteria**
A1 No Acceptable Solution.	P1 Each internal lot, or an internal lot proposed in a plan of subdivision must have sufficient useable area and dimensions suitable for its intended use, having regard to: a) consistency with existing patterns of residential development of the surrounding area; b) the lot gaining access from a road existing prior to the planning scheme coming into effect; c) site constraints making an internal lot configuration the only reasonable option to efficiently use the land; d) the lot contributing to the more efficient use of residential land and infrastructure; e) the amenity of adjacent lots not being unreasonably affected by subsequent development and use; f) the lot having access to a road via an access strip, which is part of the lot, or a right-of-way, with a width of no less than 3.6m; g) passing bays being provided at appropriate distances to service the likely future use of the lot; h) the access strip being adjacent to or combined with no more than three other internal lot access strips provided that it is otherwise not appropriate to provide access via a public road; i) the lot addressing and providing for passive surveillance of public open space and public rights of way if it fronts such public spaces; j) the relevant requirements for development of buildings on the lots; k) the intended location of buildings on the lots; l) the topography of the site; m) the presence of any natural hazards; n) adequate provision of private open space; and o) the pattern of development existing on established properties in the area.

Response

P1 The performance criteria are addressed. There is one internal lot (proposed Lot 10) included in the proposal plan. The proposed will have sufficient area for development in line with the surrounding and relevant lots.

a. there are minimal examples of internal lots in the area. Although they are not prevalent, they do occur. As such, one lot in fifteen is reasonable.
b. The lot is proposed together with the road, however,
c. due to the layout of the road, the single internal lot allows best and most efficient use of the land on the cul-de-sac.

d. This effective use of the land is specifically where the existing lot is irregular (at this location), allowing additional land area allowance.
e. The access strip is reasonable in length and no undue impact is anticipated.
f. The lot will have a short length access strip of 7.5m and a width of 6m. No right of way is proposed.
g. Passing bays will not be required.
h. Only one internal lot is proposed.
i. The internal lot is shallow and has reasonable passive surveillance qualities to the street and equal surveillance qualities to the adjoining lots.
j. The lot is generous in area and has adequate provision for a dwelling.
k. A dwelling is not proposed as a part of this application but the proposed lot is adequately dimensioned to accommodate residential development.
l. The site is not topographically challenging.
m. Low flood hazard risk is identified on the site; however, lots can accommodate development. The site is identified for bushfire risk also. Risk is mitigated by specific development advice provided in accompanying reports.
n. The lot is large enough to allow for private open space being more than double the minimum lot size in the general residential zone.
o. The surrounding development is varied in lot size and layout and the subject site is bound by several different zones. The proposed lots are generally in accordance with the adjoining residential area and generally in accordance with the masterplan.

NOR-S2.8.4 Roads

Objective	
That the arrangement of new road within a subdivision provides for: a) safe, convenient and efficient connections to assist accessibility and mobility of the community; b) the adequate accommodation of vehicular, pedestrian, cycling and public transport traffic; c) adequate areas for the planting of street trees in the road reserve; and d) the efficient ultimate subdivision of the entirety of the land and of surrounding land.	
Acceptable Solutions	Performance Criteria
A1 The subdivision includes no new roads.	P1 The arrangement and construction of roads within a subdivision must provide an appropriate level of access, connectivity, safety and convenience for vehicles, pedestrians and cyclists, having regard to: a) any road network plan adopted by the council; b) the existing and proposed road hierarchy; c) the need for connecting roads and pedestrian and cycling paths, to common boundaries with adjoining land, to facilitate future subdivision potential; d) maximising connectivity with the surrounding road, pedestrian, cycling and public transport networks; e) minimising the travel distance between key destinations such as shops and services and public transport routes; f) access to public transport; g) the efficient and safe movement of pedestrians, cyclists and public transport; h) the need to provide bicycle infrastructure on new arterial and collector roads in accordance with the Guide to Road Design Part 6A: Paths for Walking and Cycling 2016; i) the topography of the site; j) the future subdivision potential of any balance

	lots on adjoining or adjacent land; and

Response

P1 The performance criteria are applicable. The road has been designed in accordance with the masterplan and considered acceptable.

8.0 General Residential Zone

10.6 Development Standards for Subdivision

8.6.3 Services

Objective	
That the subdivision of land provides services for the future use and development of the land.	
Acceptable Solutions	**Performance Criteria**
A1 Each lot, or a lot proposed in a plan of subdivision, excluding for public open space, a riparian or littoral reserve or Utilities, must have a connection to a full water supply service.	P1 A lot, or a lot proposed in a plan of subdivision, excluding for public open space, a riparian or littoral reserve or Utilities, must have a connection to a limited water supply service, having regard to: a) flow rates; b) the quality of potable water; c) any existing or proposed infrastructure to provide the water service and its location; d) the topography of the site; and e) any advice from a regulated entity.
A2 Each lot, or a lot proposed in a plan of subdivision, excluding for public open space, a riparian or littoral reserve or Utilities, must have a connection to a reticulated sewerage system.	P2 No Performance Criterion.
A3 Each lot, or a lot proposed in a plan of subdivision, excluding for public open space, a riparian or littoral reserve or Utilities, must be capable of connecting to a public stormwater system.	P3 Each lot, or a lot proposed in a plan of subdivision, excluding for public open space, a riparian or littoral reserve or Utilities, must be capable of accommodating an on-site stormwater management system adequate for the future use and development of the land, having regard to: a) the size of the lot; b) topography of the site; c) soil conditions; d) any existing buildings on the site; e) any area of the site covered by impervious surfaces; and f) any watercourse on the land.

Response

A1 The acceptable solution is achieved.

A2 The acceptable solution is achieved.

A3 The acceptable solution is achieved.
Please refer to Annexure 3 for all servicing details and plans.

2.2 Planning Scheme Code Assessment

C2.0 Parking and Sustainable Transport Code

C2.5 Use Standards

C2.5.1 Car parking numbers

Response

A1 The acceptable solution is achieved. Each site has ample area to provide at least two car parking spaces upon development.

C2.6 Development Standards for Buildings and Works

C2.6.3 Number of accesses for vehicles

Response

A1 Each frontage has one access only.

C3.0 Road and Railway Assets Code

C3.7 Development Standards for Subdivision

C3.7.1 Subdivision for sensitive uses within a road or railway attenuation area

Response

Please refer to the Traffic Impact Assessment provided at Annexure 4 and the Attenuation report at Annexure 6.

C6.0 Local Historic Heritage Code

C6.7 Development Standards for Local Heritage Precincts and Local Historic Landscape Precincts

C6.7.3 Buildings and works, excluding demolition

Response

P1 The performance criteria are addressed. The subdivision includes the removal of trees (as detailed in C7 Natural assets code), and post and wire fencing at the road reserve to the east boundary. This will be relaced with a fence as detailed in the Attenuation and Bushfire responses. This will not cause an impact to the local historic heritage due to:

a. the post and wire fence is insignificant and has no historical merit. It is visible from public areas, but not from main roads and thoroughfares. The Olive trees are young and do not form a historical part of the local scenery.
b. Deterioration of these elements is not a contributing factor.
c. Safety is a contributing factor as the fence must be replaced – as according to the bushfire protection measures proposed. The current condition of the fence or trees is not a factor.
d. The fence and trees are not a part of a main street or thoroughfare and have little streetscape significance.
e. The contribution in historical terms of the fence or trees is not significant. They are not part of the earlier fabric of the town nor contribute to the significance of the Grange and associated open spaces. Where there are trees on the boundary to these spaces, they will be retained as a part of this application.
f. Not applicable
g. Not applicable

h. The trees are to be removed to allow the subdivision works to be made. The fence will be replaced to protect the future development from increased risk to bushfire and attenuation mitigation.

P2 Not applicable. No new front fences or gates are proposed.

C7.0 Natural Assets Code

C7.2 Application of this Code

C7.2.1 This code applies to development on land within the following areas: (GRZ not listed)

Response

The code does not apply but information is listed here for context and as it relates to Code C6.0.

C7.7.2 Subdivision within a priority vegetation area

Response

P1 The development will require some clearing for infrastructure works. The vegetation to be cleared consists of non-native species (small olive trees) and 2 medium sized wattle trees. The remainder of the lot is generally grass and small assorted shrubs.
The following images show details of the vegetation on the site.

C13.0 Bushfire-Prone Areas Code

Please refer to Annexure 5 for the response to this code.

C16.0 Safeguarding of Airports Code

C16.4.1 The following use or development is exempt from this code:

(a) development that is not more than the AHD height specified for the site of the development in the relevant airport obstacle limitation area.

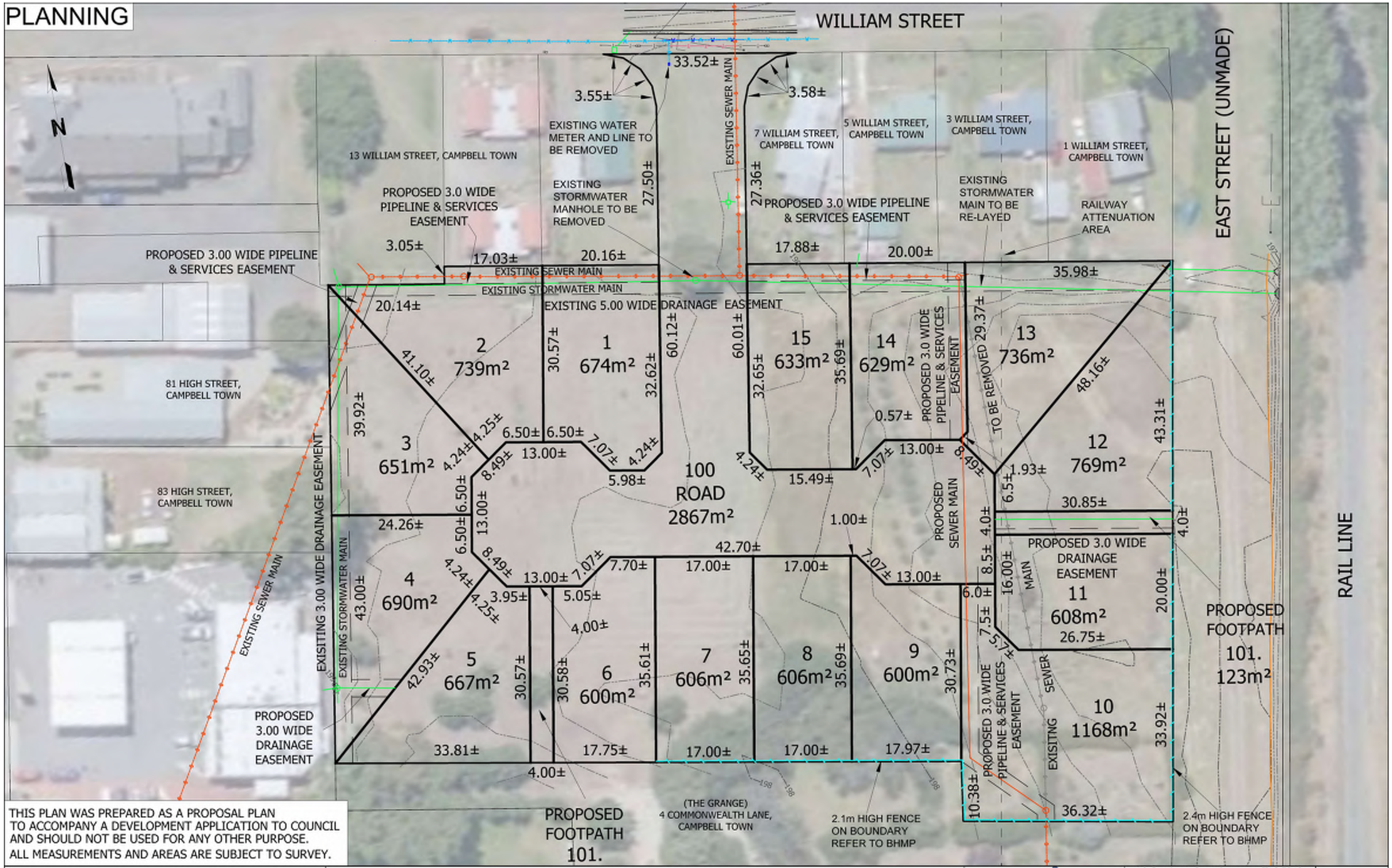
Response

The application is exempt.

3. Conclusion

The proposed development is for an 18 lot subdivision. Fifteen lots will be for residential development and there will be one road lot, and two walkway lots, in accordance with the public open space requirement of the SAP. The subdivision meets the provisions of the SAP and Zone and a permit from Council is sought.

Annexure 1 – Copy of Title plan and Folio text
Annexure 2 – Proposal plan
Annexure 3 – Civil works and services plan
Annexure 4 – Traffic impact statement
Annexure 5 – Bushfire hazard package
Annexure 6 – Attenuation report



Notes:

- CONTOUR INDEX 1.00m
  CONTOUR INTERVAL 0.20m

Exhibited

Received
10/07/2023

PROPOSED 16 LOT SUBDIVISION
OWNER: GRANGE VISTA PTY LTD
7a WILLIAM STREET, CAMPBELL TOWN, 7210
C.T. 43080-4

WOOLCOTT SURVEYS
10 Goodman Court Invermay TAS 7248
PO Box 593 Mowbray Heights TAS 7248
Phone (03) 6332 3760
Fax (03) 6332 3764
Email: office@woolcottsurveys.com.au

Job Number	Drawn	File name	Date	Scale	Edition	Sheet
L220916	JAG/CSS	L220916_Prop PlanV4.1_100723.dwg	10/07/23	1:600@A3	V4.1	1 of 1

CLIENT:
BAKER & WALLIS

PROJECT:
SUBDIVISION

ADDRESS:
7A WILLIAM STREET, CAMPBELL TOWN

PROJECT No:
231007

STATUS:
CONTROLLED DOCUMENT

ISSUED FOR / DESCRIPTION:
DEVELOPMENT APPROVAL

DRAWINGS:

REV:	ISSUED FOR / DESCRIPTION:	BY:	DATE:
A	DEVELOPMENT APPROVAL	PVD	29-03-23

STATUS: **CONTROLLED DOCUMENT**

DO NOT SCALE - IF IN DOUBT, ASK

APPROVED: R. JESSON | ACRED. No: CC5848I

DESIGN BY:	PVD
DESIGN CHK:	RJJ
DRAWN BY:	PVD
DRAFT CHK:	JWS
DATE:	29-03-23

rare.
22-24 Paterson Street
Launceston TAS 7250
rarein.com.au
P. 03 6388 9200

CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

TITLE: COVER SHEET
SCALE: - SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: COV REV: A

GENERAL

1. NOTICE TO TENDERER
THE CONTRACTOR / TENDERER IS TO MAKE THEMSELVES AWARE OF THE LOCAL COUNCIL AND THE DEPARTMENT OF STATE GROWTH (D.S.G.) STANDARDS FOR CIVIL WORKS. CONSTRUCTION IS TO BE CARRIED OUT TO THESE STANDARDS. TENDERER IS TO ALLOW FOR THESE STANDARDS DURING PRICING. COPIES OF THE STANDARDS ARE AVAILABLE FOR INSPECTION UPON REQUEST FROM THE LOCAL COUNCIL OR D.S.G.'s WEB SITE.

2. NOTIFICATION
THE CONTRACTOR IS TO NOTIFY ALL RELEVANT STATUTORY AUTHORITIES PRIOR TO COMMENCING ANY WORK FOR THE POSSIBLE LOCATION OF ANY EXISTING SERVICES NOT SHOWN ON THESE PLANS, AND IS TO NOTIFY THE SUPERINTENDENT OF THE SAME.
ALL EXISTING SERVICES ARE TO BE PROTECTED DURING CONSTRUCTION. ANY DAMAGE TO EXISTING SERVICES IS TO BE MADE GOOD AT THE CONTRACTOR'S EXPENSE.

3. DRAWINGS AND SPECIFICATIONS
THESE DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED FOR THE PURPOSE OF OBTAINING COUNCIL APPROVAL AND CALLING OF TENDERS. THEY ARE NOT TO BE USED FOR CONSTRUCTION. A CONSTRUCTION SET OF DRAWINGS STAMPED "CONSTRUCTION SET" WILL BE ISSUED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

4. COMMON TRENCHING
WHERE ANY COMMON TRENCHING IS REQUIRED, THE FOLLOWING CLEARANCE DISTANCES (BARREL TO BARREL) MUST BE MAINTAINED FROM EXISTING OR PROPOSED SERVICES:
HORIZONTALLY:
- 300mm ALONG A LENGTH GREATER THAN 2 METRES.
- 500mm MINIMUM FROM ANY MAIN GREATER THAN 200mm DIA.
- 150mm MINIMUM ALONG A LENGTH LESS THAN 2 METRES.

VERTICALLY:
- 150mm MINIMUM
- 300mm MINIMUM FROM ANY MAIN GREATER THAN 200mm DIA.

ELECTRICAL CABLES SHOULD BE LOCATED ON THE OPOSITE SIDE OF THE STREET. WHERE THIS IS NOT POSSIBLE A 400mm MINIMUM DISTANCE MUST BE OBSERVED OF WHICH 300mm SHOULD BE IN NATURAL AND UNDISTURBED MATERIAL.

5. TASNETWORKS TRENCHING
THE CONTRACTOR IS TO ALLOW FOR EXCAVATION AND BACKFILLING OF ALL TRENCHES FOR THE INSTALLATION OF TASNETWORKS CABLES. CONTRACTOR IS TO LIAISE WITH THE TASNETWORKS FOR THE EXTENT OF CABLE TRENCHING, CONDUITS & PITS.

6. COMMUNICATION TRENCHING
THE CONTRACTOR IS TO ALLOW FOR EXCAVATION AND BACKFILLING OF ALL TRENCHES FOR THE INSTALLATION OF COMMUNICATIONS CABLES. CONTRACTOR IS TO LIAISE WITH COMMUNICATION AUTHORITY FOR THE EXTENT OF CABLE TRENCHING.

7. EXISTING SERVICES
LOCATE EXISTING SERVICES PRIOR TO COMMENCING DEMOLITION AND SITE WORKS. THE CONTRACTOR IS TO ARRANGE AND PAY FOR THE ON SITE MARKING AND CONFIRMATION OF DEPTH OF SERVICE LOCATIONS FOR ALL UNDERGROUND SERVICES INCLUDING COMMUNICATIONS, TASNETWORKS, TASWATER (WATER & SEWER) AND COUNCIL SERVICES (ie: STORMWATER) IN THE AREA OF NEW WORKS. LOCATION TO BE CONFIRMED USING CABLE LOCATORS AND HAND DIGGING METHODS. PRIOR TO ANY WORKS ON SITE, ANY CLASHES WITH DESIGNED SERVICES ON FOLLOWING DRAWINGS ARE TO BE REPORTED TO DESIGN ENGINEER FOR DIRECTION.

8. COUNCIL & AUTHORITIES APPROVALS
ALL WORKS ARE TO BE IN ACCORDANCE WITH THE FOLLOWING APPROVALS:
- NIL

9. SIGNAGE
ALL SIGN WORKS AND INSTALLATION TO BE IN ACCORDANCE WITH CURRENT VERSION OF MUTCD & AUSTROADS FOR SIGNAGE DETAILS.

10. SCOPE OF WORKS
THE SCOPE OF WORKS ARE SHOWN IN THESE DOCUMENTS AND THE SPECIFICATION. IT IS EXPECTED THE CONTRACTOR WILL RESOLVE ALL ISSUES UNCOVERED ON SITE THAT ARE NOT DETAILED IN CONJUNCTION WITH THE SUPERINTENDENT.

GENERAL CONT.

11. LINE TYPE LEGEND

AG	DN100 AGG PIPE OR MEGAFLOW DRAIN AS NOTED @ 1:100 FALL TO STORM WATER SYSTEM
eSW	DENOTES EXISTING STORM WATER MAIN (CONFIRM EXACT LOCATION)
SW	DENOTES PROPOSED STORM WATER MAIN
eS	DENOTES EXISTING SEWER MAIN (CONFIRM EXACT LOCATION)
S	DENOTES PROPOSED SEWER MAIN
eW	DENOTES EXISTING WATER MAIN (CONFIRM EXACT LOCATION)
W	DENOTES PROPOSED WATER MAIN
eGAS	DENOTES EXISTING GAS MAIN (CONFIRM EXACT LOCATION)
GAS	DENOTES PROPOSED GAS MAIN
eCOM	DENOTES EXISTING UNDERGROUND TELECOM / FIBRE OPTIC LINE (CONFIRM EXACT LOCATION)
	DEMOLITION

12. SITE WORKS SYMBOLS LEGEND

PED	PEDESTRIAN RAMP
TYPE BK	BARRIER KERB
TYPE KC	KERB AND CHANNEL
TYPE KCS	KERB AND CHANNEL - SMALL
TYPE KCM	MOUNTABLE KERB AND CHANNEL
TYPE KCV	VEHICULAR CROSSING
BOL	BOLLARD, REFER DETAIL
WS1	HUDSON CIVIL PRECAST CONCRETE WHEEL STOP (2000 LONG x 100 HIGH)

13. BUILDING SERVICES SYMBOLS LEGEND

TEL-PIT	TELECOMMUNICATION PIT

14. SURVEY SYMBOLS LEGEND

e	EXISTING
TOK 44.400	SPOT LEVEL WITH DESCRIPTION
+ 44.330	EXISTING SPOT LEVEL

15. DRAINAGE SYMBOLS LEGEND

MHx-SW	STORMWATER MANHOLE
MHx-S	SEWER MANHOLE
GPx-SW	GRATED/GULLY PIT - STORM WATER
GDx-SW	GRATED DRAIN - STORM WATER
SEPx-SW	SIDE ENTRY PIT - STORM WATER
uPVC	UNPLASTICIZED POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE (OR FOR) CLASS 4 (Z)
DN	NOMINAL DIAMETER
CL	COVER LEVEL
IL	INVERT LEVEL
DP	DOWN PIPE
IO	INSPECTION OPENING
IOS	INSPECTION OPENING TO SURFACE
	GRATED PIT

16. WATER RETICULATION SYMBOLS LEGEND

M	METER
CM	CHECK METER
FP	FIRE PLUG
	ISOLATION VALVE
	CHECK VALVE
	STRAINER
M	MONITORED VALVE
	BALANCE VALVE
	STOP VALVE
	DN100 REFLUX VALVE
RPZD	BACK FLOW PREVENTION DEVICE
PRV kPa	PRESSURE REDUCING VALVE
HBC	HOSE BIB COCK
	FIRE HYDRANT
	DUAL HEAD FIRE HYDRANT
FHR	FIRE HOSE REEL

EARTHWORKS

1. GENERAL
GENERAL EARTHWORKS, MATERIAL AND WORKMANSHIP SHALL COMPLY WITH THIS SPECIFICATION AND THE CURRENT EDITION OF THE S.A.A. CODE FOR EARTHWORKS AS 3798 TOGETHER WITH ANY CODES, STANDARDS OR REGULATIONS REFEREED TO THEREIN.

2. INSPECTIONS
THE CONTRACTOR IS TO ENGAGE AN APPROVED GEOTECHNICAL ENGINEER TO CARRY OUT LEVEL 2 TESTING OF ALL EARTH WORKS TO AS 3798, INCLUDING
- SUBGRADE
- FILLS
- PAVEMENTS
- BACKFILLING OF SERVICE TRENCHES

CERTIFICATION OF THESE ELEMENTS IS TO BE PROVIDED PRIOR TO TO PRACTICAL COMPLETION

3. AREAS OF FILL
A. REMOVE TOP SOIL AND ORGANIC MATERIAL
B. PROOF ROLL SUBGRADE IN ACCORDANCE WITH AS1289 TO:
- 98% STANDARD DRY DENSITY UNDER BUILDING
- 98% STANDARD DRY DENSITY UNDER ROADS AND CARPARKS
- REMOVE ANY SOFT SPOTS AND COMPACT WITH 2% OF OPTIMUM MOISTURE CONTENT TO STANDARD DRY DENSITY AS STATED ABOVE

C. PLACE FILL AS SPECIFIED AND COMPACT WITHIN 2% OF OPTIMUM MOISTURE CONTENT TO STANDARD DRY DENSITY AS STATED ABOVE

4. AREAS OF CUT
A. REMOVE TOP SOIL AND ORGANIC MATERIAL
B. PROOF ROLL SUBGRADE IN ACCORDANCE WITH AS1289 TO:
- 98% STANDARD DRY DENSITY UNDER BUILDINGS
- 98% STANDARD DRY DENSITY UNDER ROADS AND CAR PARKS
- REMOVE ANY SOFT SPOTS AND COMPACT WITH 2% OF OPTIMUM MOISTURE CONTENT TO STANDARD DRY DENSITY AS STATED ABOVE

SOIL & WATER MANAGEMENT

1. GENERAL
ALL WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH 'SOIL & WATER MANAGEMENT ON BUILDING & CONSTRUCTION SITES' GUIDELINES AVAILABLE FROM NORTHERN RESOURCE MANAGEMENT (NRM).

2. SOIL EROSION CONTROL
SOIL EROSION CONTROL IN ACCORDANCE WITH NRM GUIDELINES. CONTRACTOR TO ALLOW TO:
- LIMIT DISTURBANCE WHEN EXACTING BY PRESERVING VEGETATED AREA'S AS MUCH AS POSSIBLE
- DIVERT UP-SLOPE WATER WHERE PRACTICAL
- INSTALL SEDIMENT FENCES DOWN SLOPE OF ALL DISTURBED LANDS TO FILTER LARGE PARTICLES PRIOR TO STORM WATER SYSTEM
- WASH EQUIPMENT IN DESIGNATED AREA THAT DOES NOT DRAIN TO STORM WATER SYSTEM
- PLACE STOCK PILES AWAY FROM ON-SITE DRAINAGE & UP-SLOPE FROM SEDIMENT FENCES
- LEAVE & MAINTAIN VEGETATED FOOT PATH
- STORE ALL HARD WASTE & LITTER IN A DESIGNATED AREA THAT WILL PREVENT IT FROM BEING BLOWN AWAY & WASHED INTO THE STORM WATER SYSTEM
- RESTRICT VEHICLE MOVEMENT TO A STABILISED ACCESS

3. NRM GUIDELINES
CONTRACTOR TO COMPLETE ALL WORKS IN ACCORDANCE WITH NRM SOIL & WATER MANAGEMENT ON BUILDING & CONSTRUCTION SITE USING THE FACT SHEETS:
- FACT SHEET 1: SOIL & WATER MANAGEMENT ON LARGE BUILDING & CONSTRUCTION SITES
- FACT SHEET 2: SOIL & WATER MANAGEMENT ON STANDARD BUILDING & CONSTRUCTION SITES
- FACT SHEET 3: SOIL & WATER MANAGEMENT PLANS
- FACT SHEET 4: DISPERSIVE SOILS - HIGH RISK OF TUNNEL EROSION
- FACT SHEET 5: MINIMISE SOIL DISTURBANCE
- FACT SHEET 6: PRESERVE VEGETATION
- FACT SHEET 7: DIVERT UP-SLOPE WATER
- FACT SHEET 8: EROSION CONTROL MATS & BLANKETS
- FACT SHEET 9: PROTECT SERVICE TRENCHES & STOCKPILES
- FACT SHEET 10: EARLY ROOF DRAINAGE CONNECTION
- FACT SHEET 11: SCOUR PROTECTION - STORM WATER PIPE OUTFALLS & CHECK DAMS
- FACT SHEET 12: STABILISED SITE ACCESS
- FACT SHEET 13: WHEEL WASH
- FACT SHEET 14: SEDIMENT FENCES & FIBRE ROLLS
- FACT SHEET 15: PROTECTION OF STORM WATER PITS
- FACT SHEET 16: MANAGE CONCRETE, BRICK & TILE CUTTING
- FACT SHEET 17: SEDIMENT BASINS
- FACT SHEET 18: DUST CONTROL
- FACT SHEET 19: SITE RE-VEGETATION

ROAD WORKS

1. GENERAL
ALL WORKS ARE TO BE CARRIED OUT TO THE LOCAL COUNCIL AND D.S.G. STANDARDS. ANY DEPARTURES FROM THESE STANDARDS REQUIRES THE PRIOR APPROVAL OF THE SUPERINTENDENT AND THE LOCAL COUNCIL WORKS SUPERVISOR.

