

PORT DOUGLAS ESTATE PTY LTD

ACN 682 182 887 as trustee for the Port Douglas Property Trust | ABN 26 340 087 503
M +61 400 934 811 | E pmcnamee@vermontgroup.au

25 August 2026

Neil Beck
Team Leader Planning
Douglas Shire Council
64-66 Front Street
Mossman QLD 4873

By email: Neil.Beck@douglas.qld.gov.au

Dear Neil,

**Development Permit for Operational Works, Andreassen Road, Craiglie
DA CA 2008_2452/3 as amended by MCUC 2008_2452/1**

Please find enclosed our application for a Development Permit for Operational Works for the Andreassen Road upgrade and the associated sewer, water and pump station works.

We are lodging with a nominal fee of \$5,000 and ask that Council accept the application on that basis. Our reasoning follows.

These works are the trunk road upgrade nominated in Council's Local Government Infrastructure Plan. Condition 8 of the approval, as amended on 24 February 2026, requires the cost of constructing the trunk infrastructure to be agreed by the Chief Executive Officer, and an Infrastructure Agreement to be entered into, before a Development Permit for Operational Works can issue. The design is not yet agreed with Council. Our intention is that once the plans are agreed, the works will be costed and the Infrastructure Agreement will be negotiated on the basis of those agreed costs. Application and lodgement fees form part of that same process, and we propose they be dealt with through the Infrastructure Agreement rather than settled in isolation ahead of it.

The \$5,000 is offered in good faith so that assessment can begin without further delay. Any balance Council determines to be payable will be brought into the Infrastructure Agreement cost schedule, alongside the design and tendering contributions already discussed.

Could you please confirm that Council accepts the application on this basis. We would welcome a meeting to progress the design and the Infrastructure Agreement at the same time.

Kind regards,



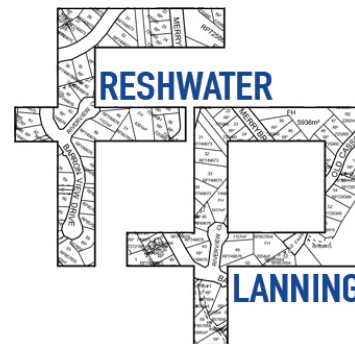
Patrick McNamee

Director
Port Douglas Estate Pty Ltd ACN 682 182 887

Your Ref:
Our Ref: F25/03 OPW

28 August, 2025

Chief Executive Officer
Douglas Shire Council
PO Box 723
MOSSMAN QLD 4873



Attention: Daniel Lamond/Neil Beck
Environment and Planning

Dear Sir,

RE: APPLICATION FOR OPERATIONAL WORKS
LOT 1 ON RP725770, LOT 3 ON RP730522 AND LOT 24 ON SR423, ANDREASSEN ROAD,
CRAIGLIE.

This application is for an Operational Works Application over land described as Lot 1 on RP725770, Lot 3 on RP730522 and Lot 24 on SR423, situated on the Captain Cook Highway, Mowbray and Andreassen Road, Craiglie is submitted on behalf of Port Douglas Estate Pty Ltd the owner of the site.

The application comprises of Application Form, Engineering Drawings, Operational Works Design Report, Port Douglas Estate Pty Ltd Letter, and this Town Planning Letter. It is understood that the proponent will provide payment of the Application Fee with the Douglas Shire Council once an Invoice is raised.

All required information is understood to be provided on the Engineering Drawings and Operational Works Design Report which are attached and can be provided over the counter by a Representative of Port Douglas Estate Pty Ltd, if required. If you have any queries or require any further information, please do not hesitate to contact Freshwater Planning Pty Ltd.

Yours faithfully,

A handwritten signature in blue ink, appearing to read 'M. Andrejic', followed by a horizontal line.

MATTHEW ANDREJIC

FRESHWATER PLANNING PTY LTD

DA Form 1 – Development application details

Approved form (version 1.6 effective 2 August 2024) made under section 282 of the Planning Act 2016.

This form **must** be used to make a development application **involving code assessment or impact assessment**, except when applying for development involving only building work.

For a development application involving **building work only**, use *DA Form 2 – Building work details*.

For a development application involving **building work associated with any other type of assessable development (i.e. material change of use, operational work or reconfiguring a lot)**, use this form (*DA Form 1*) and parts 4 to 6 of *DA Form 2 – Building work details*.

Unless stated otherwise, all parts of this form **must** be completed in full and all required supporting information **must** accompany the development application.

One or more additional pages may be attached as a schedule to this development application if there is insufficient space on the form to include all the necessary information.

This form and any other form relevant to the development application must be used to make a development application relating to strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994*, and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*. For the purpose of assessing a development application relating to strategic port land and Brisbane core port land, any reference to a planning scheme is taken to mean a land use plan for the strategic port land, Brisbane port land use plan for Brisbane core port land, or a land use plan for airport land.

Note: All terms used in this form have the meaning given under the Planning Act 2016, the Planning Regulation 2017, or the Development Assessment Rules (DA Rules).

PART 1 – APPLICANT DETAILS

1) Applicant details	
Applicant name(s) (individual or company full name)	Port Douglas Estate Pty Ltd
Contact name (only applicable for companies)	Matt Andrejic, Freshwater Planning
Postal address (P.O. Box or street address)	C/- Freshwater Planning Pty Ltd, 17 Barronview Drive
Suburb	Freshwater
State	QLD
Postcode	4870
Country	Australia
Contact number	0402729004
Email address (non-mandatory)	FreshwaterPlanning@outlook.com
Mobile number (non-mandatory)	N/A
Fax number (non-mandatory)	N/A
Applicant's reference number(s) (if applicable)	F25/03 OPW

1.1) Home-based business

☐ Personal details to remain private in accordance with section 264(6) of *Planning Act 2016*

2) Owner's consent

2.1) Is written consent of the owner required for this development application?

- ☐ Yes – the written consent of the owner(s) is attached to this development application
☒ No – proceed to 3)

PART 2 – LOCATION DETAILS

3) Location of the premises (complete 3.1) or 3.2), and 3.3) as applicable)

Note: Provide details below and attach a site plan for any or all premises part of the development application. For further information, see [DA Forms Guide: Relevant plans](#).

3.1) Street address and lot on plan

- ☒ Street address **AND** lot on plan (all lots must be listed), **or**
☐ Street address **AND** lot on plan for an adjoining or adjacent property of the premises (appropriate for development in water but adjoining or adjacent to land e.g. jetty, pontoon. All lots must be listed).

a)	Unit No.	Street No.	Street Name and Type	Suburb
			Andreassen Road	Craiglie
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
	4877	1	RP725770	Douglas Shire Council
b)	Unit No.	Street No.	Street Name and Type	Suburb
			Andreassen Road	Craiglie
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
	4877	3	RP730522	Douglas Shire Council

3.2) Coordinates of premises (appropriate for development in remote areas, over part of a lot or in water not adjoining or adjacent to land e.g. channel dredging in Moreton Bay)

Note: Place each set of coordinates in a separate row.

- ☐ Coordinates of premises by longitude and latitude

Longitude(s)	Latitude(s)	Datum	Local Government Area(s) (if applicable)
		☐ WGS84 ☐ GDA94 ☐ Other:	

- ☐ Coordinates of premises by easting and northing

Easting(s)	Northing(s)	Zone Ref.	Datum	Local Government Area(s) (if applicable)
		☐ 54 ☐ 55 ☐ 56	☐ WGS84 ☐ GDA94 ☐ Other:	

3.3) Additional premises

- ☒ Additional premises are relevant to this development application and the details of these premises have been attached in a schedule to this development application
☐ Not required

4) Identify any of the following that apply to the premises and provide any relevant details

☒ In or adjacent to a water body or watercourse or in or above an aquifer	
Name of water body, watercourse or aquifer:	Mowbray River
☐ On strategic port land under the <i>Transport Infrastructure Act 1994</i>	
Lot on plan description of strategic port land:	
Name of port authority for the lot:	
☐ In a tidal area	
Name of local government for the tidal area (if applicable):	
Name of port authority for tidal area (if applicable)	

☐ On airport land under the <i>Airport Assets (Restructuring and Disposal) Act 2008</i>
Name of airport:
☐ Listed on the Environmental Management Register (EMR) under the <i>Environmental Protection Act 1994</i>
EMR site identification:
☐ Listed on the Contaminated Land Register (CLR) under the <i>Environmental Protection Act 1994</i>
CLR site identification:

5) Are there any existing easements over the premises?

Note: Easement uses vary throughout Queensland and are to be identified correctly and accurately. For further information on easements and how they may affect the proposed development, see [DA Forms Guide](#).

- ☐ Yes – All easement locations, types and dimensions are included in plans submitted with this development application
- ☒ No

PART 3 – DEVELOPMENT DETAILS

Section 1 – Aspects of development

6.1) Provide details about the first development aspect
a) What is the type of development? <i>(tick only one box)</i>
☐ Material change of use ☐ Reconfiguring a lot ☒ Operational work ☐ Building work
b) What is the approval type? <i>(tick only one box)</i>
☒ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval
c) What is the level of assessment?
☒ Code assessment ☐ Impact assessment <i>(requires public notification)</i>
d) Provide a brief description of the proposal <i>(e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):</i>
Operational Works for Residential Subdivision including roads, stormwater and water and sewer reticulation
e) Relevant plans
<i>Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms guide: Relevant plans.</i>
☒ Relevant plans of the proposed development are attached to the development application
6.2) Provide details about the second development aspect
a) What is the type of development? <i>(tick only one box)</i>
☐ Material change of use ☐ Reconfiguring a lot ☐ Operational work ☐ Building work
b) What is the approval type? <i>(tick only one box)</i>
☐ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval
c) What is the level of assessment?
☐ Code assessment ☐ Impact assessment <i>(requires public notification)</i>
d) Provide a brief description of the proposal <i>(e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):</i>
e) Relevant plans
<i>Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms Guide: Relevant plans.</i>
☐ Relevant plans of the proposed development are attached to the development application

6.3) Additional aspects of development

- ☐ Additional aspects of development are relevant to this development application and the details for these aspects that would be required under Part 3 Section 1 of this form have been attached to this development application
- ☒ Not required

6.4) Is the application for State facilitated development?

- ☐ Yes - Has a notice of declaration been given by the Minister?
- ☒ No

Section 2 – Further development details**7) Does the proposed development application involve any of the following?**

Material change of use	☐ Yes – complete division 1 if assessable against a local planning instrument
Reconfiguring a lot	☐ Yes – complete division 2
Operational work	☒ Yes – complete division 3
Building work	☐ Yes – complete <i>DA Form 2 – Building work details</i>

Division 1 – Material change of use

Note: This division is only required to be completed if any part of the development application involves a material change of use assessable against a local planning instrument.

8.1) Describe the proposed material change of use

Provide a general description of the proposed use	Provide the planning scheme definition (include each definition in a new row)	Number of dwelling units (if applicable)	Gross floor area (m ²) (if applicable)

8.2) Does the proposed use involve the use of existing buildings on the premises?

- ☐ Yes
- ☐ No

8.3) Does the proposed development relate to temporary accepted development under the Planning Regulation?

- ☐ Yes – provide details below or include details in a schedule to this development application
- ☐ No

Provide a general description of the temporary accepted development	Specify the stated period dates under the Planning Regulation

Division 2 – Reconfiguring a lot

Note: This division is only required to be completed if any part of the development application involves reconfiguring a lot.

9.1) What is the total number of existing lots making up the premises?

--

9.2) What is the nature of the lot reconfiguration? (tick all applicable boxes)

☐ Subdivision (complete 10)	☐ Dividing land into parts by agreement (complete 11)
☐ Boundary realignment (complete 12)	☐ Creating or changing an easement giving access to a lot from a constructed road (complete 13)

10) Subdivision**10.1) For this development, how many lots are being created and what is the intended use of those lots:**

Intended use of lots created	Residential	Commercial	Industrial	Other, please specify:
Number of lots created				

10.2) Will the subdivision be staged?

- ☐ Yes – provide additional details below
- ☐ No

How many stages will the works include?

What stage(s) will this development application apply to?

11) Dividing land into parts by agreement – how many parts are being created and what is the intended use of the parts?

Intended use of parts created	Residential	Commercial	Industrial	Other, please specify:
Number of parts created				

12) Boundary realignment**12.1) What are the current and proposed areas for each lot comprising the premises?**

Current lot		Proposed lot	
Lot on plan description	Area (m ²)	Lot on plan description	Area (m ²)

12.2) What is the reason for the boundary realignment?**13) What are the dimensions and nature of any existing easements being changed and/or any proposed easement?**
(attach schedule if there are more than two easements)

Existing or proposed?	Width (m)	Length (m)	Purpose of the easement? (e.g. pedestrian access)	Identify the land/lot(s) benefitted by the easement

Division 3 – Operational work**Note:** This division is only required to be completed if any part of the development application involves operational work.**14.1) What is the nature of the operational work?**

- | | | |
|--|--|---|
| ☒ Road work | ☒ Stormwater | ☒ Water infrastructure |
| ☒ Drainage work | ☒ Earthworks | ☒ Sewage infrastructure |
| ☐ Landscaping | ☒ Signage | ☐ Clearing vegetation |
| ☐ Other – please specify: _____ | | |

14.2) Is the operational work necessary to facilitate the creation of new lots? (e.g. subdivision)☒ Yes – specify number of new lots: 102 (105 in total)☐ No

14.3) What is the monetary value of the proposed operational work? (include GST, materials and labour)

\$SEE ATTACHED LETTER

PART 4 – ASSESSMENT MANAGER DETAILS

15) Identify the assessment manager(s) who will be assessing this development application

Douglas Shire Council

16) Has the local government agreed to apply a superseded planning scheme for this development application?

- ☐ Yes – a copy of the decision notice is attached to this development application
- ☐ The local government is taken to have agreed to the superseded planning scheme request – relevant documents attached
- ☒ No

PART 5 – REFERRAL DETAILS

17) Does this development application include any aspects that have any referral requirements?

Note: A development application will require referral if prescribed by the Planning Regulation 2017.

- ☐ No, there are no referral requirements relevant to any development aspects identified in this development application – proceed to Part 6

Matters requiring referral to the **Chief Executive of the Planning Act 2016:**

- ☐ Clearing native vegetation
- ☐ Contaminated land (*unexploded ordnance*)
- ☐ Environmentally relevant activities (ERA) (*only if the ERA has not been devolved to a local government*)
- ☐ Fisheries – aquaculture
- ☐ Fisheries – declared fish habitat area
- ☐ Fisheries – marine plants
- ☐ Fisheries – waterway barrier works
- ☐ Hazardous chemical facilities
- ☐ Heritage places – Queensland heritage place (*on or near a Queensland heritage place*)
- ☐ Infrastructure-related referrals – designated premises
- ☐ Infrastructure-related referrals – state transport infrastructure
- ☒ Infrastructure-related referrals – State transport corridor and future State transport corridor
- ☐ Infrastructure-related referrals – State-controlled transport tunnels and future state-controlled transport tunnels
- ☐ Infrastructure-related referrals – near a state-controlled road intersection
- ☐ Koala habitat in SEQ region – interfering with koala habitat in koala habitat areas outside koala priority areas
- ☐ Koala habitat in SEQ region – key resource areas
- ☐ Ports – Brisbane core port land – near a State transport corridor or future State transport corridor
- ☐ Ports – Brisbane core port land – environmentally relevant activity (ERA)
- ☐ Ports – Brisbane core port land – tidal works or work in a coastal management district
- ☐ Ports – Brisbane core port land – hazardous chemical facility
- ☐ Ports – Brisbane core port land – taking or interfering with water
- ☐ Ports – Brisbane core port land – referable dams
- ☐ Ports – Brisbane core port land – fisheries
- ☐ Ports – Land within Port of Brisbane's port limits (*below high-water mark*)
- ☐ SEQ development area
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – tourist activity or sport and recreation activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – community activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – indoor recreation
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – urban activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – combined use
- ☐ SEQ northern inter-urban break – tourist activity or sport and recreation activity



- ☐ SEQ northern inter-urban break – community activity
- ☐ SEQ northern inter-urban break – indoor recreation
- ☐ SEQ northern inter-urban break – urban activity
- ☐ SEQ northern inter-urban break – combined use
- ☐ Tidal works or works in a coastal management district
- ☐ Reconfiguring a lot in a coastal management district or for a canal
- ☐ Erosion prone area in a coastal management district
- ☐ Urban design
- ☐ Water-related development – taking or interfering with water
- ☐ Water-related development – removing quarry material (*from a watercourse or lake*)
- ☐ Water-related development – referable dams
- ☐ Water-related development – levees (*category 3 levees only*)
- ☐ Wetland protection area

Matters requiring referral to the **local government**:

- ☐ Airport land
- ☐ Environmentally relevant activities (ERA) (*only if the ERA has been devolved to local government*)
- ☐ Heritage places – Local heritage places

Matters requiring referral to the **Chief Executive of the distribution entity or transmission entity**:

- ☐ Infrastructure-related referrals – Electricity infrastructure

Matters requiring referral to:

- The **Chief Executive of the holder of the licence**, if not an individual
- The **holder of the licence**, if the holder of the licence is an individual
- ☐ Infrastructure-related referrals – Oil and gas infrastructure

Matters requiring referral to the **Brisbane City Council**:

- ☐ Ports – Brisbane core port land

Matters requiring referral to the **Minister responsible for administering the Transport Infrastructure Act 1994**:

- ☐ Ports – Brisbane core port land (*where inconsistent with the Brisbane port LUP for transport reasons*)
- ☐ Ports – Strategic port land

Matters requiring referral to the **relevant port operator**, if applicant is not port operator:

- ☐ Ports – Land within Port of Brisbane's port limits (*below high-water mark*)

Matters requiring referral to the **Chief Executive of the relevant port authority**:

- ☐ Ports – Land within limits of another port (*below high-water mark*)

Matters requiring referral to the **Gold Coast Waterways Authority**:

- ☐ Tidal works or work in a coastal management district (*in Gold Coast waters*)

Matters requiring referral to the **Queensland Fire and Emergency Service**:

- ☐ Tidal works or work in a coastal management district (*involving a marina (more than six vessel berths)*)

18) Has any referral agency provided a referral response for this development application?

- ☐ Yes – referral response(s) received and listed below are attached to this development application
- ☒ No

Referral requirement	Referral agency	Date of referral response

Identify and describe any changes made to the proposed development application that was the subject of the referral response and this development application, or include details in a schedule to this development application (*if applicable*).

PART 6 – INFORMATION REQUEST

19) Information request under the DA Rules

☒ I agree to receive an information request if determined necessary for this development application

☒ I do not agree to accept an information request for this development application

Note: By not agreeing to accept an information request I, the applicant, acknowledge:

- that this development application will be assessed and decided based on the information provided when making this development application and the assessment manager and any referral agencies relevant to the development application are not obligated under the DA Rules to accept any additional information provided by the applicant for the development application unless agreed to by the relevant parties
- Part 3 under Chapter 1 of the DA Rules will still apply if the application is an application listed under section 11.3 of the DA Rules or
- Part 2 under Chapter 2 of the DA Rules will still apply if the application is for state facilitated development

Further advice about information requests is contained in the [DA Forms Guide](#).

PART 7 – FURTHER DETAILS

20) Are there any associated development applications or current approvals? (e.g. a preliminary approval)

☒ Yes – provide details below or include details in a schedule to this development application

☐ No

List of approval/development application references	Reference number	Date	Assessment manager
☒ Approval ☐ Development application	CA 2008_2452	February, 2025	Douglas Shire Council
☐ Approval ☐ Development application			

21) Has the portable long service leave levy been paid? (only applicable to development applications involving building work or operational work)

☐ Yes – a copy of the receipted QLeave form is attached to this development application

☒ No – I, the applicant will provide evidence that the portable long service leave levy has been paid before the assessment manager decides the development application. I acknowledge that the assessment manager may give a development approval only if I provide evidence that the portable long service leave levy has been paid

☐ Not applicable (e.g. building and construction work is less than \$150,000 excluding GST)

Amount paid	Date paid (dd/mm/yy)	QLeave levy number (A, B or E)
\$		

22) Is this development application in response to a show cause notice or required as a result of an enforcement notice?

☐ Yes – show cause or enforcement notice is attached

☒ No

23) Further legislative requirements

Environmentally relevant activities

23.1) Is this development application also taken to be an application for an environmental authority for an **Environmentally Relevant Activity (ERA)** under section 115 of the *Environmental Protection Act 1994*?

- ☐ Yes – the required attachment (form ESR/2015/1791) for an application for an environmental authority accompanies this development application, and details are provided in the table below
- ☒ No

Note: Application for an environmental authority can be found by searching “ESR/2015/1791” as a search term at www.qld.gov.au. An ERA requires an environmental authority to operate. See www.business.qld.gov.au for further information.

Proposed ERA number:		Proposed ERA threshold:	
Proposed ERA name:			

- ☐ Multiple ERAs are applicable to this development application and the details have been attached in a schedule to this development application.

Hazardous chemical facilities

23.2) Is this development application for a **hazardous chemical facility**?

- ☐ Yes – *Form 536: Notification of a facility exceeding 10% of schedule 15 threshold* is attached to this development application
- ☒ No

Note: See www.business.qld.gov.au for further information about hazardous chemical notifications.

Clearing native vegetation

23.3) Does this development application involve **clearing native vegetation** that requires written confirmation that the chief executive of the *Vegetation Management Act 1999* is satisfied the clearing is for a relevant purpose under section 22A of the *Vegetation Management Act 1999*?

- ☐ Yes – this development application includes written confirmation from the chief executive of the *Vegetation Management Act 1999* (s22A determination)
- ☒ No

Note: 1. Where a development application for operational work or material change of use requires a s22A determination and this is not included, the development application is prohibited development.
2. See <https://www.qld.gov.au/environment/land/vegetation/applying> for further information on how to obtain a s22A determination.

Environmental offsets

23.4) Is this development application taken to be a prescribed activity that may have a significant residual impact on a **prescribed environmental matter** under the *Environmental Offsets Act 2014*?

- ☐ Yes – I acknowledge that an environmental offset must be provided for any prescribed activity assessed as having a significant residual impact on a prescribed environmental matter
- ☒ No

Note: The environmental offset section of the Queensland Government's website can be accessed at www.qld.gov.au for further information on environmental offsets.

Koala habitat in SEQ Region

23.5) Does this development application involve a material change of use, reconfiguring a lot or operational work which is assessable development under Schedule 10, Part 10 of the Planning Regulation 2017?

- ☐ Yes – the development application involves premises in the koala habitat area in the koala priority area
- ☐ Yes – the development application involves premises in the koala habitat area outside the koala priority area
- ☒ No

Note: If a koala habitat area determination has been obtained for this premises and is current over the land, it should be provided as part of this development application. See koala habitat area guidance materials at www.desi.qld.gov.au for further information.

Water resources

23.6) Does this development application involve **taking or interfering with underground water through an artesian or subartesian bore, taking or interfering with water in a watercourse, lake or spring, or taking overland flow water under the *Water Act 2000***?

☐ Yes – the relevant template is completed and attached to this development application and I acknowledge that a relevant authorisation or licence under the *Water Act 2000* may be required prior to commencing development

☒ No

Note: Contact the Department of Resources at www.resources.qld.gov.au for further information.

DA templates are available from planning.statedevelopment.qld.gov.au. If the development application involves:

- Taking or interfering with underground water through an artesian or subartesian bore: complete DA Form 1 Template 1
- Taking or interfering with water in a watercourse, lake or spring: complete DA Form 1 Template 2
- Taking overland flow water: complete DA Form 1 Template 3.

Waterway barrier works

23.7) Does this application involve **waterway barrier works**?

☐ Yes – the relevant template is completed and attached to this development application

☒ No

DA templates are available from planning.statedevelopment.qld.gov.au. For a development application involving waterway barrier works, complete DA Form 1 Template 4.

Marine activities

23.8) Does this development application involve **aquaculture, works within a declared fish habitat area or removal, disturbance or destruction of marine plants**?

☐ Yes – an associated resource allocation authority is attached to this development application, if required under the *Fisheries Act 1994*

☒ No

Note: See guidance materials at www.daf.qld.gov.au for further information.

Quarry materials from a watercourse or lake

23.9) Does this development application involve the **removal of quarry materials from a watercourse or lake under the *Water Act 2000***?

☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development

☒ No

Note: Contact the Department of Resources at www.resources.qld.gov.au and www.business.qld.gov.au for further information.

Quarry materials from land under tidal waters

23.10) Does this development application involve the **removal of quarry materials from land under tidal water under the *Coastal Protection and Management Act 1995***?

☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development

☒ No

Note: Contact the Department of Environment, Science and Innovation at www.desi.qld.gov.au for further information.

Referable dams

23.11) Does this development application involve a **referable dam** required to be failure impact assessed under section 343 of the *Water Supply (Safety and Reliability) Act 2008* (the *Water Supply Act*)?

☐ Yes – the 'Notice Accepting a Failure Impact Assessment' from the chief executive administering the *Water Supply Act* is attached to this development application

☒ No

Note: See guidance materials at www.resources.qld.gov.au for further information.

Tidal work or development within a coastal management district

23.12) Does this development application involve **tidal work or development in a coastal management district**?

- ☐ Yes – the following is included with this development application:
- ☐ Evidence the proposal meets the code for assessable development that is prescribed tidal work (*only required if application involves prescribed tidal work*)
 - ☐ A certificate of title
- ☒ No

Note: See guidance materials at www.desi.qld.gov.au for further information.

Queensland and local heritage places

23.13) Does this development application propose development on or adjoining a place entered in the **Queensland heritage register** or on a place entered in a local government's **Local Heritage Register**?

- ☐ Yes – details of the heritage place are provided in the table below
- ☒ No

Note: See guidance materials at www.desi.qld.gov.au for information requirements regarding development of Queensland heritage places. For a heritage place that has cultural heritage significance as a local heritage place and a Queensland heritage place, provisions are in place under the Planning Act 2016 that limit a local categorising instrument from including an assessment benchmark about the effect or impact of, development on the stated cultural heritage significance of that place. See guidance materials at www.planning.statedevelopment.qld.gov.au for information regarding assessment of Queensland heritage places.

Name of the heritage place:		Place ID:	
-----------------------------	--	-----------	--

Decision under section 62 of the Transport Infrastructure Act 1994

23.14) Does this development application involve new or changed access to a state-controlled road?

- ☐ Yes – this application will be taken to be an application for a decision under section 62 of the *Transport Infrastructure Act 1994* (subject to the conditions in section 75 of the *Transport Infrastructure Act 1994* being satisfied)
- ☒ No

Walkable neighbourhoods assessment benchmarks under Schedule 12A of the Planning Regulation

23.15) Does this development application involve reconfiguring a lot into 2 or more lots in certain residential zones (except rural residential zones), where at least one road is created or extended?

- ☐ Yes – Schedule 12A is applicable to the development application and the assessment benchmarks contained in schedule 12A have been considered
- ☒ No

Note: See guidance materials at www.planning.statedevelopment.qld.gov.au for further information.

PART 8 – CHECKLIST AND APPLICANT DECLARATION

24) Development application checklist

I have identified the assessment manager in question 15 and all relevant referral requirement(s) in question 17	☒ Yes
Note: See the Planning Regulation 2017 for referral requirements	
If building work is associated with the proposed development, Parts 4 to 6 of DA Form 2 – Building work details have been completed and attached to this development application	☐ Yes ☒ Not applicable
Supporting information addressing any applicable assessment benchmarks is with the development application	☒ Yes
Note: This is a mandatory requirement and includes any relevant templates under question 23, a planning report and any technical reports required by the relevant categorising instruments (e.g. local government planning schemes, State Planning Policy, State Development Assessment Provisions). For further information, see DA Forms Guide: Planning Report Template .	
Relevant plans of the development are attached to this development application	☒ Yes
Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms Guide: Relevant plans .	
The portable long service leave levy for QLeave has been paid, or will be paid before a development permit is issued (see 21)	☒ Yes ☐ Not applicable

25) Applicant declaration

- ☒ By making this development application, I declare that all information in this development application is true and correct
- ☒ Where an email address is provided in Part 1 of this form, I consent to receive future electronic communications from the assessment manager and any referral agency for the development application where written information is required or permitted pursuant to sections 11 and 12 of the *Electronic Transactions Act 2001*

Note: It is unlawful to intentionally provide false or misleading information.

Privacy – Personal information collected in this form will be used by the assessment manager and/or chosen assessment manager, any relevant referral agency and/or building certifier (including any professional advisers which may be engaged by those entities) while processing, assessing and deciding the development application. All information relating to this development application may be available for inspection and purchase, and/or published on the assessment manager's and/or referral agency's website.

Personal information will not be disclosed for a purpose unrelated to the *Planning Act 2016*, Planning Regulation 2017 and the DA Rules except where:

- such disclosure is in accordance with the provisions about public access to documents contained in the *Planning Act 2016* and the Planning Regulation 2017, and the access rules made under the *Planning Act 2016* and Planning Regulation 2017; or
- required by other legislation (including the *Right to Information Act 2009*); or
- otherwise required by law.

This information may be stored in relevant databases. The information collected will be retained as required by the *Public Records Act 2002*.

PART 9 – FOR COMPLETION OF THE ASSESSMENT MANAGER – FOR OFFICE USE ONLY

Date received: Reference number(s):

Notification of engagement of alternative assessment manager

Prescribed assessment manager	
Name of chosen assessment manager	
Date chosen assessment manager engaged	
Contact number of chosen assessment manager	
Relevant licence number(s) of chosen assessment manager	

QLeave notification and payment

Note: For completion by assessment manager if applicable

Description of the work	
QLeave project number	
Amount paid (\$)	Date paid (dd/mm/yy)
Date receipted form sighted by assessment manager	
Name of officer who sighted the form	

SCHEDULE 1 - ADDITIONAL PREMISES (question 3.3)

DA Form 1 - Development application details | Port Douglas Estate Pty Ltd | Andreassen Road, Craiglie

Street address	Lot on plan	Local government area	Notes
Andreassen Road, Craiglie QLD 4877	Lot 24 on CP SR423	Douglas Shire Council	Part of the subject land the subject of CA 2008_2452.
Andreassen Road road reserve, Craiglie QLD 4877	Road reserve (Douglas Shire Council)	Douglas Shire Council	Road upgrade and stormwater drainage works within the Council Road reserve.
Newport Estate, Andreassen Road / Mowbray River Road, Craiglie QLD 4877	Lot 32 on SP322659 and Lot 904 on SP322659	Douglas Shire Council	Downstream sewer interface. The proposed rising main discharges at Pit 6/F1 and the resulting gravity sewer conveys flows to the existing Newport Estate sewer pump station via Pit 1/17.
Captain Cook Highway, Craiglie / Mowbray QLD 4877	State-controlled road reserve (Captain Cook Highway)	Douglas Shire Council	drawing GA101 shows the Douglas Shire Council extent of works for the new pressure water main crossing Captain Cook Highway, while the same drawing states that all works within the state-controlled road reserve fall under TMR jurisdiction.

Andreassen Road Upgrade

Design Report - Operational Works Application



Andreassen Road Upgrade

Design Report - Operational Works Application

Prepared in support of the Development Permit for Operational Works – Andreassen Road external road, drainage, water and sewer infrastructure.

28 August 2026

Prepared for:

Port Douglas Estate Pty Ltd

Prepared by

Stellen Consulting

Level 1, 27 Belgrave Street, Manly, NSW 2095, PO Box 151 Freshwater, NSW 2096

T. +61 450 460 496

www.stellenconsulting.com.au

ABN 61 149 095 189

© Stellen Consulting (Stellen). All rights reserved.

Stellen Consulting has prepared this document for the sole use of the Client and for a specific purpose, each as expressly stated in the document. No other party should rely on this document without the prior written consent of Stellen. Stellen undertakes no duty, nor accepts any responsibility, to any third party who may rely upon or use this document. This document has been prepared based on the Client's description of its requirements and Stellen's experience, having regard to assumptions that Stellen can reasonably be expected to make in accordance with sound professional principles. Stellen may also have relied upon information provided by the Client and other third parties to prepare this document, some of which may not have been verified. Subject to the above conditions, this document may be transmitted, reproduced or disseminated only in its entirety.

Quality Information

Document Design Report

Ref P171508-RP-CV-002

Date 21 August 2026

Prepared by Ian Warren & Logan English-Smith

Reviewed by Mohamud Ibrahim

Revision History

Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
0	21.08.2026	Issued for approval	Logan English-Smith Project Manager Mohamud Ibrahim RPEQ (36675)	

This page has been left blank intentionally

Table of Contents

Executive summary	7
1.0 Introduction	8
1.1 Project Background	8
1.2 Scope and Battery Limits	8
1.2.1 Roadworks	8
1.2.2 Stormwater	8
1.2.3 Water	8
1.2.4 Sewer	9
1.3 Information Relied Upon	9
2.0 Design Criteria	9
3.0 Andreassen Road Design	10
3.1 Road Classification and Design Basis	10
3.2 Road Extent and Interfaces	11
3.3 Horizontal and Vertical Geometry	11
3.4 Typical Cross Section	11
3.5 Kerb and Channel	12
3.6 Footpath Provisions	12
3.7 Road Reserve and corridor	12
3.8 Landscaping Interface	12
3.9 Signs and Line Marking	13
4.0 Pavement Design	13
4.1 Geotechnical Inputs	13
4.2 Adopted Pavement	13
5.0 Stormwater and Overland Flow Management	13
5.1 Drainage Design Criteria	13
5.2 Upstream Catchment and Captain Cook Highway Interface	14
5.3 Adopted Design Flow	14
5.4 Andreassen Road Open Channel	14
5.5 Lawful Point of Discharge	14
5.6 Stormwater Quality	15
5.7 Maintenance Access	15
6.0 Water Supply	15
6.1 Water Servicing Strategy	15
6.2 Hydraulic Assessment	15
6.3 Design Criteria	15
6.3.1 Road crossings	15
6.3.2 Hydrants	16
6.3.3 Dead legs	16

6.3.4	Valves	16
7.0	Sewer Infrastructure	16
7.1	Existing Sewer.....	16
7.2	Sewer Servicing Strategy	16
7.3	Sewer Pump Station.....	16
7.4	Rising Main.....	17
8.0	Erosion and Sediment Control.....	17
9.0	Conclusion	17
10.0	Compliance Matrix – Development Approval	18
Appendix A	Design Drawings	22
Appendix B	Detailed Pavement Report	23
Appendix C	Flood Impact Assessment	24
Appendix D	Geotechnical Assessment	25
Appendix E	Hydraulic Services Calculations	26
Appendix F	Pressure and Flow information.....	27

Executive summary

This report documents the civil engineering design for the proposed upgrade of Andreassen Road, Craiglie, and has been prepared to support the Development Permit for Operational Works application to Douglas Shire Council. The report addresses the road, stormwater drainage, water supply and sewerage infrastructure associated with the Andreassen Road works.

The Development Approval requires Andreassen Road to be upgraded from the Captain Cook Highway intersection to the eastern extent identified by Condition 11, generally in accordance with the Major Collector standard of the FNQROC Development Manual. The proposed works include road pavement, kerb and channel, verge works, underground drainage, major stormwater conveyance infrastructure and associated water and sewer servicing infrastructure. The detailed extent of the works is shown on the civil design drawings.

The stormwater design addresses the existing major overland flow path that crosses Captain Cook Highway and continues east along the Andreassen Road corridor toward the Mowbray River. The drainage assessment considers the 1% AEP event, corresponding to the Q100/100-year ARI event referenced by the Development Approval, and provides infrastructure to convey upstream runoff and stormwater flows along Andreassen Road to the downstream lawful point of discharge. The proposed open channel and associated drainage infrastructure have been designed to contain the adopted design flow while maintaining appropriate freeboard to Andreassen Road.

The water and sewer components provide the external infrastructure required to service the development. The water works extend from the nominated connection point on the western side of Captain Cook Highway to the development connection near Andreassen Road. The sewer works extend from the downstream end of the trunk sewer infrastructure servicing the lots along Andreassen Road to the downstream interface with the sewer infrastructure associated with the neighbouring Newport Estate development and include a new sewer pump station within the development site.

The road, drainage, water and sewer infrastructure has been coordinated as an integrated civil works package and has been designed having regard to the Development Approval, Douglas Shire Council requirements, the FNQROC Development Manual, QUDM and other applicable engineering standards.

1.0 Introduction

This report has been prepared by Stellen Consulting on behalf of Port Douglas Estate Pty Ltd to document the civil engineering design for the proposed Andreassen Road upgrade and associated external infrastructure at Craiglie. The report supports the Operational Works application to Douglas Shire Council and addresses the relevant Assessment Manager conditions of the Development Approval.

The report is limited primarily to the Andreassen Road roadworks and associated stormwater, water and sewer infrastructure. The Captain Cook Highway intersection works are subject to a separate approval process with the Department of Transport and Main Roads and are addressed only where they establish an interface with the works documented in this report.

1.1 Project Background

The Andreassen Road development comprises the approved reconfiguration of land for residential subdivision at Captain Cook Highway, Mowbray and Andreassen Road, Craiglie. The development was approved pursuant to the Planning and Environment Court Order dated 9 September 2013 and the subsequent Douglas Shire Council Decision Notice.

Condition 11 of the Development Approval requires Andreassen Road to be upgraded from the Captain Cook Highway intersection to a point immediately behind proposed Lot 2 on the approved subdivision plan, generally to a Major Collector standard in accordance with the FNQROC Development Manual. The works are also required to include kerb and channel and underground drainage.

The works documented by this report comprise the Andreassen Road upgrade, associated pavement and road drainage, major stormwater conveyance infrastructure, external water supply infrastructure and external sewer infrastructure including the proposed sewer pump station and associated rising main.

1.2 Scope and Battery Limits

The extent of works assessed by this report is shown on the civil design drawings. The following battery limits have been adopted.

1.2.1 Roadworks

The roadworks extend from the pavement interface with the separately designed Captain Cook Highway intersection works to the eastern extent of the proposed Andreassen Road upgrade shown on the design drawings.

1.2.2 Stormwater

The stormwater works extend from the downstream interface with the Captain Cook Highway drainage works, along the Andreassen Road corridor and through the proposed drainage system to the downstream connection with the Mowbray River drainage corridor.

1.2.3 Water

The water supply works extend from the nominated connection point on the western side of Captain Cook Highway to the development water connection near Andreassen Road, as shown on the design drawings.

1.2.4 Sewer

The sewer works extend from the downstream end of the trunk sewer infrastructure servicing the lots adjoining Andreassen Road to the downstream interface with the sewer infrastructure associated with the neighbouring Newport Estate development. The works include the proposed sewer pump station located within the development site.

The detailed physical extent and interface points are defined on the civil design drawings.

1.3 Information Relied Upon

The design documented by this report has been prepared with reference to the following information:

- Planning and Environment Court Order dated 9 September 2013;
- Douglas Shire Council Decision Notice dated 31 October 2017;
- approved Reconfiguration of a Lot Plan RPS 62273-5 Issue E dated 10 September 2012;
- Lambert & Rehbein Drawing C07037-CSK07-B referenced by Condition 11 of the Development Approval;
- Stellen Consulting civil design drawings included in Appendix A;
- site-specific survey information prepared by Twine Surveys Pty Ltd;
- geotechnical assessment prepared by Earth Test;
- Andreassen Road pavement design documentation;
- Flooding and Drainage Assessment included in Appendix C; and
- water and sewer servicing and hydraulic design documentation.

2.0 Design Criteria

The design criteria for the works documented in this report have been established from the Development Approval, Douglas Shire Council requirements, the FNQROC Development Manual and the relevant discipline-specific standards and guidelines. The principal project-specific criteria are summarised in Table 1.

Table 1 - Key Design Parameters

Parameter	Adopted criterion	Reference
General civil design standard	FNQROC Development Manual	Development Approval
Andreassen Road classification	Major Collector	Condition 11
Andreassen Road design speed	60 km/h	Project Design / FNQROC
Roadworks extent	Captain Cook Highway interface to eastern extent shown on design drawings	Condition 11 / Design Drawings
Kerb and channel	Required	Condition 11
Footpath	2.0 m wide	Condition 10
Major drainage design event	1% AEP / Q100	Condition 5
Detailed drainage standard	QUDM	Condition 5

Adopted major drainage flow	Approximately 13 m ³ /s	Flooding and Drainage Assessment
Channel freeboard to Andreassen Road	Minimum 300 mm at 1% AEP	Project Design
Lawful point of discharge	Existing drainage corridor toward Mowbray River	Condition 6
Stormwater quality treatment	In accordance with Development Approval requirements	Condition 5
Road reserve	Sufficient to accommodate required road and drainage infrastructure	Condition 11
Landscaping strip	600 mm along nominated Andreassen Road frontage	Conditions 11 and 14
Water servicing	Connection to Council water network supported by hydraulic assessment	Condition 7
Sewer servicing	Connection to downstream sewer network supported by hydraulic assessment	Condition 7
Erosion and sediment control	In accordance with FNQROC requirements	Condition 21

The design has generally been undertaken in accordance with the following standards and guidelines, as applicable:

- Douglas Shire Council Development Approval and associated Court Order;
- FNQROC Development Manual;
- Queensland Urban Drainage Manual;
- Australian Rainfall and Runoff;
- Austroads Guide to Road Design;
- Manual of Uniform Traffic Control Devices; and
- relevant water and sewer design requirements adopted by Douglas Shire Council.

3.0 Andreassen Road Design

Andreassen Road forms the principal Council road connection between the Captain Cook Highway and the proposed residential development. The road has been designed to function as a Major Collector, with the pavement width and road function generally consistent with the FNQROC Development Manual and the requirements of the Development Approval.

The adopted cross-section varies from the standard FNQROC Major Collector detail to respond to the significant existing drainage constraints within the corridor. The modified arrangement has been developed to provide a more practical and integrated road and drainage solution, while maintaining the required road function, reducing earthworks and simplifying the long-term stormwater infrastructure.

3.1 Road Classification and Design Basis

Andreassen Road has been designed as a Major Collector with an adopted design speed of 60 km/h.

The pavement width is consistent with the FNQROC Major Collector standard. The principal departures relate to the road reserve width, pavement crossfall, drainage treatment and staging of the footpath.

These departures are driven by the need to accommodate the major overland flow path and associated drainage infrastructure within the road corridor.

3.2 Road Extent and Interfaces

The proposed Andreassen Road works extend from the Captain Cook Highway intersection at the western end to the eastern extent shown on the civil design drawings.

The road geometry and levels have been coordinated with the Captain Cook Highway intersection, adjoining development levels, property access requirements, underground services and the proposed drainage system.

The western end of Andreassen Road also forms an important drainage interface, receiving flows from the Captain Cook Highway culvert system into the proposed open channel.

3.3 Horizontal and Vertical Geometry

The horizontal alignment generally follows the existing Andreassen Road corridor and approved development layout.

A single-direction pavement crossfall has been adopted in place of the conventional crowned FNQROC cross-section. The pavement falls toward the southern side of the road, where runoff can discharge directly to the adjacent open drainage channel.

This arrangement:

- reduces the overall cut and fill required to construct the road;
- provides a direct surface drainage path from the pavement to the open channel; and
- removes the need for a separate underground stormwater drainage system within the road corridor.

Road levels have also been coordinated with the major drainage design to maintain a minimum 300 mm freeboard above the 1% AEP design water level.

3.4 Typical Cross Section

The adopted Andreassen Road cross-section retains the required Major Collector pavement width but increases the road reserve from the nominal 20 m to 24 m.

The additional width is required principally to accommodate the major open drainage channel along the southern side of the road, together with the northern catch/cut-off drain, services and maintenance access.

Increasing the reserve provides a more suitable outcome than attempting to constrain the road and drainage infrastructure within the standard 20 m corridor, particularly given the scale of the existing overland flow path.

3.5 Kerb and Channel

The road drainage strategy uses the adjacent open channel in place of a conventional kerb-and-pipe system.

Hit-and-miss kerbing is provided along the southern side of Andreassen Road, allowing pavement runoff to discharge directly from the carriageway into the open channel.

This avoids the need for longitudinal stormwater pipes and pits within the road corridor, reducing construction complexity, service conflicts and future maintenance requirements. It also provides a short, visible and readily accessible drainage path.

The open channel is sized to convey both local road runoff and the larger upstream catchment flows discharged from the Captain Cook Highway drainage system.

3.6 Footpath Provisions

A 2.0 m footpath is not proposed as part of the current works because both verge areas are presently required for drainage.

The southern verge accommodates the major drainage channel, while the northern verge accommodates a smaller catch/cut-off drain required to intercept runoff from the adjoining undeveloped land.

Once the adjoining development is completed and this northern drainage function is no longer required, the corridor provides for a future 2.0 m footpath within the northern verge.

This staged approach allows the current drainage requirements to be met without precluding the ultimate pedestrian provision.

3.7 Road Reserve and corridor

The proposed road reserve has been increased to 24 m to accommodate the combined requirements of the Major Collector road, drainage infrastructure, services and maintenance access.

This is consistent with the intent of Condition 11(b) of the Development Approval, which allows the Andreassen Road reserve to be increased where the required drainage infrastructure cannot be accommodated within the existing road reserve.

The wider corridor also provides improved separation between the road and major drainage channel and supports safer and more practical future maintenance access.

3.8 Landscaping Interface

The Development Approval requires a 600 mm wide landscaping strip within the Andreassen Road reserve along the nominated development frontage.

The civil design allows sufficient corridor width for this requirement. Detailed landscaping design will be undertaken separately and coordinated with the final civil works.

3.9 Signs and Line Marking

Signs and pavement markings associated with Andreassen Road are provided in accordance with the applicable FNQROC requirements and the Manual of Uniform Traffic Control Devices.

The proposed arrangement is shown on the civil design drawings.

4.0 Pavement Design

The pavement design for Andreassen Road has been prepared for the anticipated traffic loading associated with the completed development and the Major Collector function of the road. The adopted pavement profile, design traffic, subgrade strength and pavement design assumptions are documented in the supporting pavement design included in Appendix B.

At the western extent, the Andreassen Road pavement ties into the separately designed Captain Cook Highway intersection pavement. The pavement interface has been detailed to provide a compatible structural and geometric transition between the two work packages.

4.1 Geotechnical Inputs

The pavement design has been informed by the available geotechnical investigation and laboratory testing undertaken for the development. The relevant subsurface conditions, design subgrade CBR and any required subgrade treatment are documented in the geotechnical assessment and supporting pavement design.

4.2 Adopted Pavement

The adopted Andreassen Road pavement profile is shown on the civil design drawings and detailed in Appendix B. The pavement has been selected to provide the required structural capacity for the adopted design traffic and site subgrade conditions.

5.0 Stormwater and Overland Flow Management

The Andreassen Road corridor forms part of an existing major overland flow path conveying runoff from the catchment west of Captain Cook Highway toward the Mowbray River. The proposed drainage strategy maintains this regional drainage function while replacing the existing undersized and poorly defined drainage path with purpose-built infrastructure integrated with the upgraded road.

In accordance with Conditions 5 and 6 of the Development Approval, the drainage design has been developed to assess the Q100 design event, provide for upstream catchment flows, convey runoff along Andreassen Road and discharge stormwater to a lawful point of discharge without adversely affecting surrounding or downstream properties.

5.1 Drainage Design Criteria

The principal drainage design criteria adopted for the Andreassen Road works are:

- assessment of the 1% AEP design event, corresponding to the Q100/100-year ARI event referenced in the Development Approval;
- consideration of upstream catchment flows entering from west of Captain Cook Highway;

- provision of infrastructure capable of conveying the adopted major design flow along the Andreassen Road corridor;
- maintenance of the existing regional drainage pathway toward the Mowbray River;
- provision of a lawful point of discharge; and
- detailed drainage design generally in accordance with QUDM and applicable FNQROC requirements.

5.2 Upstream Catchment and Captain Cook Highway Interface

The principal upstream catchment drains from the western side of Captain Cook Highway and is conveyed beneath the highway through the existing major culvert system. The downstream side of the highway culverts forms the upstream hydraulic battery limit of the stormwater works assessed in this report.

The Andreassen Road drainage design has been coordinated with the hydraulic performance of this upstream infrastructure so that flows discharged from the highway drainage system can be safely conveyed through the Council road corridor.

5.3 Adopted Design Flow

The Rational Method assessment provides peak inflow estimates at the upstream catchment outlet prior to routing through the existing overland flow paths and drainage system. These flows were previously applied to the existing-condition HEC-RAS 2D model.

For the 1% AEP event, the upstream catchment assessment produced a peak inflow of 16.21 m³/s. Following routing through the existing-condition HEC-RAS model, the peak flow reaching the Captain Cook Highway culverts is approximately 13 m³/s.

The routed 13 m³/s flow has therefore been adopted as the upstream design inflow to the Andreassen Road DRAINS model.

5.4 Andreassen Road Open Channel

The proposed open channel forms the principal major drainage conveyance system through the Andreassen Road corridor. The channel receives the routed upstream flow from the Captain Cook Highway culverts and conveys this flow generally east toward the Mowbray River corridor.

The channel has been sized using the DRAINS hydraulic model to convey the adopted 1% AEP design flow of 13 m³/s while maintaining a minimum 300 mm freeboard to Andreassen Road and Captain Cook Hwy.

The proposed works substantially reduce uncontrolled flood spread within the Andreassen Road corridor by confining the major design flow within a purpose-built drainage system.

5.5 Lawful Point of Discharge

The proposed drainage system conveys flows generally east along Andreassen Road and ultimately discharges to the existing drainage corridor associated with the Mowbray River. This maintains the existing regional direction of drainage and does not establish a new regional discharge location.

5.6 Stormwater Quality

Stormwater quality treatment for runoff generated from Andreassen Road is provided through the proposed rock-armoured open drainage channel. The channel will promote natural sediment deposition and settling as runoff is conveyed downstream toward the Mowbray River system.

This treatment approach is integrated with the major drainage function of the channel and avoids introducing separate treatment infrastructure that could constrain hydraulic capacity or increase maintenance requirements.

Stormwater quality treatment associated with the internal subdivision works is addressed separately as part of the subdivision stormwater quality strategy and is not included within the Andreassen Road works.

5.7 Maintenance Access

Maintenance of the open channel, culverts and associated drainage structures can generally be undertaken from Andreassen Road using an excavator bucket, without requiring maintenance plant to enter the channel.

Where direct access into the channel is required, plant can enter from the Captain Cook Highway verge near the Andreassen Road intersection. This area also provides sufficient space for temporary parking of maintenance vehicles and equipment and for use as a laydown area during maintenance activities.

6.0 Water Supply

The proposed water supply infrastructure provides the external connection required to service the development. The water works covered by this report extend from the nominated connection point on the western side of Captain Cook Highway to the development connection near Andreassen Road, as shown on the design drawings.

Calculations along with pressure and flow information for the existing system are provided in Appendix E and Appendix F, respectively.

6.1 Water Servicing Strategy

The proposed water system connects the development to Council's existing water network at the nominated connection point shown on the drawings. The servicing strategy has been developed having regard to the development demand, the connection to Council infrastructure and any relevant future servicing requirements.

6.2 Hydraulic Assessment

The proposed water network has been hydraulically assessed to confirm that the proposed infrastructure can provide the required development demand while maintaining acceptable network pressures and velocities. The hydraulic assessment considers the relevant design demand scenarios, including peak demand and fire-flow requirements where applicable.

The water supply is sized based on meeting FNQROC requirements.

6.3 Design Criteria

6.3.1 Road crossings

Road Crossings are a minimum of 150mm diameter DICL with isolation valves at either end of the crossing.

6.3.2 Hydrants

Hydrants are located at 80m centres, at dead ends and future connections, to facilitate flushing of dead legs.

6.3.3 Dead legs

The use of dead legs within the system has been minimised where possible.

6.3.4 Valves

The use of valves is generally minimised. Valves are located u/s and d/s of all road crossings.

7.0 Sewer Infrastructure

The proposed sewerage infrastructure provides the external sewer system required to service the development and connect it to the downstream sewer network. The works extend from the downstream end of the trunk sewer servicing the lots adjoining Andreassen Road to the downstream interface with the sewer infrastructure associated with the neighbouring Newport Estate development.

The sewer system includes gravity sewer infrastructure, a new sewer pump station located within the development site and rising main to the existing sewer pump station located within the Newport Estate development to the north.

Calculations are provided in Appendix E.

7.1 Existing Sewer

The development will discharge sewer to the existing pump station north of the development site, situated within Stage 1 of the Newport Estate development.

7.2 Sewer Servicing Strategy

The sewer servicing strategy has been developed having regard to the development sewer catchment, the downstream sewer network, adjoining development and any required trunk infrastructure upgrades.

The proposed system collects sewage from the development and conveys flows to the proposed pump station before discharge to the nominated downstream sewer network.

7.3 Sewer Pump Station

A new sewer pump station is proposed within the development site as part of the adopted sewer servicing strategy. The pump station receives gravity sewer flows from the development catchment and transfers these flows to the nominated downstream sewer system.

The pump station design addresses the adopted design flows, pump duty requirements, wet-well operating volume, emergency storage, access, maintenance and associated rising-main infrastructure.

The pump station proposed is to be installed / provided in accordance with FNQROC standard Drawing S3025, with a minimum effective capacity of 13,200 litres.

7.4 Rising Main

Sewer generated by the development ultimately discharges to the existing sewer pump station (SPS) located to the north of the site within the Newport Estate development.

The proposed sewer rising main extends from the proposed pump station at Pit 14/F2 to Pit 6/F1. At Pit 6/F1, the system transitions from a pressurised rising main to a gravity sewer, which conveys flows to the existing SPS via Pit 1/17 within the adjoining development.

8.0 Erosion and Sediment Control

The erosion and sediment control strategy is based on maintaining the existing open drainage channel along Andreassen Road during construction, with flows directed to a temporary sediment basin located near the eastern end of Andreassen Road, outside the main works area.

The proposed erosion and sediment controls are shown on the civil design drawings and are to be implemented prior to commencement of earthworks. The ESCP is to be treated as a live construction document and updated as required to reflect staging, changing drainage paths, completed works and progressive stabilisation throughout construction.

Controls are to be maintained for the duration of the works in accordance with the FNQROC Development Manual and applicable environmental requirements.

9.0 Conclusion

This report documents the civil engineering design for the Andreassen Road external works associated with the approved residential development at Craiglie and has been prepared in support of the Operational Works application to Douglas Shire Council.

The proposed works include the upgrade of Andreassen Road generally to Major Collector standard together with associated pavement, kerb and channel, underground road drainage, major overland-flow infrastructure, water supply infrastructure, sewerage infrastructure and a new sewer pump station.

The proposed drainage system provides a defined conveyance route for upstream catchment flows entering from the Captain Cook Highway interface and conveys these flows along the Andreassen Road corridor to the downstream Mowbray River drainage system. The proposed open channel has been sized for the adopted 1% AEP design flow while maintaining the required freeboard to Andreassen Road.

The water and sewer designs provide the external servicing infrastructure required for the development and have been coordinated with the road and drainage works and the relevant downstream network interfaces.

The road, drainage, water and sewer works have been designed having regard to the relevant conditions of the Development Approval, the FNQROC Development Manual, QUDM and other applicable engineering standards and are considered suitable to support the Operational Works application.

10.0 Compliance Matrix – Development Approval

An assessment of the Development Approval conditions relevant to the Andreassen Road external works is provided in Table 2 below. The assessment is limited to the road, drainage, water and sewer infrastructure required to support the subdivision and servicing of the development land. Conditions relating solely to the internal subdivision works are outside the scope of this report.

Table 2 - Development Approval Compliance Assessment

Condition	Condition Requirement	Compliance Status	Design Response / Evidence
1	Carry out the approved development generally in accordance with the approved drawings/documents, conditions of approval, Council requirements and the FNQROC Development Manual, except where modified by the approval.	Generally Compliant	The Andreassen Road Operational Works design has been developed having regard to the Development Approval and FNQROC Development Manual. The applicable design basis and project-specific criteria are identified in Section 2.0 of this report. Where the proposed Andreassen Road cross-section varies from the nominal FNQROC Major Collector arrangement, the departures and engineering basis are identified in Section 3.0.
5(a)	Determine the extent of the Q100 / 100-year ARI flood event for pre-development and post-development conditions and document the methodology used to determine flood levels.	Compliant	The drainage design adopts the 1% AEP event as corresponding to the Q100 event referenced in the Development Approval. The hydraulic assessment methodology and modelling are documented in the Flooding and Drainage Assessment included in Appendix C. The supporting assessment documents the existing drainage conditions, adopted design flows and hydraulic performance of the proposed drainage infrastructure. Refer Supporting Hydraulic Assessment
5(b)	Determine the drainage characteristics of the contributing upstream catchment and provide mitigation or treatment measures to accommodate flows associated with the Q100 event.	Compliant	The upstream catchment west of Captain Cook Highway has been assessed. The existing-condition HEC-RAS model routes the upstream 1% AEP peak inflow of 16.21 m ³ /s to approximately 13 m ³ /s at the Captain Cook Highway culverts. This routed flow is adopted as the upstream input to the Andreassen Road DRAINS model.
5(b)(i)	Provide drainage infrastructure necessary to protect the existing flood immunity of Captain Cook Highway and direct stormwater past the development to the lawful point of discharge.	Compliant – Interface with Separate TMR Package	The downstream side of the Captain Cook Highway culverts forms the upstream hydraulic battery limit of the stormwater works documented in this report. The proposed Andreassen Road channel receives the routed highway culvert discharge and conveys flows east toward the Mowbray River drainage corridor. The channel is sized for the adopted 13 m ³ /s design flow while maintaining a minimum 300 mm freeboard to the adjoining road infrastructure.
5(b)(ii)	Provide drainage infrastructure to adequately convey runoff and stormwater down Andreassen Road, provide appropriate flood immunity to	Compliant	A purpose-built open channel is proposed along Andreassen Road to receive upstream catchment flows and local road runoff. The channel has been modelled in DRAINS for the adopted 13

	the development and deliver flows to a lawful point of discharge.		m ³ /s 1% AEP flow and provides a minimum 300 mm freeboard to Andreassen Road. The system conveys flows generally east toward the Mowbray River drainage corridor.
5(c)	Provide a detailed internal drainage system based on the expanded drainage study and updated subdivision plan.	Partial	This report addresses the Andreassen Road external works and associated drainage interfaces. Stormwater infrastructure wholly within the internal subdivision is addressed separately as part of the subdivision works. The Andreassen Road drainage system has been coordinated with the internal development drainage interfaces shown on the design drawings.
5(d)	Incorporate gross pollutant traps or equivalent stormwater quality improvement devices satisfying the specified pollutant-removal, first-flush, hydraulic and maintenance requirements.	Partial	Stormwater quality treatment for runoff generated from Andreassen Road is proposed through the rock-armoured open drainage channel, which promotes sediment deposition and settling as runoff is conveyed downstream. Stormwater treatment for the internal subdivision is dealt with separately and is not part of this application.
5(e)	Where practical, drain new allotments to road frontages, drainage easements or drainage reserves and discharge via appropriate stormwater quality treatment.	N/A	This requirement principally relates to drainage of the internal subdivision lots. Internal lot drainage and associated stormwater quality treatment are addressed separately as part of the subdivision drainage design. The Andreassen Road works provide the external receiving drainage system.
5 – Detailed Drainage Design	Detailed drainage design is to be undertaken in accordance with QUDM and supported by appropriate calculations.	Compliant	QUDM is adopted as a governing drainage design standard in Section 2.0. The drainage design criteria, adopted flows and hydraulic modelling are documented in Section 5.0 and the supporting Flooding and Drainage Assessment included in Appendix C.
6	Direct all stormwater to a lawful point of discharge without adversely affecting surrounding or downstream properties.	Compliant	The proposed drainage system maintains the existing regional drainage direction and conveys flows generally east along Andreassen Road to the existing drainage corridor associated with the Mowbray River. The works do not establish a new regional discharge location.
7(a)	The updated water supply and sewerage infrastructure planning is to identify external catchments proposed to connect to the water and sewer networks.	Compliant	The report describes the development servicing strategy and the relevant external water and downstream sewer interfaces. The proposed sewerage infrastructure ties in to the proposed sewer strategy for the adjacent Newport ESTATE development to the north and has been coordinated with Stantec's design.
7(b)	Demonstrate how the development connects to Council infrastructure and account for other development likely to connect to the proposed infrastructure at the time of Operational Works.	Compliant	The proposed water system connects to Council's existing network at the nominated connection point west of Captain Cook Highway. The sewer system discharges via the proposed sewer pump station and associated rising main to the existing sewer network within the adjoining Newport Estate development. The servicing strategy has

			been developed having regard to adjoining and future development interfaces.
7(c)	Identify trunk infrastructure external to the subdivision that may require upgrading to accommodate the development.	Compliant	The report identifies the existing downstream water and sewer infrastructure and the proposed external connections. No other works are proposed to support the development.
7 – Hydraulic Network Analysis	Water supply and sewerage infrastructure planning is to be supported by hydraulic network analysis.	Compliant	Water hydraulic calculations and existing pressure and flow information are provided in Appendices E and F. The report states that the proposed water network has been assessed against the applicable FNQROC requirements. Sewer design calculations are also provided in Appendix E.
8	Infrastructure arising from Conditions 5, 7 and 11 may constitute trunk infrastructure and may require an Infrastructure Agreement with Council.	N/A	This condition does not affect the technical adequacy of the design documented in this report.
9(a)	Provide a single internal sewer connection to each lot in accordance with the FNQROC Development Manual.	N/A	Outside of the scope of this application
10(a)	Provide a 2.0 m wide footpath within all Access Streets and higher-order roads in accordance with FNQROC requirements.	Staged Compliance	Andreassen Road is classified as a Major Collector. A 2.0 m footpath is not proposed as part of the current works because the southern verge is required for the major drainage channel and the northern verge currently accommodates a catch/cut-off drain required to intercept runoff from adjoining undeveloped land. The road corridor provides for construction of a future 2.0 m footpath within the northern verge once this drainage function is no longer required.
10(b)–(d)	Internal access-place/access-street speed control, geometry and intersection marking requirements.	N/A	These conditions relate to the internal subdivision road network and do not form part of the Andreassen Road external works documented in this report.
11(a)	Upgrade Andreassen Road from Captain Cook Highway to the nominated eastern extent, generally in accordance with the referenced concept and to Major Collector standard under FNQROC. The works are to include kerb and channel and underground drainage.	Alternative Design Response	Andreassen Road extends over the required corridor and has been designed to function as a Major Collector with an adopted design speed of 60 km/h. The pavement width is consistent with the FNQROC Major Collector standard. Due to the significant existing overland flow path, the design varies from a conventional kerb-and-underground-pipe drainage arrangement. A single-direction pavement crossfall and hit-and-miss kerb are adopted to discharge runoff directly to the adjacent purpose-built open channel. This arrangement provides a direct drainage path, reduces earthworks and removes the need for longitudinal stormwater pipes within the road corridor.
11(b)	Increase the Andreassen Road reserve where required to accommodate drainage infrastructure identified by the drainage assessment.	Compliant	The proposed road reserve has been increased from the nominal 20 m to 24 m to accommodate the Major Collector road, major open drainage channel, northern catch/cut-off drain, services and maintenance access.

11(c)	Provide a 600 mm wide landscaping strip within the Andreassen Road reserve along the nominated development frontage.	Compliant	The civil design provides sufficient corridor width for the required 600 mm landscaping strip along the nominated Andreassen Road frontage.
14(e)	Provide a 600 mm wide landscaped screening strip within the Andreassen Road reserve from behind proposed Lot 88 through to proposed Lot 2.	Compliant	The proposed road corridor provides for the required 600 mm landscaping strip along the nominated frontage.
17	Council does not support a significant entrance statement within the Andreassen Road reserve unless specifically endorsed as part of Operational Works.	Compliant	No significant entrance statement within the Andreassen Road reserve forms part of the civil works documented in this report.
19	Building floor levels are to be located a minimum of 150 mm above the Q100 flood immunity level identified by the expanded drainage study.	N/A	Internal subdivision works are not part of this application.
20	Storage of machinery, materials and vehicles during construction must not cause nuisance to surrounding properties.	Compliant	The Erosion and Sediment Control Plan identifies the proposed construction laydown and material storage areas within the extent of the future subdivision, clear of adjoining properties. This arrangement provides dedicated areas for construction plant, materials and equipment without encroaching onto or adversely affecting adjacent landowners.
21	Implement soil and water management measures before discharge from the site so runoff from the works does not adversely affect surrounding land or downstream receiving waters.	Compliant	The proposed Erosion and Sediment Control Plan (ESCP) identifies the erosion and sediment controls to be implemented for the works prior to and during construction. The ESCP retains a defined catch drain to intercept and direct construction runoff and provides a sediment basin near the downstream end of Andreassen Road to capture and treat sediment-laden runoff before discharge. The controls are to be maintained and progressively updated as construction staging and disturbed areas change.
22	Dust emissions and other air pollutants, including odours, must not cause nuisance beyond the site boundary.	N/A	This requirement is to be addressed through the Contractor's construction and environmental management procedures and does not require a specific civil design response.

Appendix A Design Drawings

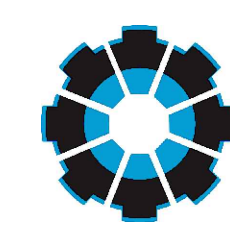
ANDREASSEN ROAD DEVELOPMENT
PROPOSED ANDREASSEN ROAD UPGRADES
ISSUED FOR OPERATIONAL WORKS APPROVAL
CA 2008__2452/3 AS AMENDED BY MCUC 2008__2452/1



LOCALITY PLAN
NOT TO SCALE

NOTE:
THIS DRAWING CONTAINS COLOR-CODED INFORMATION
ESSENTIAL FOR ACCURATE INTERPRETATION. **PLEASE ENSURE**
THIS DRAWING IS PRINTED IN COLOR. PRINTING IN BLACK AND
WHITE MAY RESULT IN MISCOMMUNICATION OR ERRORS.

This drawing is confidential and shall only be used for the purposes of this project.					
REVISIONS					
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL		LES
No.	BY	DATE	DESCRIPTION		APPD

**Stellen**

SYDNEY
P: 02 8021 9233

MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au

ABN: 61 149 095 189

Client

PORT DOUGLAS ESTATE PTY (LTD)

Scales: Plan -
@A1 Horiz. -
Vert. -
X-Sect. -
DES: GS
DRW: GS
CHK: LES
APP: LES
Datum: A.H.D

Project ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing PROJECT COVER SHEET				
Status FOR APPROVAL	Sheets -	Project No. P171508-01	Drw No. GA001	Rev. A

JURISDICTION OF WORKS AND APPROVALS

WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT AUTHORITIES HAVING JURISDICTION OVER EACH PORTION OF THE WORKS. THE EXTENTS OF EACH AUTHORITY’S JURISDICTION ARE TO BE AS DEFINED ON DRAWING GA101, WHICH DELINEATES THE BOUNDARIES OF RESPONSIBILITY.

GENERAL NOTES

1. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE DEVELOPMENT CONSENT AND THE LOCAL COUNCIL’S WORKS SPECIFICATIONS SUBDIVISIONS / DEVELOPMENTS AND / OR AS DIRECTED BY THEIR REPRESENTATIVE AND MUST INCLUDE ANY NECESSARY WORKS REQUIRED TO MAKE THE CONSTRUCTION EFFECTIVE.
2. ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE WORK HEALTH & SAFETY ACT 2011 AND ALL RELEVANT OCCUPATIONAL HEALTH & SAFETY POLICIES AND REGULATIONS.
3. DIMENSIONS SHALL NOT BE SCALED FROM THE PLANS. CLARIFICATION OF DIMENSIONS SHALL BE SOUGHT FROM THE SUPERINTENDENT OR REFERRED TO THE DESIGNER.
4. ALL NEW WORK IS TO MAKE A SMOOTH JUNCTION WITH EXISTING CONDITIONS.
5. THE CONTRACTOR IS NOT TO ENTER UPON NOR DO ANY WORK WITHIN OR ON ADJACENT LANDS WITHOUT THE PRIOR APPROVAL OF THE SUPERINTENDENT AND THE WRITTEN PERMISSION OF THE OWNERS.
6. THE CONTRACTOR SHALL MAINTAIN DUST CONTROL THROUGHOUT THE DURATION OF THE PROJECT. DIRT CARRIED ONTO THE HIGHWAY SHALL BE AVOIDED, ANY DIRT SHALL BE REMOVED IMMEDIATELY.
7. ALL NATURAL SURFACE DATA HAS BEEN DETERMINED BY TERRAIN MODELING. ALL CONSTRUCTION SITE WORKS MUST BE CARRIED OUT USING THE BENCH MARKS SHOWN ON THESE DRAWINGS.
8. IF, DURING THE COURSE OF ANY WORKS, ANY EVIDENCE OF AN ABORIGINAL ARCHAEOLOGICAL SITE OR RELIC IS FOUND, ALL WORKS ON THE SITE ARE TO CEASE AND CONTACT THE ABORIGINAL AND TORRES STRAIT ISLANDER CULTURAL HERITAGE BRANCH.
9. IF, DURING THE COURSE OF ANY WORKS, ANY EVIDENCE OF A EUROPEAN ARCHAEOLOGICAL SITE OR RELIC IS FOUND, ALL WORKS ON THE SITE ARE TO CEASE AND THE QLD HERITAGE BRANCH CONTACTED IMMEDIATELY. ALL RELICS ARE TO BE RETAINED IN SITU UNLESS OTHERWISE DIRECTED BY THE QLD HERITAGE BRANCH.
10. ANY NEW INFORMATION, WHICH COMES TO LIGHT DURING CONSTRUCTION WORKS, WHICH HAS THE POTENTIAL TO ALTER PREVIOUS CONCLUSIONS ABOUT SITE CONTAMINATION, SHALL BE REFERRED TO THE SITE SUPER INTENDENT AND THE DESIGNER.
11. CONSTRUCTION INSPECTIONS ARE REQUIRED FOR THE ENGINEERING WORKS IN ACCORDANCE WITH THE RELEVANT LOCAL COUNCIL WORKS SPECIFICATION AND QUALITY MANAGEMENT PLAN (PDE-QMP-001).
12. SEDIMENT MEASURES SHALL BE IMPLEMENTED PRIOR TO SOIL DISTURBANCE AND IN ACCORDANCE WITH:

a. THE DESIGN DOCUMENTATION

b. TMR SPEC. MRTS52 EROSION AND SEDIMENT CONTROL

c. DOUGLAS SHIRE COUNCIL REQUIREMENTS
13. THE CONTRACTOR SHALL CLEAR AND DISPOSE OF ONLY THOSE TREES THAT ARE CONDEMNED BY THE PLANS. NO TREE SHALL BE FELLED, LOPPED OR REMOVED WITHOUT PRIOR APPROVAL OF COUNCIL, WHERE REQUIRED.
14. THE CONTRACTOR SHALL CLEAR THE SITE BY REMOVING ALL RUBBISH, FENCES, OUT HOUSES, CAR BODIES, DEBRIS, ETC. THE CONTRACTOR SHALL NOT DISPOSE OF ANY DEBRIS BY BURNING OFF IN AN OPEN FIRE.

EARTHWORKS NOTES

1. CARE IS TO BE TAKEN DURING THE CONSTRUCTION OF THE PROPOSED WORKS TO ENSURE NATURAL VEGETATION AND TOPOGRAPHY ON THE SUBJECT SITE IS NOT UNNECESSARILY DISTURBED. ANY EXCAVATION MATERIAL NOT USED IN THE CONSTRUCTION OF THE SUBJECT WORKS IS TO BE REMOVED FROM THE SITE AND UNDER NO CIRCUMSTANCES IS TO BE DEPOSITED IN BUSHLAND AREAS.
2. UNSOUND MATERIALS AS DETERMINED BY COUNCIL’S/TMR’S REPRESENTATIVE SHALL BE REMOVED FROM ROADS AND LOTS PRIOR TO ANY FILLING.
3. ALL SITE REGARDING AREAS SHALL BE GRADED TO THE SATISFACTION OF COUNCIL’S/TMR’S REPRESENTATIVE. THE CONTRACTOR SHALL TAKE LEVELS ON THE EXISTING SURFACE AFTER STRIPPING TOPSOIL AND PRIOR TO COMMENCING ANY FILL OPERATIONS.
4. SURPLUS EXCAVATED MATERIAL SHALL BE PLACED OR DISPOSED OF IN ACCORDANCE WITH THE CONTRACT, OR AS DIRECTED BY THE SUPERINTENDENT.
5. ALL SITE FILLING SHALL BE PLACED IN LAYERS AND COMPACTED IN ACCORDANCE WITH THE RECOMMENDATIONS OF EARTHTEST GEOTECH AND BE TESTED AT THE REQUIRED INTERVALS BY AN APPROVED N.A.T.A. GEOTECHNICAL LABORATORY.
6. MINIMUM 100mm THICK TOPSOIL SHALL BE SPREAD ON ALL BERMS, BATTERS AND SITE REGARDING AREAS. EXCESS TOPSOIL SHALL BE DISPOSED OF AS DIRECTED BY THE SUPERINTENDENT.
7. ALL LAND DISTURBED BY EARTHWORKS SHALL BE SPRAY-GRASSED, TURFED OR SIMILARLY TREATED TO ESTABLISH GRASS COVER. SEED MIXTURES ARE TO BE APPROVED BY COUNCIL PRIOR TO SPRAYING. ALL GRASSED AREAS SHALL BE REGULARLY WATERED AND MAINTAINED UNTIL EXPIRATION OF THE MAINTENANCE PERIOD.

ROADWORKS NOTES

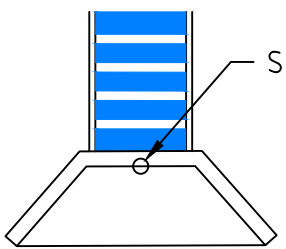
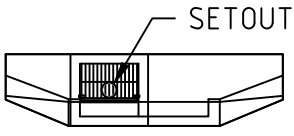
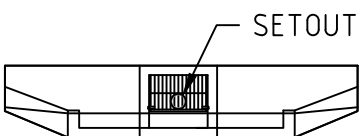
1. GUIDE POSTS SHALL BE 100mm X 50mm STEEL, PAINTED WHITE WITH REFLECTORS IN ACCORDANCE WITH MUTCD/TMR STANDARDS
2. ERECT STREET NAME SIGNS, CONDUIT WARNING SIGNS AND NO THROUGH ROAD SIGNS WHERE SHOWN OR WHERE DIRECTED BY COUNCIL’S/TMR’S REPRESENTATIVE.
3. THE CONTRACTOR SHALL UNDERTAKE TRAFFIC CONTROL MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION, IN ACCORDANCE WITH THE APPROVED TRAFFIC MANAGEMENT PLAN, COUNCIL AND TMR REQUIREMENTS.

SERVICE NOTES

1. THE CONTRACTOR IS TO IDENTIFY, LOCATE AND LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION WORKS AND WHERE NECESSARY MAKE ARRANGEMENTS WITH THE RELEVANT AUTHORITY TO RELOCATE OR ADJUST.
2. THE CONTRACTOR SHALL MAINTAIN SERVICES AND ALL WEATHER ACCESS AT ALL TIMES TO THE ADJOINING PROPERTIES.
3. CARE SHALL BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES, NO MECHANICAL EXCAVATION SHALL BE MADE OVER TELSTRA OR ELECTRICAL SERVICES, EXCAVATE BY HAND ONLY IN THESE AREAS.