2. INSPECTIONS
THE CONTRACTOR IS RESPONSIBLE FOR ORGANISING THE FOLLOWING INSPECTIONS WITH THE SUPERINTENDENT. 48 HOURS NOTICE IS REQUIRED TO BE GIVEN TO THE SUPERINTENDENT PRIOR TO THE INSPECTION.
- SUBGRADE PREPARATION
- SUB-BASE FOR ROADS, CARPARKS AND KERBS
- BASE COURSE
- FINAL TRIM PRIOR TO PLACING KERBS
- FINAL TRIM PRIOR TO SEALING

3. TESTING
THE CONTRACTOR IS TO BE RESPONSIBLE FOR ORGANISING AND PAYING ALL COSTS ASSOCIATED WITH TESTING IN ACCORDANCE WITH D.S.G. SPEC SECTION 173-EXAMINATION AND TESTING OF MATERIALS AND WORK (ROADWORKS).

4. HOTMIX
ALL HOTMIX IS TO BE BLACK IN COLOUR AND IS TO MEET AND BE PLACED IN ACCORDANCE WITH D.S.G. SPEC SECTION 407-HOT MIX ASPHALT.

5. KERBS
ALL KERBS ARE TO BE AS SHOWN ON THE DRAWINGS AND BE IN ACCORDANCE WITH IPWEA LGAT STANDARD DRAWINGS.

6. ROAD RESERVE WORKS
ALL WORKS IN (OR REQUIRING OCCUPATION) IN THE ROAD RESERVE MUST BE UNDERTAKEN BY CONTRACTOR REGISTERED WITH COUNCIL'S (REGISTERED CONTRACTOR).

7. FOOTPATHS
CONSTRUCT FOOTPATHS INCLUDING EXPANSION / CONTROL / WEAKENED PLANE JOINTS IN ACCORDANCE WITH IPWEA STD DWG TSD-R11-v3

8. LANDSCAPE / STREET FURNITURE
- BOLLARDS, REFER DETAILS / SUPERINTENDENTS SPEC.
- LANDSCAPING & STREET FURNITURE BY CONTRACTOR - U.N.O

STORMWATER

1. GENERAL
ALL WORKS ARE TO BE CARRIED OUT TO THE LOCAL COUNCIL AND DSG STANDARDS. ANY DEPARTURES FROM THESE STANDARDS REQUIRES THE PRIOR APPROVAL OF THE SUPERINTENDENT AND THE LOCAL COUNCIL WORKS SUPERVISOR. ALL STORM WATER PLUMBING & DRAINAGE TO COMPLY WITH A.S 3500.3:2003 STORM WATER DRAINAGE.

2. TESTING
ALL DRAINAGE WORKS SHALL BE SUBJECT TO THE TESTS PRESCRIBED BY THE AUTHORITIES HAVING JURISDICTION OVER THE VARIOUS SERVICES. ANY SECTION FAILING SUCH TESTS SHALL BE REMOVED AND PROPERLY INSTALLED AT THE CONTRACTOR'S EXPENSE.

3. MANHOLES
MANHOLES ARE TO BE 1050 I.D. U.N.O PRECAST CONCRETE INSTALLED TO LOCAL COUNCIL STANDARDS. ALL MANHOLES IN TRAFFICED AREAS ARE TO BE FITTED WITH HEAVY DUTY GATIC COVERS AND SURROUNDS. ALL MANHOLES ARE TO HAVE A 5 METRE LENGTH OF 75mm AG-PIPE CONNECTED TO THEM AND LAID IN THE UPSTREAM PIPE TRENCH IMMEDIATELY ADJACENT TO AND AT THE INVERT OF THE LOWEST PIPE WORK.

4. SIDE ENTRY PIT (SEP)
- PIT INVERT DEPTHS VARY, REFER SITE PLAN.
- BENCH OUT IN A NEAT AND TIDY MANNER TO ENGINEERS APPROVAL.
- GRATED PIT - GULLY HINGED OR OTHER TYPE APPROVED
- CONCRETE KERB LINTEL - STEEL KERB LINTEL AND 1200 LONG GALV BAR

5. TRENCHING AND BACKFILL
ALL TRENCHES ARE TO BE EXCAVATED AND BACKFILLED IN ACCORDANCE WITH THE DRAWINGS AND THE LOCAL COUNCIL STANDARDS.

6. INSPECTIONS
THE CONTRACTOR IS RESPONSIBLE FOR ORGANISING THE FOLLOWING INSPECTIONS WITH THE SUPERINTENDENT. 48 HOURS NOTICE IS REQUIRED TO BE GIVEN TO THE SUPERINTENDENT PRIOR TO THE INSPECTION.
- PIPEWORK BEDDING
- INSTALLED PIPE PRIOR TO BACKFILLING
- BACKFILLING

7. AS CONSTRUCTED DRAWINGS
THE CONTRACTOR WILL BE RESPONSIBLE FOR PRODUCING "AS CONSTRUCTED" DRAWINGS TO THE STANDARD REQUIRED BY THE LOCAL COUNCIL. THE DRAWINGS SHALL BE CERTIFIED AS BEING CORRECT BY EITHER A CHARTERED CIVIL ENGINEER OR A REGISTERED SURVEYOR. RARE CAN PROVIDE THIS SERVICE, HOWEVER THE CONTRACTOR WILL BE CHARGED FOR THIS SERVICE AND SHOULD BE AWARE OF THIS WHEN PRICING.

8. TESTING
CONTRACTOR SHALL CAMERA TEST ALL PIPES AND SUBMIT FOOTAGE TO LOCAL COUNCIL FOR APPROVAL.

9. REDUNDANT PIPE WORK
FILL REDUNDANT SECTION OF PIPEWORK WITH 'LIQUIFILL' (GRADE PC.1 - 0.5-2.0 MPa)

SEWERAGE

1. GENERAL
ALL SEWER WORKS TO BE IN ACCORDANCE WITH THE WSA SEWER CODE (WSA 02-2014-3.1 MRWA) AND AS AMENDED BY THE TASWATER SUPPLEMENT.
TASWATER APPROVED PRODUCTS ARE CONTAINED ON THE CITY WEST WATER WEBSITE HTTP://WWW.MRWA.COM.AU/PAGES/PRODUCTS.ASPX
ANY DEPARTURES FROM THESE STANDARDS REQUIRES THE PRIOR APPROVAL OF THE SUPERINTENDENT AND TASWATER FIELD SERVICES OFFICER.

2. TESTING
ALL DRAINAGE WORKS SHALL BE SUBJECT TO THE TESTS PRESCRIBED BY THE AUTHORITIES HAVING JURISDICTION OVER THE VARIOUS SERVICES. ANY SECTION FAILING SUCH TESTS SHALL BE REMOVED AND PROPERLY INSTALLED AT THE CONTRACTOR'S EXPENSE.

3. SEWER MAIN CONNECTIONS
ALL NEW 'LIVE' CONNECTIONS TO EXISTING TASWATER SEWER INFRASTRUCTURE INCLUDING BUT NOT LIMITED TO SEWER MAINS / MANHOLES TO BE COMPLETED BY TASWATER (UNLESS PRIOR WRITTEN APPROVAL) AT OWNERS COST.
INSTALL PROPERTY SEWER CONNECTIONS (STANDARD OR SLOPED) WITH SURFACE I.O. NOMINALLY 1.0m WITHIN EACH NEW LOT IN ACCORDANCE WITH SECTION 5 OF WSA 02-2014-3.1.

4. MANHOLES
MANHOLES ARE TO BE 1050 I.D. PRECAST CONCRETE INSTALLED TO WSA STANDARDS. CONSTRUCT ALL MANHOLES (MH) AND MANHOLE COVERS IN ACCORDANCE WITH THE SEWERAGE CODE OF AUSTRALIA - MELBOURNE RETAIL WATER AGENCIES INTEGRATED CODE - WSA 02-2014-3.1 MRWA VERSION 2.0 AND TASWATER'S SUPPLEMENT TO THIS CODE. ALL MANHOLES IN TRAFFICABLE AREAS ARE TO BE FITTED WITH HEAVY DUTY CLASS D GATIC COVERS AND SURROUNDS.
ALL MANHOLES IN NON-TRAFFICABLE AREAS ARE TO BE FITTED WITH MEDIUM DUTY CLASS B GATIC COVERS AND SURROUNDS.
BENCHING TO BE FULL DEPTH OF PIPE DIAMETER AS PER DETAILS IN WSA 02-2014-3.1 MRWA VERSION 2.0

5. TRENCHING AND BACKFILL
ALL TRENCHES ARE TO BE EXCAVATED AND BACKFILLED IN ACCORDANCE WITH THE DRAWINGS AND TASWATER STANDARDS INCLUDING ELECTROMAGNETIC METAL IMPREGNATED TAPE IN ALL NON METALLIC PIPE TRENCHES.

CEMENT STABILISED EMBEDMENT:

FOR SEWER MAINS THE FOLLOWING CHANGES SHOULD BE APPLIED TO THE MRWA SEWERAGE STANDARDS DRAWINGS MRWA-S-202 AND MRWA-S-205
MRWA-S-202
THE REQUIREMENT IDENTIFIED IN THE THIRD DOT POINT FOR TYPE B IN THE NOTES REGARDING TABLE 202-A SHALL BE AMENDED TO READ "WHERE SEWER AT GRADE > 1 IN 10"
MRWA-S-205
NOTE C REMAINS VALID "WHEN SOCKETED MAINS ARE LAID AT >1 IN 20 SLOPE IN AREAS THAT ARE LIKELY TO HAVE HIGH GROUND WATER, CEMENT STABILIZED EMBEDMENT SHALL BE USED AS PER MRWA-S-202"

6. INSPECTIONS
THE CONTRACTOR IS RESPONSIBLE FOR ORGANISING THE FOLLOWING INSPECTIONS WITH THE SUPERINTENDENT (LIAS WITH TASWATER) .
48 HOURS NOTICE IS REQUIRED TO BE GIVEN TO THE SUPERINTENDENT PRIOR TO THE INSPECTION.
- PIPEWORK BEDDING
- INSTALLED PIPE PRIOR TO BACKFILLING
- BACKFILLING

7. AS CONSTRUCTED DRAWINGS
THE CONTRACTOR WILL BE RESPONSIBLE FOR PRODUCING "AS INSTALLED" DRAWINGS TO THE STANDARD REQUIRED BY TASWATER. THE DRAWINGS SHALL BE CERTIFIED AS BEING CORRECT BY EITHER A CHARTERED CIVIL ENGINEER OR A REGISTERED SURVEYOR. RARE CAN PROVIDE THIS SERVICE, HOWEVER THE CONTRACTOR WILL BE CHARGED FOR THIS SERVICE AND SHOULD BE AWARE OF THIS WHEN PRICING.

8. TESTING
CONTRACTOR SHALL CCTV ALL PIPES AND SUBMIT FOOTAGE TO TASWATER FOR APPROVAL.

9. REDUNDANT PIPE WORK
FILL REDUNDANT SECTION OF PIPEWORK WITH 'LIQUIFILL' (GRADE PC.1 - 0.5-2.0 MPa)

WATER RETICULATION

1. GENERAL
ALL WATER SUPPLY CONSTRUCTION TO:
- WATER SUPPLY CODE OF AUSTRALIA (WSA 03-2011-3.1 VERSION MRWA EDITION V2.0) - PART 2: CONSTRUCTION
- WATER SERVICES ASSOCIATION OF AUSTRALIA - TASWATER SUPPLEMENT
- TASWATER'S STANDARD DRAWINGS TWS-W-0002 SERIES
- WATER METERING POLICY/METERING GUIDELINES
- TASWATER'S STANDARD DRAWINGS TWS-W-0003 - FOR PROPERTY SERVICE CONNECTIONS - CAGE FOR WATER METER ASSEMBLY
- BOUNDARY BACKFLOW CONTAINMENT REQUIREMENTS AND AS3500.1:2003.

ANY DEPARTURES FROM THESE STANDARDS REQUIRES THE PRIOR APPROVAL OF THE SUPERINTENDENT AND THE LOCAL WATER AUTHORITY WORKS SUPERVISOR.

2. TESTING
ALL WATER RETICULATION WORKS SHALL BE SUBJECT TO THE TESTS PRESCRIBED BY THE AUTHORITIES HAVING JURISDICTION OVER THE VARIOUS SERVICES. ANY SECTION FAILING SUCH TESTS SHALL BE REMOVED AND PROPERLY INSTALLED AT THE CONTRACTOR'S EXPENSE.

3. FIRE HYDRANTS
FIRE HYDRANTS ARE TO BE AS SHOWN ON THE DRAWINGS. THE CONTRACTOR IS TO ALLOW TO PLACE STANDARD MARKERS AS REQUIRED BY THE LOCAL AUTHORITY.

4. THRUST AND ANCHOR BLOCKS
THRUST AND ANCHOR BLOCKS ARE TO BE PROVIDED AT BENDS, VALVES, HYDRANTS AND LINE ENDS IN ACCORDANCE WITH TASWATER STANDARDS.

5. TRENCHING AND BACKFILL
ALL TRENCHES ARE TO BE EXCAVATED AND BACKFILLED IN ACCORDANCE WITH THE DRAWINGS AND TASWATER STANDARDS INCLUDING ELECTROMAGNETIC METAL IMPREGNATED TAPE IN ALL NON METALLIC PIPE TRENCHES.

CEMENT STABILISED EMBEDMENT:

THE LATEST VERSION OF DRAWING MRWA-W-208 (REV 3) INCLUDES TABLE 208_A WITH NOTE G INDICATING THAT WHEN TRENCHSTOPS OR BULKHEADS ARE USED (GRADES GREATER THAN 5%) CEMENT STABILISED EMBEDMENT MUST BE USED. THIS IS NOT TASWATER'S PREFERRED STANDARD.
FOR PIPES UP TO 10% GRADE TASWATER WILL ACCEPT THE PREVIOUS REVISION OF MRWA (REV 2). IE. PIPES UP TO 10% GRADE DO NOT REQUIRE CEMENT STABILISED EMBEDMENT UNLESS THE CONDITIONS OF NOTE H APPLY. "WHEN SOCKETED MAINS ARE LAID AT >5% SLOPE IN AREAS THAT ARE LIKELY TO HAVE HIGH GROUND WATER, CEMENT STABILISED EMBEDMENT SHALL BE USED.."
FOR PIPES AT GRADE GREATER THAN 10% MRWA-W-208 REV 3 REMAINS VALID.
THE LATEST VERSION OF MRWA-W-203 (REV 2) EMBEDMENT SHALL BE ADOPTED NOTING THAT THE REQUIREMENT IDENTIFIED IN THE THIRD DOT POINT FOR TYPE B IN THE NOTES REGARDING TABLE 203-A SHALL BE AMENDED TO READ "WHERE WATER MAIN GRADE >10%".

FURTHER TO THIS IT SHOULD BE NOTED THAT MOST WATER MAINS ARE LIKELY TO REQUIRE A TYPE A EMBEDMENT SYSTEM. THE VARIOUS MATERIALS AVAILABLE FOR THIS SYSTEM ARE IDENTIFIED IN TABLE 203-B

6. INSPECTIONS
THE CONTRACTOR IS RESPONSIBLE FOR ORGANISING THE FOLLOWING INSPECTIONS WITH THE SUPERINTENDENT. 48 HOURS NOTICE IS REQUIRED TO BE GIVEN TO THE SUPERINTENDENT PRIOR TO THE INSPECTION.
- PIPEWORK BEDDING
- INSTALLED PIPE PRIOR TO BACKFILLING
- BACKFILLING

7. PIPE CLEANING - 'DISINFECTION'
THE CONTRACTOR IS TO ALLOW TO CLEANSE WATER MAINS BY FLUSHING WITH SODIUM HYPOCHLORIDE AS DIRECTED BY THE LOCAL AUTHORITY.

8. AS CONSTRUCTED DRAWINGS
THE CONTRACTOR WILL BE RESPONSIBLE FOR PRODUCING "AS INSTALLED" DRAWINGS TO THE STANDARD REQUIRED BY TASWATER. THE DRAWINGS SHALL BE CERTIFIED AS BEING CORRECT BY EITHER A CHARTERED CIVIL ENGINEER OR A REGISTERED SURVEYOR. RARE CAN PROVIDE THIS SERVICE, HOWEVER THE CONTRACTOR WILL BE CHARGED FOR THIS SERVICE AND SHOULD BE AWARE OF THIS WHEN PRICING.

9. PROPERTY WATER CONNECTIONS
ALL PROPERTY CONNECTIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MRWA-W-110 AND MRWA-W-111 AND TASWATER STANDARD DRAWING
TW-W-0002 SERIES. THEY SHALL BE DN25(I.D.20) HDPE (PE100) SDR 11 PN16 PIPE. WHERE UNDER ROADS PIPES SHALL BE SLEEVED IN DN100 SN4 PIPE FITTED WITH TRACE AND TIGHT FITTING RUBBER WRAPS AT 2M CENTRES TO PREVENT WATER HAMMER

10. WATER MAINS CONNECTIONS
ALL NEW 'LIVE' CONNECTIONS TO EXISTING TASWATER WATER INFRASTRUCTURE TO BE COMPLETED BY TASWATER AT OWNERS COST.

11. MINIMUM COVER
MINIMUM COVER FOR WATER LINES ARE TO BE:
- UNDER ROAD WAYS (EXCLUDING MAJOR ROADS) AND VEHICULAR CROSS OVERS - 750mm
- RESIDENTIAL LAND - 450mm
- NON-RESIDENTIAL LAND - 600mm

SURVEY

1. SURVEY DETAILS
FOLLOWING ARE SURVEY DETAILS USED AS BASIS FOR DESIGN:
- SURVEYOR: WOOLCOTT SURVEYS
- SURVEY REF. NO. L220916
- SURVEY DATE: 30-11-22
- SITE LOCATION: -
- COORDINATE SYSTEM: GDA20 MGA55
- LEVEL DATUM: AHD 83
- SERVICE MARKER: SPM4887

2. SETOUT
1. SETOUT RESPONSIBILITY
   - CONTRACTOR TO ARRANGE AND PAY FOR REGISTERED SURVEYOR TO SETOUT THE PROJECT. RARE WILL PROVIDE CAD FILES TO ASSIST.

IMPORTANT NOTE:
THESE CAN BE READ IN BLACK AND WHITE, HOWEVER THESE DRAWINGS ARE BEST PRINTED IN FULL COLOUR FOR OPTIMUM CLARITY OF NEW AND EXISTING PIPE WORK.
A COLOUR COPY SHOULD BE RETAINED ON SITE AT ALL TIMES FOR CONTRACTORS COMPLETING WORKS.

REV:	ISSUED FOR / DESCRIPTION:	BY:	DATE:
A	DEVELOPMENT APPROVAL	PVD	29-03-23

STATUS: CONTROLLED DOCUMENT
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APPROVED: R. JESSON | ACRED. No: CC5848I

DESIGN BY: PVD
DESIGN CHK: RJJ
DRAWN BY: PVD
DRAFT CHK: JWS
DATE: 29-03-23

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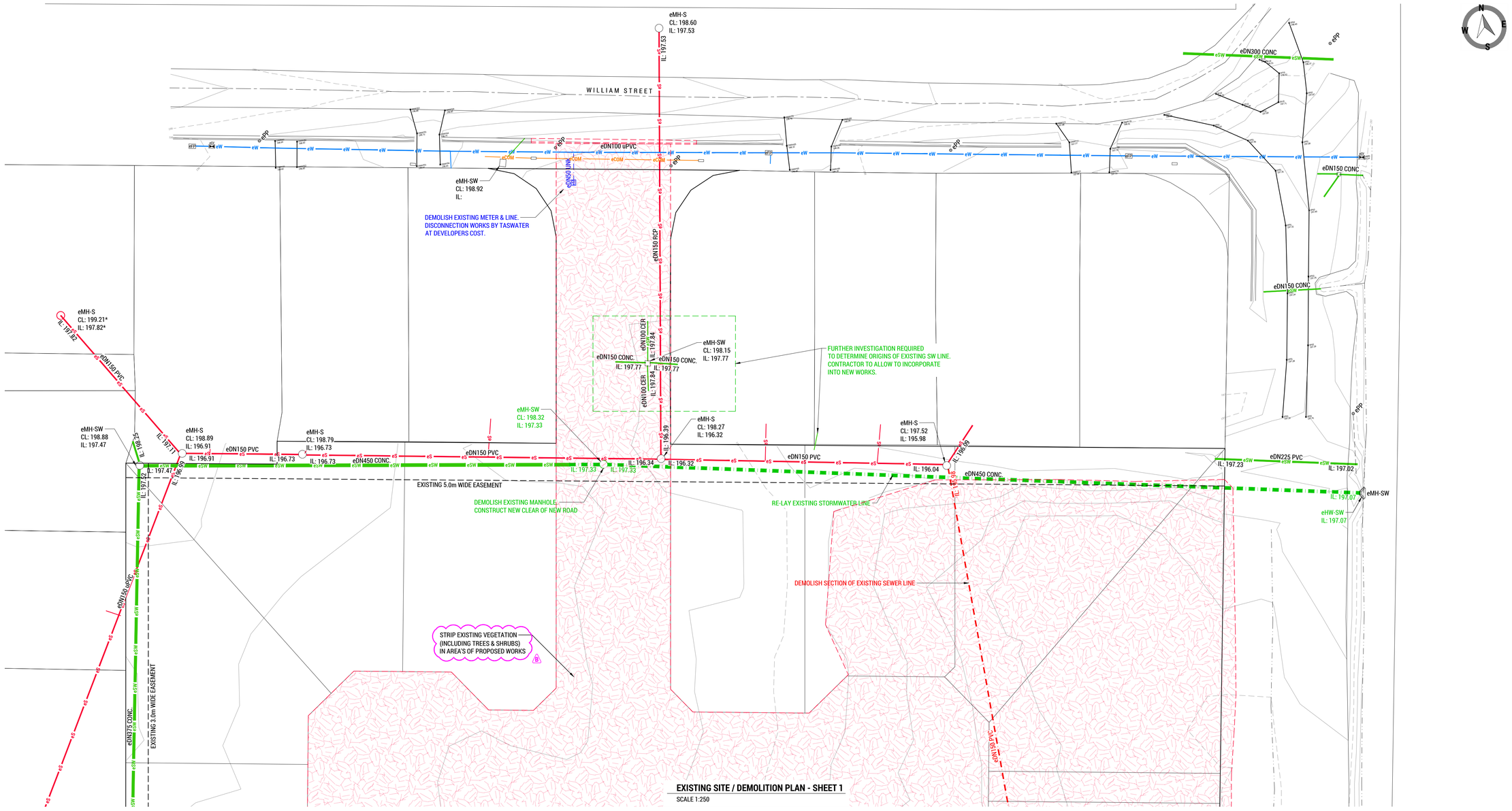
P. 03 6388 9200

CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

TITLE: CIVIL NOTES
SCALE: - SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C000 REV: A



EXISTING SITE / DEMOLITION PLAN - SHEET 1

SCALE 1:250

DEMOLITION NOTES

1. PRIOR TO COMMENCING DEMOLITION AND SITE WORKS, THE CONTRACTOR IS TO ARRANGE AND PAY FOR THE ON SITE MARKING AND CONFIRMATION OF DEPTH, OF SERVICE LOCATIONS FOR ALL UNDERGROUND SERVICES INCLUDING COMMUNICATIONS, TASNETWORKS, POWERCO AND COUNCIL SERVICES (ie: WATER, STORMWATER AND SEWER) IN THE AREA OF NEW WORKS. LOCATION TO BE CONFIRMED USING CABLE LOCATORS AND HAND DIGGING METHODS. PRIOR TO ANY WORKS ON SITE, ANY CLASHES WITH DESIGNED SERVICES ON FOLLOWING DRAWINGS ARE TO BE REPORTED TO DESIGN ENGINEER FOR DIRECTION.
2. REFER DRAWINGS FOR SET OUT DIMENSIONS & COORDINATE ALL LEVELS, CONTRACTOR TO REFER ENGINEER FOR ANY DISCREPANCIES / CLASHES.
3. CAP & TERMINATE & REMOVE REDUNDANT DISUSED DRAINAGE SERVICES TO SATISFACTION OF ENGINEER & LOCAL AUTHORITIES
4. INSTALL SILT FENCES & TRAPS TO PREVENT SEDIMENTS & POLLUTANTS ENTERING STORM WATER SYSTEM OR NATURAL DRAINAGE LINES
5. STOCK PILING OF SOILS OR MATERIALS AFFECTED BY WATER TO BE STORED CLEAR OF ANY DRAINAGE PATH
6. CLEAN SITE VEHICLES BEFORE EXITING SITE
7. DISPOSE OF EXCAVATED MATERIAL TO LICENSED WASTE FACILITY OR APPROVED LAND FILL SITE
8. TRENCHES WHERE SERVICES ARE REMOVED ARE TO BE FILLED WITH AN APPROVED COMPACTED MATERIAL & TO ENGINEERS COMPACTION SPECIFICATIONS. MATCH & MAKE GOOD EXISTING SURFACES TO MATCH EXISTING SURROUNDINGS.