DRAINAGE NOTES

1. ALL PITS DEEPER THAN 1.2m SHALL HAVE STEP IRONS PROVIDED IN ACCORDANCE WITH COUNCIL’S STANDARDS.
2. ALL GULLIES ARE TO BE LIP IN-LINE TYPE, IN ACCORDANCE WITH FNQROC STANDARD DRAWING S1050 & S1055.
3. ALL DRAINAGE STRUCTURES WITHIN ROAD RESERVE ARE TO HAVE CLASS D TRAFFICABLE GRATES/COVERS/FRAMES.
4. TRENCHING AND BEDDING TO BE IN ACCORDANCE WITH FNQROC STANDARD DRAWING S1045 & S1046.
5. SUBSOIL DRAINS SHALL BE CONSTRUCTED TO THE SATISFACTION OF COUNCIL’S REPRESENTATIVE.
6. ON COMPLETION OF PIPE INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AREAS, GRASSED AREAS AND ROAD PAVEMENTS.
7. TRENCH WIDTHS ARE TO BE KEPT TO A MINIMUM, CONSISTENT WITH LAYING AND BEDDING OF THE RELEVANT SERVICE AND CONSTRUCTION PERSONNEL ACCESS WAYS AND PITS. REFER TO AUTHORITIES STANDARDS FOR MINIMUM TRENCH WIDTHS. STANDARD TRENCH WIDTHS AND THE DIMENSIONS OF UNSUPPORTED TRENCHES.
8. PITS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH AS3500.3:2025 PLUMBING AND DRAINAGE – STORMWATER DRAINAGE STANDARD UNLESS OTHERWISE SPECIFIED BE THE LOCAL COUNCIL OR AUTHORITY.
9. PIPE BEDDING AND BACKFILL TO BE IN ACCORDANCE WITH FNQROC STANDARD DRAWING S1046, TMR STANDARDS, MRTS03 AND MRS03, WHERE APPLICABLE.
10. BACKFILL TRENCHES IN ACCORDANCE WITH COUNCIL REQUIREMENTS WITHOUT DELAY FOR THE SECTION OF PIPE THAT HAS BEEN COMPLETED AND APPROVED, IF POSSIBLE ON THE SAME WORKING DAY.
11. BULKHEADS TO BE CONSTRUCTED ON ALL STORMWATER LINE WITH A GRADIENT EXCEEDING 5%
12. FOR STORMWATER SETOUT REFER BELOW:

STRUCTURE SETOUT POINTS		
STRUCTURE	HORIZONTAL SETOUT	VERTICAL SETOUT
HEADWALL		INVERT OF PIPE
ON-GRADE KERB INLET		FINISHED SURFACE LEVEL
LOW-POINT KERB INLET		FINISHED SURFACE LEVEL

ALL GULLIES ARE TO BE LIP IN-LINE TYPE, IN ACCORDANCE WITH FNQROC STANDARD DRAWINGS S1050 & 1055

SEWER NOTES

1. WORKS ARE TO BE IN ACCORDANCE WITH FNQROC DESIGN STANDARDS AND SPECIFICATIONS
2. ALL SEWER PIPEWORK TO BE CONSTRUCTED USING uPVC RRJ SN8 UNLESS NOTED OTHERWISE.
3. ALL SEWER MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH FNQROC STANDARD DRAWING S3000.
4. PROPERTY CONNECTION BRANCHES TO BE CONSTRUCTED IN ACCORDANCE WITH FNQROC STANDARD DRAWING S3005.
5. TRENCHING AND BEDDING TO BE IN ACCORDANCE WITH FNQROC STANDARD DRAWING S3015.
6. SEWER MANHOLE SETOUT TO BE IN ACCORDANCE WITH THE SETOUT TABLES. SETOUT POINT IS TO THE CENTER OF THE COVER

WATER NOTES

1. WORKS ARE TO BE IN ACCORDANCE WITH FNQROC DESIGN STANDARDS AND SPECIFICATIONS
2. ALL ROAD CROSSINGS ARE TO BE CONSTRUCTED IN DUCTILE IRON CEMENT LINED PIPE UNLESS NOTED OTHERWISE. DICL PIPEWORK SHALL EXTEND KERB TO KERB.
3. ALL WATER MAINS NOT UNDER ROADS TO BE oPVC, PN16.
4. PIPE COVER FROM FINISHED SURFACE TO BE AS FOLLOWS, UNLESS OTHERWISE NOTED:

a. VERGE / PARKS: 600mm

b. BELOW KERBED ROADS: 800mm

c. BELOW UN-KERBED ROADS: 900mm
5. TRENCHING AND BEDDING TO BE IN ACCORDANCE WITH FNQROC STANDARD DRAWING S2016.
6. ALL COVER BOXES AND SURROUNDS ARE TO BE CONSTRUCTED/REPLACED AT THE NEW LEVELS IN ACCORDANCE WITH FNQROC STANDARD DRAWING S2000.
7. FOR THRUST BLOCKS AND ANCHOR BLOCKS:

a. THE BEARING FACE OF THE THRUST RESTRAINT MUST BE CAST AGAINST UNDISTURBED GROUND.

b. CONCRETE MUST NOT SPILL OVER SOCKET JOINTS.

c. THE CONTRACTOR SHALL CONFIRM BEARING CAPACITY PRIOR TO CONSTRUCTION. SHOULD GROUND CONDITIONS DIFFER TO THOSE ASSUMED IN THE DESIGN, RED-DESIGN MAY BE REQUIRED.

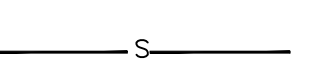
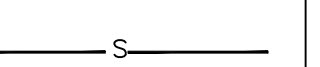
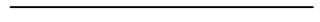
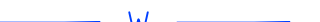
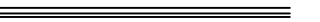
d. REFER TO FNQROC STANDARD DRAWING S2015 FOR DETAIL.

SURVEY NOTES

1. SURVEY MARKS SHOWN THUS  SHALL BE MAINTAINED AT ALL TIMES. WHERE RETENTION IS NOT POSSIBLE THE ENGINEER SHALL BE NOTIFIED AND CONSENT RECEIVED PRIOR TO THEIR REMOVAL.
2. ALL SERVICES SHOWN ON THIS PLAN HAVE BEEN PREPARED FROM A COMBINATION OF FIELD SURVEY & EXISTING RECORDS PROVIDED BY SERVICE AUTHORITIES HOWEVER ALL RELEVANT AUTHORITIES MUST BE CONTACTED & SERVICE LOCATIONS CHECKED PRIOR TO WORK COMMENCING. THE CONTRACTOR IS TO ADEQUATELY INFORM THEMSELVES AS TO THE DEPTH AND LOCATION OF ALL EXISTING & PROPOSED SERVICES PRIOR TO COMMENCEMENT OF CONSTRUCTION. ALL SURVEY UNDERTAKEN WITHIN THE HWY CORRIDOR TO BE TO TMR STANDARDS
3. SURVEY INFORMATION IS BASED ON GDA2020 ZONE 55

COUNCIL NOTES – ANDREASSEN ROAD

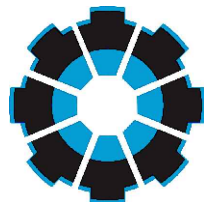
1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH FNQROC DESIGN STANDARDS & SPECIFICATIONS.

LEGEND			
DESCRIPTION	EXISTING	PROPOSED	FUTURE
CONTOURS 0.1m			
RIISING SEWER MAIN			
SEWER			
WATER			
COMMUNICATIONS			
ELECTRICAL			
GAS			
DRAINAGE			
SUBSOIL			
FENCE			
KERBS			
FOOTPATH			
BOUNDARY			
ROAD PAVEMENT			
LIMIT OF WORKS			
ROAD SIGN			
SEWER MANHOLE			
SEWER PIT LABEL (MH#)			
DRAINAGE KERB INLET			
DRAINAGE PIT LABEL (Line.No)			
WATER VALVE			
FIRE HYDRANT			
STREET LIGHT			

File Ref is GENERAL DRAWINGS SHEETS.dwg

REVISIONS

This drawing is confidential and shall only be used for the purposes of this project.				
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL	LES
No.	BY	DATE	DESCRIPTION	APPD



SYDNEY
P: 02 8021 9233
MELBOURNE
P: 03 9969 2673

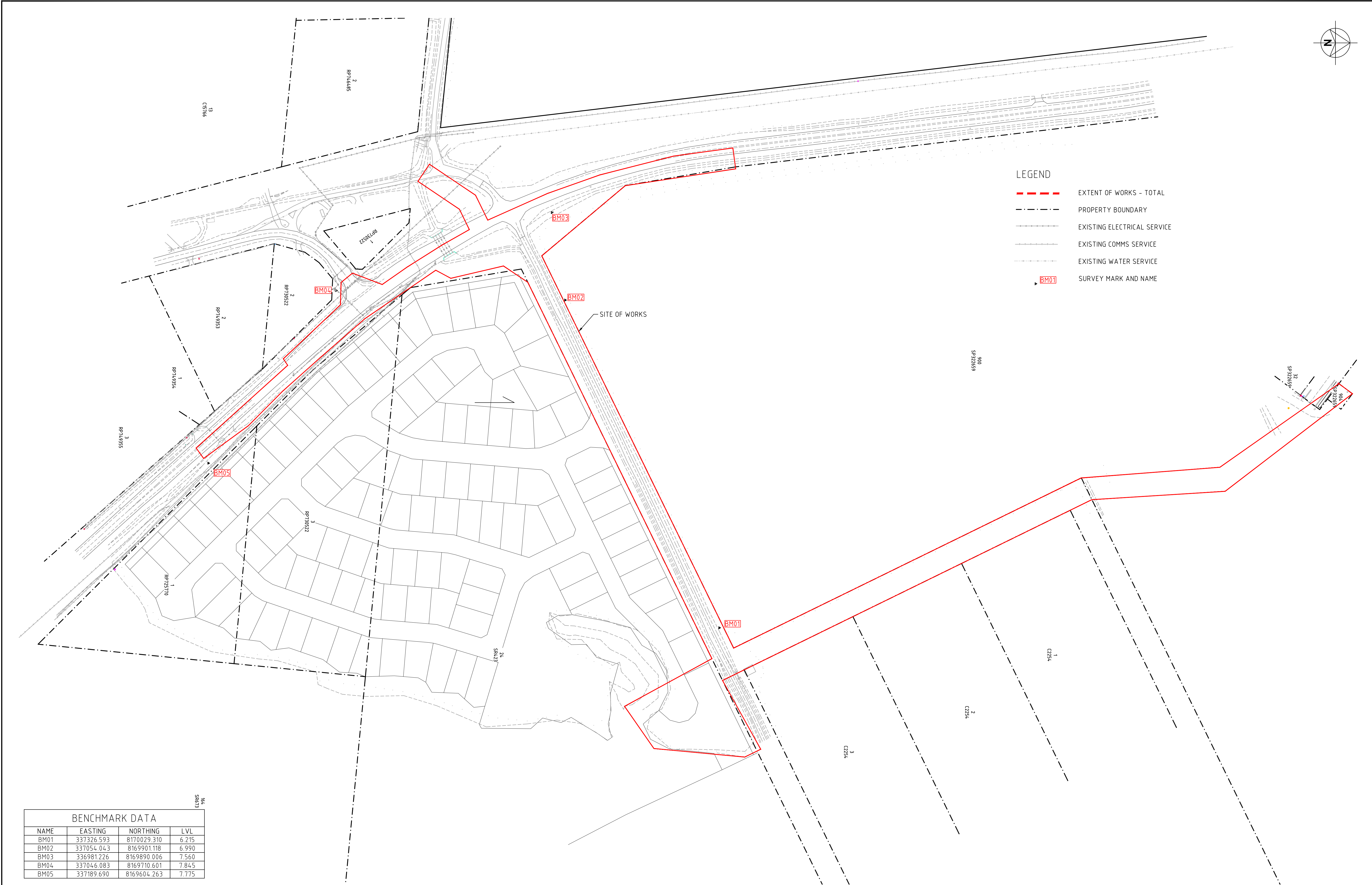
www.stellenconsulting.com.au

ABN: 61 149 095 189

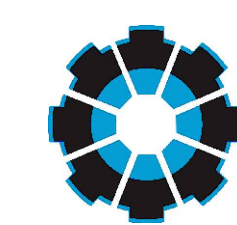
Client
PORT DOUGLAS ESTATE PTY (LTD)

Scales:	Plan -	DES: GS
@A1	Horiz. -	DRW: GS
	Vert. -	CHK: LES
	X-Sect. -	APP: LES
Datum:	A.H.D	

Project	ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES			
Drawing	GENERAL NOTES AND LEGEND			
Status	FOR APPROVAL	Sheets	-	
Project No.	P171508-01	Drw No.	GA002	Rev.
				A



This drawing is confidential and shall only be used for the purposes of this project.					
REVISIONS					
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL		LES
No.	BY	DATE	DESCRIPTION		APPD

**Stellen**

SYDNEY
P: 02 8021 9233

MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au

ABN: 61 149 095 189

Client	PORT DOUGLAS ESTATE PTY (LTD)
--------	-------------------------------

Scales:			
Plan	N.T.S.	DES:	GS
Horiz.	-	DRW:	GS
Vert.	-	CHK:	LES
X-Sect.	-	APP:	LES
Datum: A.H.D.			

Project				
ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing				
SITE SURVEY LAYOUT				
Status	Sheets	Project No.	Drw No.	Rev.
FOR APPROVAL	-	P171508-01	GA100	A

SCOPE OF WORKS AND JURISDICTION

THE WORKS ARE DIVIDED INTO TWO (2) DISTINCT EXTENTS BASED ON JURISDICTION:

1. WORKS WITHIN THE STATE-CONTROLLED ROAD CORRIDOR UNDER THE AUTHORITY OF THE DEPARTMENT OF TRANSPORT AND MAIN ROADS (TMR)
2. WORKS WITHIN THE LOCAL AUTHORITY ROAD RESERVE IN ACCORDANCE WITH THE STANDARDS OF THE FAR NORTH QUEENSLAND REGIONAL ORGANISATION OF COUNCILS AND DOUGLAS SHIRE COUNCIL.

THE LIMITS OF EACH EXTENT ARE DEFINED ON THE DRAWINGS BY:

- ROAD RESERVE BOUNDARIES
- TIE-IN POINTS
- CHAINAGES (WHERE APPLICABLE)

LEGEND

- EXTENT OF WORKS - DEPARTMENT OF TRANSPORT AND MAIN ROADS
- EXTENT OF WORKS - DOUGLAS SHIRE COUNCIL
- PROPERTY BOUNDARY
- EXISTING ELECTRICAL SERVICE
- EXISTING COMMS SERVICE
- EXISTING WATER SERVICE

DEPARTMENT OF TRANSPORT AND MAIN ROADS (TMR) EXTENT OF WORKS

1. TMR WORKS APPLY TO ALL AREAS WITHIN THE STATE-CONTROLLED ROAD RESERVE, INCLUDING:

a. FULL WIDTH OF CARRIAGEWAY, INCLUDING:
 - TRAFFIC LANES
 - SHOULDERS
 - MEDIANS AND TRAFFIC ISLANDS
 - VERGE AREAS WITHIN THE TMR BOUNDARY

b. BATTERS EXTENDING FROM FORMATION TO:
 - TOP OF CUT
 - TOE OF FILL

c. DRAINAGE CORRIDORS WITHIN TMR LAND
2. TMR SCOPE OF WORKS INCLUDES, BUT IS NOT LIMITED TO:

a. UPGRADE OF THE ANDREASSEN ROAD / PALM AVENUE / CAPTAIN COOK HIGHWAY INTERSECTION

b. ROAD WIDENING AND NEW LINEMARKING ALONG CAPTAIN COOK HIGHWAY

c. EXTENSION OF EXISTING CULVERTS CROSSING CAPTAIN COOK HIGHWAY NEAR ANDREASSEN ROAD

d. DIVERSION OF EXISTING FLOODWAY ALONG ANDREASSEN ROAD TO THE SOUTH VIA A PROPOSED OPEN CHANNEL

LOCAL AUTHORITY (DOUGLAS SHIRE COUNCIL) EXTENT OF WORKS

1. LOCAL AUTHORITY WORKS APPLY TO ALL AREAS WITHIN THE LOCAL ROAD RESERVE, INCLUDING:

a. ROAD CARRIAGEWAY

b. VERGE AREAS

c. FOOTPATHS

d. PARKING LANES (WHERE APPLICABLE)

e. PROPERTY ACCESSES FROM BOUNDARY TO ROAD EDGE

f. LOCAL DRAINAGE CORRIDORS
2. DOUGLAS SHIRE COUNCIL SCOPE OF WORKS INCLUDES, BUT IS NOT LIMITED TO:

a. UPGRADE AND WIDENING OF ANDREASSEN ROAD

b. CONSTRUCTION OF NEW SEWER RISING MAIN

c. CONSTRUCTION OF NEW GRAVITY SEWER MAIN

d. CONSTRUCTION OF NEW PRESSURE WATER MAIN

e. CONSTRUCTION OF NEW OPEN CHANNEL ALONG ANDREASSEN ROAD

INTERFACE OF WORKS

1. ALL WORKS AT THE INTERFACE BETWEEN TMR AND LOCAL AUTHORITY EXTENTS SHALL:

a. BE COORDINATED TO ENSURE SMOOTH TRANSITIONS IN ALIGNMENT AND LEVELS

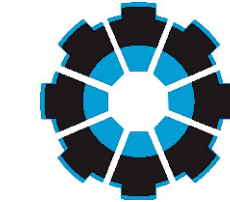
b. MAINTAIN CONTINUITY OF DRAINAGE SYSTEMS

c. BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT AUTHORITY

d. WHERE REQUIREMENTS DIFFER, TMR STANDARDS SHALL APPLY WITHIN THE STATE-CONTROLLED ROAD CORRIDOR.

File Ref: 14 GENERAL DRAWINGS SHEETS.dwg

REVISIONS				
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL	LES
No.	BY	DATE	DESCRIPTION	APPD



Stellen

SYDNEY
P: 02 8021 9233
MELBOURNE
P: 03 9969 2673

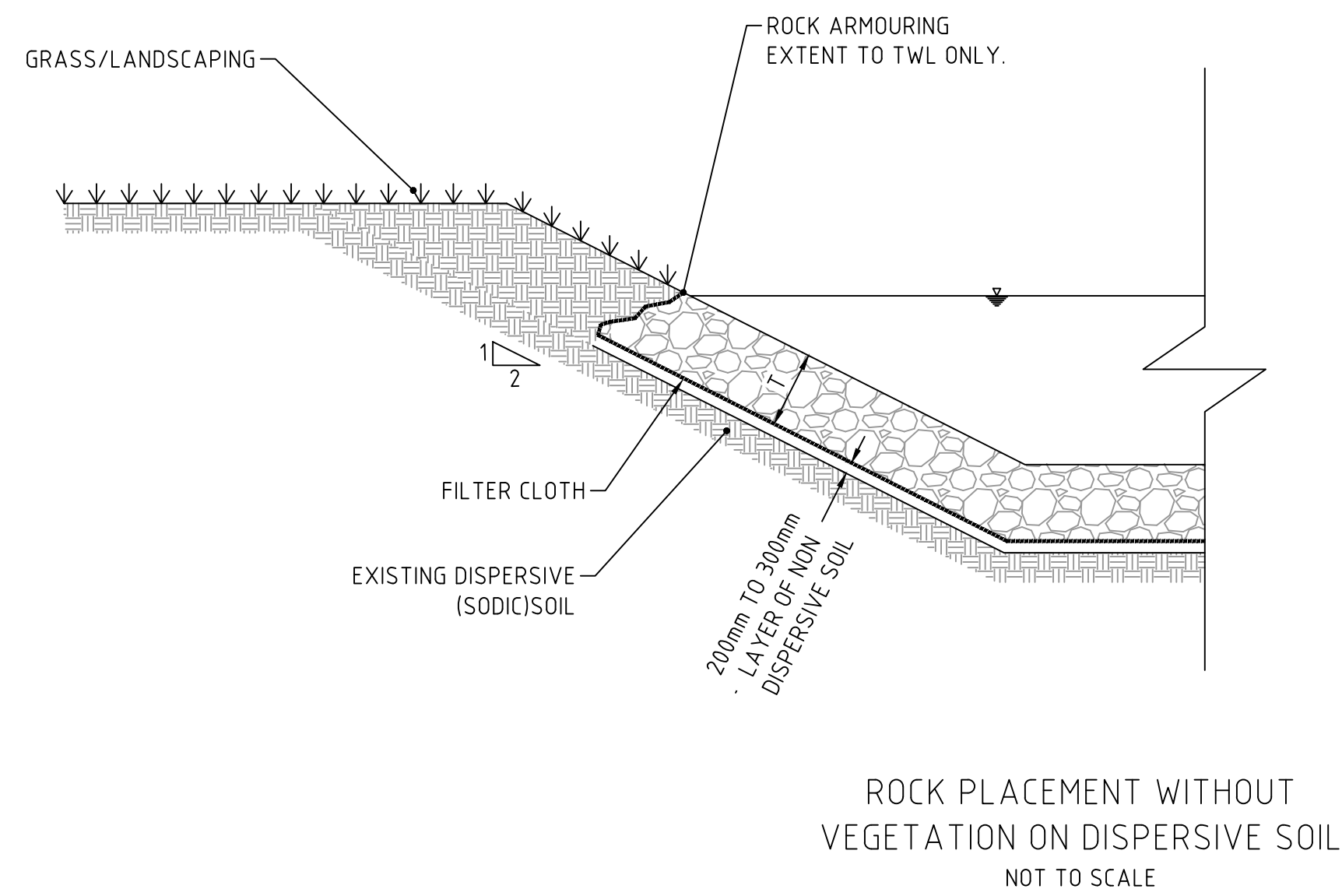
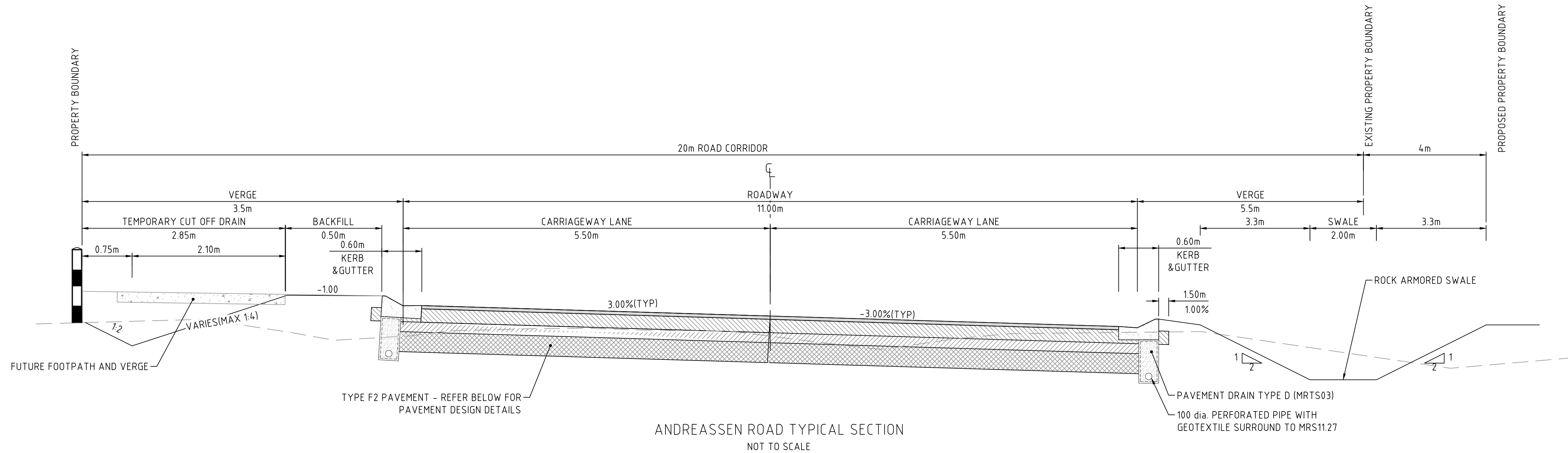
www.stellenconsulting.com.au

ABN: 61 149 095 189

Client
PORT DOUGLAS ESTATE PTY (LTD)

Scales:
@A1
Plan N.T.S
Horiz. -
Vert. -
X-Sect. -
DES: GS
DRW: GS
CHK: LES
APP: LES
Datum: A.H.D

Project ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing JURISDICTION OF WORKS				
Status FOR APPROVAL	Sheets -	Project No. P171508-01	Drw No. GA101	Rev. A



This drawing is confidential and shall only be used for the purposes of this project.



SYDNEY
P: 02 8021 9233
MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au

ABN: 61 149 095 189

Client

PORT DOUGLAS ESTATE PTY (LTD)

Scales:

@A1

Plan	-	DES: GS
Horiz.	-	DRW: GS
Vert.	-	CHK: LES
X-Sect.	-	APP: LES

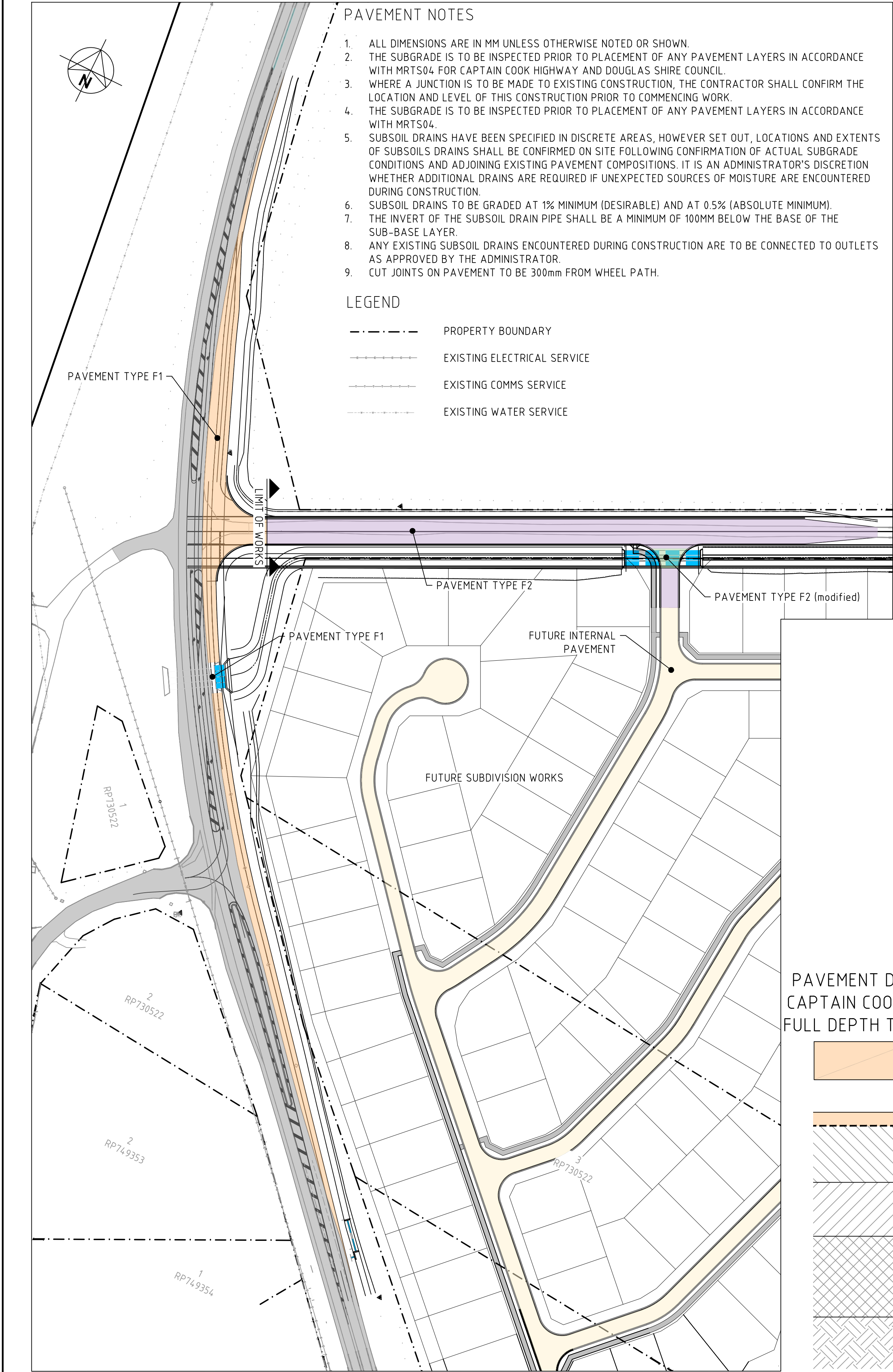
Datum: A.H.D

Project
ANDREASSEN ROAD DEVELOPMENT
PROPOSED ANDREASSEN ROAD UPGRADES

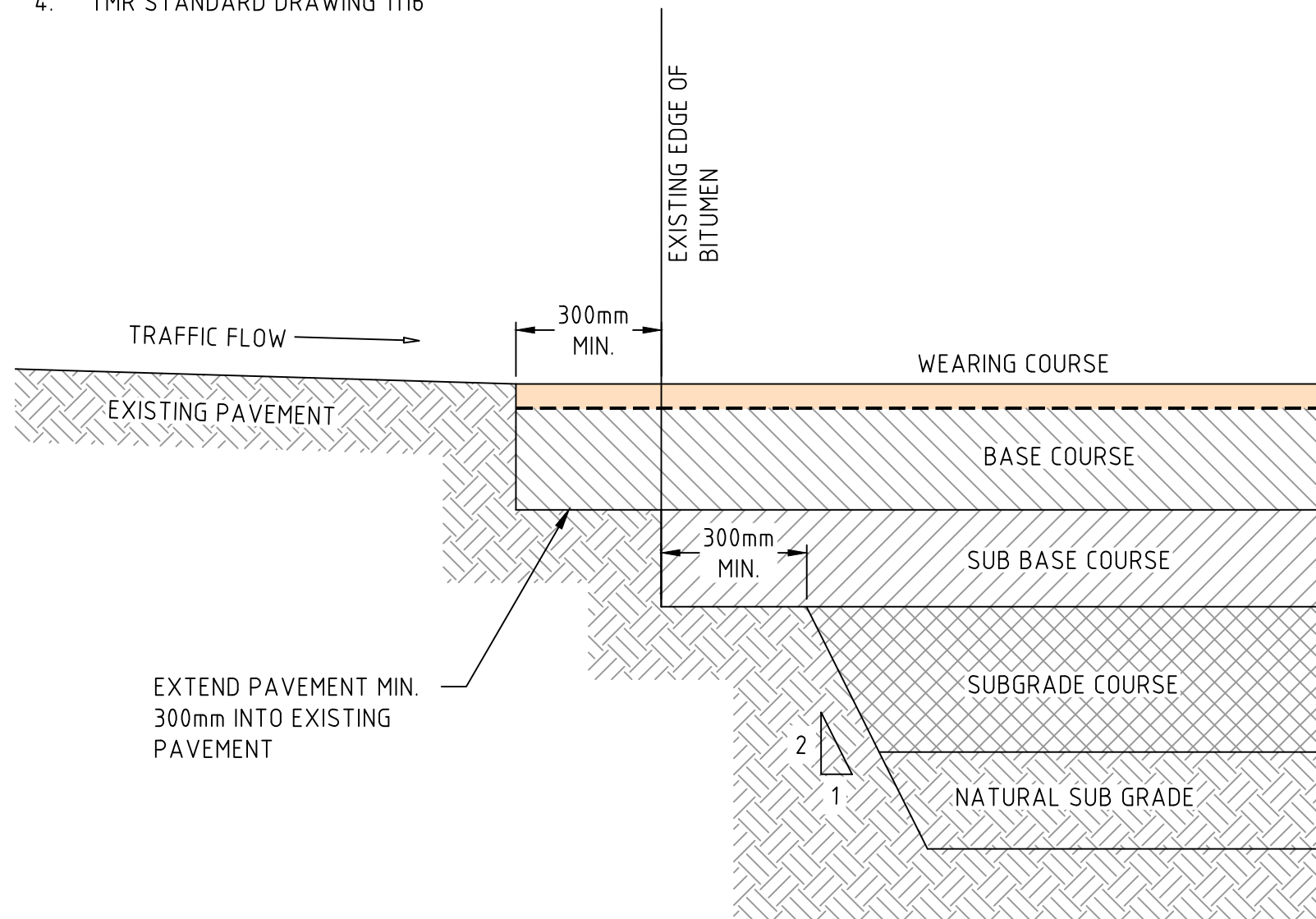
Drawing
TYPICAL CROSS SECTIONS

Status FOR APPROVAL	Sheets -	Project No. P171508-01	Draw No. CV001	Rev. A
------------------------	-------------	---------------------------	-------------------	-----------

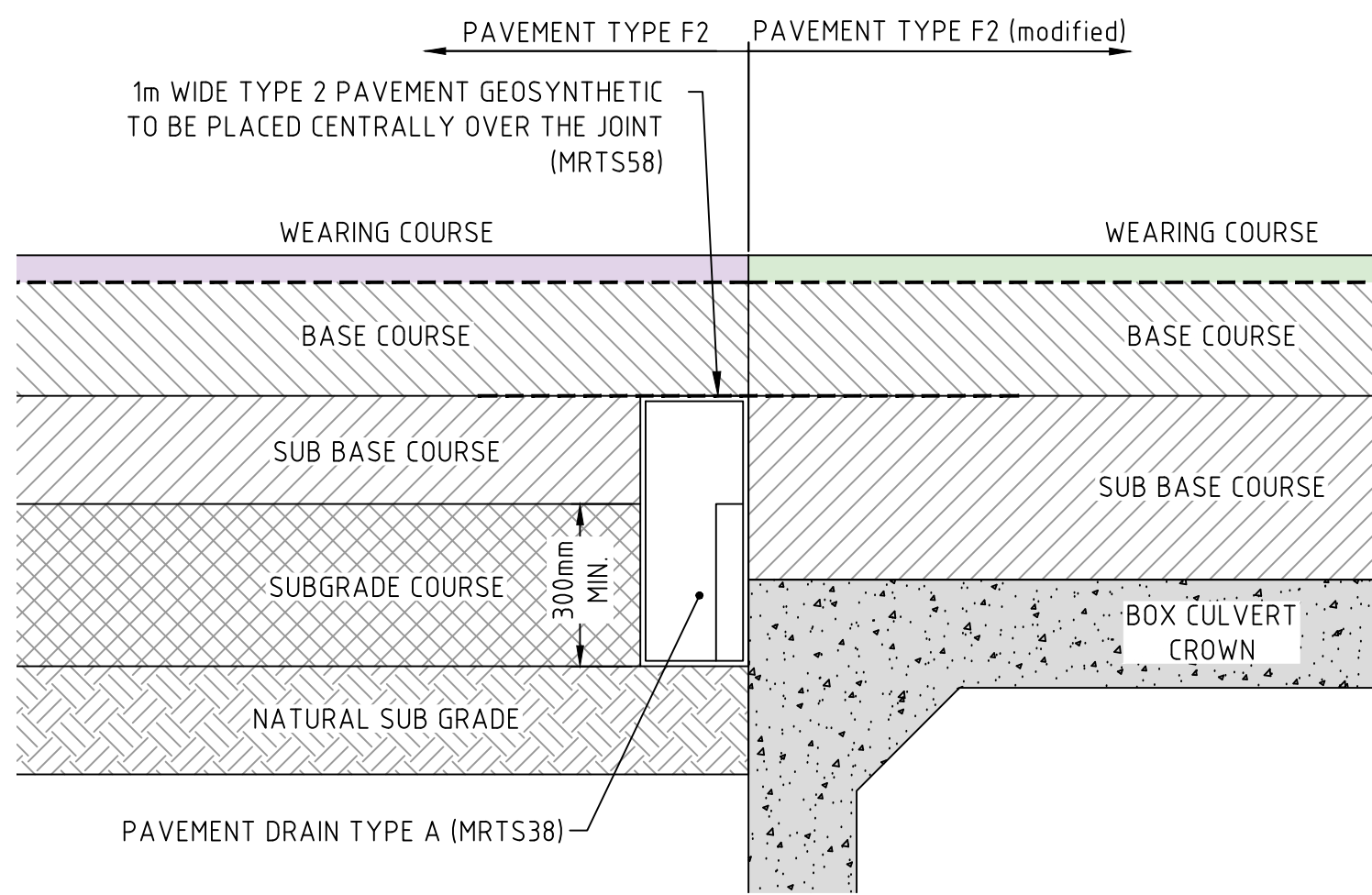
REVISIONS				
No.	BY	DATE	DESCRIPTION	APPD
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL	LES



- TMR STANDARDS
1. TMR MRTS11.03
 2. TMR MRTC11.04
 3. TMR MRTC11.05
 4. TMR STANDARD DRAWING 1116

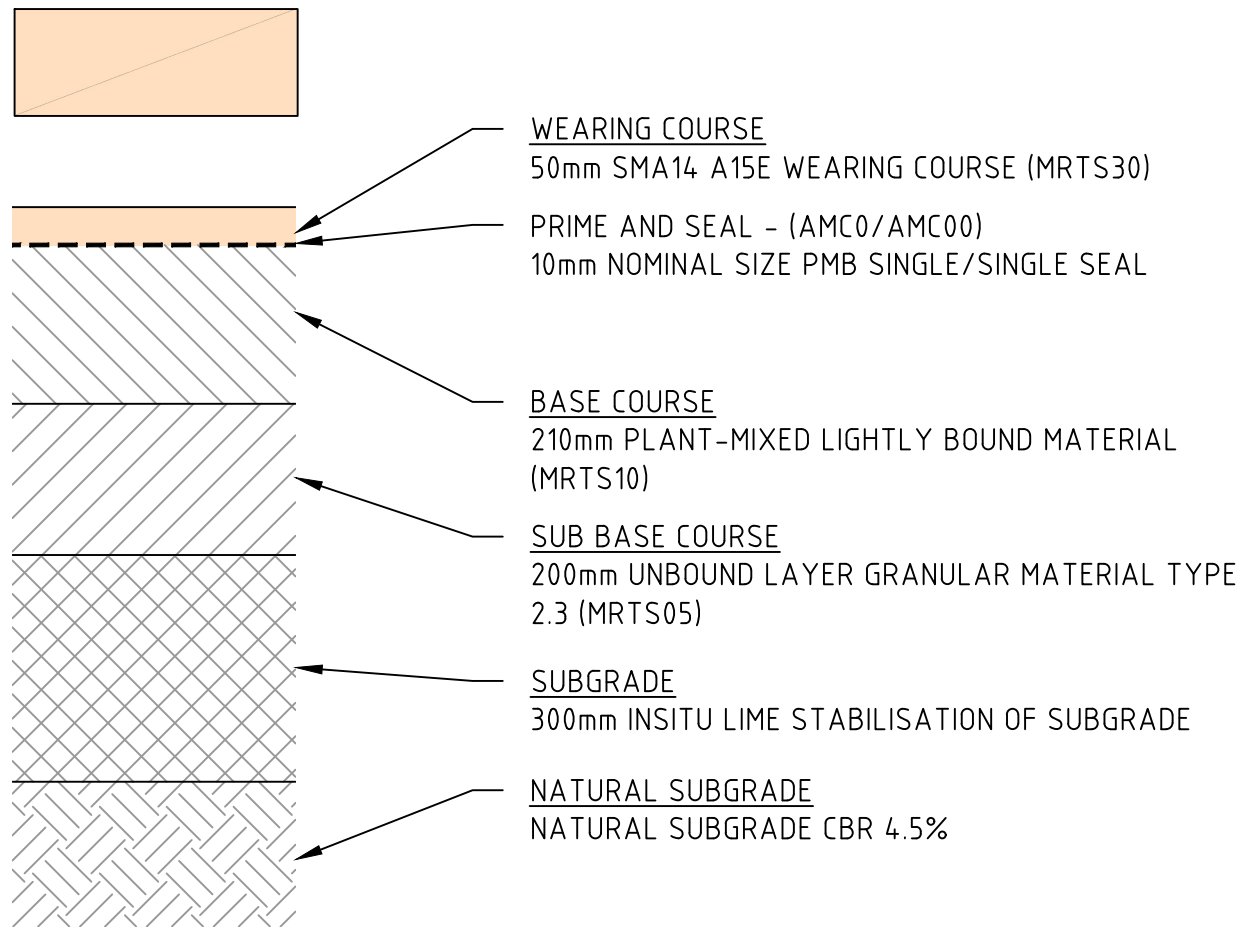


PAVEMENT JOINT SECTION (EXISTING TO F1 TYPE)
N.T.S.

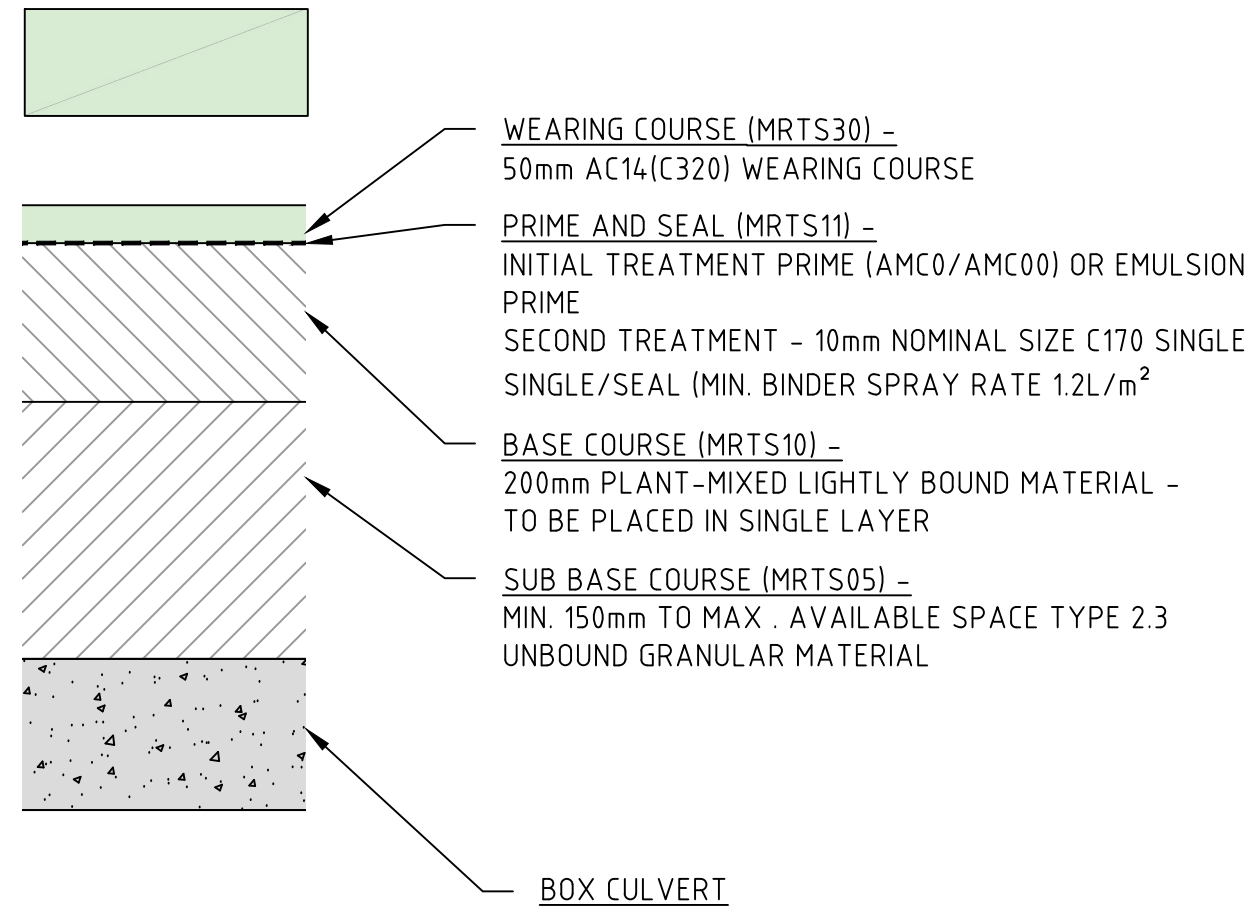


PAVEMENT JOINT SECTION (F2 TYPE TO F2 (modified))
N.T.S.

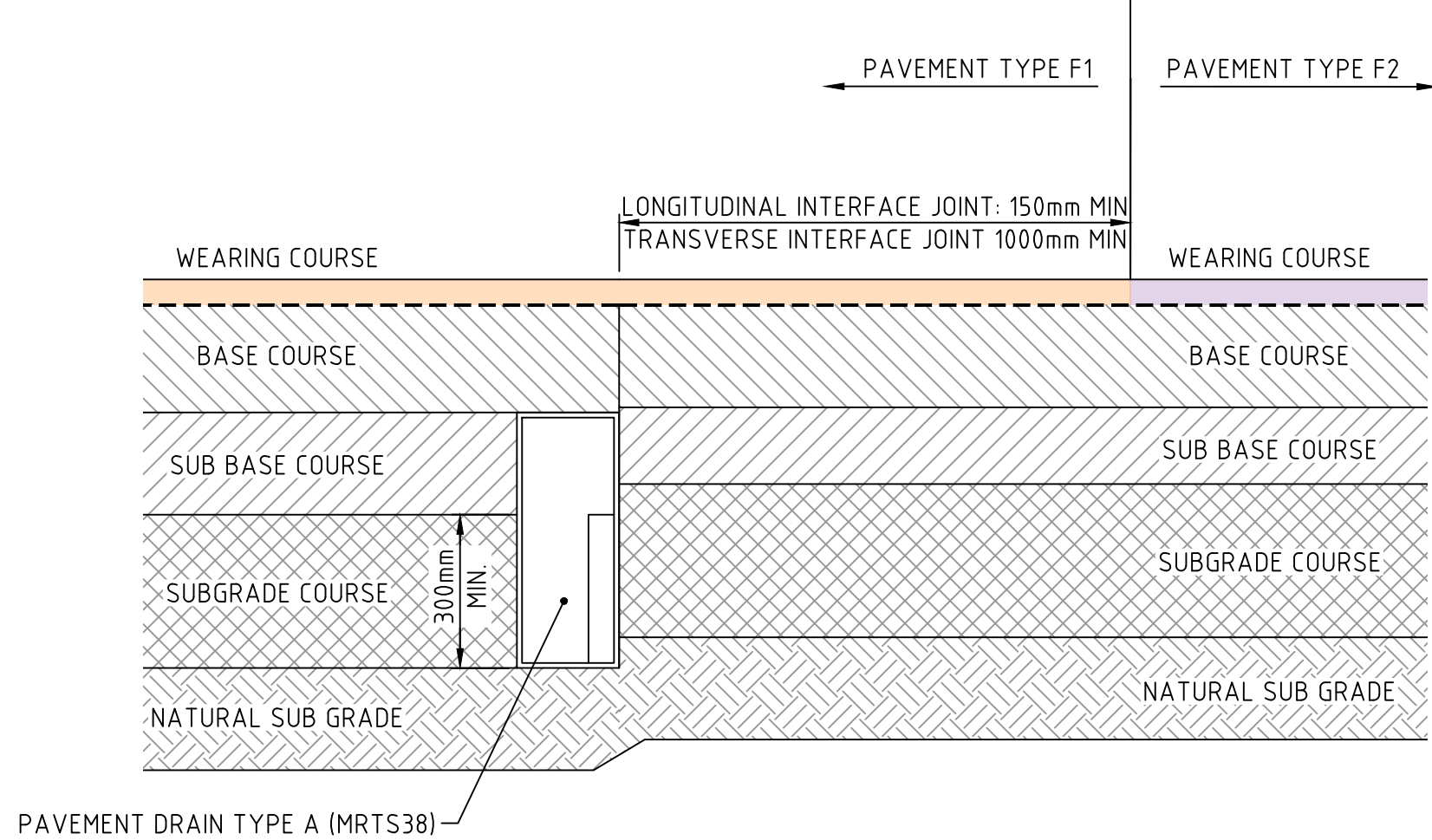
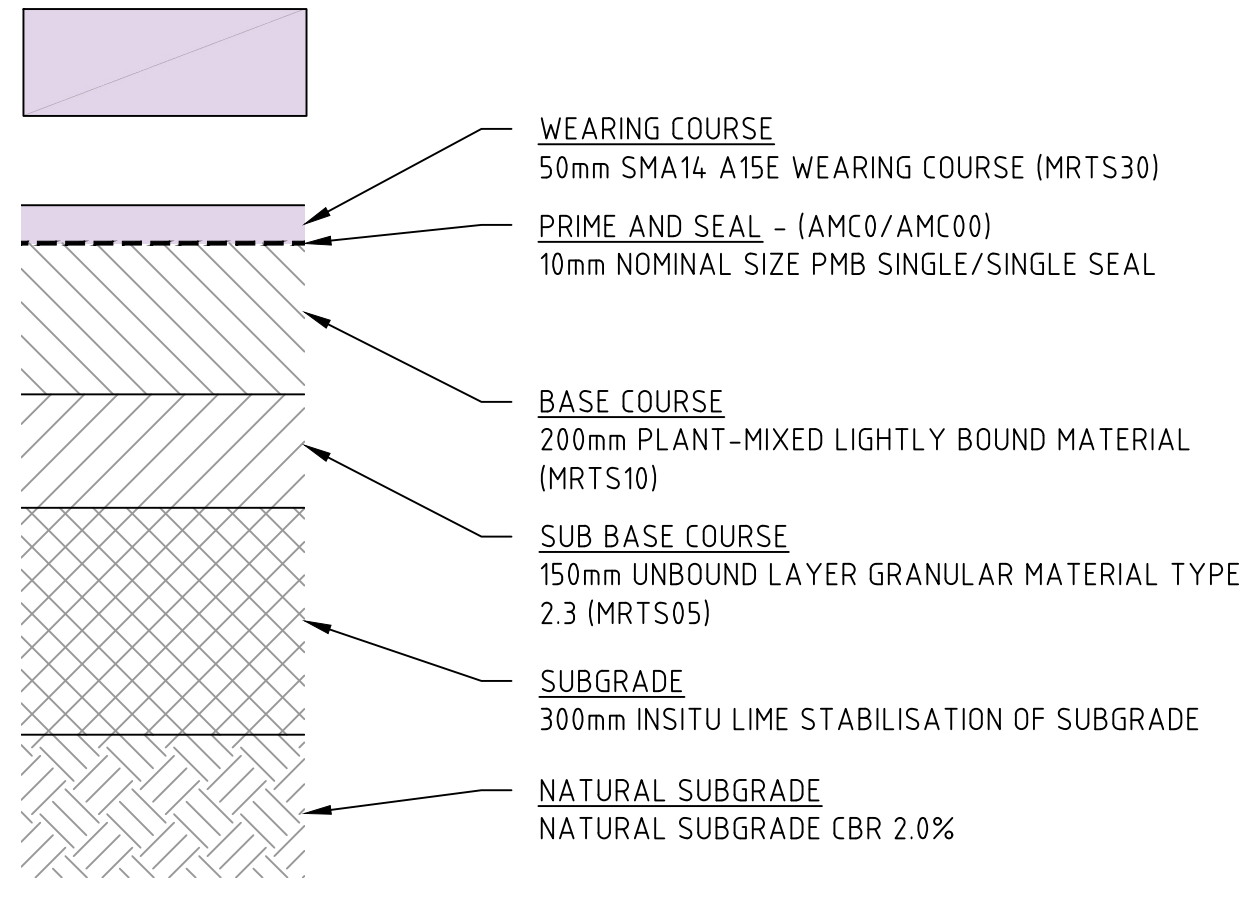
PAVEMENT DESIGN
CAPTAIN COOK HWY
FULL DEPTH TYPE F1



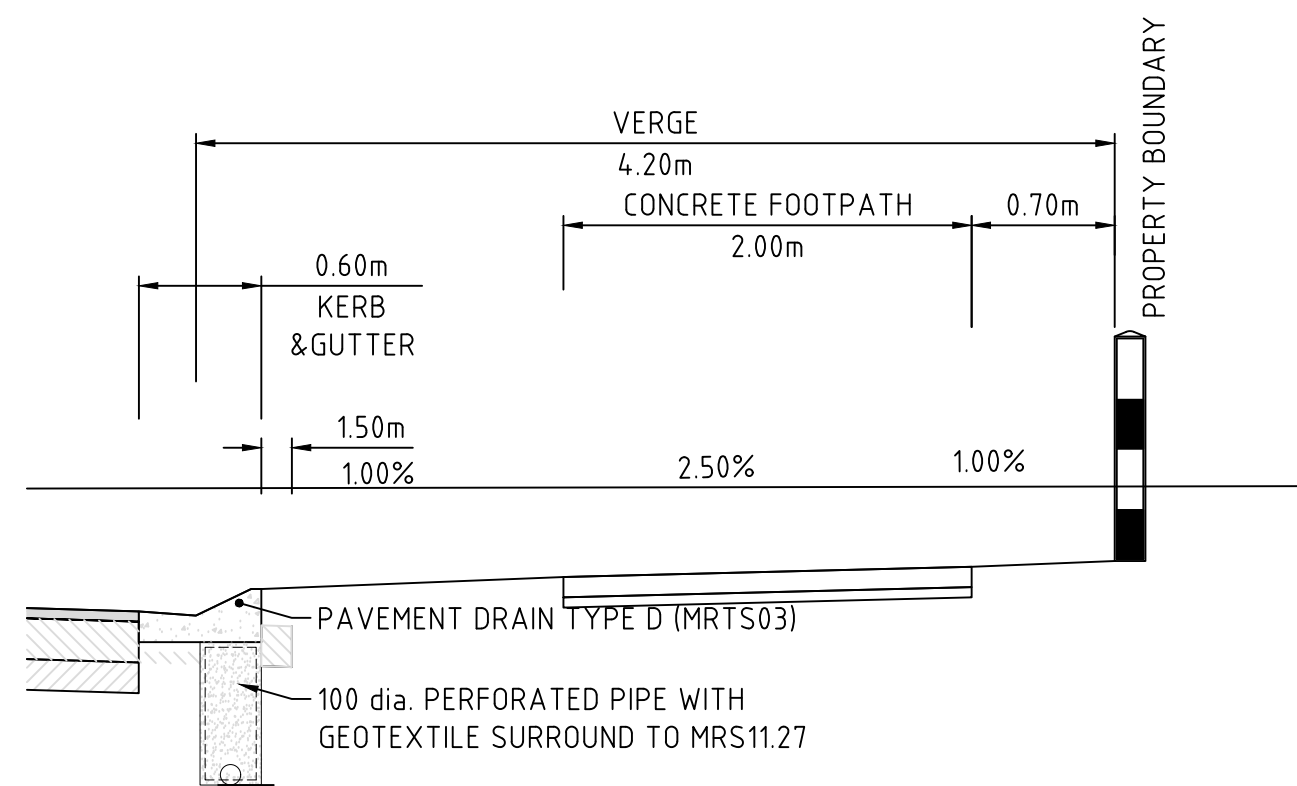
PAVEMENT DESIGN
ANDREASSEN ROAD
FULL DEPTH TYPE F2 (modified)



PAVEMENT DESIGN
ANDREASSEN ROAD
FULL DEPTH TYPE F2

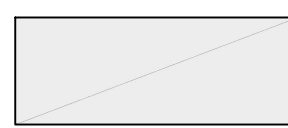


PAVEMENT JOINT SECTION (F1 TYPE TO F2 TYPE)
N.T.S.

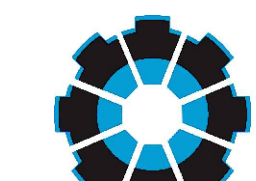


SUBSOIL TYPICAL DETAIL
N.T.S.

EXISTING
PAVEMENT



This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS				
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL	LES
No.	BY	DATE	DESCRIPTION	APPD

 **Stellen**

SYDNEY
P: 02 8021 9233
MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au

ABN: 61 149 095 189

Client

PORT DOUGLAS ESTATE PTY (LTD)

Scales:

Plan NTS
Horiz. -
Vert. -
X-Sect. -

DES: GS
DRW: GS
CHK: LES
APP: LES

Datum: A.H.D

Project

ANDREASSEN ROAD DEVELOPMENT
PROPOSED ANDREASSEN ROAD UPGRADES

Drawing

PAVEMENT LAYOUT AND DESIGN DETAILS

Status

FOR APPROVAL

Sheets

-

Project No.

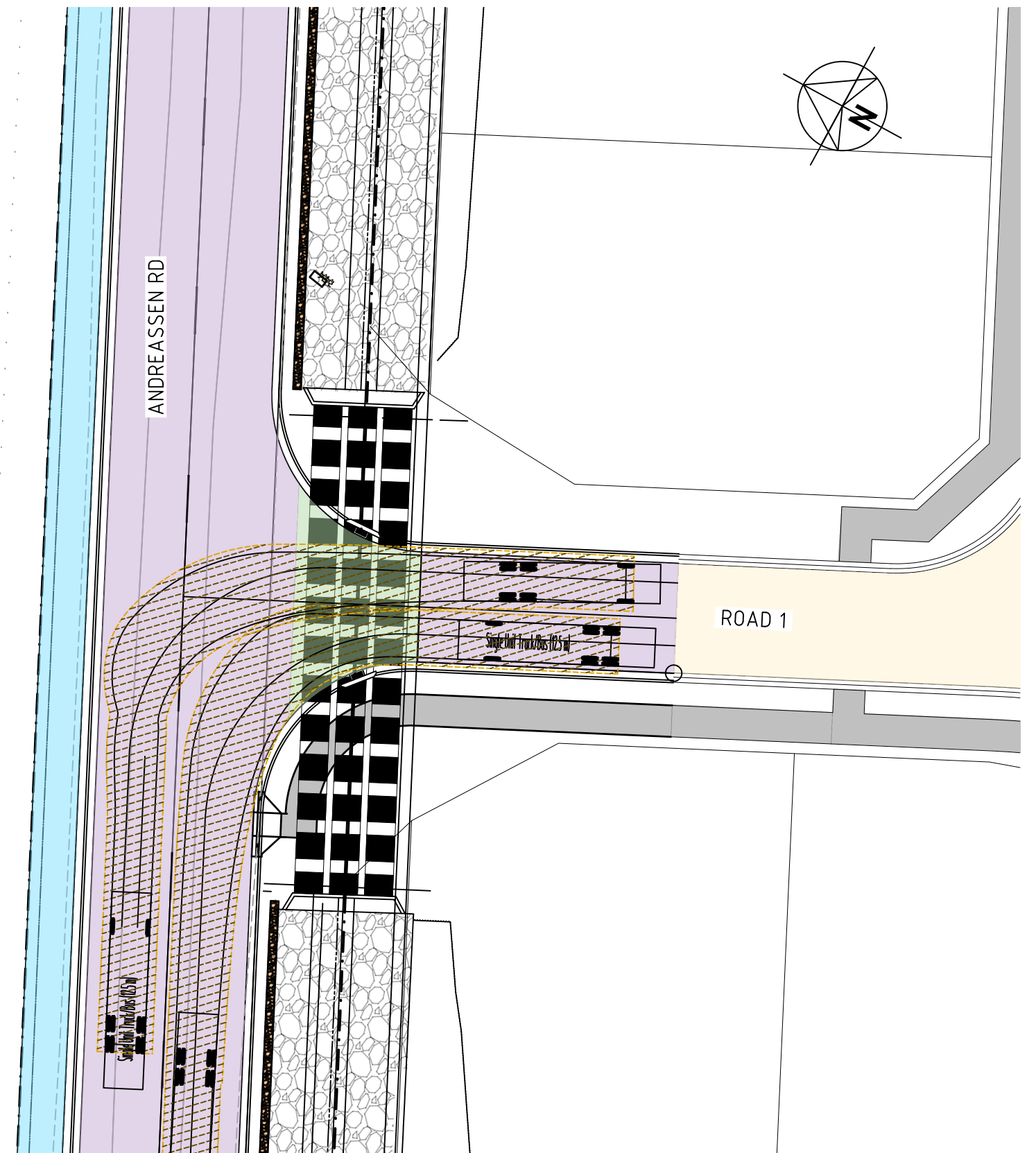
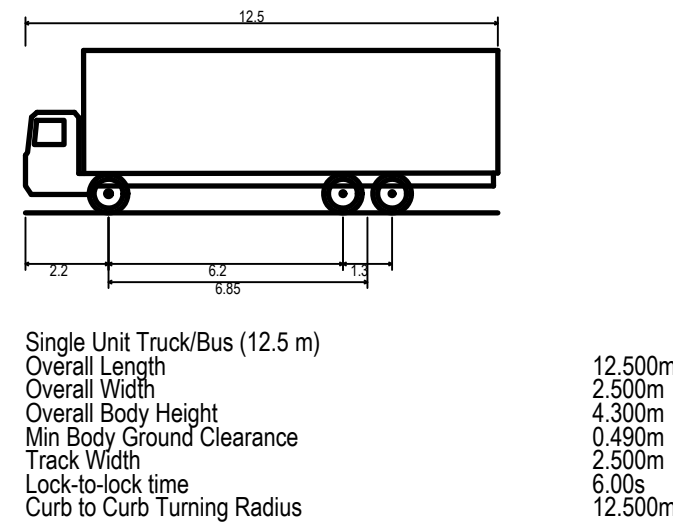
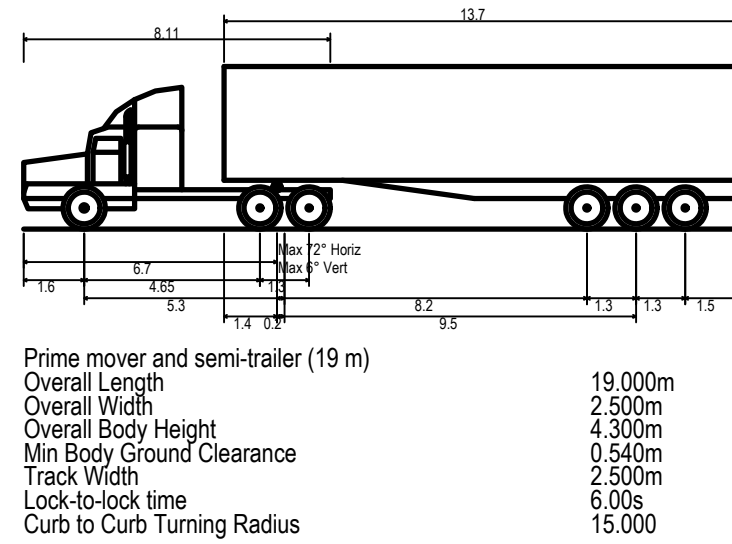
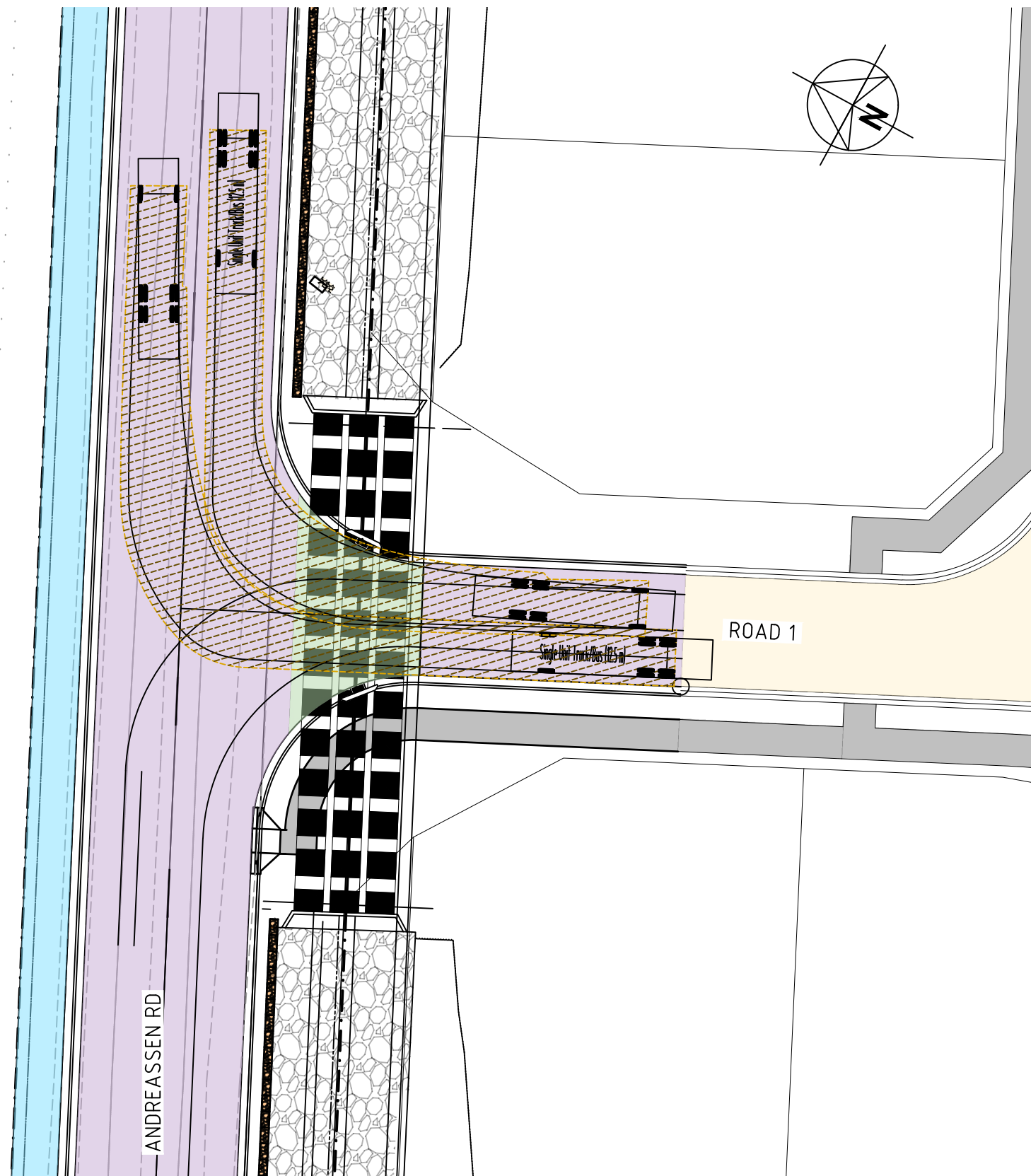
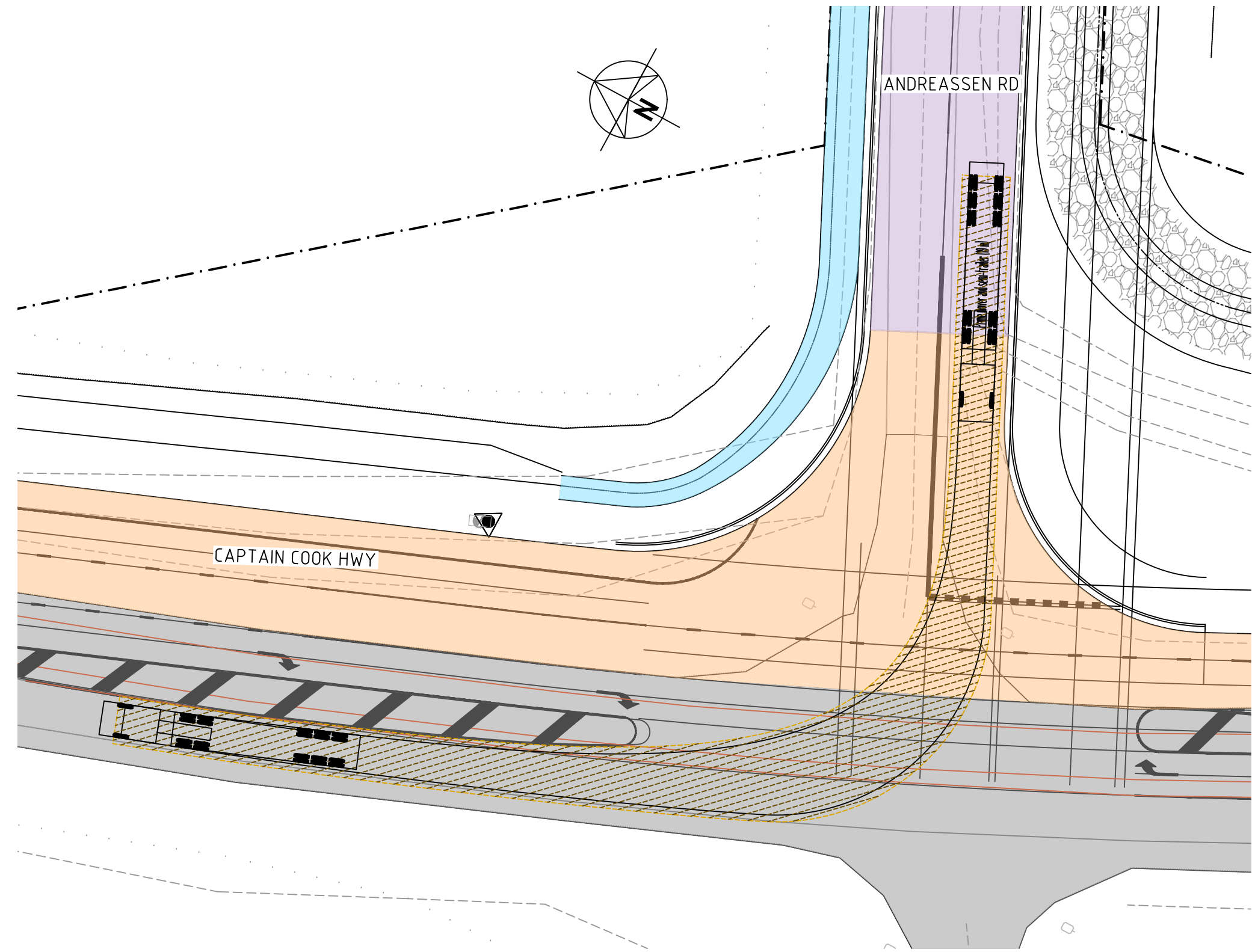
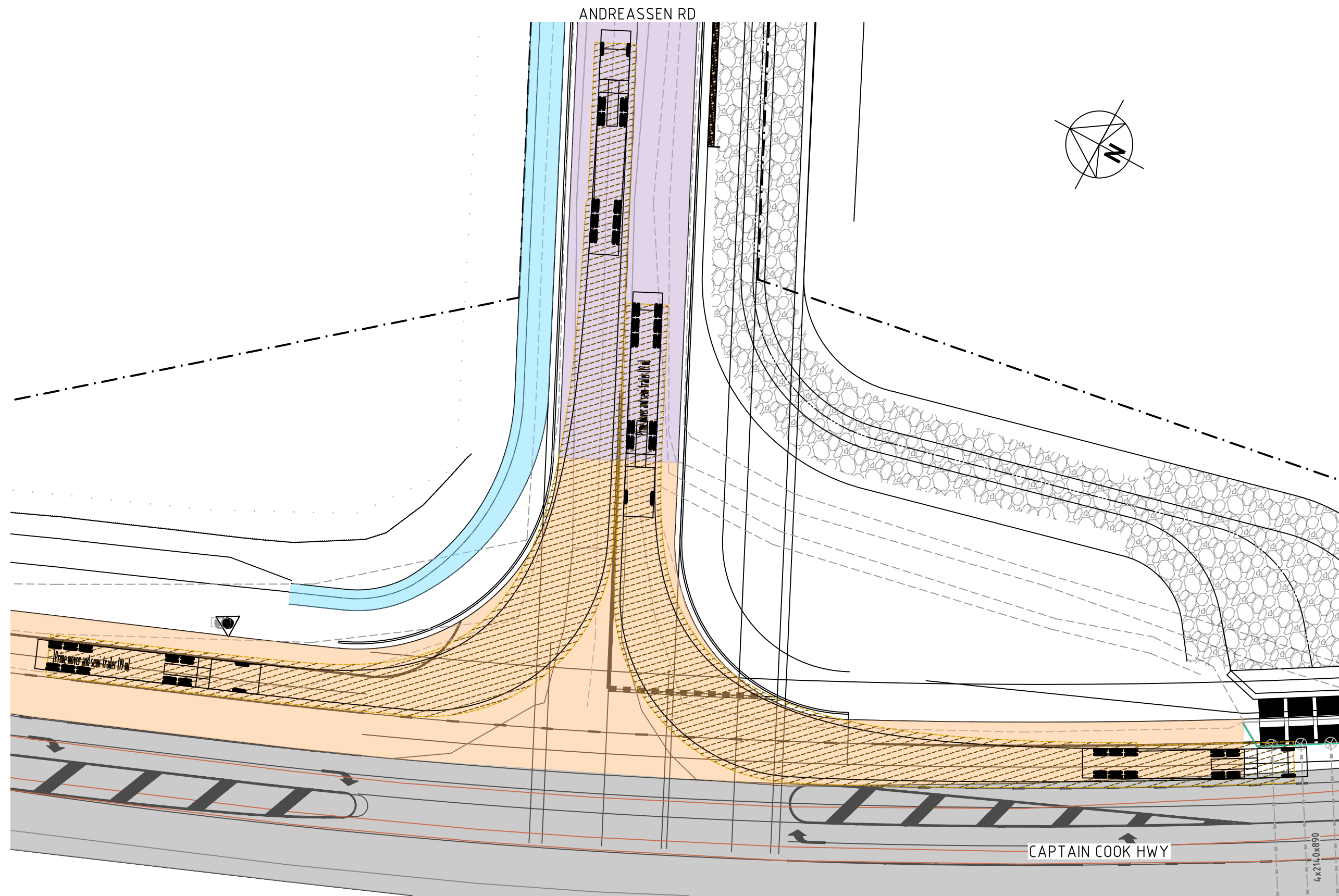
P171508-01

Drw No.

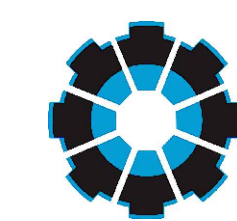
CV002

Rev.

A



This drawing is confidential and shall only be used for the purposes of this project.					
REVISIONS	No.	BY	DATE	DESCRIPTION	APPD
	A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL	LES

**Stellen**

SYDNEY
P: 02 8021 9233

MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au

ABN: 61 149 095 189

Client	PORT DOUGLAS ESTATE PTY (LTD)
--------	-------------------------------

Scales:		Plan 1:300	DES: GS
@A1	Horiz.	-	DRW: GS
	Vert.	-	CHK: LES
	X-Sect.	-	APP: LES
Datum: A.H.D.			

Project					ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing					VEHICLE TRACKING LAYOUT PLAN				
Status	FOR APPROVAL	Sheets	-	Project No.	P171508-01	Drw No.	CV003	Rev.	A



Surface Analysis: Elevation Ranges				
Number	Color	Minimum Elevation (m)	Maximum Elevation (m)	2D Area (m²)
1		-3.500	-3.000	379.0
2		-3.000	-2.500	872.2
3		-2.500	-2.000	908.7
4		-2.000	-1.500	865.4
5		-1.500	-1.000	1532.9
6		-1.000	-0.500	3346.2
7		-0.500	0.000	1761.4
8		0.000	0.500	100.2
9		0.500	1.000	6.7

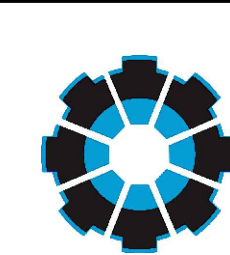
Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
DATUM_CUT_FILL	1.000	1.000	9784.084sq.m	12161.881 Cu. M.	13.732 Cu. M.	12148.149 Cu. M.<Cut>
Totals			9784.084sq.m	12161.881 Cu. M.	13.732 Cu. M.	12148.149 Cu. M.<Cut>

- NOTES:
- BULK EARTHWORKS VOLUMES ARE PROVIDED FOR INFORMATION PURPOSES ONLY.
 - VOLUMES HAVE BEEN CALCULATED BASED ON SURVEY LEVELS AND FINISHED SUBGRADE LEVELS.
 - EARTHWORKS VOLUMES EXCLUDE TRENCHING FOR PITS, PIPES, BOX CULVERTS, SERVICES, RETAINING WALL FOOTINGS, AND ANY STRUCTURES BELOW THE FINISHED DESIGN SURFACE.
 - NO BULKING OR SHRINKAGE FACTORS HAVE BEEN APPLIED TO THE CALCULATED VOLUMES.

NOTE:
THIS DRAWING CONTAINS COLOR-CODED INFORMATION
ESSENTIAL FOR ACCURATE INTERPRETATION. PLEASE ENSURE
THIS DRAWING IS PRINTED IN COLOR. PRINTING IN BLACK AND
WHITE MAY RESULT IN MISCOMMUNICATION OR ERRORS.

This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS				
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL	LES
No.	BY	DATE	DESCRIPTION	APPD



SYDNEY
P: 02 8021 9233

MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au

Client

PORT DOUGLAS ESTATE PTY (LTD)

Dates: Plan 1:2000 DES: GS
Horiz. - DRW: GS
Vert. -
X-Sect. -

CHK: LES
APP: LES

Datum: A.H.D.

Project

ANDREASSEN ROAD DEVELOPMENT
PROPOSED ANDREASSEN ROAD UPGRADES

Drawing

EARTHWORKS CUT AND FILL PLAN

Status

FOR APPROVAL

Sheets

-

Project No.

P171508-01

Drw No.

CV100

Rev.

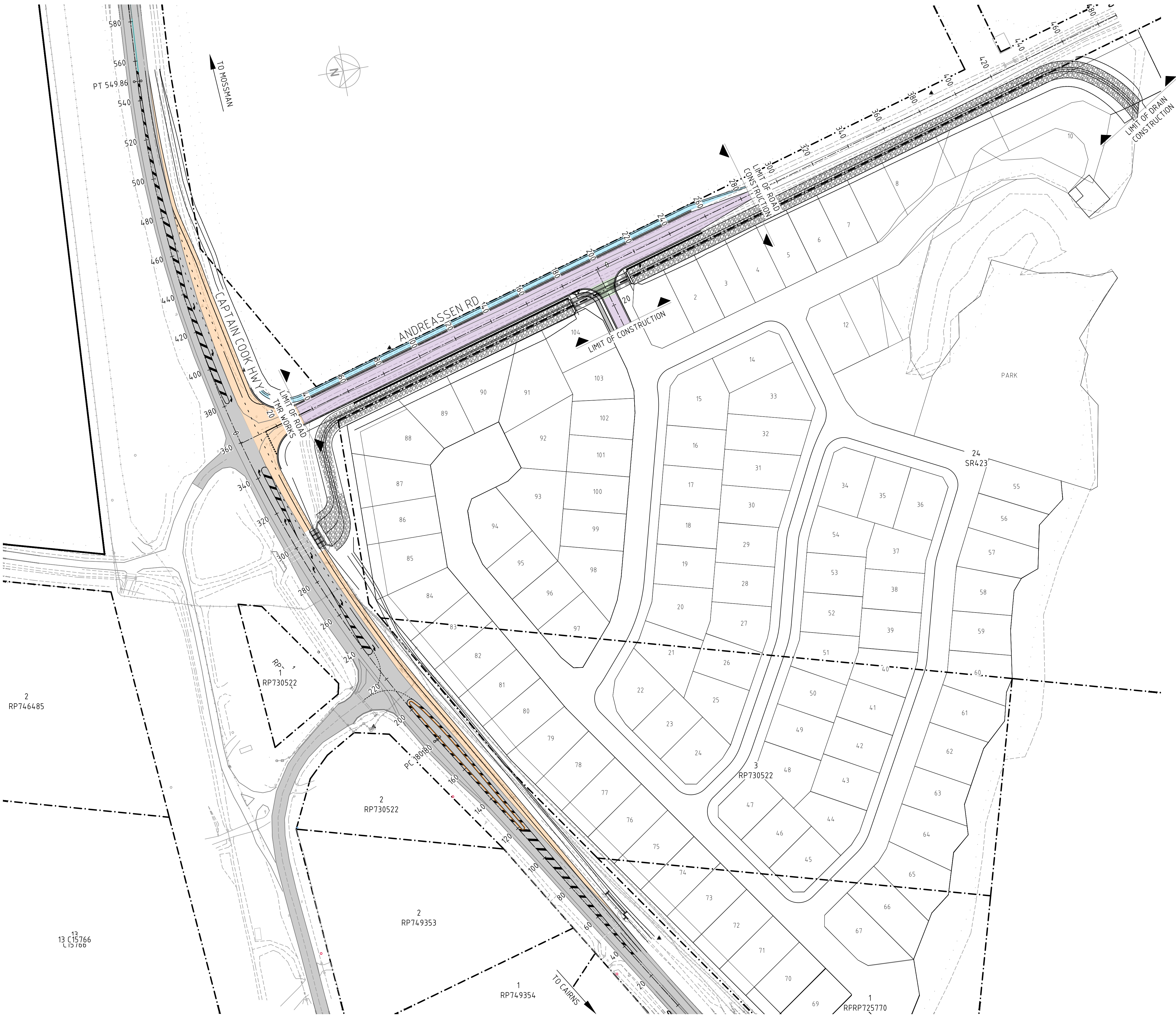
A

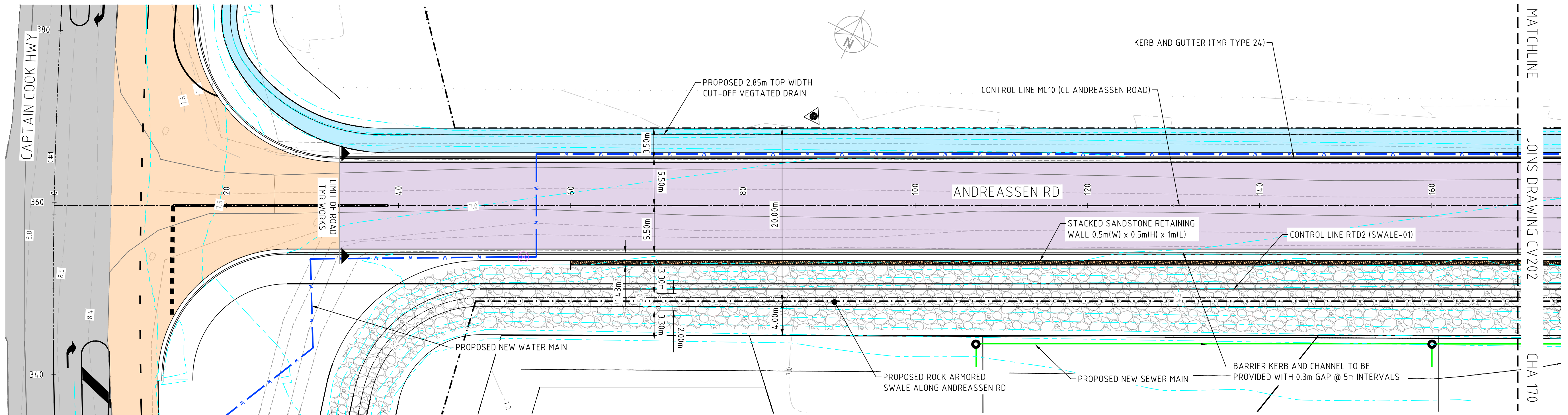
ABN: 61 149 095 189

File Ref: 14 EARTHWORKS DRAWINGS

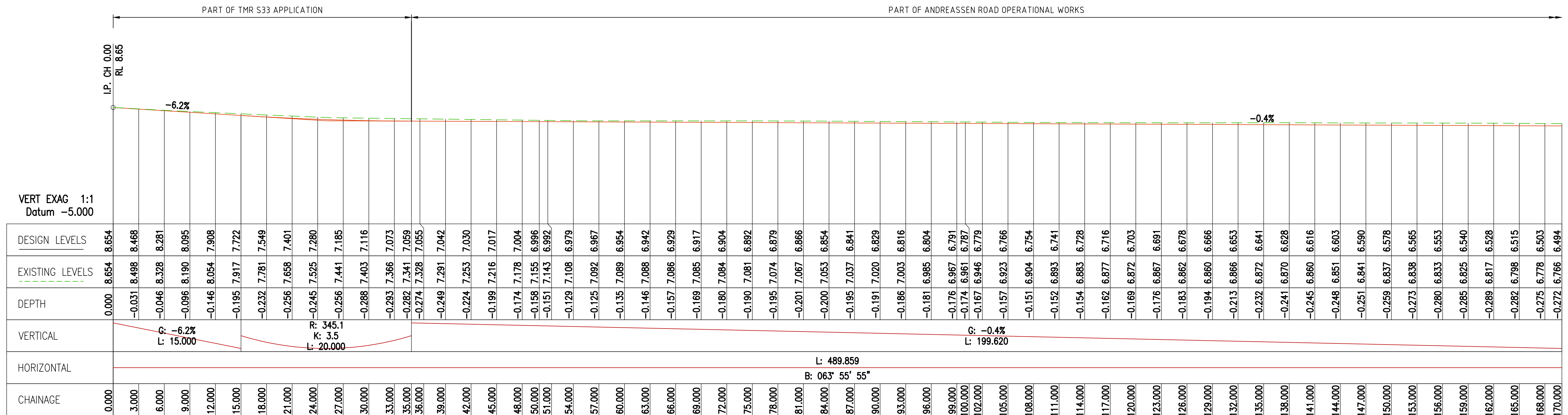
CAPTAIN COOK HWY					
Number		Chainage	Easting	Northing	Radii/A Value
L#1	Start End	0.000 180.522	337199.082 337078.016	8169570.447 8169704.354	-
C#1	Start End IP Co-ords	180.522 549.863 371.254	337078.016 336927.363 336950.103	8169704.354 8170035.205 8169845.835	600.000
L#2	Start End	549.863 605.514	336927.363 336920.728	8170035.205 8170090.460	-
317°52'59" Straight					
353°09'09" Arc					

ANDREASSEN RD					
Number		Chainage	Easting	Northing	Radii/A Value
L#10	Start End	0.000 490.082	336979.366 337419.594	8169853.025 8170068.387	-
63°55'55" Straight					





ANDREASSEN RD LAYOUT
SCALE 1:250



CL-ANDREASSEN ROAD LONG SECTION
HOR 1:250 VERT 1:250

NOTE:
THIS DRAWING CONTAINS COLOR-CODED INFORMATION
ESSENTIAL FOR ACCURATE INTERPRETATION. PLEASE ENSURE
THIS DRAWING IS PRINTED IN COLOR. PRINTING IN BLACK AND
WHITE MAY RESULT IN MISCOMMUNICATION OR ERRORS.



FOR REVIEW OF EARTHWORKS DRAWINGS ONLY

This drawing is confidential and shall only be used for the purposes of this project.					
REVISIONS					
	A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL	LES
	No.	BY	DATE	DESCRIPTION	APPD



www.stellenconsulting.com.au

SYDNEY
P: 02 8021 9233
MELBOURNE
P: 03 9969 2673

ABN: 61 149 095 189

Client

PORT DOUGLAS ESTATE PTY (LTD)

Scales:

@A1

Plan 1:250

Horiz. -

Vert. -

X-Sect. -

Datum: A.H.D.

DES: GS

DRW: GS

CHK: LES

APP: LES

Project

ANDREASSEN ROAD DEVELOPMENT
PROPOSED ANDREASSEN ROAD UPGRADES

Drawing

ANDREASSEN ROAD LAYOUT - SHEET 1 OF 3

Status

FOR APPROVAL

Sheets

-

Project No.

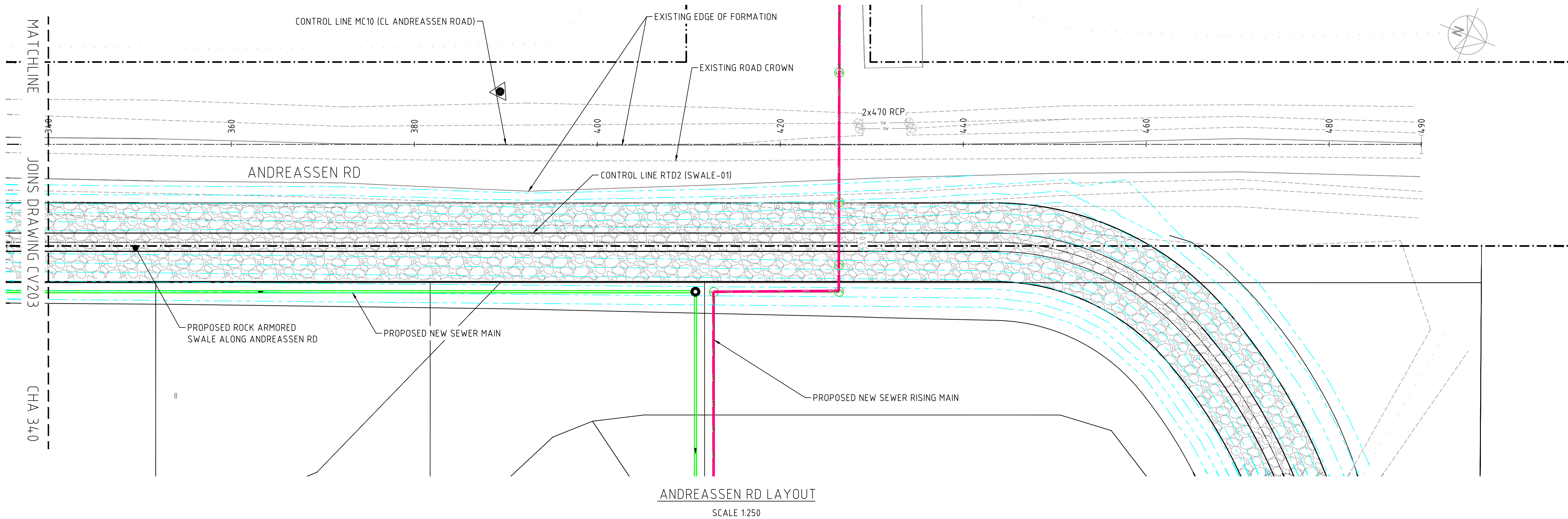
P171508-01

Drw No.

CV201

Rev.

A



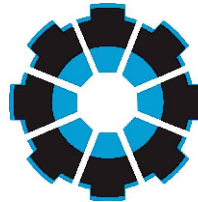
VERT EXAG 1:1 Datum -5.000			
DESIGN LEVELS			
EXISTING LEVELS	6.404	6.389	6.366
	6.343	6.328	6.321
	6.305	6.290	6.278
	6.266	6.254	6.242
	6.230	6.220	6.209
	6.196	6.183	6.170
	6.157	6.143	6.149
	6.160	6.164	6.171
	6.182	6.192	6.203
	6.223	6.217	6.212
	6.206	6.201	6.195
	6.181	6.113	6.045
	5.977	5.910	5.842
	5.774	5.707	5.641
	5.576	5.510	5.444
	5.378	5.298	5.194
	5.091	4.990	4.888
	4.786	4.684	4.655
	4.655		
DEPTH			
VERTICAL			
HORIZONTAL	L: 489.859 B: 063° 55' 55"		
CHAINAGE	340.000	342.000	345.000
	348.000	350.000	351.000
	354.000	357.000	360.000
	363.000	366.000	369.000
	372.000	375.000	378.000
	381.000	384.000	387.000
	390.000	393.000	396.000
	399.000	400.000	402.000
	405.000	408.000	411.000
	414.000	417.000	420.000
	423.000	426.000	429.000
	432.000	435.000	438.000
	441.000	444.000	447.000
	450.000	453.000	456.000
	459.000	462.000	465.000
	468.000	471.000	474.000
	477.000	480.000	483.000
	486.000	489.000	489.859
	490.000		

CL-ANDREASSEN ROAD LONG SECTION

CL-ANDREASSEN ROAD LONG SECTION
HOR 1:250 VERT 1:250



This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS				
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL	LES
No.	BY	DATE	DESCRIPTION	APPD

**Stellen**

SYDNEY
P: 02 8021 9233

MELBOURNE
P: 03 9969 2673

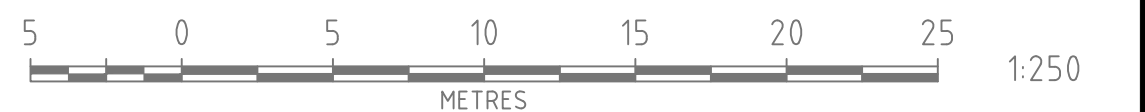
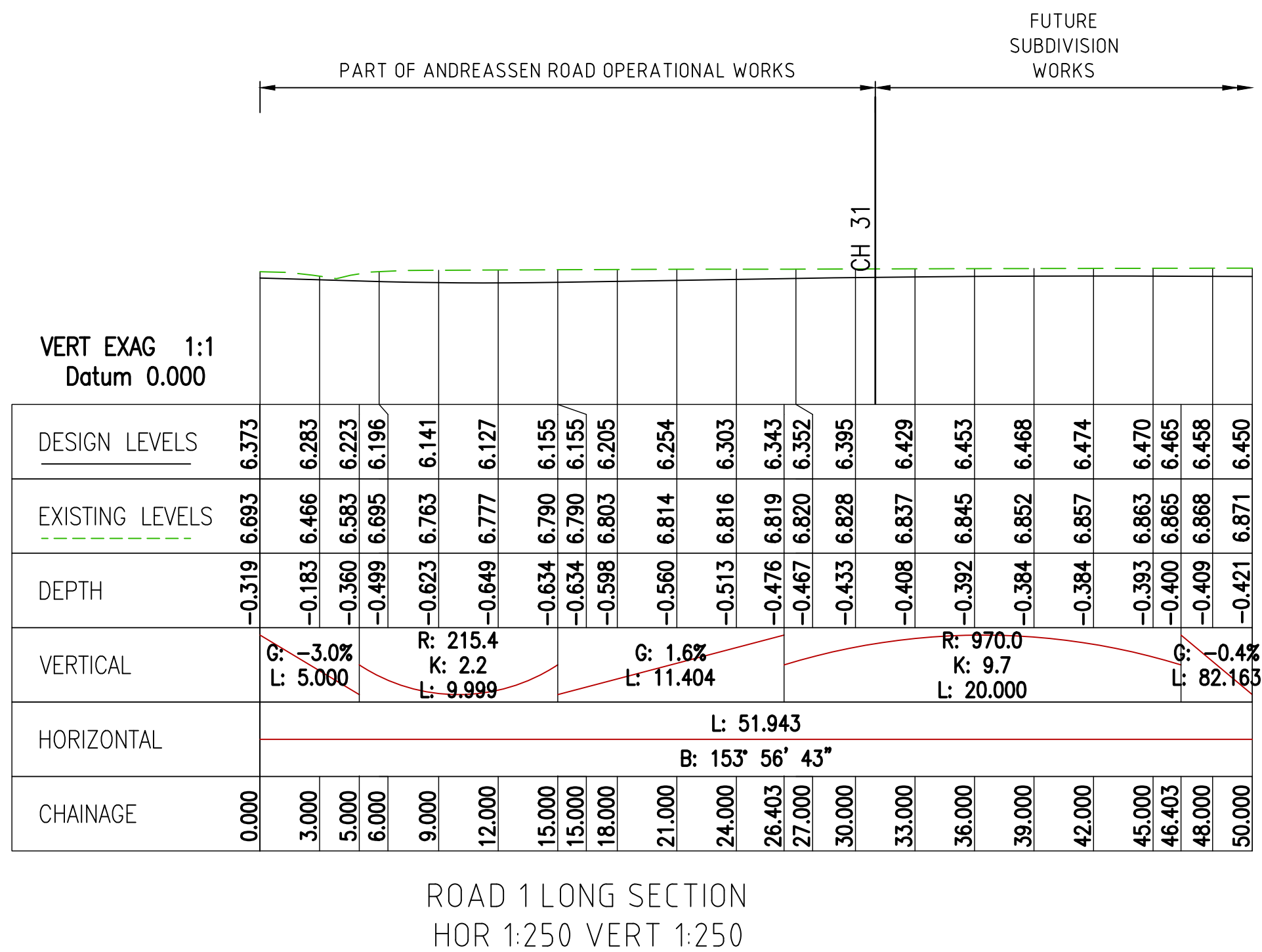
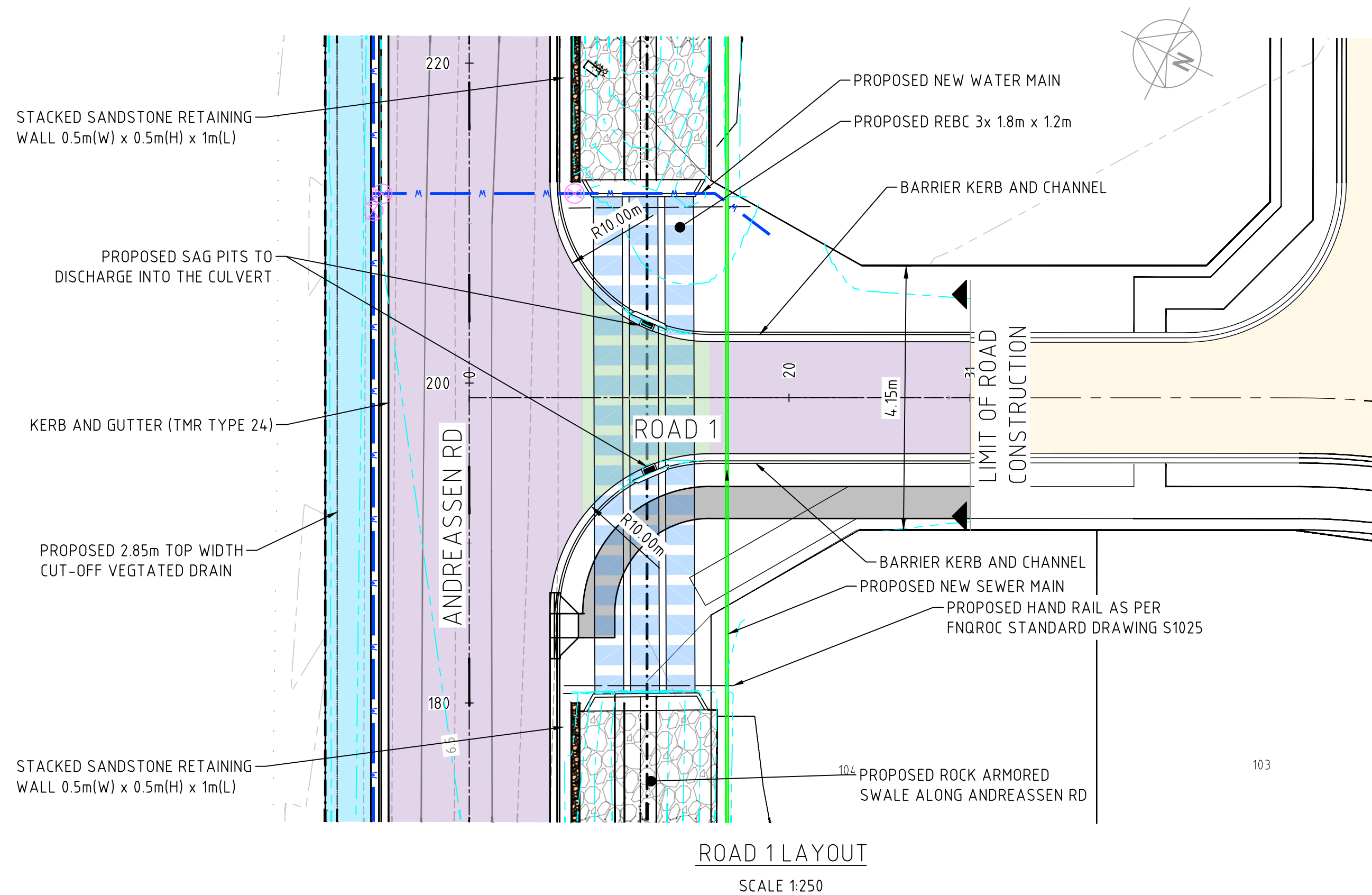
www.stellenconsulting.com.au

ABN: 61 149 095 189

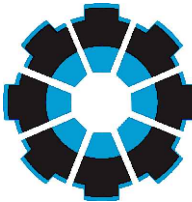
Client	PORT DOUGLAS ESTATE PTY (LTD)
--------	-------------------------------

Scales:	
Plan	1:250
Horiz.	-
Vert.	-
X-Sect.	-
DES: GS	
DRW: GS	
CHK: LES	
APP: LES	
Datum: A.H.D	

Project				
ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing				
ANDREASSEN ROAD LAYOUT - SHEET 3 OF 3				
Status	FOR APPROVAL	Sheets	-	Project No.
				P171508-01
Drw No.	CV203	Rev.	A	



This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS				
No.	BY	DATE	DESCRIPTION	APPD
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL	LES



SYDNEY
P: 02 8021 9233

MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au

PORT DOUGLAS ESTATE PTY (LTD)

ABN: 61 149 095 189

Client

PORT DOUGLAS ESTATE PTY (LTD)

Scales:

@A1

Plan 1:250
Horiz. -
Vert. -
X-Sect. -

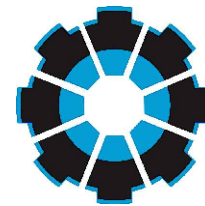
DES: GS
DRW: GS
CHK: LES
APP: LES

Datum: A.H.D

Project				
ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing				
ROAD 1 LAYOUT - SHEET 1 OF 1				
Status	Sheets	Project No.	Drw No.	Rev.
FOR APPROVAL	-	P171508-01	CV204	A

File Ref: 14-L0710000-00-Drawings.dwg

This drawing is confidential and shall only be used for the purposes of this project.					
REVISIONS					
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL		LES
No	BY	DATE	DESCRIPTION		APPD



www.stellenconsulting.com.au

SYDNEY
P: 02 8021 9233
MELBOURNE
P: 03 9969 2673

ABN: 61 149 095 189

Client

PORT DOUGLAS ESTATE PTY (LTD)

Scales:

@A1

Plan -
Horiz. 1:250
Vert. 1:250
X-Sect. -

DES: GS
DRW: GS
CHK: LES
APP: LES

Datum: A.H.D

Project

ANDREASSEN ROAD DEVELOPMENT
PROPOSED ANDREASSEN ROAD UPGRADES

Drawing

ROAD CROSS SECTIONS SHEET 1 OF 2

Status

FOR APPROVAL

Sheets

-

Project No

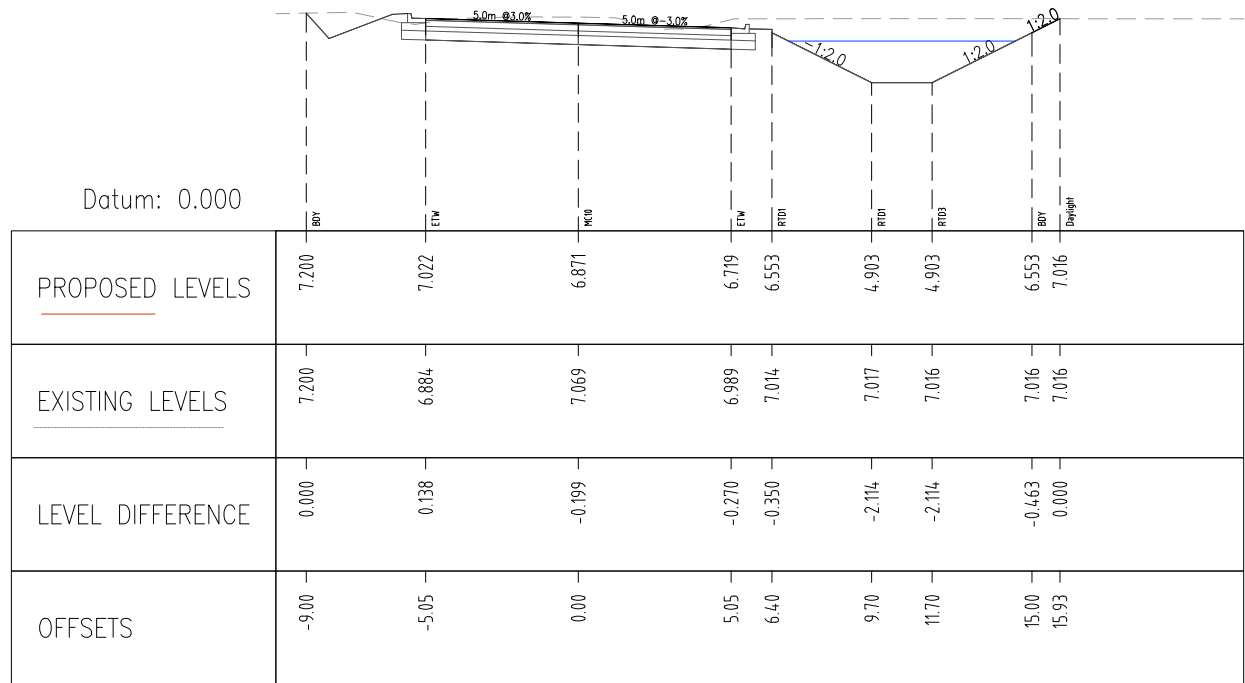
P171508-01

Drw No

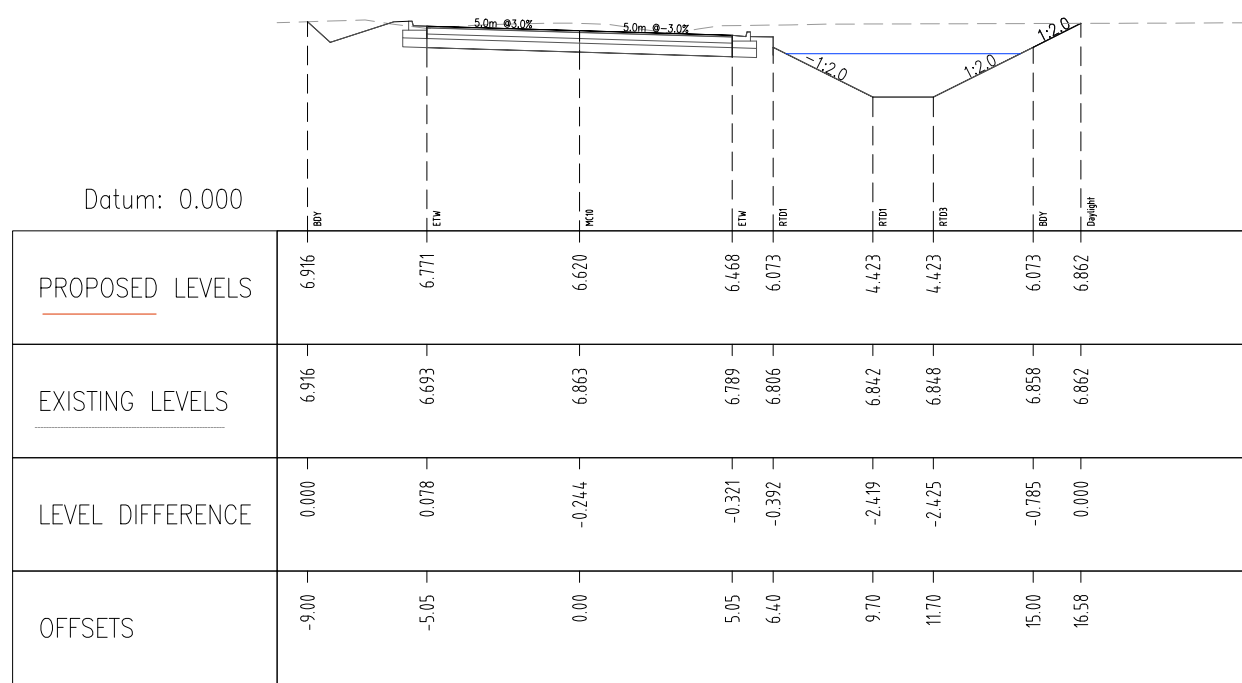
CV301

Rev

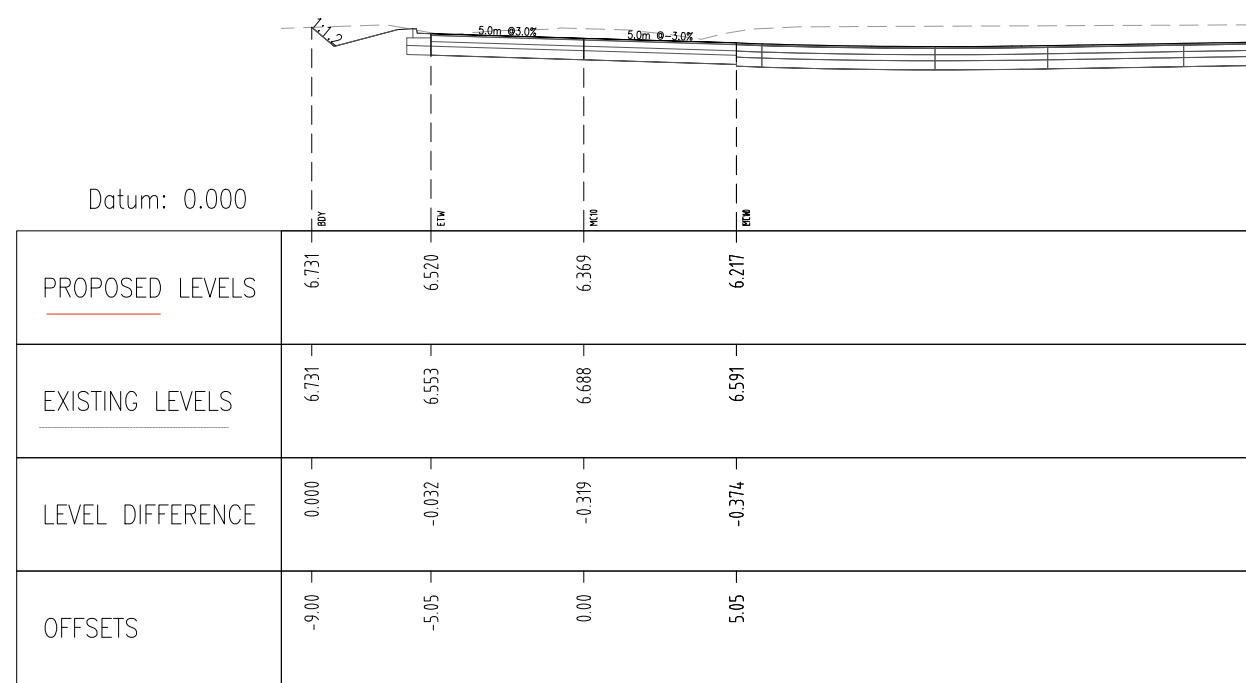
A



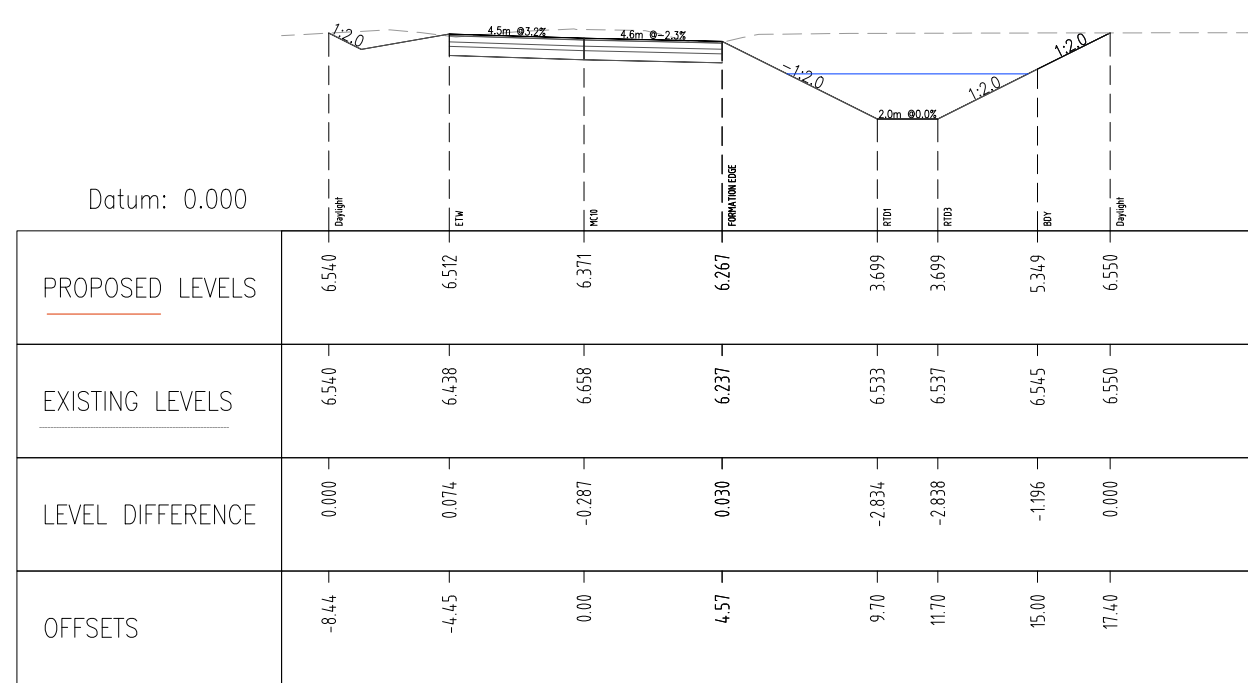
CH 80.000



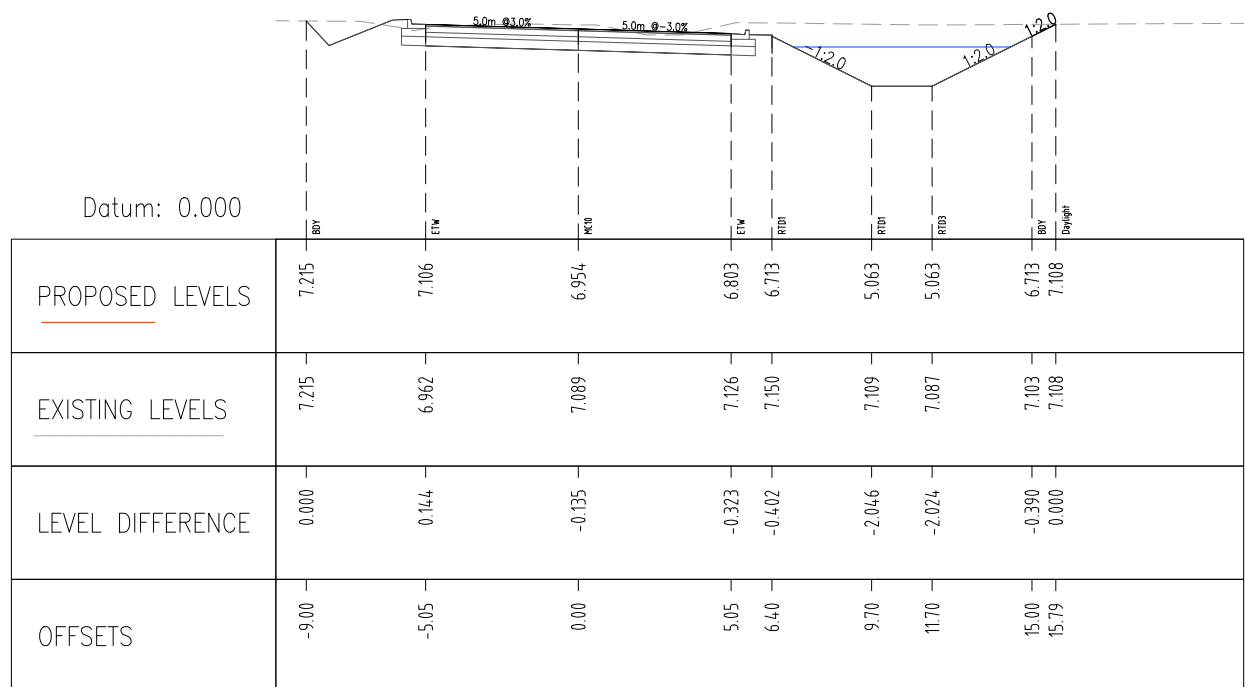
CH 140.000



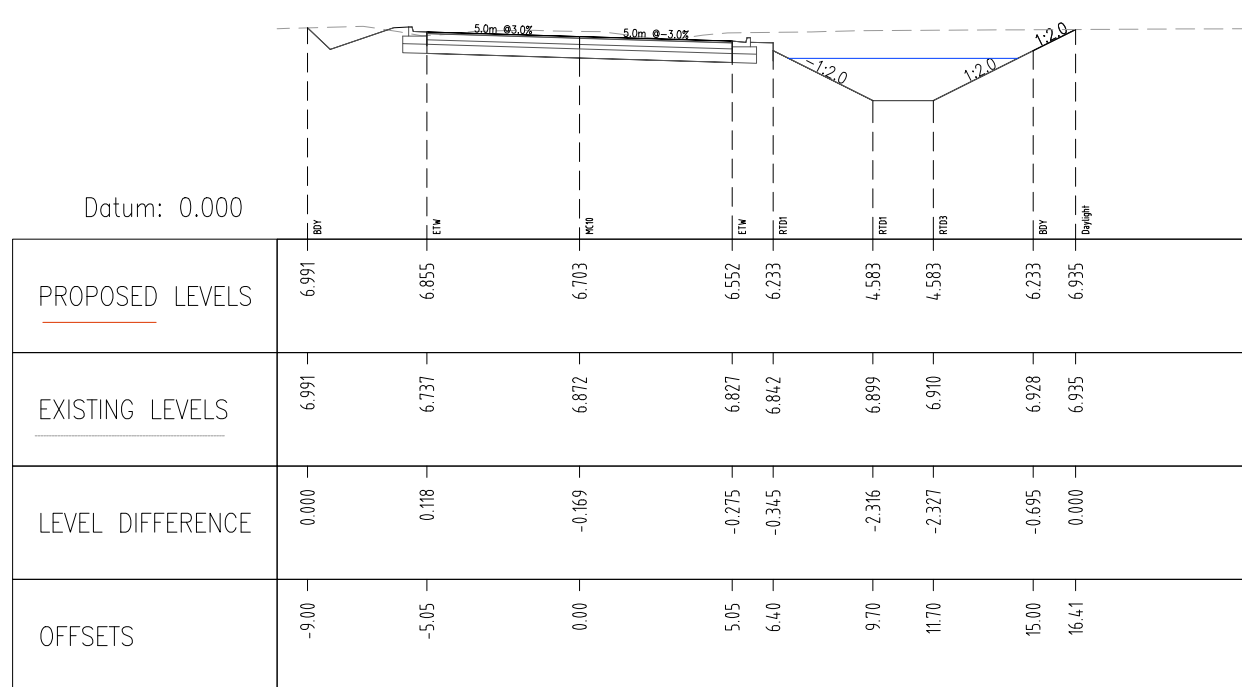
CH 200.000



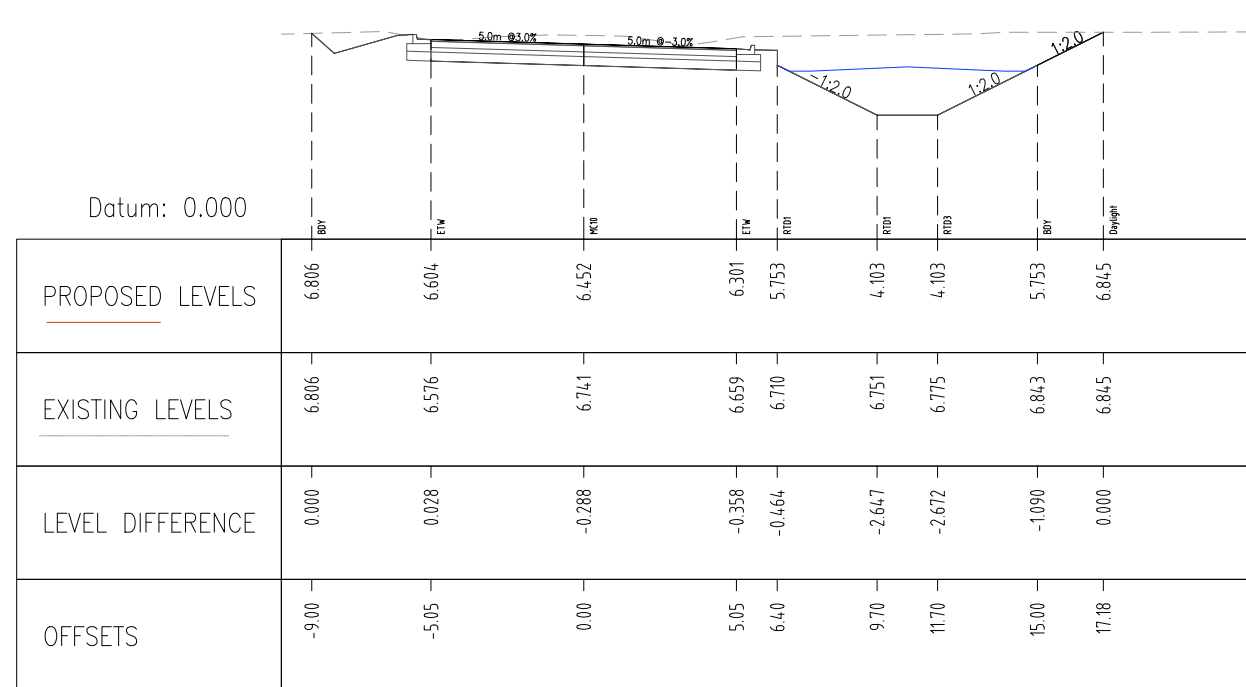
CH 260.000



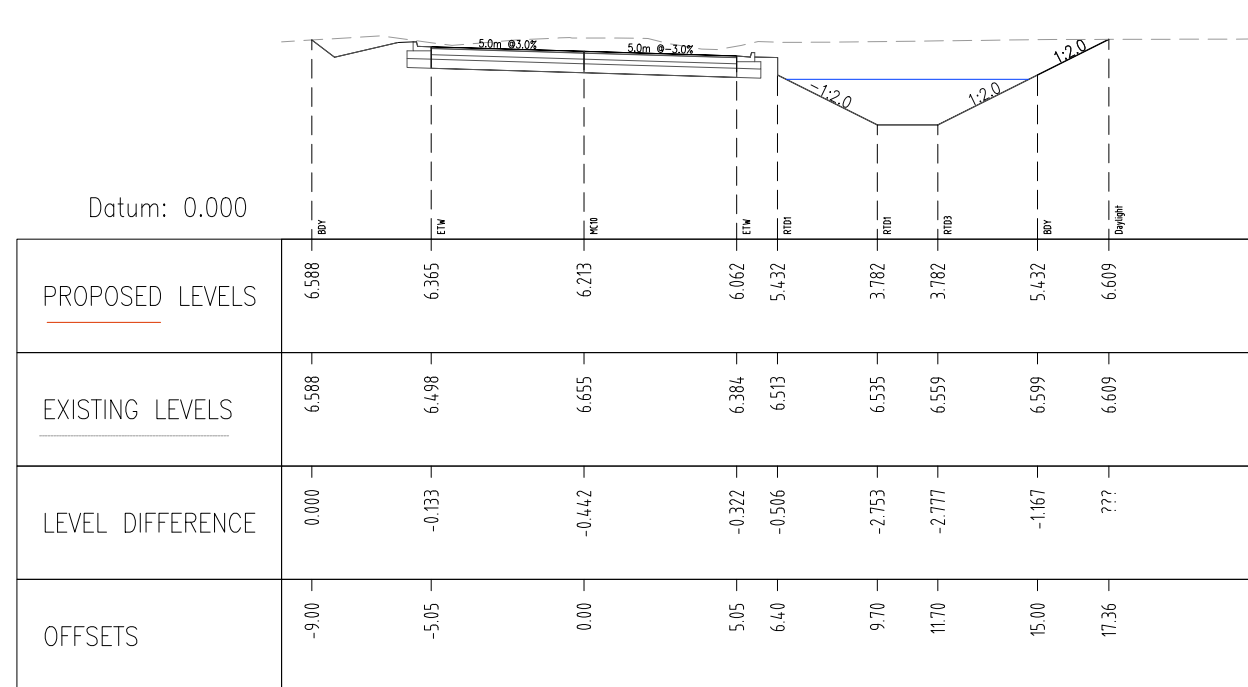
CH 60.000



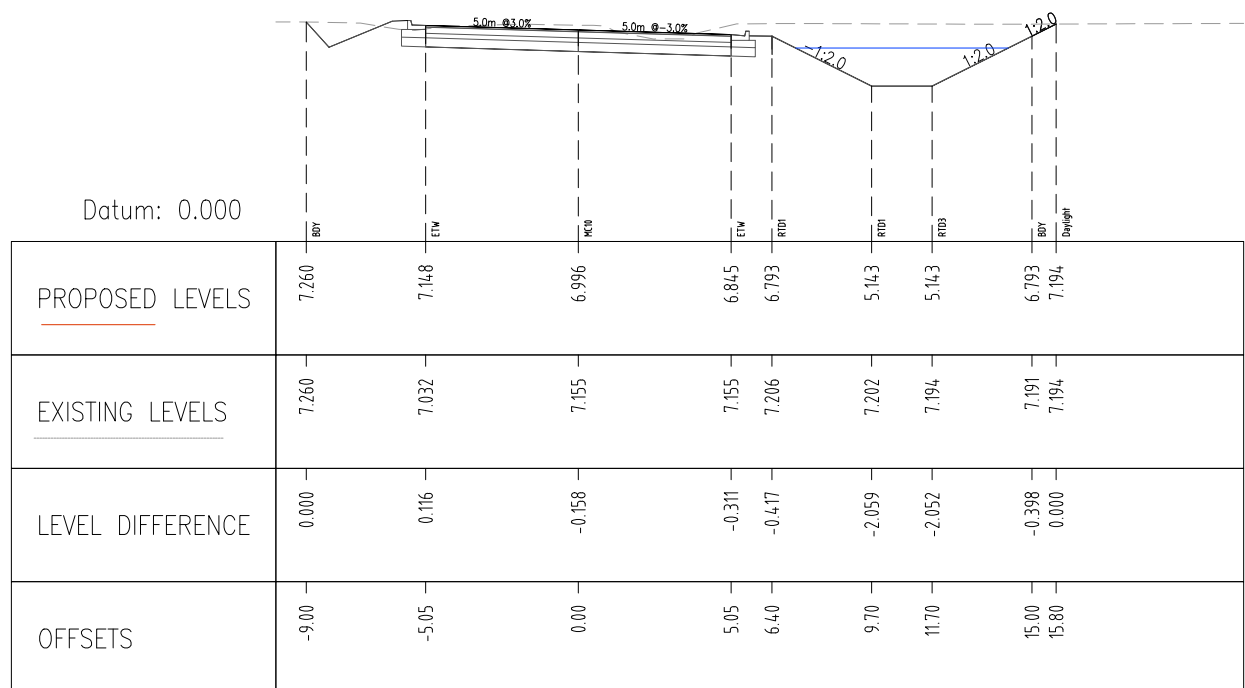
CH 120.000



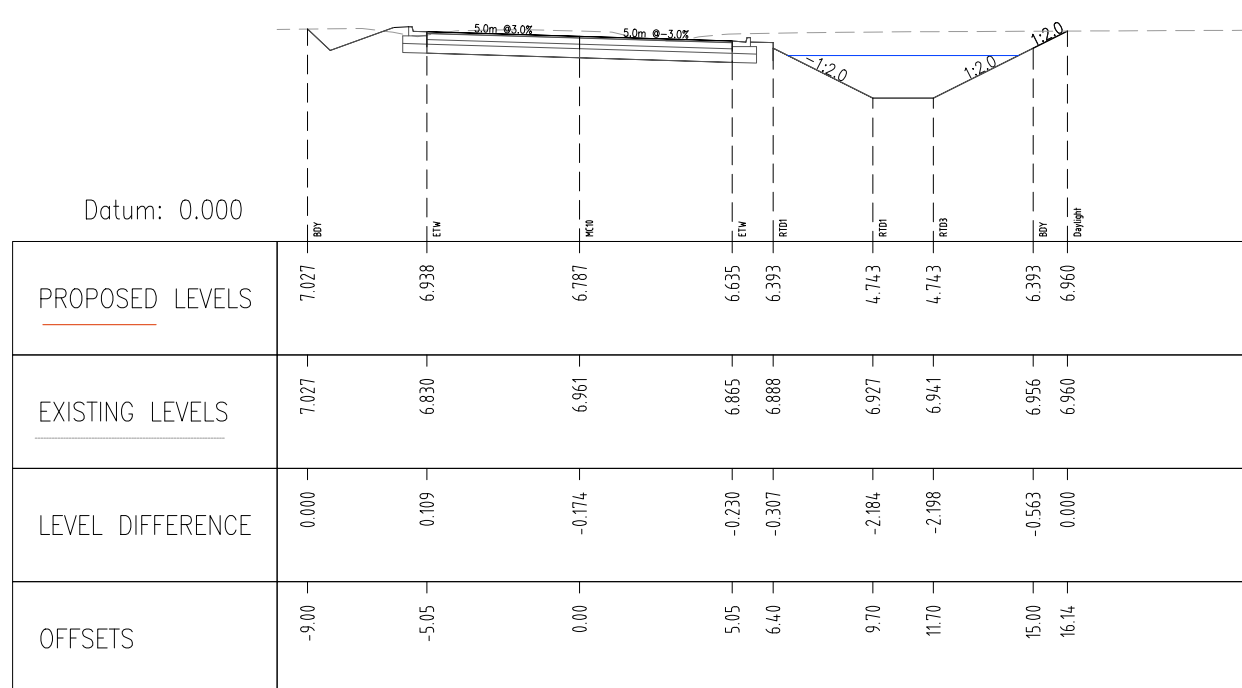
CH 180.000



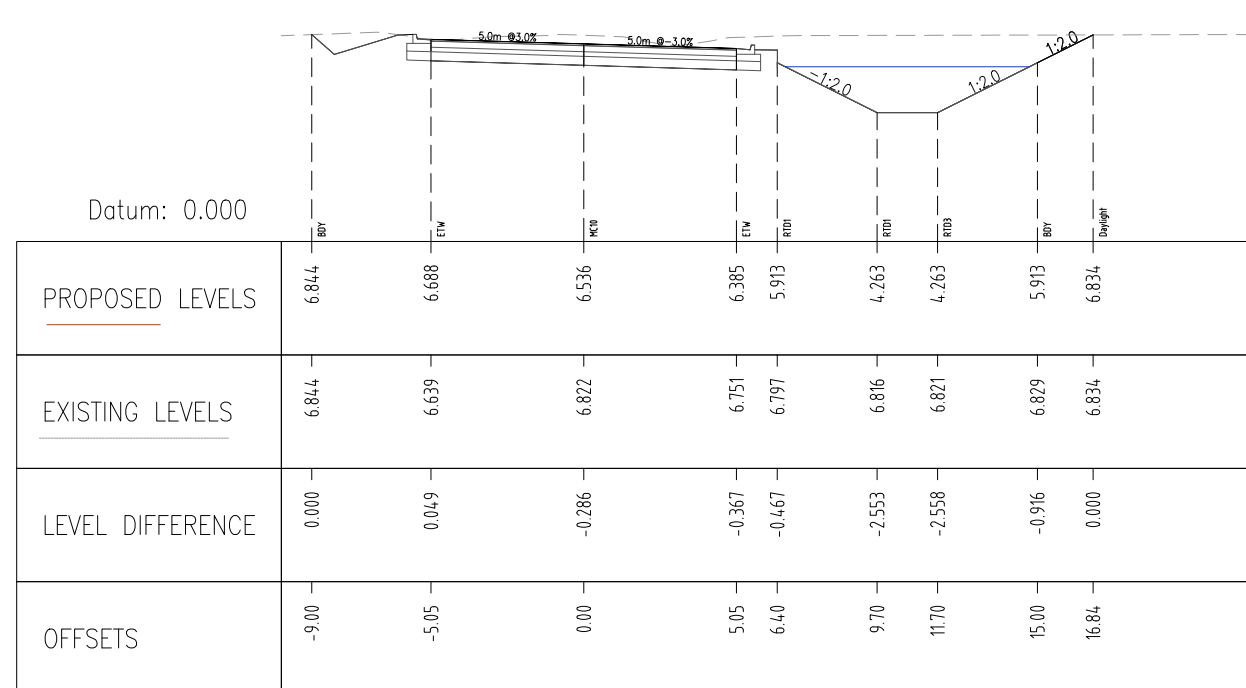
CH 240.000



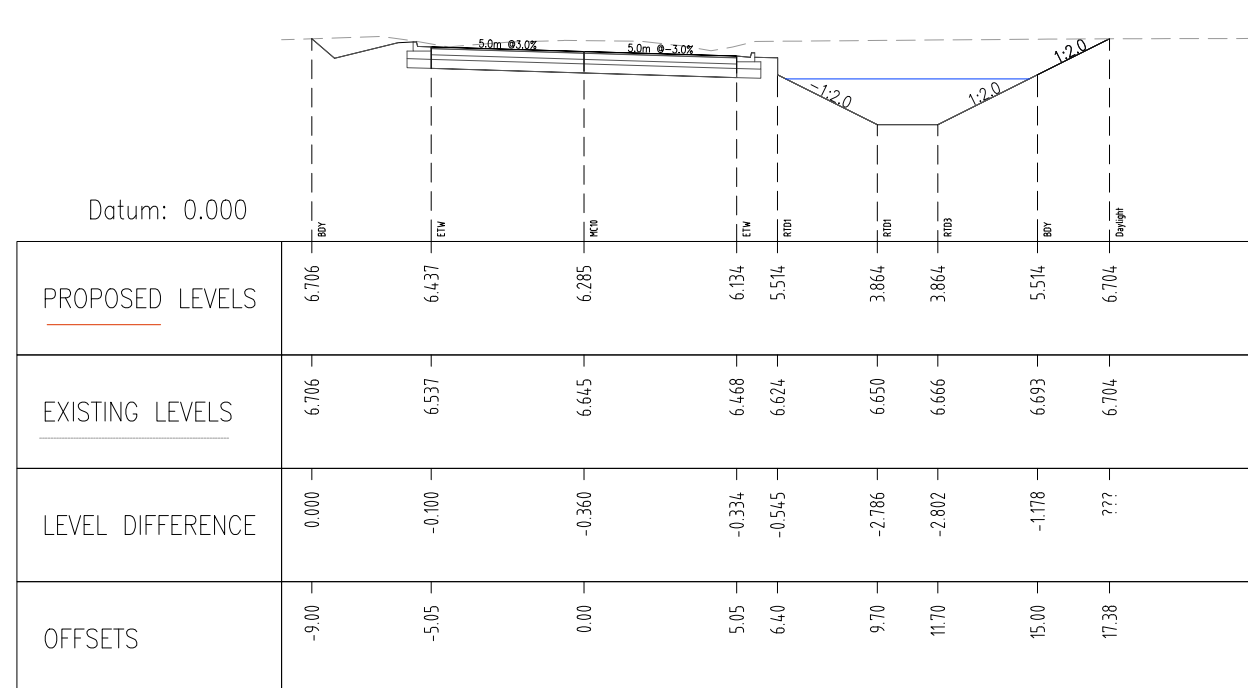
CH 50.000



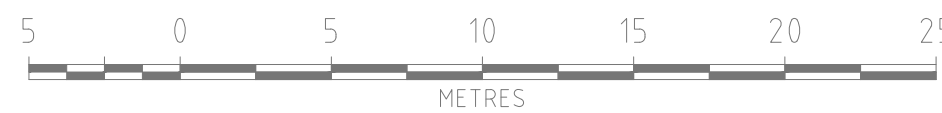
CH 100.000



CH 160.000



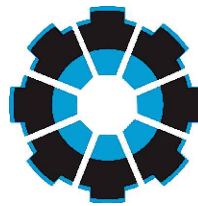
CH 220.000



1:250

File Ref: 14-1401-000000-DRAWING-1401

This drawing is confidential and shall only be used for the purposes of this project.					
REVISIONS					
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL		LES
No	BY	DATE	DESCRIPTION		APPD



Stellen

SYDNEY
P: 02 8021 9233
MELBOURNE
P: 03 9969 2673

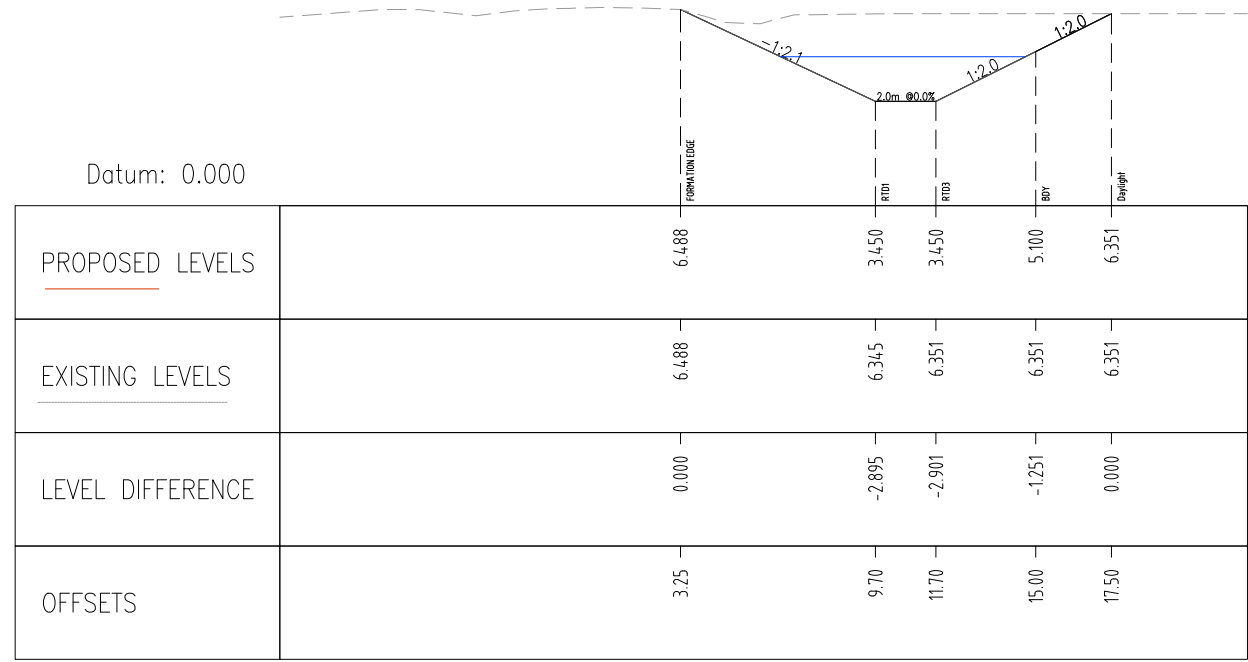
www.stellenconsulting.com.au

ABN: 61 149 095 189

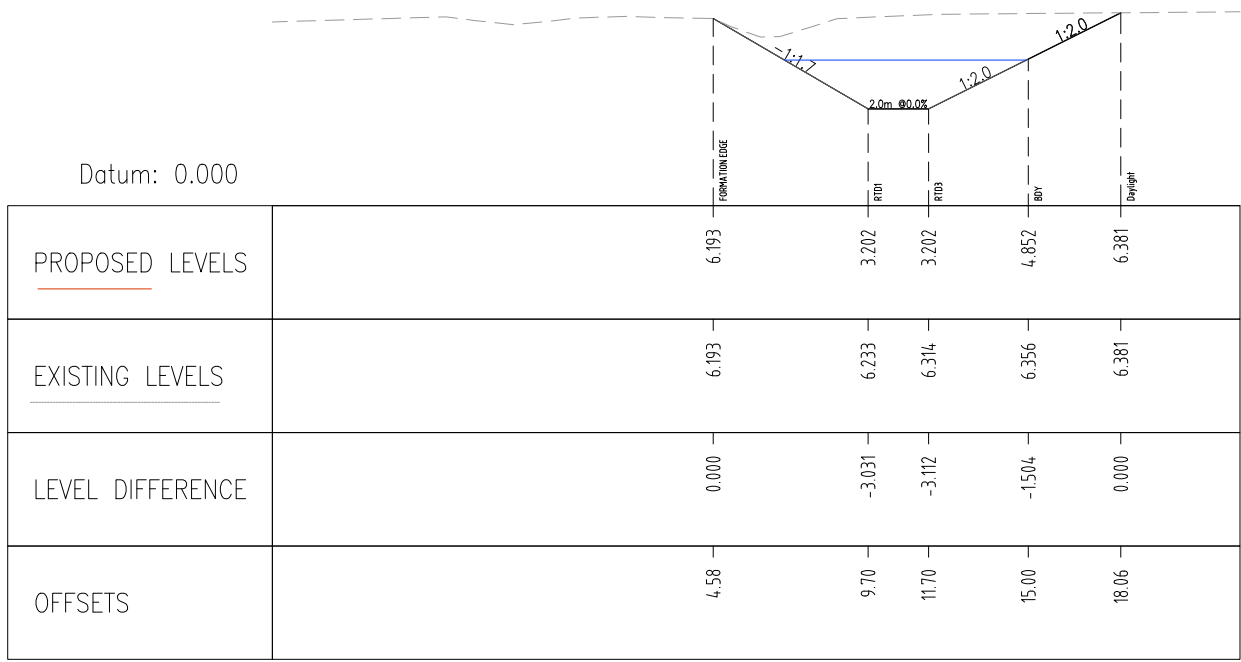
Client	PORT DOUGLAS ESTATE PTY (LTD)
--------	-------------------------------

Scales:	Plan	-	DES: GS
	Horiz.	1:250	DRW: GS
	Vert.	1:250	CHK: LES
	X-Sect.	-	APP: LES
Datum: A.H.D			

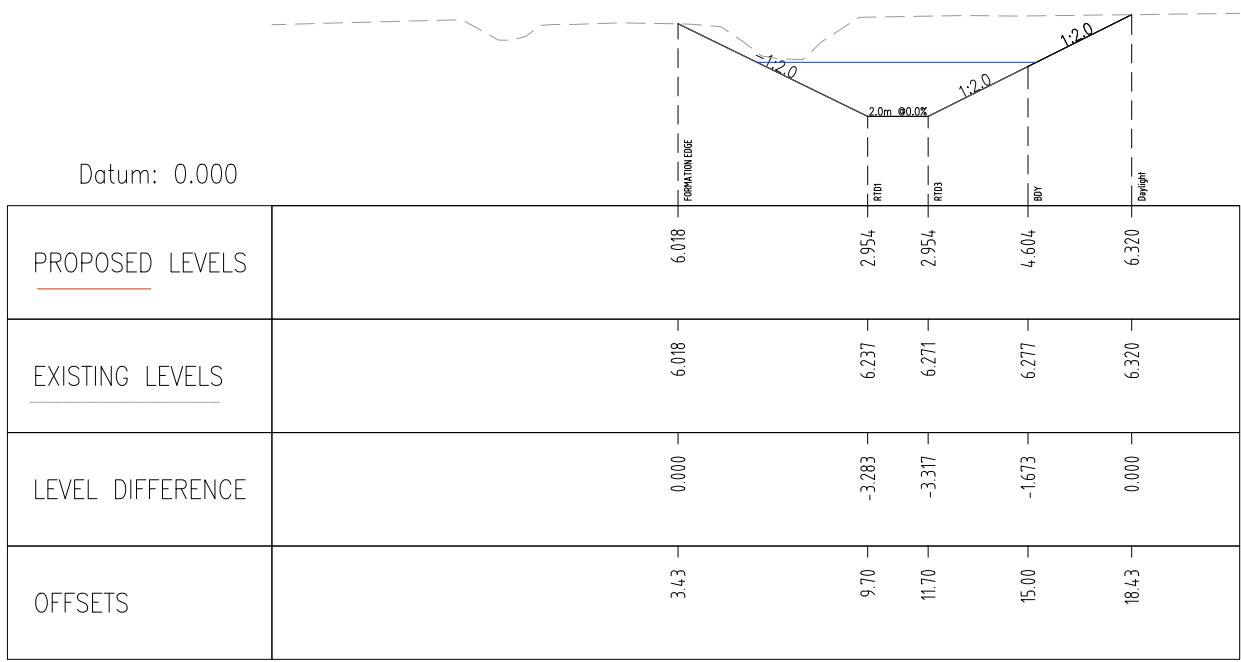
Project				
ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing				
ROAD CROSS SECTIONS SHEET 2 OF 2				
Status	Sheets	Project No	Drw No	Rev
FOR APPROVAL	-	P171508-01	CV302	A