LEGEND

- eSW — EXISTING STORM WATER MAIN
- eS — EXISTING SEWER MAIN
- eW — EXISTING WATER MAIN
- eCOM — EXISTING COMMUNICATIONS LINE
- EXISTING SURFACE/STRUCTURE TO BE DEMOLISHED
- EXISTING SERVICE LINE TO BE DEMOLISHED

REV:	ISSUED FOR / DESCRIPTION:	BY:	DATE:
B	DA RAI RESPONSE - VEGETATION REMOVAL ADDED	PVD	17-07-23
A	DEVELOPMENT APPROVAL	PVD	29-03-23

STATUS: CONTROLLED DOCUMENT

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APPROVED: R. JESSON | ACRED. No: CC5848I

DESIGN BY: PVD
DESIGN CHK: RJJ
DRAWN BY: PVD
DRAFT CHK: JWS
DATE: 29-03-23

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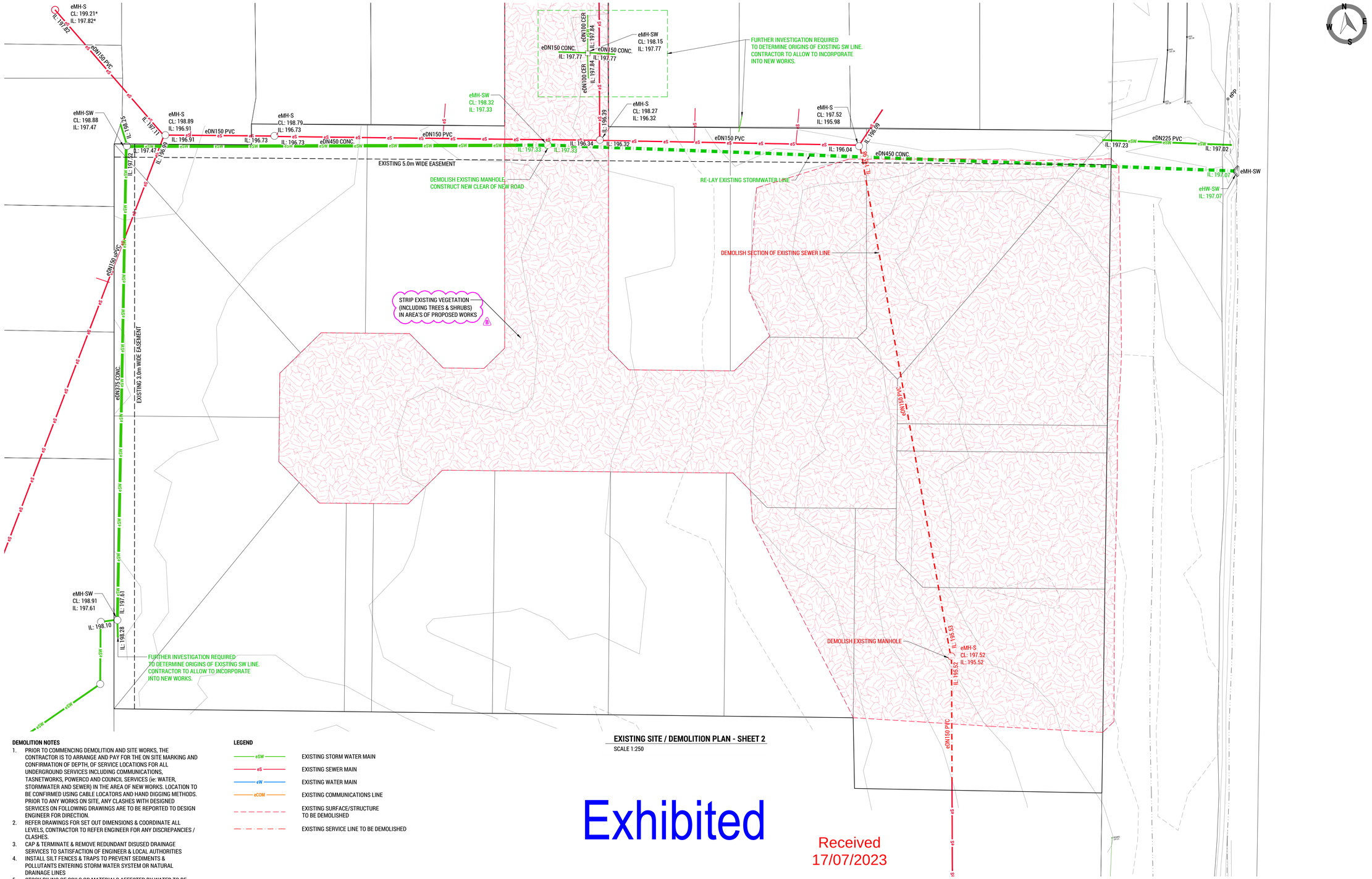
P. 03 6388 9200

CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

TITLE: EXISTING SITE / DEMOLITION PLAN - SHEET 1
SCALE: 1:250 SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C101 REV: B



DEMOLITION NOTES

1. PRIOR TO COMMENCING DEMOLITION AND SITE WORKS, THE CONTRACTOR IS TO ARRANGE AND PAY FOR THE ON SITE MARKING AND CONFIRMATION OF DEPTH, OF SERVICE LOCATIONS FOR ALL UNDERGROUND SERVICES INCLUDING COMMUNICATIONS, TASNETWORKS, POWERCO AND COUNCIL SERVICES (ie: WATER, STORMWATER AND SEWER) IN THE AREA OF NEW WORKS. LOCATION TO BE CONFIRMED USING CABLE LOCATORS AND HAND DIGGING METHODS. PRIOR TO ANY WORKS ON SITE, ANY CLASHES WITH DESIGNED SERVICES ON FOLLOWING DRAWINGS ARE TO BE REPORTED TO DESIGN ENGINEER FOR DIRECTION.
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4. INSTALL SILT FENCES & TRAPS TO PREVENT SEDIMENTS & POLLUTANTS ENTERING STORM WATER SYSTEM OR NATURAL DRAINAGE LINES
5. STOCK PILING OF SOILS OR MATERIALS AFFECTED BY WATER TO BE STORED CLEAR OF ANY DRAINAGE PATH
6. CLEAN SITE VEHICLES BEFORE EXITING SITE
7. DISPOSE OF EXCAVATED MATERIAL TO LICENSED WASTE FACILITY OR APPROVED LAND FILL SITE
8. TRENCHES WHERE SERVICES ARE REMOVED ARE TO BE FILLED WITH AN APPROVED COMPACTED MATERIAL & TO ENGINEERS COMPACTION SPECIFICATIONS. MATCH & MAKE GOOD EXISTING SURFACES TO MATCH EXISTING SURROUNDINGS.

LEGEND

eSW	EXISTING STORM WATER MAIN
eS	EXISTING SEWER MAIN
eW	EXISTING WATER MAIN
eCOM	EXISTING COMMUNICATIONS LINE
	EXISTING SURFACE/STRUCTURE TO BE DEMOLISHED
	EXISTING SERVICE LINE TO BE DEMOLISHED

EXISTING SITE / DEMOLITION PLAN - SHEET 2

SCALE 1:250

Exhibited

Received
17/07/2023

REV:	ISSUED FOR / DESCRIPTION:	BY:	DATE:
B	DA RAI RESPONSE - VEGETATION REMOVAL ADDED	PVD	17-07-23
A	DEVELOPMENT APPROVAL	PVD	29-03-23

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DESIGN BY: PVD
DESIGN CHK: RJJ
DRAWN BY: PVD
DRAFT CHK: JWS
DATE: 29-03-23

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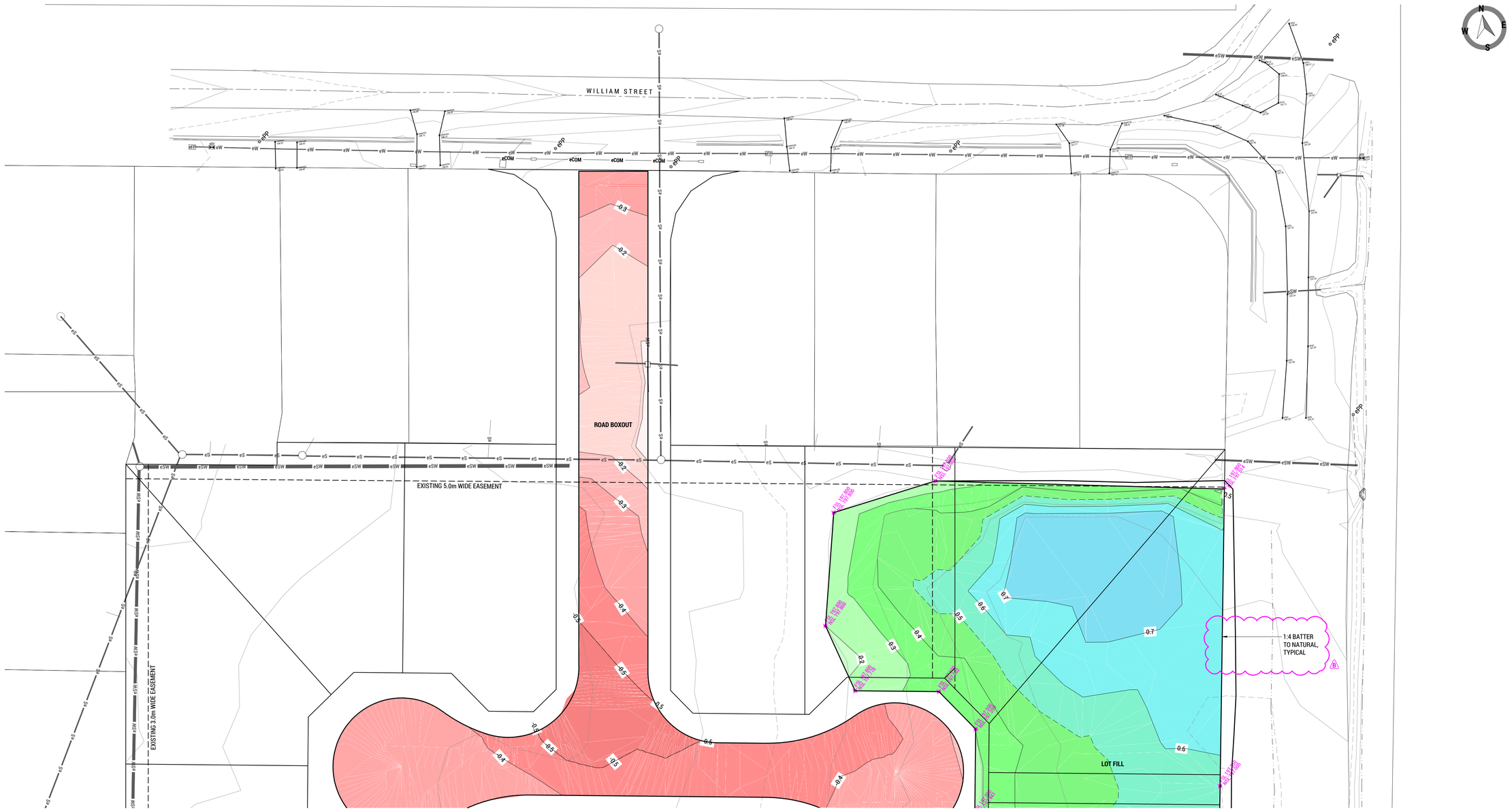
CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

TITLE: EXISTING SITE / DEMOLITION PLAN - SHEET 2
SCALE: 1:250 SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C102 REV: B



BULK EARTHWORKS PLAN - SHEET 1
SCALE 1:250

EARTHWORKS VOLUMES - ROAD BOXOUT NS-0.2 - B.O.K -0.5	
	VOLUME
SITE STRIP - -0.2m	1643m³ (328m³)
EMBANKMENT CUT	600m³
EMBANKMENT FILL	0m³
TOTAL	600m³ CUT

EARTHWORKS VOLUMES - LOT FILLING NS - LOT FILL	
	VOLUME
SITE STRIP - -0.2m	3818m² (764m³)
EMBANKMENT CUT	0m³
EMBANKMENT FILL	1822m³
TOTAL	1822m³ FILL

CUT - FILL HEIGHTS TABLE	
Elevation	Colour
-0.70 to -0.60	
-0.60 to -0.50	
-0.50 to -0.40	
-0.40 to -0.30	
-0.30 to -0.20	
-0.20 to -0.10	
-0.10 to 0.00	
0.00 to 0.10	
0.10 to 0.20	
0.20 to 0.30	
0.30 to 0.40	
0.40 to 0.50	
0.50 to 0.60	
0.60 to 0.70	
0.70 to 0.80	

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Received
17/07/2023

REV:	ISSUED FOR / DESCRIPTION:	BY:	DATE:
B	DA RAI RESPONSE - BATTER ADDED	PVD	17-07-23
A	DEVELOPMENT APPROVAL	PVD	29-03-23

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APPROVED: R. JESSON | ACRED. No: CC5848I

DESIGN BY: PVD | DESIGN CHK: RJJ | DRAWN BY: PVD | DRAFT CHK: JWS | DATE: 29-03-23

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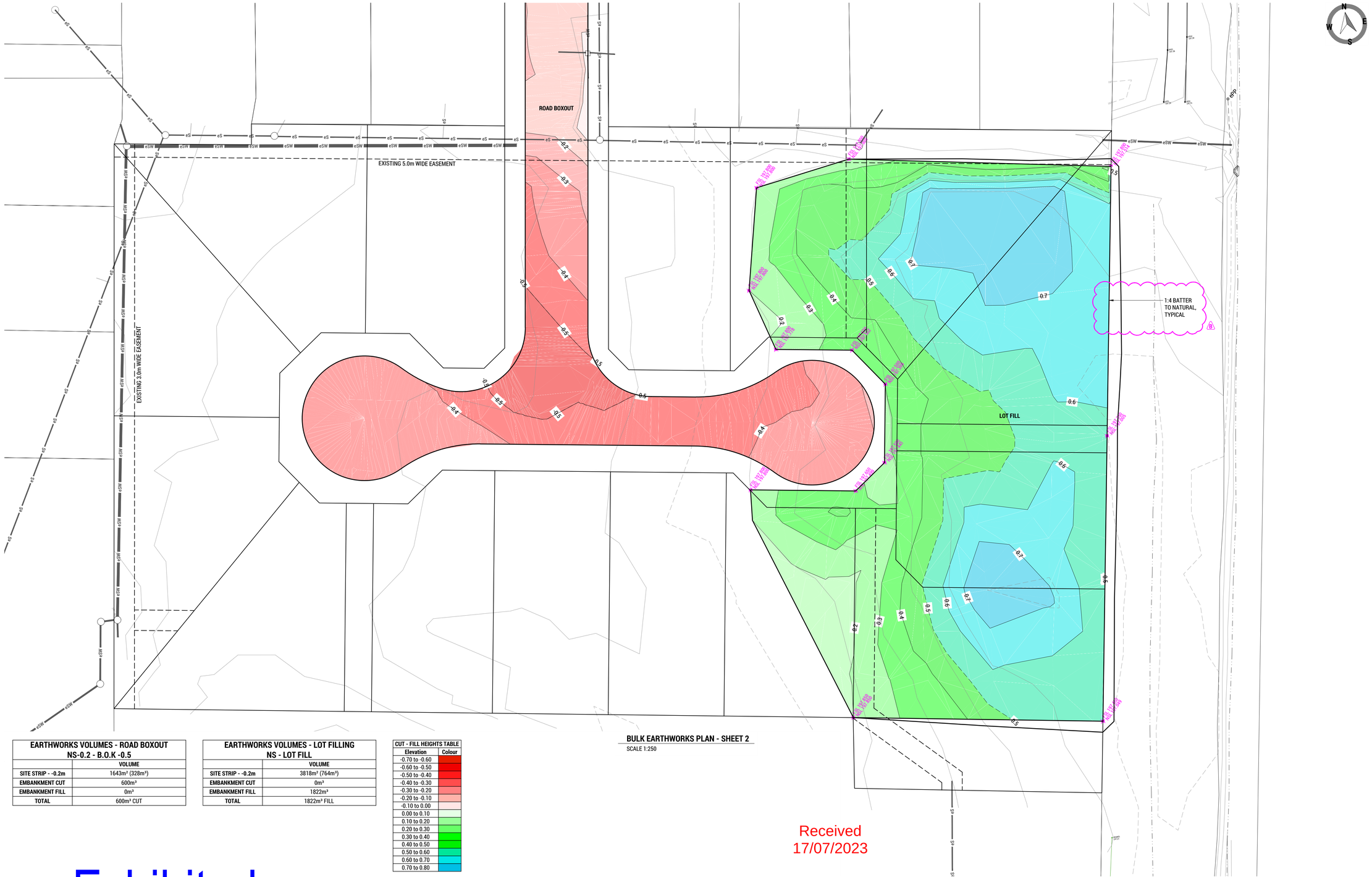
CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

TITLE: BULK EARTHWORKS PLAN - SHEET 1
SCALE: 1:250 | SHEET SIZE: A1 | DWGs IN SET: -
PROJECT No: 231007 | DWG No: C201 | REV: B



BULK EARTHWORKS PLAN - SHEET 2
SCALE 1:250

EARTHWORKS VOLUMES - ROAD BOXOUT NS-0.2 - B.O.K -0.5	
	VOLUME
SITE STRIP - -0.2m	1643m² (328m³)
EMBANKMENT CUT	600m³
EMBANKMENT FILL	0m³
TOTAL	600m³ CUT

EARTHWORKS VOLUMES - LOT FILLING NS - LOT FILL	
	VOLUME
SITE STRIP - -0.2m	3818m² (764m³)
EMBANKMENT CUT	0m³
EMBANKMENT FILL	1822m³
TOTAL	1822m³ FILL

CUT - FILL HEIGHTS TABLE	
Elevation	Colour
-0.70 to -0.60	
-0.60 to -0.50	
-0.50 to -0.40	
-0.40 to -0.30	
-0.30 to -0.20	
-0.20 to -0.10	
-0.10 to 0.00	
0.00 to 0.10	
0.10 to 0.20	
0.20 to 0.30	
0.30 to 0.40	
0.40 to 0.50	
0.50 to 0.60	
0.60 to 0.70	
0.70 to 0.80	

Exhibited

Received
17/07/2023

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A	DEVELOPMENT APPROVAL	PVD	29-03-23

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DRAFT CHK:	JWS
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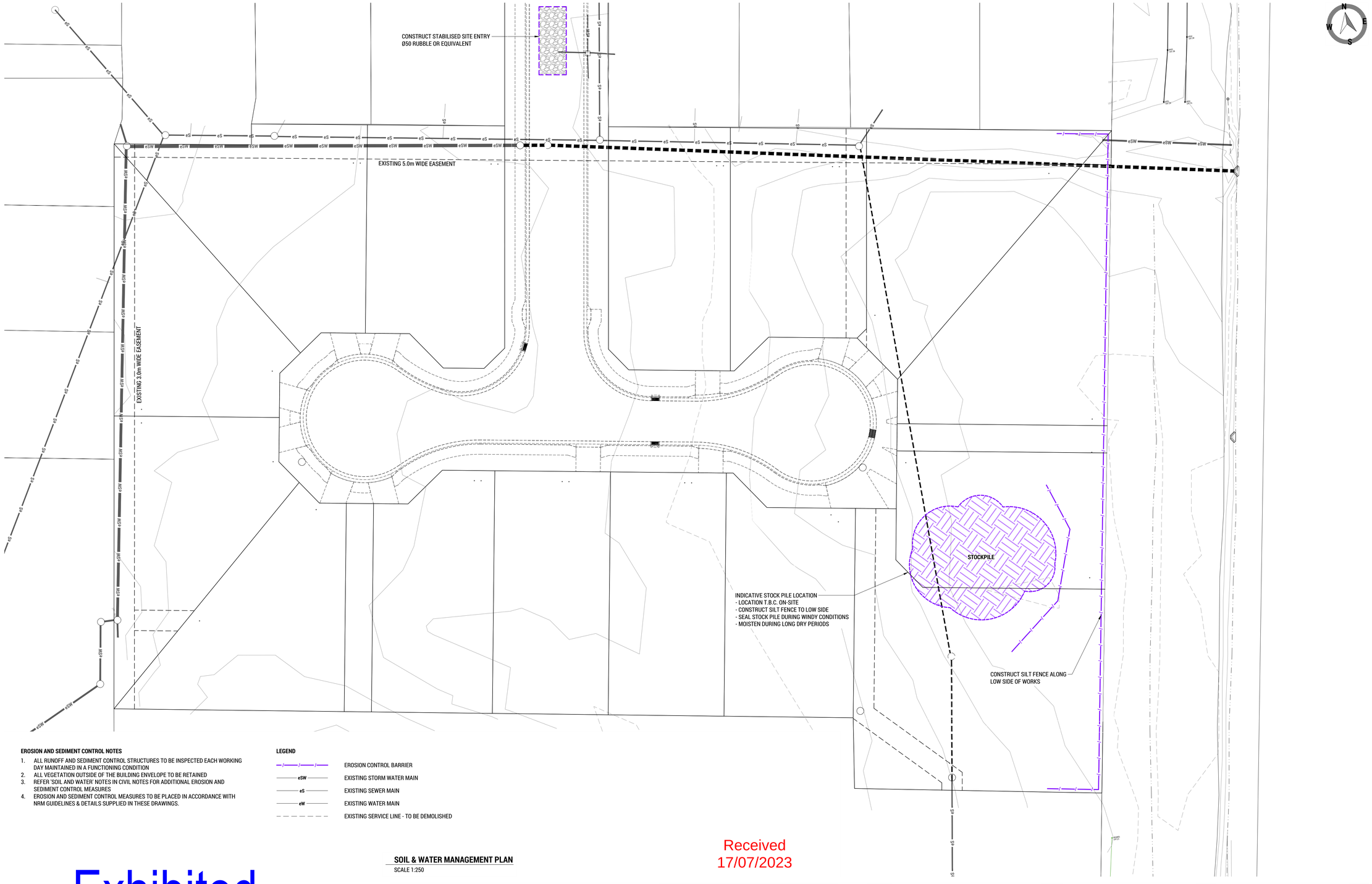
CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

TITLE: BULK EARTHWORKS PLAN - SHEET 2
SCALE: 1:250 SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C202 REV: B



EROSION AND SEDIMENT CONTROL NOTES

1. ALL RUNOFF AND SEDIMENT CONTROL STRUCTURES TO BE INSPECTED EACH WORKING DAY MAINTAINED IN A FUNCTIONING CONDITION
2. ALL VEGETATION OUTSIDE OF THE BUILDING ENVELOPE TO BE RETAINED
3. REFER 'SOIL AND WATER' NOTES IN CIVIL NOTES FOR ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES
4. EROSION AND SEDIMENT CONTROL MEASURES TO BE PLACED IN ACCORDANCE WITH NRM GUIDELINES & DETAILS SUPPLIED IN THESE DRAWINGS.

LEGEND

- EROSION CONTROL BARRIER
- eSW — EXISTING STORM WATER MAIN
- eS — EXISTING SEWER MAIN
- eW — EXISTING WATER MAIN
- EXISTING SERVICE LINE - TO BE DEMOLISHED

Exhibited

Received
17/07/2023

SOIL & WATER MANAGEMENT PLAN

SCALE 1:250

REV:	DESCRIPTION:	BY:	DATE:
A	DEVELOPMENT APPROVAL	PVD	29-03-23
REV:	ISSUED FOR / DESCRIPTION:	BY:	DATE:

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DRAFT CHK:	JWS
DATE:	29-03-23

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CLIENT: BAKER & WALLIS

PROJECT: SUBDIVISION

ADDRESS: 7A WILLIAM STREET
CAMPBELL TOWN

TITLE: SOIL & WATER MANAGEMENT PLAN

SCALE: 1:250 SHEET SIZE: A1 DWGs IN SET: -

PROJECT No: 231007 DWG No: C301 REV: A

CIVIL WORKS PLAN - SHEET 1
SCALE 1:250

LEGEND

PAV-A	HOTMIX - TRAFFICABLE REFER DETAILS	KC	KERB & CHANNEL
PAV-B	CONCRETE - TRAFFICABLE REFER DETAILS	KCV	KERB & CHANNEL VEHICULAR
PAV-C	CONCRETE - PEDESTRIAN REFER DETAILS	PED-B	PEDESTRIAN ACCESS RAMP - LGAT TYPE B
SURF-A	GRASSED / TURFED / LANDSCAPED AREA 200mm MIN GOOD QUALITY TOP SOIL	MH	MANHOLE
		SAW	SAW CUT
		ME	MATCH EXISTING

Exhibited

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A	DEVELOPMENT APPROVAL	PVD	29-03-23

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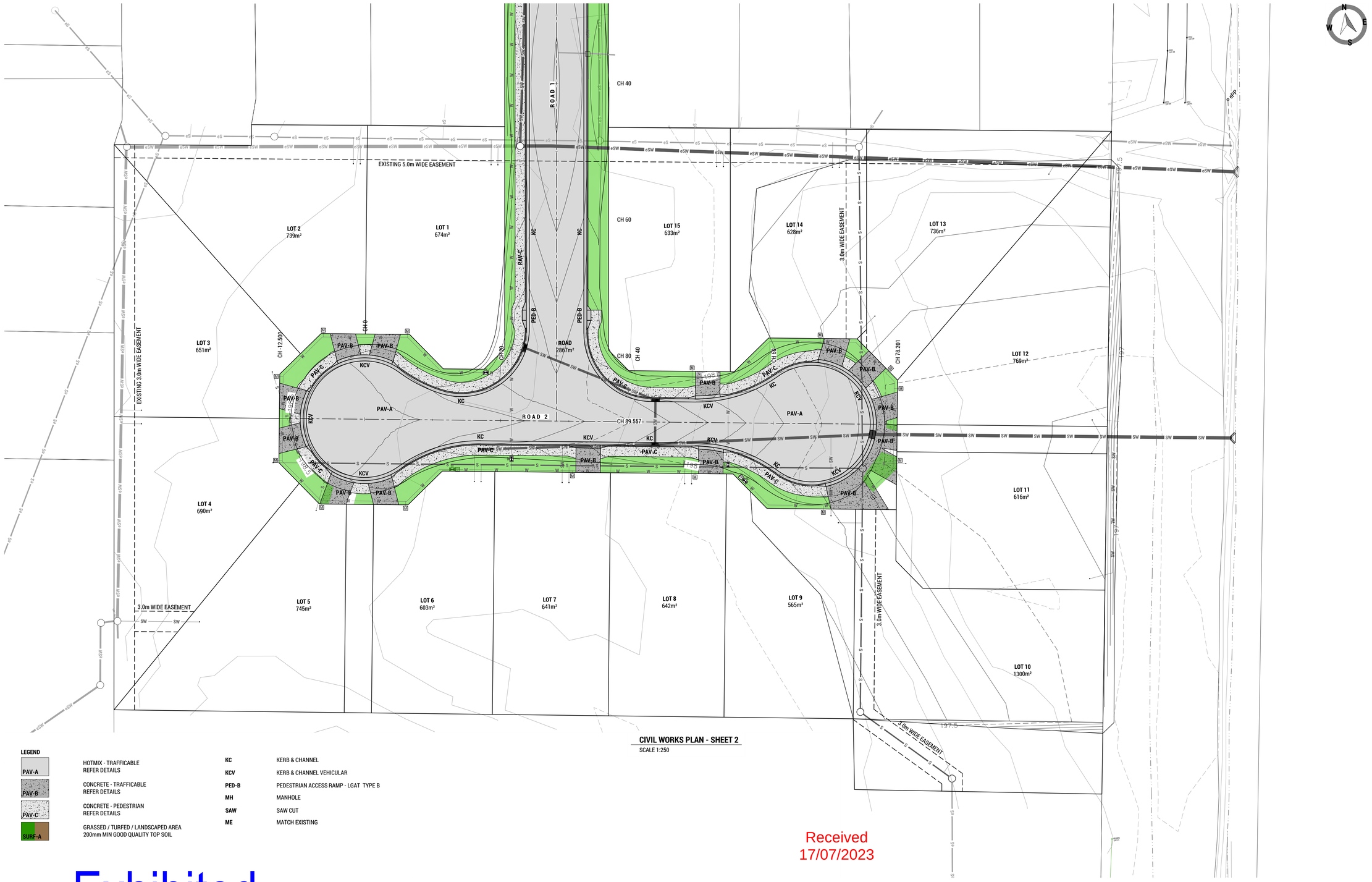
CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET
CAMPBELL TOWN

TITLE: CIVIL WORKS PLAN - SHEET 1
SCALE: 1:250 SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C401 REV: A



CIVIL WORKS PLAN - SHEET 2
SCALE 1:250

LEGEND

PAV-A	HOTMIX - TRAFFICABLE REFER DETAILS	KC	KERB & CHANNEL
PAV-B	CONCRETE - TRAFFICABLE REFER DETAILS	KCV	KERB & CHANNEL VEHICULAR
PAV-C	CONCRETE - PEDESTRIAN REFER DETAILS	PED-B	PEDESTRIAN ACCESS RAMP - LGAT TYPE B
SURF-A	GRASSED / TURFED / LANDSCAPED AREA 200mm MIN GOOD QUALITY TOP SOIL	MH	MANHOLE
		SAW	SAW CUT
		ME	MATCH EXISTING

Received
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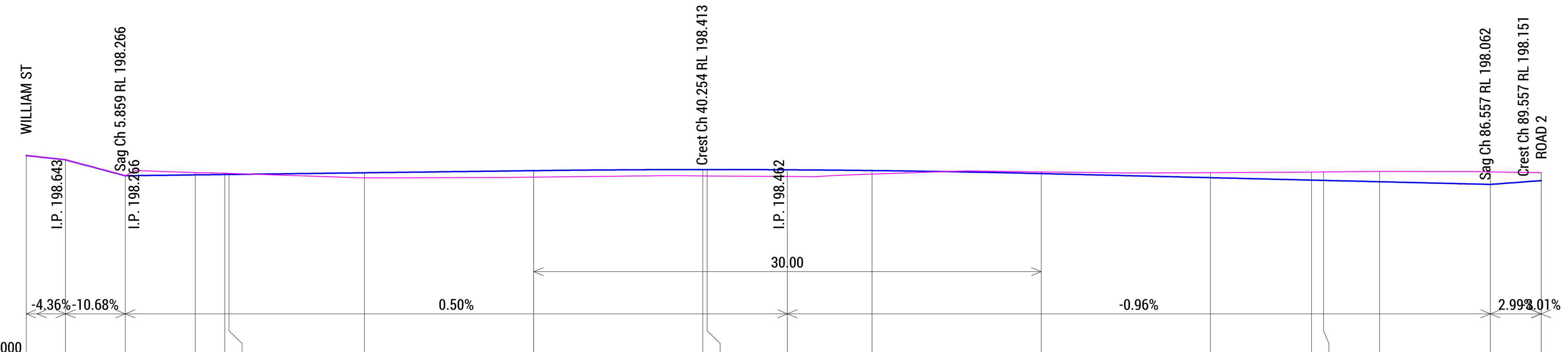
CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