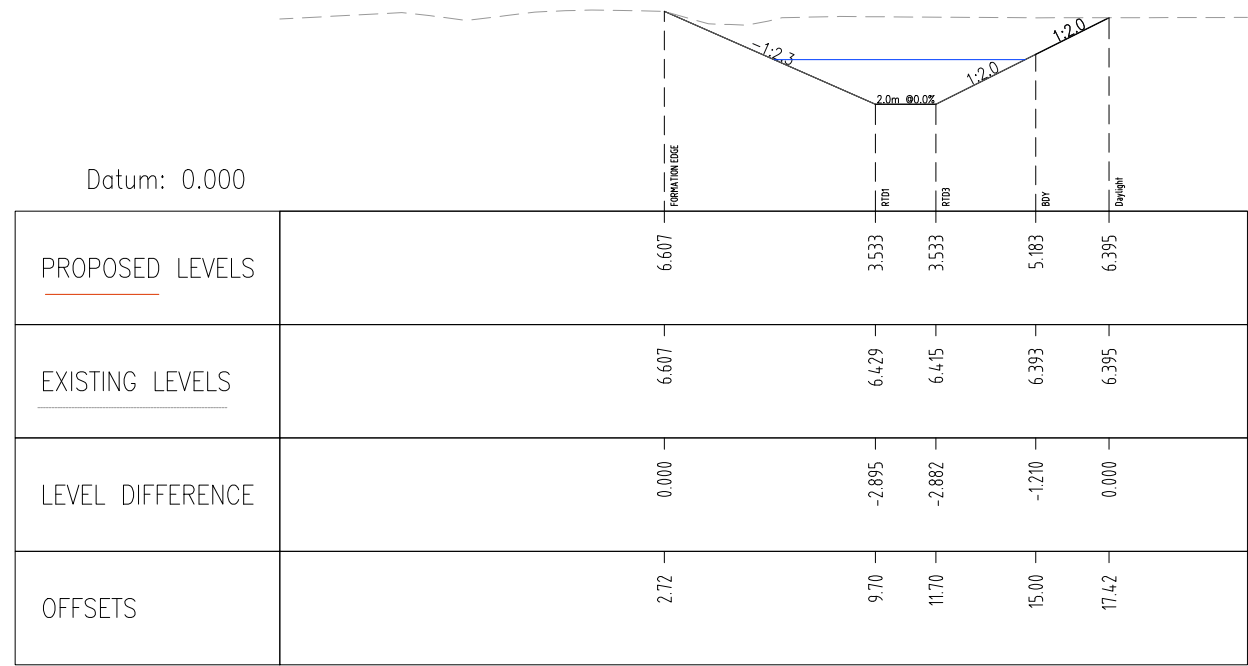
CH 320.000



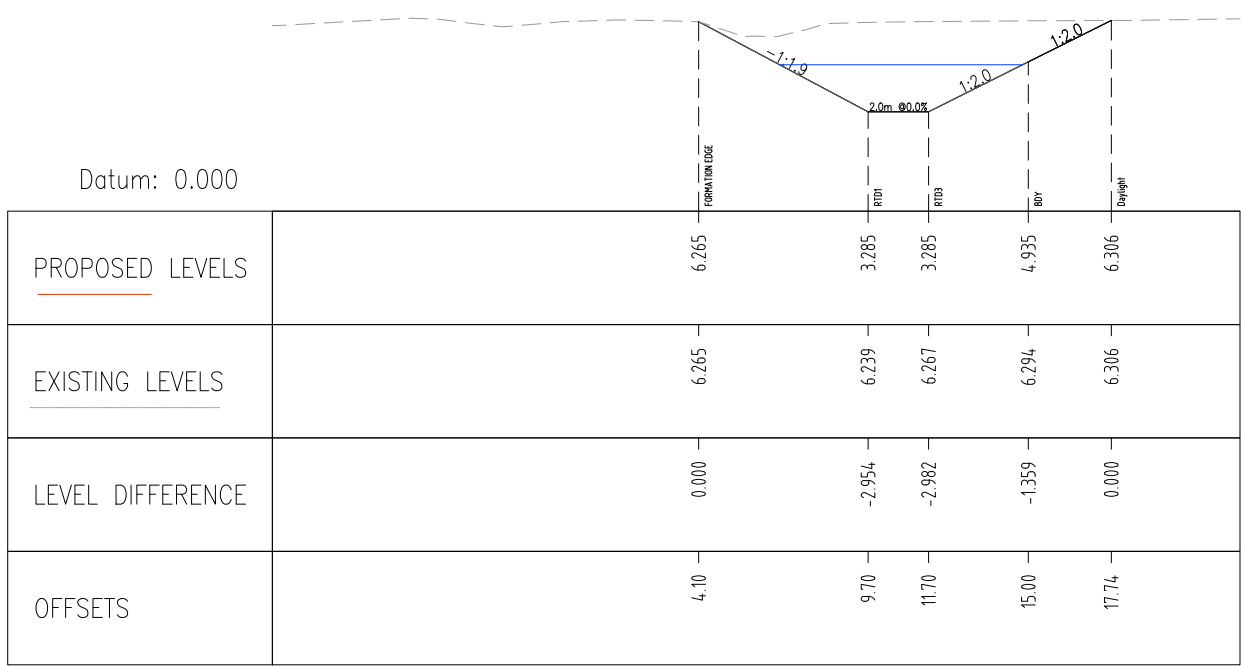
CH 380.000



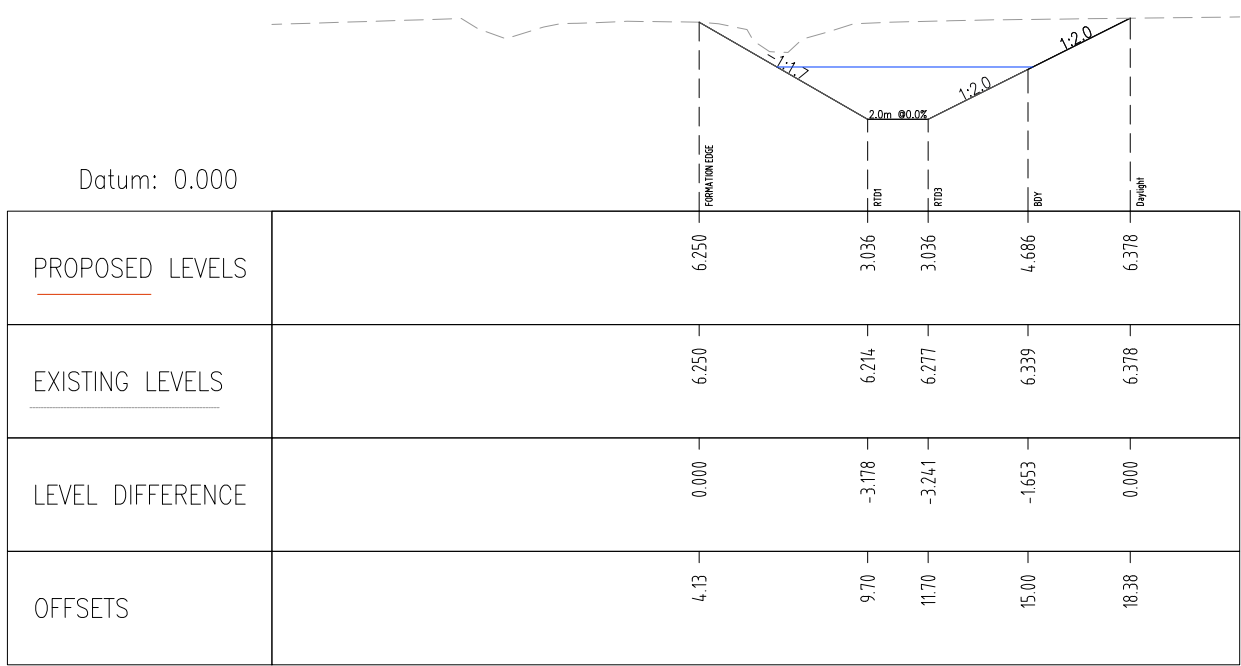
CH 440.000



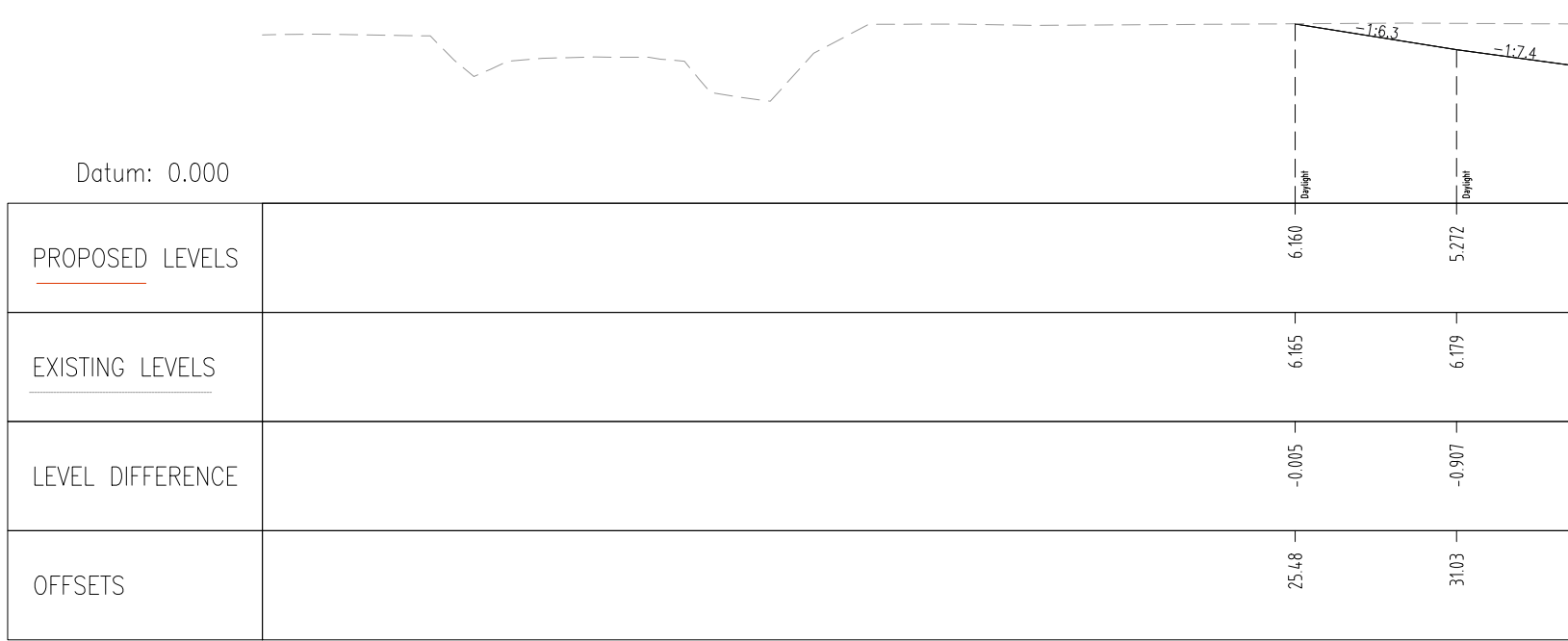
CH 300.000



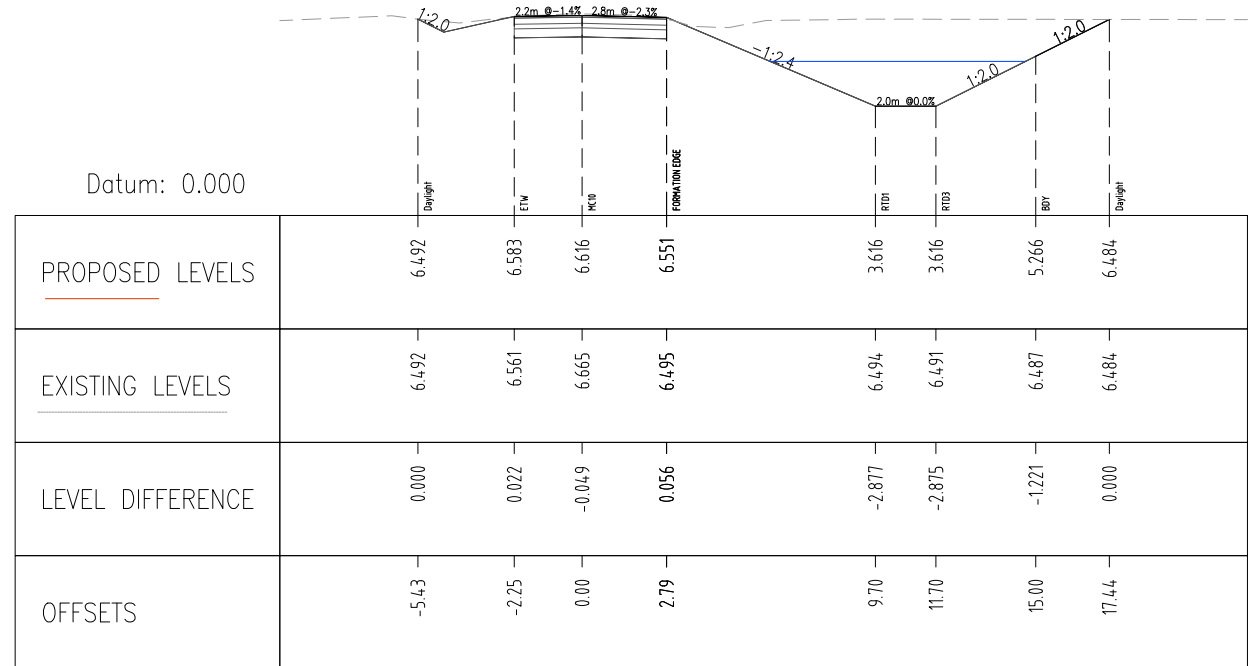
CH 360.000



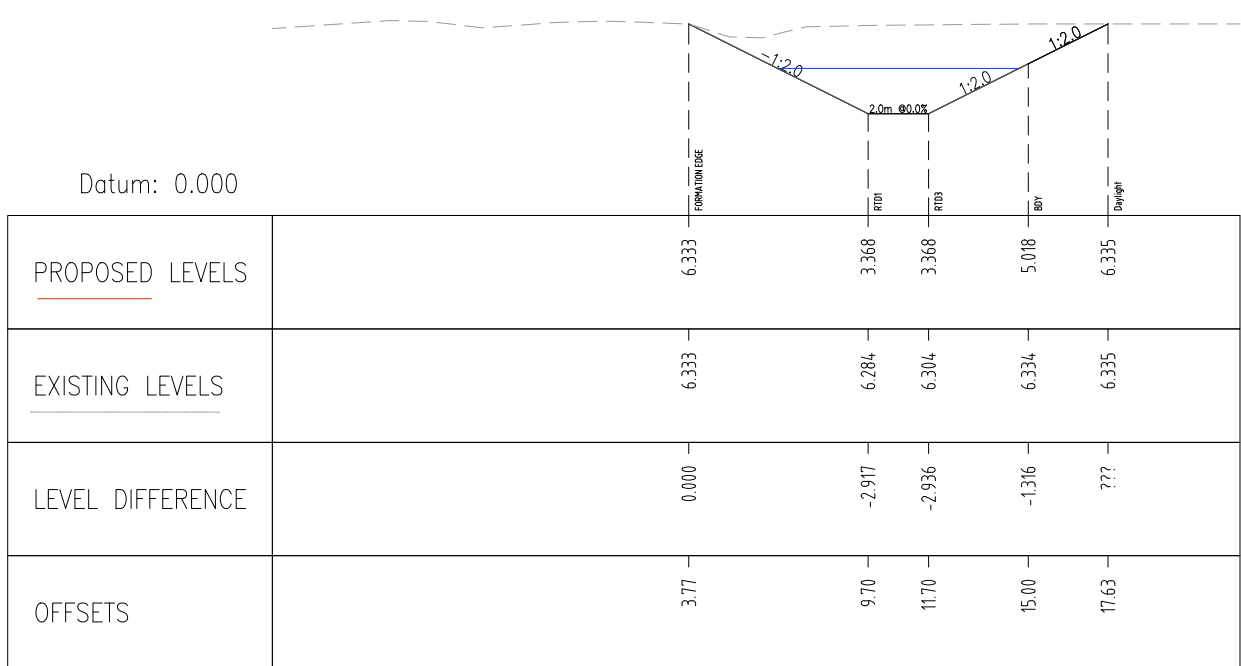
CH 420.000



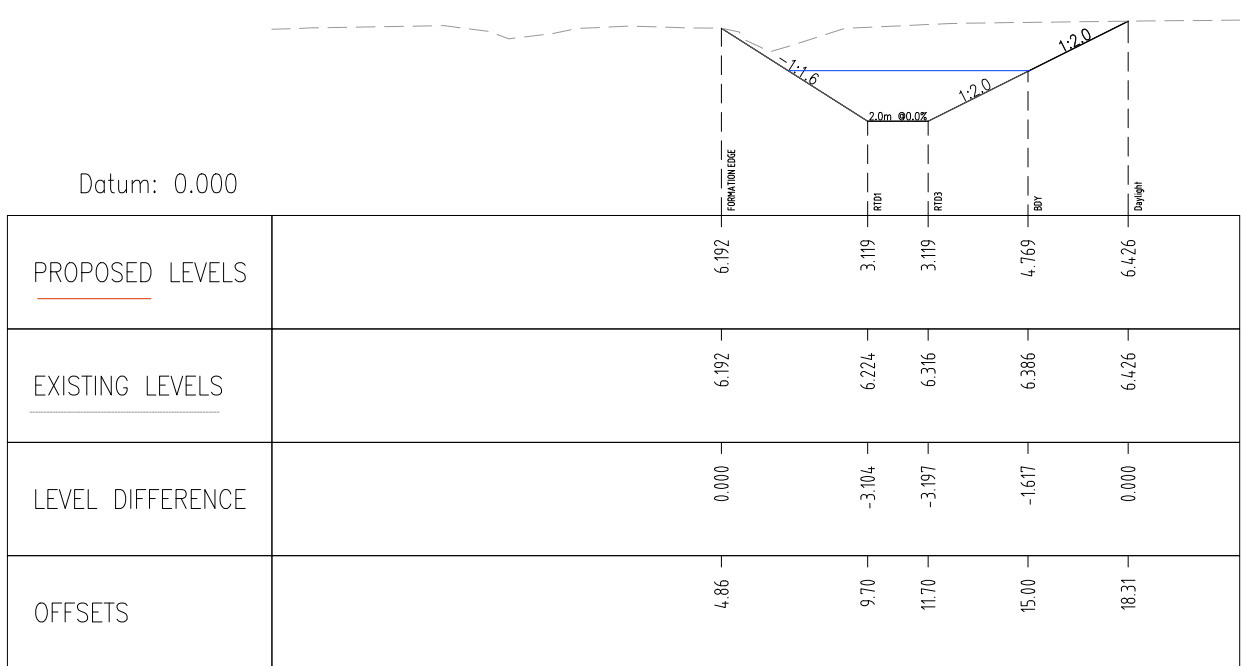
CH 480.000



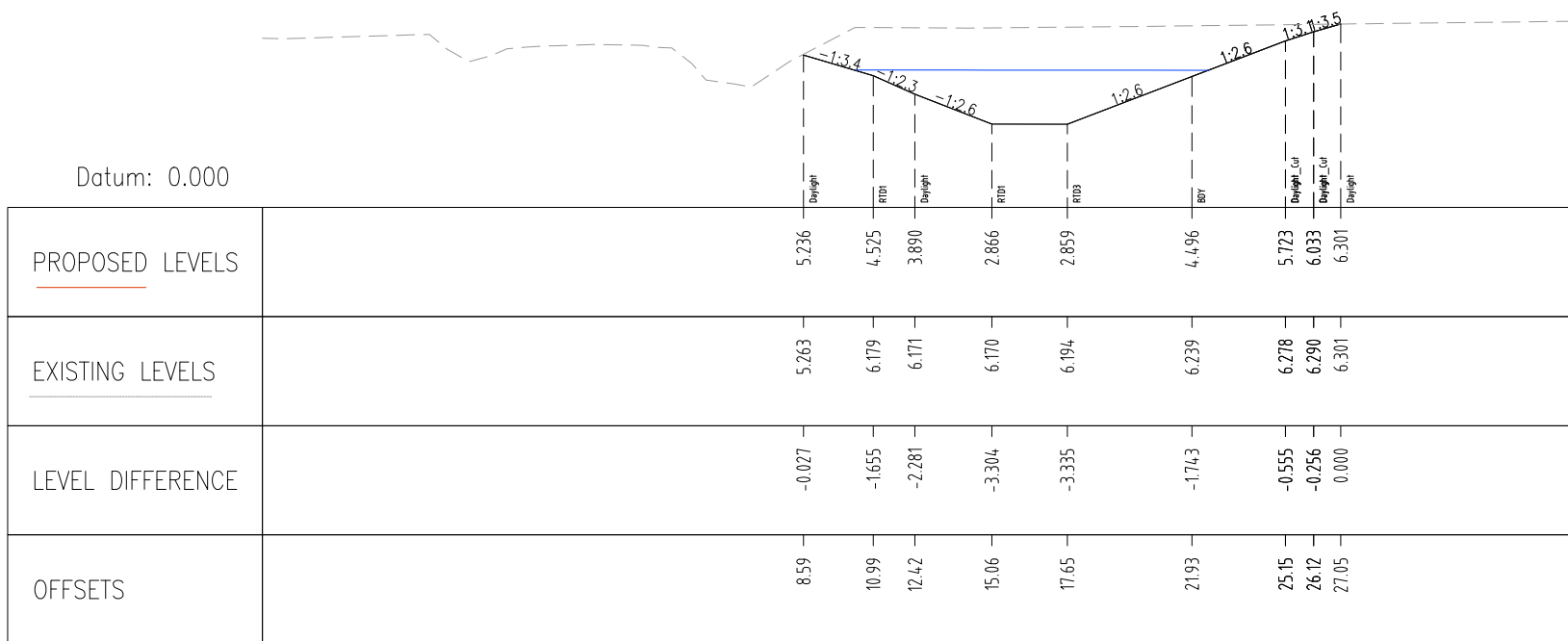
CH 280.000



CH 340.000

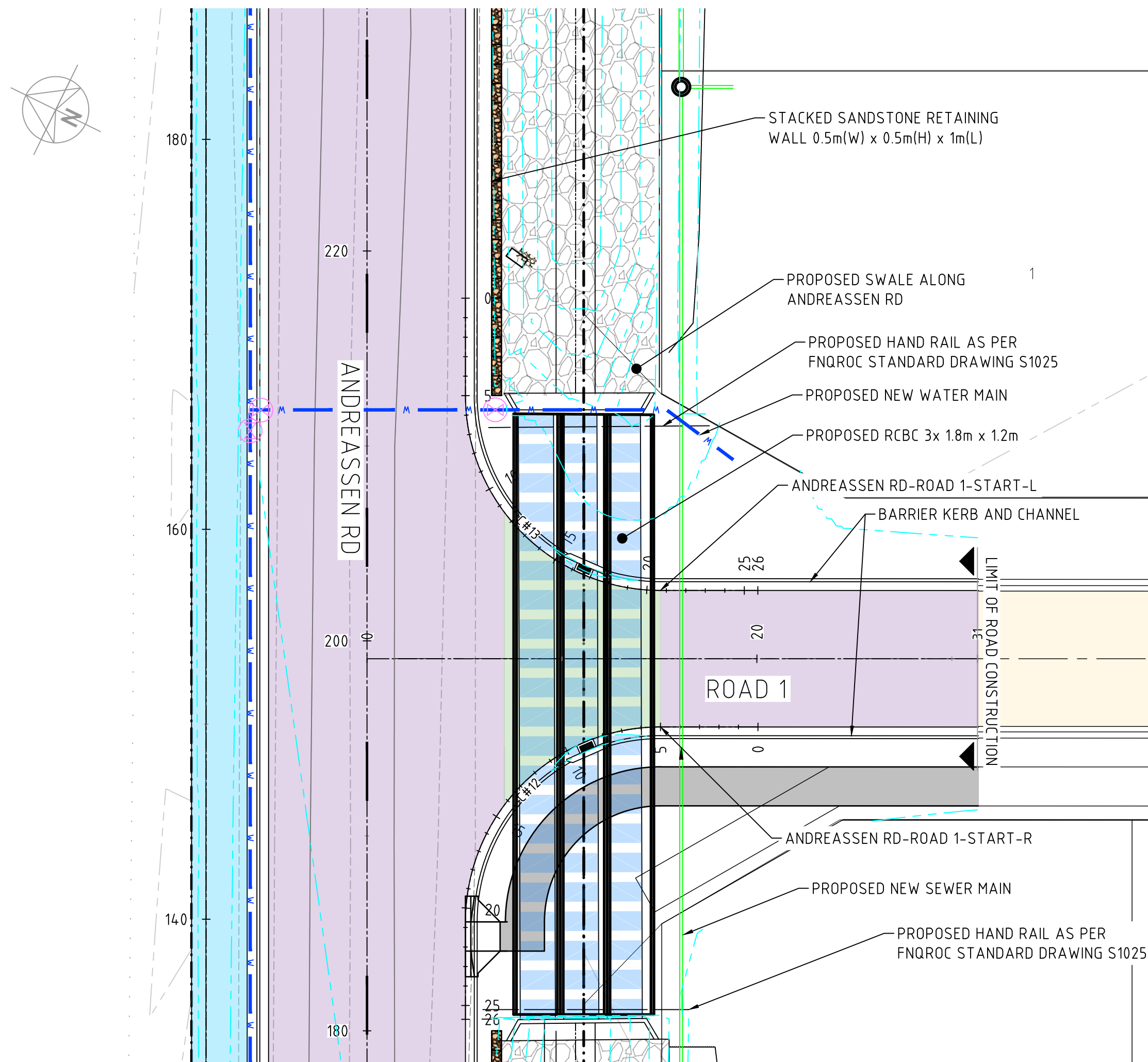


CH 400.000



CH 460.000



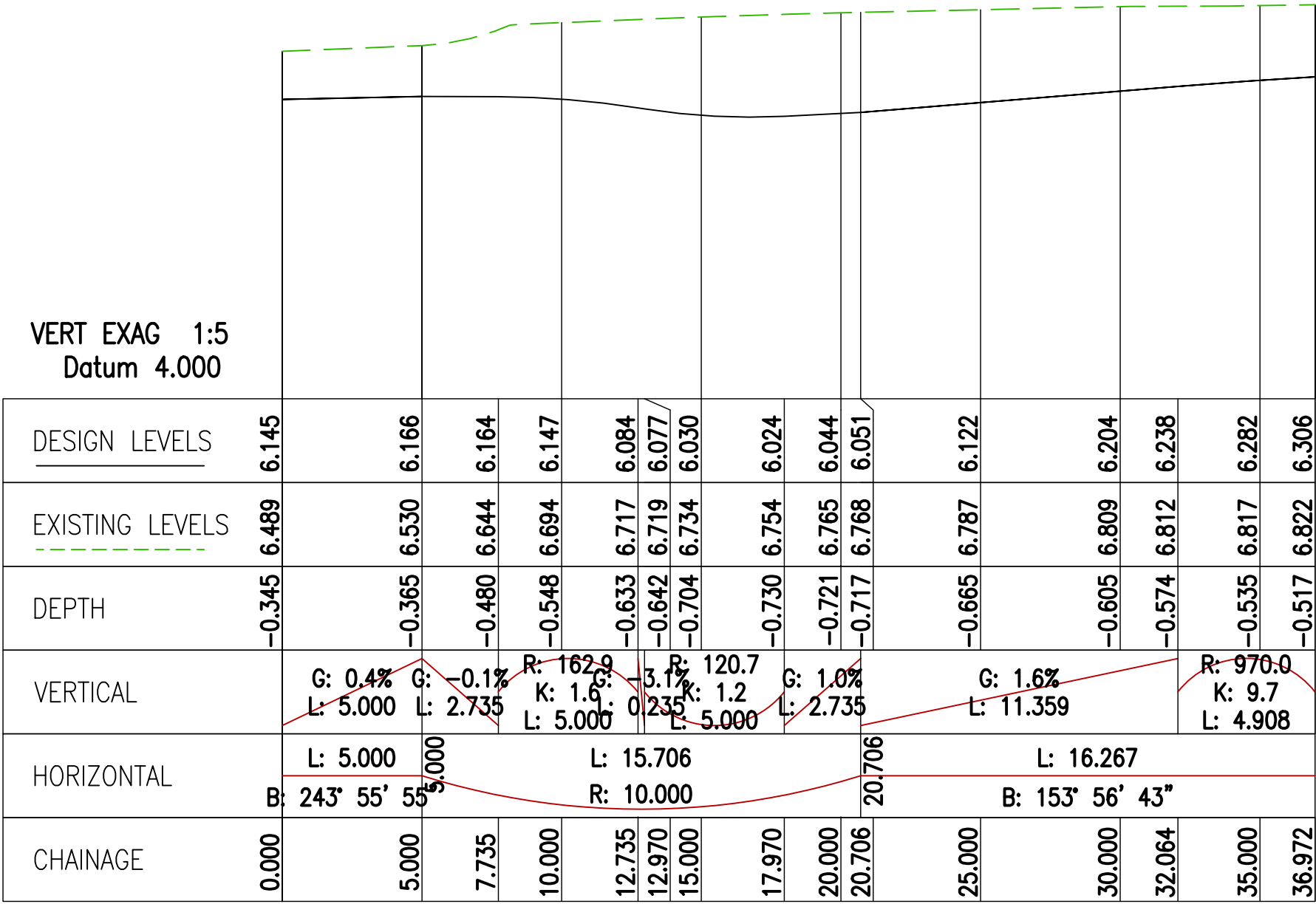


INTERSECTION LAYOUT
SCALE 1:250

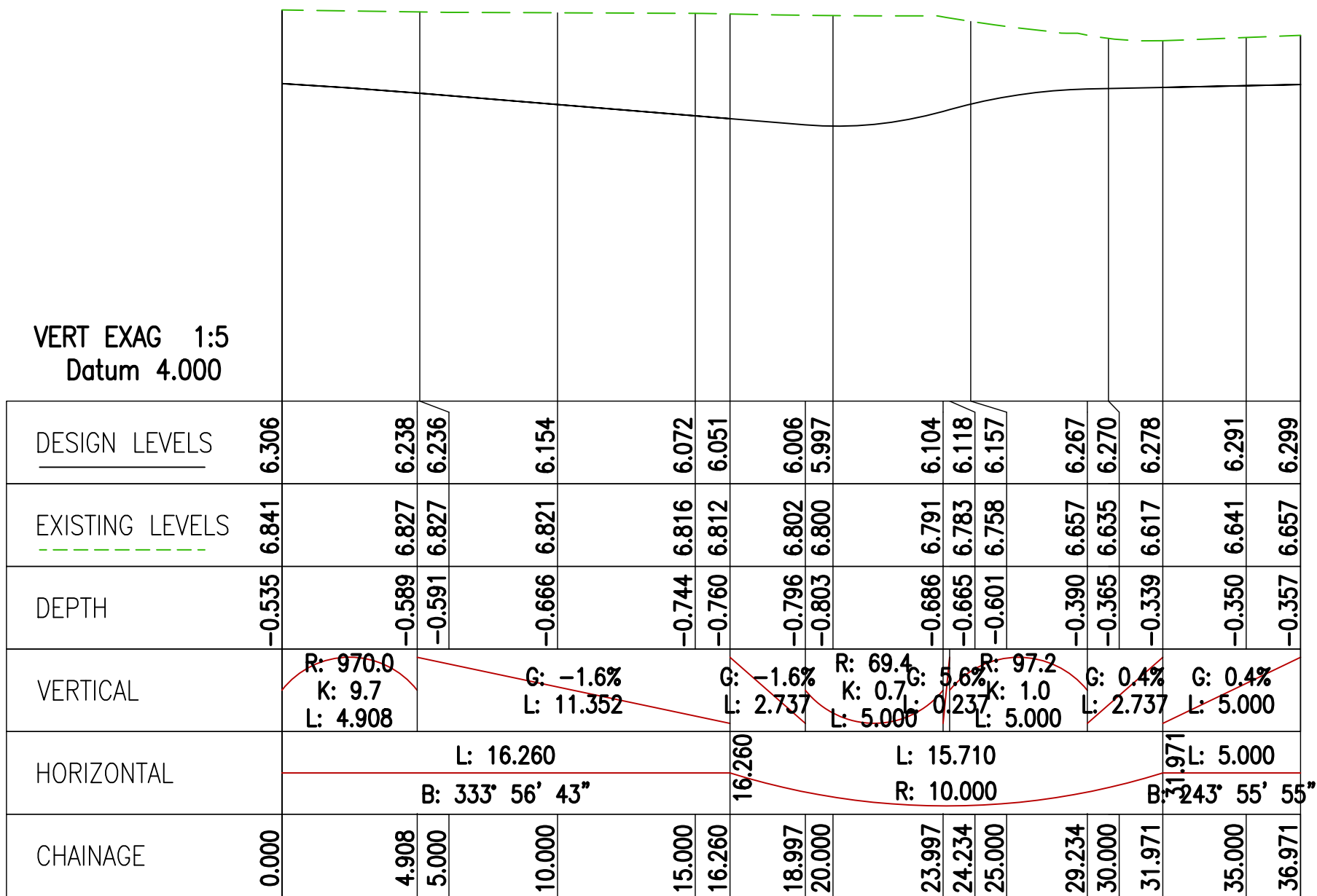
ANDREASSEN RD-ROAD 1-START-L						
Number		Chainage	Easting	Northing	Radii/A Value	Bearing
CH13	Start	4.990	337172.546	816994.1908	10.004	243°54'28" Arc 153°57'19" Arc
	End	20.696	337167.958	8169928.531		
	IP Co-ords	14.985	337163.569	8169937.512		

ANDREASSEN RD-ROAD 1-START-R						
Number		Chainage	Easting	Northing	Radii/A Value	Bearing
CH12	Start	5.000	337161.672	8169925.450	10.000	333°56'43" Arc 243°55'53" Arc
	End	20.710	337148.294	8169930.041		
	IP Co-ords	15.002	337157.279	8169934.436		

NOTE:
THIS DRAWING CONTAINS COLOR-CODED INFORMATION
ESSENTIAL FOR ACCURATE INTERPRETATION. PLEASE ENSURE
THIS DRAWING IS PRINTED IN COLOR. PRINTING IN BLACK AND
WHITE MAY RESULT IN MISCOMMUNICATION OR ERRORS.



ANDREASSEN RD-ROAD 1-START-L LONG SECTION



ANDREASSEN RD-ROAD 1-START-R LONG SECTION



This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS				
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL	LES
No.	BY	DATE	DESCRIPTION	APPD



SYDNEY
P: 02 8021 9233
MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au

ABN: 61 149 095 189

Client

PORT DOUGLAS ESTATE PTY (LTD)

Scales:

@A1

Plan 1:250
Horiz. 1:250
Vert. 1:50
X-Sect. -

DES: GS
DRW: GS
CHK: LES
APP: LES

Datum: A.H.D

Project

ANDREASSEN ROAD DEVELOPMENT
PROPOSED ANDREASSEN ROAD UPGRADES

Drawing

INTERSECTION LAYOUT SHEET 1 OF 1

Status

FOR APPROVAL

Sheets

-

Project No.

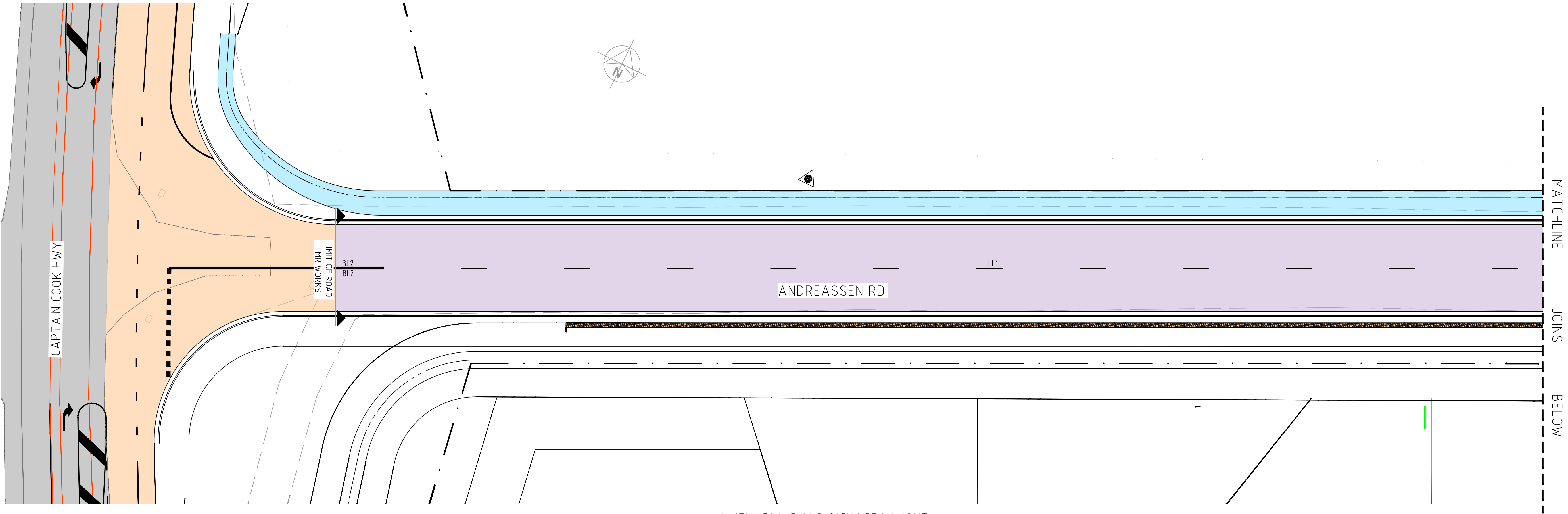
P171508-01

Drw No.

CV400

Rev.

A

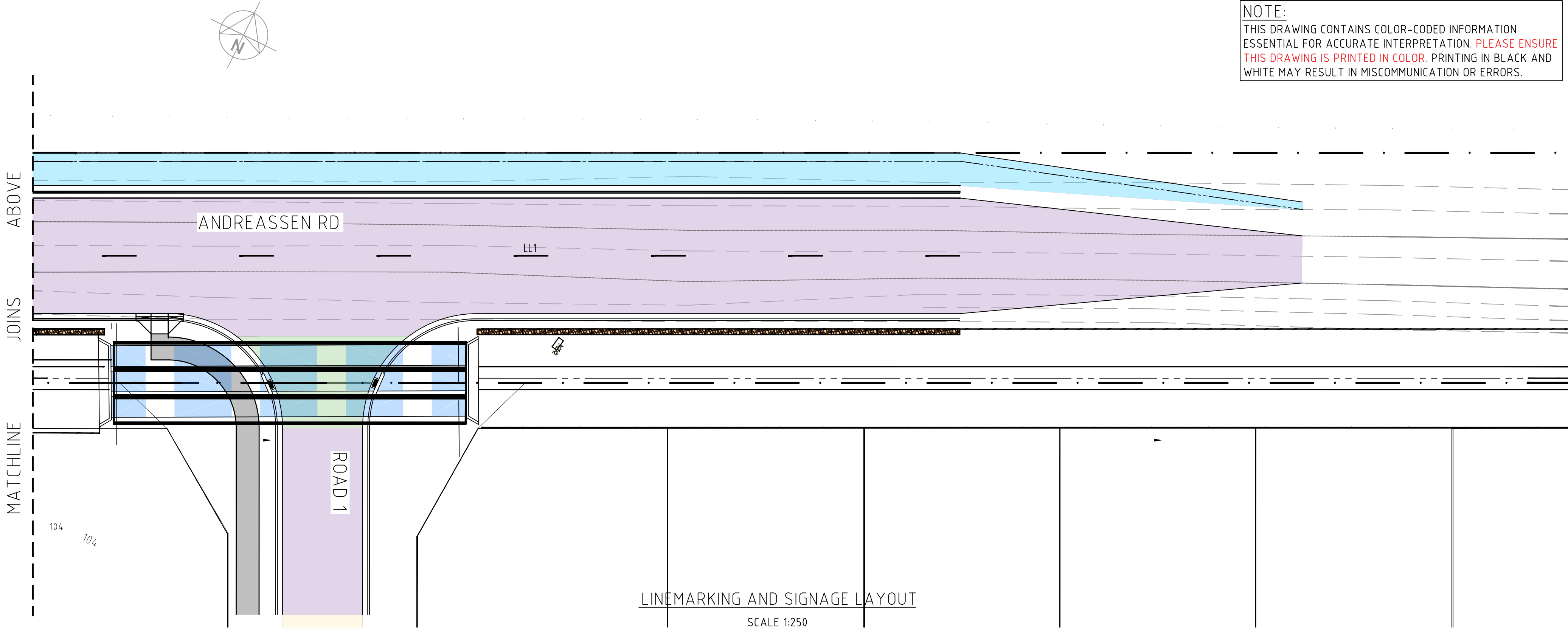


LINEMARKING AND SIGNAGE LAYOUT

SCALE 1:250

PAVEMENT MARKING LEGEND

LINE TYPE		WIDTH (mm)	PAINT/GAP RATIO (mm)	COLOUR
DL1		100	3000/9000	White
DL2		100	9000/3000	White
DL3		100	11000/1000	White
BL1		100	3000/9000	White
BL2		100		White
BL3		100		White
BL4		200		White
LL1		100	3000/9000	White
LL2		100	9000/3000	White
LL3		150	9000/3000	White
LL4		100		White
EL1		150		White
EL2		200		White
CL1		150	3000/1000	White
CL2		200	3000/1000	White
CL3		150	600/600	White
OL1		150		White
OL2		200		White
TL		100	600/600	White

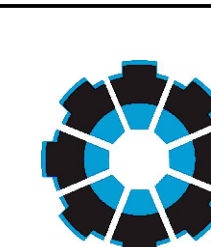


LINEMARKING AND SIGNAGE LAYOUT

SCALE 1:250

NOTE:
THIS DRAWING CONTAINS COLOR-CODED INFORMATION
ESSENTIAL FOR ACCURATE INTERPRETATION. PLEASE ENSURE
THIS DRAWING IS PRINTED IN COLOR. PRINTING IN BLACK AND
WHITE MAY RESULT IN MISCOMMUNICATION OR ERRORS.

This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS				
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL	LES
No.	BY	DATE	DESCRIPTION	APPD

**Stellen**

SYDNEY
P: 02 8021 9233

MELBOURNE
P: 03 9969 2673

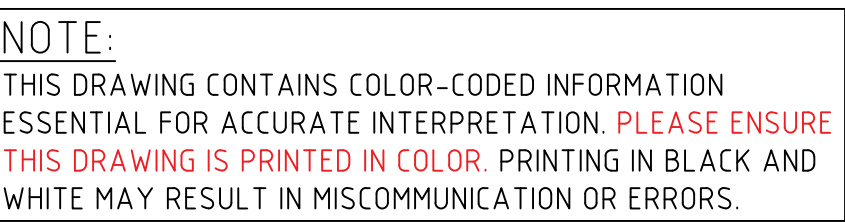
www.stellenconsulting.com.au

ABN: 61 149 095 189

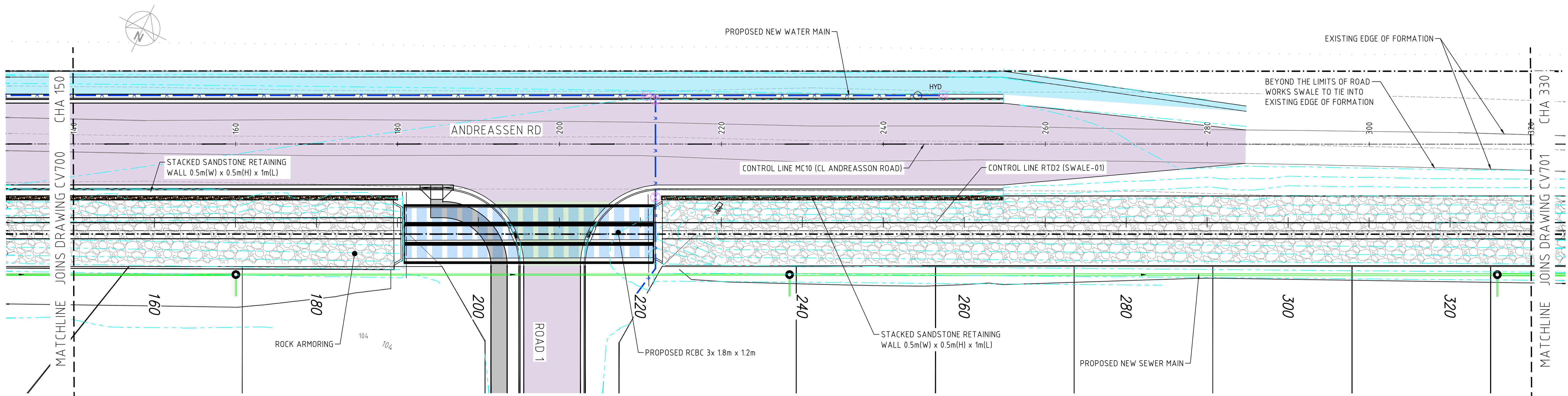
Client
PORT DOUGLAS ESTATE PTY (LTD)

Scales:
@A1
Plan 1:250
Horiz. -
Vert. -
X-Sect. -
DES: GS
DRW: GS
CHK: LES
APP: LES
Datum: A.H.D.

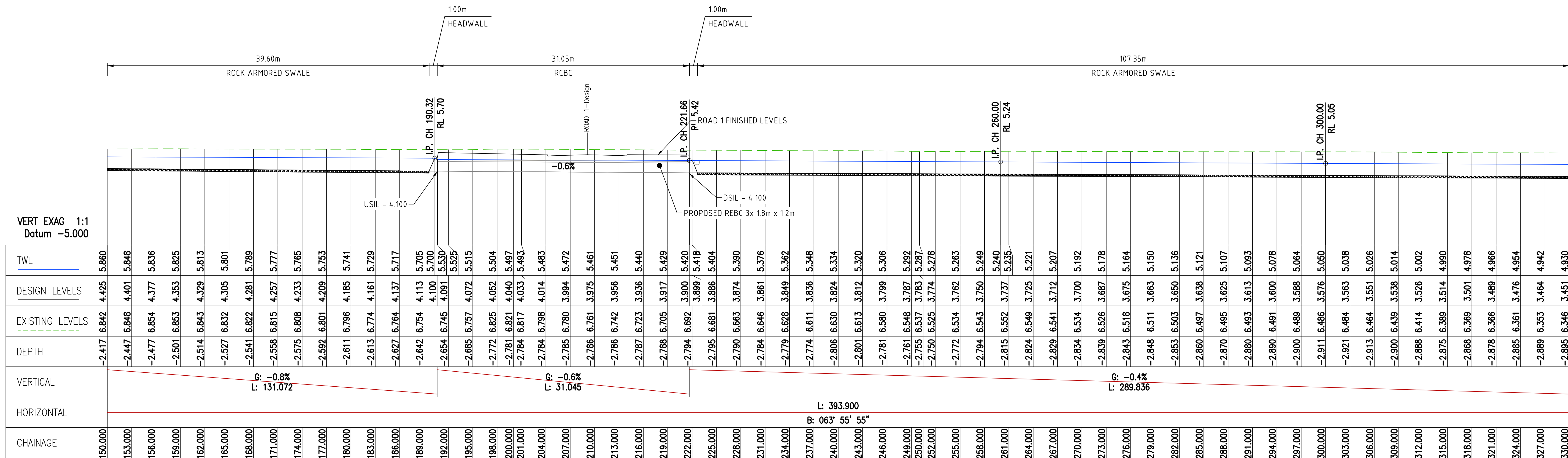
Project ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing LINEMARKING AND SIGNAGE LAYOUT SHEET 1 OF 1				
Status FOR APPROVAL	Sheets -	Project No. P171508-01	Drw No. CV600	Rev. A

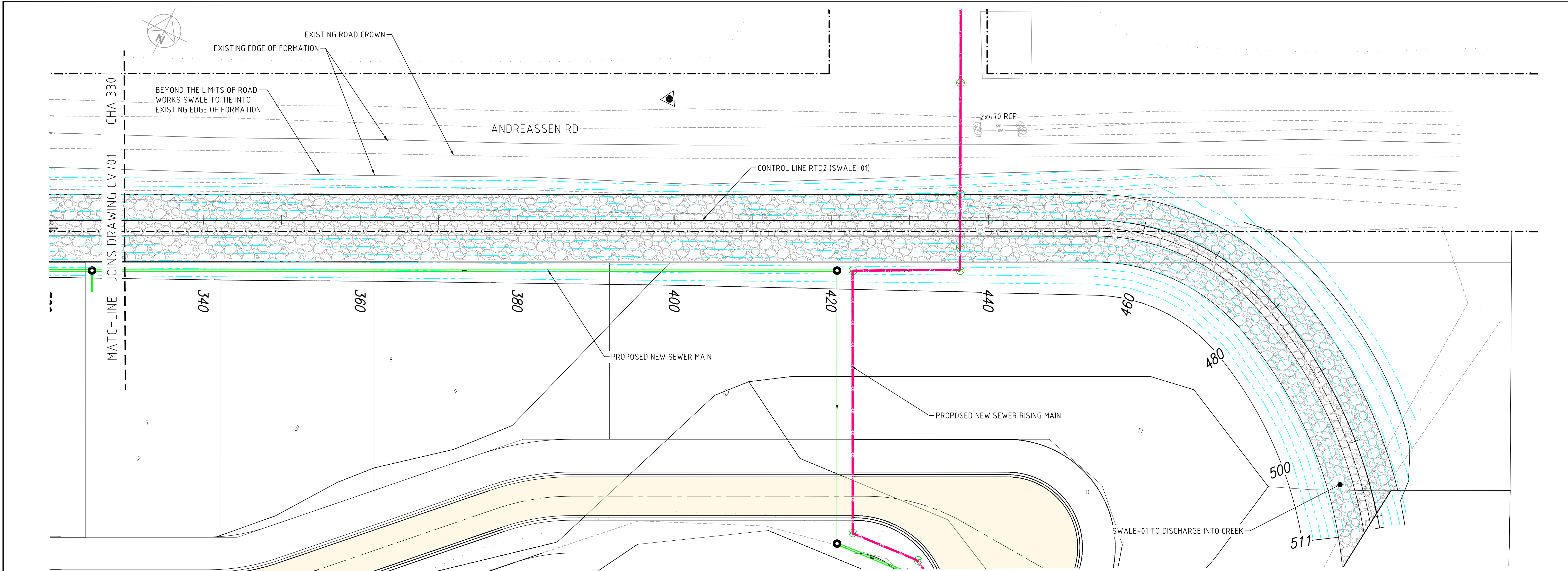


Project				
ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing				
SWALE-01 LAYOUT SHEET 1 OF 3				
Status	Sheets	Project No.	Drw No.	Rev.
FOR APPROVAL	-	P171508-01	CV700	A



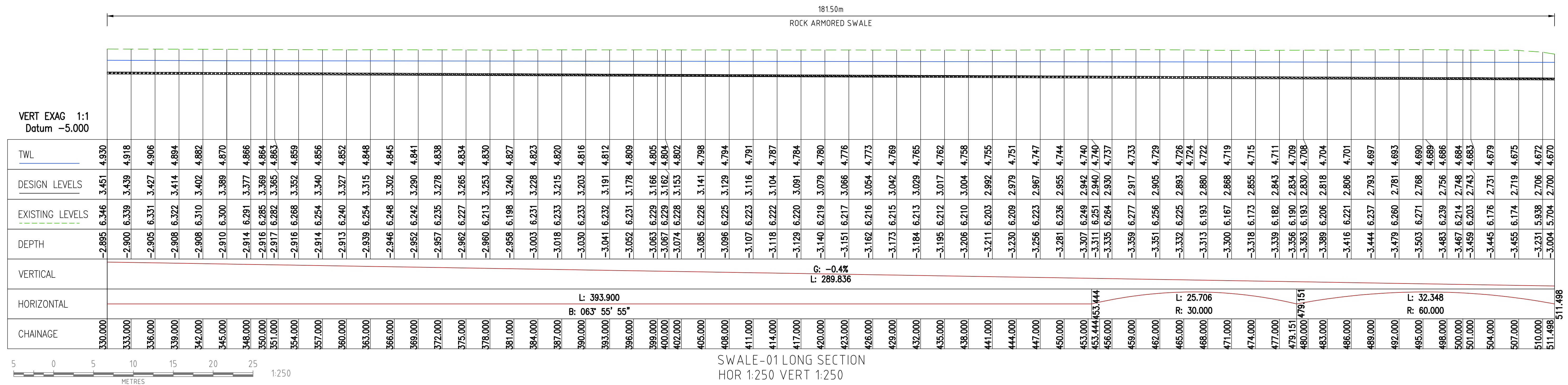
SWALE -01 LAYOUT
SCALE 1:250



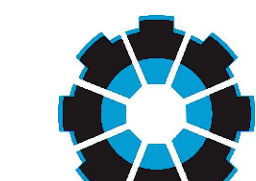


NOTE:
THIS DRAWING CONTAINS COLOR-CODED INFORMATION
ESSENTIAL FOR ACCURATE INTERPRETATION. PLEASE ENSURE
THIS DRAWING IS PRINTED IN COLOR. PRINTING IN BLACK AND
WHITE MAY RESULT IN MISCOMMUNICATION OR ERRORS.

SWALE -01 LAYOUT
SCALE 1:250



This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS	No.	BY	DATE	DESCRIPTION
	A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL
				APPD
				LES

**Stellen**

SYDNEY
P: 02 8021 9233

MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au

ABN: 61 149 095 189

Client

PORT DOUGLAS ESTATE PTY (LTD)

Scales:

@A1

Plan 1:250
Horiz. -
Vert. -
X- Sect. -

DES: GS
DRW: GS
CHK: LES
APP: LES

Datum: A.H.D

Project

ANDREASSEN ROAD DEVELOPMENT
PROPOSED ANDREASSEN ROAD UPGRADES

Drawing

SWALE-01 LAYOUT SHEET 3 OF 3

Status

FOR APPROVAL

Sheets

-

Project No.

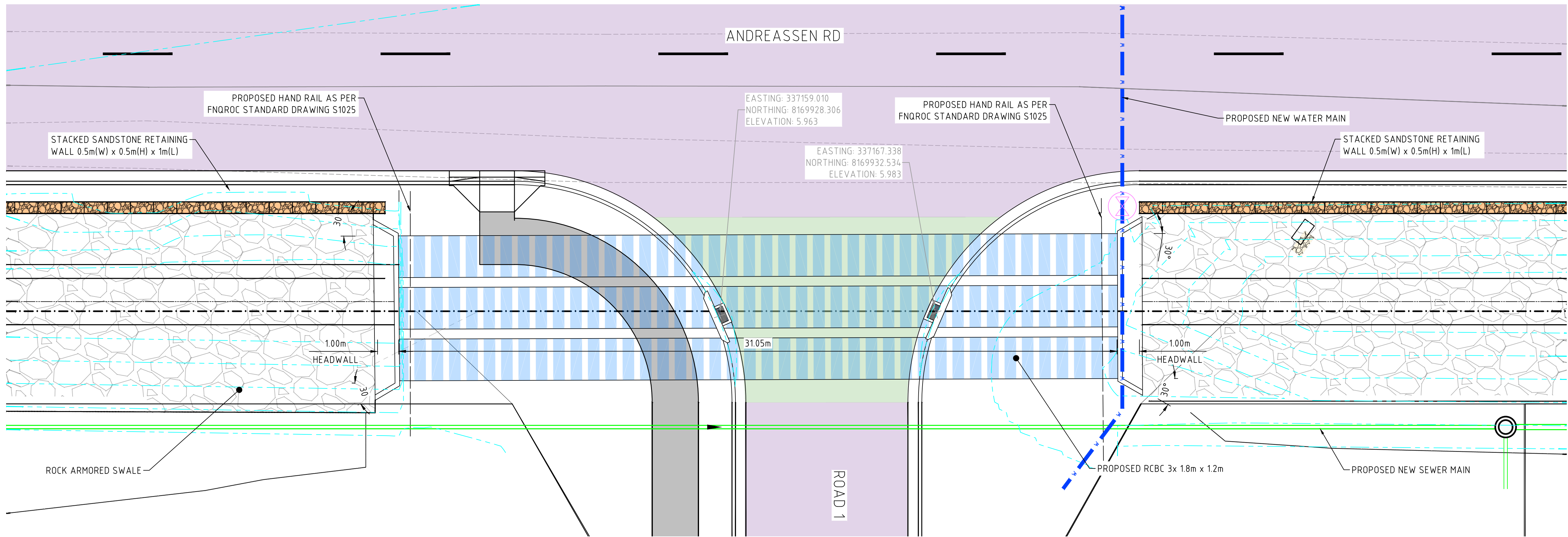
P171508-01

Drw No.

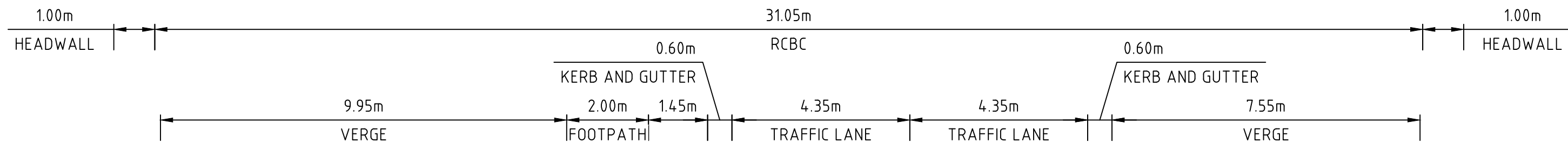
CV702

Rev.

A



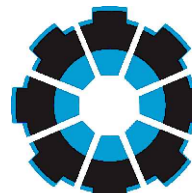
CULVERT LAYOUT
SCALE 1:100



CULVERT CROSS SECTION
HOR 1:100 VERT 1:100

NOTE:
THIS DRAWING CONTAINS COLOR-CODED
INFORMATION ESSENTIAL FOR ACCURATE
INTERPRETATION. PLEASE ENSURE THIS
DRAWING IS PRINTED IN COLOR. PRINTING IN
BLACK AND WHITE MAY RESULT IN
MISCOMMUNICATION OR ERRORS.

This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS				
A	GS	28/08/26	ISSUED FOR OPERATIONAL WORKS APPROVAL	LES
No.	BY	DATE	DESCRIPTION	APPD

**Stellen**

SYDNEY
P: 02 8021 9233

MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au
ABN: 61 149 095 189

Client	PORT DOUGLAS ESTATE PTY (LTD)
--------	-------------------------------

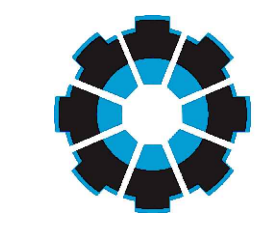
Scales:	Plan 1:100	DES: GS
@A1	Horiz. 1:100	DRW: GS
	Vert. 1:100	CHK: LES
	X-Sect. -	APP: LES
Datum:	A.H.D	

Project	ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES			
Drawing	CULVERT LAYOUT AND DETAILS			
Status	FOR APPROVAL	Sheets	-	Project No. P171508-01
Drw No.	CV800	Rev.	A	



NOTE:
THIS DRAWING CONTAINS COLOR-CODED INFORMATION
ESSENTIAL FOR ACCURATE INTERPRETATION. PLEASE ENSURE
THIS DRAWING IS PRINTED IN COLOR. PRINTING IN BLACK AND
WHITE MAY RESULT IN MISCOMMUNICATION OR ERRORS.

This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS				
A	GS	21/08/26	ISSUED FOR AUTHORITY APPROVAL	LES
No.	BY	DATE	DESCRIPTION	APPD

**Stellen**

SYDNEY
P: 02 8021 9233

MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au

ABN: 61 149 095 189

Client

PORT DOUGLAS ESTATE PTY (LTD)

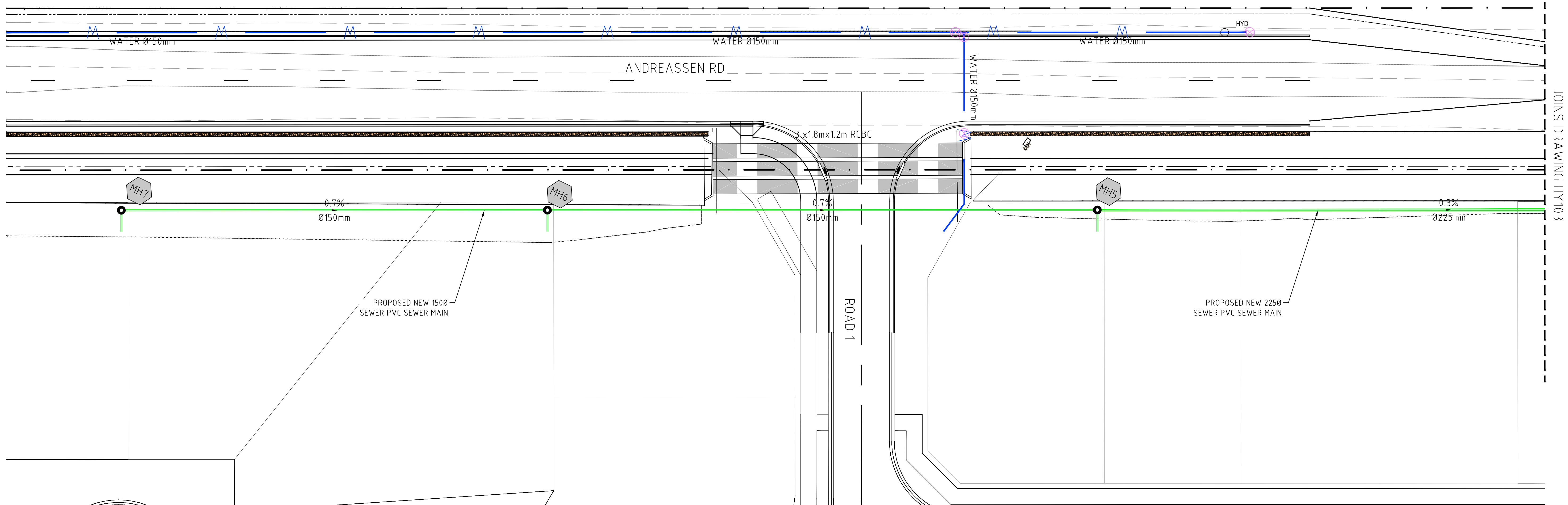
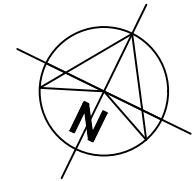
Scales:

@A1

Datum: A.H.D.

Plan	1:1000	DES: GS
Horiz.	-	DRW: GS
Vert.	-	CHK: LES
X-Sect.	-	APP: LES

Project				
ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing				
SEWER GENERAL ARRANGEMENT				
Status	Sheets	Project No.	Drw No.	Rev.
S33 APPROVAL	-	P171508-01	HY101	A

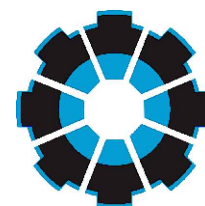


JOINS DRAWING HY103



NOTE:
THIS DRAWING CONTAINS COLOR-CODED INFORMATION
ESSENTIAL FOR ACCURATE INTERPRETATION. PLEASE ENSURE
THIS DRAWING IS PRINTED IN COLOR. PRINTING IN BLACK AND
WHITE MAY RESULT IN MISCOMMUNICATION OR ERRORS.

This drawing is confidential and shall only be used for the purposes of this project.					
REVISIONS					
A	GS	21/08/26	ISSUED FOR AUTHORITY APPROVAL		LES
No.	BY	DATE	DESCRIPTION		APPD



Stellen

SYDNEY
P: 02 8021 9233
MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au

ABN: 61 149 095 189

Client

PORT DOUGLAS ESTATE PTY (LTD)

Scales:

Plan 1:250
Horiz. -
Vert. -
X-Sect. -
DES: GS
DRW: GS
CHK: LES
APP: LES

Datum: A.H.D.

Project

ANDREASSEN ROAD DEVELOPMENT
PROPOSED ANDREASSEN ROAD UPGRADES

Drawing

SEWER LAYOUT SHEET 1 OF 5

Status

S33 APPROVAL

Sheets

-

Project No.

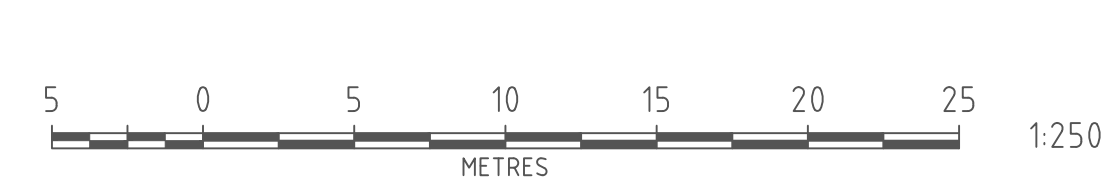
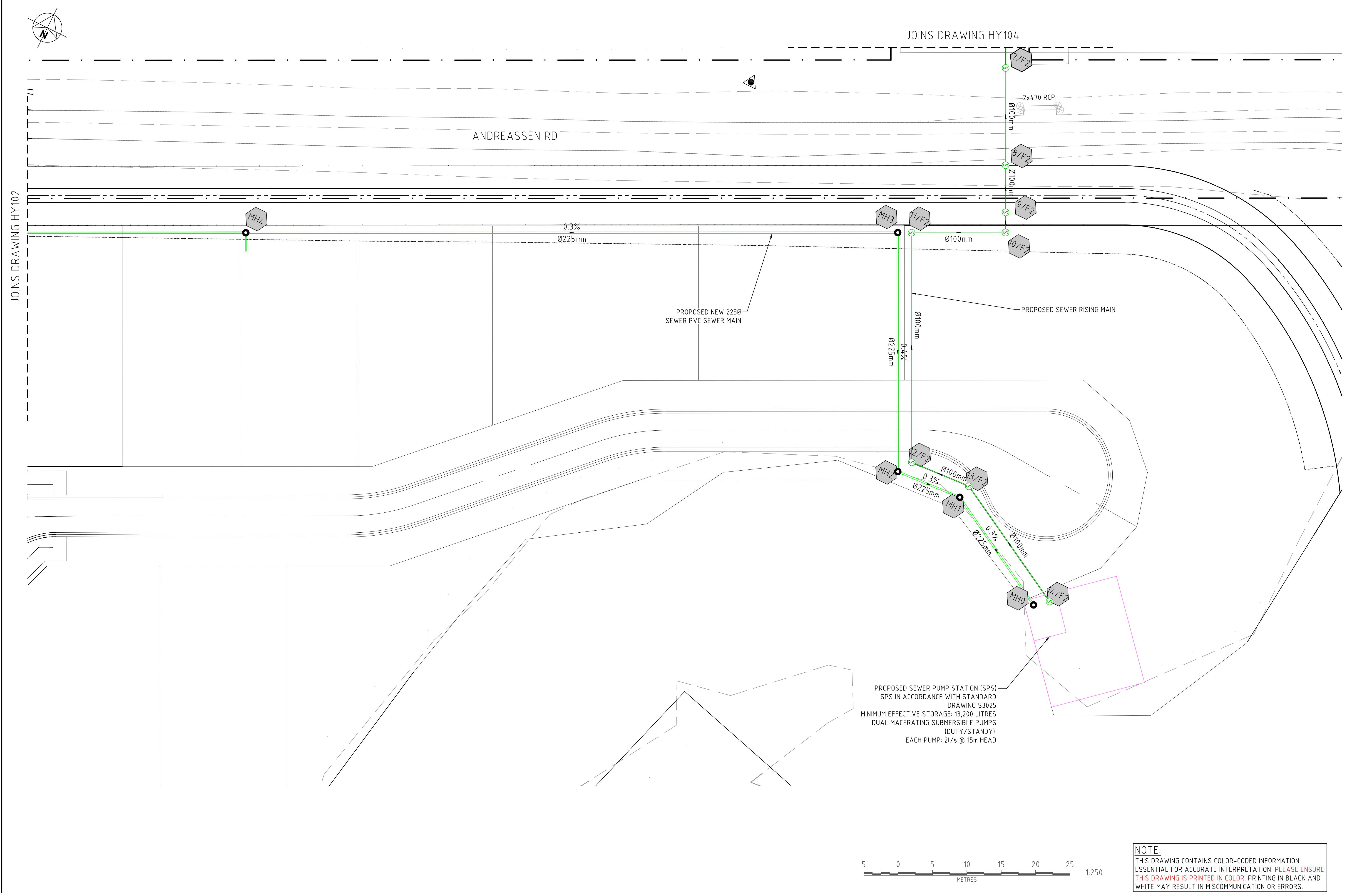
P171508-01

Drw No.

HY102

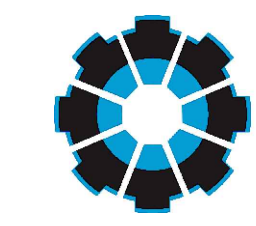
Rev.

A



NOTE:
THIS DRAWING CONTAINS COLOR-CODED INFORMATION
ESSENTIAL FOR ACCURATE INTERPRETATION. **PLEASE ENSURE**
THIS DRAWING IS PRINTED IN COLOR. PRINTING IN BLACK AND
WHITE MAY RESULT IN MISCOMMUNICATION OR ERRORS.

This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS				
A	GS	21/08/26	ISSUED FOR AUTHORITY APPROVAL	LES
No.	BY	DATE	DESCRIPTION	APPD

**Stellen**

SYDNEY
P: 02 8021 9233

MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au

ABN: 61 149 095 189

Client

PORT DOUGLAS ESTATE PTY (LTD)

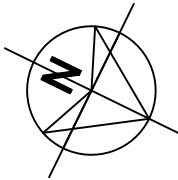
Scales:

@A1

Plan	1:250	DES: GS
Horiz.	-	DRW: GS
Vert.	-	CHK: LES
X-Sect.	-	APP: LES

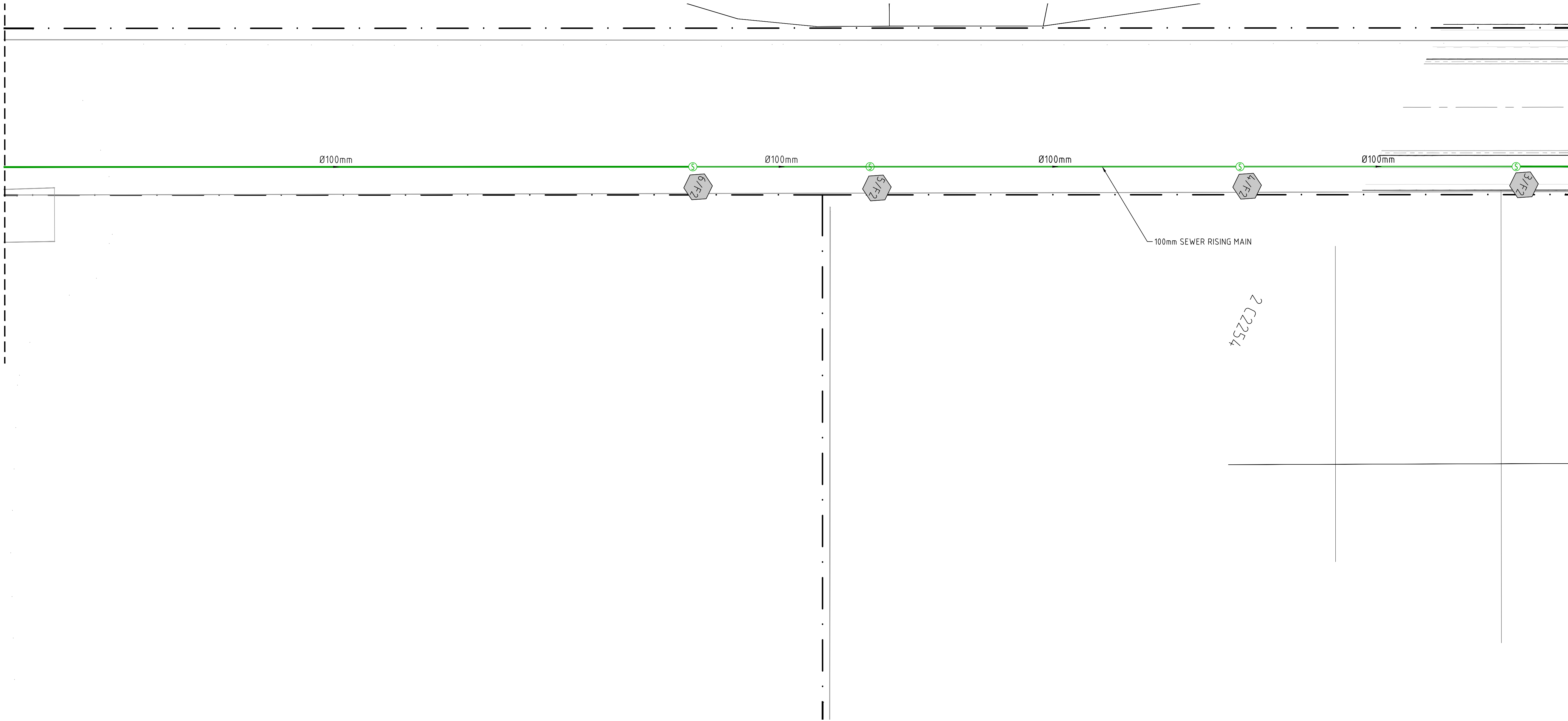
Datum: A.H.D.

Project				
ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing				
SEWER LAYOUT SHEET 2 OF 5				
Status	S33 APPROVAL	Sheets	-	Project No.
				P171508-01
			Drw No.	HY103
			Rev.	A



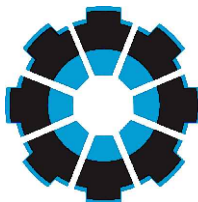
JOINS DRAWING HY103

JOINS DRAWING HY105



NOTE:
THIS DRAWING CONTAINS COLOR-CODED INFORMATION
ESSENTIAL FOR ACCURATE INTERPRETATION. PLEASE ENSURE
THIS DRAWING IS PRINTED IN COLOR. PRINTING IN BLACK AND
WHITE MAY RESULT IN MISCOMMUNICATION OR ERRORS.

This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS				
A	GS	21/08/26	ISSUED FOR AUTHORITY APPROVAL	LES
No.	BY	DATE	DESCRIPTION	APPD



Stellen

SYDNEY
P: 02 8021 9233
MELBOURNE
P: 03 9969 2673

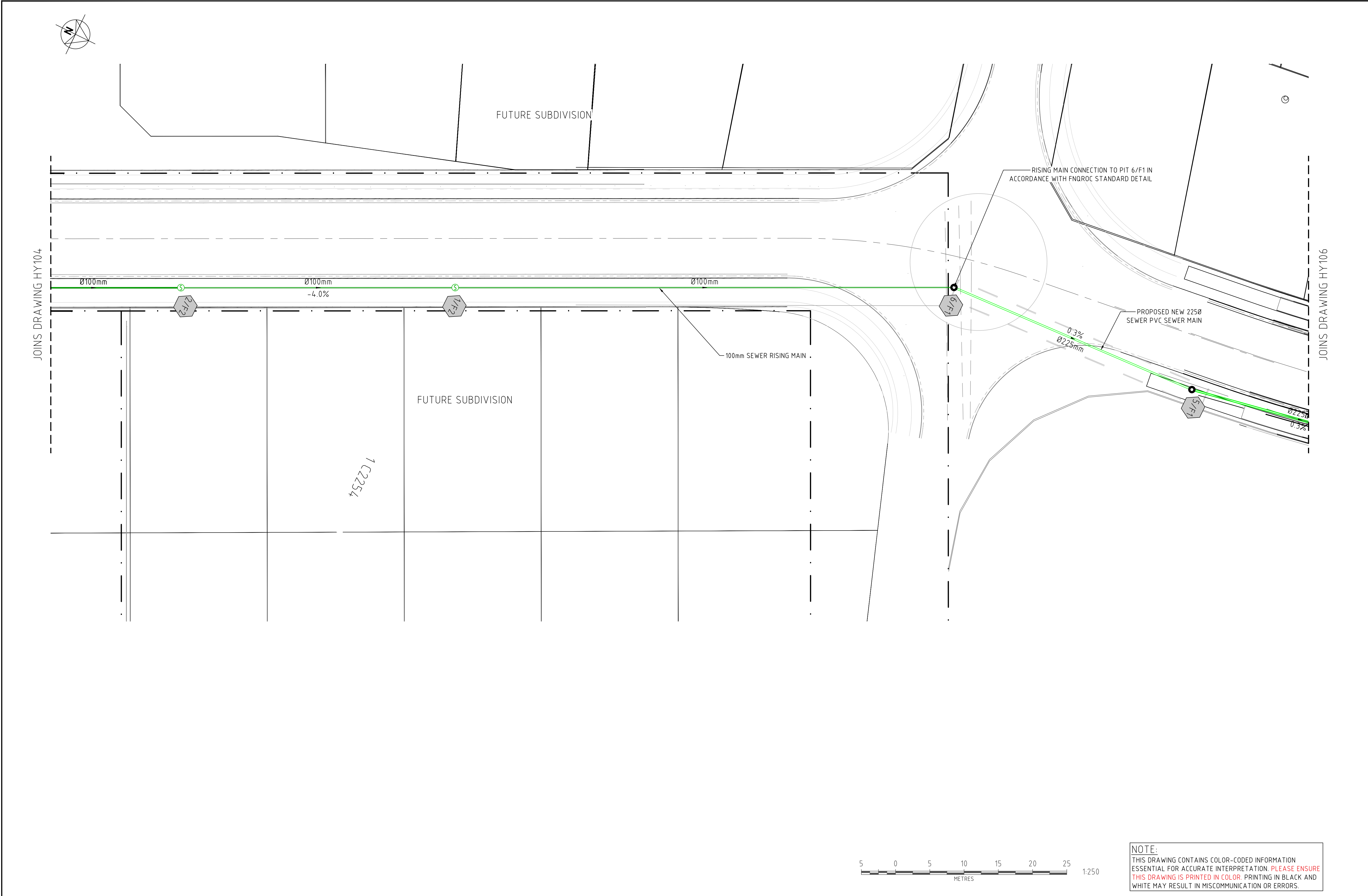
www.stellenconsulting.com.au

ABN: 61 149 095 189

Client
PORT DOUGLAS ESTATE PTY (LTD)

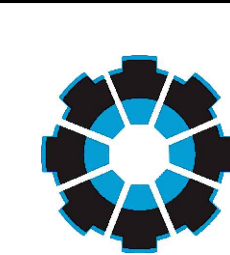
Scales:	
Plan	1:250
Horiz.	-
Vert.	-
X-Sect.	-
Datum: A.H.D	

Project				
ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing				
SEWER LAYOUT SHEET 3 OF 5				
Status	Sheets	Project No.	Drw No.	Rev.
S33 APPROVAL	-	P171508-01	HY104	A



NOTE:
THIS DRAWING CONTAINS COLOR-CODED INFORMATION
ESSENTIAL FOR ACCURATE INTERPRETATION. PLEASE ENSURE
THIS DRAWING IS PRINTED IN COLOR. PRINTING IN BLACK AND
WHITE MAY RESULT IN MISCOMMUNICATION OR ERRORS.

This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS				
A	GS	21/08/26	ISSUED FOR AUTHORITY APPROVAL	LES
No.	BY	DATE	DESCRIPTION	APPD



Stellen
SYDNEY
P: 02 8021 9233
MELBOURNE
P: 03 9969 2673
www.stellenconsulting.com.au

ABN: 61 149 095 189

Client

PORT DOUGLAS ESTATE PTY (LTD)

Scales: @A1

Plan 1:250

Horiz. -

Vert. -

X-Sect. -

DES: GS

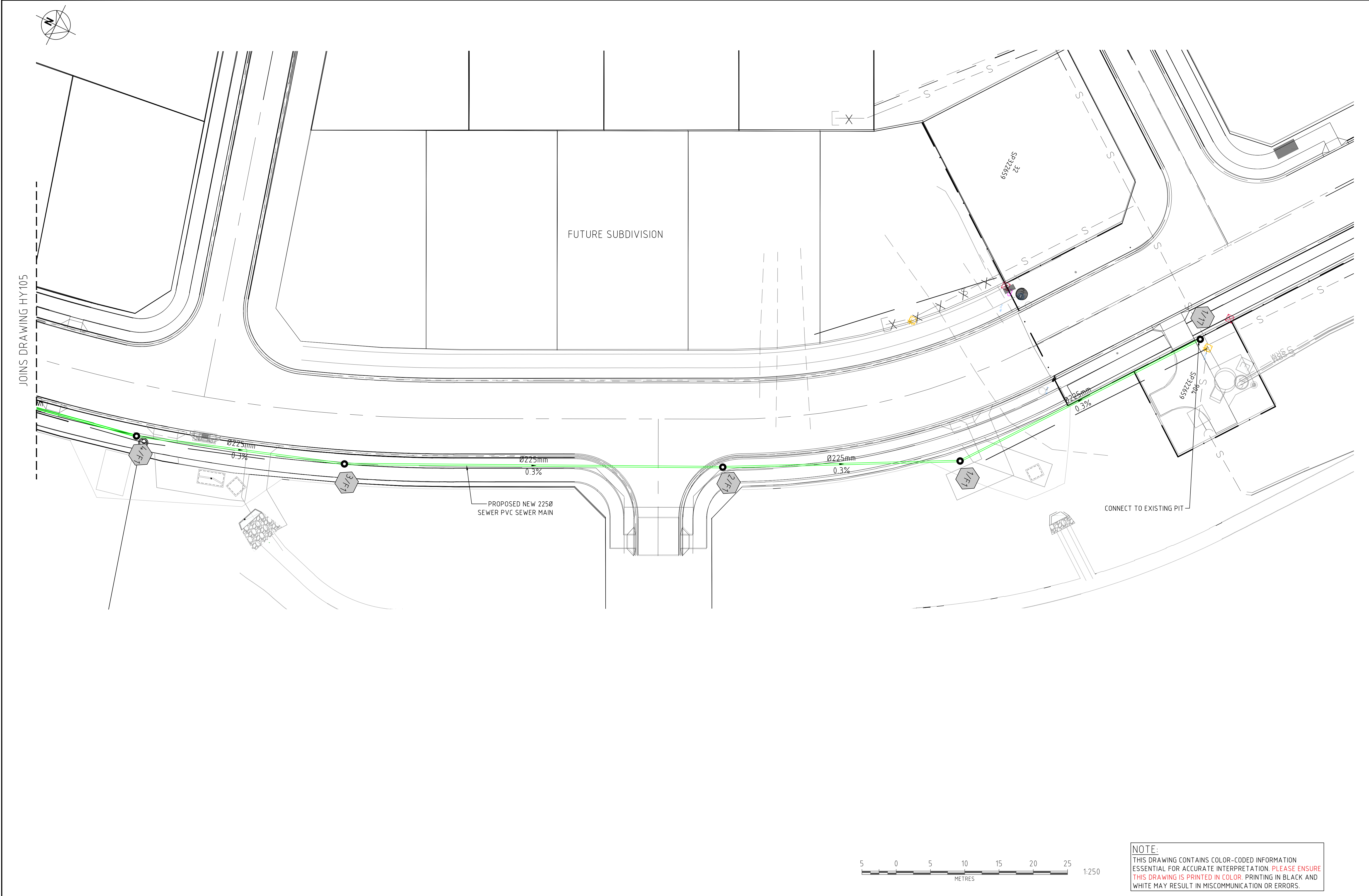
DRW: GS

CHK: LES

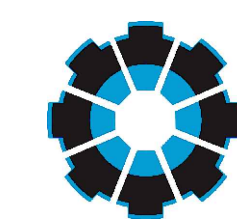
APP: LES

Datum: A.H.D.

Project				
ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing				
SEWER LAYOUT SHEET 4 OF 5				
Status	Sheets	Project No.	Drw No.	Rev.
S33 APPROVAL	-	P171508-01	HY105	A



This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS				
No.	BY	DATE	DESCRIPTION	APPD
A	GS	21/08/26	ISSUED FOR AUTHORITY APPROVAL	LES

**Stellen**

SYDNEY
P: 02 8021 9233

MELBOURNE
P: 03 9969 2673

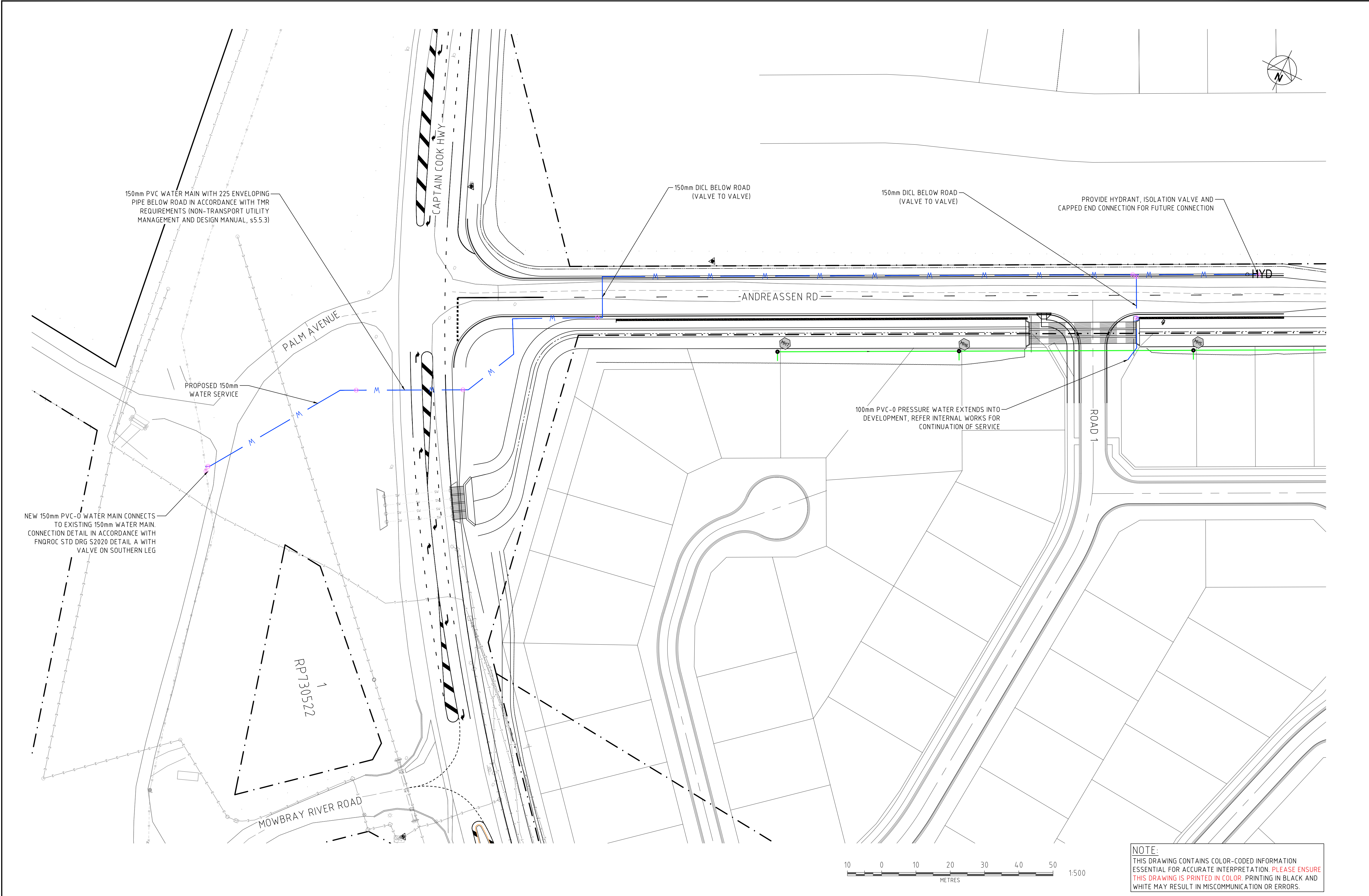
www.stellenconsulting.com.au

ABN: 61 149 095 189

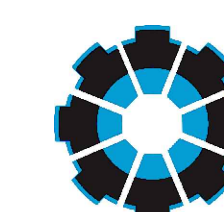
Client	PORT DOUGLAS ESTATE PTY (LTD)
--------	-------------------------------

Scales:	
Plan	1:250
Horiz.	-
Vert.	-
X-Sect.	-
@A1	
Datum: A.H.D	
DES:	GS
DRW:	GS
CHK:	LES
APP:	LES

Project				
ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing				
SEWER LAYOUT SHEET 5 OF 5				
Status	S33 APPROVAL	Sheets	-	Project No.
				P171508-01
Drw No.	HY106	Rev.	A	



This drawing is confidential and shall only be used for the purposes of this project.				
REVISIONS				
A	GS	21/08/26	ISSUED FOR AUTHORITY APPROVAL	LES
No.	BY	DATE	DESCRIPTION	APPD

**Stellen**

SYDNEY
P: 02 8021 9233

MELBOURNE
P: 03 9969 2673

www.stellenconsulting.com.au

ABN: 61 149 095 189

Client

PORT DOUGLAS ESTATE PTY (LTD)

Scales:

@A1

Plan 1:500
Horiz. -
Vert. -
X-Sect. -

DES: GS
DRW: GS
CHK: LES
APP: LES

Datum: A.H.D.