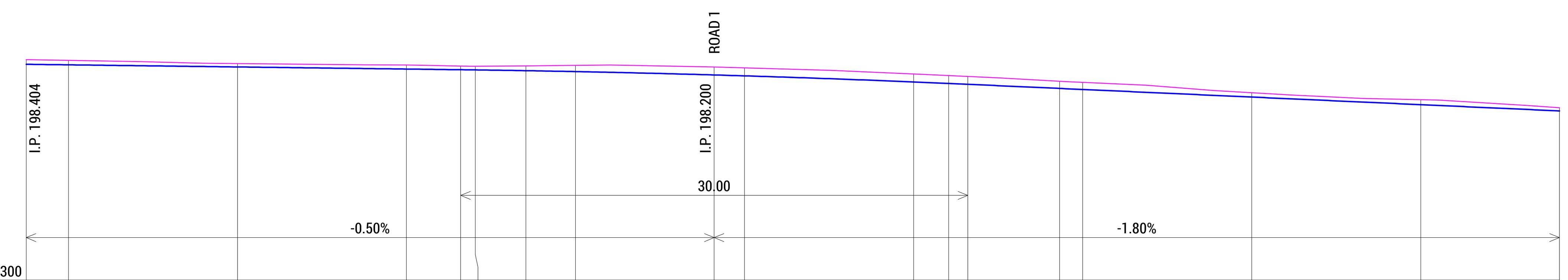
TITLE: CIVIL WORKS PLAN - SHEET 2
SCALE: 1:250 SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C402 REV: A



Chainage	Existing Levels	Design Levels	Cut / Fill
0.000	198.746	198.745	-0.001
2.326	198.643	198.643	+0.000
5.859	198.266	198.266	+0.000
10.000	198.339	198.287	-0.052
11.737	198.326	198.296	-0.030
11.988	198.323	198.297	-0.026
20.000	198.216	198.337	+0.121
30.000	198.234	198.387	+0.153
40.000	198.262	198.413	+0.151
40.254	198.261	198.413	+0.152
45.000	198.249	198.407	+0.158
50.000	198.304	198.389	+0.085
60.000	198.357	198.317	-0.040
70.000	198.339	198.221	-0.118
75.980	198.353	198.164	-0.189
76.694	198.356	198.157	-0.199
80.000	198.368	198.125	-0.243
86.557	198.358	198.062	-0.296
89.557	198.338	198.151	-0.187

LONGITUDINAL SECTION
Scales: H 1:250 V 1:100

ROAD 1



Chainage	Existing Levels	Design Levels	Cut / Fill
-12.500	198.515	198.404	-0.111
-10.000	198.498	198.391	-0.107
0.000	198.421	198.341	-0.080
10.000	198.386	198.291	-0.095
13.201	198.361	198.275	-0.086
14.068	198.357	198.271	-0.086
17.062	198.368	198.252	-0.116
20.000	198.378	198.231	-0.147
28.201	198.338	198.151	-0.187
30.000	198.318	198.130	-0.188
40.000	198.174	197.985	-0.189
42.073	198.135	197.950	-0.185
43.201	198.114	197.930	-0.184
48.639	198.002	197.832	-0.170
50.000	197.975	197.808	-0.167
60.000	197.729	197.628	-0.101
70.000	197.565	197.448	-0.117
78.201	197.374	197.300	-0.074

LONGITUDINAL SECTION
Scales: H 1:250 V 1:100

ROAD 2

Exhibited

Received
17/07/2023

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DATE: 29-03-23

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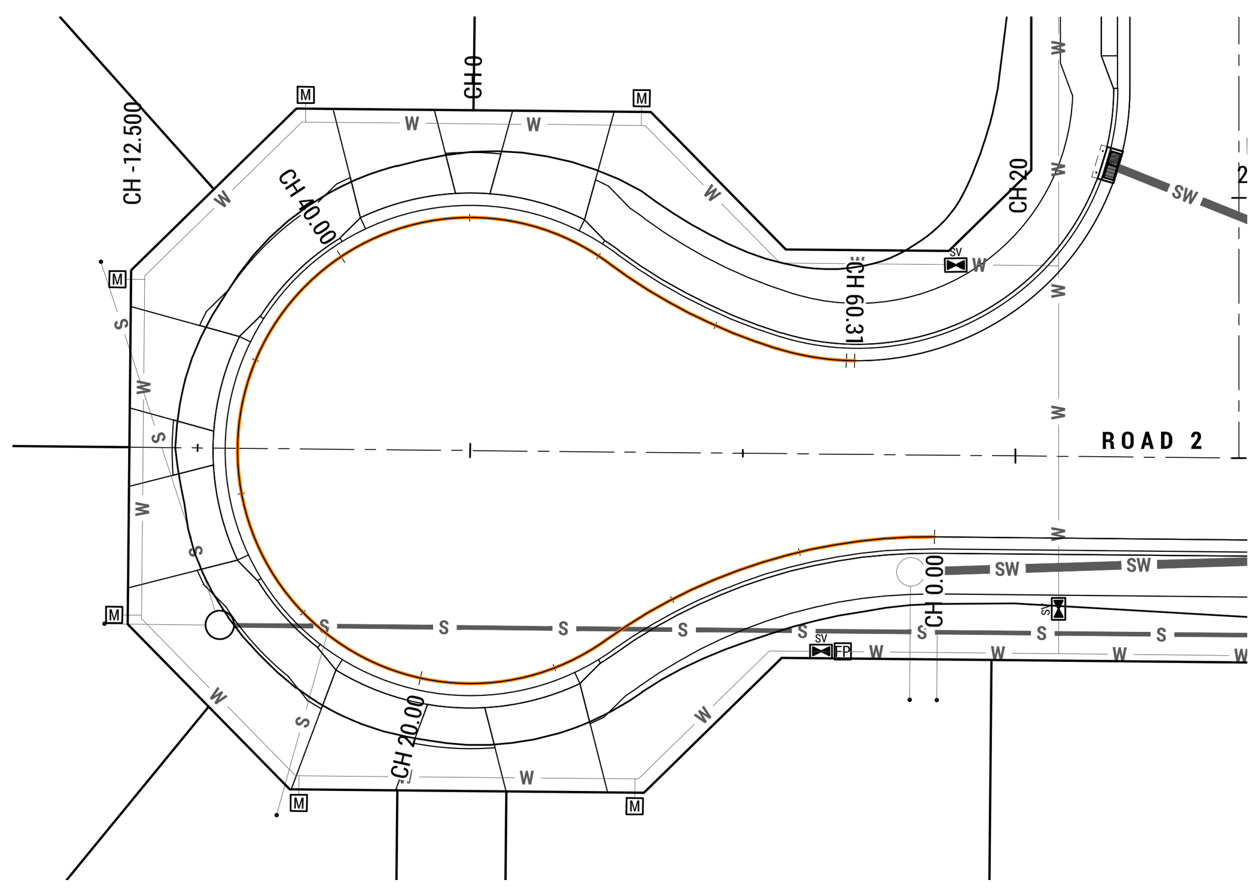
P. 03 6388 9200

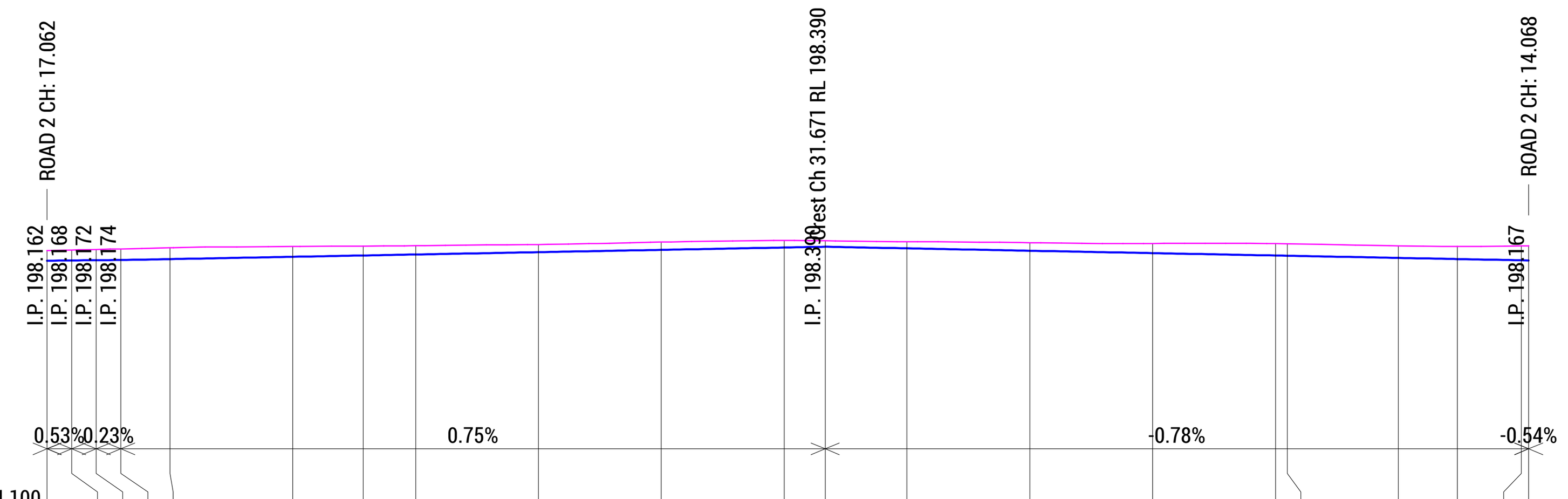
CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

TITLE: CIVIL LONG SECTIONS - ROAD 1 & ROAD 2
SCALE: 1:250 SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C421 REV: A



ROAD 2 - CUL-DE-SAC 1

SCALE 1:250

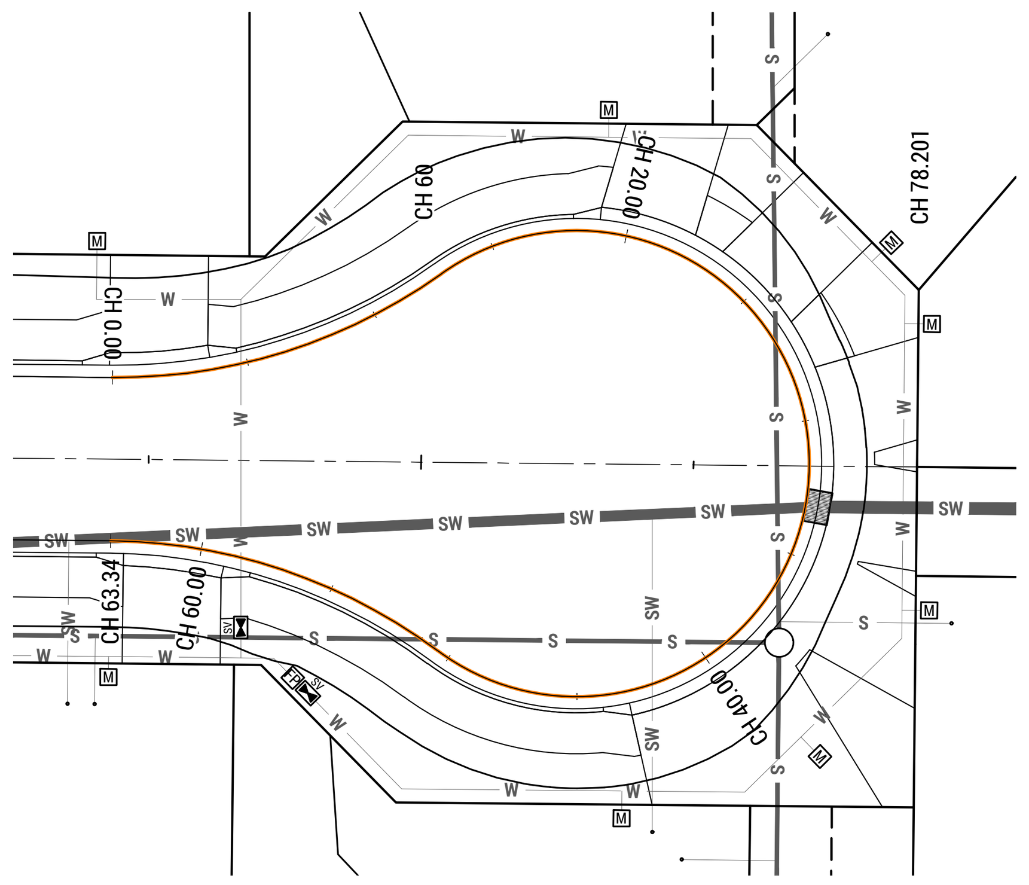


R.L. 194.100

Chainage	0.000	1.000	2.000	3.000	5.000	10.000	12.863	15.000	20.000	25.000	30.000	31.671	35.000	40.000	45.000	50.000	50.479	55.000	57.400	60.000	60.306
Cut Fill	-0.166	-0.169	-0.174	-0.181	-0.184	-0.167	-0.153	-0.142	-0.123	-0.126	-0.116	-0.097	-0.108	-0.131	-0.158	-0.194	-0.194	-0.197	-0.206	-0.233	-0.237
Design Levels	198.162	198.168	198.172	198.174	198.189	198.227	198.248	198.264	198.302	198.340	198.377	198.390	198.364	198.325	198.286	198.247	198.244	198.209	198.190	198.170	198.167
Existing Levels	198.328	198.337	198.346	198.355	198.373	198.394	198.401	198.406	198.425	198.466	198.493	198.487	198.472	198.456	198.444	198.441	198.438	198.406	198.396	198.403	198.404

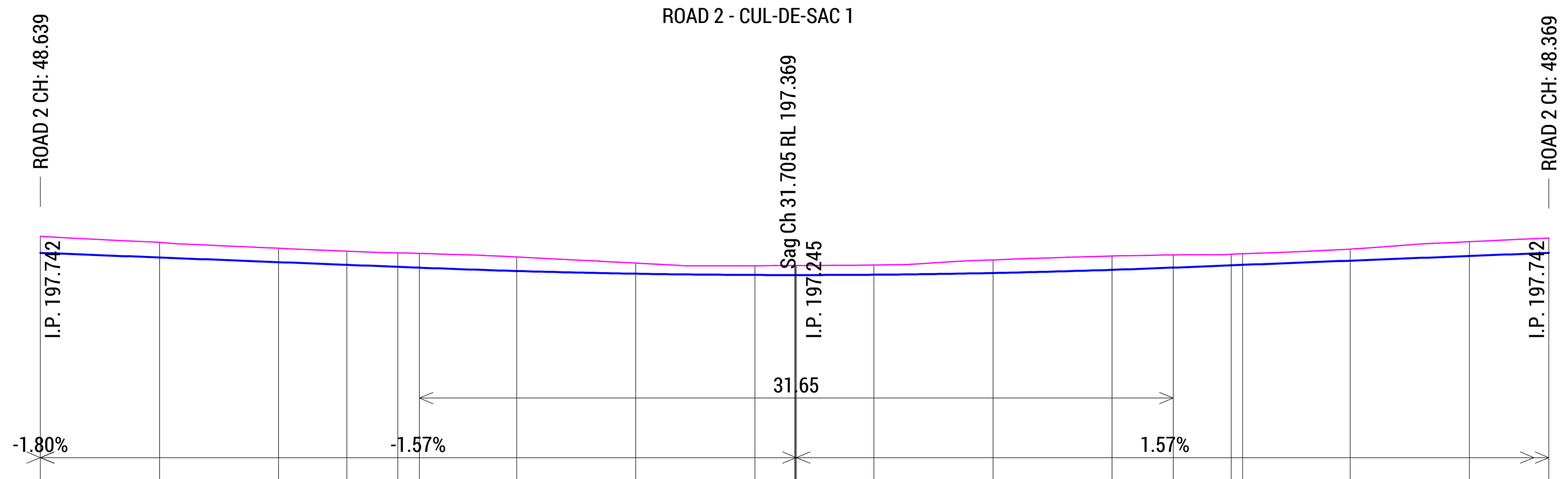
LONGITUDINAL SECTION
Scales: H 1:250 V 1:100

ROAD 2 - CUL-DE-SAC 1



ROAD 2 - CUL-DE-SAC 2

SCALE 1:250

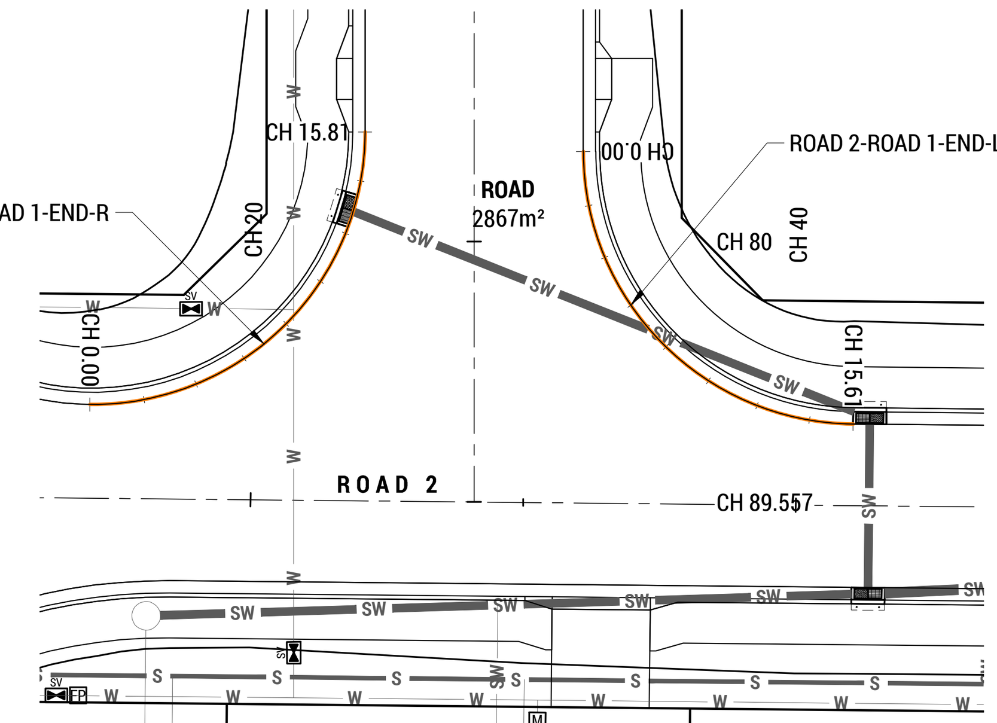


R.L. 193.300

Chainage	0.000	5.000	10.000	12.863	15.000	15.913	20.000	25.000	30.000	31.671	31.705	31.739	35.000	40.000	45.000	47.564	50.000	50.479	55.000	60.000	63.342
Cut Fill	-0.278	-0.254	-0.234	-0.231	-0.234	-0.240	-0.235	-0.179	-0.155	-0.160	-0.160	-0.160	-0.163	-0.221	-0.231	-0.213	-0.186	-0.186	-0.193	-0.240	-0.249
Design Levels	197.742	197.664	197.585	197.541	197.507	197.493	197.437	197.391	197.371	197.369	197.369	197.369	197.375	197.403	197.457	197.494	197.532	197.540	197.611	197.690	197.742
Existing Levels	198.020	197.918	197.819	197.772	197.741	197.733	197.672	197.570	197.526	197.529	197.529	197.529	197.538	197.624	197.688	197.707	197.718	197.726	197.804	197.930	197.991

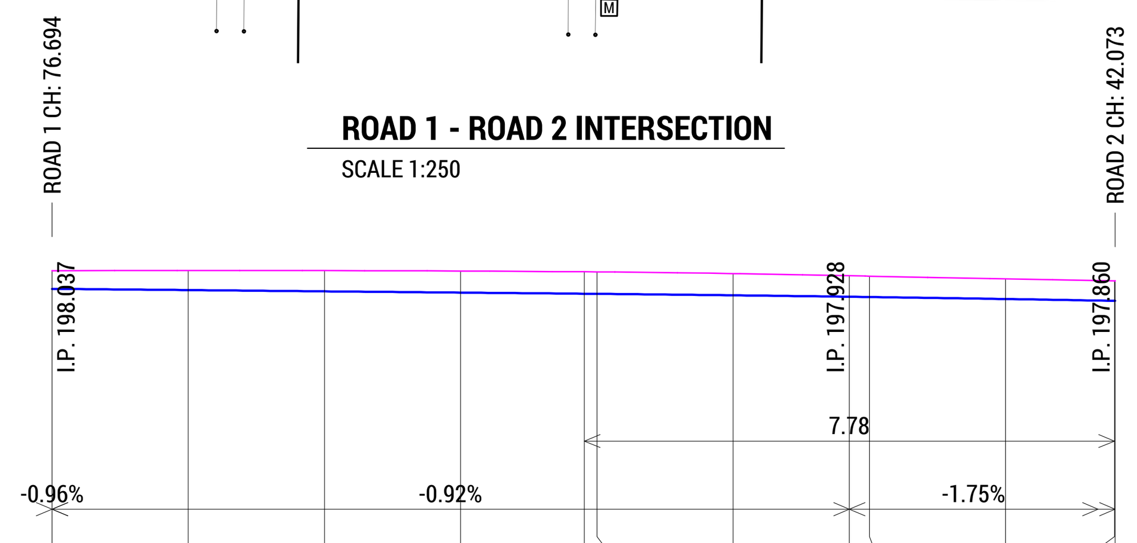
LONGITUDINAL SECTION
Scales: H 1:250 V 1:100

ROAD 2 - CUL-DE-SAC 2



ROAD 1 - ROAD 2 INTERSECTION

SCALE 1:250

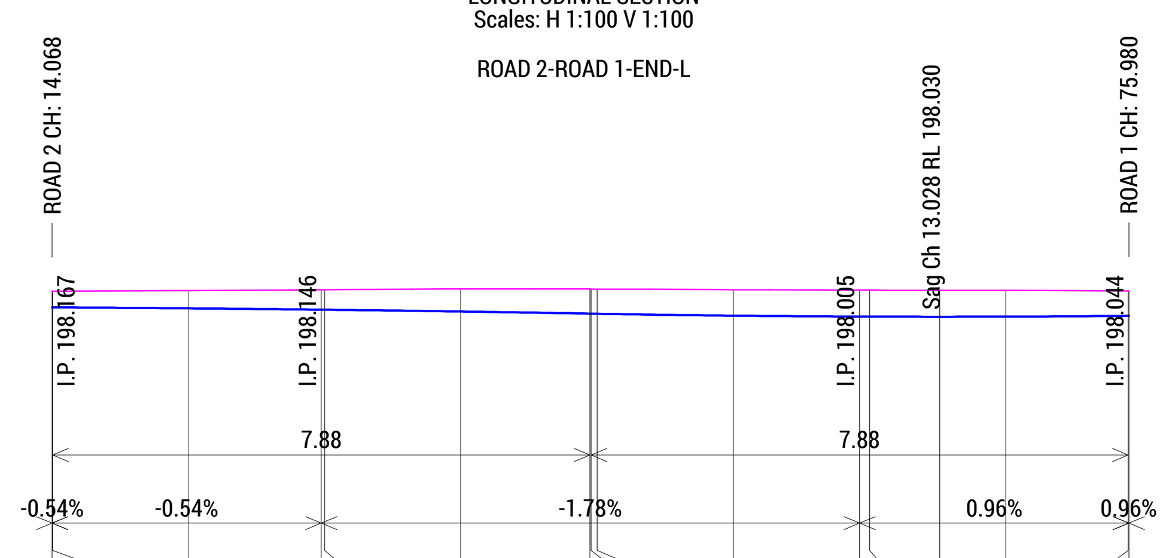


R.L. 193.800

Chainage	0.000	2.000	4.000	6.000	7.815	8.000	10.000	11.707	12.000	14.000	15.599	15.609
Cut Fill	-0.264	-0.288	-0.305	-0.317	-0.323	-0.322	-0.318	-0.308	-0.306	-0.296	-0.293	-0.293
Design Levels	198.037	198.018	198.000	197.981	197.964	197.963	197.942	197.920	197.916	197.887	197.860	197.860
Existing Levels	198.301	198.306	198.305	198.298	198.287	198.285	198.260	198.228	198.222	198.183	198.153	198.153

LONGITUDINAL SECTION
Scales: H 1:100 V 1:100

ROAD 2-ROAD 1-END-L

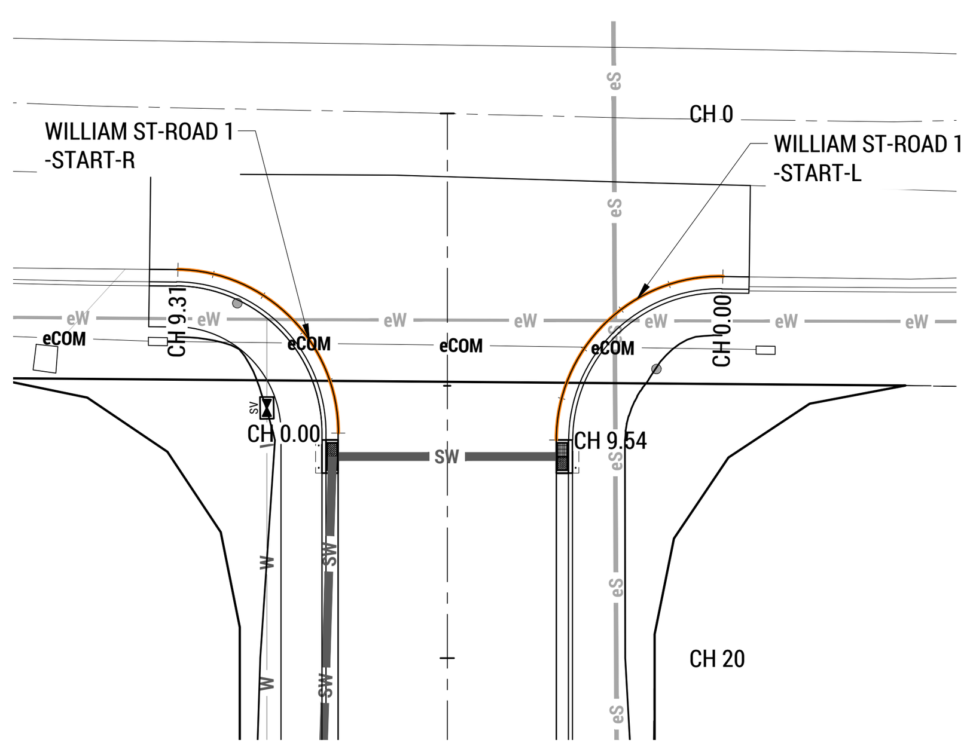


R.L. 194.000

Chainage	0.000	0.010	2.000	3.952	4.000	6.000	7.893	7.913	8.000	10.000	11.855	12.000	13.028	14.000	15.797	15.807
Cut Fill	-0.237	-0.237	-0.260	-0.291	-0.292	-0.331	-0.361	-0.361	-0.363	-0.382	-0.388	-0.388	-0.387	-0.384	-0.365	-0.364
Design Levels	198.167	198.167	198.153	198.134	198.133	198.107	198.076	198.076	198.074	198.046	198.032	198.032	198.030	198.032	198.043	198.044
Existing Levels	198.404	198.404	198.413	198.425	198.425	198.438	198.437	198.437	198.437	198.428	198.420	198.420	198.417	198.416	198.408	198.408

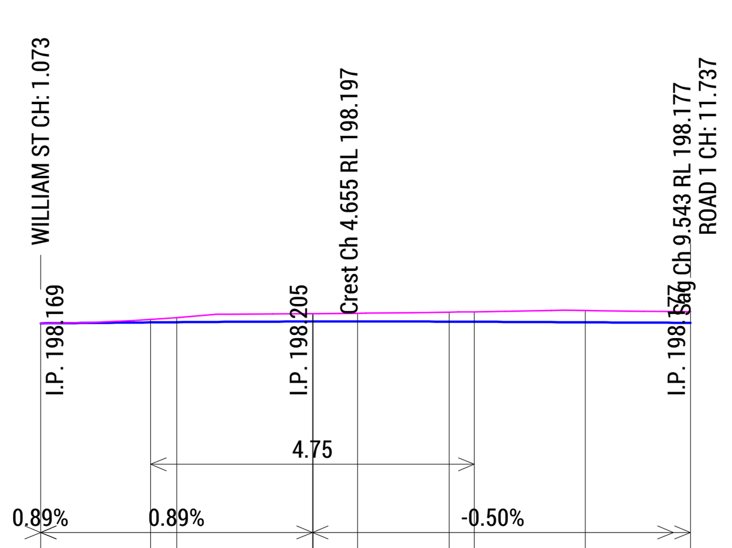
LONGITUDINAL SECTION
Scales: H 1:100 V 1:100

ROAD 2-ROAD 1-END-R



WILLIAM ST - ROAD 1 INTERSECTION

SCALE 1:250

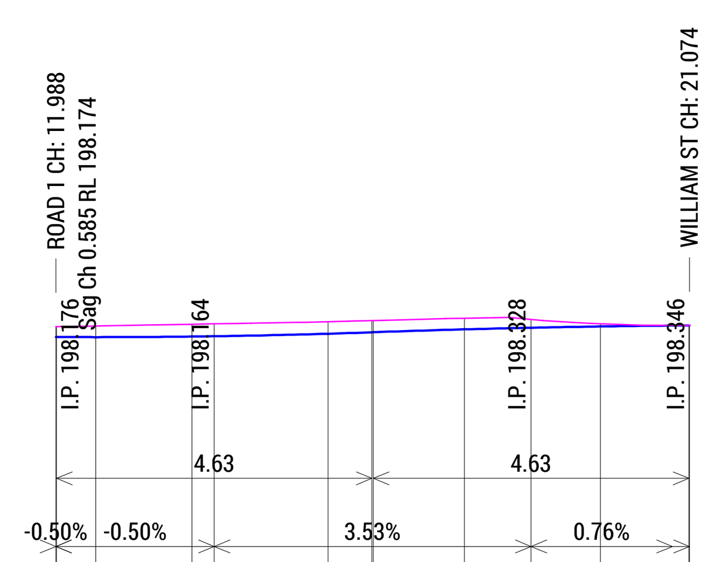


R.L. 194.100

Chainage	0.000	1.616	2.000	3.992	4.000	4.655	6.000	6.367	8.000	9.543
Cut Fill	+0.000	-0.043	-0.065	-0.115	-0.115	-0.120	-0.139	-0.146	-0.172	-0.162
Design Levels	198.169	198.183	198.187	198.196	198.196	198.197	198.194	198.193	198.185	198.177
Existing Levels	198.169	198.226	198.252	198.311	198.311	198.317	198.333	198.339	198.357	198.339

LONGITUDINAL SECTION
Scales: H 1:100 V 1:100

WILLIAM ST-ROAD 1-START-L



R.L. 194.100

Chainage	0.000	0.010	0.585	2.000	2.327	4.000	4.643	4.663	6.000	6.980	8.000	9.296	9.306
Cut Fill	-0.151	-0.152	-0.163	-0.180	-0.182	-0.176	-0.172	-0.173	-0.163	-0.122	-0.038	+0.000	+0.000
Design Levels	198.176	198.175	198.174	198.183	198.187	198.225	198.246	198.246	198.288	198.312	198.331	198.346	198.346
Existing Levels	198.327	198.327	198.337	198.363	198.369	198.401	198.418	198.419	198.451	198.434	198.369	198.346	198.346

LONGITUDINAL SECTION
Scales: H 1:100 V 1:100

WILLIAM ST-ROAD 1-START-R

Exhibited

Received
17/07/2023

REV:	ISSUED FOR / DESCRIPTION:	BY:	DATE:
A	DEVELOPMENT APPROVAL	PVD	29-03-23

STATUS: CONTROLLED DOCUMENT

DO NOT SCALE - IF IN DOUBT, ASK

APPROVED: R. JESSON ACRED. No: CC5848I

DESIGN BY: PVD
DESIGN CHK: RJJ
DRAWN BY: PVD
DRAFT CHK: JWS
DATE: 29-03-23

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22-24 Paterson Street
Launceston TAS 7250
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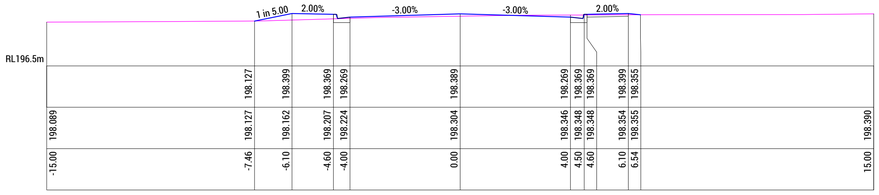
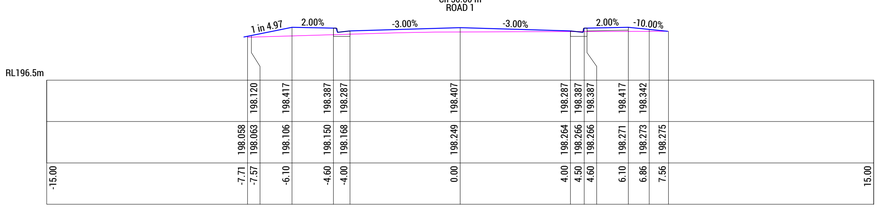
P. 03 6388 9200

CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

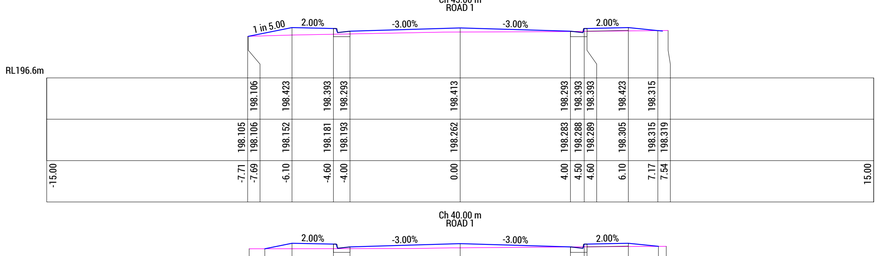
TITLE: CIVIL LONG SECTIONS - CUL-DE-SACS & KERB RETURNS
SCALE: 1:250 SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C422 REV: A



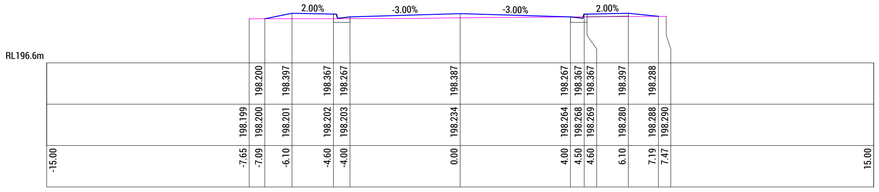
Ch 50.00 m
ROAD 1



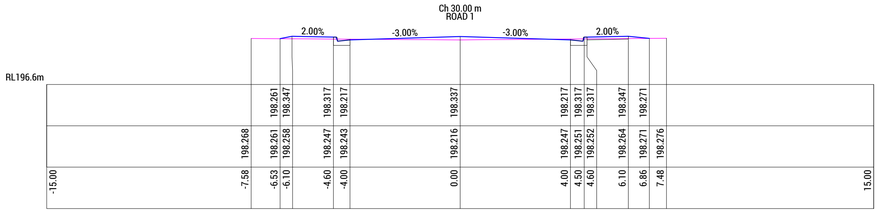
Ch 45.00 m
ROAD 1



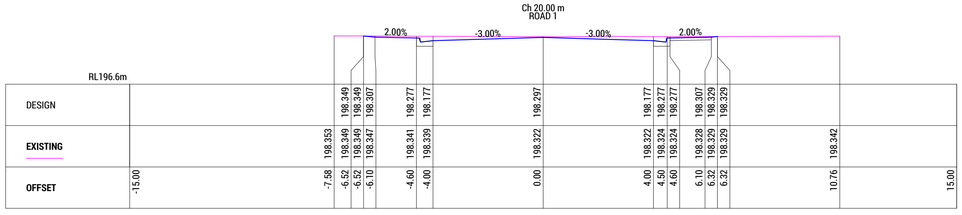
Ch 40.00 m
ROAD 1



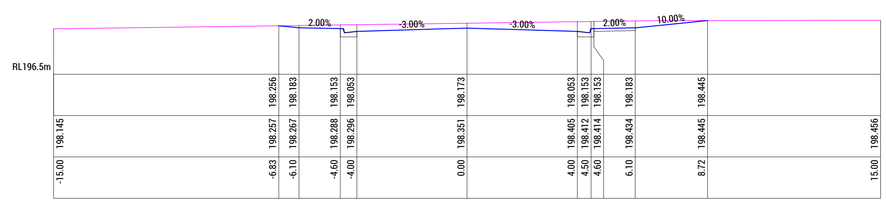
Ch 30.00 m
ROAD 1



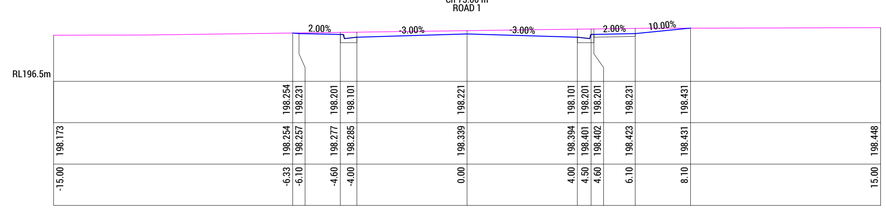
Ch 20.00 m
ROAD 1



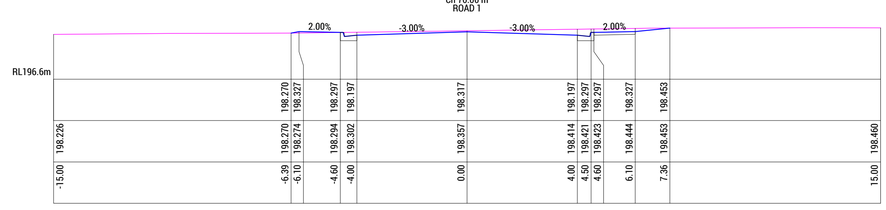
Ch 12.00 m
ROAD 1



Ch 75.00 m
ROAD 1



Ch 70.00 m
ROAD 1



Ch 60.00 m
ROAD 1

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REV:	DESCRIPTION:	BY:	DATE:
A	DEVELOPMENT APPROVAL	PVD	29-03-23

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APPROVED: R. JESSON | ACRED. No: CC5848I

DESIGN BY:	PVD
DESIGN CHK:	RJJ
DRAWN BY:	PVD
DRAFT CHK:	JWS
DATE:	29-03-23

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P. 03 6388 9200

CLIENT: BAKER & WALLIS

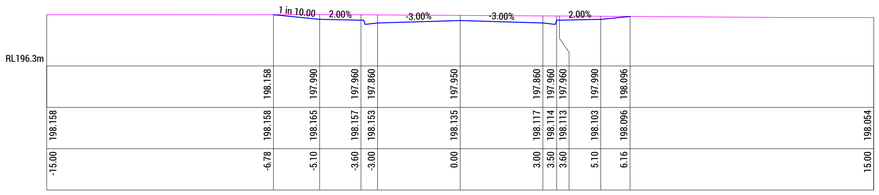
PROJECT: SUBDIVISION

ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

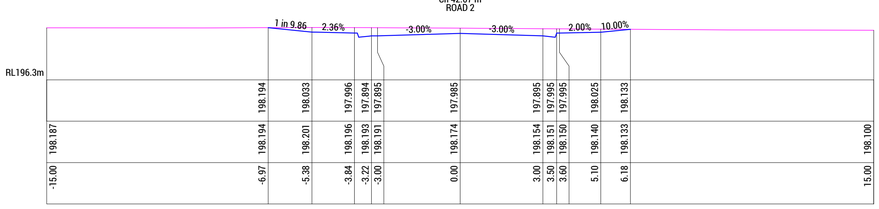
TITLE: CIVIL CROSS SECTIONS - ROAD 1

SCALE: 1:100 SHEET SIZE: A1 DWGs IN SET: -

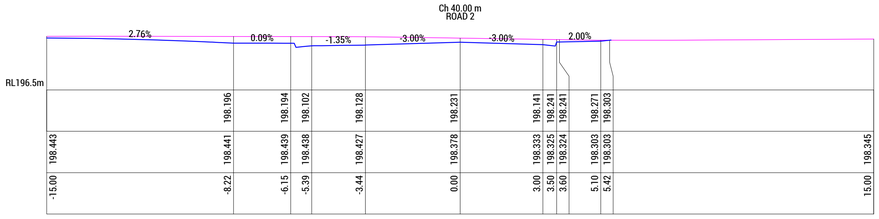
PROJECT No: 231007 DWG No: C431 REV: A



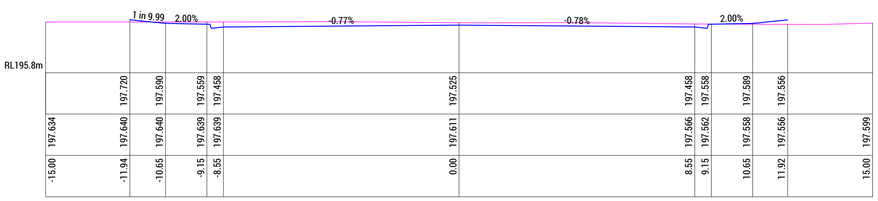
Ch 42.07 m
ROAD 2



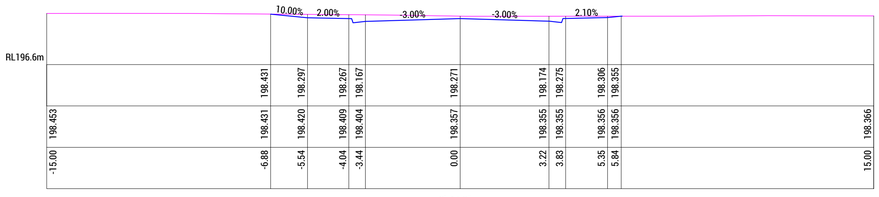
Ch 40.00 m
ROAD 2



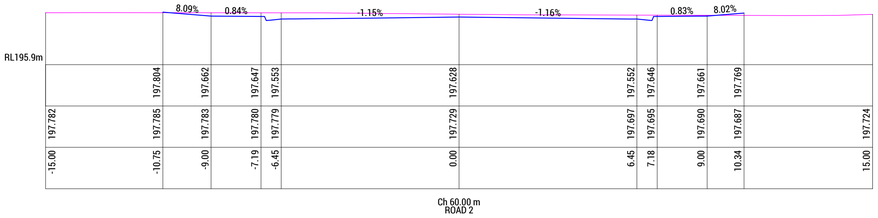
Ch 20.00 m
ROAD 2



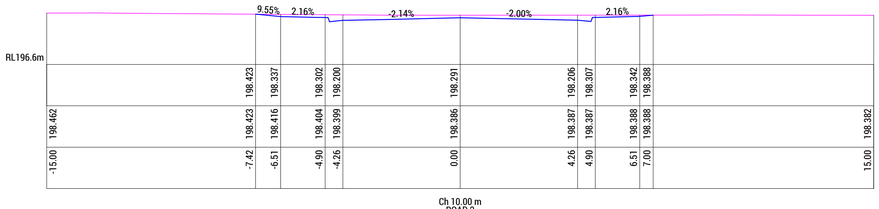
Ch 65.70 m
ROAD 2



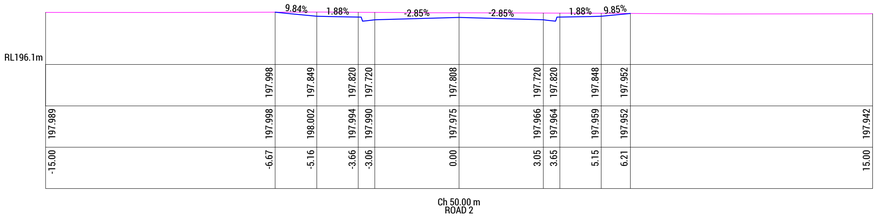
Ch 14.07 m
ROAD 2



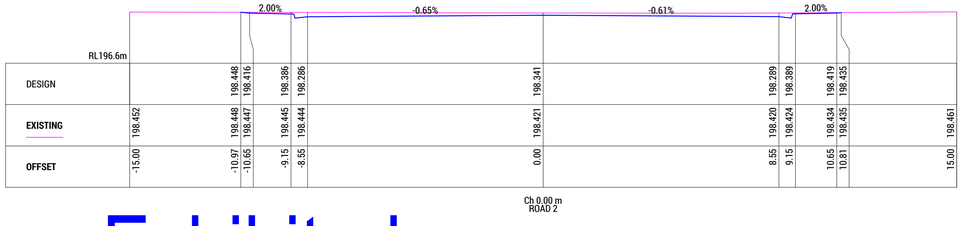
Ch 60.00 m
ROAD 2



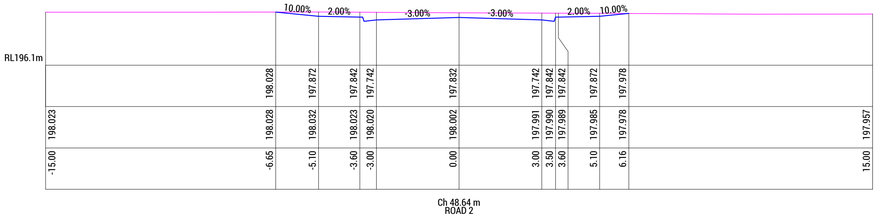
Ch 10.00 m
ROAD 2



Ch 50.00 m
ROAD 2



Ch 0.00 m
ROAD 2



Ch 48.64 m
ROAD 2

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APPROVED: R. JESSON | ACRED. No: CC5848I

DESIGN BY: PVD
DESIGN CHK: RJJ
DRAWN BY: PVD
DRAFT CHK: JWS
DATE: 29-03-23

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Launceston TAS 7250
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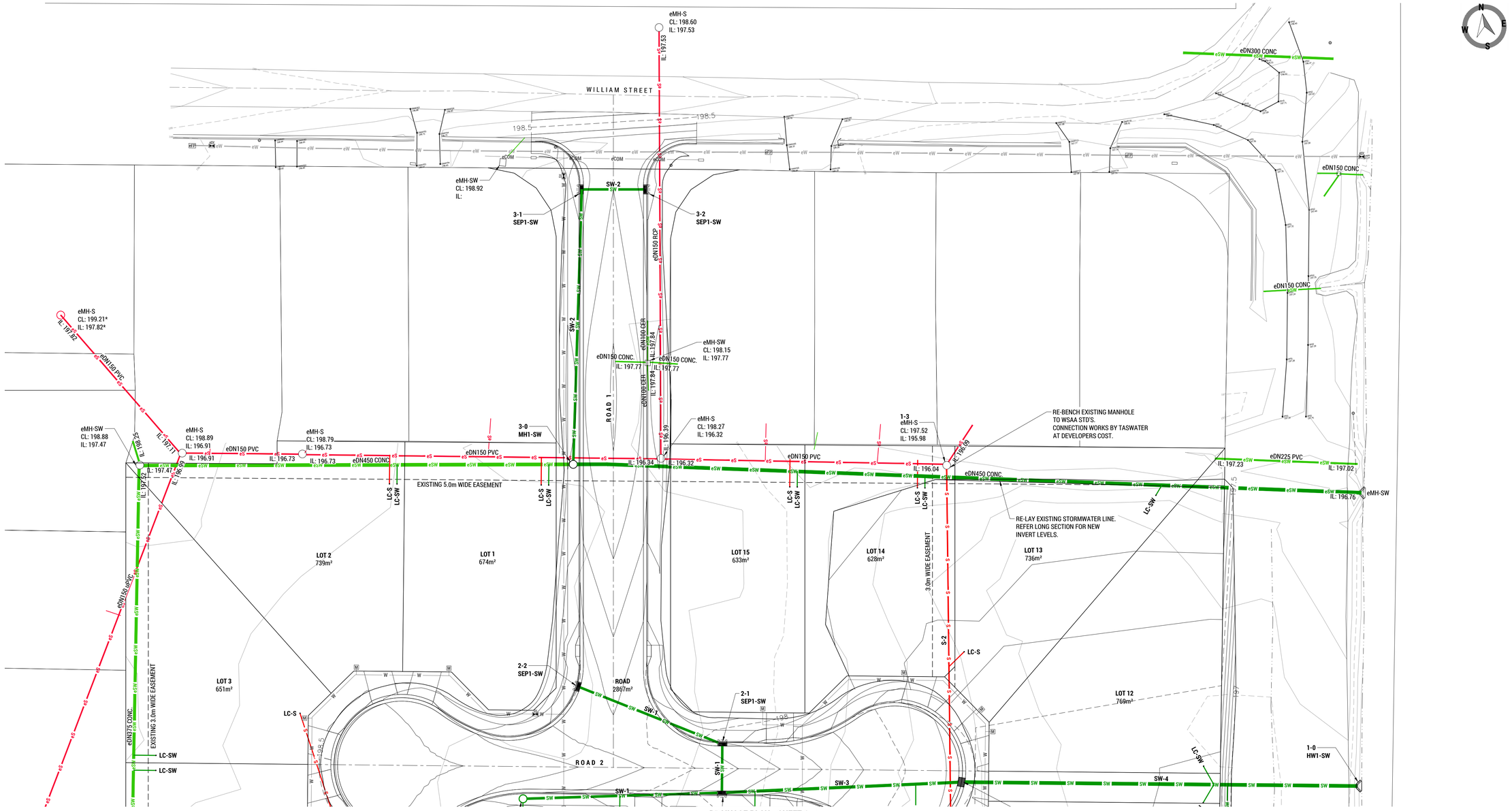
P. 03 6388 9200

CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

TITLE: CIVIL CROSS SECTIONS - ROAD 2
SCALE: 1:100 SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C435 REV: A



DRAINAGE PLAN - SHEET 1

SCALE 1:250

LEGEND

eSW	EXISTING STORM WATER MAIN
SW	PROPOSED STORMWATER MAIN
eS	EXISTING SEWER MAIN
S	PROPOSED SEWER MAIN
AG	PROPOSED AG DRAIN
	PROPOSED OPEN / SWALE / VEE DRAIN
MH-S	SEWER MANHOLE
LC-S	DN100 uPVC LOT CONNECTION - IO TO SURFACE TYPE 1 - IN ACCORDANCE WITH MRWA 300 SERIES
MH-SW	STORMWATER MANHOLE
SEP-SW	SIDE ENTRY PIT
LC-SW	DN100 uPVC LOT CONNECTION - IO TO SURFACE IN ACCORDANCE WITH TSD-SW25-v3

STORMWATER PIPE SCHEDULE

MARK	PIPE SIZE	TYPE	CLASS
SW-1	300	BMAX	SN8
SW-2	300	RCP	CLASS 4
SW-3	375	BMAX	SN8
SW-4	450	RCP	CLASS 4

SEWER PIPE SCHEDULE

MARK	PIPE SIZE	TYPE	CLASS
S-1	150	DWV uPVC	SN8
S-2	225	DWV uPVC	SN8

STORMWATER PIT / MANHOLE SCHEDULE

MARK	SIZE	TYPE	ACCESSORIES
MH1-SW	Ø1050	PRECAST CONC. MANHOLE	CLASS B 'SW' MARKED GATIC LID
SEP1-SW	1220	PRECAST CONC. TYPE 1	REFER LGAT STD DWG TSD-SW07-v3
HW1-SW	SUIT PIPE DIA	PRECAST CONC. HEADWALL	

SEWER PIT / MANHOLE SCHEDULE

MARK	SIZE	TYPE	ACCESSORIES
MH1-S	Ø1050	PRECAST CONC. MANHOLE	CLASS B 'S' MARKED GATIC LID

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APPROVED: R. JESSON | ACRED. No: CC5848I

DESIGN BY: PVD | DESIGN CHK: RJJ | DRAWN BY: PVD | DRAFT CHK: JWS | DATE: 29-03-23

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P. 03 6388 9200

CLIENT: BAKER & WALLIS

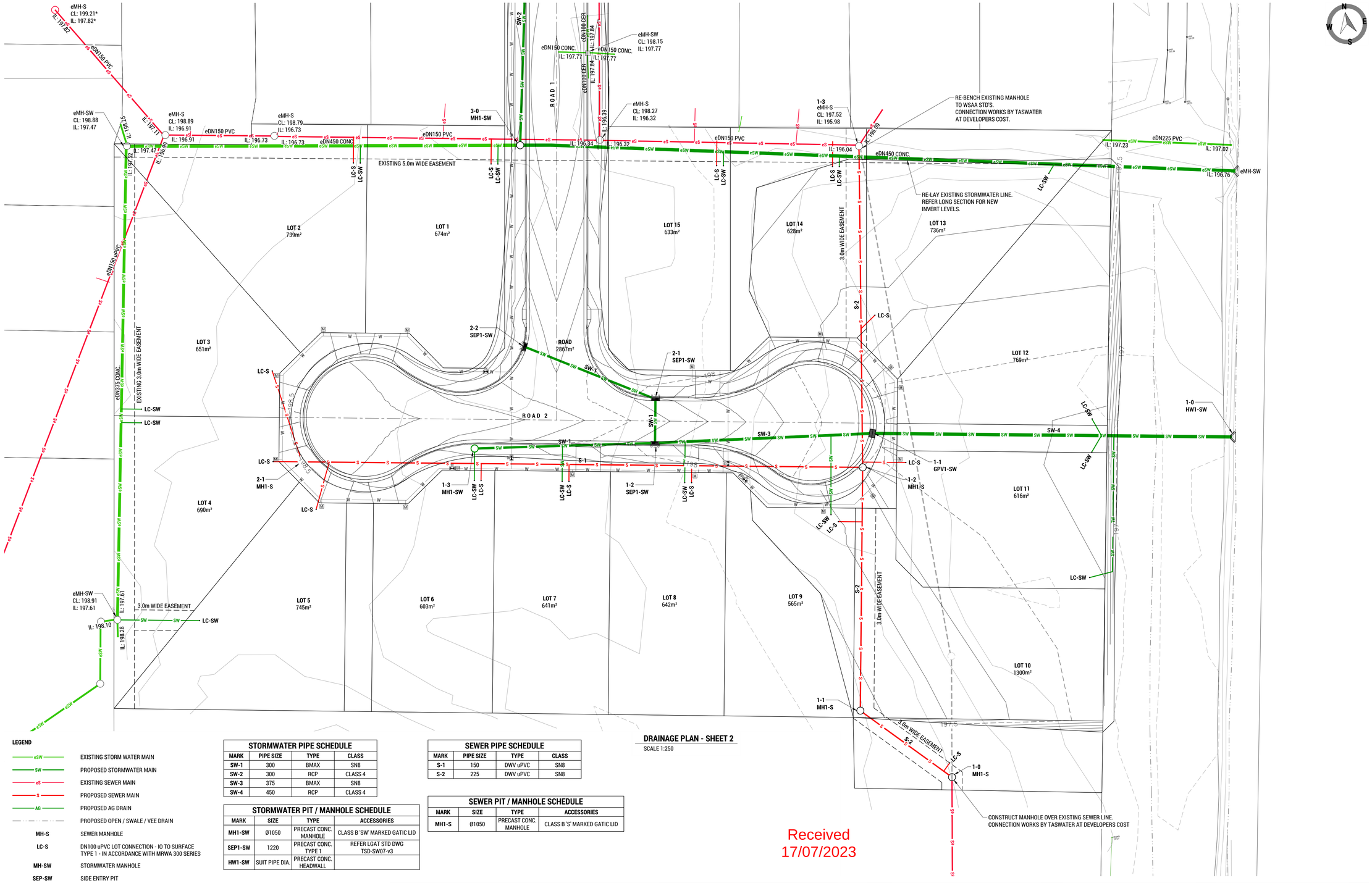
PROJECT: SUBDIVISION

ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

TITLE: DRAINAGE PLAN - SHEET 1

SCALE: 1:250 | SHEET SIZE: A1 | DWGs IN SET: -

PROJECT No: 231007 | DWG No: C501 | REV: A



LEGEND

eSW	EXISTING STORM WATER MAIN
SW	PROPOSED STORMWATER MAIN
eS	EXISTING SEWER MAIN
S	PROPOSED SEWER MAIN
AG	PROPOSED AG DRAIN
	PROPOSED OPEN / SWALE / VEE DRAIN
MH-S	SEWER MANHOLE
LC-S	DN100 uPVC LOT CONNECTION - IO TO SURFACE TYPE 1 - IN ACCORDANCE WITH MRWA 300 SERIES
MH-SW	STORMWATER MANHOLE
SEP-SW	SIDE ENTRY PIT
LC-SW	DN100 uPVC LOT CONNECTION - IO TO SURFACE IN ACCORDANCE WITH TSD-SW25-v3