Project

ANDREASSEN ROAD DEVELOPMENT
PROPOSED ANDREASSEN ROAD UPGRADES

Drawing

WATER LAYOUT SHEET 1 OF 1

Status

S33 APPROVAL

Sheets

-

Project No.

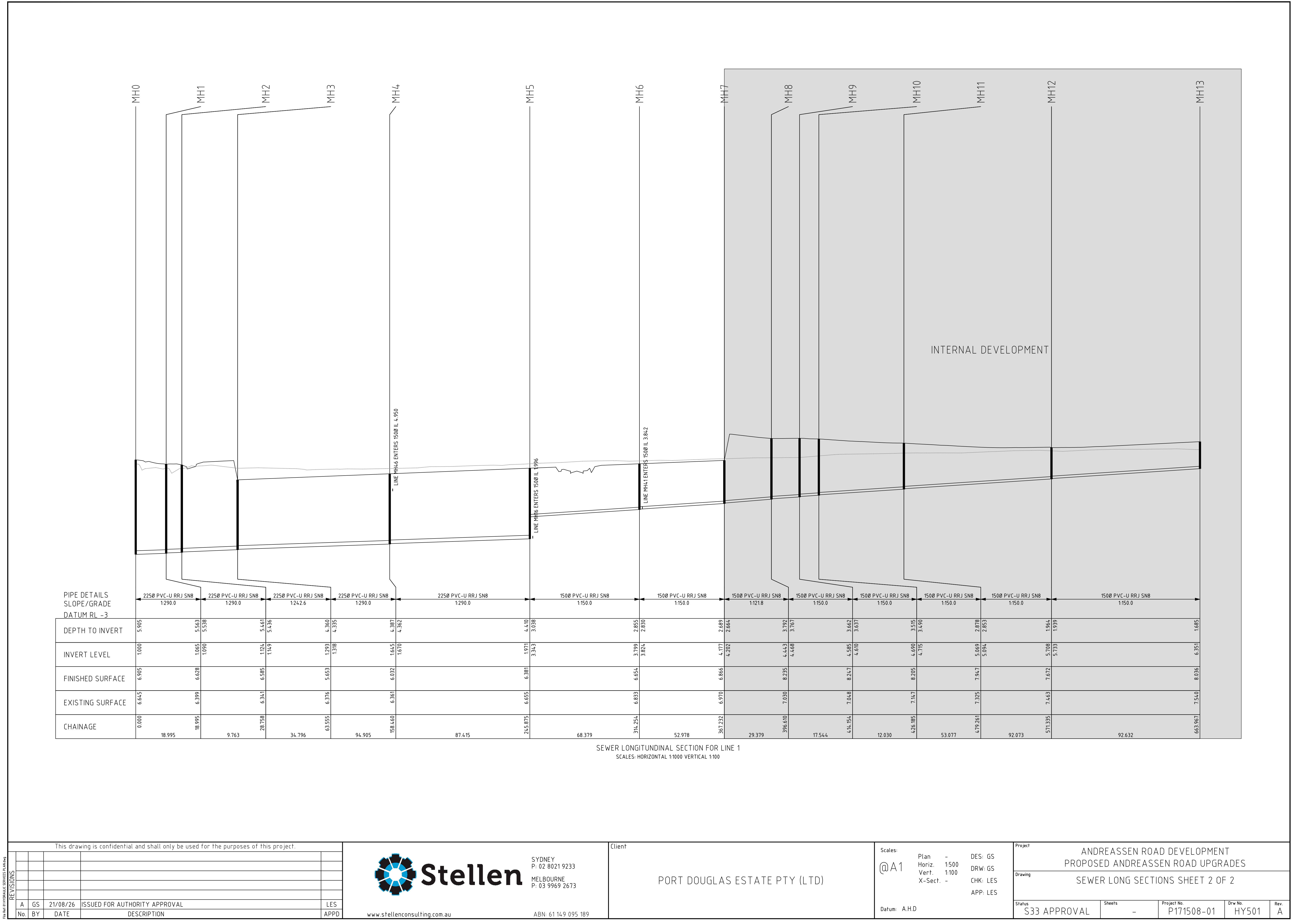
P171508-01

Drw No.

HY200

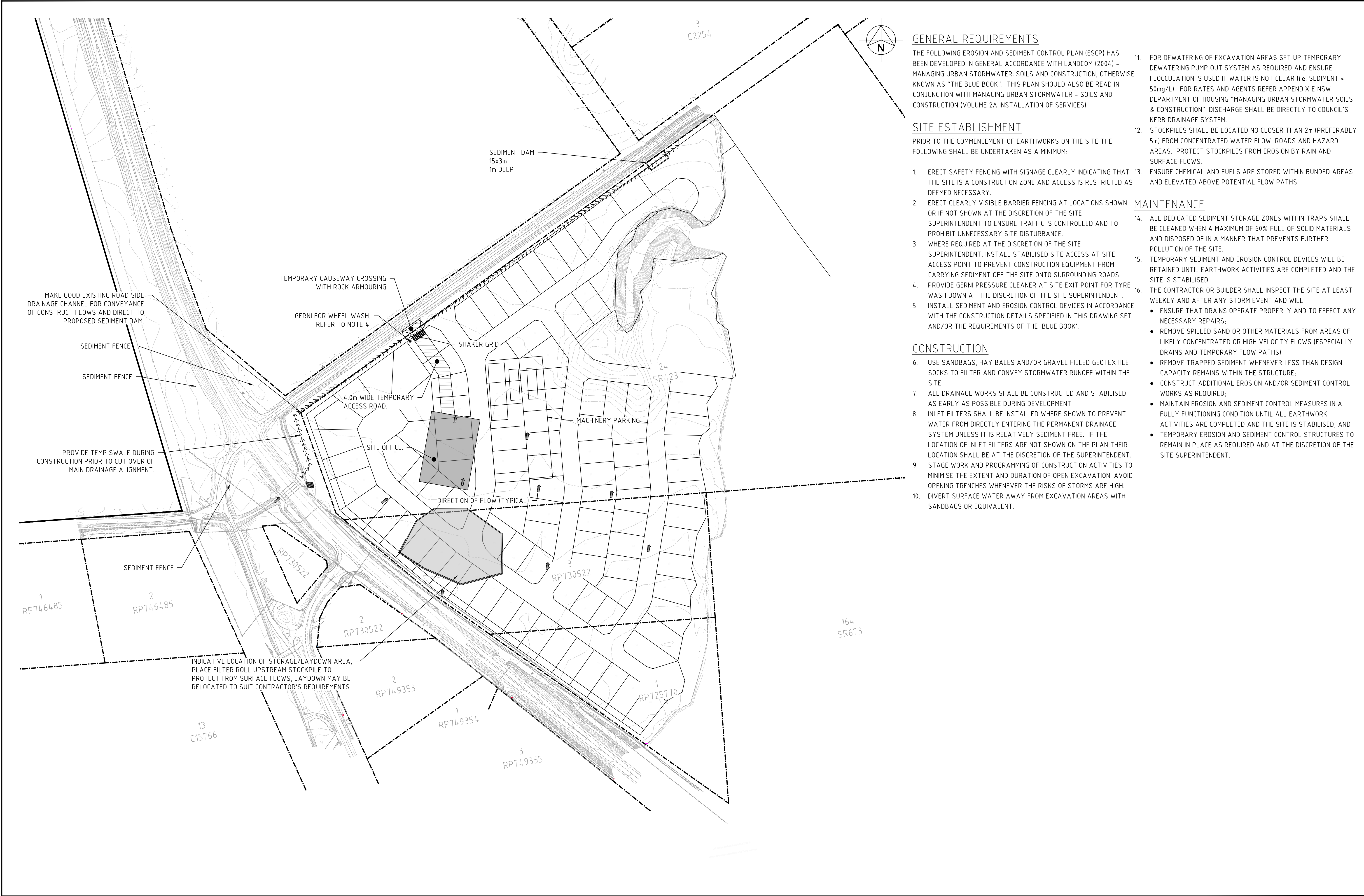
Rev.

A



Pit Schedule - Rising Main										
Pit No.	Pit Type	Outlet Diameter	Outlet Invert RL	Inlet Diameter	Inlet Invert RL	Pit Depth	Pit Lid Level	Easting	Northing	Comment
		(mm)	(m)	(mm)	(m)	(m)	(m)	(m)	(m)	
1/17	FNQROC - Circular Cover >3m depth			225	-0.780	4.932	4.152	337127.95	8170541.801	STANTEC DESIGN
1/F1	FNQROC - Circular Cover >3m depth	225	-0.680	225	-0.640	4.223	3.543	337159.29	8170518.115	STANTEC DESIGN
2/F1	FNQROC - Circular Cover >3m depth	225	-0.521	225	-0.481	3.709	3.188	337175.30	8170487.405	STANTEC DESIGN
3/F1	FNQROC - Circular Cover >3m depth	225	-0.290	225	-0.250	4.119	3.829	337199.12	8170437.606	STANTEC DESIGN
4/F1	FNQROC - Circular Cover >3m depth	225	-0.145	225	-0.105	4.107	3.962	337208.79	8170408.565	STANTEC DESIGN
5/F1	FNQROC - Circular Cover >3m depth	225	0.009	225	0.049	3.435	3.444	337214.75	8170376.265	STANTEC DESIGN
6/F1	FNQROC - Circular Cover >3m depth	225	0.179	100	2.989	3.992	4.171	337216.60	8170338.514	STANTEC DESIGN
1/F2	n/a	100	3.600	100	3.600	1.223	4.823	337248.61	8170273.094	100mm RISING MAIN
2/F2	Scour Valve	100	2.000	100	2.000	2.990	4.990	337266.19	8170237.146	100mm RISING MAIN
3/F2	n/a	100	2.105	100	2.105	2.986	5.091	337277.45	8170214.144	100mm RISING MAIN
4/F2	n/a	100	3.134	100	3.134	2.056	5.190	337292.10	8170184.185	100mm RISING MAIN
5/F2	n/a	100	3.267	100	3.267	1.531	4.798	337311.73	8170144.059	100mm RISING MAIN
6/F2	n/a	100	3.407	100	3.407	1.409	4.815	337321.13	8170124.852	100mm RISING MAIN
7/F2	n/a	100	4.468	100	4.468	1.242	5.710	337358.99	8170047.460	100mm RISING MAIN
8/F2	n/a	100	3.126	100	3.126	2.145	5.271	337365.21	8170034.754	100mm RISING MAIN
9/F2	n/a	100	2.954	100	2.954	1.165	4.119	337368.22	8170028.585	100mm RISING MAIN
10/F2	n/a	100	2.866	100	2.866	2.724	5.590	337369.52	8170025.943	100mm RISING MAIN
11/F2	n/a	100	4.501	100	4.501	1.144	5.645	337357.21	8170019.923	100mm RISING MAIN
12/F2	n/a	100	5.453	100	5.453	1.088	6.541	337371.90	8169989.878	100mm RISING MAIN
13/F2	n/a	100	5.504	100	5.504	1.040	6.544	337380.90	8169990.430	100mm RISING MAIN
14/F2	n/a	100	5.645			1.292	6.937	337398.85	8169980.493	100mm RISING MAIN

Pit Schedule - Line 1										
Pit No.	Pit Type	Outlet Diameter	Outlet Invert RL	Inlet Diameter	Inlet Invert RL	Pit Depth	Pit Lid Level	Easting	Northing	Comment
		(mm)	(m)	(mm)	(m)	(m)	(m)	(m)	(m)	
MH0	FNQROC - Circular Cover >3m depth			225	1.000	5.905	6.905	337396.96	8169979.038	
MH1	FNQROC - Circular Cover >3m depth	225	1.065	225	1.090	5.563	6.628	337380.43	8169988.395	
MH2	FNQROC - Circular Cover >3m depth	225	1.124	225	1.149	5.461	6.585	337370.69	8169987.779	
MH3	FNQROC - Circular Cover >3m depth	225	1.293	225	1.318	4.360	5.653	337355.40	8170019.036	
MH4	FNQROC - Circular Cover >3m depth	225	1.645	225	1.670	4.387	6.032	337270.15	8169977.331	
				150	4.950					
MH5	FNQROC - Circular Cover >3m depth	225	1.971	150	3.343	4.410	6.381	337191.62	8169938.918	
				150	1.996					
MH6	FNQROC - Circular Cover >3m depth	150	3.799	150	3.824	2.855	6.654	337130.20	8169908.870	
				150	3.842					
MH7	FNQROC - Circular Cover >3m depth	150	4.177	150	4.202	2.689	6.866	337082.61	8169885.589	



GENERAL REQUIREMENTS

THE FOLLOWING EROSION AND SEDIMENT CONTROL PLAN (ESCP) HAS BEEN DEVELOPED IN GENERAL ACCORDANCE WITH LANDCOM (2004) - MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION, OTHERWISE KNOWN AS "THE BLUE BOOK". THIS PLAN SHOULD ALSO BE READ IN CONJUNCTION WITH MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION (VOLUME 2A INSTALLATION OF SERVICES).

SITE ESTABLISHMENT

PRIOR TO THE COMMENCEMENT OF EARTHWORKS ON THE SITE THE FOLLOWING SHALL BE UNDERTAKEN AS A MINIMUM:

- ERECT SAFETY FENCING WITH SIGNAGE CLEARLY INDICATING THAT THE SITE IS A CONSTRUCTION ZONE AND ACCESS IS RESTRICTED AS DEEMED NECESSARY.
- ERECT CLEARLY VISIBLE BARRIER FENCING AT LOCATIONS SHOWN OR IF NOT SHOWN AT THE DISCRETION OF THE SITE SUPERINTENDENT TO ENSURE TRAFFIC IS CONTROLLED AND TO PROHIBIT UNNECESSARY SITE DISTURBANCE.
- WHERE REQUIRED AT THE DISCRETION OF THE SITE SUPERINTENDENT, INSTALL STABILISED SITE ACCESS AT SITE ACCESS POINT TO PREVENT CONSTRUCTION EQUIPMENT FROM CARRYING SEDIMENT OFF THE SITE ONTO SURROUNDING ROADS.
- PROVIDE GERNI PRESSURE CLEANER AT SITE EXIT POINT FOR TYRE WASH DOWN AT THE DISCRETION OF THE SITE SUPERINTENDENT.
- INSTALL SEDIMENT AND EROSION CONTROL DEVICES IN ACCORDANCE WITH THE CONSTRUCTION DETAILS SPECIFIED IN THIS DRAWING SET AND/OR THE REQUIREMENTS OF THE 'BLUE BOOK'.

CONSTRUCTION

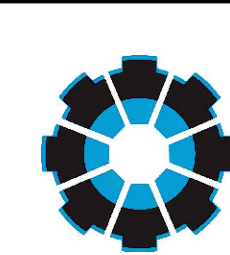
- USE SANDBAGS, HAY BALES AND/OR GRAVEL FILLED GEOTEXTILE SOCKS TO FILTER AND CONVEY STORMWATER RUNOFF WITHIN THE SITE.
- ALL DRAINAGE WORKS SHALL BE CONSTRUCTED AND STABILISED AS EARLY AS POSSIBLE DURING DEVELOPMENT.
- INLET FILTERS SHALL BE INSTALLED WHERE SHOWN TO PREVENT WATER FROM DIRECTLY ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE. IF THE LOCATION OF INLET FILTERS ARE NOT SHOWN ON THE PLAN THEIR LOCATION SHALL BE AT THE DISCRETION OF THE SUPERINTENDENT.
- STAGE WORK AND PROGRAMMING OF CONSTRUCTION ACTIVITIES TO MINIMISE THE EXTENT AND DURATION OF OPEN EXCAVATION. AVOID OPENING TRENCHES WHENEVER THE RISKS OF STORMS ARE HIGH.
- DIVERT SURFACE WATER AWAY FROM EXCAVATION AREAS WITH SANDBAGS OR EQUIVALENT.

- FOR DEWATERING OF EXCAVATION AREAS SET UP TEMPORARY DEWATERING PUMP OUT SYSTEM AS REQUIRED AND ENSURE FLOCCULATION IS USED IF WATER IS NOT CLEAR (i.e. SEDIMENT > 50mg/L). FOR RATES AND AGENTS REFER APPENDIX E NSW DEPARTMENT OF HOUSING "MANAGING URBAN STORMWATER SOILS & CONSTRUCTION". DISCHARGE SHALL BE DIRECTLY TO COUNCIL'S KERB DRAINAGE SYSTEM.
- STOCKPILES SHALL BE LOCATED NO CLOSER THAN 2m (PREFERABLY 5m) FROM CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS. PROTECT STOCKPILES FROM EROSION BY RAIN AND SURFACE FLOWS.
- ENSURE CHEMICAL AND FUELS ARE STORED WITHIN BUNDED AREAS AND ELEVATED ABOVE POTENTIAL FLOW PATHS.

MAINTENANCE

- ALL DEDICATED SEDIMENT STORAGE ZONES WITHIN TRAPS SHALL BE CLEANED WHEN A MAXIMUM OF 60% FULL OF SOLID MATERIALS AND DISPOSED OF IN A MANNER THAT PREVENTS FURTHER POLLUTION OF THE SITE.
- TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES WILL BE RETAINED UNTIL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS STABILISED.
- THE CONTRACTOR OR BUILDER SHALL INSPECT THE SITE AT LEAST WEEKLY AND AFTER ANY STORM EVENT AND WILL:
 - ENSURE THAT DRAINS OPERATE PROPERLY AND TO EFFECT ANY NECESSARY REPAIRS;
 - REMOVE SPILLED SAND OR OTHER MATERIALS FROM AREAS OF LIKELY CONCENTRATED OR HIGH VELOCITY FLOWS (ESPECIALLY DRAINS AND TEMPORARY FLOW PATHS)
 - REMOVE TRAPPED SEDIMENT WHENEVER LESS THAN DESIGN CAPACITY REMAINS WITHIN THE STRUCTURE;
 - CONSTRUCT ADDITIONAL EROSION AND/OR SEDIMENT CONTROL WORKS AS REQUIRED;
 - MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES IN A FULLY FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS STABILISED; AND
 - TEMPORARY EROSION AND SEDIMENT CONTROL STRUCTURES TO REMAIN IN PLACE AS REQUIRED AND AT THE DISCRETION OF THE SITE SUPERINTENDENT.

This drawing is confidential and shall only be used for the purposes of this project.					
REVISIONS					
A	GS	19/08/26	ISSUED FOR AUTHORITY APPROVAL		LES
No.	BY	DATE	DESCRIPTION		APPD

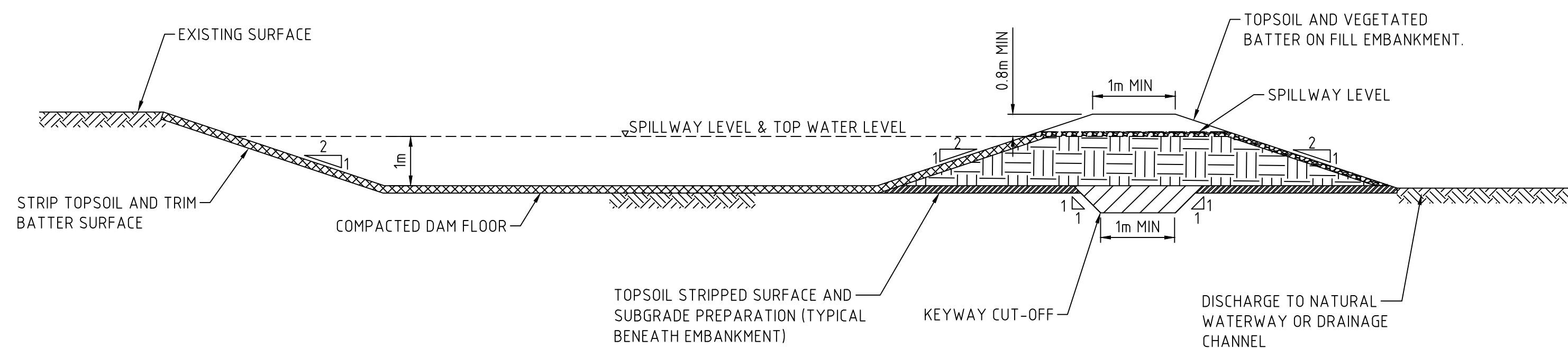


Stellen
SYDNEY
P: 02 8021 9233
MELBOURNE
P: 03 9969 2673
www.stellenconsulting.com.au

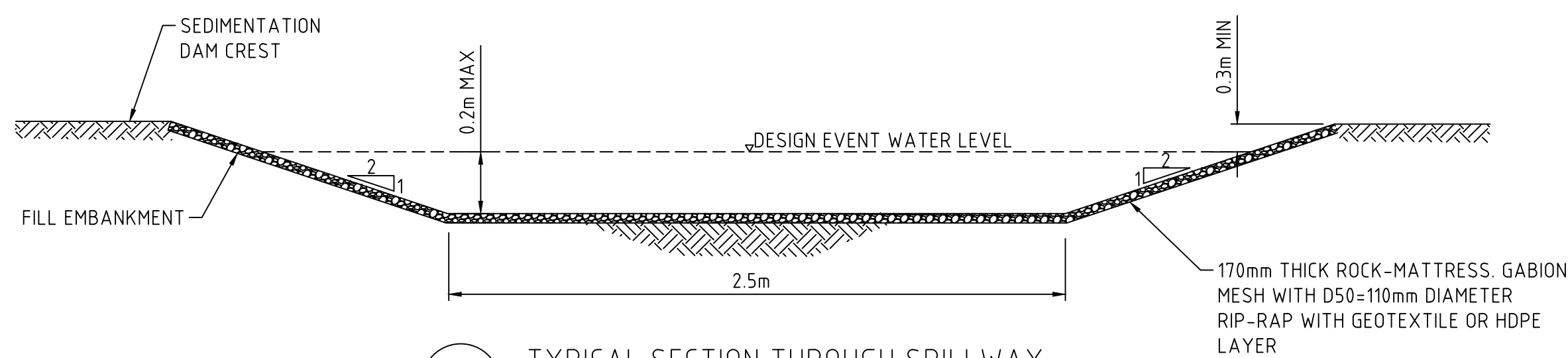
ABN: 61 149 095 189

Client	
Scales:	
@A1	Plan 1:1000 DES: GS Horiz. - DRW: GS Vert. - X-Sect. - CHK: LES APP: LES
Datum: A.H.D	

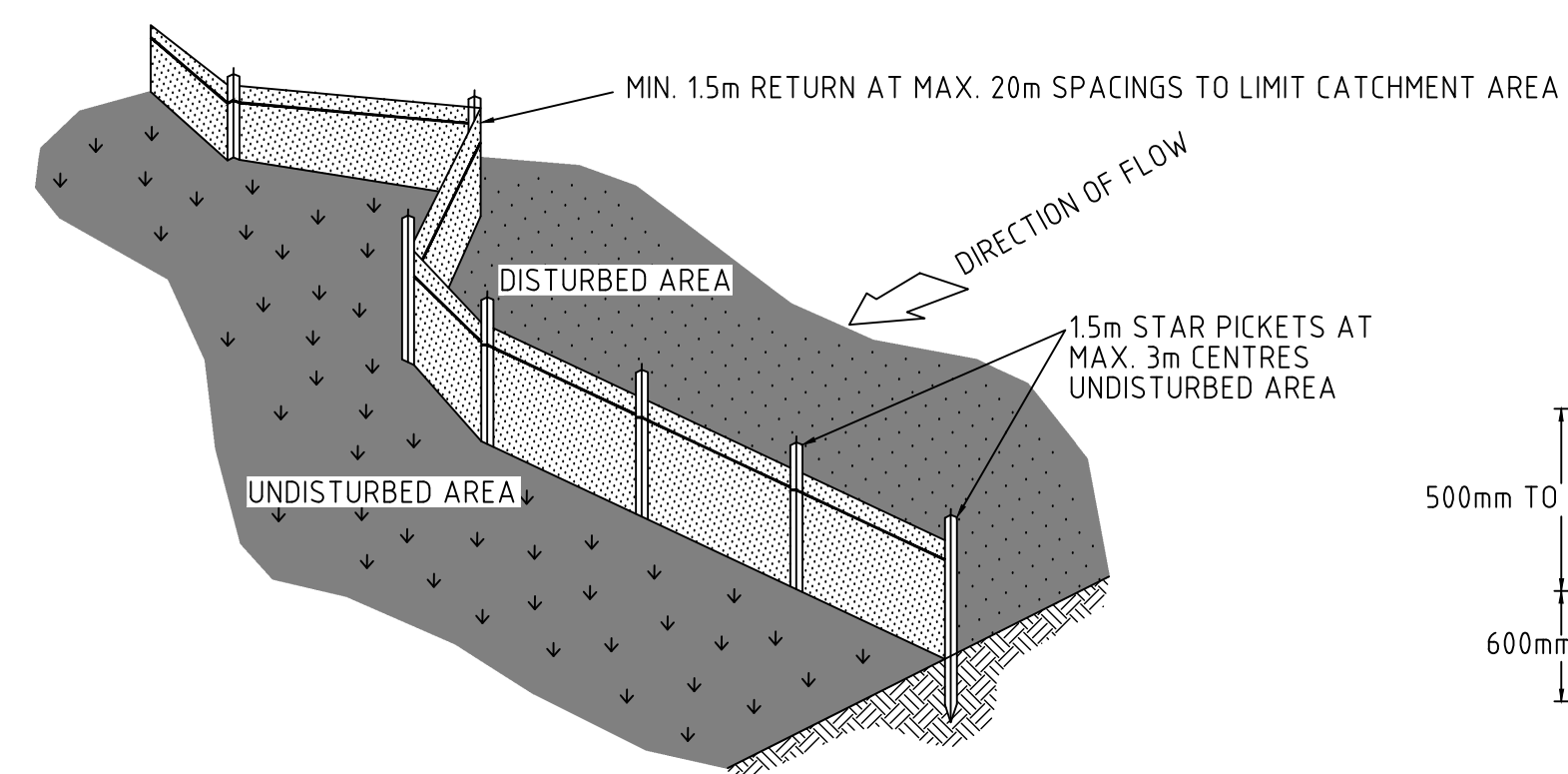
Project				
ANDREASSEN ROAD DEVELOPMENT PROPOSED ANDREASSEN ROAD UPGRADES				
Drawing				
EROSION AND SEDIMENT CONTROL - SHEET 1 OF 2				
Status	Sheets	Project No.	Drw No.	Rev.
S33 APPROVAL	-	P171508-01	SD001	A



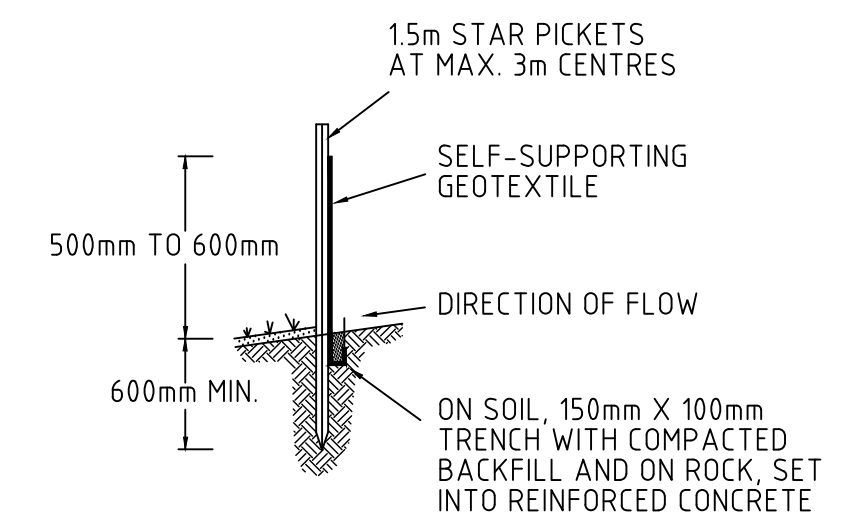
DETAIL 5
TYPICAL SECTION THROUGH SEDIMENT DAM
NOT TO SCALE



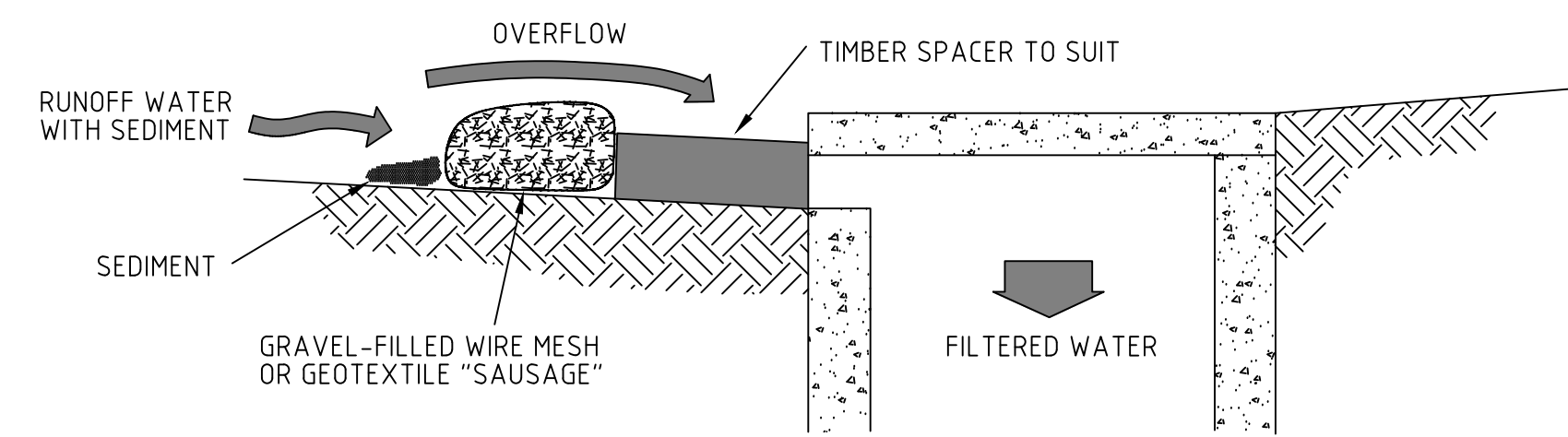
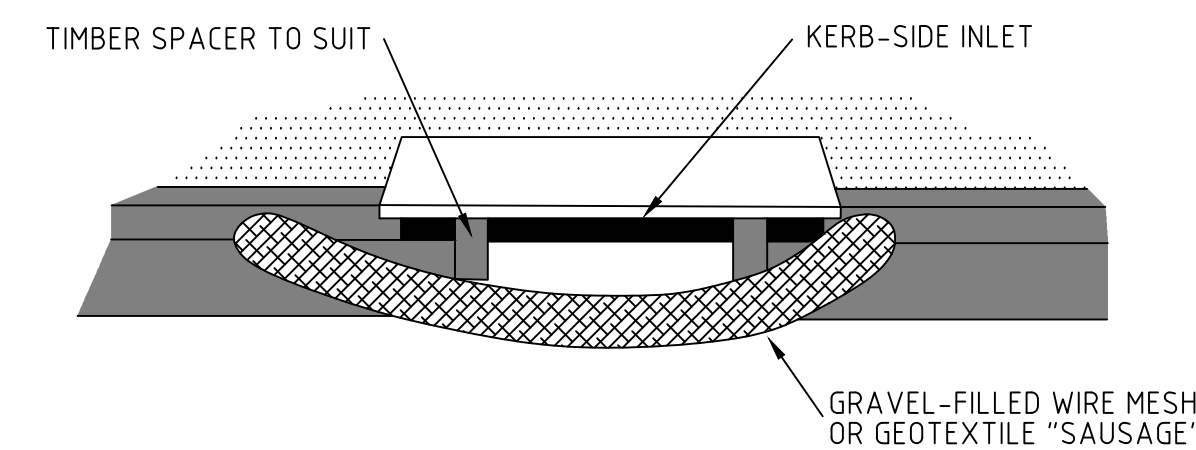
DETAIL 6
TYPICAL SECTION THROUGH SPILLWAY
NOT TO SCALE



DETAIL 1
TYPICAL SEDIMENT FENCE
NOT TO SCALE



DETAIL 2
SECTION DETAIL
NOT TO SCALE



DETAIL 3
FILTER TOLL (TYPICAL)
NOT TO SCALE

This drawing is confidential and shall only be used for the purposes of this project.

REVISIONS				
No.	BY	DATE	DESCRIPTION	APPD
A	GS	19/08/26	ISSUED FOR AUTHORITY APPROVAL	LES



www.stellenconsulting.com.au

Client

Scales:
@A1
Plan - DES: GS
Horiz. - DRW: GS
Vert. -
X-Sect. - CHK: LES
APP: LES

Datum: A.H.D

Project
ANDREASSEN ROAD DEVELOPMENT
PROPOSED ANDREASSEN ROAD UPGRADES

Drawing
EROSION AND SEDIMENT CONTROL - SHEET 2 OF 2

Status S33 APPROVAL	Sheets -	Project No. P171508-01	Drw No. SD002	Rev A
------------------------	-------------	---------------------------	------------------	----------

Appendix B Detailed Pavement Report

SUBDIVISION ALONG ANDREASSEN ROAD,
CRAIGLIE, QLD (SOUTH OF PORT DOUGLAS)
PACKAGE 1, CAPTAIN COOK HIGHWAY

Prepared for: **Stellen Consulting**

Date: **14 August 2026**

Rev B



ATPAVE ENGINEERING PTY LTD

Detailed Pavement
Design Report

Document Control

ATPAVE Engineering Pty Ltd

ABN: 79 651 118 679

Brisbane/Sydney

M: +61 416 436 613

E: Jon.Lee@atpave.com.au

www.atpave.com.au

REV	DATE	DETAILS
A	17/03/2026	Detailed Pavement Design Report
B	14/08/2026	Respond to TMR comments

PREPARED BY:	REVIEWED BY:	DATE	SIGNATURE
Jon Lee Technical Principal - Pavement RPEQ 13160	Tanmay Vaidya Specialist Pavement Engineer RPEQ 13454	14/08/2026	 Jon Lee

This document may contain confidential and legally privileged information, neither of which is intended to be waived, and must be used only for its intended purpose. Any unauthorised copying, dissemination or use in any form or by any means other than by the addressee, is strictly prohibited. If you have received this document in error or by any means other than as authorised addressee, please notify us immediately and we will arrange for its return to us.

TABLE OF CONTENTS

1	PROJECT BACKGROUND AND SCOPE	4
2	DESIGN REFERENCE DOCUMENTS	5
3	DESIGN CRITERIA AND INPUT	6
3.1	Design Period	6
3.2	Project Reliability	6
3.3	TMR Captain Cook Highway 2021 drawing, Pavement Design Parameters	6
3.4	Traffic Loading	7
3.5	Design Speed – Heavy Vehicles	8
3.6	Asphalt modulus	8
4	SUBGRADE CONDITIONS	9
5	PAVEMENT DESIGN	11
6	PAVEMENT DRAINS	12
7	RECOMMENDATIONS	13

Appendix A – Design Traffic Information

Appendix B – Soil Testing and CBR Results

Appendix C – CIRCLY Output Reports

1 PROJECT BACKGROUND AND SCOPE

ATPAVE has been engaged by Stellen Consulting to prepare a detailed pavement design report for a 36-lot residential subdivision (Phase 1 of a five-stage development) located along Andreassen Road and Captain Cook Highway. The subdivision includes several internal roads subject to light traffic, for which a pavement design is required. It is understood that Andreassen Road and subdivision internal roads are assets of the Douglas Shire Council.

The detailed pavement design package 1 scope comprises the following key design elements:

- Captain Cook Highway/ Andreassen Road/ Palm Avenue intersection, southbound widening from Ch 30 to Ch 474.778 m (Approx. 445 m long).
- Captain Cook Highway / Andreassen Road/ Palm Avenue intersection, northbound widening from Ch 205 to Ch 415 m (Approx. 210 m long).
- Other design elements, including footpaths, driveways and medians, are excluded from the scope, as these will be constructed in accordance with the applicable CRC/IPWEA standard drawings.

The location and extent are shown in Figure 1.1 to 1.4.

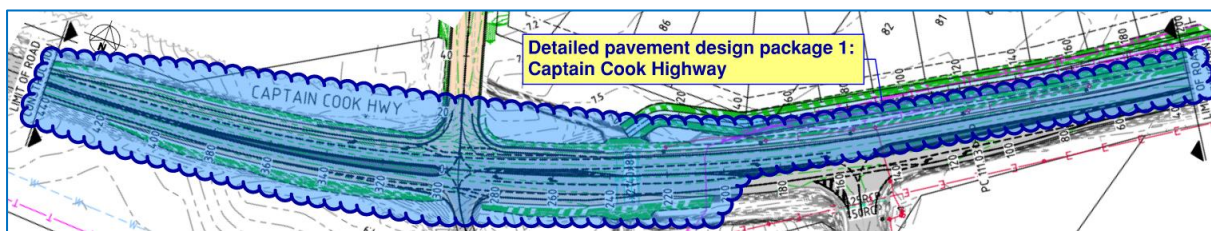


Figure 1.1 SITE LOCATION (encircling by blue)

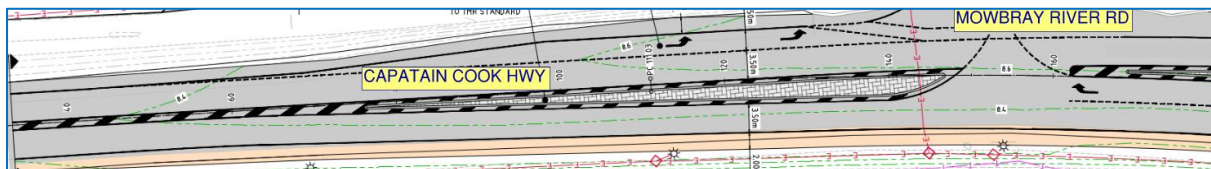


Figure 1.2 LOCATION OF DETAILED PAVEMENT DESIGN PACKAGE 1 WORKS SCOPE, 1 OF 3

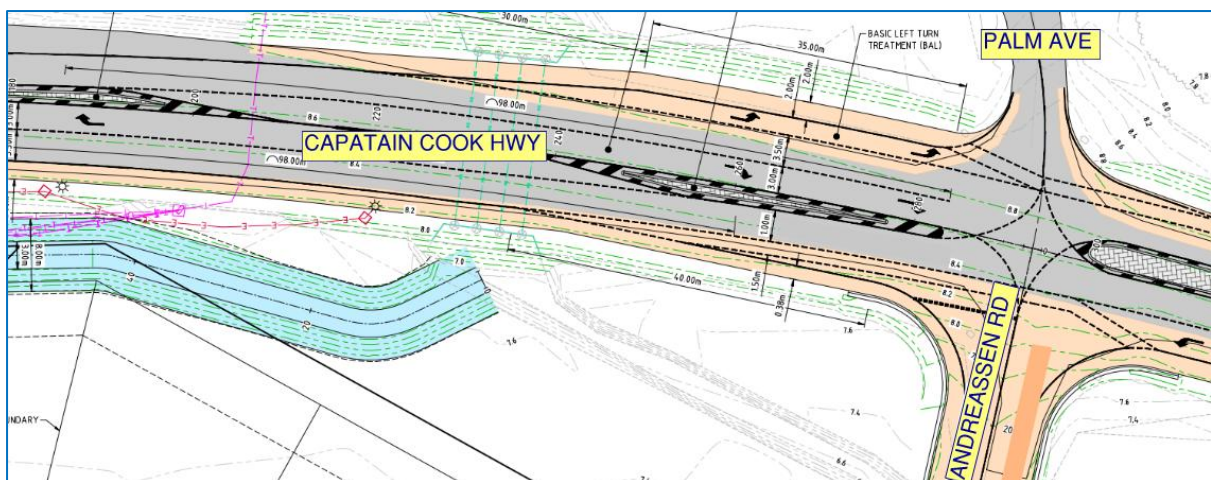


Figure 1.3 LOCATION OF DETAILED PAVEMENT DESIGN PACKAGE 1 WORKS SCOPE, 2 OF 3

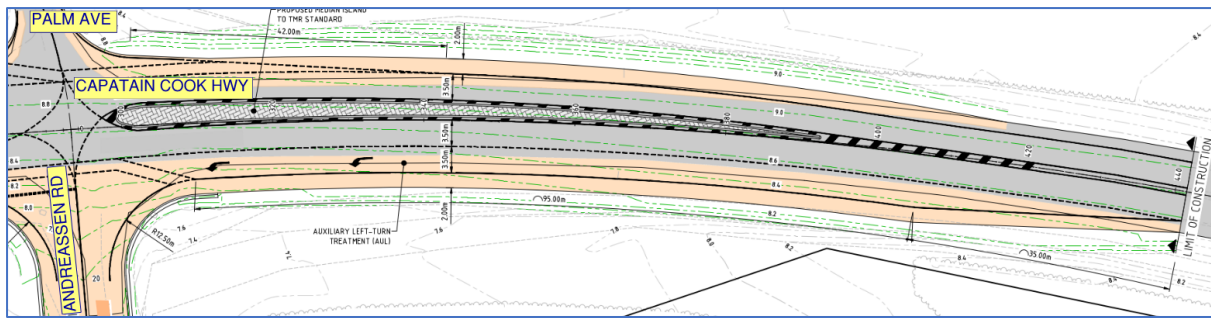


Figure 1.4 LOCATION OF DETAILED PAVEMENT DESIGN PACKAGE 1 WORKS SCOPE, 3 OF 3

2 DESIGN REFERENCE DOCUMENTS

The engineering standards and reference design information are listed below:

- a) Austroads Guide to Pavement Technology Part 2: Pavement Structural Design, Edition 4.4, April 2024 (AGPT02-24) – Referred as the “Austroads guide” here.
- b) TMR Pavement Design Supplement, June 2021 - Referred as the “TMR PDS” here.
Detailed pavement design package 1 and package 2 both commenced in November 2025, prior to the issuance of TMR PDS in February 2026. As a result, TMR PDS 2021 remains applicable for this project.
- c) TMR 2021 drawings, Captain Cook Highway (Carins – Mossman) CH 57770 – 59015.
- d) Douglas Shire Council, FNQROC Regional Development Manual (RDM), Version 9, 2024.
- e) Douglas Shire Council, Access crossovers Standard Drawing S1015, 2017.
- f) Andreassen Road development, proposed public road upgrade drawing set (P171508-01) by Stellen Consulting, issued 6/2/2026.
- g) Andreassen Road development, proposed residential subdivision stage 1 drawing set (P171508-02) by Stellen Consulting, issued 13/2/2026.
- h) Andreassen Road subdivision development, Design Traffic Loading and Traffic Load Distribution (TLD), Transport Strategies Alliance Pty Ltd, Feb 2026.
- i) Geotechnical Investigation by Earth Test, Feb 2026.

3 DESIGN CRITERIA AND INPUT

3.1 Design Period

A 20-year design period has been applied to Captain Cook Highway, Andreassen Road and internal access in accordance with Table 7.4.2 of the TMR PDS.

3.2 Project Reliability

Project reliability represents the statistical level of confidence applied to the pavement design. The project is located in a coastal rural environment. A project reliability of 95% has been adopted for Captain Cook Highway, in accordance with Table 2.3.1 of the TMR PDS.

3.3 TMR Captain Cook Highway 2021 drawing, Pavement Design Parameters

As shown in Figure 3.1 (TMR Captain Cook Highway 2021 drawing), the Captain Cook Highway proposed public works upgrade is located between MC01 CH57860 and CH58305 m (that is, equivalent to Ch 30 to Ch 445 m in the Stellen civil drawings). Pavement Type A (CH5770 to CH58600), as shown in Figure 3.2 and 3.3, has been constructed. Report Section 5 details the Captain Cook Highway widening pavement profile and the design methodology adopted to match the adjacent as-built pavement profile.

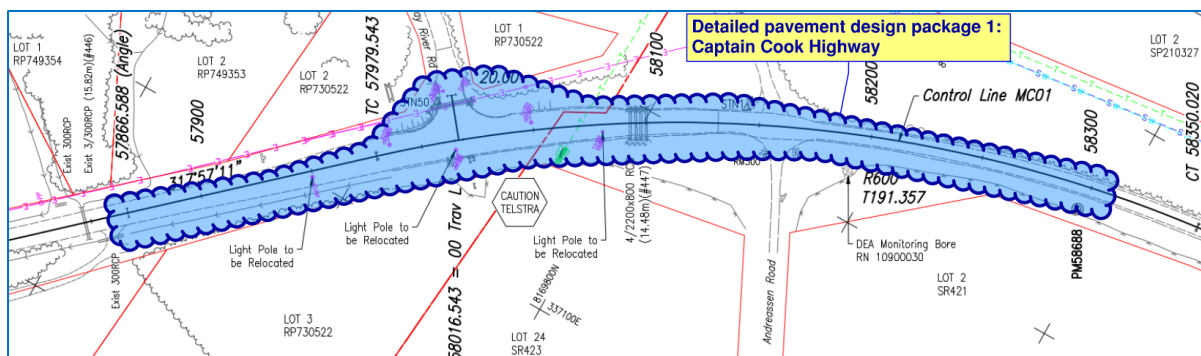


Figure 3.1 SITE LOCATION, 2021 TMR CAPTAIN COOK HIGHWAY DRAWING (encircling by blue)

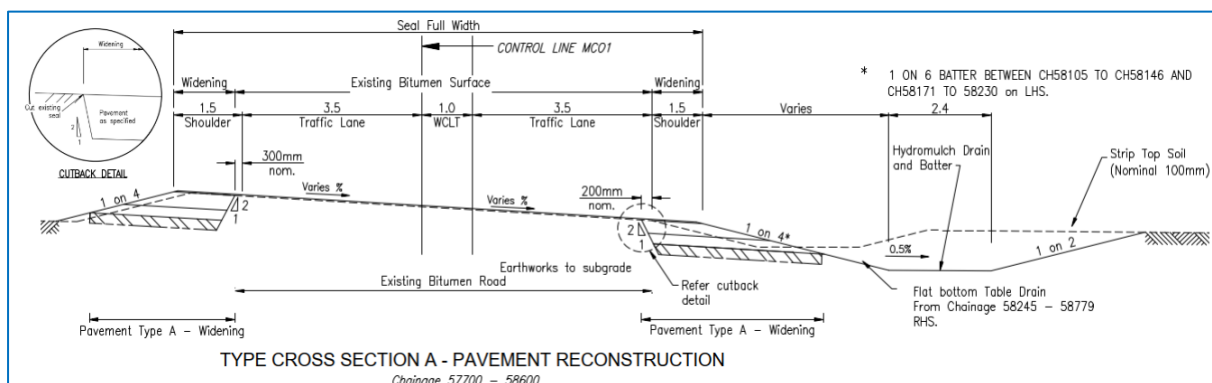


Figure 3.2 TYPICAL CROSS SECTION, 2021 TMR CAPTAIN COOK HIGHWAY DRAWING

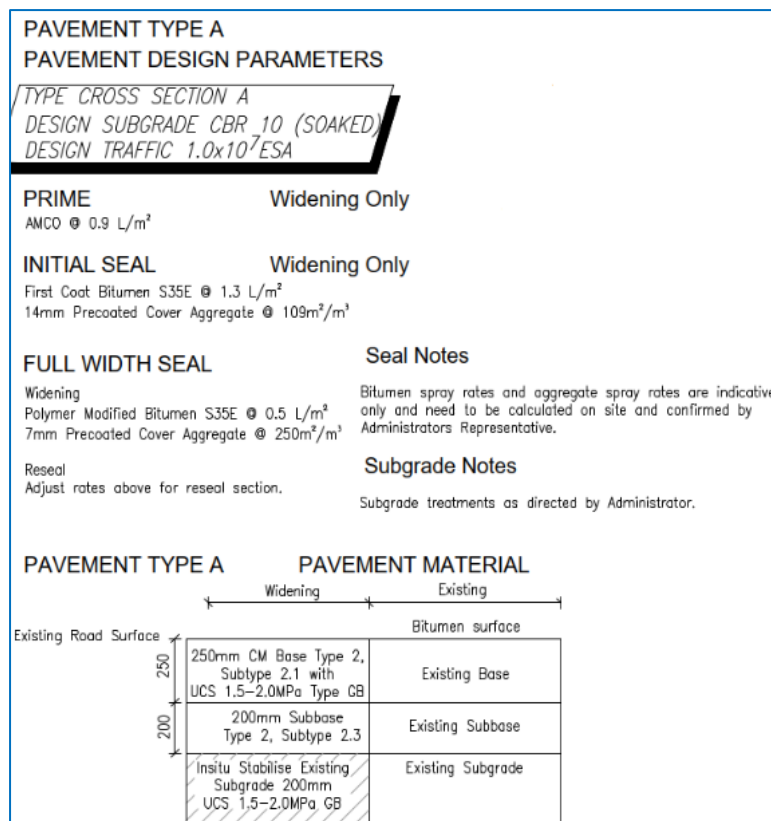


Figure 3.3 PAVEMENT TYPE A, 2021 TMR CAPTAIN COOK HIGHWAY DRAWING

3.4 Traffic Loading

Traffic loading calculation for Captain Cook Highway were provided by Transport Strategies Alliance. To maintain consistency with the adjoining Captain Cook Highway pavement, the design traffic loading has been adopted from TMR Captain Cook Highway Drawing No. 887283 for Pavement Type A (Ch 57770 to Ch 58600), being 1.0E+07 ESAs. The annual traffic growth rate has been assessed using TMR traffic census data from 2014 to 2024. The relevant Captain Cook Highway traffic counting station is Station 110022, located approx. 1.9 km south of the Captain Cook Highway / Andreassen Rd intersection. Based on the available data, the annual growth rate for both directions is 1.96%. For design purposes, an annual growth rate of 2% has been adopted. The adopted traffic load distribution and design traffic loading parameters are summarised in Table 3.1

Table 3.1 – Traffic Load Distribution and Design Traffic Loading

Measures	Captain Cook Hwy, Design Traffic Loading Calculation by Transport Strategies Alliance Pty Ltd	Captain Cook Hwy, Design Traffic Loading by 2021 TMR Drawings
N _{HVAG}	2.17	-
ESA/ HVAG	0.898	-
ESA/ HV	1.95	-

N _{DT}	5.87E+06	1.11E+07
DESA	5.28E+06	1.00E+07

3.5 Design Speed – Heavy Vehicles

The posted speed limits for Captain Cook Highway is 100km/h. The adopted heavy vehicle design speeds are presented in Table 3.2.

Table 3.2 – Design Speed, Heavy Vehicles

	Captain Cook Highway
Post Speed	100km/h
Road Design Speed	110km/h

3.6 Asphalt modulus

- WMAPT: 37 °C
AGPT2 2017 Appendix B, WMAPT for Cairns is 37C.
- Presumptive moduli of asphalt mixes are per Equation 6.5.7 (a) of the TMR PDS as shown in Table 3.3.

Asphalt modulus at heavy vehicle operating speed has been based on an adopted speed of 80 km/h, in accordance with TMR PDS Table 6.7.7(d). The adopted parameters for the proposed asphalt materials are shown in Table 3.3.

Table 3.3 – Asphalt modulus

Material	Binder	Volume of Binder	Asphalt modulus
SMA14	A15E	13%	1,000 MPa

4 SUBGRADE CONDITIONS

Earth Test undertook a geotechnical investigation and laboratory testing from January-February 2026. The locations of boreholes are shown in Figure 4.1.

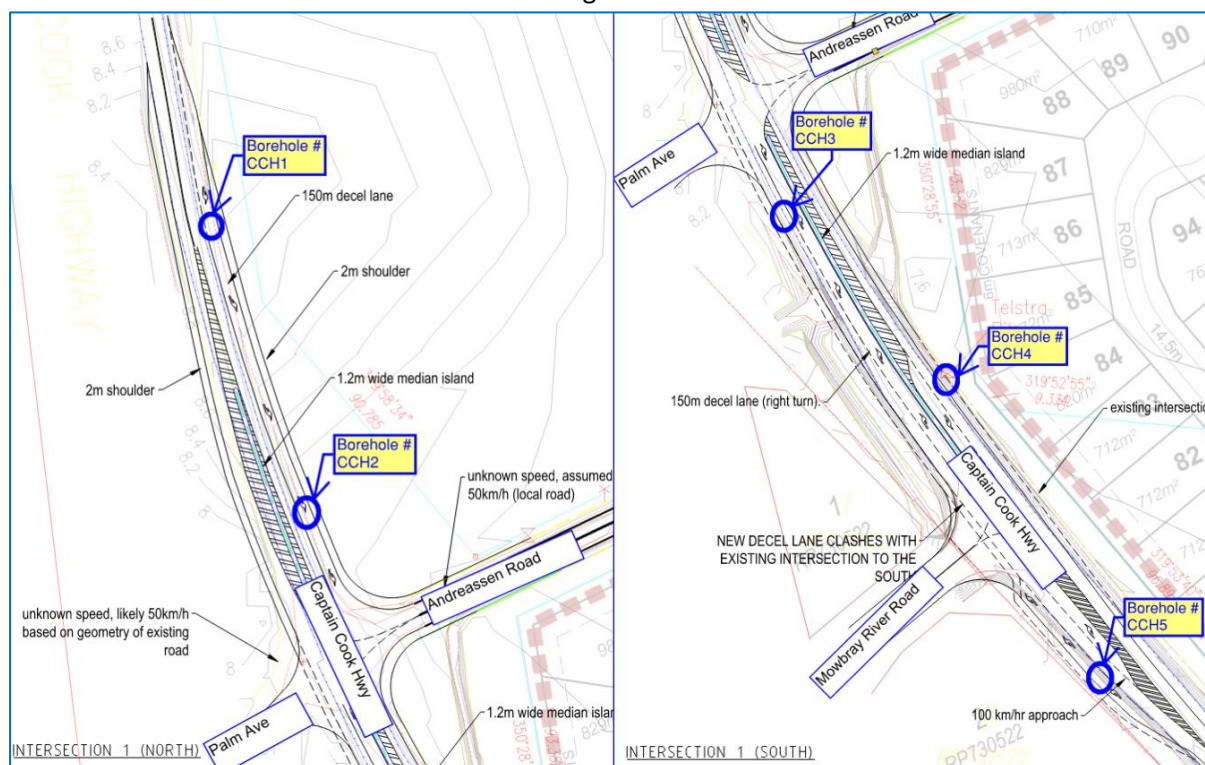


Figure 4.1 CAPTAIN COOK HIGHWAY, CCH1 to CCH5, BOREHOLE LOCATIONS

The boreholes sample range, 4-day soaked subgrade CBR test results and swell test results are summarised in Table 4.1.

Table 4.1 – Boreholes and Laboratory Test Results

Borehole	Location	CBR sample range	Lab test, CBR% 4-day soaked	Lab test, Swell%
CCH1	Captain Cook hwy	0.5 -0.8m	9.0	1.0
CCH2	Captain Cook hwy	0.5 -0.8m	6.0	0.5
CCH3	Captain Cook hwy	0.5 -0.8m	12.0	0.0
CCH4	Captain Cook hwy	0.5 -0.8m	40.0	0.0
CCH5	Captain Cook hwy	0.5 -0.8m	3.5	1.0

The key finding and interpretations are:

- Earth Test indicate that the proposed development site has previously been utilised for sugar cane farming. Uniform subsurface conditions were encountered across the site, comprising medium-plasticity clay with trace sand and gravel from the ground surface to the borehole termination depth. The soil strength was generally assessed as soft to firm.

- Subgrade testing was undertaken at the design subgrade level, with samples collected from approx. 0.5 to 0.8 m below the existing surface.
- The subgrade material was broadly described as sandy gravel to clayey gravel with fine to coarse sand, fine gravel, and low-plasticity fines. The subgrade was assessed as non-expansive (swell < 1.0%), and no groundwater was encountered during the investigation. The applicable boreholes for Captain Cook Highway are CCH1 to CCH5. The 4-day soaked CBR results range from 3.5% to 40%. A design subgrade CBR of 4.5% has been adopted based on the CBR 10th percentile analysis for the subject section of Captain Cook Highway.
- A 300 mm thick lime stabilisation layer (no sublayering), in accordance with PDS Section 8.2.2, is recommended for the pavement design, having regard to the following three (3) considerations:
 - TMR 2021 drawings
A lime stabilisation layer was adopted in the TMR 2021 design. It is therefore included in the pavement design to maintain consistency with the adjoining Captain Cook Highway pavement.
 - Soft ground condition recorded in the Design Package 2 Andreassen Road geotechnical investigation (boreholes AR1 to AR3).
 - The lime stabilisation layer provides a moisture resilient subgrade, appropriate for a high-rainfall region and the associated moisture risk from nearby ground conditions.
- The Stellen civil drawings indicate that both cut and fill will be required to achieve the design surface level. The finished surface levels will tie into the existing shallow cut-and-fill earthworks and match the adjacent road surface.
- The design subgrade for Captain Cook Highway has been assessed using the 10th percentile CBR. Where the design CBR is less than 2%, subgrade treatment is required in accordance with Clause 3.14.1 of the TMR PDS.

5 PAVEMENT DESIGN

The pavement layer thicknesses for the Captain Cook Highway widening works have been designed using a mechanistic design method in accordance with the TMR PDS, using CIRCLY (Version 7.0). Based on the TMR 2021 drawings for Captain Cook Highway widening pavement (that is, Pavement Type A) and Table 2.2.1 of the TMR PDS, the appropriate pavement type is a Lightly Bound Granular Base with Asphalt Surfacing (ALBB). The ALBB option reduces construction complexity and cost, while providing improved durability and lower maintenance requirements. This makes it a practical and cost-effective solution for this project.

For the ALBB pavement, the following design methodology has been adopted in accordance with the TMR PDS:

- A Type 2.3 unbound granular subbase has been adopted with a design modulus of 150 MPa (sublayered).
- In accordance with Table 6.8(a) and Table 6.8(b) of the TMR PDS, a design vertical modulus of 600 MPa has been adopted for the lightly bound gravel, with no sublayering.
- The thickness of the lightly bound base layer has been determined using mechanistic modelling, including a 20 mm construction tolerance. The CIRCLY output report for the mechanistic design model is provided in Appendix C.
- The minimum lightly bound base thickness has then been checked using the relationship in Figure 8.2.9 of the TMR PDS, considering the 50 mm overlying asphalt surfacing. The lightly bound base must have a minimum thickness of 210 mm.
- The key pavement design inputs are as follows:
 - Design traffic loading: $1.11\text{E}+07$ N_{DT} and $1.00\text{E}+07$ ESA.
 - Design subgrade CBR: 4.5%.

The Captain Cook Highway widening pavement is designated as Type F1, with the pavement profile presented in Table 5.1.

Table 5.1 – Pavement Design – Type F1

Pavement Layer	Pavement Material	Pavement Thickness (mm)	Specification
Surfacing	SMA14 (A15E)	50	MRTS30
Prime and Seal	Initial treatment – Prime (AMC0/AMC00) Second treatment – 10mm nominal size PMB single/single seal (min. binder spray rate 1.2 L/m ²)	✓	MRTS11
Base ⁽¹⁾	Plant-mixed lightly bound material – To be placed in a single layer	210	MRTS10
Subbase	Type 2.3 unbound granular material	200	MRTS05
Total Thickness (mm)		460	-
Insitu Lime Stabilisation of Subgrade		300	MRTS07A
Subgrade design CBR (4-day soaked)		4.5%	MRTS04

Note 1: 20mm construction tolerance added to the pavement structural critical layer.

6 PAVEMENT DRAINS

Pavement drainage will mitigate the effects of moisture variation within the subgrade during and following rainfall events, thereby reducing the risk of subgrade saturation and associated shrink-swell movements. To address potential moisture accumulation at pavement interfaces, a subsoil pavement drain, comprising a Type A strip drain with no-fines concrete backfill, shall be provided at the transverse interface between the Captain Cook Highway pavement and the Andreassen Road pavement.

No longitudinal interface drain is required, as the subgrade treatment within the widening pavement will drain inter-pavement layer water from the existing pavement to the Table drain or Type D pavement drain behind the kerb.

In addition, table drains of 300mm below the subgrade or Type D pavement drain shall be provided along the widened pavement section to ensure surface runoff is efficiently intercepted and conveyed away from the pavement structure. This will facilitate rapid drainage during rainfall events and minimise the ingress of water into the underlying pavement layers and subgrade.

7 RECOMMENDATIONS

Adoption of the lightly bound (ALBB) pavement is recommended for the Captain Cook Highway widening pavement, as it provides a cost-effective and durable solution. Accordingly, it is recommended that Pavement Type F1 be constructed in accordance with Table 5.1 of this report. The following shall be noted:

- The contractor is responsible for completing the seal and prime designs. PMB and spray application rates are to be confirmed on site. The 210 mm plant-mixed lightly bound gravel base shall be placed in a single layer.
- Adopt pavement drainage as per Section 6.

Appendix A – Design Traffic Information

The following workflow outlines the systematic steps to estimate traffic loading

1. Select Design Period (P)

The time span for the pavement to function without major rehabilitation

P 20 years

2. Identify the Design Lane

No project specific information available. Refer to Table 7.3

LDF 1

3. Determine Initial Daily Heavy Vehicles in the Design Lane (N_i)

The average daily number of heavy vehicles in the design lane during the first year of the project's life is estimated using the following formula

$$N_i = AADT \times DF \times (\%HV/100) \times LDF \quad (\text{Eq. 30, page 108})$$

AADT	6775
DF	0.5
%HV	9
LDF	1

N_i	305
-------	-----

4. Calculate the Cumulative Number of Heavy Vehicles (N_{HV})

a) Calculate cumulative growth factor

$$CGF = \frac{(1 + 0.01R)^P - 1}{0.01R} \text{ for } R > 0 \quad (\text{Eq. 31, page 109})$$

$$= P \text{ for } R = 0$$

R	2	Annual growth rate (%)
P	20	Design period (years)
CGF	24.30	

b) Cumulative heavy vehicles

$$N_{HV} = 365 \times CGF \times N_i \quad (\text{Eq. 32, page 109})$$

N_i Initial Daily Heavy Vehicles in the Design Lane- calculated in Step 3
CGF Cumulative growth factor - calculated above

N_{HV}	2.70E+06	Heavy vehicles
----------	----------	----------------

5. Determine Total Heavy Vehicles Axle Groups (N_{DT})

Heavy Vehicle Axle Groups (HVAG) using an average number of axle groups per vehicle

$$N_{DT} = N_{HV} \times N_{HVAG} \quad (\text{Eq. 32, page 109})$$

N_{HVAG} Average number of axle groups per heavy vehicles

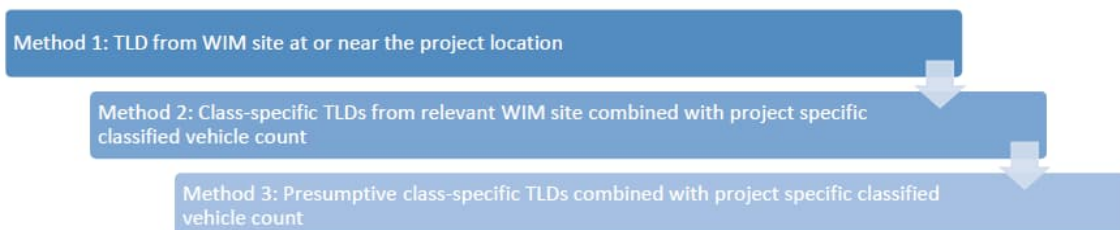
a) N_{HV} has been determined from step 4 above

b) N_{HVAG} to be defined as below

With reference to AGPT, Part 2, Section 7.4.7, in the absence of WIM or classification counter data, a presumptive value for N_{HVAG} needs to be selected. Appendix D presents the WIM data obtained at many sites throughout Australia. However, it does not include Queensland Data.

Refer to **Appendix E, TMR, Supplement to Part 2: Pavement Structural Design of the Austroads Guide to Pavement Technology, Section E2** provides guidance on the selection of derivation of TLD

Figure E.2 – Hierarchy for selecting TLDs



Note: In this specific site, classified vehicle count is unavailable

With reference to **Section E.3** of the **Appendix E**, it is stated that **Method 2:Class-specific TLDs from Relevant WIM Site Combined with Project-specific Classified Vehicle Count**. This method, combines the heavy vehicle proportions and the WIM site considered most relevant to the project location.

Considering the below:

- With the absence of project specific Classified Vehicle Count
- the AADT Segment Report from Traffic Analysis and Reporting System (TARS)
- the WIM site described as "Oakey" having the mix traffic (vehicle types and loads) which is closest to that at the site. The road is Warrego Highway between Toowoomba and Dalby)

Adopt Method 2 for the calculation of LTD

Refer to the Class-Specific Traffic Loads Distribution (CTLD) spreadsheet available on TMR website.

<https://www.tmr.qld.gov.au/business-industry/technical-standards-publications/pavement-design-supplement>.

The following has been entered the spreadsheet as the inputs:

- Classification Type : 4 bin
- Proportions: Based on the TARS report (8% for trucks & buses, 1% for Articulated Vehicles, 0.2% for road trains)
- Select "Darling Downs - 18B-Lane 2 - Oakey" Warrego Highway (Toowoomba - Dalby) as the WIM Site

See the exported LTD spreadsheet for details

Weigh-in-Motion data based on selected WIM site details											
	Recombined	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12
NHVAG	2.17	2.00	2.00	2.00	3.00	3.05	3.13	3.04	4.00	5.14	7.16
ESA / HVAG	0.90	0.54	1.38	1.00	0.34	0.26	0.95	1.27	1.46	1.33	0.97
ESA / HV	1.95	1.07	2.75	2.00	1.03	0.78	2.97	3.85	5.85	6.84	6.94
WIM recorded heavy vehicles		1,690	883	246	176	380	195	2,164	3,753	2,560	Presumptive

From the calculation spreadsheet

N _{HVAG}	2.17
ESA/HVAG	0.9
ESA/HV	1.95

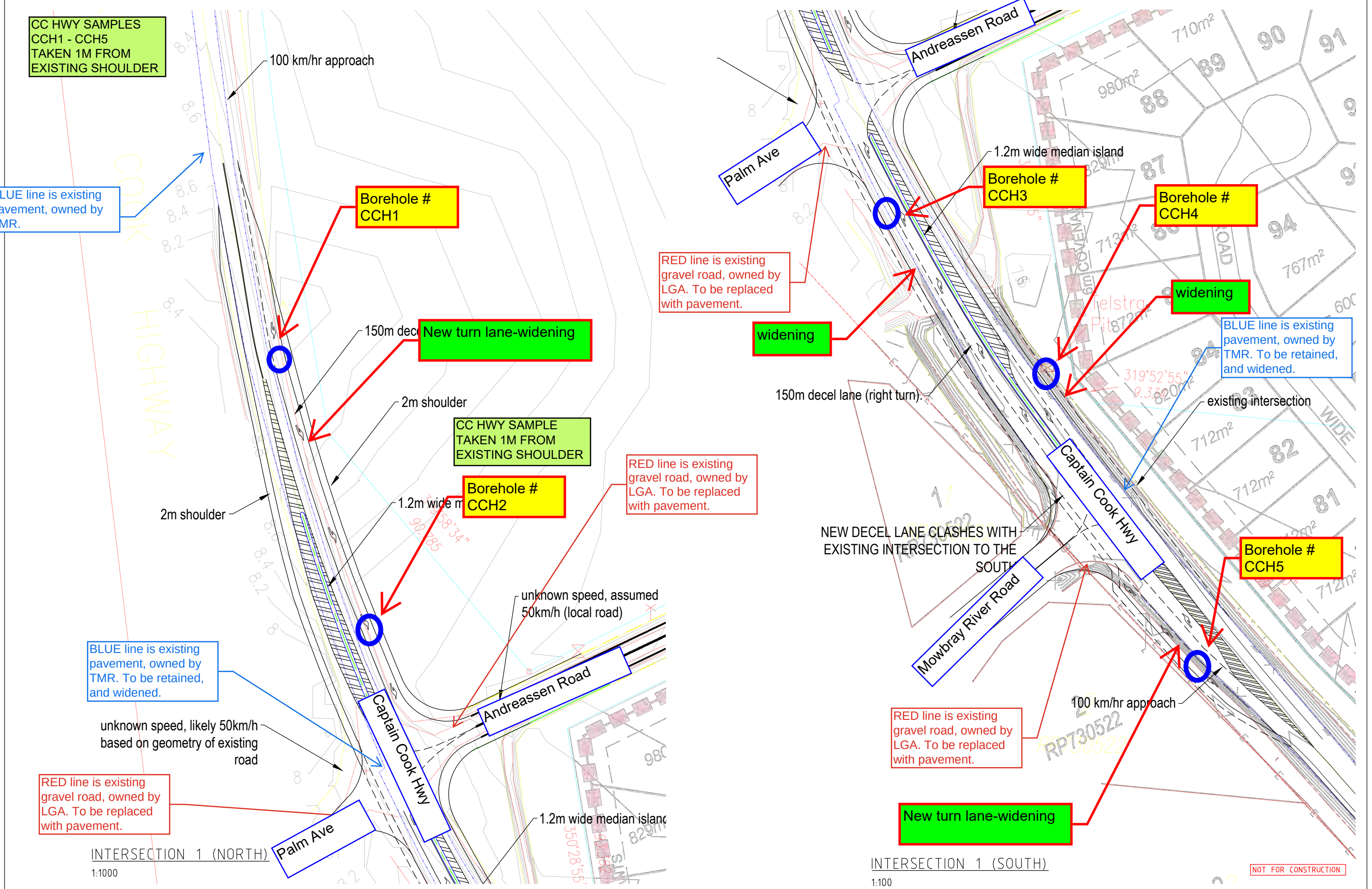
N_{DT} 5.87E+06

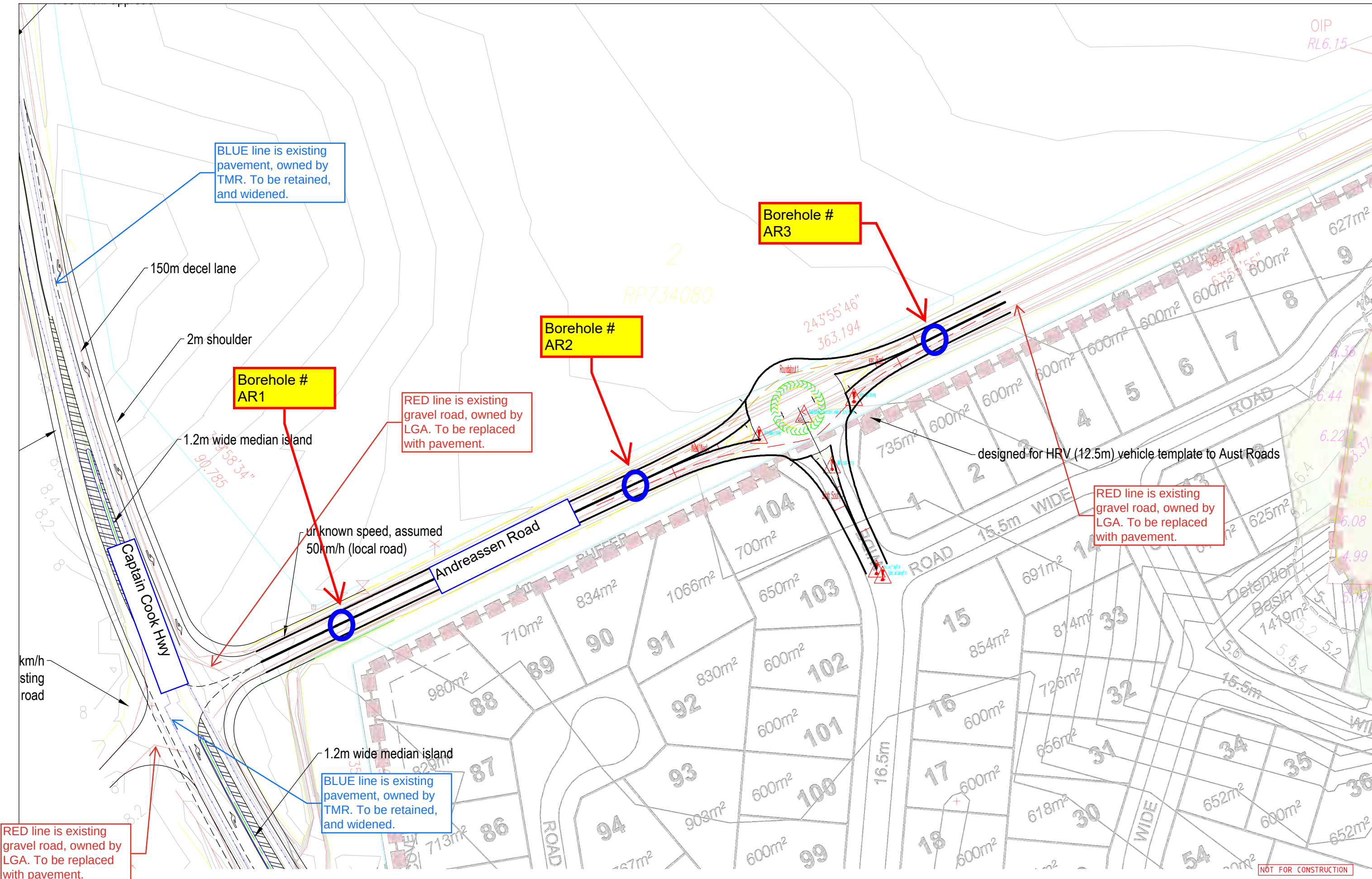
6. Express Traffic Loading

$$DESA = ESA/HVAG \times N_{DT} \quad (\text{Eq. 38, page 116})$$

DESA 5.28E+06

Appendix B – Soil Testing and CBR Results





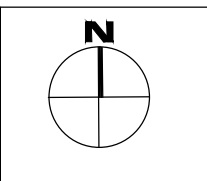
REVISIONS				
No.	BY	DATE	DESCRIPTION	APPROVED
A	LES	14.05.2025	DRAFT FOR REVIEW	IRW

This drawing is confidential and shall only be used for the purposes of this project.