STORMWATER PIPE SCHEDULE

MARK	PIPE SIZE	TYPE	CLASS
SW-1	300	BMAX	SN8
SW-2	300	RCP	CLASS 4
SW-3	375	BMAX	SN8
SW-4	450	RCP	CLASS 4

STORMWATER PIT / MANHOLE SCHEDULE

MARK	SIZE	TYPE	ACCESSORIES
MH1-SW	Ø1050	PRECAST CONC. MANHOLE	CLASS B 'SW' MARKED GATIC LID
SEP1-SW	1220	PRECAST CONC. TYPE 1	REFER LGAT STD DWG TSD-SW07-v3
HW1-SW	SUIT PIPE DIA.	PRECAST CONC. HEADWALL	

SEWER PIPE SCHEDULE

MARK	PIPE SIZE	TYPE	CLASS
S-1	150	DWV uPVC	SN8
S-2	225	DWV uPVC	SN8

SEWER PIT / MANHOLE SCHEDULE

MARK	SIZE	TYPE	ACCESSORIES
MH1-S	Ø1050	PRECAST CONC. MANHOLE	CLASS B 'S' MARKED GATIC LID

DRAINAGE PLAN - SHEET 2

SCALE 1:250

Received
17/07/2023

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REV:	DESCRIPTION:	BY:	DATE:
A	DEVELOPMENT APPROVAL	PVD	29-03-23
	ISSUED FOR / DESCRIPTION:	BY:	DATE:

STATUS: **CONTROLLED DOCUMENT**

DO NOT SCALE - IF IN DOUBT, ASK

APPROVED: R. JESSON | ACRED. No: CC5848I

DESIGN BY: PVD | DESIGN CHK: RJJ | DRAWN BY: PVD | DRAFT CHK: JWS | DATE: 29-03-23

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P. 03 6388 9200

CLIENT: BAKER & WALLIS

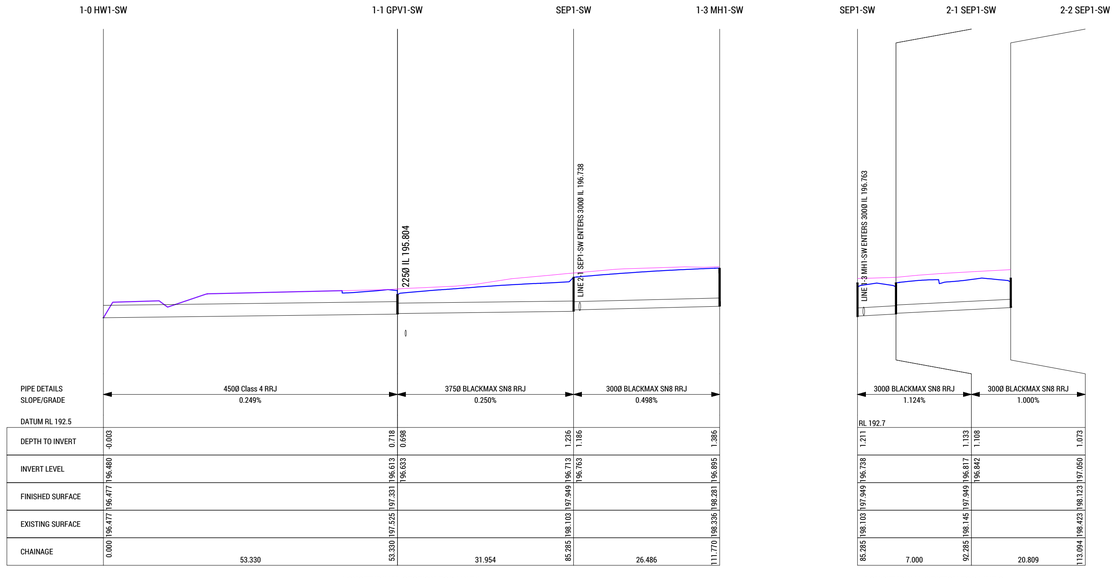
PROJECT: SUBDIVISION

ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

TITLE: DRAINAGE PLAN - SHEET 2

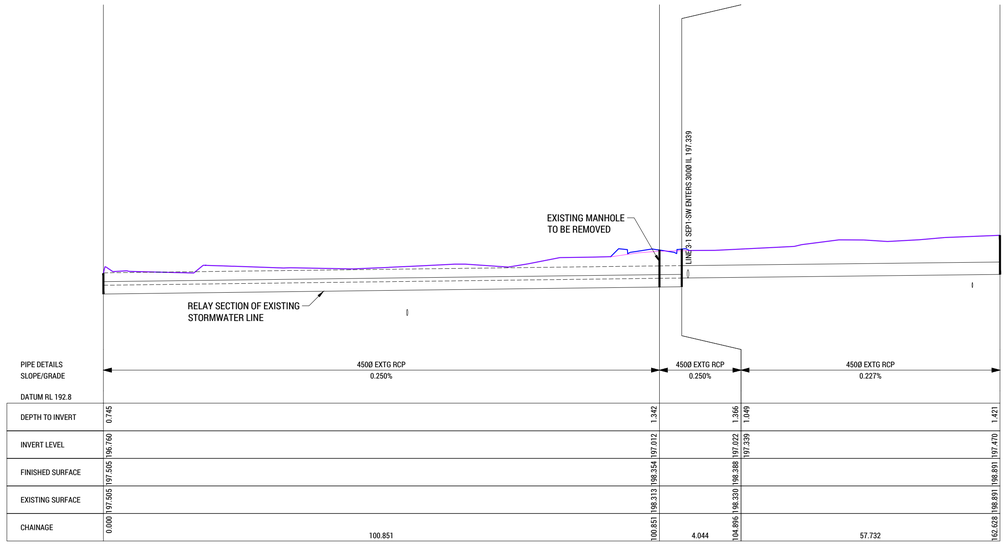
SCALE: 1:250 | SHEET SIZE: A1 | DWGs IN SET: -

PROJECT No: 231007 | DWG No: C502 | REV: A

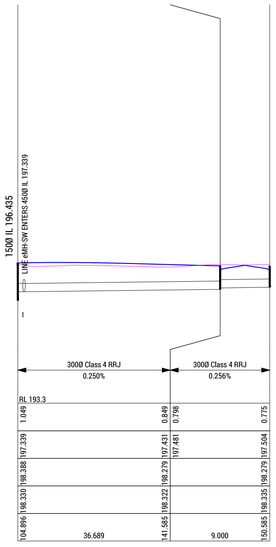


LONGITUDINAL SECTION FOR LINE 1
SCALES: HORIZONTAL 1:500 VERTICAL 1:100

LONGITUDINAL SECTION FOR LINE 2
SCALES: HORIZONTAL 1:500 VERTICAL 1:100



LONGITUDINAL SECTION FOR LINE 1
SCALES: HORIZONTAL 1:500 VERTICAL 1:100



LONGITUDINAL SECTION FOR LINE 2
SCALES: HORIZONTAL 1:500 VERTICAL 1:100

Exhibited

Received
17/07/2023

REV:	ISSUED FOR / DESCRIPTION:	BY:	DATE:
A	DEVELOPMENT APPROVAL	PVD	29-03-23

STATUS:
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APPROVED: R. JESSON | ACRED. No: CC5848I

DESIGN BY: PVD
DESIGN CHK: RJJ
DRAWN BY: PVD
DRAFT CHK: JWS
DATE: 29-03-23

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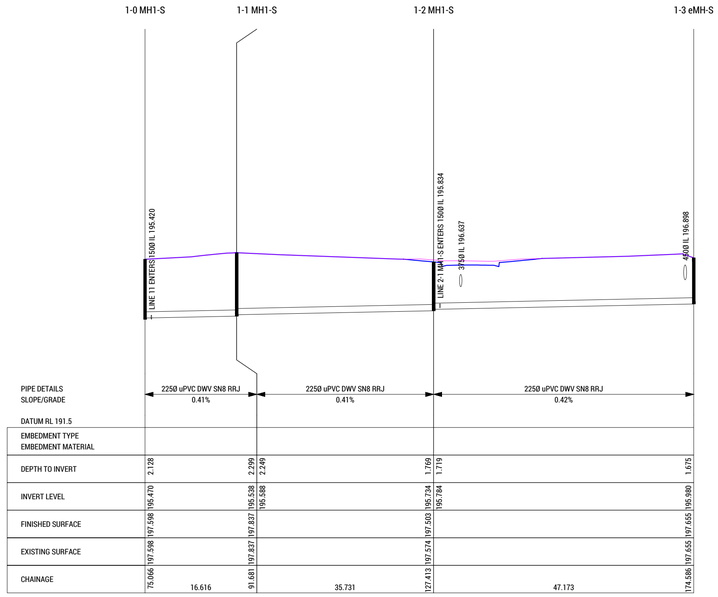
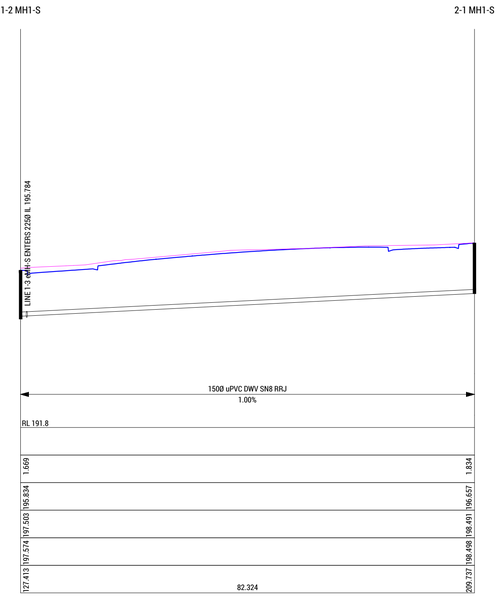
CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

TITLE: STORMWATER LONG SECTIONS
SCALE: 1:500H 1:100V SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C521 REV: A



SEWER LONGITUDINAL SECTION FOR LINE 1
SCALES: HORIZONTAL 1:500 VERTICAL 1:100



SEWER LONGITUDINAL SECTION FOR LINE 2
SCALES: HORIZONTAL 1:500 VERTICAL 1:100

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17/07/2023

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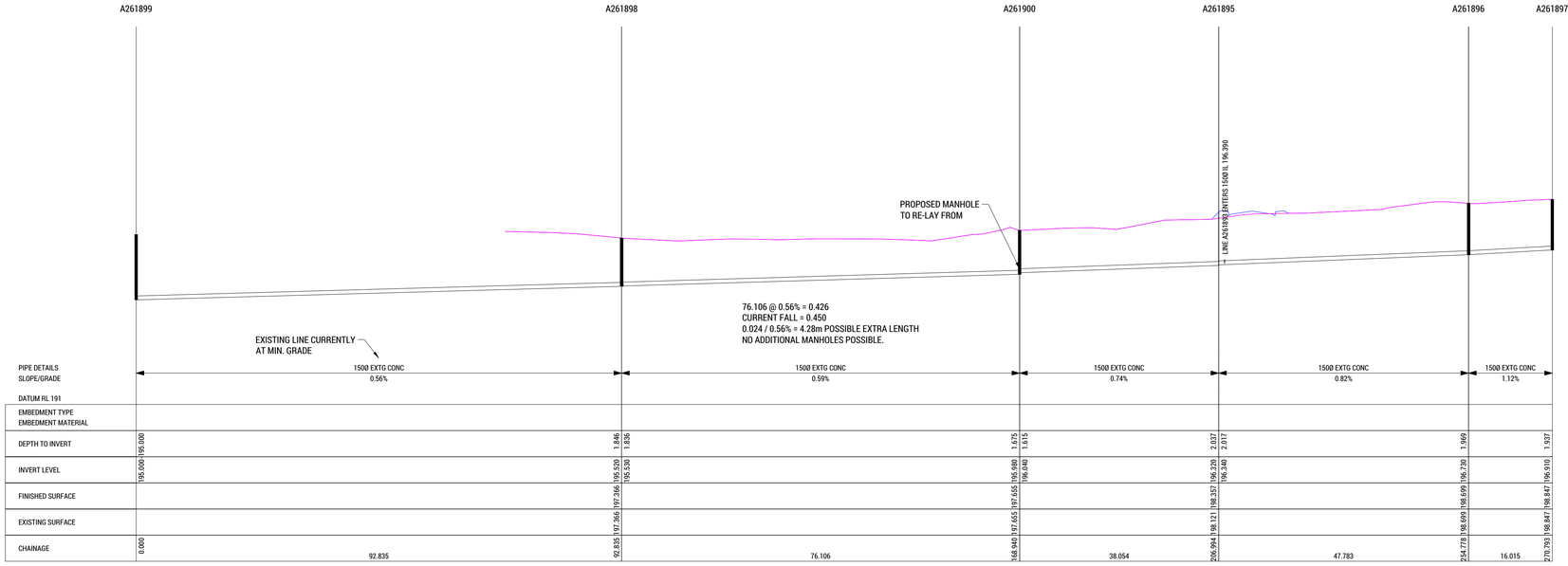
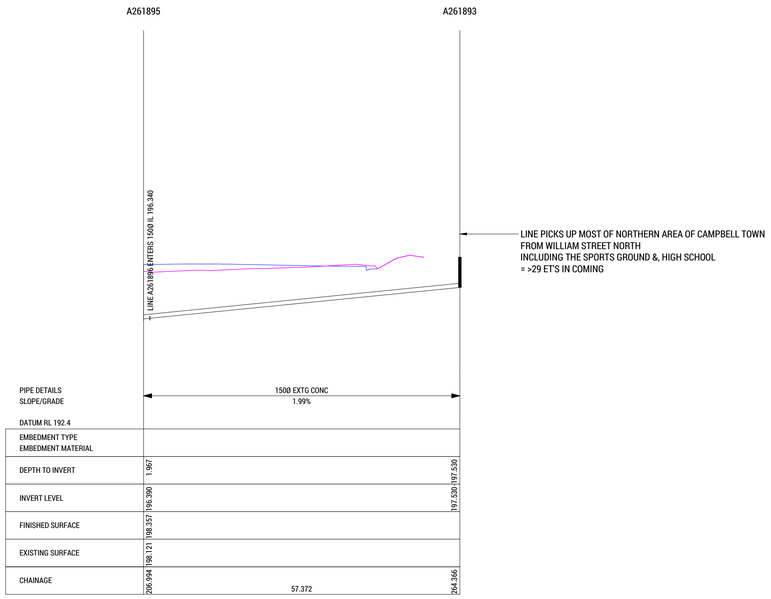
CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

TITLE: SEWER LONG SECTION
SCALE: 1:500H 1:100V SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C531 REV: A



SEWER LONGITUDINAL SECTION FOR LINE 1
SCALES: HORIZONTAL 1:500 VERTICAL 1:100



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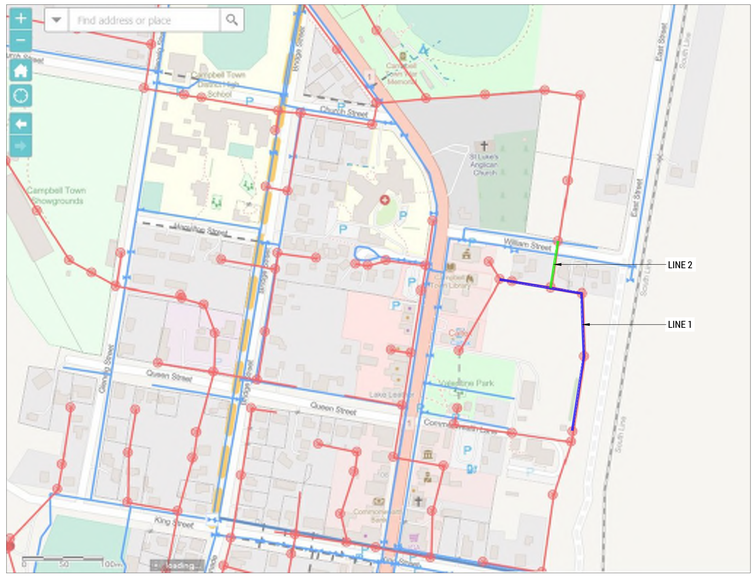

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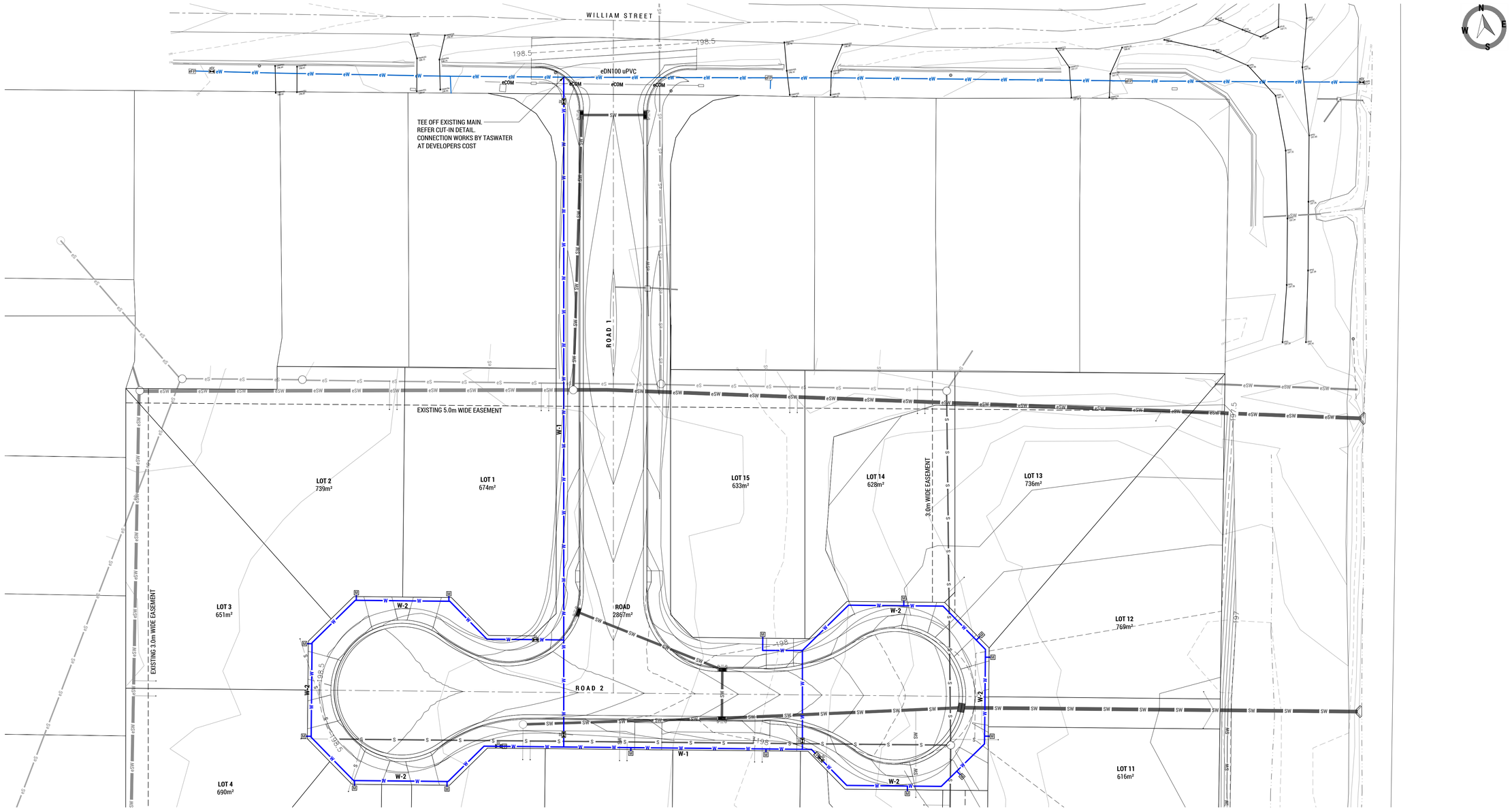
CLIENT: BAKER & WALLIS
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET
CAMPBELL TOWN

TITLE: EXISTING SEWER LONG SECTION
SCALE: 1:500H 1:100V SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C532 REV: A



LEGEND

- eW — EXISTING WATER MAIN
- W — PROPOSED WATER MAIN
- FP — FIRE PLUG
- SV — STOP VALVE
- M — 20mm LOW HAZARD WATER METER WITH CLASS B NON-TRAFFICABLE METER BOX IN ACCORDANCE WITH TASWATER STD DWG TWS-W-0002-SH2

WATER MAIN SCHEDULE

MARK	PIPE SIZE	TYPE
W-1	100	PVC-O PN16
W-2	650D (50ID)	POLY PE100 SDR11 PN16
W-3	250D (20ID)	POLY PE100 SDR11 PN16

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WATER RETICULATION PLAN

SCALE 1:250

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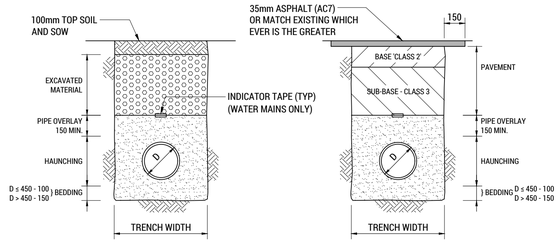
PROJECT: SUBDIVISION
ADDRESS: 7A WILLIAM STREET CAMPBELL TOWN

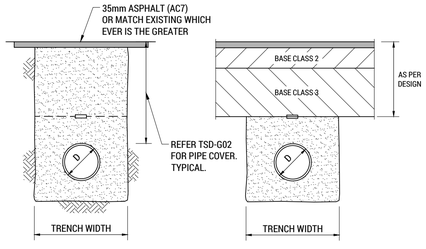
TITLE: WATER RETICULATION PLAN
SCALE: 1:250 SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C601 REV: A



D01 - **TRENCHES - NON-TRAFFICABLE**
SCALE 1:20

CLASS 1, 2 AND 3 ROADS

D02 - **TRENCHES - EXISTING ROADS**
SCALE 1:20



CLASS 4 LOCAL ROADS
PARKING LANES - ALL ROADS
FOOTPATHS / DRIVEWAYS

D03 - **TRENCHES - NEW ROADS**
SCALE 1:20

TRENCH WIDTH		
PIPE TYPE	**NOM. DIA (D)**	**TRENCH WIDTH**
CONCRETE	≤ 1500	D + 300
	> 1500	DESIGN REQ.
OTHER PIPES	100	300
	150	450
	225-300	600
	450	750
	450-1500	D + 600
	> 1500	DESIGN REQ.

MINIMUM TRENCH WIDTHS MAY BE VARIED ABOVE THE PIPE OVERLAY ZONE TO MEET 'WORKPLACE STANDARDS' REQUIREMENTS.
ie EXCAVATIONS OVER 1.5m MAY REQUIRE RISK ASSESSMENT.

COMPACTION OF BEDDING, HAUNCHING & OVERLAY
REFER TO AS 1289-5.5
CONCRETE PIPES = MIN. DENSITY INDEX = 60% (85% STD. COMPACTION)
uPVC PIPES = DENSITY INDEX = 65% (90% STD. COMPACTION)
DICL PIPES = DENSITY INDEX = 65% (90% STD. COMPACTION)

BEDDING, HAUNCHING AND OVERLAY MATERIAL
BEDDING , HAUNCHING AND PIPE OVERLAY MATERIAL SHALL CONTAIN NO DELETERIOUS MATERIAL OR CLAY LUMPS AND SHALL COMPLY WITH THE FOLLOWING GRADINGS:

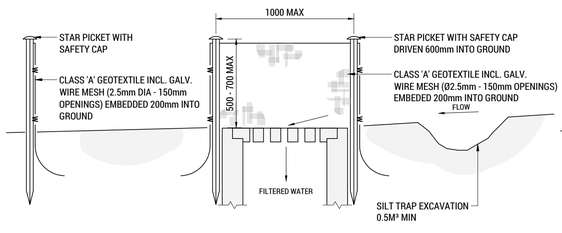
FOR uPVC AND DUCTILE IRON PIPES
SAND OR CRUSHED ROCK (STONE DUST)

SIEVE APERTURE (mm) TO AS 1152	% PASSING (BY MASS)
6.7	100
2.36	70-100
0.6	20-90
0.3	8-50
0.15	0-20
0.075	0-10

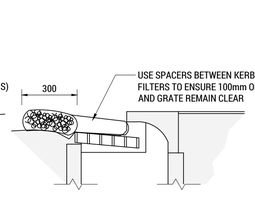
FOR CONCRETE PIPES
CRUSHED ROCK

SIEVE APERTURE (mm) TO AS 1152	% PASSING (BY MASS)
19	100
2.36	50-100
0.6	20-90
0.3	10-60
0.15	0-25
0.075	0-10

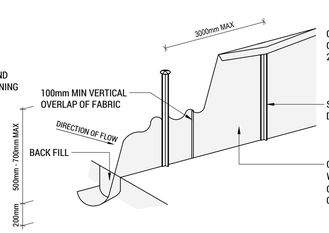
ALL MATERIAL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH AS 3725 AND TO THE SATISFACTION OF THE SUPERINTENDENT.



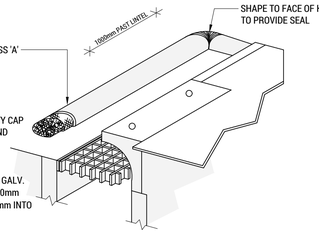
D04 - **SILT FENCE AT GRATED PIT**
SCALE N.T.S



D05 - **SILT FENCE AT GULLY PIT**
SCALE N.T.S



D06 - **SILT FENCE DETAIL**
SCALE N.T.S



D07 - **SILT FENCE AT GULLY PIT**
SCALE N.T.S

SILT FENCE
CONSTRUCT AS DETAILED AND INSTALL CLASS 'A' GEOTEXTILE OR USE PROPRIETARY SILT FENCE. EG; MACCAFERRI 'SILT LOK'.

OMIT SANDBAG WALL AND SILTTRAP WHEN PIT IS IN A LOW POINT.

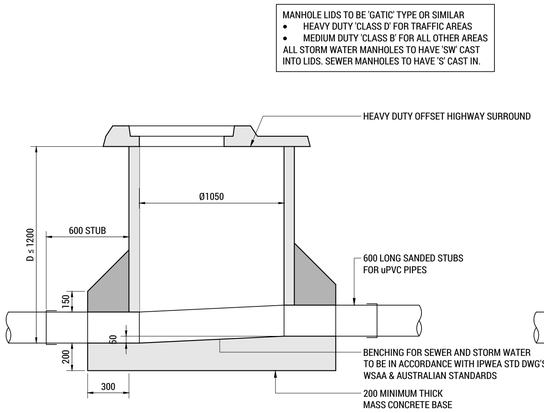
GULLY PIT
GALVANIZED WIRE MESH 2mm DIA x 12mm OPENING.

GENERAL
SEDIMENT FENCES ARE TO BE CLEANED DAILY TO PREVENT BREAKAGE/OVERTOPPING.

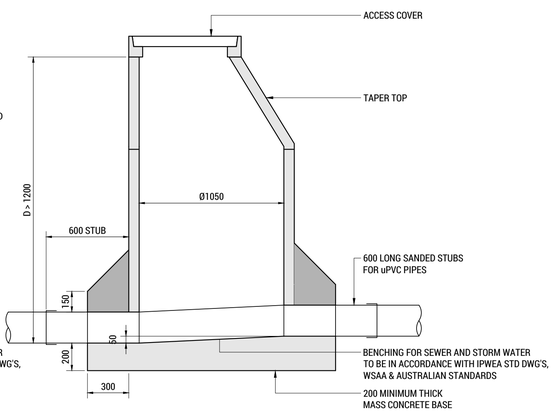
IT IS THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL, MAINTAIN AND (UPON COMPLETION) REMOVE ALL TEMPORARY SEDIMENT CONTROL MEASURES.

IT IS STRONGLY RECOMMENDED THAT THE DEVELOPER RE-COVERS ANY DISTURBED AREAS WITH TOPSOIL AS QUICKLY AS POSSIBLE AFTER BULK EARTHWORKS ARE COMPLETED, TO PREVENT SOIL DISPERSION.

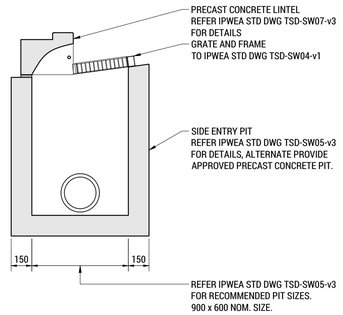
NOTE:
INSTALL SILT MANAGEMENT AS REQUIRED. LOCATIONS TO BE CONFIRMED ON SITE. ENSURE SILT MANAGEMENT COMPLIES WITH CURRENT COUNCIL STANDARDS AND REQUIREMENTS.



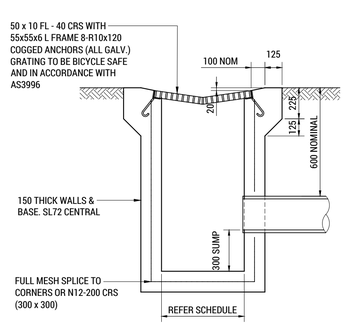
D08 - **DETAIL OF MANHOLE - D ≤ 1200**
SCALE 1:20
REFER IPWEA STD DWG TSD-SW02-v3
FOR STORMWATER MANHOLE DETAILS
REFER WSAA STD DWG'S FOR SEWER
MANHOLE DETAILS



D09 - **DETAIL OF MANHOLE - D > 1200**
SCALE 1:20



D10 - **SECTION DETAIL - SIDE ENTRY PIT 'TYPE 1'**
SCALE 1:20
REFER IPWEA STANDARD DRAWINGS FOR ADDITIONAL SIDE ENTRY PIT DETAILS



D11 - **GRATED VEE PIT**
SCALE 1:20
REFER IPWEA STANDARD DRAWINGS FOR ALTERNATE PIT CONSTRUCTION DETAILS.
APPROVED PRECAST UNIT MAYBE SUBSTITUTED.

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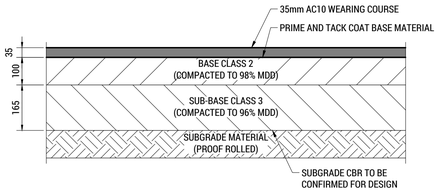
CLIENT: **BAKER & WALLIS**
PROJECT: **SUBDIVISION**
ADDRESS: **7A WILLIAM STREET CAMPBELL TOWN**

TITLE: **CIVIL SECTIONS & DETAILS - SHEET 1**
SCALE: **1:20** SHEET SIZE: **A1** DWGs IN SET: **-**
PROJECT No: **231007** DWG No: **C701** REV: **A**

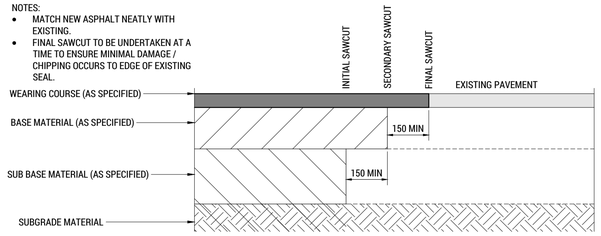


D01 - **HOT MIX PAVEMENT - ROADWAYS - PAV-A**

SCALE 1:10

MIN CBR 4% (CONTRACTOR TO CONFIRM ONSITE)

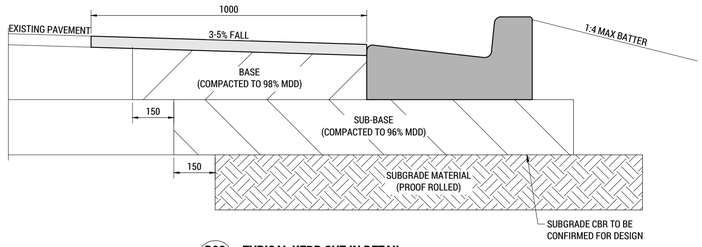
NOTES:
- MATCH NEW ASPHALT NEATLY WITH EXISTING.
- FINAL SAWCUT TO BE UNDERTAKEN AT A TIME TO ENSURE MINIMAL DAMAGE / CHIPPING OCCURS TO EDGE OF EXISTING SEAL.



D02 - **NEW TO EXISTING HOT MIX TRANSITION**

SCALE 1:10

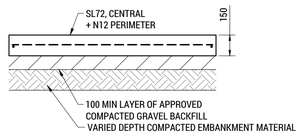
NOTE - HOTMIX PAVEMENT - ROADWAYS FOR BASE MATERIAL TYPES & DEPTHS



D03 - **TYPICAL KERB CUT IN DETAIL**

SCALE 1:10

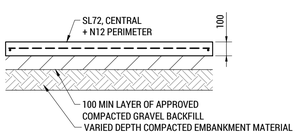
NOTE - HOTMIX PAVEMENT - ROADWAYS FOR BASE MATERIAL TYPES & DEPTHS



D04 - **SECTION - PAVEMENT 'B' DRIVEWAY (TYP.)**

SCALE 1:20

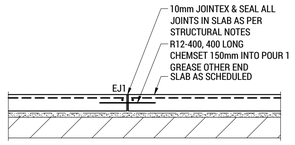
REFER IPWEA STD DWG TSD-R09-v3 FOR ADDITIONAL DRIVEWAY DETAILS



D05 - **SECTION DETAIL - PAVEMENT 'C' (TYP.)**

SCALE 1:20

REFER IPWEA STD DWG TSD-R11-v3 FOR ADDITIONAL FOOTPATH DETAILS

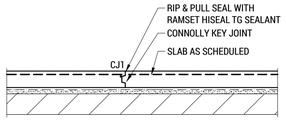


D06 - **DETAIL - CONSTRUCTION JOINT EJ1 (TYP.)**

SCALE 1:20

PROVIDE EXPANSION JOINTS EACH SIDE DRIVEWAYS AND AT 18.0m MAX CRS

REFER IPWEA STD DWG TSD-R09-v3 & TSD-R11-v3 FOR DETAILS

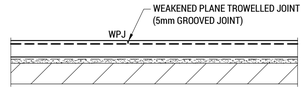


D07 - **DETAIL - CONSTRUCTION JOINT CJ1 (TYP.)**

SCALE 1:20

PROVIDE CONSTRUCTION JOINTS AT 6.0m MAX CRS

REFER IPWEA STD DWG TSD-R11-v3 FOR DETAILS

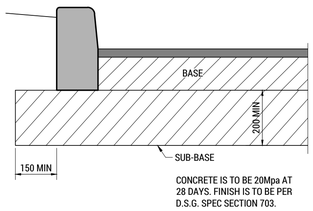


D08 - **DETAIL - WEAKENED PLANE JOINT WPJ (TYP.)**

SCALE 1:20

PROVIDE WEAKENED PLANE JOINTS AT 2.0m MAX CRS

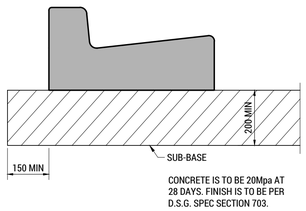
REFER IPWEA STD DWG TSD-R11-v3 FOR DETAILS



D09 - **TYPE BK KERB**

SCALE 1:10

REFER IPWEA STD DWG TSD-R14-v3
FOR APPROVED KERB & CHANNEL
PROFILES & DIMENSIONS

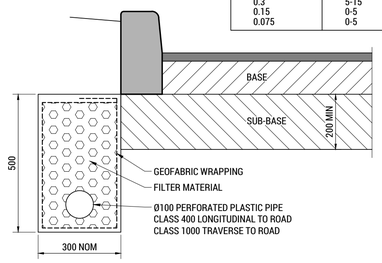


D10 - **TYPE KC KERB**

SCALE 1:10

REFER IPWEA STD DWG TSD-R14-v3
FOR APPROVED KERB & CHANNEL
PROFILES & DIMENSIONS

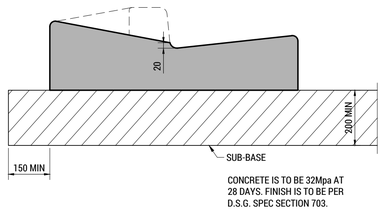
FIN DRAIN BACKFILL QUARTZ PAVING SAND	
SIEVE APERTURE (mm) TO AS 1152	% PASSING (BY MASS)
4.75	95-100
2.36	65-95
0.6	15-65
0.3	5-15
0.15	0-5
0.075	0-5



D11 - **SUB-SOIL DRAIN DETAIL**

SCALE 1:10

INSTALL TO DSG SPEC ON DWG 3401-3/P17-4



D12 - **TYPE KCV KERB - VEHICULAR CROSSING**

SCALE 1:10

REFER IPWEA STD DWG TSD-R14-v3
FOR APPROVED KERB & CHANNEL
PROFILES & DIMENSIONS

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TITLE: CIVIL SECTIONS & DETAILS - SHEET 2
SCALE: 1:10, 1:20 SHEET SIZE: A1 DWGs IN SET: -
PROJECT No: 231007 DWG No: C702 REV: A

Exhibited

TRAFFIC & CIVIL SERVICES

7A WILLIAM STREET, CAMPBELL TOWN
15 LOT SUBDIVISION
TRAFFIC IMPACT ASSESSMENT

APRIL 2023

Exhibited

7A William Street, Campbell Town
15 Lot Subdivision

TRAFFIC IMPACT ASSESSMENT

- Final
- April 2023

Traffic & Civil Services
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Contents

Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
1	21st Feb 2023	R Burk	R Burk	21st Feb 2023	Draft
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3	6th April 2023	R Burk	R Burk	6th April 2033	Final #2

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1. Introduction

1.1 Background

A 15 Lot General Residential subdivision is proposed at 7A William Street, Campbell Town. This TIA has been prepared to assess the impact of the proposal with recommendations where necessary.

This Traffic Impact Assessment (TIA) must be submitted with the development application and provide the following details:

- The significance of the impact of these movements on the existing road network.
- Any changes required to accommodate the additional traffic.

The TIA has been prepared based on Department of State Growth guidelines.

1.2 Objectives

A Traffic Impact Assessment is a means for assisting in the planning and design of sustainable development that considers:

- Safety and capacity
- Equity and social justice
- Economic efficiency
- The environment and future development.

This TIA considers the impact of the proposal on projected traffic volumes expected by 2033.

1.3 Scope of Traffic Impact Assessment (TIA)

This TIA considers in detail the impact of the proposal on the local road network which includes William Street and High Street, Campbell Town.

1.4 References

- RTA Guide to Traffic Generating Developments - 2002
- Tasmanian Planning Scheme – Northern Midlands
- Austroads Guidelines
  - Road Design: Part 4A: Unsignalised & Signalised Intersections - 2021
  - Traffic Management: Part 6:Intersections, Interchanges & Crossings – 2020

1.5 Statement of Qualifications and Experience

This TIA has been prepared by Richard Burk, an experienced and qualified traffic engineer in accordance with the requirements of the Department of State Growth's guidelines and Council's requirements. Richard's experience and qualifications include:

- 36 years professional experience in road and traffic engineering industry
    - Manager Traffic Engineering, Department of State Growth until May 2017.
    - Previous National committee memberships of Austroads Traffic Management and State Road Authorities Pavement Marking Working Groups
- Master of Traffic, Monash University, 2004
- Post Graduate Diploma in Management, Deakin University, 1995
- Bachelor of Civil Engineering, University of Tasmania, 1987

Richard Burk

BE (Civil) M Traffic Dip Man. MIE Aust CPEng

Director Traffic and Civil Services Pty Ltd

1.6 Glossary of Terms

AADT	Annual Average Daily Traffic - The total number of vehicles travelling in both directions passing a point in a year divided by the number of days in a year.
Acceleration Lane	An auxiliary lane used to allow vehicles to increase speed without interfering with the main traffic stream. It is often used on the departure side of intersections.
Access	The driveway by which vehicles and/or pedestrians enter and/or leave the property adjacent to a road.
ADT	Average Daily Traffic – The average 24-hour volume being the total number of vehicles travelling in both directions passing a point in a stated period divided by the stared number of days in that period.
Austroads	The Association of Australian and New Zealand road transport and traffic authorities and includes the Australian Local Government Association.
Delay	The additional travel time experiences by a vehicle or pedestrian with reference to a vase travel time (e.g. the free flow travel time).
DSG	Department of State Growth – The Tasmanian Government Department which manages the State Road Network.
GFA	Gross Floor Area
Intersection Kerb	The place at which two or more roads meet or cross. A raised border of rigid material formed at the edge of a carriageway, pavement or bridge.
km/h	Kilometres per hour
Level of Service	An index of the operational performance of traffic on a given traffic lane, carriageway or road when accommodating various traffic volumes under different combinations of operating conditions. It is usually defined in terms of the convenience of travel and safety performance.
m	Metres
Median	A strip of road, not normally intended for use by traffic, which separates carriageways for traffic in opposite directions. Usually formed by painted lines, kerbed and paved areas grassed areas, etc.
Movement	A stream of vehicles that enters from the same approach and departs from the same exit (i.e. with the same origin and destination).
Phase	The part of a signal cycle during which one or more movements receive right-of-way subject to resolution of any vehicle or pedestrian conflicts by priority rules. A phase is identified by at least one movement gaining right-of-way at the start of it and at least one movement losing right-of-way at the end of it.

Sight Distance	The distance, measured along the road over which visibility occurs between a driver and an object or between two drivers at specific heights above the carriageway in their lane of travel.
Signal Phasing	Sequential arrangement of separately controlled groups of vehicle and pedestrian movements within a signal cycle to allow all vehicle and pedestrian movements to proceed.
SISD	Safe Intersection Sight Distance – The sight distance provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle on a minor road approach moving into a collision situation and to decelerate to a stop before reaching the collision point.
Speed	Distance travelled per unit time.
85th Percentile	The speed at which 85% of car drivers will travel slower and 15% will travel faster.
	A control method that allows a variable sequence and variable duration of signal displays depending on vehicle and pedestrian traffic demands.
Traffic-actuated Control	A control method that allows a variable sequence and variable duration of signal displays depending on vehicle and pedestrian tragic demands.
Traffic Growth Factor	A factor used to estimate the percentage annual increase in traffic volume.
Trip	A one-way vehicular movement from one point to another excluding the return journey. Therefore, a vehicle entering and leaving a land use is counted as two trips. (RTA Guide to Traffic generating Developments).
Turning Movement	The number of vehicles observed to make a particular turning movement (left or right turn, or through movement) at an intersection over a specified period.
Turning Movement Count	A traffic count at an intersection during which all turning movements are recorded.
Vehicle Actuated Traffic Signals	Traffic signals in which the phasing varies in accordance with the detected presence of vehicles on the signal approaches.
vpd	vehicles per day – The number of vehicles travelling in both directions passing a point during a day from midnight to midnight.
vph	vehicles per hour – The number of vehicles travelling in both directions passing a point during an hour.

1.7 Site Specific Glossary of Terms

NMC	Northern Midlands Council
SSA	Safe System Assessment

Exhibited

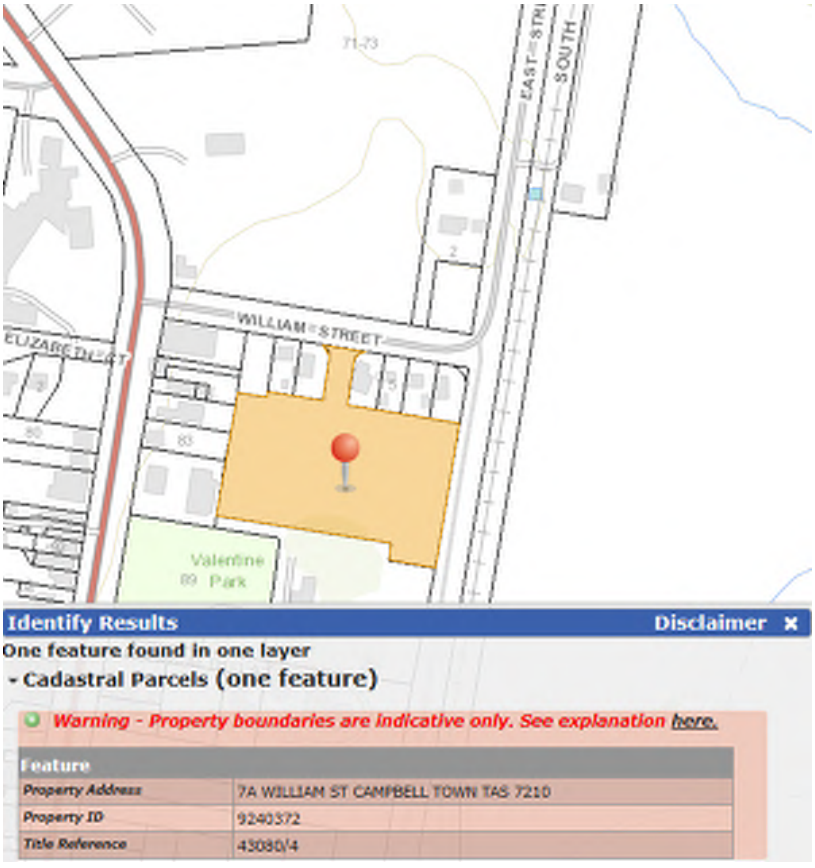
2. Site Description

Figure 1 to 3 show the proposed subdivision site at Campbell Town. The land is generally flat and cleared paddock with minimal vegetation. A major rail line is located some 28m from the Eastern boundary of lots 10-13 of the proposed subdivision.

Figure 1 – Proposed development site

Source: LISTmap

Figure 2 – Proposed development site



Source: LISTmap

Figure 3 – Proposed development site

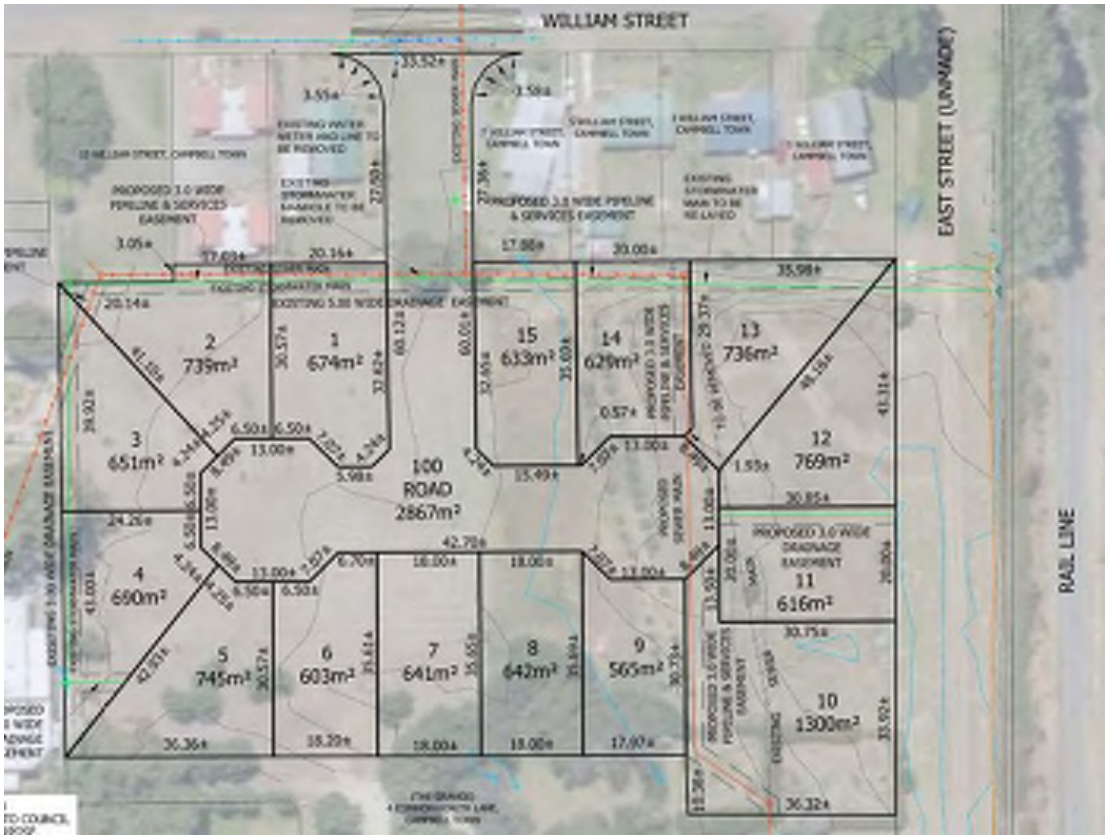
3. Proposal, Planning Scheme and Road Owner objectives.

3.1 Description of Proposed Development

The proposal urban residential subdivision involves 15 lots as shown in Figure 4. Lot sizes vary between 565 and 1300 m2 in area.

An overall subdivision plan is attached in Appendix A.

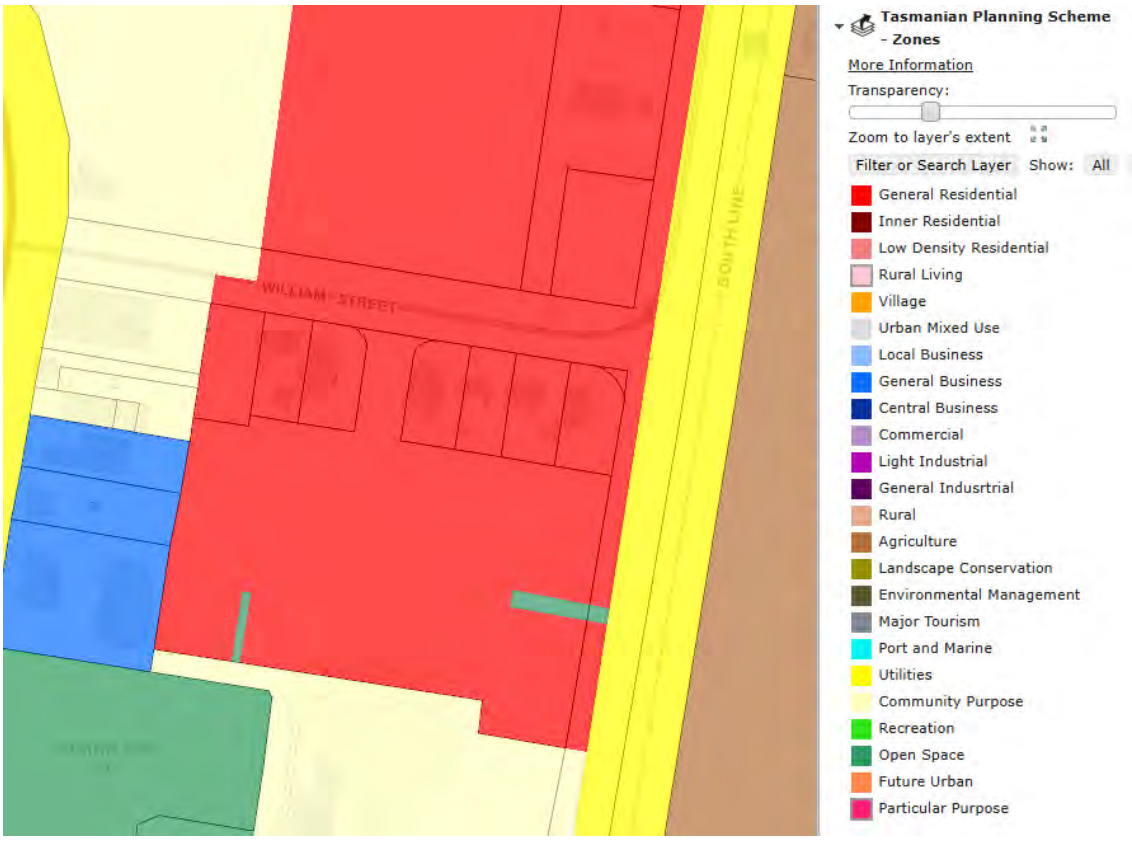
Figure 4 – Proposed subdivision layout



3.2 Council Planning Scheme

The proposed development involves land zoned General Residential in accordance with the Tasmanian Planning Scheme – Northern Midlands shown in Figure 5.

Figure 5 – Development site is zoned General Residential



Source: LISTmap

3.3 Council Road Network Objectives

To ensure safe and efficient operation of Council Roads.

Exhibited

4. Existing Conditions

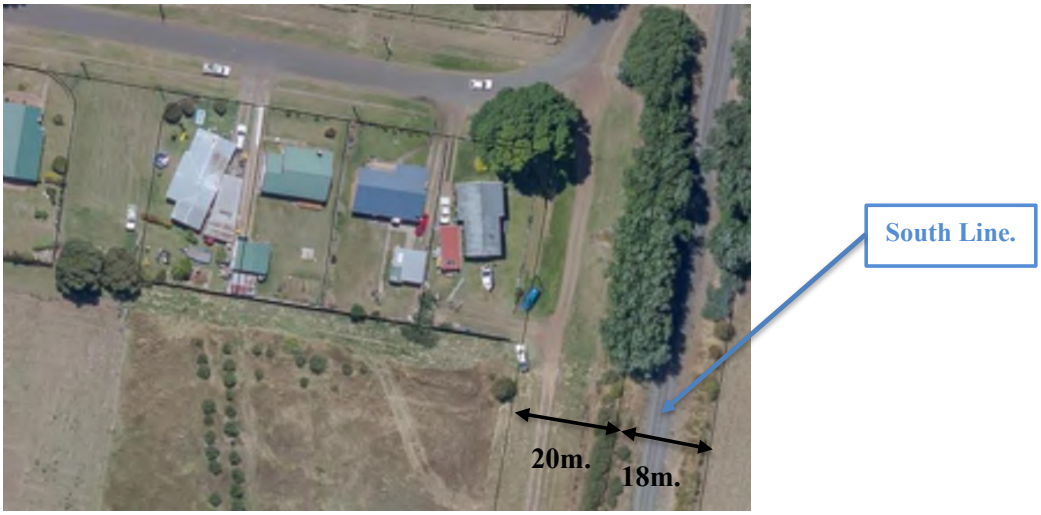
4.1 Transport Network

The adjacent transport network consists of the Tasrail South Line, High Street (Midlands Highway) which is a State Road, and William Street and East Street which are Council Roads.

4.1.1 South Rail Line

The South Rail Line has an approximately North – South alignment and passes to the East of the development site by 20m with a some 18m wide rail reservation with the rail line centrally positioned within the reservation, see Figure 6.

Figure 6 – South Rail Line adjacent the development site.



4.2 High Street

High Street (Midlands Highway) is a Category 1- Trunk Road in the State Road Hierarchy, see Appendix F, with an estimated AADT of 7,870 vpd (2021) 360m North of William Street and is part of the Tasmanian 26m B Double network, see Appendix E.