Scale
1:1000 A3

DO NOT SCALE. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE STELLEN QUALITY ASSURANCE SYSTEM			
DESIGNED	LES	CHECKED	IRW
DRAWN	LES	CHECKED	IRW
APPROVED	IRW	DATE	14.05.2025

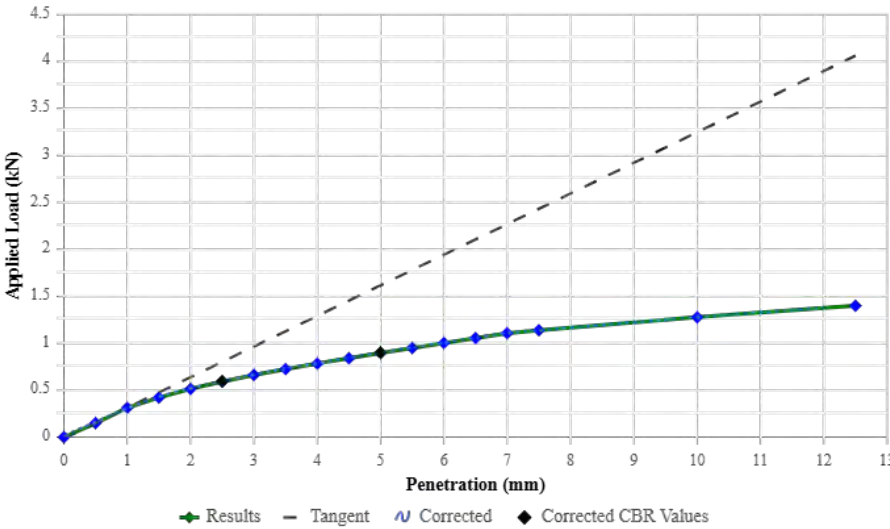


ANDREASSEN ROAD, PORT DOUGLAS - FUNDING APPLICATION			
LAYOUT - PROPOSED ROUNDABOUT			
Size A3	Status DRAFT FOR REVIEW	Dwg No. SK-101	Rev. A

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00030-1 | ISSUE #: 1

Sample Details

Sample Id	S-TL-26-00117	Location	0.3-0.6m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	IR1
Date Tested	Monday, 26 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name	Sandy CLAY	Northing	
Soil Aggregate Description	Sandy CLAY, Firm, Yellow-Brown Mottled Grey, Wet	Elevation (m)	

Test Results		Load V Penetration
CBR Value (%)	4.5	Load v Penetration 
CBR Value at 2.5mm (%)	4.5	
CBR Value at 5.0mm (%)	4.5	
Maximum Dry Density (t/m³)	1.80	
Optimum Moisture Content (%)	13.5	
Dry Density before Soaking (t/m³)	1.77	
Density Ratio before soaking (%)	98.0	
Moisture Content before Soaking (%)	13.6	
Moisture Ratio before soaking (%)	99.5	
Dry Density after Soaking (t/m³)	1.75	
Density Ratio after soaking (%)	97.5	
Swell (%)	1.0	
Moisture Content of Top 30mm (%)	18.5	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	116.0	

Notes and Comments

 EARTH TEST Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00030-1, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	 Accredited for compliance with ISO/IEC 17025 - Testing  Approved Signatory: Gavin Negri Date Of Issue: 16/02/2026 NATA Accredited Lab # 18563
---	--	---	--

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00030-1 | ISSUE #: 1

Sample Details			
Sample Id	S-TL-26-00118	Location	0.4-0.8m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	IR2
Date Tested	Thursday, 26 February 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name	Sandy CLAY	Northing	
Soil Aggregate Description	Sandy CLAY, Soft, Yellow-Brown, Moist	Elevation (m)	

Test Results		Load V Penetration																																																																												
CBR Value (%)	2.0	Load v Penetration Applied Load (kN) Penetration (mm) Legend: Results (green line with diamond markers), Tangent (dashed line), Corrected (blue line with diamond markers), Corrected CBR Values (black diamond markers). <table border="1"><caption>Data points from the Load v Penetration graph</caption><thead><tr><th>Penetration (mm)</th><th>Results (kN)</th><th>Corrected (kN)</th><th>Corrected CBR Values (%)</th></tr></thead><tbody><tr><td>0</td><td>0.0</td><td>0.0</td><td>0.0</td></tr><tr><td>0.5</td><td>0.1</td><td>0.1</td><td>0.1</td></tr><tr><td>1.0</td><td>0.15</td><td>0.15</td><td>0.15</td></tr><tr><td>1.5</td><td>0.18</td><td>0.18</td><td>0.18</td></tr><tr><td>2.0</td><td>0.2</td><td>0.2</td><td>0.2</td></tr><tr><td>2.5</td><td>0.22</td><td>0.22</td><td>0.22</td></tr><tr><td>3.0</td><td>0.25</td><td>0.25</td><td>0.25</td></tr><tr><td>3.5</td><td>0.28</td><td>0.28</td><td>0.28</td></tr><tr><td>4.0</td><td>0.3</td><td>0.3</td><td>0.3</td></tr><tr><td>4.5</td><td>0.33</td><td>0.33</td><td>0.33</td></tr><tr><td>5.0</td><td>0.35</td><td>0.35</td><td>0.35</td></tr><tr><td>5.5</td><td>0.38</td><td>0.38</td><td>0.38</td></tr><tr><td>6.0</td><td>0.4</td><td>0.4</td><td>0.4</td></tr><tr><td>6.5</td><td>0.42</td><td>0.42</td><td>0.42</td></tr><tr><td>7.0</td><td>0.45</td><td>0.45</td><td>0.45</td></tr><tr><td>7.5</td><td>0.48</td><td>0.48</td><td>0.48</td></tr><tr><td>10.0</td><td>0.55</td><td>0.55</td><td>0.55</td></tr><tr><td>12.5</td><td>0.65</td><td>0.65</td><td>0.65</td></tr></tbody></table>	Penetration (mm)	Results (kN)	Corrected (kN)	Corrected CBR Values (%)	0	0.0	0.0	0.0	0.5	0.1	0.1	0.1	1.0	0.15	0.15	0.15	1.5	0.18	0.18	0.18	2.0	0.2	0.2	0.2	2.5	0.22	0.22	0.22	3.0	0.25	0.25	0.25	3.5	0.28	0.28	0.28	4.0	0.3	0.3	0.3	4.5	0.33	0.33	0.33	5.0	0.35	0.35	0.35	5.5	0.38	0.38	0.38	6.0	0.4	0.4	0.4	6.5	0.42	0.42	0.42	7.0	0.45	0.45	0.45	7.5	0.48	0.48	0.48	10.0	0.55	0.55	0.55	12.5	0.65	0.65	0.65
Penetration (mm)	Results (kN)		Corrected (kN)	Corrected CBR Values (%)																																																																										
0	0.0		0.0	0.0																																																																										
0.5	0.1		0.1	0.1																																																																										
1.0	0.15		0.15	0.15																																																																										
1.5	0.18		0.18	0.18																																																																										
2.0	0.2		0.2	0.2																																																																										
2.5	0.22		0.22	0.22																																																																										
3.0	0.25		0.25	0.25																																																																										
3.5	0.28		0.28	0.28																																																																										
4.0	0.3		0.3	0.3																																																																										
4.5	0.33		0.33	0.33																																																																										
5.0	0.35		0.35	0.35																																																																										
5.5	0.38		0.38	0.38																																																																										
6.0	0.4		0.4	0.4																																																																										
6.5	0.42		0.42	0.42																																																																										
7.0	0.45		0.45	0.45																																																																										
7.5	0.48	0.48	0.48																																																																											
10.0	0.55	0.55	0.55																																																																											
12.5	0.65	0.65	0.65																																																																											
CBR Value at 2.5mm (%)	2.0																																																																													
CBR Value at 5.0mm (%)	2.0																																																																													
Maximum Dry Density (t/m³)	1.70																																																																													
Optimum Moisture Content (%)	14.0																																																																													
Dry Density before Soaking (t/m³)	1.67																																																																													
Density Ratio before soaking (%)	98.0																																																																													
Moisture Content before Soaking (%)	13.8																																																																													
Moisture Ratio before soaking (%)	97.0																																																																													
Dry Density after Soaking (t/m³)	1.62																																																																													
Density Ratio after soaking (%)	95.0																																																																													
Swell (%)	3.5																																																																													
Moisture Content of Top 30mm (%)	26.0																																																																													
Moisture Content of Remaining Depth (%)																																																																														
Compactive Effort	Standard																																																																													
Surcharge Mass (kg)	4.5																																																																													
Period of Soaking (Days)	4																																																																													
CBR Moisture Content Method	AS 1289.2.1.1																																																																													
Plasticity Method	Visual/Tactile Assessment																																																																													
Sample Curing Time (h)	96.0																																																																													

 Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00030-1, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Accredited for compliance with ISO/IEC 17025 - Testing  Approved Signatory: Gavin Negri Date Of Issue: 16/02/2026 NATA Accredited Lab # 18563
--	--	--	---

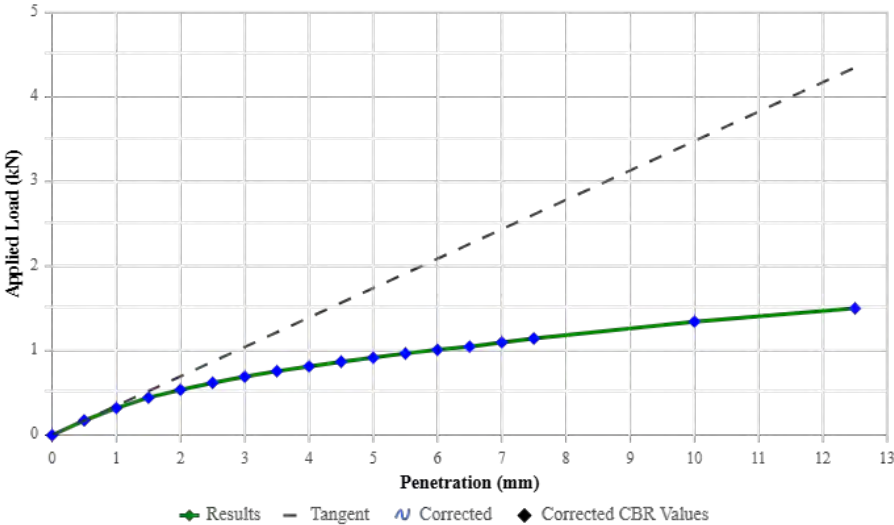
CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00030-1 | ISSUE #: 1

Sample Details

Sample Id	S-TL-26-00119	Location	0.4-0.8m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	IR3
Date Tested	Monday, 26 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name	Sandy CLAY	Northing	
Soil Aggregate Description	Sandy CLAY, Soft, Yellow-Brown, Moist	Elevation (m)	

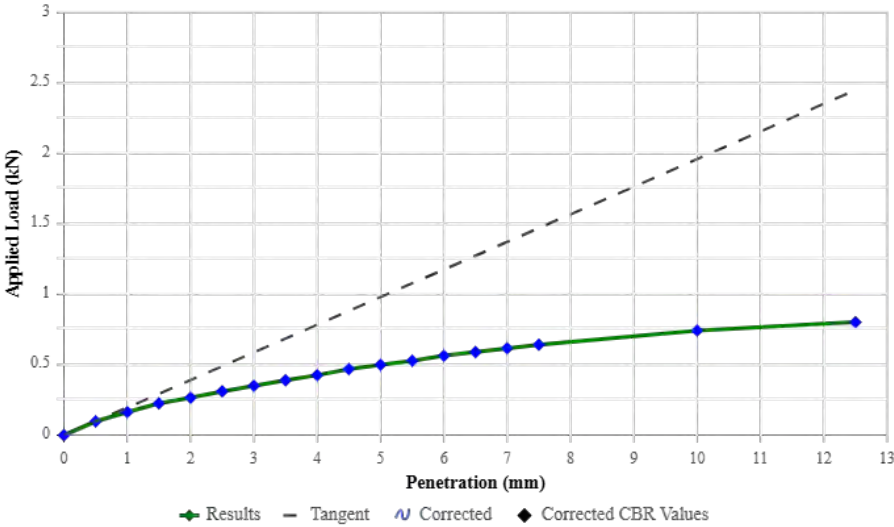
Test Results	Load V Penetration
CBR Value (%)	4.5
CBR Value at 2.5mm (%)	4.5
CBR Value at 5.0mm (%)	4.5
Maximum Dry Density (t/m³)	1.82
Optimum Moisture Content (%)	13.0
Dry Density before Soaking (t/m³)	1.78
Density Ratio before soaking (%)	97.5
Moisture Content before Soaking (%)	13.5
Moisture Ratio before soaking (%)	103.0
Dry Density after Soaking (t/m³)	1.76
Density Ratio after soaking (%)	97.0
Swell (%)	1.0
Moisture Content of Top 30mm (%)	18.8
Moisture Content of Remaining Depth (%)	
Compactive Effort	Standard
Surcharge Mass (kg)	4.5
Period of Soaking (Days)	4
CBR Moisture Content Method	AS 1289.2.1.1
Plasticity Method	Visual/Tactile Assessment
Sample Curing Time (h)	94.0

Load v Penetration



 Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00030-1, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Accredited for compliance with ISO/IEC 17025 - Testing  Approved Signatory: Gavin Negri Date Of Issue: 16/02/2026 NATA Accredited Lab # 18563
	CALIFORNIA BEARING RATIO REPORT CBR-W-TL-26-00030-1 ISSUE #: 1		

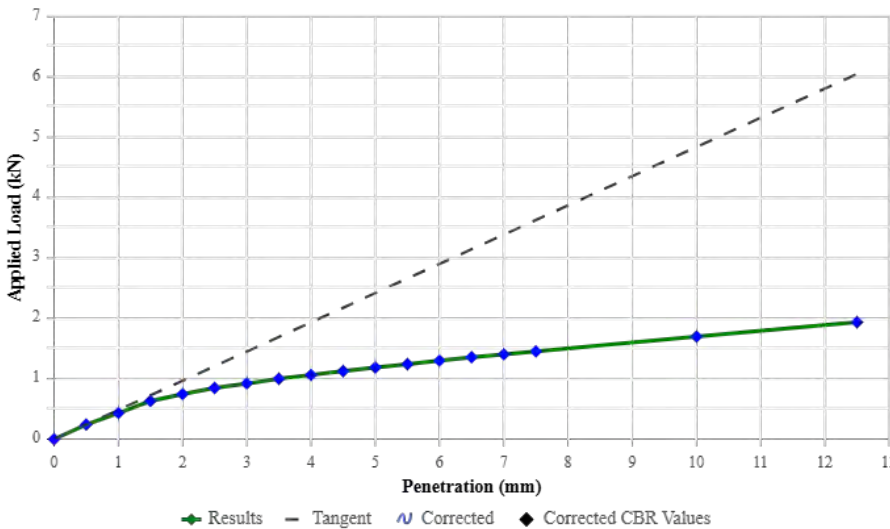
Sample Details			
Sample Id	S-TL-26-00120	Location	0.3-0.7m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	IR4
Date Tested	Monday, 26 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name	Sandy CLAY	Northing	
Soil Aggregate Description	Sandy CLAY, Soft, Yellow-Brown, Moist	Elevation (m)	

Test Results		Load V Penetration
CBR Value (%)	2.5	Load v Penetration 
CBR Value at 2.5mm (%)	2.5	
CBR Value at 5.0mm (%)	2.5	
Maximum Dry Density (t/m³)	1.64	
Optimum Moisture Content (%)	16.5	
Dry Density before Soaking (t/m³)	1.62	
Density Ratio before soaking (%)	98.5	
Moisture Content before Soaking (%)	16.1	
Moisture Ratio before soaking (%)	98.0	
Dry Density after Soaking (t/m³)	1.58	
Density Ratio after soaking (%)	96.0	
Swell (%)	2.5	
Moisture Content of Top 30mm (%)	25.8	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	99.0	

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00030-1 | ISSUE #: 1

Sample Details

Sample Id	S-TL-26-00121	Location	0.3-0.6m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	IR5
Date Tested	Monday, 26 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name	Sandy CLAY	Northing	
Soil Aggregate Description	Sandy CLAY, Soft, Yellow-Brown, Moist	Elevation (m)	

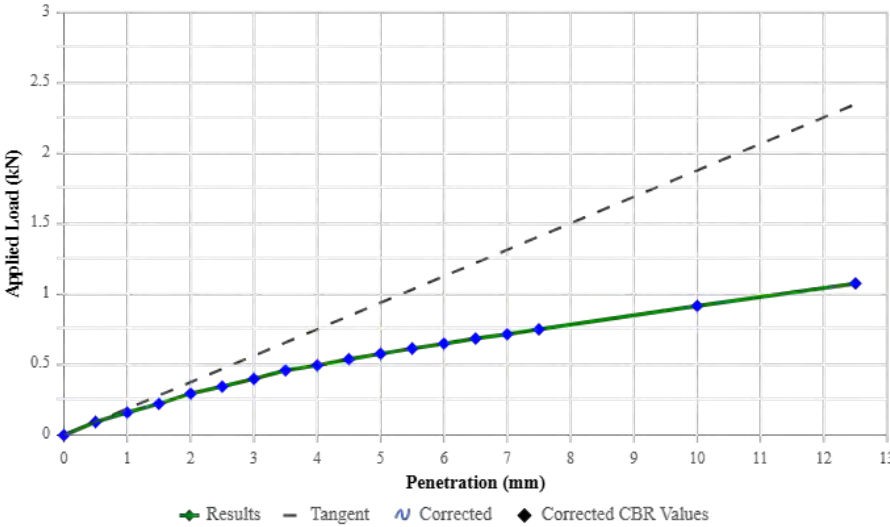
Test Results		Load V Penetration																																				
CBR Value (%)	6	Load v Penetration  <table><caption>Graph Data Points (Approximate)</caption><tr><th>Penetration (mm)</th><th>Applied Load (kN) - Results</th><th>Applied Load (kN) - Corrected</th></tr><tr><td>0</td><td>0.0</td><td>0.0</td></tr><tr><td>1</td><td>0.4</td><td>0.4</td></tr><tr><td>2</td><td>0.7</td><td>0.7</td></tr><tr><td>3</td><td>0.9</td><td>0.9</td></tr><tr><td>4</td><td>1.0</td><td>1.0</td></tr><tr><td>5</td><td>1.1</td><td>1.1</td></tr><tr><td>6</td><td>1.2</td><td>1.2</td></tr><tr><td>7</td><td>1.3</td><td>1.3</td></tr><tr><td>8</td><td>1.4</td><td>1.4</td></tr><tr><td>10</td><td>1.6</td><td>1.6</td></tr><tr><td>12.5</td><td>1.9</td><td>1.9</td></tr></table>	Penetration (mm)	Applied Load (kN) - Results	Applied Load (kN) - Corrected	0	0.0	0.0	1	0.4	0.4	2	0.7	0.7	3	0.9	0.9	4	1.0	1.0	5	1.1	1.1	6	1.2	1.2	7	1.3	1.3	8	1.4	1.4	10	1.6	1.6	12.5	1.9	1.9
Penetration (mm)	Applied Load (kN) - Results		Applied Load (kN) - Corrected																																			
0	0.0		0.0																																			
1	0.4		0.4																																			
2	0.7		0.7																																			
3	0.9		0.9																																			
4	1.0		1.0																																			
5	1.1		1.1																																			
6	1.2		1.2																																			
7	1.3		1.3																																			
8	1.4		1.4																																			
10	1.6		1.6																																			
12.5	1.9		1.9																																			
CBR Value at 2.5mm (%)	6																																					
CBR Value at 5.0mm (%)	6																																					
Maximum Dry Density (t/m³)	1.73																																					
Optimum Moisture Content (%)	14.5																																					
Dry Density before Soaking (t/m³)	1.69																																					
Density Ratio before soaking (%)	97.5																																					
Moisture Content before Soaking (%)	15.1																																					
Moisture Ratio before soaking (%)	102.5																																					
Dry Density after Soaking (t/m³)	1.68																																					
Density Ratio after soaking (%)	97.0																																					
Swell (%)	0.5																																					
Moisture Content of Top 30mm (%)	20.7																																					
Moisture Content of Remaining Depth (%)																																						
Compactive Effort	Standard																																					
Surcharge Mass (kg)	4.5																																					
Period of Soaking (Days)	4																																					
CBR Moisture Content Method	AS 1289.2.1.1																																					
Plasticity Method	Visual/Tactile Assessment																																					
Sample Curing Time (h)	98.0																																					

Notes and Comments

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00030-1 | ISSUE #: 1

Sample Details

Sample Id	S-TL-26-00122	Location	0.4-0.7m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	IR6
Date Tested	Monday, 26 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name	Sandy CLAY	Northing	
Soil Aggregate Description	Sandy CLAY, Soft, Yellow-Brown, Mottled Grey, Moist	Elevation (m)	

Test Results		Load V Penetration
CBR Value (%)	3.0	Load v Penetration 
CBR Value at 2.5mm (%)	2.5	
CBR Value at 5.0mm (%)	3.0	
Maximum Dry Density (t/m³)	1.70	
Optimum Moisture Content (%)	15.5	
Dry Density before Soaking (t/m³)	1.67	
Density Ratio before soaking (%)	98.0	
Moisture Content before Soaking (%)	15.6	
Moisture Ratio before soaking (%)	99.5	
Dry Density after Soaking (t/m³)	1.65	
Density Ratio after soaking (%)	97.0	
Swell (%)	1.0	
Moisture Content of Top 30mm (%)	23.4	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	73.0	

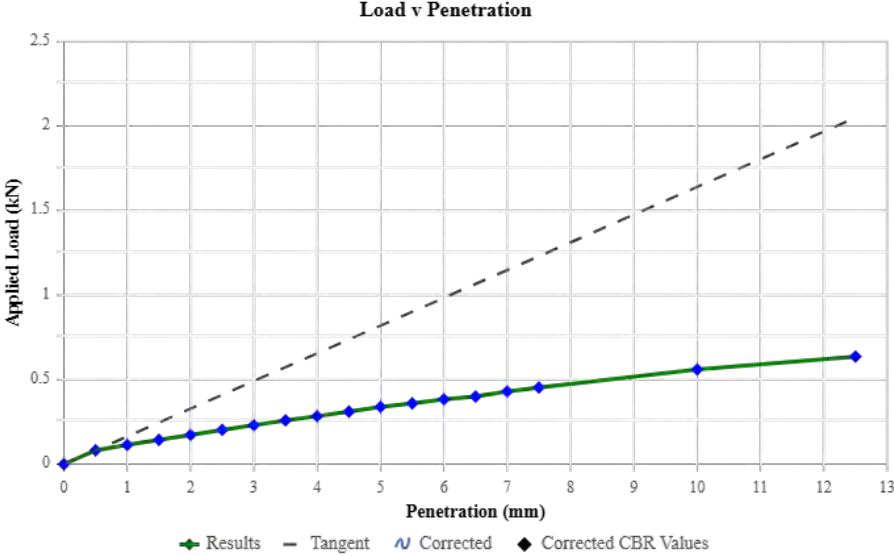
Notes and Comments

 Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00030-1, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	 Accredited for compliance with ISO/IEC 17025 - Testing  Approved Signatory: Gavin Negri Date Of Issue: 16/02/2026 NATA Accredited Lab # 18563
--	--	---	--

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00030-1 | ISSUE #: 1

Sample Details

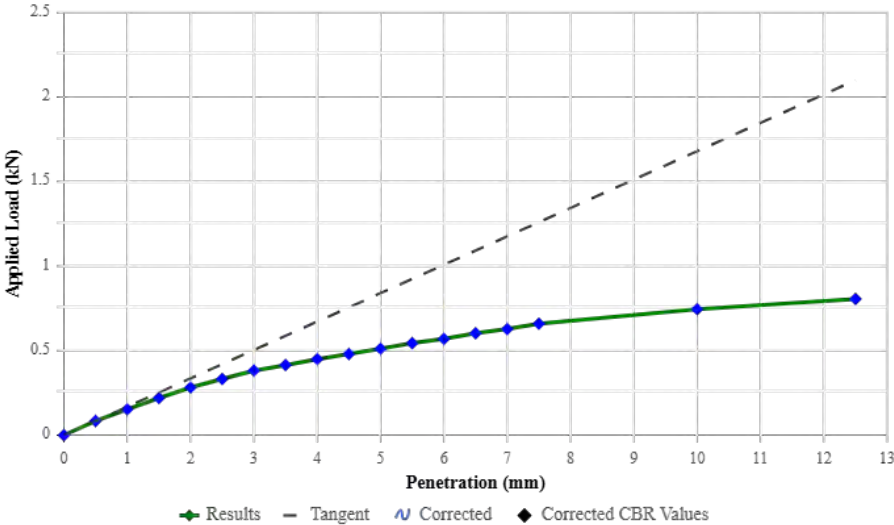
Sample Id	S-TL-26-00123	Location	0.3-0.6m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	IR7
Date Tested	Monday, 26 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name	Sandy CLAY	Northing	
Soil Aggregate Description	Sandy CLAY, Very Soft, Yellow-Brown, Wet	Elevation (m)	

Test Results		Load v Penetration
CBR Value (%)	1.5	
CBR Value at 2.5mm (%)	1.5	
CBR Value at 5.0mm (%)	1.5	
Maximum Dry Density (t/m³)	1.71	
Optimum Moisture Content (%)	15.5	
Dry Density before Soaking (t/m³)	1.68	
Density Ratio before soaking (%)	98.0	
Moisture Content before Soaking (%)	15.9	
Moisture Ratio before soaking (%)	101.5	
Dry Density after Soaking (t/m³)	1.63	
Density Ratio after soaking (%)	95.5	
Swell (%)	2.5	
Moisture Content of Top 30mm (%)	23.8	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	97.0	

Notes and Comments

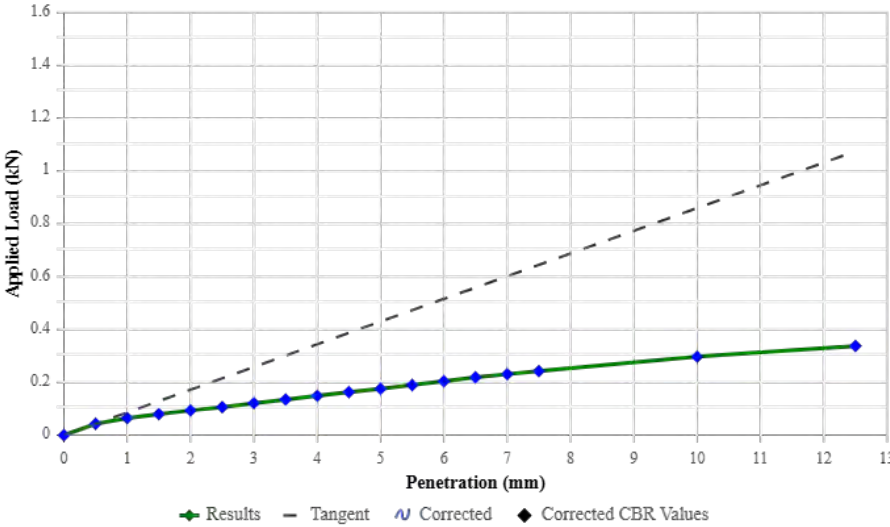
 Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00030-1, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Accredited for compliance with ISO/IEC 17025 - Testing  Approved Signatory: Gavin Negri Date Of Issue: 16/02/2026 NATA Accredited Lab # 18563
	CALIFORNIA BEARING RATIO REPORT CBR-W-TL-26-00030-1 ISSUE #: 1		

Sample Details			
Sample Id	S-TL-26-00124	Location	0.3-0.7m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	IR8
Date Tested	Monday, 26 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name	Sandy CLAY	Northing	
Soil Aggregate Description	Sandy CLAY, Soft, Yellow-Brown, Moist	Elevation (m)	

Test Results		Load V Penetration
CBR Value (%)	2.5	Load v Penetration 
CBR Value at 2.5mm (%)	2.5	
CBR Value at 5.0mm (%)	2.5	
Maximum Dry Density (t/m³)	1.65	
Optimum Moisture Content (%)	15.5	
Dry Density before Soaking (t/m³)	1.62	
Density Ratio before soaking (%)	98.5	
Moisture Content before Soaking (%)	14.9	
Moisture Ratio before soaking (%)	97.0	
Dry Density after Soaking (t/m³)	1.60	
Density Ratio after soaking (%)	97.0	
Swell (%)	1.5	
Moisture Content of Top 30mm (%)	23.7	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	98.0	

 Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00030-1, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Accredited for compliance with ISO/IEC 17025 - Testing  Approved Signatory: Gavin Negri Date Of Issue: 16/02/2026 NATA Accredited Lab # 18563
	CALIFORNIA BEARING RATIO REPORT CBR-W-TL-26-00030-1 ISSUE #: 1		

Sample Details			
Sample Id	S-TL-26-00125	Location	0.4-0.7m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	IR9
Date Tested	Monday, 26 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name	Sandy CLAY	Northing	
Soil Aggregate Description	Sandy CLAY, Soft, Yellow-Brown, Moist	Elevation (m)	

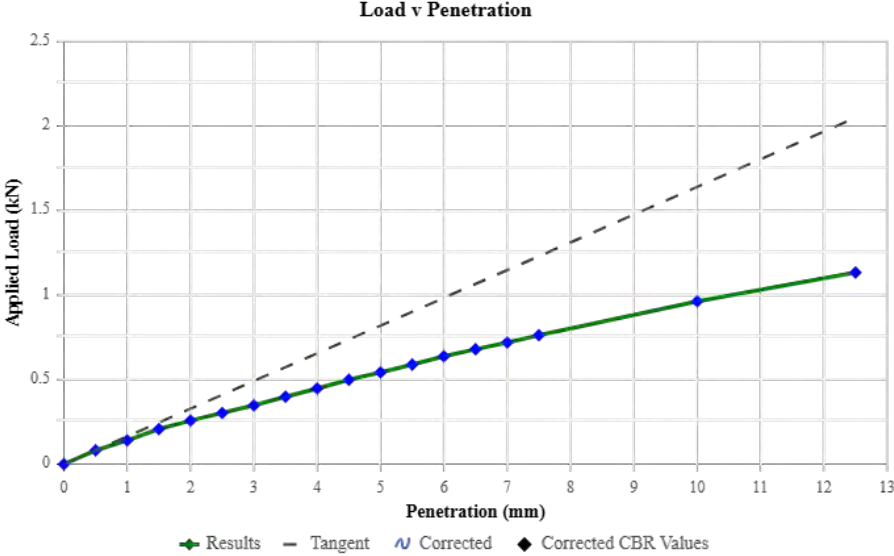
Test Results		Load V Penetration
CBR Value (%)	1.0	Load v Penetration 
CBR Value at 2.5mm (%)	1.0	
CBR Value at 5.0mm (%)	1.0	
Maximum Dry Density (t/m³)	1.71	
Optimum Moisture Content (%)	12.0	
Dry Density before Soaking (t/m³)	1.67	
Density Ratio before soaking (%)	97.5	
Moisture Content before Soaking (%)	12.3	
Moisture Ratio before soaking (%)	104.0	
Dry Density after Soaking (t/m³)	1.61	
Density Ratio after soaking (%)	94.0	
Swell (%)	4.0	
Moisture Content of Top 30mm (%)	26.1	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	116.0	

 Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00030-1, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	 Accredited for compliance with ISO/IEC 17025 - Testing  Approved Signatory: Gavin Negri Date Of Issue: 16/02/2026 NATA Accredited Lab # 18563
--	--	---	--

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00030-1 | ISSUE #: 1

Sample Details

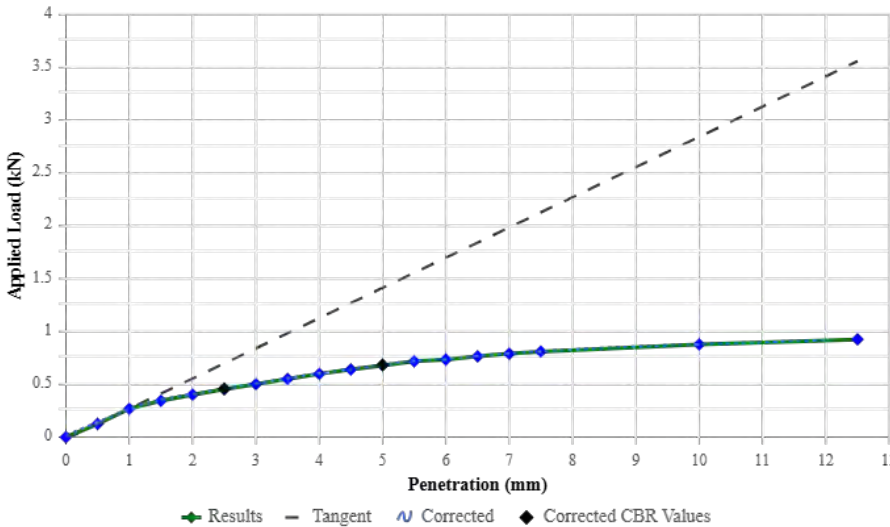
Sample Id	S-TL-26-00126	Location	0.4-0.7m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	IR10
Date Tested	Monday, 26 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name	Sandy CLAY	Northing	
Soil Aggregate Description	Sandy CLAY, Firm, Yellow-Brown Mottled Grey, Moist	Elevation (m)	

Test Results		Load V Penetration
CBR Value (%)	2.5	
CBR Value at 2.5mm (%)	2.5	
CBR Value at 5.0mm (%)	2.5	
Maximum Dry Density (t/m³)	1.71	
Optimum Moisture Content (%)	15.0	
Dry Density before Soaking (t/m³)	1.68	
Density Ratio before soaking (%)	98.0	
Moisture Content before Soaking (%)	14.9	
Moisture Ratio before soaking (%)	98.5	
Dry Density after Soaking (t/m³)	1.65	
Density Ratio after soaking (%)	96.5	
Swell (%)	2.0	
Moisture Content of Top 30mm (%)	23.7	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	118.0	

Notes and Comments

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00030-1 | ISSUE #: 1

Sample Details			
Sample Id	S-TL-26-00127	Location	0.5-0.8m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	IR11
Date Tested	Wednesday, 28 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name	Sandy CLAY	Northing	
Soil Aggregate Description	Sandy CLAY, Soft, Yellow-Brown, Wet	Elevation (m)	

Test Results		Load V Penetration																																																																																																																																	
CBR Value (%)	3.5	Load v Penetration  <table><caption>Load v Penetration Data Points (Approximate)</caption><tr><th>Penetration (mm)</th><th>Applied Load (kN)</th><th>Type</th></tr><tr><td>0</td><td>0.0</td><td>Results</td></tr><tr><td>1</td><td>0.2</td><td>Results</td></tr><tr><td>2</td><td>0.3</td><td>Results</td></tr><tr><td>3</td><td>0.4</td><td>Results</td></tr><tr><td>4</td><td>0.5</td><td>Results</td></tr><tr><td>5</td><td>0.6</td><td>Results</td></tr><tr><td>6</td><td>0.7</td><td>Results</td></tr><tr><td>7</td><td>0.75</td><td>Results</td></tr><tr><td>8</td><td>0.8</td><td>Results</td></tr><tr><td>9</td><td>0.85</td><td>Results</td></tr><tr><td>10</td><td>0.9</td><td>Results</td></tr><tr><td>11</td><td>0.95</td><td>Results</td></tr><tr><td>12</td><td>0.98</td><td>Results</td></tr><tr><td>13</td><td>1.0</td><td>Results</td></tr><tr><td>0</td><td>0.0</td><td>Corrected</td></tr><tr><td>1</td><td>0.2</td><td>Corrected</td></tr><tr><td>2</td><td>0.3</td><td>Corrected</td></tr><tr><td>3</td><td>0.4</td><td>Corrected</td></tr><tr><td>4</td><td>0.5</td><td>Corrected</td></tr><tr><td>5</td><td>0.6</td><td>Corrected</td></tr><tr><td>6</td><td>0.7</td><td>Corrected</td></tr><tr><td>7</td><td>0.75</td><td>Corrected</td></tr><tr><td>8</td><td>0.8</td><td>Corrected</td></tr><tr><td>9</td><td>0.85</td><td>Corrected</td></tr><tr><td>10</td><td>0.9</td><td>Corrected</td></tr><tr><td>11</td><td>0.95</td><td>Corrected</td></tr><tr><td>12</td><td>0.98</td><td>Corrected</td></tr><tr><td>13</td><td>1.0</td><td>Corrected</td></tr><tr><td>0</td><td>0.0</td><td>Corrected CBR Values</td></tr><tr><td>1</td><td>0.2</td><td>Corrected CBR Values</td></tr><tr><td>2</td><td>0.3</td><td>Corrected CBR Values</td></tr><tr><td>3</td><td>0.4</td><td>Corrected CBR Values</td></tr><tr><td>4</td><td>0.5</td><td>Corrected CBR Values</td></tr><tr><td>5</td><td>0.6</td><td>Corrected CBR Values</td></tr><tr><td>6</td><td>0.7</td><td>Corrected CBR Values</td></tr><tr><td>7</td><td>0.75</td><td>Corrected CBR Values</td></tr><tr><td>8</td><td>0.8</td><td>Corrected CBR Values</td></tr><tr><td>9</td><td>0.85</td><td>Corrected CBR Values</td></tr><tr><td>10</td><td>0.9</td><td>Corrected CBR Values</td></tr><tr><td>11</td><td>0.95</td><td>Corrected CBR Values</td></tr><tr><td>12</td><td>0.98</td><td>Corrected CBR Values</td></tr><tr><td>13</td><td>1.0</td><td>Corrected CBR Values</td></tr></table>	Penetration (mm)	Applied Load (kN)	Type	0	0.0	Results	1	0.2	Results	2	0.3	Results	3	0.4	Results	4	0.5	Results	5	0.6	Results	6	0.7	Results	7	0.75	Results	8	0.8	Results	9	0.85	Results	10	0.9	Results	11	0.95	Results	12	0.98	Results	13	1.0	Results	0	0.0	Corrected	1	0.2	Corrected	2	0.3	Corrected	3	0.4	Corrected	4	0.5	Corrected	5	0.6	Corrected	6	0.7	Corrected	7	0.75	Corrected	8	0.8	Corrected	9	0.85	Corrected	10	0.9	Corrected	11	0.95	Corrected	12	0.98	Corrected	13	1.0	Corrected	0	0.0	Corrected CBR Values	1	0.2	Corrected CBR Values	2	0.3	Corrected CBR Values	3	0.4	Corrected CBR Values	4	0.5	Corrected CBR Values	5	0.6	Corrected CBR Values	6	0.7	Corrected CBR Values	7	0.75	Corrected CBR Values	8	0.8	Corrected CBR Values	9	0.85	Corrected CBR Values	10	0.9	Corrected CBR Values	11	0.95	Corrected CBR Values	12	0.98	Corrected CBR Values	13	1.0	Corrected CBR Values
Penetration (mm)	Applied Load (kN)		Type																																																																																																																																
0	0.0		Results																																																																																																																																
1	0.2		Results																																																																																																																																
2	0.3		Results																																																																																																																																
3	0.4		Results																																																																																																																																
4	0.5		Results																																																																																																																																
5	0.6		Results																																																																																																																																
6	0.7		Results																																																																																																																																
7	0.75		Results																																																																																																																																
8	0.8		Results																																																																																																																																
9	0.85		Results																																																																																																																																
10	0.9		Results																																																																																																																																
11	0.95		Results																																																																																																																																
12	0.98		Results																																																																																																																																
13	1.0		Results																																																																																																																																
0	0.0		Corrected																																																																																																																																
1	0.2		Corrected																																																																																																																																
2	0.3		Corrected																																																																																																																																
3	0.4		Corrected																																																																																																																																
4	0.5	Corrected																																																																																																																																	
5	0.6	Corrected																																																																																																																																	
6	0.7	Corrected																																																																																																																																	
7	0.75	Corrected																																																																																																																																	
8	0.8	Corrected																																																																																																																																	
9	0.85	Corrected																																																																																																																																	
10	0.9	Corrected																																																																																																																																	
11	0.95	Corrected																																																																																																																																	
12	0.98	Corrected																																																																																																																																	
13	1.0	Corrected																																																																																																																																	
0	0.0	Corrected CBR Values																																																																																																																																	
1	0.2	Corrected CBR Values																																																																																																																																	
2	0.3	Corrected CBR Values																																																																																																																																	
3	0.4	Corrected CBR Values																																																																																																																																	
4	0.5	Corrected CBR Values																																																																																																																																	
5	0.6	Corrected CBR Values																																																																																																																																	
6	0.7	Corrected CBR Values																																																																																																																																	
7	0.75	Corrected CBR Values																																																																																																																																	
8	0.8	Corrected CBR Values																																																																																																																																	
9	0.85	Corrected CBR Values																																																																																																																																	
10	0.9	Corrected CBR Values																																																																																																																																	
11	0.95	Corrected CBR Values																																																																																																																																	
12	0.98	Corrected CBR Values																																																																																																																																	
13	1.0	Corrected CBR Values																																																																																																																																	
CBR Value at 2.5mm (%)	3.5																																																																																																																																		
CBR Value at 5.0mm (%)	3.5																																																																																																																																		
Maximum Dry Density (t/m³)	1.68																																																																																																																																		
Optimum Moisture Content (%)	15.5																																																																																																																																		
Dry Density before Soaking (t/m³)	1.67																																																																																																																																		
Density Ratio before soaking (%)	99.0																																																																																																																																		
Moisture Content before Soaking (%)	14.4																																																																																																																																		
Moisture Ratio before soaking (%)	91.5																																																																																																																																		
Dry Density after Soaking (t/m³)	1.68																																																																																																																																		
Density Ratio after soaking (%)	99.5																																																																																																																																		
Swell (%)	-0.5																																																																																																																																		
Moisture Content of Top 30mm (%)	24.4																																																																																																																																		
Moisture Content of Remaining Depth (%)																																																																																																																																			
Compactive Effort	Standard																																																																																																																																		
Surcharge Mass (kg)	4.5																																																																																																																																		
Period of Soaking (Days)	4																																																																																																																																		
CBR Moisture Content Method	AS 1289.2.1.1																																																																																																																																		
Plasticity Method	Visual/Tactile Assessment																																																																																																																																		
Sample Curing Time (h)	168.0																																																																																																																																		



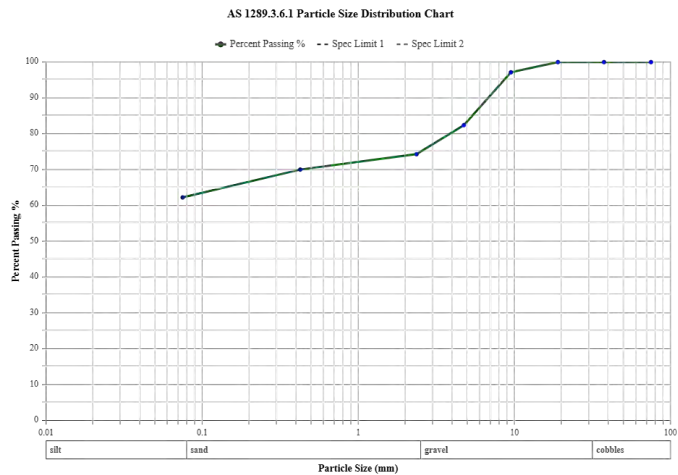
Quality of Materials Report

Report No: SAR-W-TL-26-00030-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	16/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00117	0.3-0.6m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:	Sandy CLAY	Lot Number:	IR1
Rock Type:		Field Sample Id:	1
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Firm, Yellow-Brown Mottled Grey, Wet	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Friday, 23 January 2026	S-TL-26-00117
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	100	
9.5mm	97	
4.75mm	82	
2.36mm	74	
0.425mm	70	
0.075mm	62	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00117
Result Name	Result Value	Limits
Moisture Content (%)	16.2	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00117
Result Name	Result Value	Limits
Liquid Limit (%)	38	
Plastic Limit (%)	18	
Plastic Index (%)	20	
Linear Shrinkage (%)	9.5	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



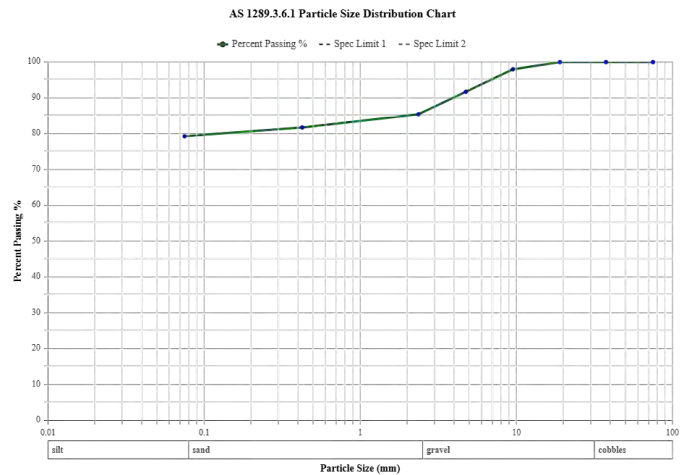
Quality of Materials Report

Report No: SAR-W-TL-26-00030-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	16/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00118	0.4-0.8m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:	Sandy CLAY	Lot Number:	IR2
Rock Type:		Field Sample Id:	2
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Soft, Yellow-Brown, Moist	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Wednesday, 28 January 2026	S-TL-26-00118
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	100	
9.5mm	98	
4.75mm	92	
2.36mm	85	
0.425mm	82	
0.075mm	79	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00118
Result Name	Result Value	Limits
Moisture Content (%)	17.6	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00118
Result Name	Result Value	Limits
Liquid Limit (%)	52	
Plastic Limit (%)	25	
Plastic Index (%)	27	
Linear Shrinkage (%)	12.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



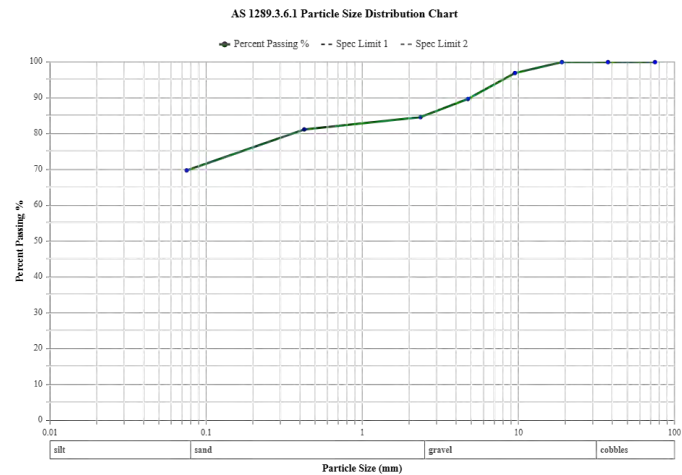
Quality of Materials Report

Report No: SAR-W-TL-26-00030-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	16/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00119	0.4-0.8m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:	Sandy CLAY	Lot Number:	IR3
Rock Type:		Field Sample Id:	3
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Soft, Yellow-Brown, Moist	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Wednesday, 28 January 2026	S-TL-26-00119
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	100	
9.5mm	97	
4.75mm	90	
2.36mm	85	
0.425mm	81	
0.075mm	70	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00119
Result Name	Result Value	Limits
Moisture Content (%)	14.1	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00119
Result Name	Result Value	Limits
Liquid Limit (%)	38	
Plastic Limit (%)	18	
Plastic Index (%)	20	
Linear Shrinkage (%)	10.5	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



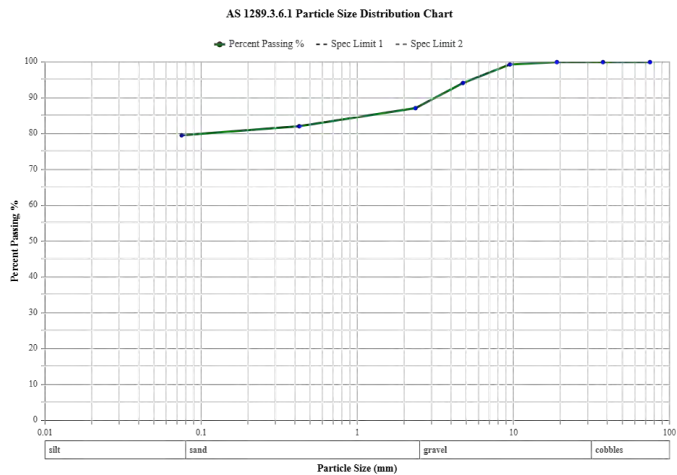
Quality of Materials Report

Report No: SAR-W-TL-26-00030-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	16/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00120	0.3-0.7m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:	Sandy CLAY	Lot Number:	IR4
Rock Type:		Field Sample Id:	4
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Soft, Yellow-Brown, Moist	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Wednesday, 28 January 2026	S-TL-26-00120
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	100	
9.5mm	99	
4.75mm	94	
2.36mm	87	
0.425mm	82	
0.075mm	80	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00120
Result Name	Result Value	Limits
Moisture Content (%)	19.0	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Friday, 30 January 2026	S-TL-26-00120
Result Name	Result Value	Limits
Liquid Limit (%)	52	
Plastic Limit (%)	24	
Plastic Index (%)	28	
Linear Shrinkage (%)	13.5	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



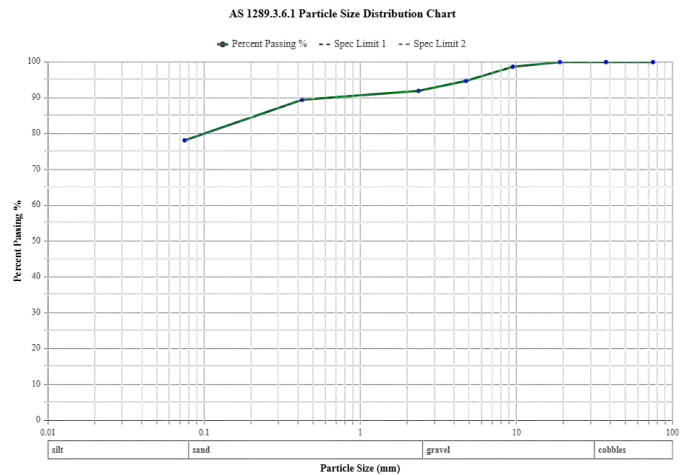
Quality of Materials Report

Report No: SAR-W-TL-26-00030-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	16/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00121	0.3-0.6m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:	Sandy CLAY	Lot Number:	IR5
Rock Type:		Field Sample Id:	5
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Soft, Yellow-Brown, Moist	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Wednesday, 28 January 2026	S-TL-26-00121
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	100	
9.5mm	99	
4.75mm	95	
2.36mm	92	
0.425mm	89	
0.075mm	78	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00121
Result Name	Result Value	Limits
Moisture Content (%)	19.9	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00121
Result Name	Result Value	Limits
Liquid Limit (%)	42	
Plastic Limit (%)	21	
Plastic Index (%)	21	
Linear Shrinkage (%)	9.5	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



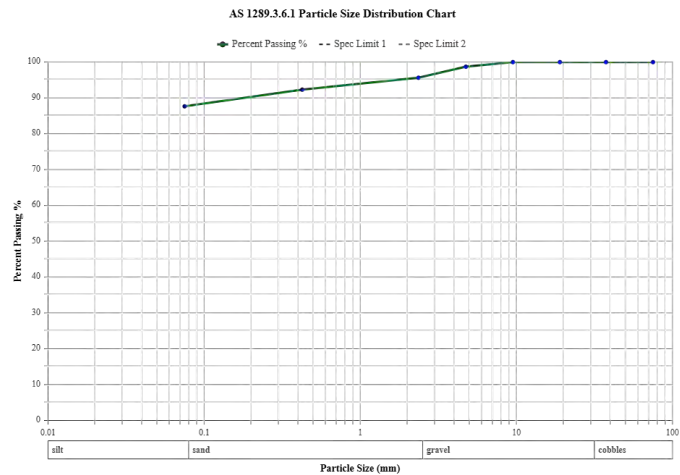
Quality of Materials Report

Report No: SAR-W-TL-26-00030-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	16/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00122	0.4-0.7m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:	Sandy CLAY	Lot Number:	IR6
Rock Type:		Field Sample Id:	6
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Soft, Yellow-Brown, Mottled Grey, Moist	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Wednesday, 28 January 2026	S-TL-26-00122
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	100	
9.5mm	100	
4.75mm	99	
2.36mm	96	
0.425mm	92	
0.075mm	88	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00122
Result Name	Result Value	Limits
Moisture Content (%)	18.7	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Friday, 30 January 2026	S-TL-26-00122
Result Name	Result Value	Limits
Liquid Limit (%)	44	
Plastic Limit (%)	22	
Plastic Index (%)	22	
Linear Shrinkage (%)	12.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



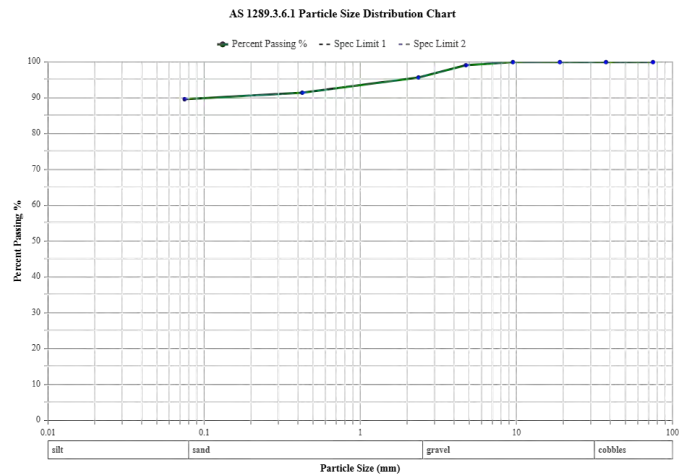
Quality of Materials Report

Report No: SAR-W-TL-26-00030-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	16/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00123	0.3-0.6m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:	Sandy CLAY	Lot Number:	IR7
Rock Type:		Field Sample Id:	7
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Very Soft, Yellow-Brown, Wet	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Wednesday, 28 January 2026	S-TL-26-00123
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	100	
9.5mm	100	
4.75mm	99	
2.36mm	96	
0.425mm	91	
0.075mm	90	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00123
Result Name	Result Value	Limits
Moisture Content (%)	16.6	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Friday, 30 January 2026	S-TL-26-00123
Result Name	Result Value	Limits
Liquid Limit (%)	47	
Plastic Limit (%)	22	
Plastic Index (%)	25	
Linear Shrinkage (%)	9.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



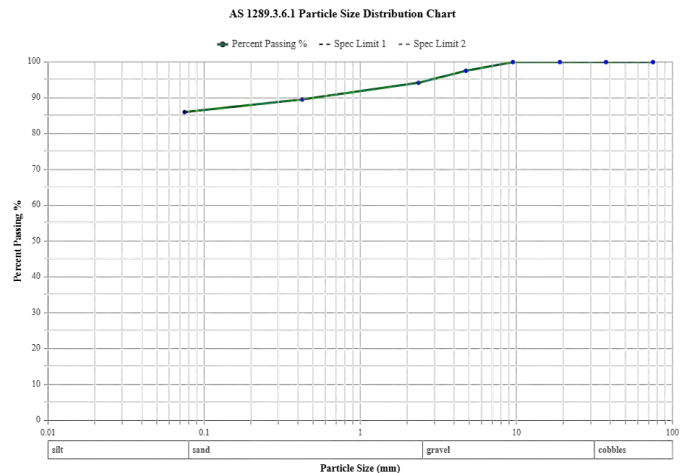
Quality of Materials Report

Report No: SAR-W-TL-26-00030-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	16/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00124	0.3-0.7m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:	Sandy CLAY	Lot Number:	IR8
Rock Type:		Field Sample Id:	8
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Soft, Yellow-Brown, Moist	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Wednesday, 28 January 2026	S-TL-26-00124
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	100	
9.5mm	100	
4.75mm	98	
2.36mm	94	
0.425mm	90	
0.075mm	86	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00124
Result Name	Result Value	Limits
Moisture Content (%)	22.4	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Friday, 30 January 2026	S-TL-26-00124
Result Name	Result Value	Limits
Liquid Limit (%)	46	
Plastic Limit (%)	22	
Plastic Index (%)	24	
Linear Shrinkage (%)	10.5	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



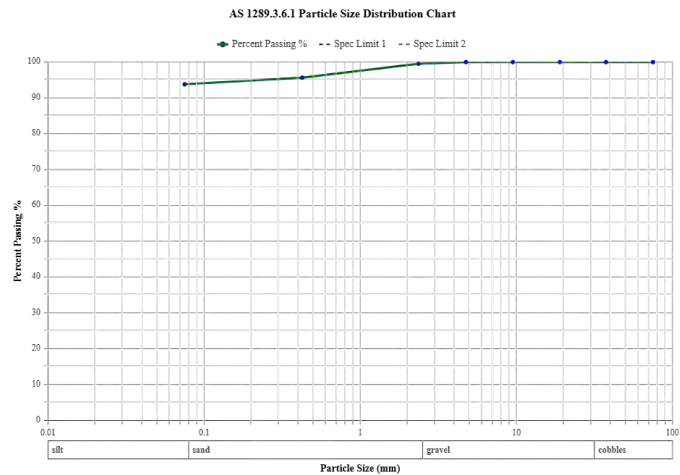
Quality of Materials Report

Report No: SAR-W-TL-26-00030-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	16/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00125	0.4-0.7m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:	Sandy CLAY	Lot Number:	IR9
Rock Type:		Field Sample Id:	9
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Soft, Yellow-Brown, Moist	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Friday, 23 January 2026	S-TL-26-00125
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	100	
9.5mm	100	
4.75mm	100	
2.36mm	100	
0.425mm	96	
0.075mm	94	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00125
Result Name	Result Value	Limits
Moisture Content (%)	14.9	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00125
Result Name	Result Value	Limits
Liquid Limit (%)	51	
Plastic Limit (%)	21	
Plastic Index (%)	30	
Linear Shrinkage (%)	13.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



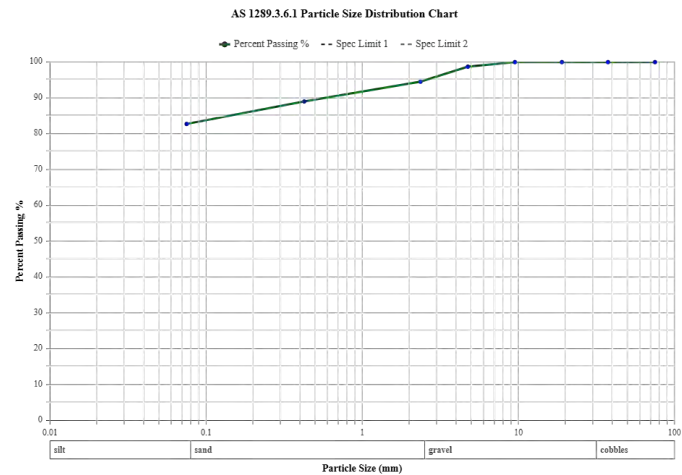
Quality of Materials Report

Report No: SAR-W-TL-26-00030-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	16/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00126	0.4-0.7m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:	Sandy CLAY	Lot Number:	IR10
Rock Type:		Field Sample Id:	10
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Firm, Yellow-Brown Mottled Grey, Moist	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Friday, 23 January 2026	S-TL-26-00126
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	100	
9.5mm	100	
4.75mm	99	
2.36mm	95	
0.425mm	89	
0.075mm	83	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00126
Result Name	Result Value	Limits
Moisture Content (%)	17.8	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00126
Result Name	Result Value	Limits
Liquid Limit (%)	48	
Plastic Limit (%)	22	
Plastic Index (%)	26	
Linear Shrinkage (%)	11.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



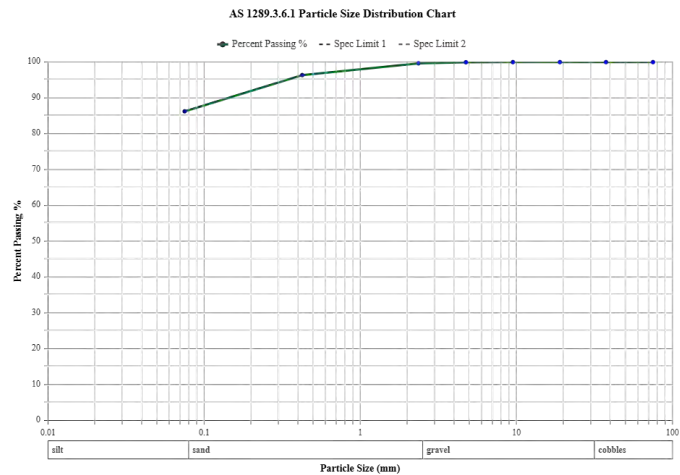
Quality of Materials Report

Report No: SAR-W-TL-26-00030-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	16/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00127	0.5-0.8m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:	Sandy CLAY	Lot Number:	IR11
Rock Type:		Field Sample Id:	11
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Soft, Yellow-Brown, Wet	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Friday, 23 January 2026	S-TL-26-00127
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	100	
9.5mm	100	
4.75mm	100	
2.36mm	100	
0.425mm	96	
0.075mm	86	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00127
Result Name	Result Value	Limits
Moisture Content (%)	15.7	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00127
Result Name	Result Value	Limits
Liquid Limit (%)	47	
Plastic Limit (%)	23	
Plastic Index (%)	24	
Linear Shrinkage (%)	11.5	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

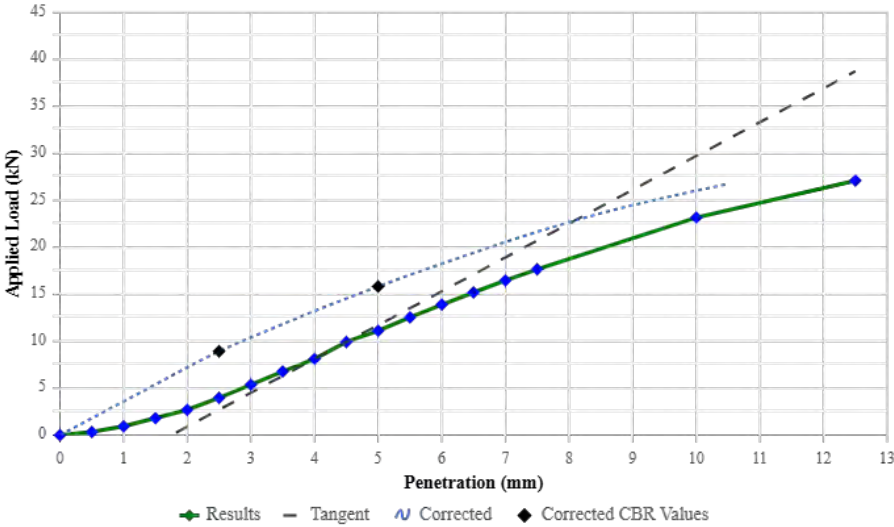
Test Results Only Apply To Sample/s Tested

 Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00029-1, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	 Accredited for compliance with ISO/IEC 17025 - Testing  Approved Signatory: Gavin Negri Date Of Issue: 17/02/2026 NATA Accredited Lab # 18563
--	---	--	---

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-1 | ISSUE #: 1

Sample Details

Sample Id	S-TL-26-00101	Location	0.0-0.25m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	CCH1-P
Date Tested	Friday, 16 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Pavement	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy Silty GRAVEL, Grey-Blue, Moist, Imported FILL	Elevation (m)	

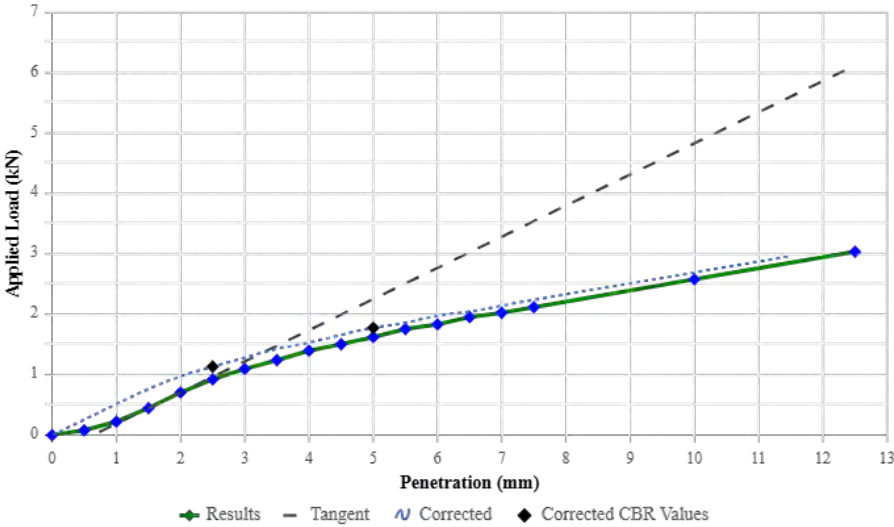
Test Results		Load V Penetration
CBR Value (%)	80	Load v Penetration 
CBR Value at 2.5mm (%)	70	
CBR Value at 5.0mm (%)	80	
Maximum Dry Density (t/m³)	2.16	
Optimum Moisture Content (%)	8.5	
Dry Density before Soaking (t/m³)	2.13	
Density Ratio before soaking (%)	98.5	
Moisture Content before Soaking (%)	7.9	
Moisture Ratio before soaking (%)	95.0	
Dry Density after Soaking (t/m³)	2.14	
Density Ratio after soaking (%)	98.5	
Swell (%)	-0.5	
Moisture Content of Top 30mm (%)	8.3	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	68.0	

Notes and Comments

 EARTH TEST Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00029-1, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	 Accredited for compliance with ISO/IEC 17025 - Testing  Approved Signatory: Gavin Negri Date Of Issue: 17/02/2026 NATA Accredited Lab # 18563
---	---	--	--

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-1 | ISSUE #: 1

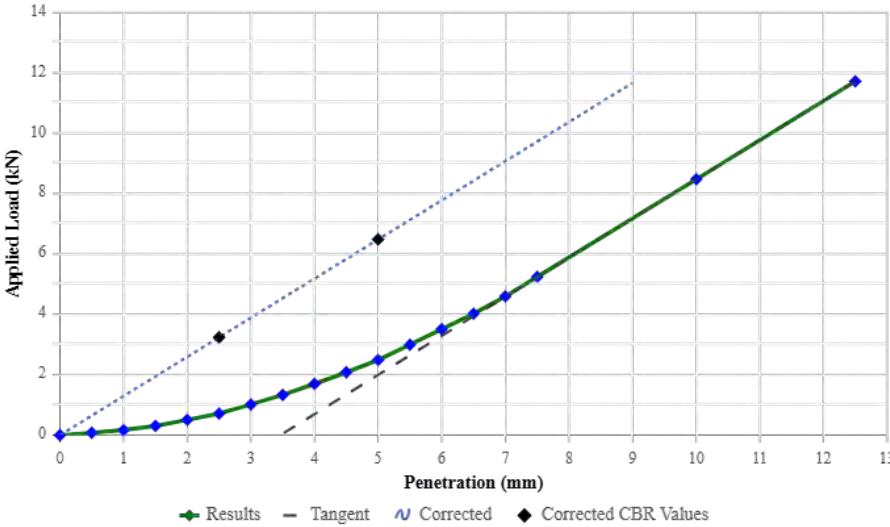
Sample Details			
Sample Id	S-TL-26-00102	Location	0.5-0.8m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	CCH1
Date Tested	Friday, 23 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy CLAY, Moist, Yellow-Brown	Elevation (m)	

Test Results		Load V Penetration	
CBR Value (%)	9	Load v Penetration  Applied Load (kN) Penetration (mm) Legend: Results (green line with diamonds), Tangent (dashed line), Corrected (dotted blue line), Corrected CBR Values (black diamonds)	
CBR Value at 2.5mm (%)	9		
CBR Value at 5.0mm (%)	9		
Maximum Dry Density (t/m³)	1.89		
Optimum Moisture Content (%)	12.0		
Dry Density before Soaking (t/m³)	1.86		
Density Ratio before soaking (%)	98.5		
Moisture Content before Soaking (%)	11.5		
Moisture Ratio before soaking (%)	96.5		
Dry Density after Soaking (t/m³)	1.84		
Density Ratio after soaking (%)	97.5		
Swell (%)	1.0		
Moisture Content of Top 30mm (%)	16.8		
Moisture Content of Remaining Depth (%)			
Compactive Effort	Standard		
Surcharge Mass (kg)	4.5		
Period of Soaking (Days)	4		
CBR Moisture Content Method	AS 1289.2.1.1		
Plasticity Method	Visual/Tactile Assessment		
Sample Curing Time (h)	48.0		

 Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00029-1, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	 Accredited for compliance with ISO/IEC 17025 - Testing  Approved Signatory: Gavin Negri Date Of Issue: 17/02/2026 NATA Accredited Lab # 18563
--	---	--	---

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-1 | ISSUE #: 1

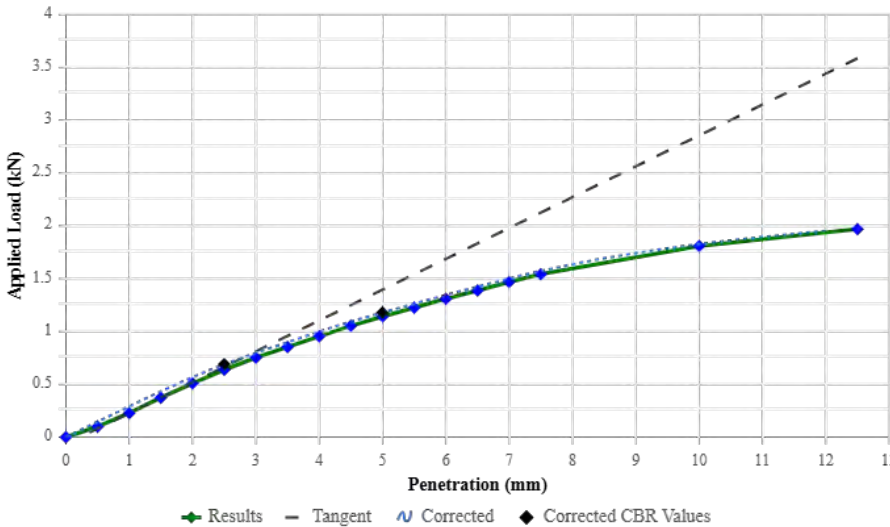
Sample Details			
Sample Id	S-TL-26-00103	Location	0.0-0.2m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	CCH2-P
Date Tested	Friday, 16 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Pavement	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy Silty GRAVEL, Grey-Blue, Moist, Imported FILL	Elevation (m)	

Test Results		Load V Penetration	
CBR Value (%)	35	Load v Penetration 	
CBR Value at 2.5mm (%)	25		
CBR Value at 5.0mm (%)	35		
Maximum Dry Density (t/m³)	2.13		
Optimum Moisture Content (%)	9.5		
Dry Density before Soaking (t/m³)	2.09		
Density Ratio before soaking (%)	98.0		
Moisture Content before Soaking (%)	9.2		
Moisture Ratio before soaking (%)	98.0		
Dry Density after Soaking (t/m³)	2.10		
Density Ratio after soaking (%)	98.5		
Swell (%)	0.0		
Moisture Content of Top 30mm (%)	9.3		
Moisture Content of Remaining Depth (%)			
Compactive Effort	Standard		
Surcharge Mass (kg)	4.5		
Period of Soaking (Days)	4		
CBR Moisture Content Method	AS 1289.2.1.1		
Plasticity Method	Visual/Tactile Assessment		
Sample Curing Time (h)	72.0		

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-1 | ISSUE #: 1

Sample Details

Sample Id	S-TL-26-00104	Location	0.5-0.8m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	CCH2
Date Tested	Friday, 23 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy CLAY, Grey-Brown, Soft, Moist	Elevation (m)	

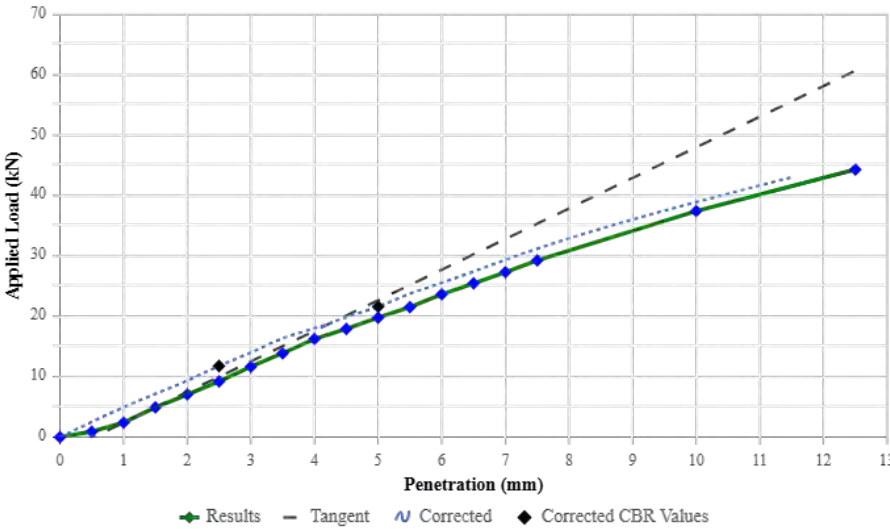
Test Results		Load V Penetration																																																												
CBR Value (%)	6	Load v Penetration  <table><caption>Graph Data Points (Approximate)</caption><tr><th>Penetration (mm)</th><th>Applied Load (kN) - Results</th><th>Applied Load (kN) - Corrected</th><th>Applied Load (kN) - Corrected CBR Values</th></tr><tr><td>0</td><td>0.0</td><td>0.0</td><td>0.0</td></tr><tr><td>1</td><td>0.2</td><td>0.2</td><td>0.2</td></tr><tr><td>2</td><td>0.4</td><td>0.4</td><td>0.4</td></tr><tr><td>3</td><td>0.6</td><td>0.6</td><td>0.6</td></tr><tr><td>4</td><td>0.8</td><td>0.8</td><td>0.8</td></tr><tr><td>5</td><td>1.0</td><td>1.0</td><td>1.0</td></tr><tr><td>6</td><td>1.2</td><td>1.2</td><td>1.2</td></tr><tr><td>7</td><td>1.4</td><td>1.4</td><td>1.4</td></tr><tr><td>8</td><td>1.6</td><td>1.6</td><td>1.6</td></tr><tr><td>9</td><td>1.7</td><td>1.7</td><td>1.7</td></tr><tr><td>10</td><td>1.8</td><td>1.8</td><td>1.8</td></tr><tr><td>11</td><td>1.85</td><td>1.85</td><td>1.85</td></tr><tr><td>12</td><td>1.9</td><td>1.9</td><td>1.9</td></tr><tr><td>13</td><td>1.95</td><td>1.95</td><td>1.95</td></tr></table>	Penetration (mm)	Applied Load (kN) - Results	Applied Load (kN) - Corrected	Applied Load (kN) - Corrected CBR Values	0	0.0	0.0	0.0	1	0.2	0.2	0.2	2	0.4	0.4	0.4	3	0.6	0.6	0.6	4	0.8	0.8	0.8	5	1.0	1.0	1.0	6	1.2	1.2	1.2	7	1.4	1.4	1.4	8	1.6	1.6	1.6	9	1.7	1.7	1.7	10	1.8	1.8	1.8	11	1.85	1.85	1.85	12	1.9	1.9	1.9	13	1.95	1.95	1.95
Penetration (mm)	Applied Load (kN) - Results		Applied Load (kN) - Corrected	Applied Load (kN) - Corrected CBR Values																																																										
0	0.0		0.0	0.0																																																										
1	0.2		0.2	0.2																																																										
2	0.4		0.4	0.4																																																										
3	0.6		0.6	0.6																																																										
4	0.8		0.8	0.8																																																										
5	1.0		1.0	1.0																																																										
6	1.2		1.2	1.2																																																										
7	1.4		1.4	1.4																																																										
8	1.6		1.6	1.6																																																										
9	1.7		1.7	1.7																																																										
10	1.8		1.8	1.8																																																										
11	1.85		1.85	1.85																																																										
12	1.9		1.9	1.9																																																										
13	1.95		1.95	1.95																																																										
CBR Value at 2.5mm (%)	5																																																													
CBR Value at 5.0mm (%)	6																																																													
Maximum Dry Density (t/m³)	1.95																																																													
Optimum Moisture Content (%)	10.0																																																													
Dry Density before Soaking (t/m³)	1.92																																																													
Density Ratio before soaking (%)	98.0																																																													
Moisture Content before Soaking (%)	9.7																																																													
Moisture Ratio before soaking (%)	99.0																																																													
Dry Density after Soaking (t/m³)	1.90																																																													
Density Ratio after soaking (%)	97.5																																																													
Swell (%)	0.5																																																													
Moisture Content of Top 30mm (%)	15.4																																																													
Moisture Content of Remaining Depth (%)																																																														
Compactive Effort	Standard																																																													
Surcharge Mass (kg)	4.5																																																													
Period of Soaking (Days)	4																																																													
CBR Moisture Content Method	AS 1289.2.1.1																																																													
Plasticity Method	Visual/Tactile Assessment																																																													
Sample Curing Time (h)	72.0																																																													

Notes and Comments

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-1 | ISSUE #: 1

Sample Details

Sample Id	S-TL-26-00105	Location	0.0-0.3m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	CCH3-P
Date Tested	Friday, 16 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Pavement	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy Silty GRAVEL, Grey-Brown, Moist, Imported FILL	Elevation (m)	

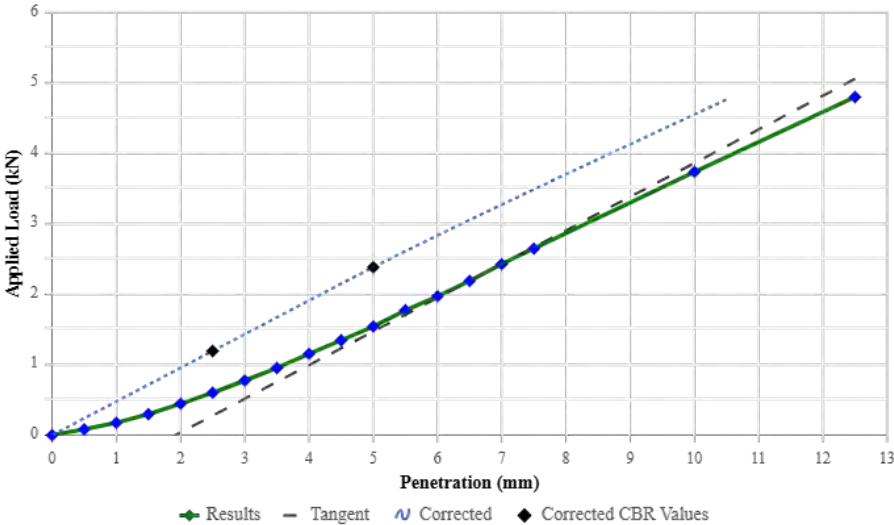
Test Results		Load v Penetration
CBR Value (%)	110	Load v Penetration 
CBR Value at 2.5mm (%)	90	
CBR Value at 5.0mm (%)	110	
Maximum Dry Density (t/m³)	2.19	
Optimum Moisture Content (%)	7.5	
Dry Density before Soaking (t/m³)	2.14	
Density Ratio before soaking (%)	98.0	
Moisture Content before Soaking (%)	7.1	
Moisture Ratio before soaking (%)	96.0	
Dry Density after Soaking (t/m³)	2.14	
Density Ratio after soaking (%)	98.0	
Swell (%)	0.0	
Moisture Content of Top 30mm (%)	8.3	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	72.0	

Notes and Comments

 Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00029-1, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	 Accredited for compliance with ISO/IEC 17025 - Testing Approved Signatory: Gavin Negri Date Of Issue: 17/02/2026 NATA Accredited Lab # 18563
--	---	--	---

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-1 | ISSUE #: 1

Sample Details			
Sample Id	S-TL-26-00106	Location	0.5-0.8m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	CCH3
Date Tested	Friday, 23 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy Gravelly CLAY, Brown, Moist, Imported FILL	Elevation (m)	

Test Results		Load V Penetration
CBR Value (%)	12	Load v Penetration 
CBR Value at 2.5mm (%)	9	
CBR Value at 5.0mm (%)	12	
Maximum Dry Density (t/m³)	2.10	
Optimum Moisture Content (%)	9.5	
Dry Density before Soaking (t/m³)	2.07	
Density Ratio before soaking (%)	98.0	
Moisture Content before Soaking (%)	9.0	
Moisture Ratio before soaking (%)	97.0	
Dry Density after Soaking (t/m³)	2.07	
Density Ratio after soaking (%)	98.0	
Swell (%)	0.0	
Moisture Content of Top 30mm (%)	9.6	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	94.0	

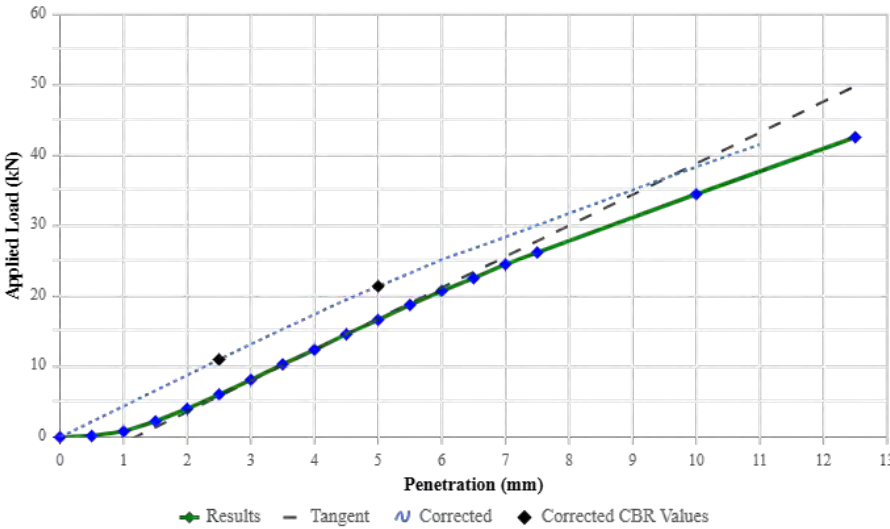
Notes and Comments

- Comments:Test Results Only Apply To Sample/s Tested

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-1 | ISSUE #: 1

Sample Details

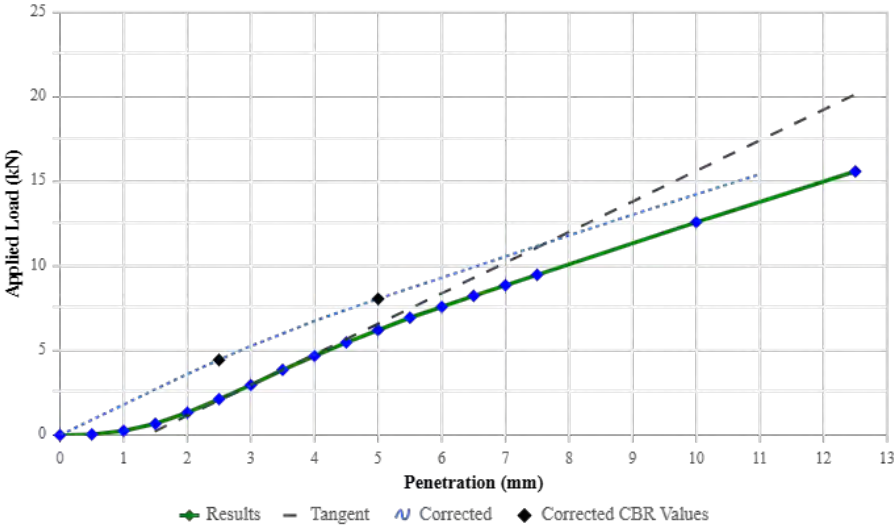
Sample Id	S-TL-26-00107	Location	0.0-0.2m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	CCH4-P
Date Tested	Friday, 23 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Pavement	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy Silty GRAVEL, Grey-Blue, Moist, Imported FILL	Elevation (m)	

Test Results		Load v Penetration
CBR Value (%)	110	Load v Penetration 
CBR Value at 2.5mm (%)	80	
CBR Value at 5.0mm (%)	110	
Maximum Dry Density (t/m³)	2.09	
Optimum Moisture Content (%)	9.0	
Dry Density before Soaking (t/m³)	2.10	
Density Ratio before soaking (%)	100.5	
Moisture Content before Soaking (%)	8.5	
Moisture Ratio before soaking (%)	92.5	
Dry Density after Soaking (t/m³)	2.10	
Density Ratio after soaking (%)	100.5	
Swell (%)	0.0	
Moisture Content of Top 30mm (%)	8.8	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	98.0	

Notes and Comments

 EARTH TEST Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00029-1, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Accredited for compliance with ISO/IEC 17025 - Testing  Approved Signatory: Gavin Negri Date Of Issue: 17/02/2026 NATA Accredited Lab # 18563
	CALIFORNIA BEARING RATIO REPORT CBR-W-TL-26-00029-1 ISSUE #: 1		

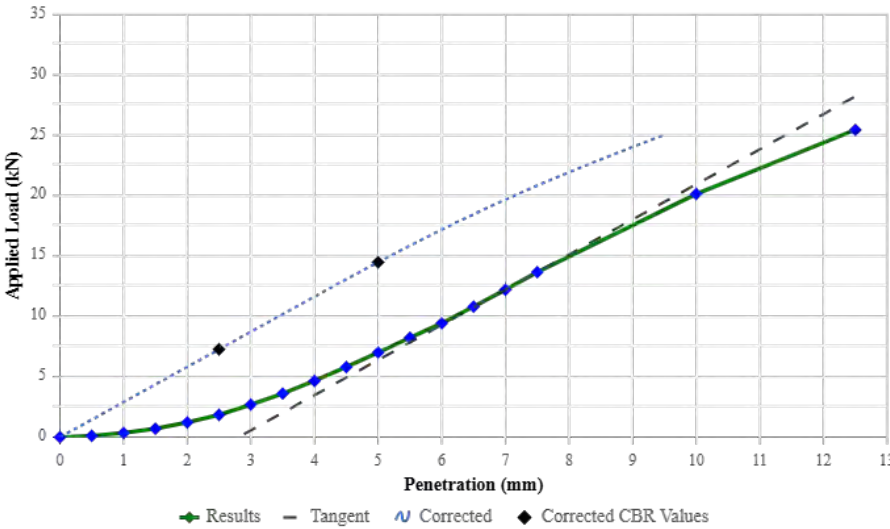
Sample Details			
Sample Id	S-TL-26-00108	Location	0.5-0.8m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	CCH4
Date Tested	Friday, 23 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy Clayey GRAVEL, Brown, Moist, Imported FILL	Elevation (m)	

Test Results		Load v Penetration
CBR Value (%)	40	Load v Penetration 
CBR Value at 2.5mm (%)	35	
CBR Value at 5.0mm (%)	40	
Maximum Dry Density (t/m³)	2.12	
Optimum Moisture Content (%)	9.5	
Dry Density before Soaking (t/m³)	2.08	
Density Ratio before soaking (%)	98.5	
Moisture Content before Soaking (%)	8.9	
Moisture Ratio before soaking (%)	95.5	
Dry Density after Soaking (t/m³)	2.08	
Density Ratio after soaking (%)	98.0	
Swell (%)	0.0	
Moisture Content of Top 30mm (%)	9.9	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	72.0	

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-1 | ISSUE #: 1

Sample Details

Sample Id	S-TL-26-00109	Location	0.0-0.3m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	CCH5-P
Date Tested	Friday, 23 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Pavement	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy Clayey GRAVEL, Grey-Brown, Moist, Imported FILL	Elevation (m)	

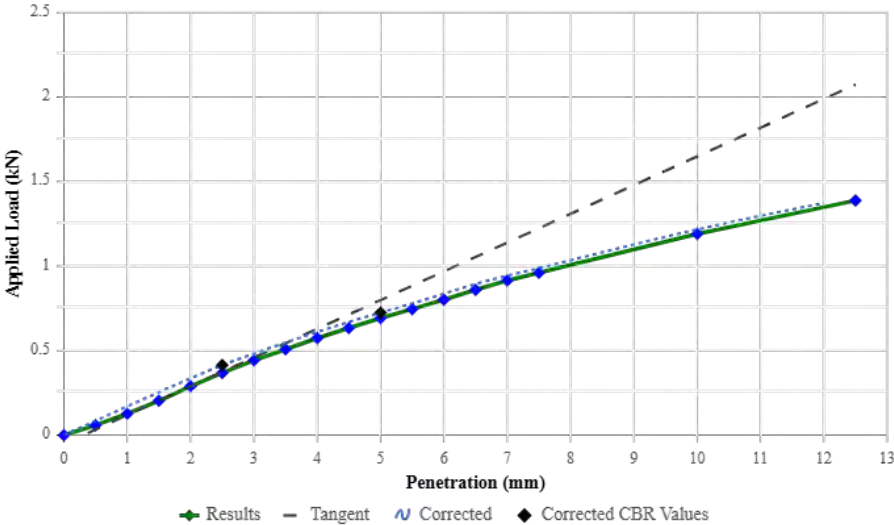
Test Results		Load v Penetration
CBR Value (%)	70	Load v Penetration 
CBR Value at 2.5mm (%)	60	
CBR Value at 5.0mm (%)	70	
Maximum Dry Density (t/m³)	2.18	
Optimum Moisture Content (%)	7.5	
Dry Density before Soaking (t/m³)	2.18	
Density Ratio before soaking (%)	100.0	
Moisture Content before Soaking (%)	7.2	
Moisture Ratio before soaking (%)	98.5	
Dry Density after Soaking (t/m³)	2.18	
Density Ratio after soaking (%)	100.0	
Swell (%)	0.0	
Moisture Content of Top 30mm (%)	7.3	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	97.0	

Notes and Comments

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-1 | ISSUE #: 1

Sample Details

Sample Id	S-TL-26-00110	Location	0.5-0.8m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	CCH5
Date Tested	Friday, 23 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy CLAY, Brown, Moist	Elevation (m)	

Test Results		Load V Penetration
CBR Value (%)	3.5	Load v Penetration 
CBR Value at 2.5mm (%)	3.0	
CBR Value at 5.0mm (%)	3.5	
Maximum Dry Density (t/m³)	1.94	
Optimum Moisture Content (%)	10.5	
Dry Density before Soaking (t/m³)	1.89	
Density Ratio before soaking (%)	97.5	
Moisture Content before Soaking (%)	11.1	
Moisture Ratio before soaking (%)	103.5	
Dry Density after Soaking (t/m³)	1.87	
Density Ratio after soaking (%)	96.5	
Swell (%)	1.0	
Moisture Content of Top 30mm (%)	14.8	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	74.0	

Notes and Comments



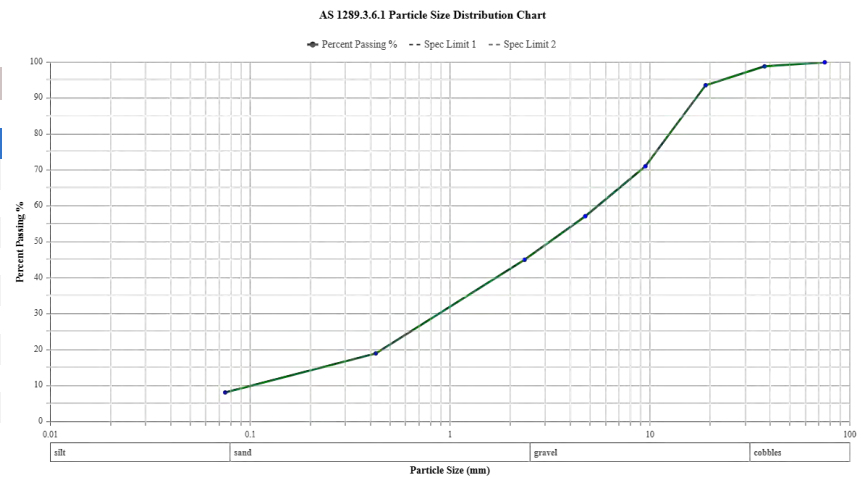
Quality of Materials Report

Report No: SAR-W-TL-26-00029-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details			
Sample ID:	S-TL-26-00101	SAMPLE LOCATION 0.0-0.25m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	CCH1-P
Rock Type:		Field Sample Id:	1
Material Source:	Pavement	TRN:	
Soil Description:	Sandy Silty GRAVEL, Grey-Blue, Moist, Imported FILL	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Monday, 19 January 2026 S-TL-26-00101	
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	99	
19mm	94	
9.5mm	71	
4.75mm	57	
2.36mm	45	
0.425mm	19	
0.075mm	8	



AS 1289.3.9.2 3.2.1 3.3.2 3.4.1 One Point Cone Liquid Limit			
Date Tested	Friday, 30 January 2026	S-TL-26-00101	
Result Name	Result Value	Limits	
Liquid Limit (%)	26		
Plastic Limit (%)	19		
Plastic Index (%)	7		
Linear Shrinkage (%)	3.0		
Sample History	Air Dried		
Preparation Method	Dry Sieved		
Nature Of Shrinkage			

AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00101
Result Name	Result Value	Limits
Moisture Content (%)	4.8	

COMMENTS

Test Results Only Apply To Sample/s Tested



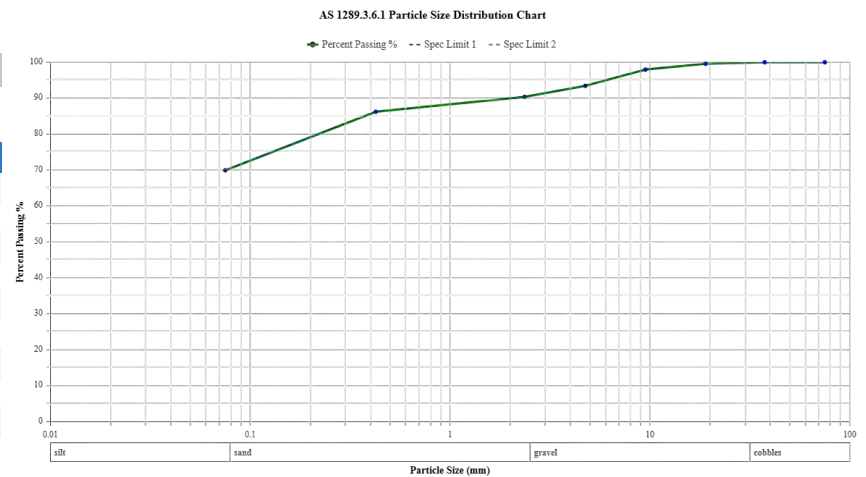
Quality of Materials Report

Report No: SAR-W-TL-26-00029-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00102	0.5-0.8m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	CCH1
Rock Type:		Field Sample Id:	2
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Moist, Yellow-Brown	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Thursday, 22 January 2026	S-TL-26-00102
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	100	
9.5mm	98	
4.75mm	93	
2.36mm	90	
0.425mm	86	
0.075mm	70	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00102
Result Name	Result Value	Limits
Moisture Content (%)	8.6	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Saturday, 31 January 2026	S-TL-26-00102
Result Name	Result Value	Limits
Liquid Limit (%)	26	
Plastic Limit (%)	18	
Plastic Index (%)	8	
Linear Shrinkage (%)	5.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



Quality of Materials Report

Report No: SAR-W-TL-26-00029-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

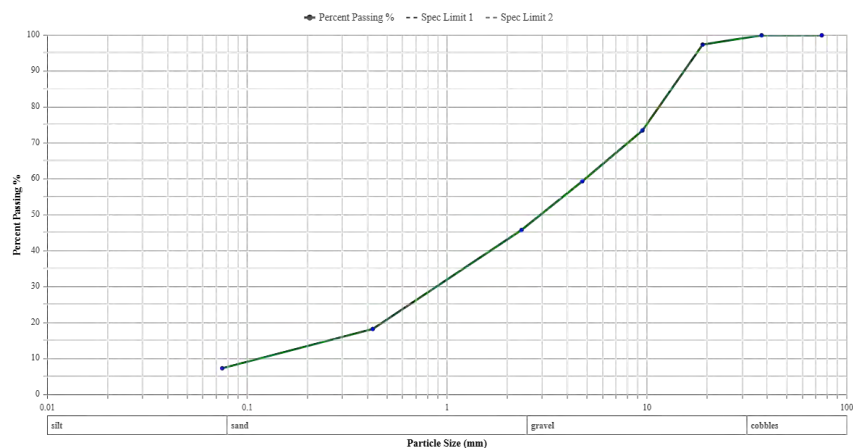
Sample Details

Sample ID:	S-TL-26-00103	SAMPLE LOCATION 0.0-0.2m
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	
Sampled By:	Gavin Negri	
Date/Time Sampled:	14/01/2026 /	
Sample Preparation	AS 1289.1.1	
Material Type:		Lot Number: CCH2-P
Rock Type:		Field Sample Id: 3
Material Source:	Pavement	TRN:
Soil Description:	Sandy Silty GRAVEL, Grey-Blue, Moist, Imported FILL	Specification: -75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil

Date Tested	Monday, 19 January 2026 S-TL-26-00103	
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	97	
9.5mm	74	
4.75mm	59	
2.36mm	46	
0.425mm	18	
0.075mm	7	

AS 1289.3.6.1 Particle Size Distribution Chart



AS 1289.3.9.2 3.2.1 3.3.2 3.4.1 One Point Cone Liquid Limit

Date Tested	Friday, 30 January 2026	S-TL-26-00103
Result Name	Result Value	Limits
Liquid Limit (%)	27	
Plastic Limit (%)	21	
Plastic Index (%)	6	
Linear Shrinkage (%)	3.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage		

AS 1289.2.1.1 Moisture Content Oven

Date Tested	Friday, 16 January 2026	S-TL-26-00103
Result Name	Result Value	Limits
Moisture Content (%)	3.6	

COMMENTS

Test Results Only Apply To Sample/s Tested

APPROVED SIGNATORY

Name: Gavin Negri
Date Of Issue: 17/02/2026 | Issue#: 1
Accredited for compliance with ISO/IEC 17025 -
Testing
NATA Accredited Laboratory Number: 18563





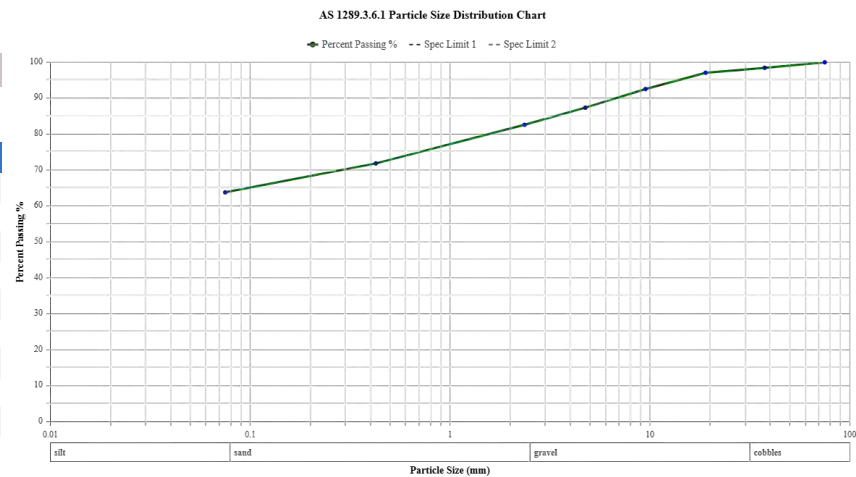
Quality of Materials Report

Report No: SAR-W-TL-26-00029-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00104	0.5-0.8m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	CCH2
Rock Type:		Field Sample Id:	4
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Grey-Brown, Soft, Moist	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Thursday, 22 January 2026	S-TL-26-00104
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	98	
19mm	97	
9.5mm	93	
4.75mm	87	
2.36mm	83	
0.425mm	72	
0.075mm	64	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00104
Result Name	Result Value	Limits
Moisture Content (%)	8.1	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00104
Result Name	Result Value	Limits
Liquid Limit (%)	27	
Plastic Limit (%)	18	
Plastic Index (%)	9	
Linear Shrinkage (%)	5.5	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



Quality of Materials Report

Report No: SAR-W-TL-26-00029-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

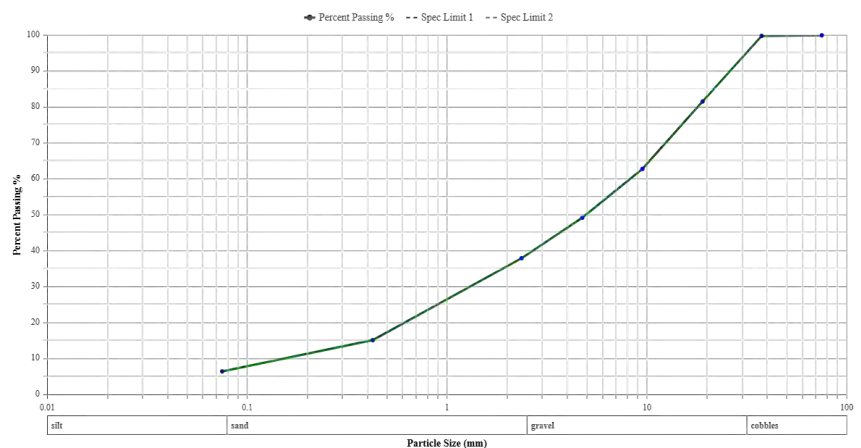
Sample Details

Sample ID:	S-TL-26-00105	SAMPLE LOCATION 0.0-0.3m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	CCH3-P
Rock Type:		Field Sample Id:	5
Material Source:	Pavement	TRN:	
Soil Description:	Sandy Silty GRAVEL, Grey-Brown, Moist, Imported FILL	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil

Date Tested	Monday, 19 January 2026 S-TL-26-00105	
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	82	
9.5mm	63	
4.75mm	49	
2.36mm	38	
0.425mm	15	
0.075mm	6	

AS 1289.3.6.1 Particle Size Distribution Chart



AS 1289.3.9.2 3.2.1 3.3.2 3.4.1 One Point Cone Liquid Limit

Date Tested	Friday, 30 January 2026	S-TL-26-00105
Result Name	Result Value	Limits
Liquid Limit (%)	20	
Plastic Limit (%)	15	
Plastic Index (%)	5	
Linear Shrinkage (%)	1.5	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage		

AS 1289.2.1.1 Moisture Content Oven

Date Tested	Friday, 16 January 2026	S-TL-26-00105
Result Name	Result Value	Limits
Moisture Content (%)	4.3	

COMMENTS

Test Results Only Apply To Sample/s Tested

APPROVED SIGNATORY

Name: Gavin Negri
Date Of Issue: 17/02/2026 | Issue#: 1
Accredited for compliance with ISO/IEC 17025 -
Testing
NATA Accredited Laboratory Number: 18563





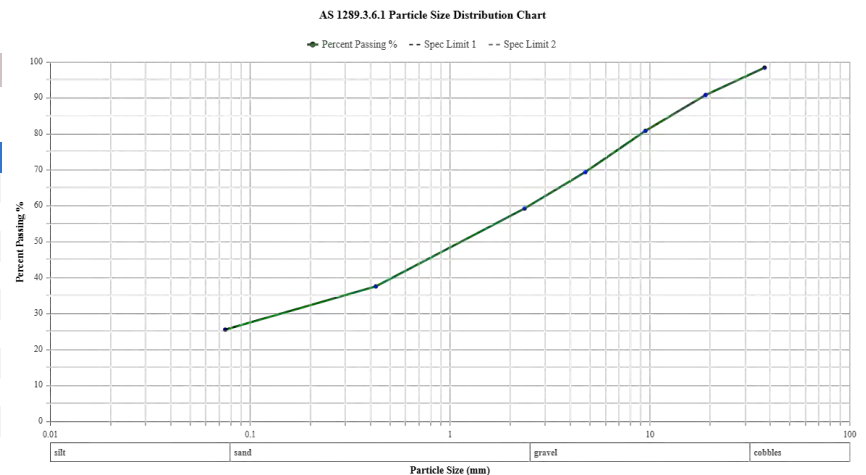
Quality of Materials Report

Report No: SAR-W-TL-26-00029-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00106	0.5-0.8m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	CCH3
Rock Type:		Field Sample Id:	6
Material Source:	Insitu	TRN:	
Soil Description:	Sandy Gravelly CLAY, Brown, Moist, Imported FILL	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Wednesday, 21 January 2026	S-TL-26-00106
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %	0.68	
75mm		
37.5mm	98	
19mm	91	
9.5mm	81	
4.75mm	69	
2.36mm	59	
0.425mm	38	
0.075mm	26	



AS 1289.3.9.2 3.2.1 3.3.2 3.4.1 One Point Cone Liquid Limit		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00106
Result Name	Result Value	Limits
Liquid Limit (%)	25	
Plastic Limit (%)	18	
Plastic Index (%)	7	
Linear Shrinkage (%)	4.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage		

AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00106
Result Name	Result Value	Limits
Moisture Content (%)	7.8	

COMMENTS

Test Results Only Apply To Sample/s Tested



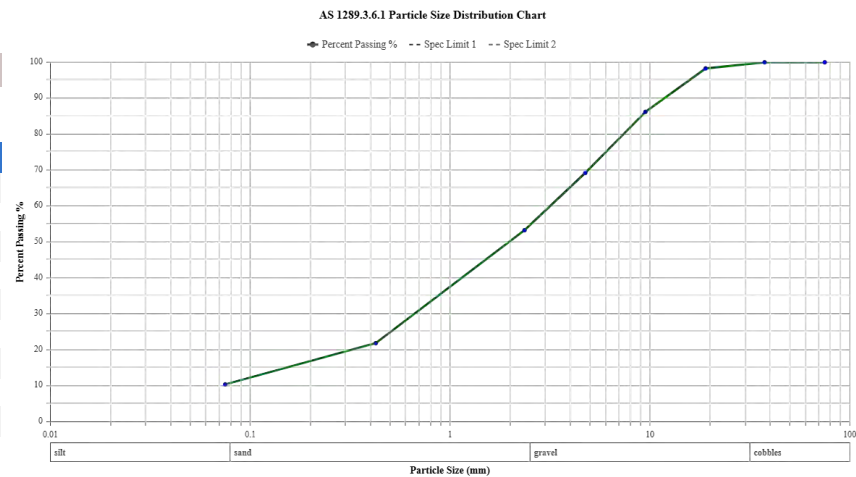
Quality of Materials Report

Report No: SAR-W-TL-26-00029-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00107	0.0-0.2m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	CCH4-P
Rock Type:		Field Sample Id:	7
Material Source:	Pavement	TRN:	
Soil Description:	Sandy Silty GRAVEL, Grey-Blue, Moist, Imported FILL	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Wednesday, 21 January 2026	S-TL-26-00107
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %	0.48	
75mm	100	
37.5mm	100	
19mm	98	
9.5mm	86	
4.75mm	69	
2.36mm	53	
0.425mm	22	
0.075mm	10	



AS 1289.3.9.2 3.2.1 3.3.2 3.4.1 One Point Cone Liquid Limit		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00107
Result Name	Result Value	Limits
Liquid Limit (%)	30	
Plastic Limit (%)	22	
Plastic Index (%)	8	
Linear Shrinkage (%)	2.5	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage		

AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00107
Result Name	Result Value	Limits
Moisture Content (%)	4.4	

COMMENTS

Test Results Only Apply To Sample/s Tested



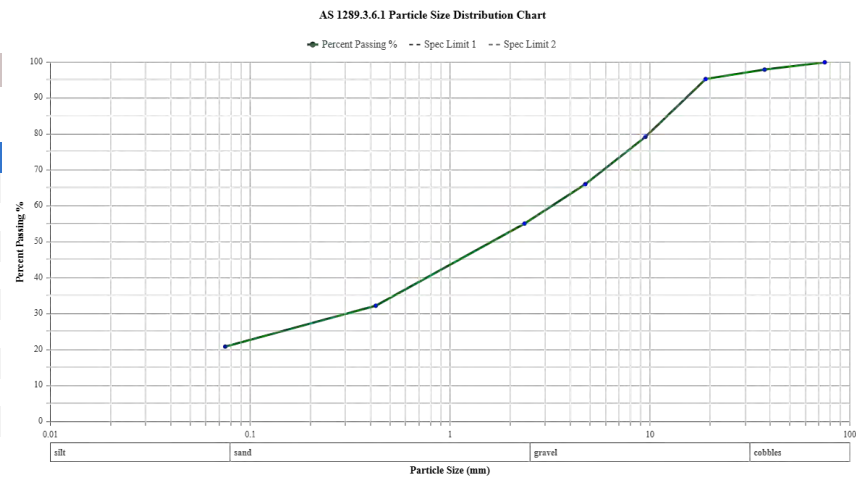
Quality of Materials Report

Report No: SAR-W-TL-26-00029-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details			
Sample ID:	S-TL-26-00108	SAMPLE LOCATION 0.5-0.8m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	CCH4
Rock Type:		Field Sample Id:	8
Material Source:	Insitu	TRN:	
Soil Description:	Sandy Clayey GRAVEL, Brown, Moist, Imported FILL	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Thursday, 22 January 2026	S-TL-26-00108
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	98	
19mm	95	
9.5mm	79	
4.75mm	66	
2.36mm	55	
0.425mm	32	
0.075mm	21	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00108
Result Name	Result Value	Limits
Moisture Content (%)	5.6	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00108
Result Name	Result Value	Limits
Liquid Limit (%)	25	
Plastic Limit (%)	18	
Plastic Index (%)	7	
Linear Shrinkage (%)	3.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



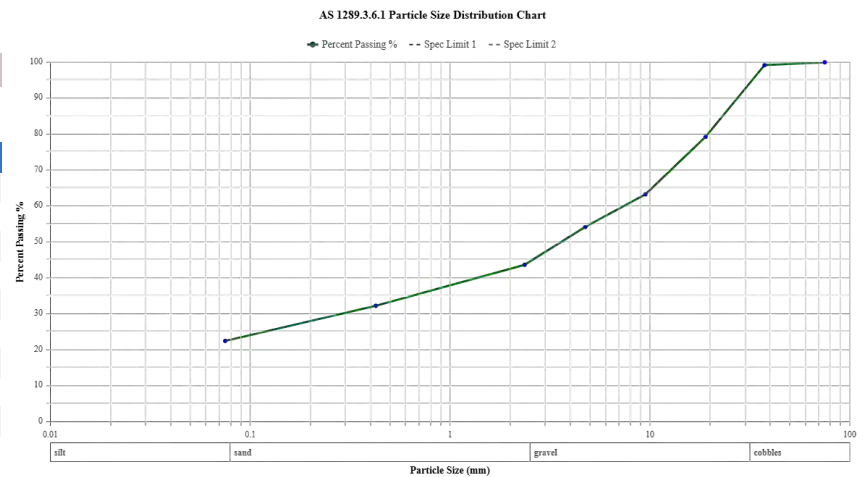
Quality of Materials Report

Report No: SAR-W-TL-26-00029-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00109	0.0-0.3m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	CCH5-P
Rock Type:		Field Sample Id:	9
Material Source:	Pavement	TRN:	
Soil Description:	Sandy Clayey GRAVEL, Grey-Brown, Moist, Imported FILL	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Wednesday, 21 January 2026	S-TL-26-00109
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	99	
19mm	79	
9.5mm	63	
4.75mm	54	
2.36mm	44	
0.425mm	32	
0.075mm	22	



AS 1289.3.9.2 3.2.1 3.3.2 3.4.1 One Point Cone Liquid Limit		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00109
Result Name	Result Value	Limits
Liquid Limit (%)	23	
Plastic Limit (%)	18	
Plastic Index (%)	5	
Linear Shrinkage (%)	1.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage		

AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00109
Result Name	Result Value	Limits
Moisture Content (%)	6.5	

COMMENTS

Test Results Only Apply To Sample/s Tested



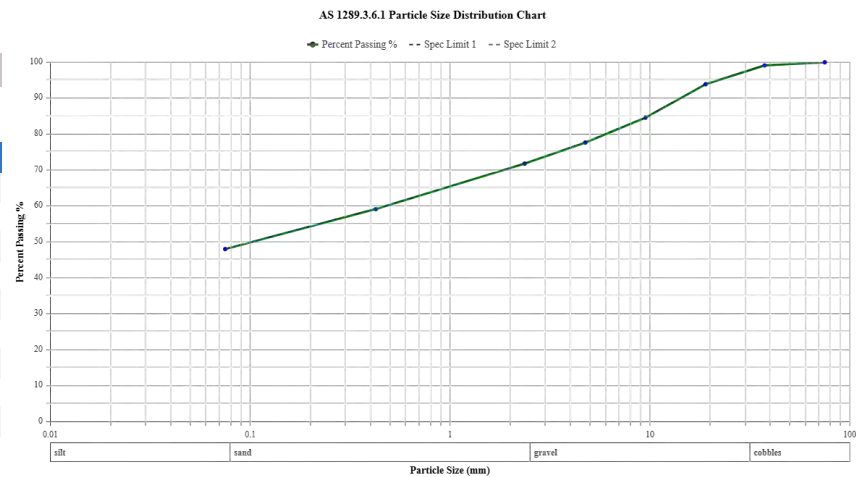
Quality of Materials Report

Report No: SAR-W-TL-26-00029-1 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00110	0.5-0.8m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	CCH5
Rock Type:		Field Sample Id:	10
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Brown, Moist	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Thursday, 22 January 2026	S-TL-26-00110
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	99	
19mm	94	
9.5mm	85	
4.75mm	78	
2.36mm	72	
0.425mm	59	
0.075mm	48	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00110
Result Name	Result Value	Limits
Moisture Content (%)	5.8	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Monday, 02 February 2026	S-TL-26-00110
Result Name	Result Value	Limits
Liquid Limit (%)	30	
Plastic Limit (%)	18	
Plastic Index (%)	12	
Linear Shrinkage (%)	7.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

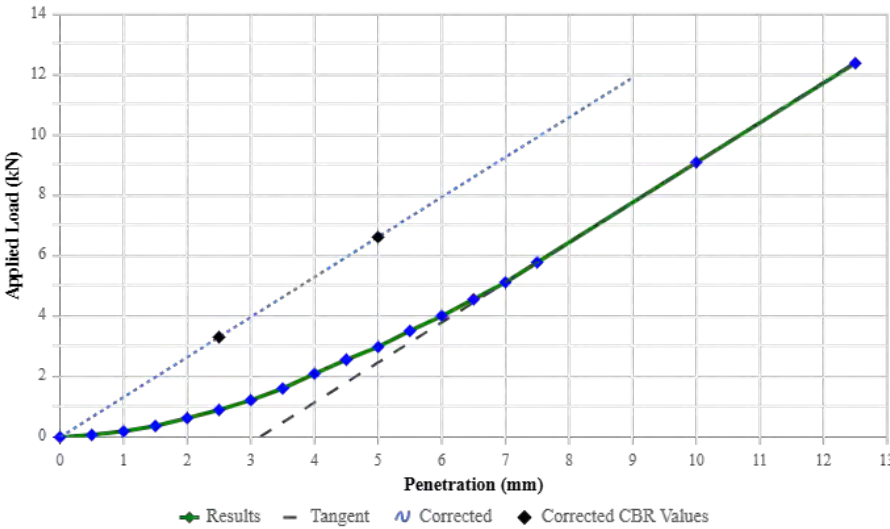
COMMENTS

Test Results Only Apply To Sample/s Tested

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-2 | ISSUE #: 1

Sample Details

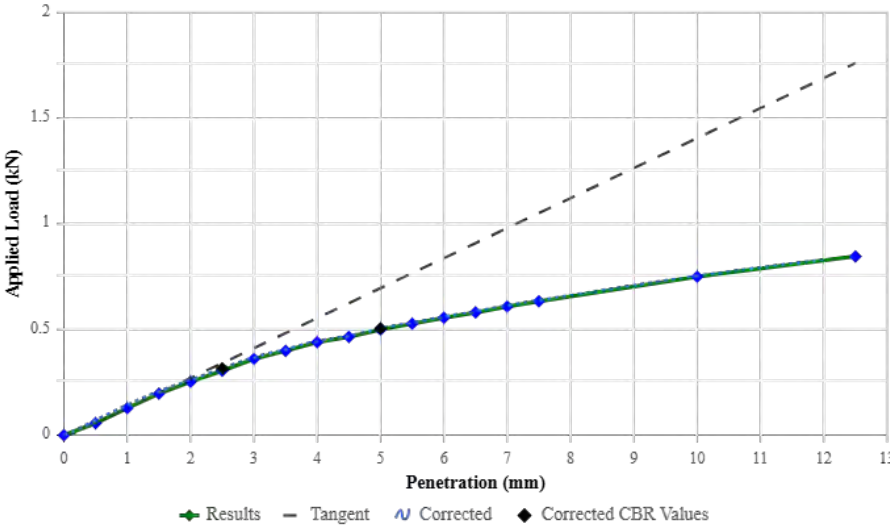
Sample Id	S-TL-26-00111	Location	0.0-0.15m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	AR1-P
Date Tested	Friday, 23 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Pavement	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy Gravelly SILT, Brown, Moist, Imported FILL	Elevation (m)	

Test Results		Load V Penetration
CBR Value (%)	35	Load v Penetration 
CBR Value at 2.5mm (%)	25	
CBR Value at 5.0mm (%)	35	
Maximum Dry Density (t/m³)	2.18	
Optimum Moisture Content (%)	7.5	
Dry Density before Soaking (t/m³)	2.18	
Density Ratio before soaking (%)	100.5	
Moisture Content before Soaking (%)	7.0	
Moisture Ratio before soaking (%)	96.0	
Dry Density after Soaking (t/m³)	2.18	
Density Ratio after soaking (%)	100.5	
Swell (%)	0.0	
Moisture Content of Top 30mm (%)	7.6	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	96.0	

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-2 | ISSUE #: 1

Sample Details

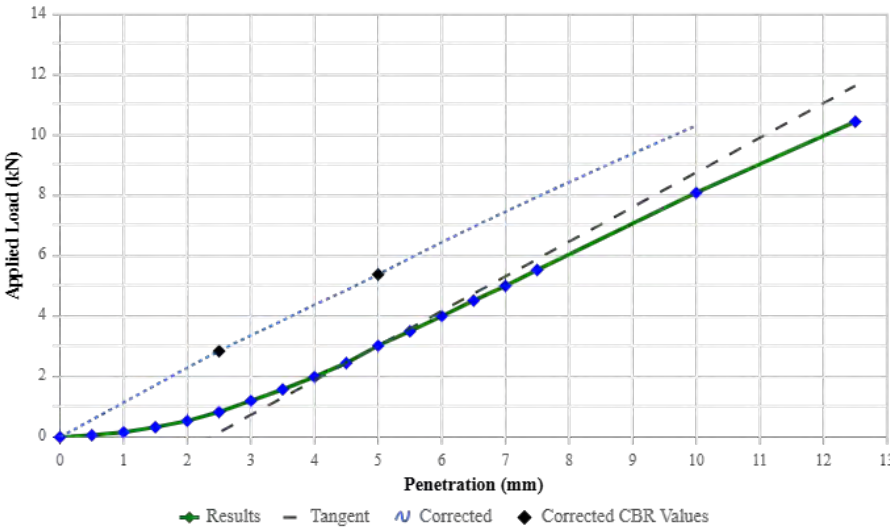
Sample Id	S-TL-26-00112	Location	0.4-0.8m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	AR1
Date Tested	Friday, 23 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy CLAY, Yellow-Brown, Moist, Soft	Elevation (m)	

Test Results		Load v Penetration
CBR Value (%)	2.5	Load v Penetration 
CBR Value at 2.5mm (%)	2.5	
CBR Value at 5.0mm (%)	2.5	
Maximum Dry Density (t/m³)	1.75	
Optimum Moisture Content (%)	15.5	
Dry Density before Soaking (t/m³)	1.72	
Density Ratio before soaking (%)	98.5	
Moisture Content before Soaking (%)	15.3	
Moisture Ratio before soaking (%)	97.5	
Dry Density after Soaking (t/m³)	1.69	
Density Ratio after soaking (%)	96.5	
Swell (%)	2.0	
Moisture Content of Top 30mm (%)	20.6	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	75.0	

 Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00029-2, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	 Accredited for compliance with ISO/IEC 17025 - Testing Approved Signatory: Gavin Negri Date Of Issue: 17/02/2026 NATA Accredited Lab # 18563
--	---	--	---

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-2 | ISSUE #: 1

Sample Details			
Sample Id	S-TL-26-00113	Location	0.1-0.4m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	AR2-P
Date Tested	Friday, 23 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Pavement	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy Clayey Gravel, Brown, Moist, Imported FILL, (Profile Trimmings)	Elevation (m)	

Test Results		Load V Penetration
CBR Value (%)	25	Load v Penetration 
CBR Value at 2.5mm (%)	20	
CBR Value at 5.0mm (%)	25	
Maximum Dry Density (t/m³)	2.14	
Optimum Moisture Content (%)	8.0	
Dry Density before Soaking (t/m³)	2.14	
Density Ratio before soaking (%)	100.0	
Moisture Content before Soaking (%)	7.6	
Moisture Ratio before soaking (%)	97.5	
Dry Density after Soaking (t/m³)	2.14	
Density Ratio after soaking (%)	100.0	
Swell (%)	0.0	
Moisture Content of Top 30mm (%)	8.1	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	96.0	

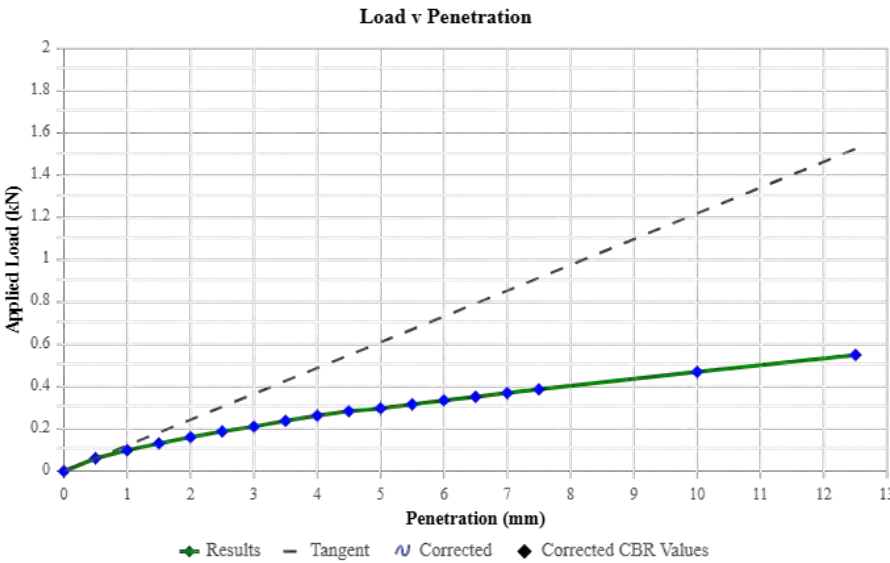
Page 3 of 6

Notes and Comments

 Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00029-2, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	 Accredited for compliance with ISO/IEC 17025 - Testing  Approved Signatory: Gavin Negri Date Of Issue: 17/02/2026 NATA Accredited Lab # 18563
--	--	---	--

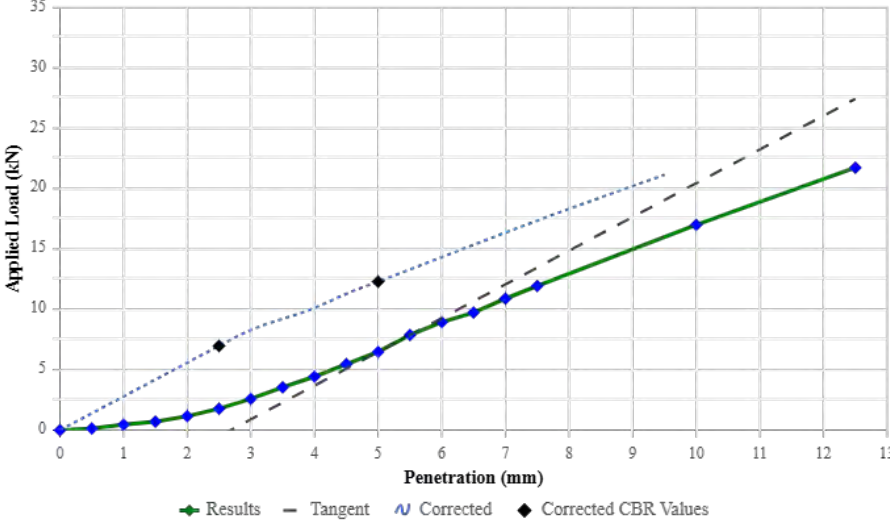
CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-2 | ISSUE #: 1

Sample Details			
Sample Id	S-TL-26-00114	Location	0.5-0.8m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	AR2
Date Tested	Friday, 23 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy CLAY, Yellow-Brown, Moist, Soft	Elevation (m)	

Test Results		Load v Penetration
CBR Value (%)	1.5	
CBR Value at 2.5mm (%)	1.5	
CBR Value at 5.0mm (%)	1.5	
Maximum Dry Density (t/m³)	1.63	
Optimum Moisture Content (%)	17.5	
Dry Density before Soaking (t/m³)	1.59	
Density Ratio before soaking (%)	97.5	
Moisture Content before Soaking (%)	17.8	
Moisture Ratio before soaking (%)	101.5	
Dry Density after Soaking (t/m³)	1.54	
Density Ratio after soaking (%)	94.0	
Swell (%)	3.5	
Moisture Content of Top 30mm (%)	29.8	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	50.0	

CALIFORNIA BEARING RATIO REPORT | CBR-W-TL-26-00029-2 | ISSUE #: 1

Sample Details			
Sample Id	S-TL-26-00115	Location	0.0-0.3m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	AR3-P
Date Tested	Friday, 23 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Pavement	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy Gravelly SILT, Brown, Moist, Imported FILL	Elevation (m)	

Test Results		Load V Penetration
CBR Value (%)	60	Load v Penetration 
CBR Value at 2.5mm (%)	50	
CBR Value at 5.0mm (%)	60	
Maximum Dry Density (t/m³)	2.23	
Optimum Moisture Content (%)	7.0	
Dry Density before Soaking (t/m³)	2.23	
Density Ratio before soaking (%)	100.0	
Moisture Content before Soaking (%)	6.9	
Moisture Ratio before soaking (%)	98.5	
Dry Density after Soaking (t/m³)	2.23	
Density Ratio after soaking (%)	100.0	
Swell (%)	0.0	
Moisture Content of Top 30mm (%)	6.9	
Moisture Content of Remaining Depth (%)		
Compactive Effort	Standard	
Surcharge Mass (kg)	4.5	
Period of Soaking (Days)	4	
CBR Moisture Content Method	AS 1289.2.1.1	
Plasticity Method	Visual/Tactile Assessment	
Sample Curing Time (h)	95.0	

 Site No 20508: Tolga Laboratory	Earth Test ABN : 17625941139 1 Vince Street, Atherton, 4883 Phone: 07 40954734 Email: info@earthtest.com.au Website: https://www.earthtest.com.au/	Report Number: CBR-W-TL-26-00029-2, Issue#: 1 Comment: Client: Vermont Group Pty Ltd Address: Project: 2026 Various FNQ Testing - 2026 Various FNQ Testing Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Accredited for compliance with ISO/IEC 17025 - Testing  Approved Signatory: Gavin Negri Date Of Issue: 17/02/2026 NATA Accredited Lab # 18563
	CALIFORNIA BEARING RATIO REPORT CBR-W-TL-26-00029-2 ISSUE #: 1		

Sample Details			
Sample Id	S-TL-26-00116	Location	0.5-0.8m
Test Method Name	AS 1289.6.1.1 California Bearing Ratio	Lot Number	AR3
Date Tested	Monday, 26 January 2026	Chainage Value (m)	
Date Sampled	14/01/2026	Offset	
Sampling Method	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	Offset From (m)	
Sample Preparation	AS 1289.1.1	Elevation (m)	
Material Source	Insitu	Easting	
Material Name		Northing	
Soil Aggregate Description	Sandy CLAY, Yellow-Brown Mottled Grey	Elevation (m)	

Test Results		Load V Penetration																																																												
CBR Value (%)	1.5	Load v Penetration <table border="1"><caption>Data points from the Load v Penetration graph</caption><thead><tr><th>Penetration (mm)</th><th>Applied Load (kN) - Results</th><th>Applied Load (kN) - Tangent</th><th>Applied Load (kN) - Corrected</th><th>Applied Load (kN) - Corrected CBR Values</th></tr></thead><tbody><tr><td>0</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td></tr><tr><td>1</td><td>0.08</td><td>0.10</td><td>0.08</td><td>0.08</td></tr><tr><td>2</td><td>0.15</td><td>0.20</td><td>0.15</td><td>0.15</td></tr><tr><td>3</td><td>0.22</td><td>0.30</td><td>0.22</td><td>0.22</td></tr><tr><td>4</td><td>0.28</td><td>0.40</td><td>0.28</td><td>0.28</td></tr><tr><td>5</td><td>0.32</td><td>0.50</td><td>0.32</td><td>0.32</td></tr><tr><td>6</td><td>0.35</td><td>0.60</td><td>0.35</td><td>0.35</td></tr><tr><td>7</td><td>0.38</td><td>0.70</td><td>0.38</td><td>0.38</td></tr><tr><td>8</td><td>0.42</td><td>0.80</td><td>0.42</td><td>0.42</td></tr><tr><td>10</td><td>0.48</td><td>1.00</td><td>0.48</td><td>0.48</td></tr><tr><td>12.5</td><td>0.55</td><td>1.20</td><td>0.55</td><td>0.55</td></tr></tbody></table>	Penetration (mm)	Applied Load (kN) - Results	Applied Load (kN) - Tangent	Applied Load (kN) - Corrected	Applied Load (kN) - Corrected CBR Values	0	0.00	0.00	0.00	0.00	1	0.08	0.10	0.08	0.08	2	0.15	0.20	0.15	0.15	3	0.22	0.30	0.22	0.22	4	0.28	0.40	0.28	0.28	5	0.32	0.50	0.32	0.32	6	0.35	0.60	0.35	0.35	7	0.38	0.70	0.38	0.38	8	0.42	0.80	0.42	0.42	10	0.48	1.00	0.48	0.48	12.5	0.55	1.20	0.55	0.55
Penetration (mm)	Applied Load (kN) - Results		Applied Load (kN) - Tangent	Applied Load (kN) - Corrected	Applied Load (kN) - Corrected CBR Values																																																									
0	0.00		0.00	0.00	0.00																																																									
1	0.08		0.10	0.08	0.08																																																									
2	0.15		0.20	0.15	0.15																																																									
3	0.22		0.30	0.22	0.22																																																									
4	0.28		0.40	0.28	0.28																																																									
5	0.32		0.50	0.32	0.32																																																									
6	0.35		0.60	0.35	0.35																																																									
7	0.38		0.70	0.38	0.38																																																									
8	0.42		0.80	0.42	0.42																																																									
10	0.48		1.00	0.48	0.48																																																									
12.5	0.55		1.20	0.55	0.55																																																									
CBR Value at 2.5mm (%)	1.0																																																													
CBR Value at 5.0mm (%)	1.5																																																													
Maximum Dry Density (t/m³)	1.74																																																													
Optimum Moisture Content (%)	14.5																																																													
Dry Density before Soaking (t/m³)	1.70																																																													
Density Ratio before soaking (%)	98.0																																																													
Moisture Content before Soaking (%)	14.9																																																													
Moisture Ratio before soaking (%)	101.5																																																													
Dry Density after Soaking (t/m³)	1.65																																																													
Density Ratio after soaking (%)	95.0																																																													
Swell (%)	3.0																																																													
Moisture Content of Top 30mm (%)	22.7																																																													
Moisture Content of Remaining Depth (%)																																																														
Compactive Effort	Standard																																																													
Surcharge Mass (kg)	4.5																																																													
Period of Soaking (Days)	4																																																													
CBR Moisture Content Method	AS 1289.2.1.1																																																													
Plasticity Method	Visual/Tactile Assessment																																																													
Sample Curing Time (h)	120.0																																																													



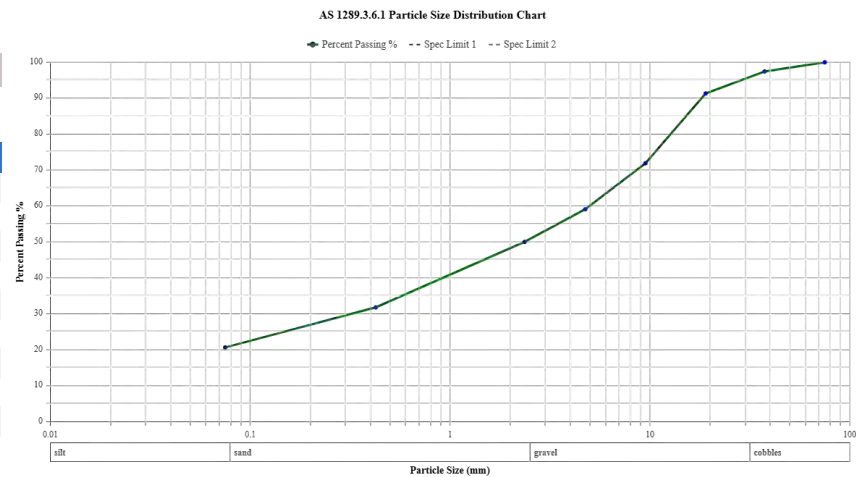
Quality of Materials Report

Report No: SAR-W-TL-26-00029-2 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00111	0.0-0.15m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	AR1-P
Rock Type:		Field Sample Id:	11
Material Source:	Pavement	TRN:	
Soil Description:	Sandy Gravelly SILT, Brown, Moist, Imported FILL	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Wednesday, 21 January 2026	S-TL-26-00111
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	97	
19mm	91	
9.5mm	72	
4.75mm	59	
2.36mm	50	
0.425mm	32	
0.075mm	21	



AS 1289.3.9.2 3.2.1 3.3.2 3.4.1 One Point Cone Liquid Limit		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00111
Result Name	Result Value	Limits
Liquid Limit (%)	22	
Plastic Limit (%)	15	
Plastic Index (%)	7	
Linear Shrinkage (%)	3.0	
Sample History		
Preparation Method	Dry Sieved	
Nature Of Shrinkage		

AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00111
Result Name	Result Value	Limits
Moisture Content (%)	7.0	

COMMENTS

Test Results Only Apply To Sample/s Tested



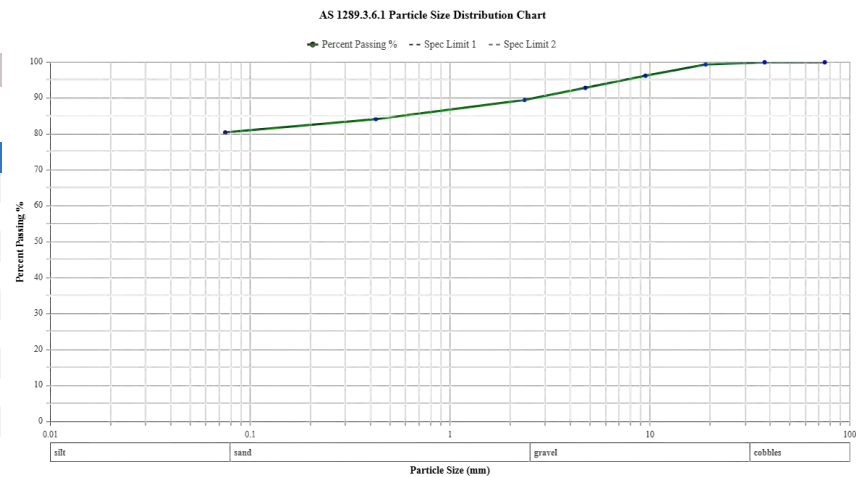
Quality of Materials Report

Report No: SAR-W-TL-26-00029-2 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00112	0.4-0.8m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	AR1
Rock Type:		Field Sample Id:	12
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Yellow-Brown, Moist, Soft	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Thursday, 22 January 2026	S-TL-26-00112
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	99	
9.5mm	96	
4.75mm	93	
2.36mm	90	
0.425mm	84	
0.075mm	80	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00112
Result Name	Result Value	Limits
Moisture Content (%)	10.0	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00112
Result Name	Result Value	Limits
Liquid Limit (%)	39	
Plastic Limit (%)	18	
Plastic Index (%)	21	
Linear Shrinkage (%)	7.5	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested



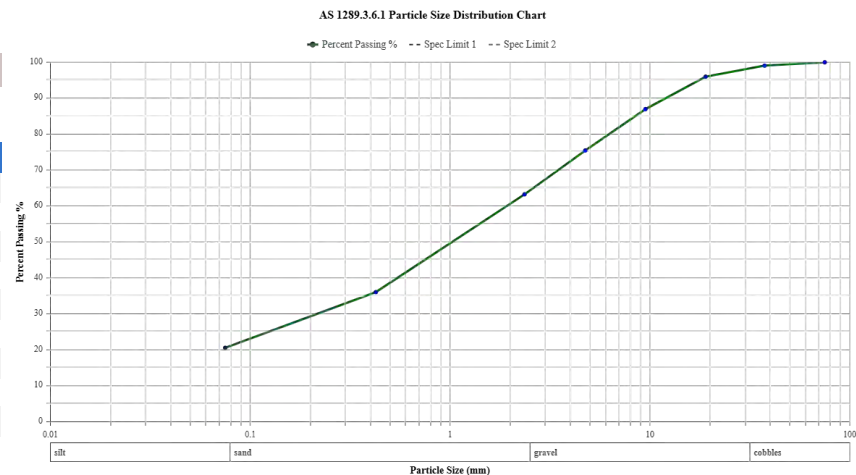
Quality of Materials Report

Report No: SAR-W-TL-26-00029-2 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00113	0.1-0.4m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	AR2-P
Rock Type:		Field Sample Id:	13
Material Source:	Pavement	TRN:	
Soil Description:	Sandy Clayey Gravel, Brown, Moist, Imported FILL, (Profile Trimmings)	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Wednesday, 21 January 2026	S-TL-26-00113
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	99	
19mm	96	
9.5mm	87	
4.75mm	75	
2.36mm	63	
0.425mm	36	
0.075mm	21	



AS 1289.3.9.2 3.2.1 3.3.2 3.4.1 One Point Cone Liquid Limit		
Date Tested	Tuesday, 03 February 2026	S-TL-26-00113
Result Name	Result Value	Limits
Liquid Limit (%)	24	
Plastic Limit (%)	17	
Plastic Index (%)	7	
Linear Shrinkage (%)	4.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage		

AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00113
Result Name	Result Value	Limits
Moisture Content (%)	5.5	

COMMENTS

Test Results Only Apply To Sample/s Tested

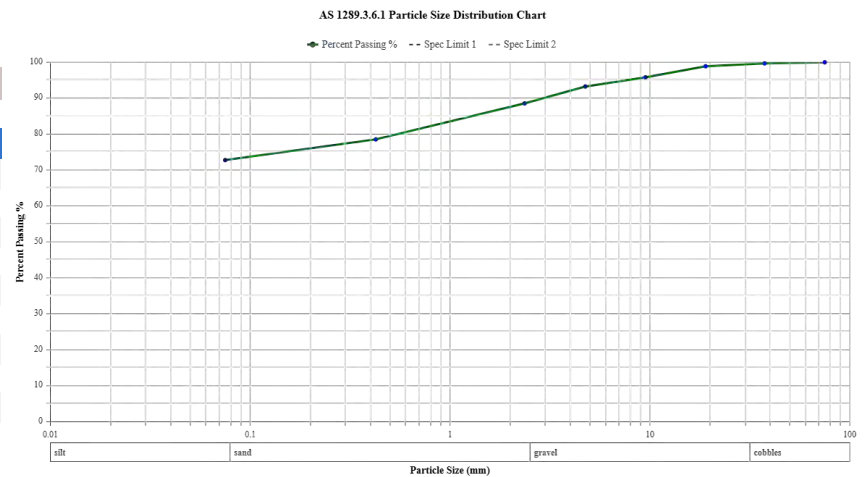


Quality of Materials Report Report No: SAR-W-TL-26-00029-2 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00114	0.5-0.8m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	AR2
Rock Type:		Field Sample Id:	14
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Yellow-Brown, Moist, Soft	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Friday, 23 January 2026	S-TL-26-00114
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	99	
9.5mm	96	
4.75mm	93	
2.36mm	89	
0.425mm	79	
0.075mm	73	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00114
Result Name	Result Value	Limits
Moisture Content (%)	13.4	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Friday, 30 January 2026	S-TL-26-00114
Result Name	Result Value	Limits
Liquid Limit (%)	47	
Plastic Limit (%)	23	
Plastic Index (%)	24	
Linear Shrinkage (%)	12.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage		

COMMENTS

Test Results Only Apply To Sample/s Tested



Quality of Materials Report

Report No: SAR-W-TL-26-00029-2 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details

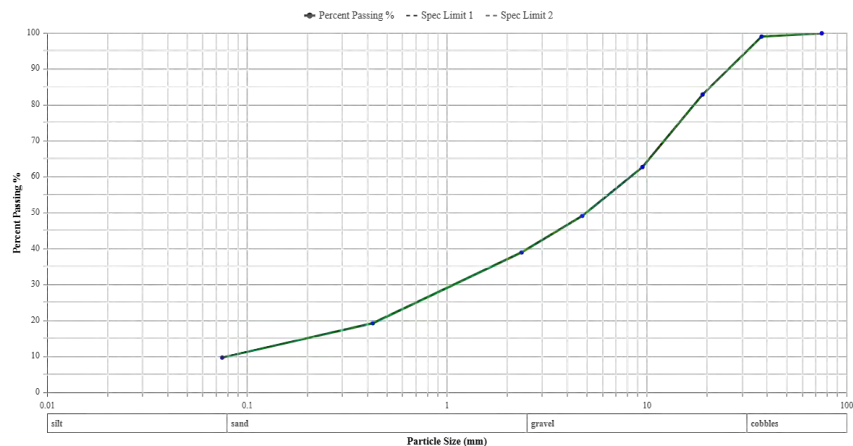
Sample ID:	S-TL-26-00115	SAMPLE LOCATION 0.0-0.3m
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling	
Sampled By:	Gavin Negri	
Date/Time Sampled:	14/01/2026 /	
Sample Preparation	AS 1289.1.1	
Material Type:		Lot Number: AR3-P
Rock Type:		Field Sample Id: 15
Material Source:	Pavement	TRN:
Soil Description:	Sandy Gravelly SILT, Brown, Moist, Imported FILL	Specification: -75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil

Date Tested Wednesday, 21 January 2026 S-TL-26-00115

Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	99	
19mm	83	
9.5mm	63	
4.75mm	49	
2.36mm	39	
0.425mm	19	
0.075mm	10	

AS 1289.3.6.1 Particle Size Distribution Chart



AS 1289.3.9.2 3.2.1 3.3.2 3.4.1 One Point Cone Liquid Limit

Date Tested	Tuesday, 03 February 2026	S-TL-26-00115
Result Name	Result Value	Limits
Liquid Limit (%)	22	
Plastic Limit (%)	16	
Plastic Index (%)	6	
Linear Shrinkage (%)	2.5	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage		

AS 1289.2.1.1 Moisture Content Oven

Date Tested	Friday, 16 January 2026	S-TL-26-00115
Result Name	Result Value	Limits
Moisture Content (%)	5.6	

COMMENTS

Test Results Only Apply To Sample/s Tested

APPROVED SIGNATORY

Name: Gavin Negri
Date Of Issue: 17/02/2026 | Issue#: 1
Accredited for compliance with ISO/IEC 17025 -
Testing
NATA Accredited Laboratory Number: 18563





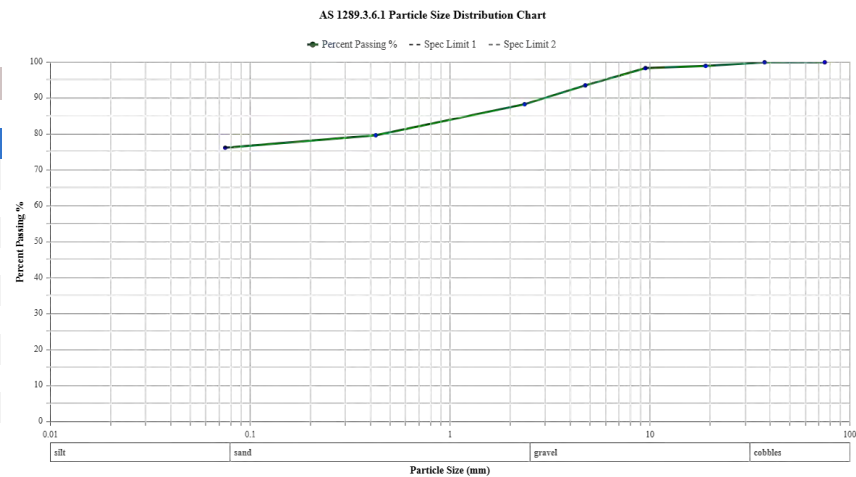
Quality of Materials Report

Report No: SAR-W-TL-26-00029-2 | Issue No: 1

Client:	Vermont Group Pty Ltd	Project Number:	2026 Various FNQ Testing
Address:		Report Date:	17/02/2026
Project Name:	2026 Various FNQ Testing - 2026 Various FNQ Testing	Order Number:	
Project Location:	Andreassen Road, Craiglie - Geotech testing Andreassen Road, Craiglie, 4877	Job Description:	

Sample Details		SAMPLE LOCATION	
Sample ID:	S-TL-26-00116	0.5-0.8m	
Sampling Method:	AS 1289.1.2.1 Clause 6.5.3 - Sampling from power auger drilling		
Sampled By:	Gavin Negri		
Date/Time Sampled:	14/01/2026 /		
Sample Preparation	AS 1289.1.1		
Material Type:		Lot Number:	AR3
Rock Type:		Field Sample Id:	16
Material Source:	Insitu	TRN:	
Soil Description:	Sandy CLAY, Yellow-Brown Mottled Grey	Specification:	-75mm TMR Sieves No Spec

AS 1289.3.6.1 Particle Size Distribution - Soil		
Date Tested	Friday, 23 January 2026	S-TL-26-00116
Sieve Size (mm)	(%) Passing	Limits
Fines Ratio %		
75mm	100	
37.5mm	100	
19mm	99	
9.5mm	98	
4.75mm	94	
2.36mm	88	
0.425mm	80	
0.075mm	76	



AS 1289.2.1.1 Moisture Content Oven		
Date Tested	Friday, 16 January 2026	S-TL-26-00116
Result Name	Result Value	Limits
Moisture Content (%)	8.9	

AS 1289.3.1.2 3.2.1 3.3.1 3.4.1 One Point Atterberg Limits		
Date Tested	Friday, 30 January 2026	S-TL-26-00116
Result Name	Result Value	Limits
Liquid Limit (%)	42	
Plastic Limit (%)	19	
Plastic Index (%)	23	
Linear Shrinkage (%)	11.0	
Sample History	Air Dried	
Preparation Method	Dry Sieved	
Nature Of Shrinkage	, ,	

COMMENTS

Test Results Only Apply To Sample/s Tested

Appendix C – CIRCLY Output Reports

Detailed pavement design package 1
Appendix C, page 1
Pavement type F1,CAPATAIN COOK HWY
Base 210mm thick

CIRCLY - Version 7.0 (1 July 2025)

Job Title: Andreassen_PV1-1_260317

Design Method: Austroads 2017

NDT (cumulative heavy vehicle axle groups over design period): 1.11E+07

Traffic Load Distribution:

ID: State Route 44

Name: Captain Cook Highway, Road Section 20A, State Route 44_Andreassen rd

ESA/HVAG: 0.898

Details of Load Groups:

Load No.	Load ID	Load Category	Load Type	Radius	Pressure/Ref. stress	Exponent
1	ESA750-Full	ESA750-Full	Vertical Force	92.1	0.75	0.00
2	SAST53	SAST53	Vertical Force	102.4	0.80	0.00

Load Locations:

Location No.	Load ID	Gear No.	X	Y	Scaling Factor	Theta
1	ESA750-Full	1	-165.0	0.0	1.00E+00	0.00
2	ESA750-Full	1	165.0	0.0	1.00E+00	0.00
3	ESA750-Full	1	1635.0	0.0	1.00E+00	0.00
4	ESA750-Full	1	1965.0	0.0	1.00E+00	0.00
1	SAST53	1	0.0	0.0	1.00E+00	0.00
2	SAST53	1	2130.0	0.0	1.00E+00	0.00

Details of Layered System:

ID: Andreassen_PV1 Title: Andreassen, PV1 Captain Cook Highway, CBR4.5%

Layer No.	Lower i/face	Material ID	Isotropy	Modulus (or Ev)	P.Ratio (or vvh)	F	Eh	vh
1	rough	SMA14_A15E_80kph	Iso.	1.00E+03	0.40			
2	rough	LB-NSL-0600	Aniso.	6.00E+02	0.35	4.44E+02	3.00E+02	0.35
3	rough	UG-SL-0150	Aniso.	1.50E+02	0.35	1.11E+02	7.50E+01	0.35
4	rough	LSSG-210	Aniso.	2.10E+02	0.45	1.45E+02	1.05E+02	0.45
5	rough	SG-CBR04.5	Aniso.	4.50E+01	0.45	3.10E+01	2.25E+01	0.45

Performance Relationships:

Layer No.	Location	Material ID	Component	Perform. Constant	Perform. Exponent	Shift Factor
1	bottom	SMA14_A15E_80kph	ETH	0.007025	5.000	6.0
5	top	SG-CBR04.5	EZZ	0.009150	7.000	

Reliability Factors:

Project Reliability: Austroads 95%

Layer No.	Reliability Factor	Material Type
1	6.00	_TMR Asphalt-SMA
5	1.00	_TMR Subgrade (AGPT02)

Details of Layers to be sublayered:

Layer no. 3: Austroads (2004) sublayering

Strains:

Layer No.	Thickness	Material ID	Axle	Unitless Strain
1	50.00	SMA14_A15E_80kph		
			SADT(80):	1.718E-04
			SAST(53):	1.745E-04
5	0.00	SG-CBR04.5		
			SADT(80):	3.366E-04

Results:

Layer No.	Thickness	Material ID	Axle Group	CDF
1	50.00	SMA14_A15E_80kph	Total:	1.099E-01
			SAST:	7.596E-02
			SADT:	1.479E-02
			TAST:	6.122E-03
			TADT:	1.099E-02
			TRDT:	1.993E-03
			QADT:	1.789E-05
2	210.00	LB-NSL-0600		n/a
3	200.00	UG-SL-0150		n/a
4	300.00	LSSG-210		n/a
5	0.00	SG-CBR04.5	Total:	9.081E-04

Detailed pavement design package 1
Appendix C, page 1
Pavement type F1,CAPATAIN COOK HWY
Base 190mm thick, with 20mm construction tolerance

CIRCLY - Version 7.0 (1 July 2025)

Job Title: Andreassen_PV1-2_260317

Design Method: Austroads 2017

NDT (cumulative heavy vehicle axle groups over design period): 1.11E+07

Traffic Load Distribution:

ID: State Route 44

Name: Captain Cook Highway, Road Section 20A, State Route 44_Andreassen rd

ESA/HVAG: 0.898

Details of Load Groups:

Load No.	Load ID	Load Category	Load Type	Radius	Pressure/Ref. stress	Exponent
1	ESA750-Full	ESA750-Full	Vertical Force	92.1	0.75	0.00
2	SAST53	SAST53	Vertical Force	102.4	0.80	0.00

Load Locations:

Location No.	Load ID	Gear No.	X	Y	Scaling Factor	Theta
1	ESA750-Full	1	-165.0	0.0	1.00E+00	0.00
2	ESA750-Full	1	165.0	0.0	1.00E+00	0.00
3	ESA750-Full	1	1635.0	0.0	1.00E+00	0.00
4	ESA750-Full	1	1965.0	0.0	1.00E+00	0.00
1	SAST53	1	0.0	0.0	1.00E+00	0.00
2	SAST53	1	2130.0	0.0	1.00E+00	0.00

Details of Layered System:

ID: Andreassen_PV1-2 Title: Andreassen, PV1-2 Captain Cook Highway, CBR4.5%

Layer No.	Lower i/face	Material ID	Isotropy	Modulus (or Ev)	P.Ratio (or vvh)	F	Eh	vh
1	rough	SMA14_A15E_80kph	Iso.	1.00E+03	0.40			
2	rough	LB-NSL-0600	Aniso.	6.00E+02	0.35	4.44E+02	3.00E+02	0.35
3	rough	UG-SL-0150	Aniso.	1.50E+02	0.35	1.11E+02	7.50E+01	0.35
4	rough	LSSG-210	Aniso.	2.10E+02	0.45	1.45E+02	1.05E+02	0.45
5	rough	SG-CBR04.5	Aniso.	4.50E+01	0.45	3.10E+01	2.25E+01	0.45

Performance Relationships:

Layer No.	Location	Material ID	Component	Perform. Constant	Perform. Exponent	Shift Factor
1	bottom	SMA14_A15E_80kph	ETH	0.007025	5.000	6.0
5	top	SG-CBR04.5	EZZ	0.009150	7.000	

Reliability Factors:

Project Reliability: Austroads 95%

Layer Reliability

Layer No.	Factor	Material Type
1	6.00	_TMR Asphalt-SMA
5	1.00	_TMR Subgrade (AGPT02)

Details of Layers to be sublayered:

Layer no. 3: Austroads (2004) sublayering

Strains:

Layer No.	Thickness	Material ID	Axle	Unitless Strain
1	50.00	SMA14_A15E_80kph		
			SADT(80):	1.717E-04
			SAST(53):	1.737E-04
5	0.00	SG-CBR04.5		
			SADT(80):	3.552E-04

Results:

Layer No.	Thickness	Material ID	Axle Group	CDF
1	50.00	SMA14_A15E_80kph	Total:	1.078E-01
			SAST:	7.407E-02
			SADT:	1.475E-02
			TAST:	5.969E-03
			TADT:	1.096E-02
			TRDT:	1.987E-03
			QADT:	1.784E-05
2	190.00	LB-NSL-0600		n/a
3	200.00	UG-SL-0150		n/a
4	300.00	LSSG-210		n/a
5	0.00	SG-CBR04.5	Total:	1.324E-03

Appendix C Flood Impact Assessment

Flood Impact Assessment

Proposed Subdivision Development at Andreassen Road



Flood Impact Assessment

Proposed Subdivision development at Andreassen Road.