The High / William Street junction is within a 50km/h speed limit, see Figure 7.

Road delineation is provided with street lighting and line marking. The seal width is 20m in the vicinity of the William Street junction. There is kerb & channel and footpath along both sides of the road.

Exhibited

Figure 7 – High Street Speed Limit.

Northern approach to High Street and 50km/h Zone followed by William Street junction.

4.3 William Street

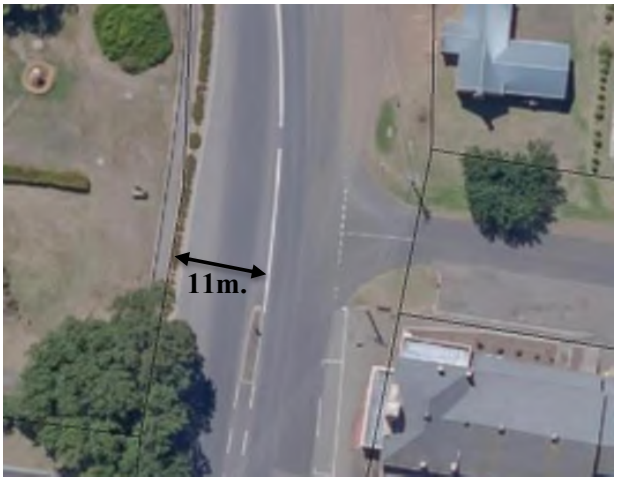
William Street is 210m in length with a 4.7m seal width in a General Residential setting with estimated AADT of 70vpd (2023). Delineation is provided with street lighting.

The General Urban Speed Limit of 50km/h applies.

4.4 High Street / William Street junction

Figures 8-14 show the nature of the High Street / William Street junction.

Figure 8– Aerial view of High / William Street junction



Source: LISTmap

This junction effectively operates as an Austroads BAR junction as through traffic passes to the left of vehicles propped to turn right to William Street.

Exhibited

Figure 9 – William Street approach to High Street

Figure 10 – Elevation view of High Street / William Street junction

Figure 11 – Looking right along High Street from William Street

Sight Distance right is >120m.

Exhibited

Figure 12 – Looking left along High Street from William Street

Sight Distance left is >120m.

Figure 13 – High Street Northern approach to William Street

Figure 14 – High Street Southern approach to William Street

4.5 William Street / Proposed Road junction

Figures 15 - 20 show the nature of the Gardners Road / Allen Street junction.

Figure 15 – Aerial view of William Street / Proposed Road junction

Source: LISTmap

Figure 16 – Elevation view of William Street / Proposed Road junction

Figure 17 – Looking right along William Street from Proposed Road

Sight Distance right is 95m.

Exhibited

Figure 18 – Looking left along William Street from Proposed Road

Sight Distance left is 125m.

Figure 19 – William Street Eastern approach to Proposed Road

Figure 20 – William Street Western approach to Proposed Road

4.6 East Street

East Street is 1000m in length with a 3.5m seal width and technically within a General Residential setting with estimated AADT of 70vpd (2023).

The General Urban Speed Limit of 50km/h applies, and delineation is provided with a street light and some guide posts.

4.7 Sight Distance Summary

Sight distance requirements are summarised in Figure 21.

Figure 21 – Summary of sight distance requirements

			Austroads	Current Provision		AS / NZS 2890.1
Junction Major Rd - Minor Rd	Speed Limit (km/h)	Speed Environment (km/h)	Road frontage sight distance			
			SISD (m)	Available		SSD (m)
				Left(m)	Right(m)	
High - William	50	50	97	> 120	> 120	45
William - Proposed	50	40	73	125	95	35

Austroads Compliant

4.8 Traffic Activity

4.8.1 High Street

Estimated ADDT is 7,870 vpd (2021) 360m North of William Street junction from DSG data, see Appendix B.

4.8.2 William Street

Estimated ADDT is 70 vpd (2023) from TCS observations, see Appendix C.

4.9 Crash History

The Department of State Growth is supplied with reported crashes by Tasmania Police. The Department maintains a crash database from the crash reports which is used to monitor road safety, identify problem areas and develop improvement schemes.

The 5-year crash history records one reported crash, see Figure 22 and 23. There is no evidence of a crash propensity on William Street.

Figure 22 – 5 Year reported Crash History on William Street

Crash Id	Description	Date	Time	Severity	Light	Location	Units
50827827	147 - Emerging from driveway or lane	23-Sep-2020	14:00	PDO	Day	William Street	LV & HV

PDO	Property Damage Only
LV	Light Vehicle
HV	Heavy Vehicle

Figure 23 – 5 Year reported Crash locations on William Street

4.10 Services

No above ground services appear to be disaffected by the proposal.

4.11 Road Safety Review

A road safety review was conducted for William Street and no road safety issues were identified.

4.12 Austroads Safe System Assessment

William Street approaches to the proposed road junction have been assessed in accordance with the Austroads Safe System Assessment framework. This framework involves consideration of exposure, likelihood and severity to yield a risk framework score. High risk crash types and vulnerable road user crash types are assessed for each site and aggregated to provide an overall crash risk. Crash risk is considered in terms of three components:

- Exposure (is low where low numbers of through and turning traffic) i.e.1 out of 4
- Likelihood (is low where the infrastructure standard is high) i.e. 1 out of 4
- Severity (is low where the speed environment is low) i.e. 1 out of 4

The Austroads Safe System Assessment process enables the relative crash risk of an intersection or road link to be assessed. Vulnerable road users are considered along with the most common crash types.

The crash risk score indicates how well the infrastructure satisfies the *safe system objective which is for a forgiving road system where crashes do not result in death or serious injury.*

From safe system assessment, William Street approaches to the proposed Road are determined to be well aligned with the safe system objective with a very low crash risk score of 20/448, see Figures 24 and 25.

Figure 24 – Austroads Safe System Assessment alignment between crash score and risk

<40/448	Very low risk score
(40-80)/ 448	Low risk score
(80-180)/448	Moderate to high risk score
>180/448	High risk score

Figure 25 - Safe System Assessment of William Street, Campbell Town

Safe System Assessment **Existing situation William Street**

		Run-off-road	Head-on	Intersection	Other	Pedestrian	Cyclist	Motorcyclist	
Exposure	**William St (AADT 70vpd.)**	No reported crashes, low traffic volume	No reported crashes, low traffic volume	High Street intersection with 7,870 vpd(2021) and no crash history.	Very low volume residential street.	Low pedestrian activity.	Low cyclist activity.	Low motorcyclist activity.	
	Score /4	1	1	1	1	1	1	1	
Likelihood	**Justification**	Narrow 4.7m seal, straight alignment, street lighting and adequate sight distance.	Narrow 4.7m seal, straight alignment, street lighting and adequate sight distance.	Effectively satisfies Austroads BAR and BAL junction layout warrant.	Narrow 4.7m seal, straight alignment, street lighting and adequate sight distance.	No formal footpath, mowed pedestrian friendly verges.	Narrow 4.7m seal, straight alignment, street lighting and adequate sight distance.	Narrow 4.7m seal, straight alignment, street lighting and adequate sight distance.	
	Score /4	3	3	1	1	2	2	2	
Severity	**50km/h Speed Limit and Speed Environment.**	Low speed environment and minimal roadside hazards.	Low speed environment and minimal roadside hazards.	Low speed environment 50km/h approaches.	Low speed environment and minimal roadside hazards.	Moderate to High speed environment for vulnerable road users such as pedestians	Moderate to High speed environment for vulnerable road users such as cyclists	Moderate to High speed environment for vulnerable road users such as motorcyclists	
	Score /4	1	1	1	1	2	2	2	**Total /448**
Product	**Total Score /64**	**3**	**3**	**1**	**1**	**4**	**4**	**4**	**20**

5. Traffic Generation and Assignment

This section of the report is to determine how traffic generated by the proposal is distributed within the adjacent road network now and ten years future.

5.1 Traffic Growth

Background traffic compound annual growth of 1% has been assumed due to background infill development.

5.2 Trip Generation

Traffic generation rates are sourced from RTA Guide to Traffic Generating Developments 2002.

For dwelling houses traffic generation rates are 9 daily trips per house with 0.85 peak hour vehicle trips.

For 15 lots this amounts to peak activity estimated at 13 vph and 135 vpd.

5.3 Trip Assignment

Trip assignments have been estimated as follows:

- William Street / Proposed Road junction 2033 – Figure 26
- High Street / William Street junction 2033 – Figure 27

Exhibited

Figure 26 – Projection for William Street / Proposed Road junction for 2033

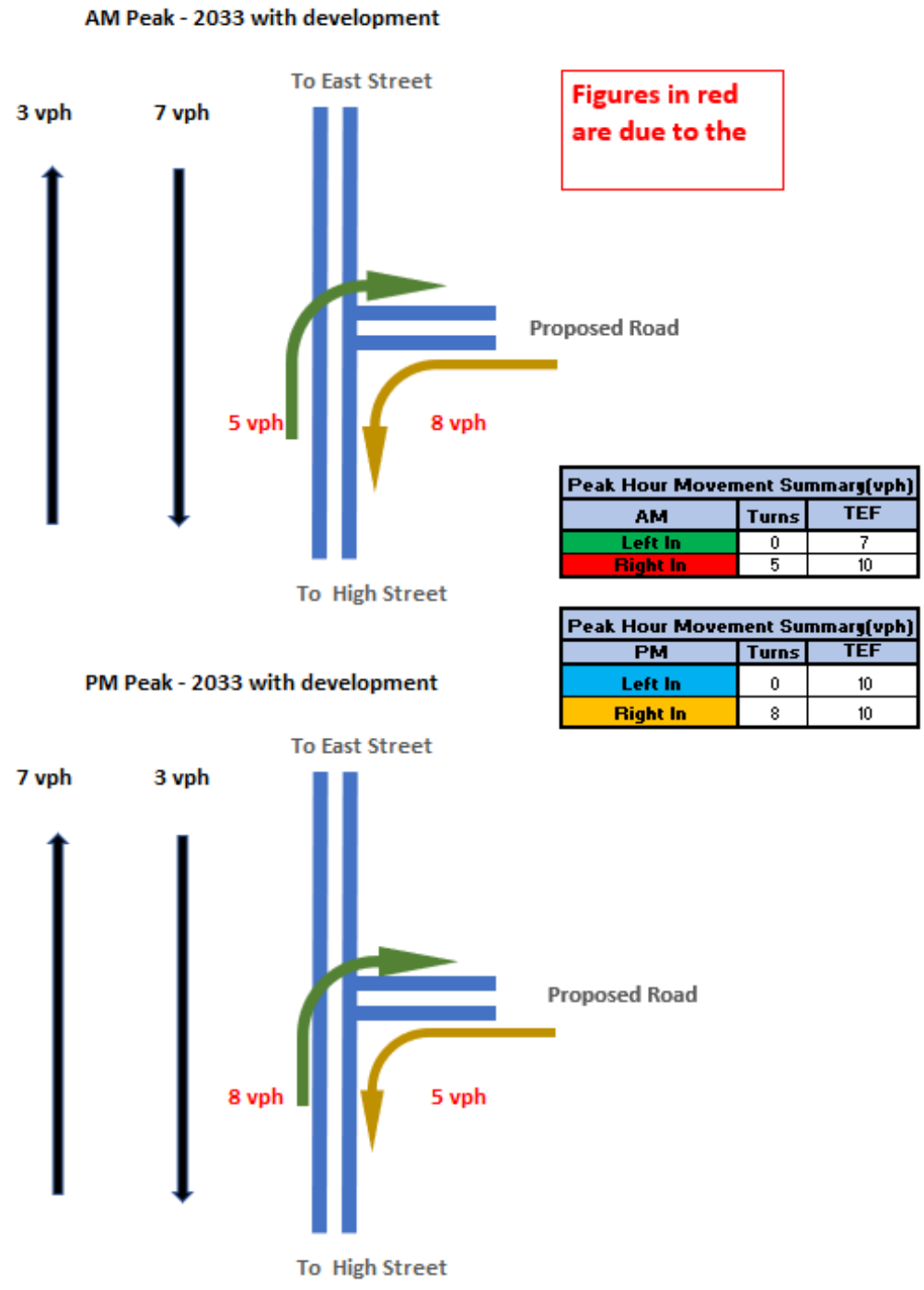
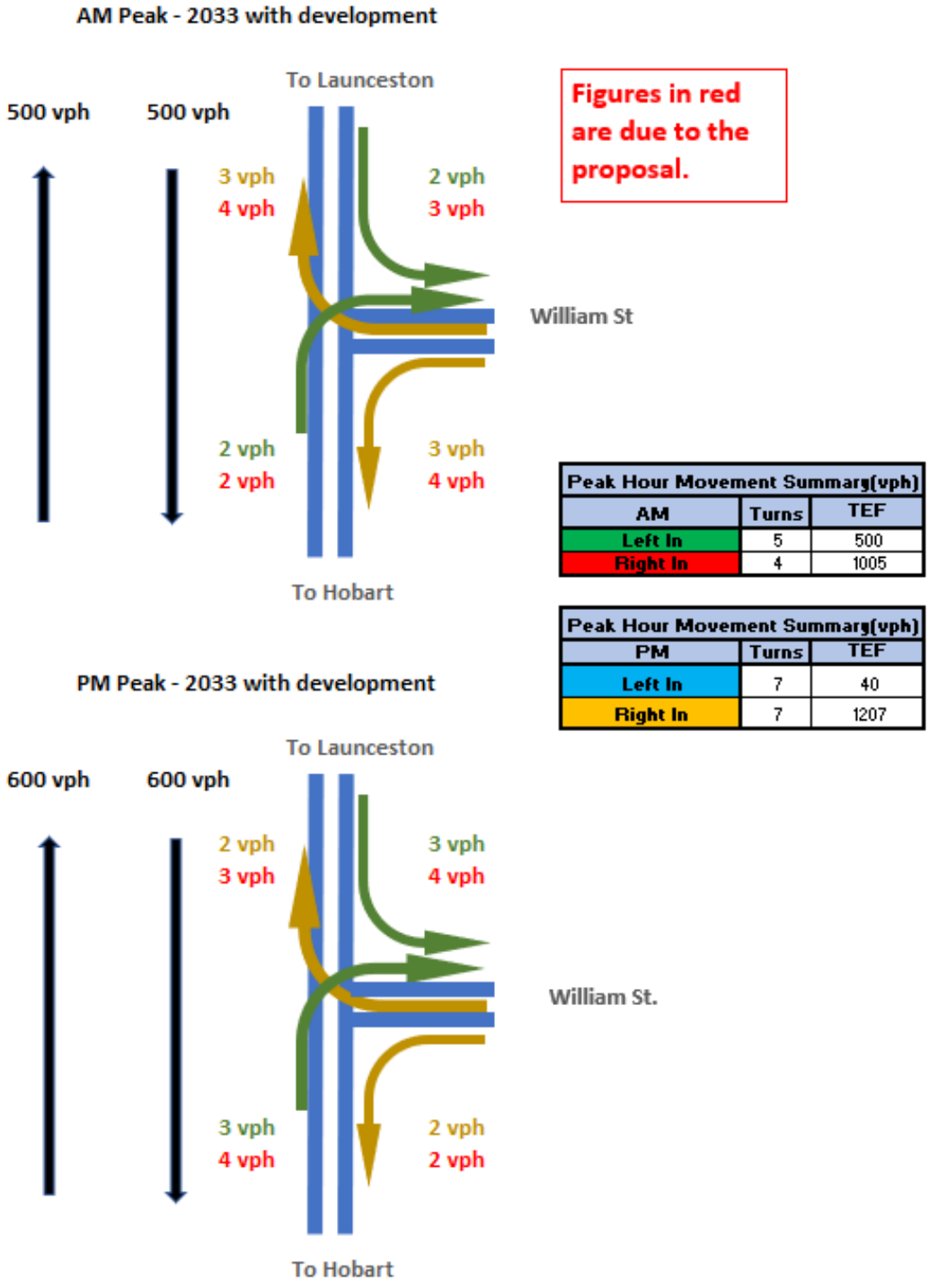


Figure 27 – Projection for High Street / William Street junction for 2033



6. Impact on Road Network

6.1 Impact on William Street

Traffic generations estimation indicates that the proposal will add up to 135vpd to the projected 100vpd (2033) on William Street. While this is more than double 2033 traffic, the aggregate volume of 235vpd is low and there are no traffic capacity issues at this level with the road operation at LOS A, see Appendix D for LOS descriptions.

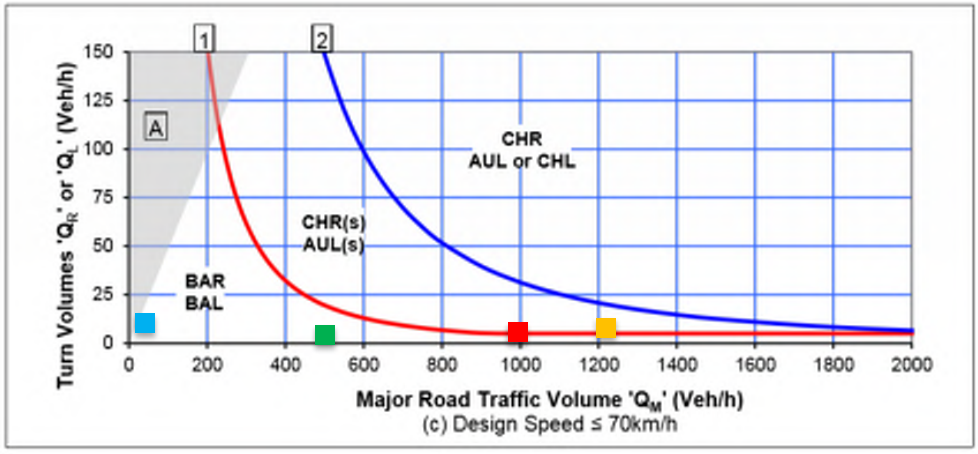
6.2 Austroads Junction warrant

The William Street junctions with Hight Street and the proposed road have been reviewed in terms of Austroads junction layout requirements as follows.

6.2.1 High Street / William Street Junction

Figure 28 demonstrates that a Simple Right and Left turn junction layout is adequate for the High / William Street junction, and this effectively matches the current junction layout.

Figure 28 – Austroads Junction warrant for High Street / William Street Junction 2033



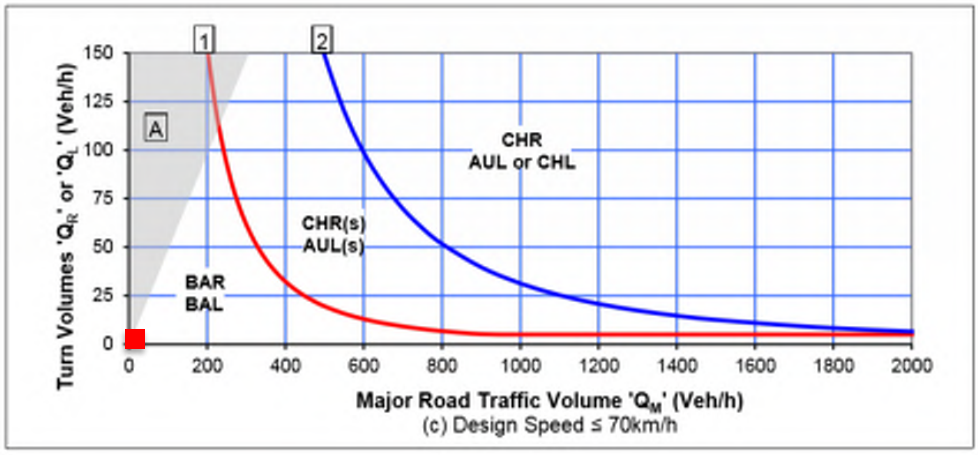
Peak Hour Movement Summary(vph)		
AM	Turns	TEF
Left In	5	500
Right In	4	1005

Peak Hour Movement Summary(vph)		
PM	Turns	TEF
Left In	7	40
Right In	7	1207

6.2.2 William Street / Proposed Road Junction

Figure 29 demonstrates that a Simple Right and Left turn junction layout is adequate for the William / Proposed Road junction which matches with the current junction layout.

Figure 29 – Austroads Junction warrant William Street / Proposed Road Junction 2033



Peak Hour Movement Summary(vph)		
AM	Turns	TEF
Left In	0	7
Right In	5	10

Peak Hour Movement Summary(vph)		
PM	Turns	TEF
Left In	0	10
Right In	8	10

6.3 Impact on High Street / William Street junction

The impact of the proposal on this junction is notable in that traffic activity will increase by 135vpd from 100 vpd to 235 vpd h by 2033 however this activity is low and has a very minor impact on traffic safety and traffic capacity.

The junction is estimated to continue to operate at LOS A with no traffic capacity issues.

The junction is estimated to continue to operate safely. There is no crash history and the turning movements associated with the development would be well catered for with the current junction layout.

6.4 Impact on William Street / Proposed Road junction

The impact of the proposal on this junction is notable in that activity will increase from by 100vpd to 235 vpd by 2033 however this activity is low and has a very minor impact on traffic safety and traffic capacity.

The junction is estimated to continue to operate at LOS A with no traffic capacity issues.

The junction is estimated to continue to operate safely. The 5-year reported crash history shows no evidence of a crash propensity and it is assessed that turning movements will be well catered for with the proposed junction layout.

6.5 Impacts on road users.

6.5.1 Public Transport

No effects.

6.5.2 Delivery Vehicles

No effects.

6.5.3 Pedestrians and Cyclists

Proposal will increase pedestrian activity on William Street between the proposed road and High Street.

6.5.4 Motorcyclists

No effects.

6.6 Other impacts

6.6.1 Environmental

No applicable environmental impacts were identified in relation to:

- Community severance, pedestrian amenity
- Hazardous loads, air pollution or ecological impacts
- Heritage and Conservation

Noise, vibration or visual impact of South Rail line operation on residential amenity requires consideration.

6.6.2 Street Lighting and Furniture

No issues.

6.6.3 Tasmanian Subdivision Guideline Considerations

No issues.

6.6.4 Transport Planning Considerations

No issues.

6.7 Urban residential street standard.

Currently William Street has a 4.7m seal with kerb & channel along the Southern side.

In accordance with LGAT standard drawing TSD-R06, the minimum urban road standard for a 15 lot Cul-De-Sac Road less than 150m in length is a type 4 Local Cul-De-Sac with a trafficable width of 6.9m and footpath one side.

The recommended urban residential road property access standard is detailed in the LGAT standard drawings TSD-R09. These standards are available online at:

https://www.lgat.tas.gov.au/__data/assets/pdf_file/0027/813735/Tasmanian-Municipal-Standards-Drawings-v3-December-20202.pdf

6.8 Liveability, Safety and Amenity Guidelines

Guidelines for the safety and amenity of residential areas include:

- Bound residential precincts with traffic routes or natural barriers to minimise conflict.
- Direct vehicular and pedestrian access should be avoided from single dwelling units onto road with over 2,000 vehicles per day.
- Effective street lengths should be less than 200-250m in order to achieve typical vehicle speeds of 40km/h.
- Cater for cyclist & pedestrian demand with separate paths or cycle networks.

To maximise the liveability, safety and amenity of the local area, road and street network layout should be such that:

- A minimum of 60% of lots should abut residential streets with less than 300vpd passing traffic.
- A minimum of 80% of lots should abut residential streets with less than 600 vpd passing traffic.
- A maximum of 5% of single dwelling lots should abut residential streets with between 1,000-2,000 vpd passing traffic.
- A maximum of 1% of single dwelling lots should abut local streets or collectors with less than 3,000 vpd passing traffic, and
- No single dwelling lot should abut a route with > 3,000 vpd passing traffic.

These guidelines are from *TE&M Chapter 2.2: Design of New Urban Networks*.

The proposal satisfies liveability, safety and amenity targets described above.

6.9 Tasmanian Planning Scheme – Northern Midlands

Road and Railway Assets Code C3

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction

Acceptable Solution A1.1 *– For a category 1 road or a limited access road, vehicular traffic to and from the site will not require:*

(a) A new junction
(b) A new vehicle crossing.
(c) A new level crossing.

Not applicable as the roads are not Category 1.

Acceptable Solution A1.2 *– For a road, excluding a Category 1 road or a limited access road, written consent for a new junction, vehicle crossing, or level crossing to serve the use and development has been issued by the road authority.*

A1.2 is not satisfied as no written consent has been issued by the road or rail crossing authority, see response to Performance Criteria P1.

Acceptable Solution A1.3 *– For the rail network, written consent for a new private level crossing to serve the use and development has been issued by the rail authority.*

Not applicable as no new private level crossing is proposed.

Acceptable solution A1.4: *Vehicular traffic to and from the site, using and existing vehicle crossing or private level crossing will not increase by more than:*

(a) The amounts in Table C3.1
(b) Allowed by a licence issued under Part IVA of the Roads and Jetties Act 1935 in respect to a limited access road; and

A1.4 is not satisfied from Table C3.1 as proposal involves up to 135vpd and involves o*ther road* and more than 40 vpd for vehicles up to 5.5m in length.

Performance Criteria P1: *Vehicular traffic to and from the site must minimise any adverse effects on the safety of a junction, vehicle crossing or level crossing or safety or efficiency of the road or rail network, having regard to:*

(a) any increase in traffic caused by the use.
(b) the nature of the traffic generated by the use.
(c) the nature of the road.
(d) the speed limit and traffic flow of the road.
(e) any alternative access to a road.
(f) the need for the use.
(g) any traffic impact assessment; and
(h) any advice received from the rail or road authority.

(a) The increase in traffic due to the proposal is estimated at up to 135 vpd. From review of Austroads junction warrants it has been determined that:

- High Street / William Street junction layout is adequate.
- William Street / Proposed Road junction layout is adequate.

(b) The nature of the traffic generated by the use will be 98% light vehicles post residential construction phase.

(c) The proposed road is to be constructed to a 6.9m width from face to face of kerb with kerb & Channel and footpath one side consistent with LGAT guidelines.

(d) The General Urban Default Speed Limit of 50km/h will apply which is appropriate for the traffic activity and function of William Street.

(e) There is no suitable alternative access.

(f) The proposal is consistent with zoning for the area and considered cost effective and efficient infill development.

(g) This traffic assessment identifies no reason to disallow the proposal due to traffic impacts.

(h) No rail or road infrastructure is disaffected by the proposal.

In summary there are no traffic safety or capacity issues due to the proposal. **P1 is satisfied.**

Acceptable solution A1.5: Vehicular traffic must be able to enter and leave a major road in a forward direction. **A1.5 is satisfied.**

Exhibited

C3.6.1 Habitable buildings for sensitive uses within a road or railway attenuation area

Acceptable Solution A1

Unless within a building area on a sealed plan approved under this planning scheme, habitable buildings for a sensitive use within a road or railway attenuation area, must be:

(a) within a row of existing habitable buildings for sensitive uses and no closer to the existing or future major road or rail network than the adjoining habitable building;

(b) an extension which extends no closer to the existing or future major road or rail network than:

(i) the existing habitable building; or

(ii) an adjoining habitable building for a sensitive use; or

(c) located or designed so that external noise levels are not more than the level in Table C3.2 measured in accordance with Part D of the *Noise Measurement Procedures Manual, 2nd edition, July 2008*.

Table C3.2 Acceptable noise levels within a road or railway attenuation area

Roads
The arithmetic average of the A-weighted L10 sound pressure levels for each of the one-hour periods between 6:00am and midnight on any day [L10 (18-hour)] of 63 dB(A).

Habitable buildings (sensitive uses) are proposed within the General Residential Zone and within 50m of the South Railway Line through Campbell Town (the rail attenuation area) and closer to the rail network than adjoining habitable buildings, see Figures 30 and 31.

It may be possible that the noise level exceeds > 63 dB. A noise & vibration report is being prepared by a consultant. Details to be advised in due course.

A1 may or may not be satisfied.

Exhibited

Figure 30 – South Rail Line East of proposed subdivision

Source: LISTmap, DPIPWE

Figure 31 – Proposed Lots 10,11,12 & 13 in relation to the South Rail Line reservation