Prepared for our clients:

Port Douglas Estate Pty Ltd

Prepared by:

Stellen Consulting

PO Box 151 Freshwater, NSW 2096

T. +61 2 8021 9233

www.stellenconsulting.com.au

ABN 61 149 095 189

Quality Information

Document Flood Impact Assessment

Ref P1711508 -RP-FL-001-C

Date 19 August 2026

Prepared by Digvijay Desai

Reviewed by Logan English-Smith, Mohamud Ibrahim and Ian Warren

Revision History

Revision	Date	Details	Authorised	
			Name/Position	Signature
A	10.04.2026	S33 Approval	Logan English-Smith Senior Engineer	
			Mohamud Ibrahim RPEQ (36675)	
B	14.08.2026	S33 Approval	Logan English-Smith Senior Engineer	
C	21.08.2026	S33 Approval	Logan English-Smith Senior Engineer	

© Stellen Consulting (Stellen). All rights reserved.

Stellen Consulting has prepared this document for the sole use of the Client and for a specific purpose, each as expressly stated in the document. No other party should rely on this document without the prior written consent of Stellen. Stellen undertakes no duty, nor accepts any responsibility, to any third party who may rely upon or use this document. This document has been prepared based on the Client's description of its requirements and Stellen's experience, having regard to assumptions that Stellen can reasonably be expected to make in accordance with sound professional principles. Stellen may also have relied upon information provided by the Client and other third parties to prepare this document, some of which may not have been verified. Subject to the above conditions, this document may be transmitted, reproduced or disseminated only in its entirety

1.0 Executive Summary

This Flood Impact Assessment was prepared to support the upgrade of the Captain Cook Highway intersection at Andreassen Road, Cairns region. The primary objective is to demonstrate compliance with Concurrence Agency Condition 5 of the Decision Notice under Section 87 of the *Planning Act 2016*, which requires no worsening of flood behaviour on the State-controlled road reserve (SCRR) for all events up to and including the 1% Annual Exceedance Probability (AEP).

A two-stage hydraulic modelling approach was undertaken. First, a two-dimensional (2D) hydraulic model was developed using HEC-RAS to establish existing flood behaviour and generate a routed inflow hydrograph. Second, a one-dimensional (1D) hydraulic model was developed using DRAINS to assess the proposed realigned rock lined channel and drainage network. Hydrologic inputs were derived using the Rational Method as the primary tool, validated by a RORB runoff-routing model following ARR 2019 regional parameters.

The hydraulic design strategy centres on realigning the existing overland flow path channel to accommodate the upgraded intersection. Existing culverts are maintained, and no new discharge points are created on the SCRR. The proposed drainage infrastructure has been designed to convey the adopted design flows while maintaining the required hydraulic capacity and freeboard.

Key results:

- The proposed realigned rock lined channel has sufficient capacity to convey the 1% AEP design flows.
- No worsening of flood behaviour on the SCRR.
- No increase in peak water levels on the highway pavement.
- No surcharging of existing culverts.
- The DRAINS model predicts a peak flow of 13 m³/s at the SCRR for the 1% AEP event, which is the routed outflow from the upstream catchment following losses and attenuation.

Table of Contents

1.0	Executive Summary	4
2.0	Introduction	6
3.0	Hydrology	6
3.1	Peak Flow Routing and Design Inflows	8
4.0	Hydraulics	8
4.1	Model Domain and Grid Resolution	9
4.2	Boundary Conditions	9
4.3	Inflow Hydrograph	10
4.4	Design Model (DRAINS 1D)	12
5.0	Hydraulic Design & Mitigation Strategy	17
6.0	Findings	18
7.0	Conclusion	18

2.0 Introduction

Purpose

This Flood Impact Assessment has been prepared to support the upgrade of the Captain Cook Highway intersection at Andreassen Road. The primary objective is to demonstrate compliance with Condition 5 of the Decision Notice under S87 of the *Planning Act 2016*, which requires no worsening of flood behaviour on the State-controlled road reserve (SCRR) for all events up to and including the 1% Annual Exceedance Probability (AEP).

Scope

This report addresses:

- Catchment analysis and hydrologic modelling.
- Two-dimensional (2D) hydraulic modelling of existing flood behaviour using HEC-RAS.
- One-dimensional (1D) hydraulic modelling of the proposed design using DRAINS.
- Assessment of flood immunity and overland flow conveyance.

Site Description

The site is located within the coastal lowlands of the Cairns region, forming part of the Mowbray River floodplain. Natural drainage patterns flow toward the Mowbray River corridor to the south and east. Existing ground levels range between 5 m and 7.6 m AHD.

Reference Documents & Information

The following documents from the background information are relied upon:

- TMR Technical Guideline: Hydrologic and Hydraulic Modelling (January 2024).
- Australian Rainfall and Runoff (ARR) 2019.
- Queensland Urban Drainage Manual (QUDM) 2017.
- FNQROC Regional Development Manual, Version 9, 2024.

Survey

- **Primary Data:** ELVIS DEM 2m resolution topographic data.
- **Survey:** Twine Surveys Pty Ltd

3.0 Hydrology

The primary hydrologic modelling method adopted for this assessment was the Rational Method, used in conjunction with ARR Intensity-Frequency-Duration (IFD) data. For each design event, the Rational Method was

applied to generate peak flow estimates for the catchment areas draining toward the Captain Cook Highway and the proposed diversion swale system. The catchment plan is shown in Figure 1.



Figure 1: Catchment Plan

To validate the peak flows derived from the Rational Method, a runoff-routing model using RORB was employed as a check method. The RORB model was developed using regional parameters as per ARR 2019 for uncalibrated models. Loss rates were applied to each catchment in accordance with ARR 2019. Initial loss was set at 0 millimetres for both impervious and pervious areas, reflecting the wetter coastal environment, while a continuing loss rate of 3.5 millimetres per hour was applied to pervious areas.

All temporal patterns were sourced from ARR 2019 and were rigorously checked for "embedded bursts" in accordance with Chapter 5, Section 5.9.4 of Book 2 – Rainfall Estimation. Consideration was given to filtering out any embedded bursts to ensure the temporal patterns were representative of realistic storm events. The obtained outputs were compared against the Rational Method results to ensure consistency and reliability.

To ensure the peak flows from each catchment were aligned in time, the Rational Method results were time-synchronised using the flow routing outputs from the HEC-RAS model. This approach ensured that peak flows from different catchments occurred simultaneously in the hydraulic model, allowing a realistic assessment of coincident flood peaks.

3.1 Peak Flow Routing and Design Inflows

Peak flows for the contributing catchments were initially estimated using the Rational Method. The calculated 10% and 1% AEP peak inflows for Catchments A, B and C are summarised in Table 1.

Table 1: Design Peak Inflows by Catchment and AEP Event

Catchment	Event %	Inflow (m ³ /s)
Catchment A	10% AEP	13.58
	1% AEP	16.21
Catchment B	10% AEP	1.57
	1% AEP	2.15
Catchment C	10% AEP	4.87
	1% AEP	6.68

These peak flows were used to define the upstream inflows to the HEC-RAS 2D Base Case model documented in Stellen Consulting Report P171508-RP-FL-001-A, dated 10 April 2026. The HEC-RAS model represents the existing, pre-development site conditions and routes the catchment inflows through the existing overland flow paths, floodplain storage areas and drainage infrastructure.

For the current design assessment, the previous HEC-RAS modelling has not been updated to represent the proposed works. Instead, the existing-conditions Base Case model has been used to establish a representative routed flow through the existing Captain Cook Highway culverts, which is then used as the upstream design flow for the DRAINS model.

For Catchment A, the Rational Method calculated a 1% AEP peak inflow of 16.21 m³/s. This flow was applied to the HEC-RAS model together with the corresponding inflows from the other contributing catchments. As these flows are routed through the existing floodplain and drainage system, the resulting hydrograph at the Captain Cook Highway culvert crossing is attenuated.

The discharge hydrograph extracted from the HEC-RAS model at the outlet of the existing four 2.1 m wide × 0.9 m high RCBCs has a peak discharge of approximately 13 m³/s for the 1% AEP event. The reduction from the upstream catchment peak reflects the hydraulic routing, storage and timing effects represented within the HEC-RAS model.

4.0 Hydraulics

The hydraulic assessment was undertaken using a two-stage modelling approach. First, a two-dimensional (2D) hydraulic model was developed using HEC-RAS to establish existing flood behaviour and generate a routed inflow hydrograph for use in the design model. Second, a one-dimensional (1D) hydraulic model was developed using DRAINS to assess the proposed realigned channel and drainage network.

Table 2 – Key Assumptions for HEC-RAS 2D Modelling

Assumption Category	Adopted Value/ Method	Justification/ Reference
Software Version	HEC-RAS Version 6.5	Stable release with full 2D capabilities and TUFLOW compatibility for peer review.
2D solver	SWE-EM (Stricter momentum)	Appropriate for overland flow and floodplain applications where inertial effects are significant; full momentum terms are retained for accurate representation of flood wave propagation.
Grid Resolution	2mx2m	Provides sufficient detail for the road corridor and diversion swales; consistent with the TMR guideline for projects of this scale.
Boundary Conditions – Upstream	Flow hydrographs from the Rational Method (primary) validated by RORB	Consistent with hydrologic assessment.
Boundary Conditions – Downstream	Normal depth (slope = 0.001 m/m) or water level from the regional flood model (if available)	Based on the Mowbray River corridor topography, slope derived from ELVIS DEM.

4.1 Model Domain and Grid Resolution

The model domain extended sufficiently beyond the 1% AEP flood extent to ensure boundary conditions did not influence results within the area of interest. A **2 m × 2 m structured grid** was adopted, providing adequate resolution to represent:

- Highway pavement and roadside batters.
- Proposed diversion swale geometry (15 m top width).
- Existing culverts (modelled as 2D flow structures).
- Overland flow paths and floodplain storage.

4.2 Boundary Conditions

- **Upstream:** Flow hydrographs from the hydrologic assessment (Rational Method, validated by RORB) were applied at catchment inflow points.
- **Downstream:** A normal depth boundary condition (slope = 0.001 m/m) was applied, based on the Mowbray River corridor topography derived from the ELVIS DEM.



Figure 2: 2D Flow Area and Upstream Inflow Catchment Boundaries

The HEC-RAS model confirmed that upstream catchment flows cross the development land and reach the Captain Cook Highway, where they are conveyed through existing culverts under the highway and continue toward the Mowbray River corridor. The model was also used to generate a routed discharge hydrograph at the outlet of the Captain Cook Highway culverts, which was subsequently adopted as the upstream boundary condition for the Design Case DRAINS model.

4.3 Inflow Hydrograph

The HEC-RAS discharge hydrograph at the outlet of the Captain Cook Highway culverts was subsequently adopted as the upstream boundary condition for the Design Case DRAINS model. The 1% AEP hydrograph used in the DRAINS model is presented in Figure 3.

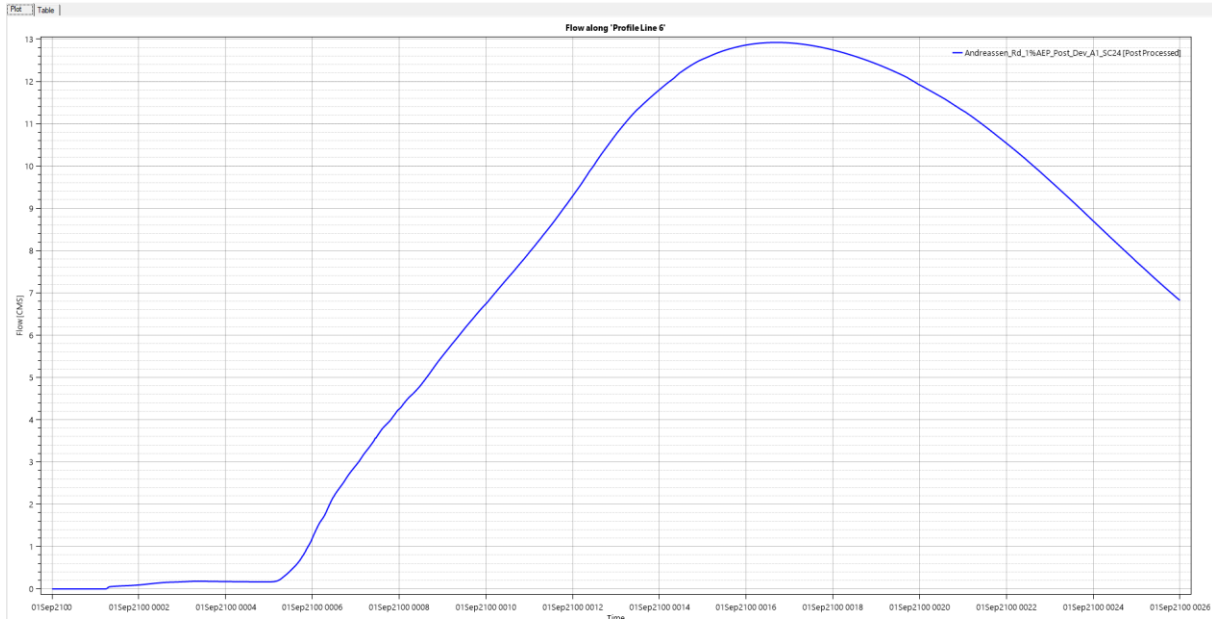


Figure 3: 1% AEP Inflow Hydrograph at Captain Cook Highway Culvert Outlet

The DRAINS model therefore does not use the unrouted 16.21 m³/s Rational Method peak directly for sizing the proposed drainage channel. Instead, it uses the routed HEC-RAS hydrograph, with a peak of approximately 13 m³/s, as this provides a more representative estimate of the flow discharged from the existing highway culverts into the proposed drainage system.

Rock Armoring Design for Realigned Channel

To ensure long-term stability and prevent erosion of the realigned channel, rock armoring has been designed in accordance with IECA Rock Linings Drainage Control Technique. The design adopts Equation 6:

$$d_{50} \approx \frac{K_1 \cdot V^2}{2 \cdot g \cdot K^2 (s_r - 1)}$$

- d_{50} = nominal rock size (m)
- K_1 = 1.0 (angular rock correction factor)
- V = depth-average flow velocity (m/s)
- g = 9.81 m/s² (gravitational acceleration)
- K = 0.86 (turbulence coefficient for high turbulent/supercritical flow)
- s_r = 2.6 (specific gravity of basalt/granite)

Parameter	Value
Design Flow (1% AEP)	13.00m ³ /s
Channel Section	C1, C2, C3
Average Velocity	3.0 – 3.5 m/s
Side Slope	2H:1V

Rock Size and Layer thickness Determination

Channel	Adopted d50(mm)	Layer Thickness (mm)
C1	450	850
C2	400	750
C3	550	1000

4.4 Design Model (DRAINS 1D)

The hydraulic assessment of the proposed design was undertaken using a one-dimensional (1D) hydraulic modelling approach, with DRAINS. The design model includes the proposed realignment of the existing overland flow path, the improved intersection geometry, and the existing highway culverts as retained.

The model domain covers the proposed drainage network, including the upstream inflow hydrograph (derived from the HEC-RAS model), the realigned overland flow path, and the downstream outlet to the Mowbray River corridor. The model utilises the channel cross-sections, pipes, and node data provided in the survey (Appendix A) to represent the key features of the drainage system.

No blockage applied to CC Hwy box culverts

A blockage factor has not been applied to the existing box culverts beneath Captain Cook Highway on the basis of how it influences model conservatism:

- Blockage is applied uniformly across events**
 In hydraulic modelling, a blockage factor represents a fixed reduction in culvert capacity that is applied consistently to all design events.
- Focus of assessment is downstream behaviour**
 The primary area of interest for this assessment is downstream of the culvert crossing, where potential flood impacts to the development are realised.
- No blockage represents maximum conveyance**
 By adopting a no-blockage scenario, the culverts are modelled at full capacity, allowing the maximum possible discharge to pass through the crossing.
- Conservative outcome downstream**
 This approach results in higher flows and water levels downstream of the culverts compared to a partially

blocked scenario. As such, it provides a conservative assessment of downstream flood behaviour and associated impacts.

Accordingly, excluding a blockage factor ensures the modelling captures a worst-case condition for downstream areas, which is the critical focus of the assessment.

Roughness

The entire realigned overland flow channel has been designed as a rock lined channel. A Manning's n value of 0.035 was adopted for the realigned overland flow channel within the DRAINS model.

Drainage Network

The proposed realigned overland flow path and existing upstream culverts were modelled as a 1D network within DRAINS. Figures 4 and 5 below show the existing and proposed location and key attributes of the drainage network. Culvert and channel dimensions and invert levels were extracted from TWINE SURVEYS PTY LTD survey (Appendix A).

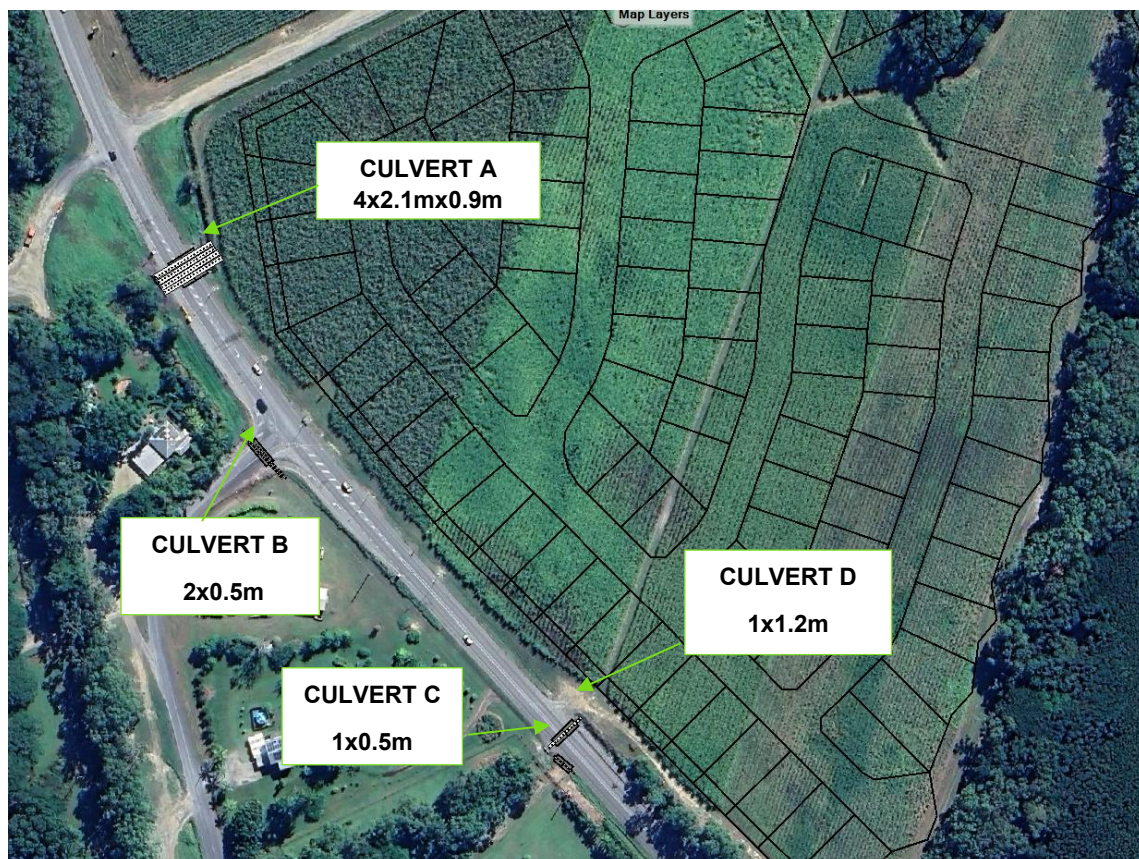


Figure 4: Existing stormwater network

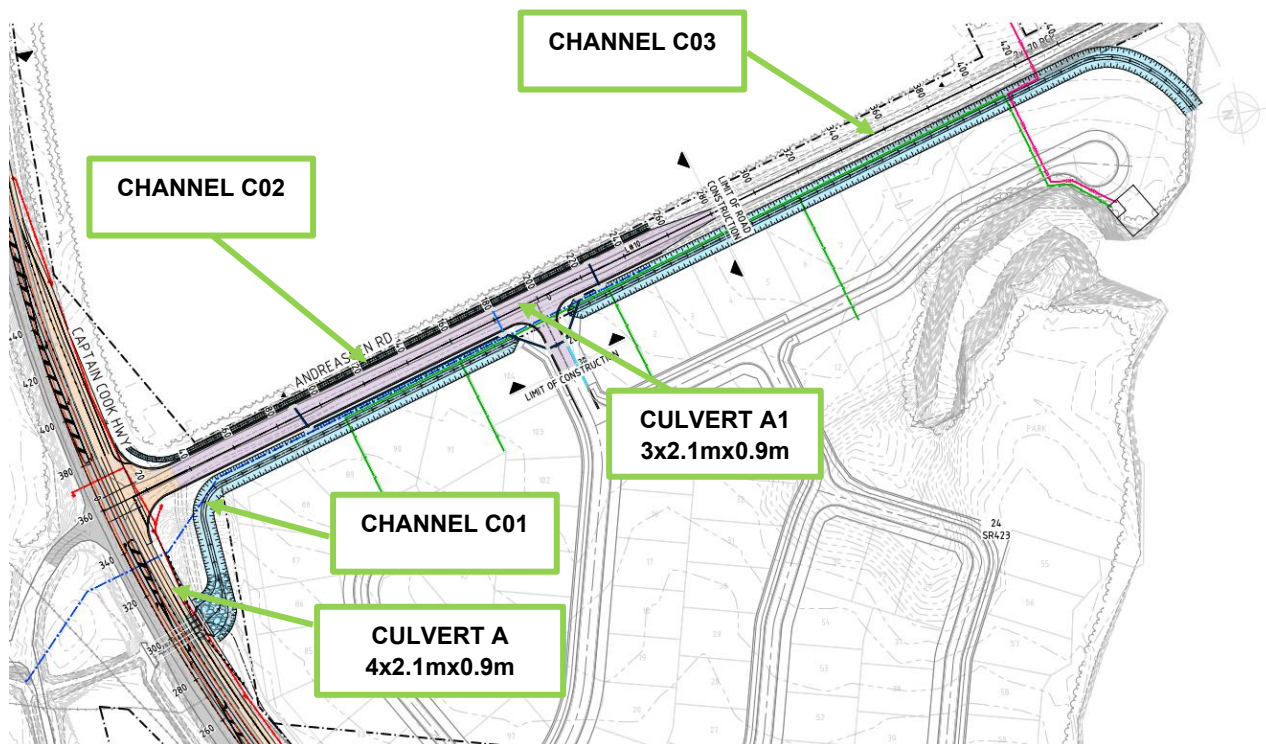


Figure 5: Proposed stormwater network

Table 3 – Key Assumptions for DRAINS 1D Modelling

Assumption Category	Adopted Value/ Method	Justification/ Reference
Software	DRAINS	Industry standard software for 1D drainage and overland flow modelling.
Channel Representation	Irregular Channel Cross-Sections	Uses representative cross-sections as supplied in the survey data (Appendix A) to accurately model flow conveyance.
Pipe Representation	Link-Node Model	Consistent with hydrologic assessment (Section 3.0).
Manning's n (Channel)	0.035	Consistent with survey data and typical values for rock lined channels with light vegetation.
Boundary Conditions -- Downstream	Free Discharge	Outlet is located far enough downstream that the boundary does not influence 1% AEP water levels in the area of interest.

Model Setup

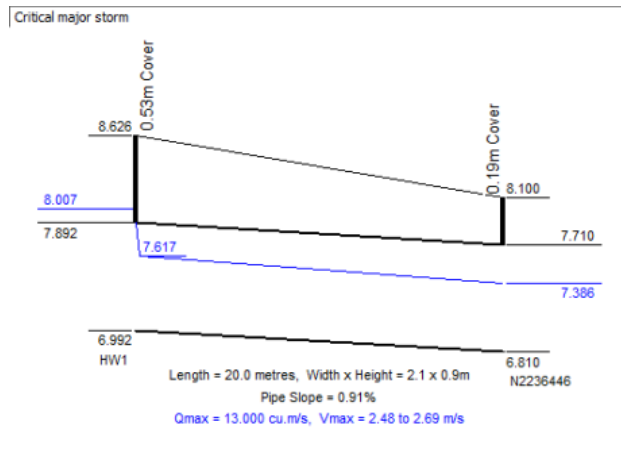
The DRAINS model was set up using the following key elements:

- **Channels:** The irregular overland flow channels were modelled as a series of reaches using the representative cross-sections provided in the survey (Appendix A). Their bed levels were adjusted to match the specified upstream and downstream invert levels. A Manning's n value of 0.035 was applied to all channel reaches.
- **Pipes:** The box culverts under Captain Cook Highway and the proposed intersection at Andreassen road were modelled as pipes with the specified dimensions, length, and slope.
- **Nodes:** The model includes all key junction nodes (e.g., HW3, N1, N2) as shown in the drainage network diagram (Figures 4 and 5), connecting the channels and pipes.

DRAINS MODEL

The DRAINS model was run to assess the hydraulic performance of the proposed realigned channel. The model output is presented in Figure 6 below, showing the water surface profile along the channel for the 1% AEP event.

Key parameters extracted from the DRAINS model output include:



Culvert A: 4x2.1mx0.9m (Length: 20m)

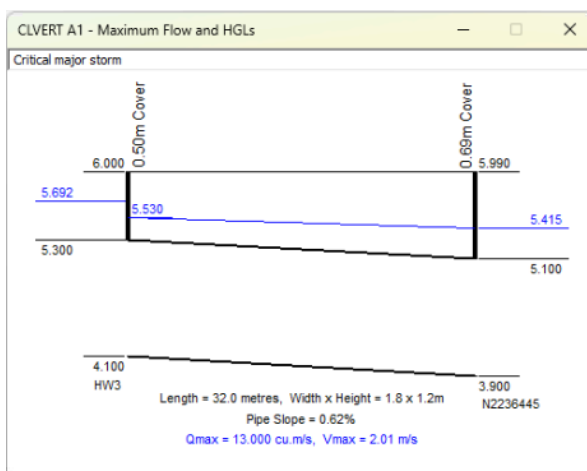
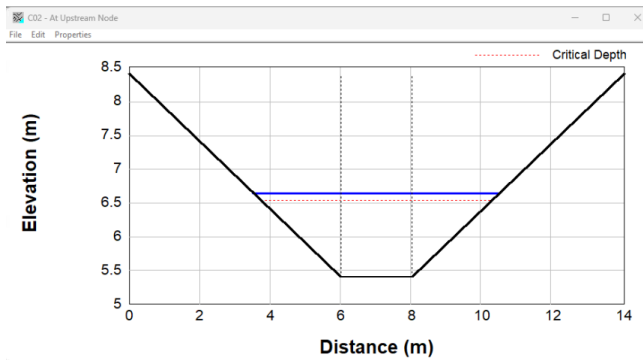
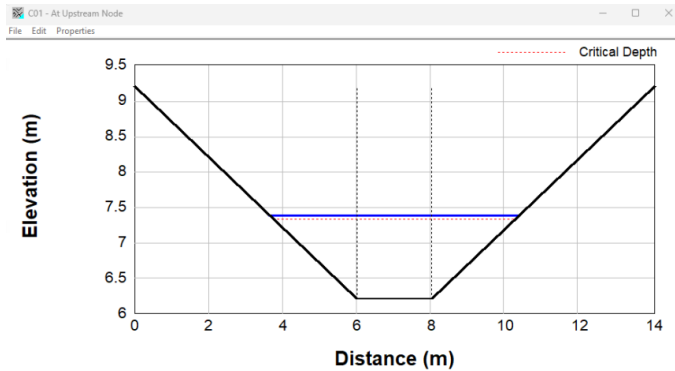
Upstream Invert Level: 6.992m AHD

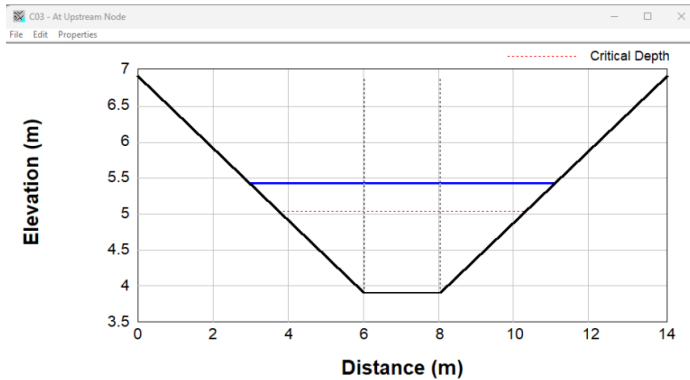
Downstream Invert Level :6.810m AHD

Slope: 0.91%

1% AEP Water Level: 8.007m AHD

Road surface Level: 8.626m AHD





Channel: C03 (Length: 288m)
Upstream Invert Level: 3.90m AHD
Downstream Invert Level: 2.90m AHD
1% AEP Water Level: 5.50m AHD
Road surface Level: 6.77m AHD

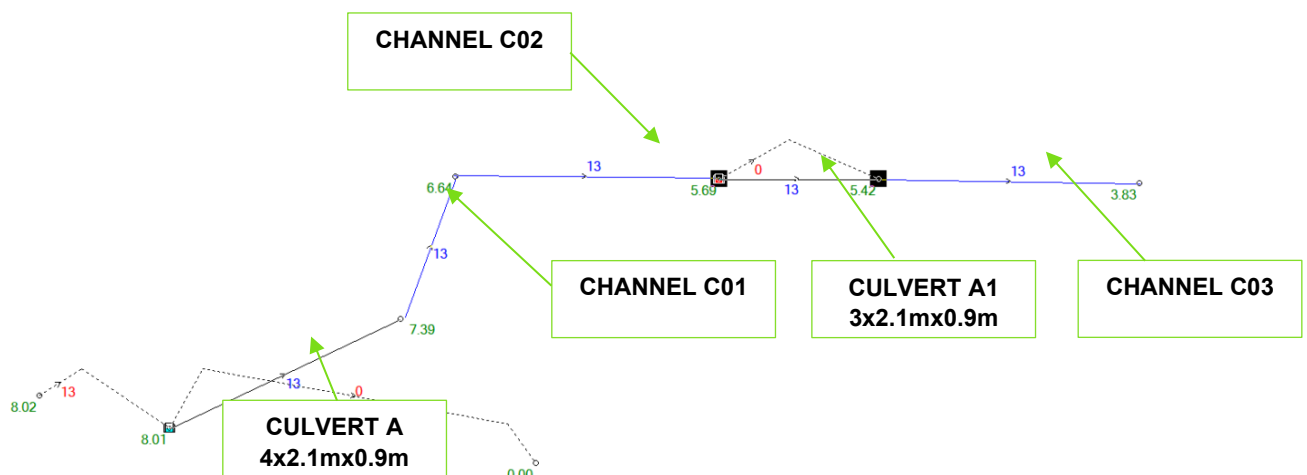


Figure 6: DRAINS Model Output – 1% AEP Event

5.0 Hydraulic Design & Mitigation Strategy

The hydraulic design strategy for the Captain Cook Highway intersection upgrade focuses on achieving no worsening of flood behaviour on the State-controlled road reserve (SCRR) for all events up to and including the 1% AEP. The primary mitigation element is the realignment of the existing overland flow channel. The existing channel will be realigned to accommodate the new intersection geometry and increase the conveyance capacity.

The existing highway culverts are maintained and extended where necessary, but no new culverts or discharge points are created on the SCRR. The upgraded Andreassen Road includes kerb and channel with underground drainage that connects to the internal subdivision drainage network, ensuring no direct discharge of road runoff onto the SCRR.

The DRAINS 1D model was run for the Design Case with all mitigation measures in place to verify that the proposed channel has sufficient capacity to convey the design flows without surcharging or overtopping.

6.0 Findings

The DRAINS 1D model was executed for the design events, 10% and 1% AEP. The results demonstrate that the proposed realignment of the existing overland flow path has sufficient capacity to convey the design flows without causing any increase in peak water levels on the SCRR for the 1% AEP events.

Key findings include:

- The realigned channel conveys the 1% AEP design flow of 13 m³/s from Catchment A without surcharging or overtopping. The proposed realignment channel provides adequate freeboard above the 1%AEP water surface level. The minimum freeboard is 300mm, consistent with TMR and QUDM guidelines.
- Peak water levels within the realigned channel remain below the surrounding ground levels, confirming no floodplain encroachment.
- The existing culverts under Captain Cook Highway operate without surcharging under the 1% AEP event.

7.0 Conclusion

The proposed works result in a significant improvement to existing flood behaviour within the State-controlled road reserve (SCRR). Under existing conditions, floodwater is conveyed through an undersized and poorly maintained drainage channel, resulting in widespread inundation across the road reserve. The proposed works formalise this overland flow path within a purpose-built open channel designed to contain and convey flows up to and including the 1% AEP event. This substantially reduces the extent of flooding within the SCRR and provides a controlled drainage path for upstream catchment flows.

This Flood Impact Assessment, prepared in accordance with the TMR Hydrologic and Hydraulic Modelling Guideline (January 2024), demonstrates that the proposed Captain Cook Highway intersection upgrade and associated realignment of the existing overland flow path will not worsen flood behaviour within the State-controlled road reserve for events up to and including the 1% AEP.

The hydrologic assessment adopted the Rational Method to estimate catchment inflows, with the existing-condition HEC-RAS 2D model used to establish representative routed flows through the existing Captain Cook Highway culverts. These routed hydrographs were subsequently adopted as inputs to the DRAINS model for assessment and sizing of the proposed drainage channel.

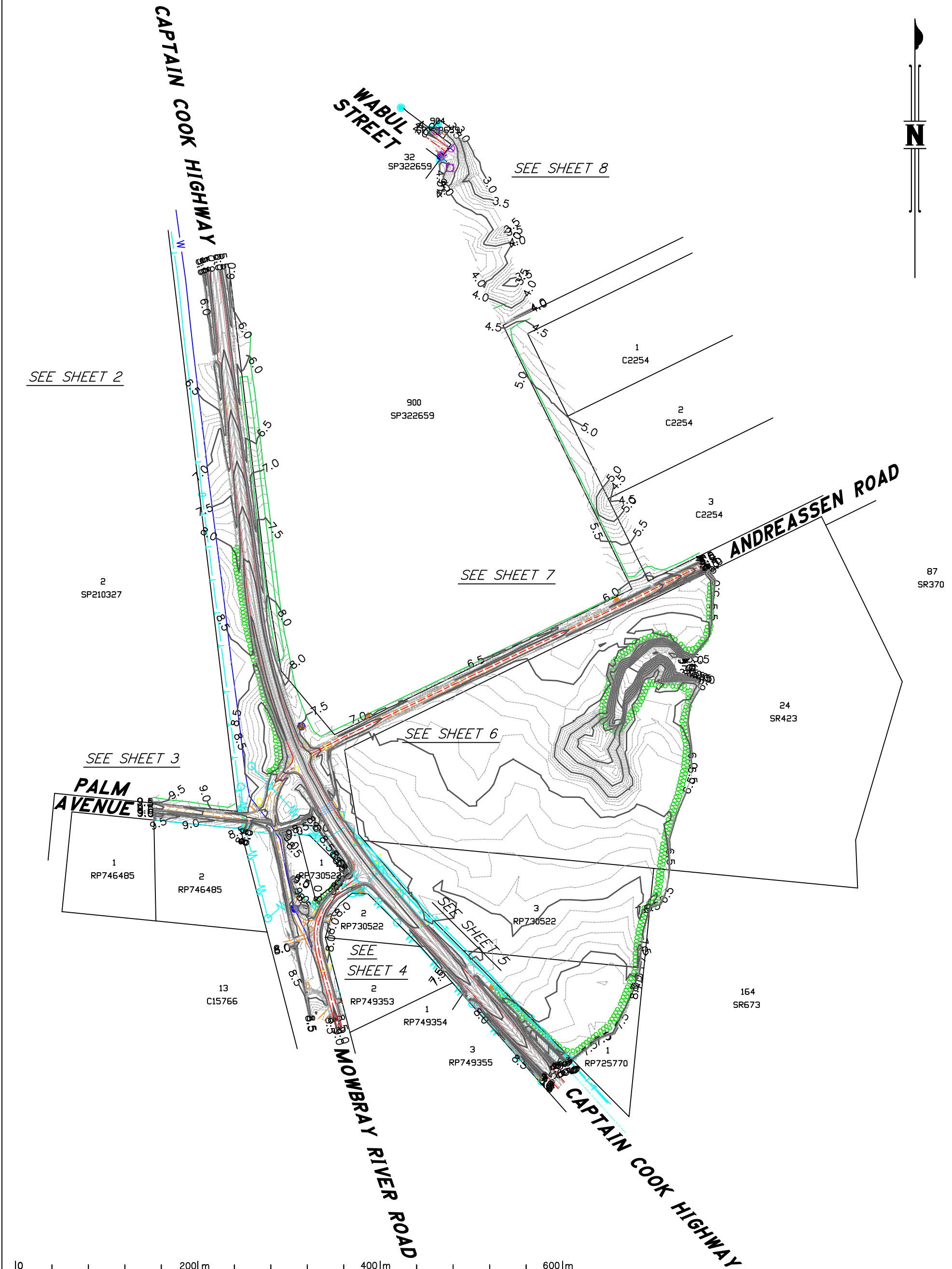
The hydraulic assessment was undertaken using DRAINS 1D, incorporating surveyed channel and drainage infrastructure and a Manning's roughness coefficient of 0.035 for the proposed channel.

The assessment confirms that the proposed channel has sufficient capacity to convey the design flows and significantly reduces the existing flood extent within the road reserve. The works do not introduce new discharge locations, do not surcharge the existing highway culverts and maintain the existing downstream discharge pathway toward the Mowbray River corridor.

Overall, the proposed drainage works improve the existing hydraulic condition by replacing an informal and deficient overland flow path with a defined, maintainable and appropriately sized drainage channel, while avoiding adverse flood impacts to the Captain Cook Highway and surrounding land.

Appendix A

Survey by Twine Surveys Pty Ltd dated 10/04/2026



MGA2020 AHD D
AHD D Vide PM99037
Lot 24 on SR423
Lot 3 on RP730522
Lot 1 on RP725770
Scale 1: 4000 (A3)
DWG No: 9982 Detail – 15.1.26 Rev A

DETAIL SURVEY

Andreassen Road

Craiglie

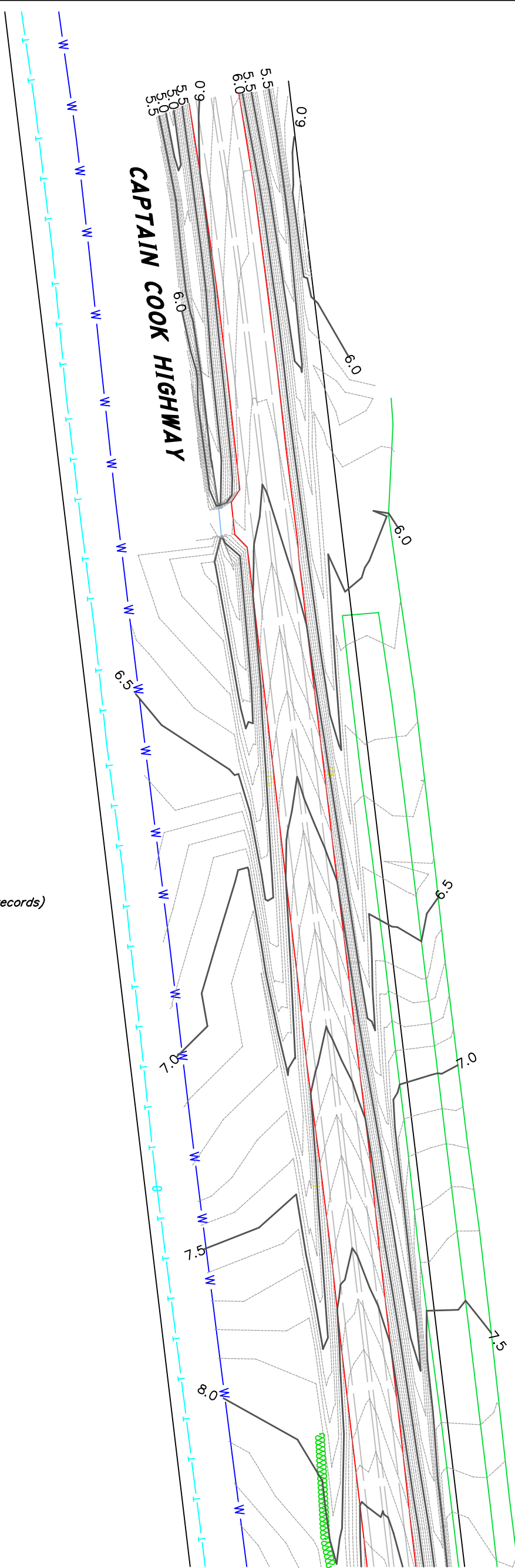


TWINE SURVEYS PTY LTD
15 Herberton Rd, Atherton QLD 4883
PO Box 146, Atherton QLD 4883
P: 07 4091 1303
E: info@twinesurveys.com.au

CVT

LEGEND

- Property Boundary (compiled from records)
- Major Contour (0.5m interval)
- Minor Contour (0.1m interval)
- Road
- Kerb
- Crown
- Linemarking
- Gravel Road
- Concrete
- U/G Comms
- Powerline
- U/G Electrical
- U/G Fibre optic
- Water by GPR
- Staywire
- Stormwater
- Headwall
- Roofline
- Plantation
- Tree line
- Benchmark
- PSM
- Power pole
- Sign
- Comms pit
- Electric pillar
- Down pipe
- Sewer manhole
- Water valve
- Water hydrant



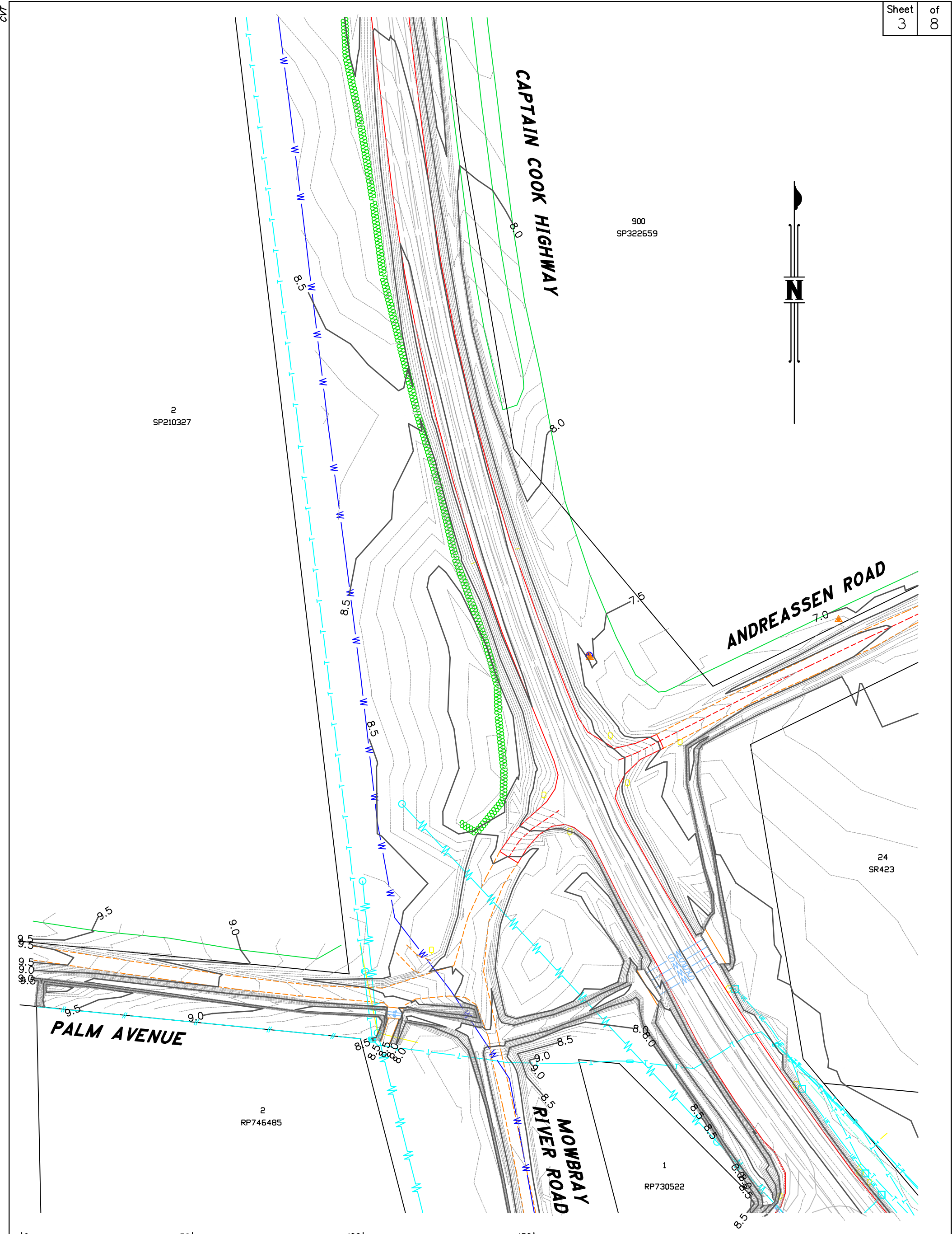
0 50m 100m 150m

MGA2020 AHD D
AHD D Vide PM99037
Lot 24 on SR423
Lot 3 on RP730522
Lot 1 on RP725770
Scale 1: 1000 (A3)
DWG No: 9982 Detail – 15.1.26 Rev A

DETAIL SURVEY
Andreassen Road
Craigie



TWINE SURVEYS PTY LTD
15 Herberton Rd, Atherton QLD 4883
PO Box 146, Atherton QLD 4883
P: 07 4091 1303
E: info@twinesurveys.com.au

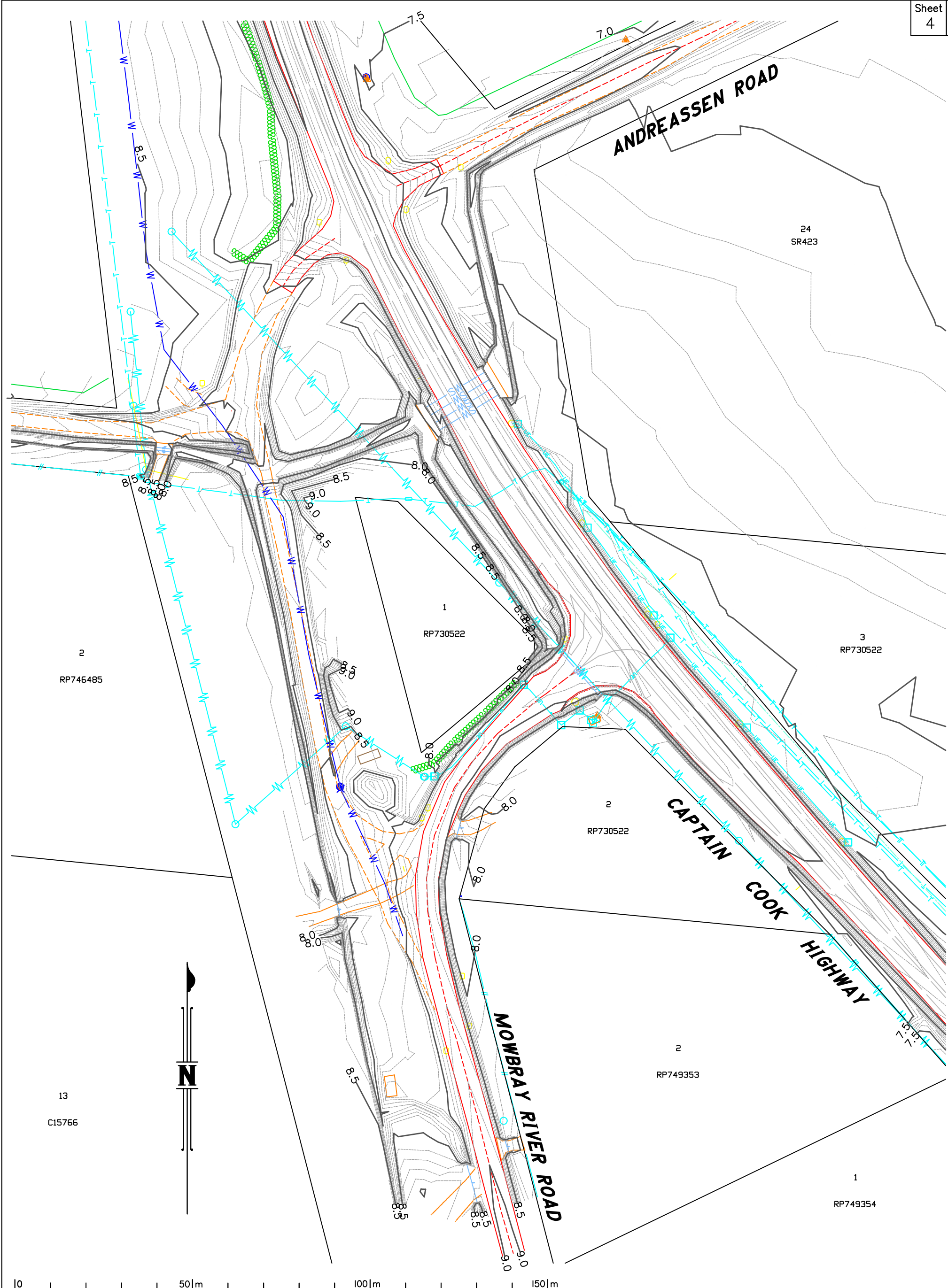


MGA2020 AHD D
AHD D Vide PM99037
Lot 24 on SR423
Lot 3 on RP730522
Lot 1 on RP725770
Scale 1: 1000 (A3)
DWG No: 9982 Detail – 15.1.26 Rev A

DETAIL SURVEY
Andreassen Road
Craiglie



TWINE SURVEYS PTY LTD
15 Herberton Rd, Atherton QLD 4883
PO Box 146, Atherton QLD 4883
P: 07 4091 1303
E: info@twinesurveys.com.au

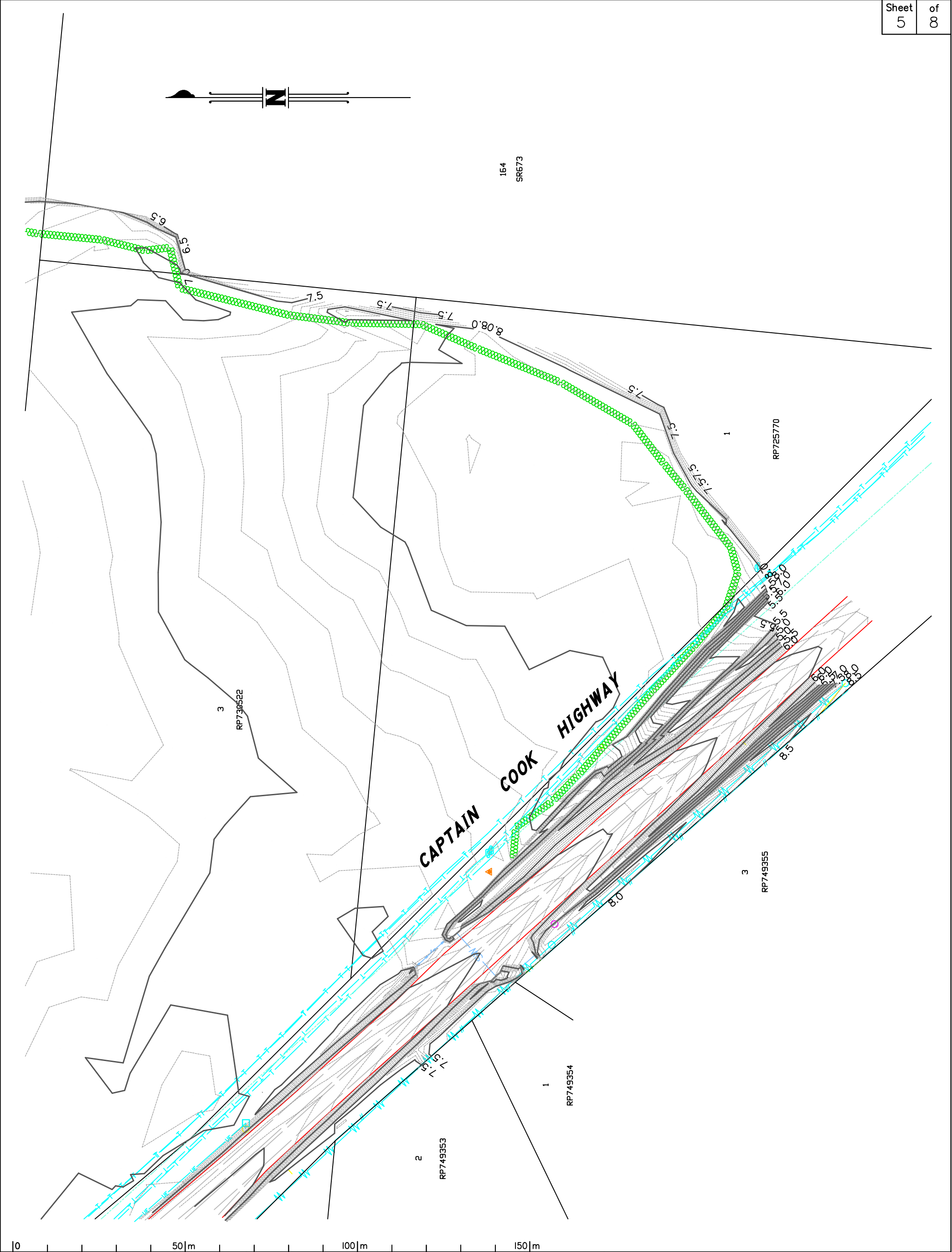


MGA2020 AHD D
AHD D Vide PM99037
Lot 24 on SR423
Lot 3 on RP730522
Lot 1 on RP725770
Scale 1: 1000 (A3)
DWG No: 9982 Detail – 15.1.26 Rev A

DETAIL SURVEY
Andreassen Road
Craiglie

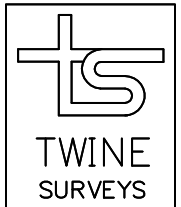


TWINE SURVEYS PTY LTD
15 Herberton Rd, Atherton QLD 4883
PO Box 146, Atherton QLD 4883
P: 07 4091 1303
E: info@twinesurveys.com.au

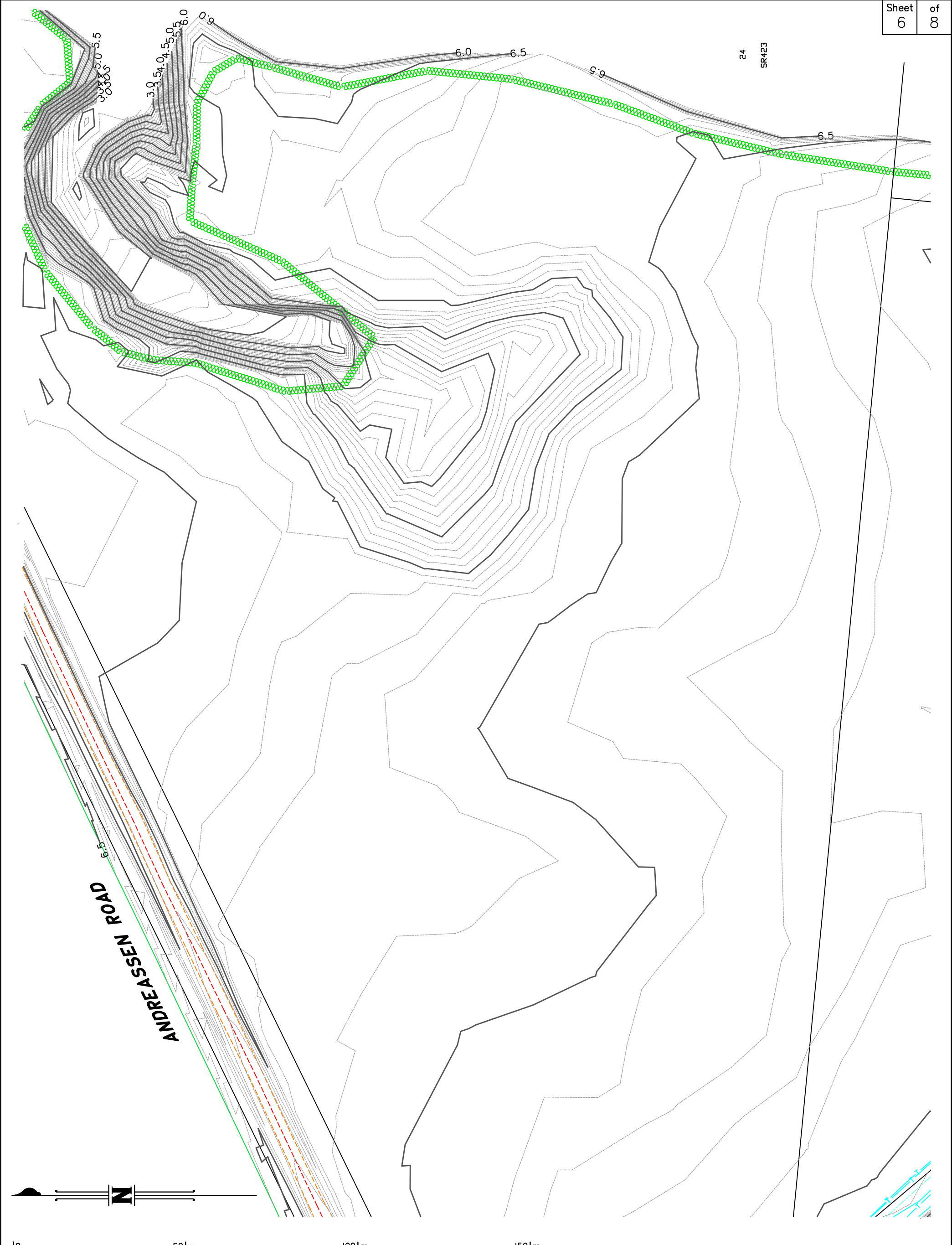


MGA2020 AHD D
AHD D Vide PM99037
Lot 24 on SR423
Lot 3 on RP730522
Lot 1 on RP725770
Scale 1: 1000 (A3)
DWG No: 9982 Detail – 15.1.26 Rev A

DETAIL SURVEY
Andreassen Road
Craiglie

	TWINE SURVEYS PTY LTD
	15 Herberton Rd, Atherton QLD 4883
	PO Box 146, Atherton QLD 4883
	P: 07 4091 1303
	E: info@twinesurveys.com.au

CVT



MGA2020 AHD D
AHD D Vide PM99037
Lot 24 on SR423
Lot 3 on RP730522
Lot 1 on RP725770
Scale 1:1000 (A3)
DWG No: 9982 Detail – 15.1.26 Rev A

DETAIL SURVEY
Andreassen Road
Craigie



TWINE SURVEYS PTY LTD
15 Herberton Rd, Atherton QLD 4883
PO Box 146, Atherton QLD 4883
P: 07 4091 1303
E: info@twinesurveys.com.au

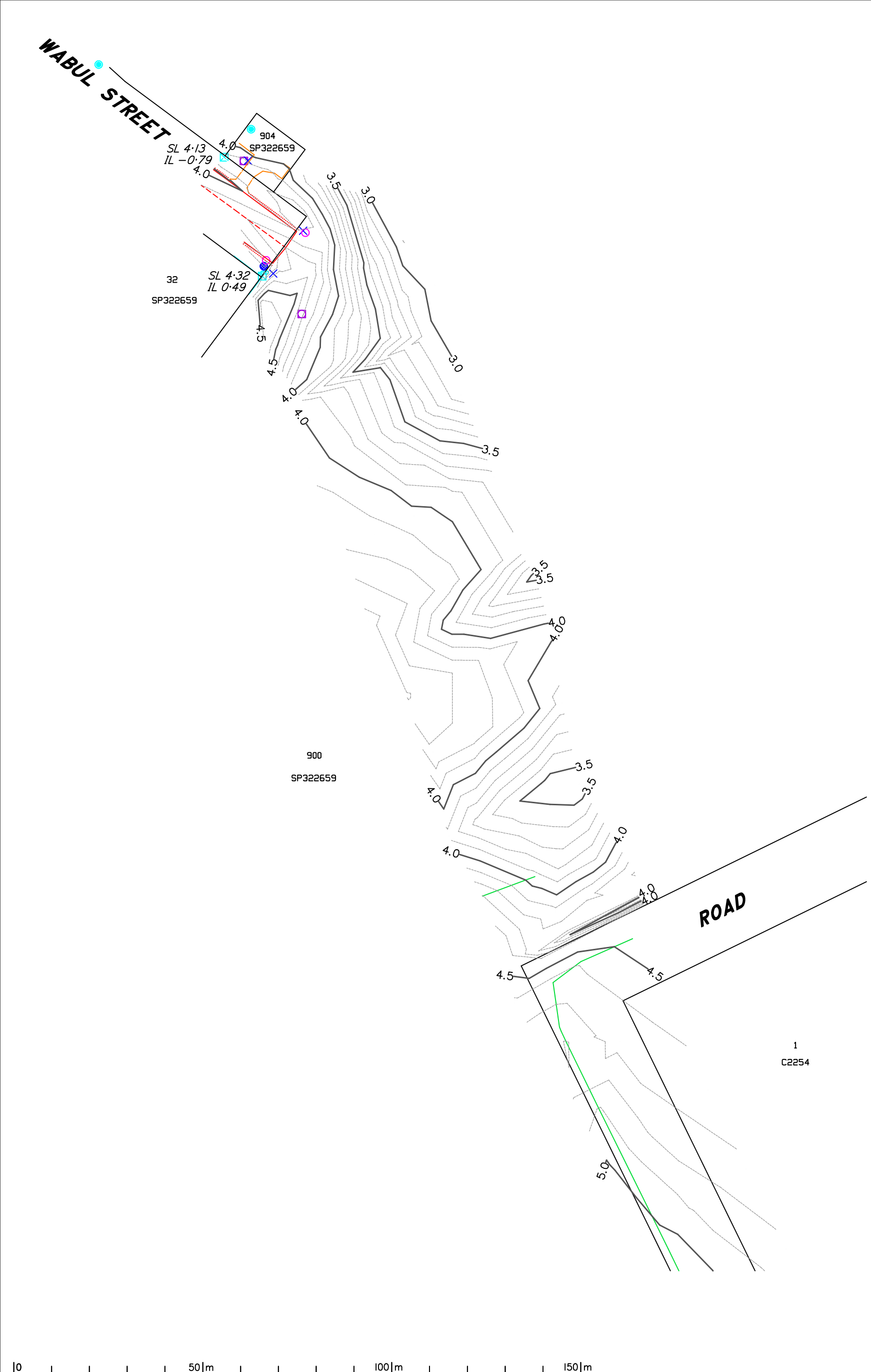


MGA2020 AHD D
AHD D Vide PM99037
Lot 24 on SR423
Lot 3 on RP730522
Lot 1 on RP725770
Scale 1:1000 (A3)
DWG No: 9982 Detail - 15.1.26 Rev A

Craiglie



CVT



0 50|m 100|m 150|m

MGA2020 AHD D
AHD D Vide PM99037
Lot 24 on SR423
Lot 3 on RP730522
Lot 1 on RP725770
Scale 1: 1000 (A3)
DWG No: 9982 Detail – 15.1.26 Rev A

DETAIL SURVEY
Andreassen Road
Craiglie



TWINE SURVEYS PTY LTD
15 Herberton Rd, Atherton QLD 4883
PO Box 146, Atherton QLD 4883
P: 07 4091 1303
E: info@twinesurveys.com.au

Appendix D Geotechnical Assessment



Consoil Solutions Pty. Ltd. T/A Earth Test QBCC #. 15092731



Geotechnical Investigation

For

Port Douglas Estate Pty Ltd

Andreassen Road Subdivision

Craiglie



INTRODUCTION:

Earth Test has been engaged by Port Douglas Estate Pty Ltd to carry out a Geotechnical Investigation on the Andreassen Road Subdivision, Craiglie.

It is understood the intention is assess the existing pavement, subgrade and insitu subgrade materials for future design and works.

This report summarises sampled taken at locations as shown on the site plans provided.

Site sampling was carried out in January 2026.

SCOPE OF WORKS:

The site was identified by the sites address. Photos where taken at site to confirm the sites identity.

Nineteen test pits (TP) were sampled at nominated areas. Pits were drilled with a CASE CX26C 2.6tonne excavator and sampled to approximately 1.0m in existing pavement locations and 1.5m in proposed road alignments at sites specified by the client.

Pavement and insitu subgrade samples were taken for material quality testing. California Bearing Ratio, Particle Size Distribution, Atterberg Limits undertaken by a NATA endorsed laboratories.



Consoil Solutions Pty. Ltd. T/A Earth Test QBCC #. 15092731
SITE INVESTIGATION REPORT
BOREHOLE LOG

CLIENT: Port Douglas Estate Pty Ltd		DATE SAMPLED: 14/01/2026
PROJECT: Andreassen Road Subdivision, Craiglie		Sampled by: G.N
REPORT DATE: 09/02/2026		
TEST PIT No:	CCH1	
DEPTH (m)	DESCRIPTION	COMMENTS
0.0-0.25	Sandy Silty GRAVEL, Grey-Blue, Moist, Imported FILL	Disturbed Sample 0.0-0.25 & 0.5-0.8m
0.25-0.45	Sandy Clayey GRAVEL, Brown, Moist, Imported FILL	No rock or water table encountered.
0.45-1.0	Sandy CLAY, Moist, Yellow-Brown	
TEST PIT No:	CCH2	
DEPTH (m)	DESCRIPTION	COMMENTS
0.0-0.2	Sandy Silty GRAVEL, Grey-Blue, Moist, Imported FILL	Disturbed Sample 0.0-0.2 & 0.5-0.8m
0.2-0.5	Clayey GRAVEL, Brown, Moist, Imported FILL	No rock or water table encountered.
0.5-1.0	Sandy CLAY, Grey-Brown, Soft, Moist	
TEST PIT No:	CCH3	
DEPTH (m)	DESCRIPTION	COMMENTS
0.0-0.35	Sandy Silty GRAVEL, Grey-Brown, Moist, Imported FILL	Disturbed Sample 0.0-0.3 & 0.5-0.8m
0.35-0.9	Sandy Gravelly CLAY, Brown, Moist, Imported FILL	No rock or water table encountered.
TEST PIT No:	CCH4	
DEPTH (m)	DESCRIPTION	COMMENTS
0.0-0.25	Sandy Silty GRAVEL, Grey-Blue, Moist, Imported FILL	Disturbed Sample 0.0-0.2 & 0.5-0.8m
0.25-0.75	Sandy Clayey GRAVEL, Brown, Moist, Imported FILL	Cobbles noted in fill material 0.3-0.75m
0.75	Refusal	
TEST PIT No:	CCH5	
DEPTH (m)	DESCRIPTION	COMMENTS
0.0-0.35	Sandy Clayey GRAVEL, Grey-Brown, Moist, Imported FILL	Disturbed Sample 0.0-0.3 & 0.5-0.8m
0.35-0.8	Sandy CLAY, Brown, Moist	No rock or water table encountered.



Consoil Solutions Pty. Ltd. T/A Earth Test QBCC #. 15092731
SITE INVESTIGATION REPORT

BOREHOLE LOG

CLIENT: Port Douglas Estate Pty Ltd		DATE SAMPLED: 14/01/2026
PROJECT: Andreassen Road Subdivision, Craiglie		Sampled by: G.N
REPORT DATE: 09/02/2026		
TEST PIT No:	AR1	
DEPTH (m)	DESCRIPTION	COMMENTS
0.0-0.15	Sandy Gravelly SILT, Brown, Moist, Imported FILL	Disturbed Sample 0.0-0.15 & 0.4-0.8m No rock encountered Water table encountered at 0.5m.
0.15-0.8	Sandy CLAY, Yellow-Brown, Moist, Soft	
TEST PIT No:	AR2	
DEPTH (m)	DESCRIPTION	COMMENTS
0.0-0.05	Sandy Silty GRAVEL, Grey-Brown, Moist, Imported FILL	Disturbed Sample 0.1-0.4 & 0.5-0.8m No rock or water table encountered.
0.05-0.4	Sandy Clayey Gravel, Brown, Moist, Imported FILL, (Profile Trimmings)	
0.4-0.8	Sandy CLAY, Yellow-Brown, Moist, Soft	
TEST PIT No:	AR3	
DEPTH (m)	DESCRIPTION	COMMENTS
0.0-0.35	Sandy Gravelly SILT, Brown, Moist, Imported FILL	Disturbed Sample 0.0-0.3 & 0.5-0.8m No rock or water table encountered.
0.35-0.9	Sandy CLAY, Yellow-Brown Mottled Grey	



SITE INVESTIGATION REPORT

BOREHOLE LOG

CLIENT: Port Douglas Estate Pty Ltd		DATE SAMPLED: 14/01/2026	
PROJECT: Andreassen Road Subdivision, Craiglie		Sampled by: G.N	
REPORT DATE: 09/02/2026			
TEST PIT No:	IR1		
DEPTH (m)	DESCRIPTION	COMMENTS	
0.0-0.2	Sandy CLAY, Grey-Brown, Very Soft, Wet, Topsoil	Disturbed Sample 0.3-0.6m	
0.2-1.2	Sandy CLAY, Firm, Yellow-Brown Mottled Grey, Wet	No Rock Layer Encountered	
1.2-1.5	Sandy CLAY, Stiff, Red-Brown, Moist	Water Table Encountered at 1.1m	
TEST PIT No:	IR2		
DEPTH (m)	DESCRIPTION	COMMENTS	
0.0-0.2	Sandy CLAY, Grey-Brown, Very Soft, Wet, Topsoil	Disturbed Sample 0.4-0.8m	
0.2-1.1	Sandy CLAY, Soft, Yellow-Brown, Moist	No Rock Layer Encountered	
1.1-1.5	Sandy CLAY, Firm, Orange-Brown, Moist	Water Table Encountered at 1.0m	
TEST PIT No:	IR3		
DEPTH (m)	DESCRIPTION	COMMENTS	
0.0-0.15	Sandy Silty CLAY, Soft, Grey, Topsoil, Wet	Disturbed Sample 0.4-0.8m	
0.15-1.2	Sandy CLAY, Soft, Yellow-Brown, Moist	No Rock Layer Encountered	
1.2-1.5	Sandy CLAY, Soft, Orange-Brown Mottled Red, Moist	Water Table Encountered at 0.7m	
TEST PIT No:	IR4		
DEPTH (m)	DESCRIPTION	COMMENTS	
0.0-0.2	Sandy Silty CLAY, Soft, Grey, Topsoil, Wet	Disturbed Sample 0.3-0.7m	
0.2-1.3	Sandy CLAY, Soft, Yellow-Brown, Moist	No Rock Layer Encountered	
1.3-1.5	Sandy CLAY, Soft, Orange-Brown Mottled Red, Moist	Water Table Encountered at 1.0m	



SITE INVESTIGATION REPORT

BOREHOLE LOG

CLIENT: Port Douglas Estate Pty Ltd		DATE SAMPLED: 14/01/2026	
PROJECT: Andreassen Road Subdivision, Craiglie		Sampled by: G.N	
REPORT DATE: 09/02/2026			
TEST PIT No:	IR5		
DEPTH (m)	DESCRIPTION	COMMENTS	
0.0-0.2	Sandy CLAY, Grey-Brown, Very Soft, Wet, Topsoil	Disturbed Sample 0.3-0.6m	
0.2-0.8	Sandy CLAY, Soft, Yellow-Brown, Moist	No Rock Layer Encountered	
0.8-1.5	Sandy CLAY, Soft, Orange-Brown Mottled Grey, Moist	Water Table Encountered at 0.7m	
TEST PIT No:	IR6		
DEPTH (m)	DESCRIPTION	COMMENTS	
0.0-0.1	Sandy CLAY, Grey-Brown, Very Soft, Wet, Topsoil	Disturbed Sample 0.4-0.7m	
0.1-1.0	Sandy CLAY, Soft, Yellow-Brown, Mottled Grey, Moist	No Rock Layer Encountered	
1.0-1.5	Sandy CLAY, Soft, Red-Brown, Moist	Water Table Encountered at 1.0m	
TEST PIT No:	IR7		
DEPTH (m)	DESCRIPTION	COMMENTS	
0.0-0.2	Sandy CLAY, Grey-Brown, Very Soft, Wet, Topsoil	Disturbed Sample 0.3-0.6m	
0.2-1.2	Sandy CLAY, Very Soft, Yellow-Brown, Wet	No Rock Layer Encountered	
1.2-1.5	Sandy CLAY, Soft, Pale Brown, Wet	Water Table Encountered at 0.6m	
TEST PIT No:	IR8		
DEPTH (m)	DESCRIPTION	COMMENTS	
0.0-0.15	Sandy CLAY, Grey-Brown, Very Soft, Wet, Topsoil	Disturbed Sample 0.3-0.7m	
0.15-1.1	Sandy CLAY, Soft, Yellow-Brown, Moist	No Rock Layer Encountered	
1.1-1.4	Sandy CLAY, Soft, Pale Red-Brown, Moist	Water Table Encountered at 1.0m	



SITE INVESTIGATION REPORT

BOREHOLE LOG

CLIENT: Port Douglas Estate Pty Ltd		DATE SAMPLED: 14/01/2026	
PROJECT: Andreassen Road Subdivision, Craiglie		Sampled by: G.N	
REPORT DATE: 09/02/2026			
TEST PIT No:	IR9		
DEPTH (m)	DESCRIPTION	COMMENTS	
0.0-0.3	Sandy CLAY, Grey, Very Soft, Wet, Topsoil	Disturbed Sample 0.4-0.7m No Rock Layer Encountered Water Table Encountered at 0.7m	
0.3-0.9	Sandy CLAY, Soft, Yellow-Brown, Moist		
0.9-1.5	Sandy CLAY, Firm, Orange-Brown, Moist		
TEST PIT No:	IR10		
DEPTH (m)	DESCRIPTION	COMMENTS	
0.0-0.2	Sandy CLAY, Grey-Brown, Very Soft, Wet, Topsoil	Disturbed Sample 0.4-0.7m No Rock Layer Encountered Water Table Encountered at 0.7m	
0.2-1.1	Sandy CLAY, Firm, Yellow-Brown Mottled Grey, Moist		
1.1-1.5	Sandy CLAY, Soft, Orange-Brown, Moist		
TEST PIT No:	IR11		
DEPTH (m)	DESCRIPTION	COMMENTS	
0.0-0.2	Sandy CLAY, Grey-Brown, Very Soft, Wet, Topsoil	Disturbed Sample 0.5-0.8m No Rock Layer Encountered Water Table Encountered at 0.8m	
0.2-1.2	Sandy CLAY, Soft, Yellow-Brown, Wet		
1.2-1.5	Sandy CLAY, Soft, Orange-Brown Mottled Grey, Wet		



DYNAMIC CONE PENETROMETER REPORT

AS 1289.6.3.2

CLIENT: Port Douglas Estate Pty Ltd.

DATE TESTED: 14/01/2026

PROJECT: Andreassen Road Subdivision,
Craiglie.

Tested By: G.N

REPORT DATE: 09/02/2026

SAMPLE DETAILS: Sites "IR1 through
IR6." as per site plan.

DEPTH (Metres)	IR1	IR2	IR3	IR4	IR5	IR6
	No Blows	No Blows	No Blows	No Blows	No Blows	No Blows
0.0 – 0.1	-	-	-	-	-	-
0.1 – 0.2	-	-	-	-	-	-
0.2 – 0.3	2	-	-	1	-	2
0.3 – 0.4	2	1	2	1	-	2
0.4 – 0.5	3	2	2	2	2	3
0.5 – 0.6	3	2	2	1	3	4
0.6 – 0.7	3	3	3	2	3	3
0.7 – 0.8	3	3	4	3	2	4
0.8 – 0.9	3	4	3	4	2	4
0.9 – 1.0	3	4	2	4	2	2
1.0 – 1.1	4	3	2	5	2	3
1.1 – 1.2	6	2	4	4	2	2
1.2 – 1.3	4	2	4	4	2	3
1.3 – 1.4	5	2	5	4	2	3
1.4 – 1.5	5	2	4	3	2	3
1.5 – 1.6						
1.6 – 1.7						
1.7 – 1.8						
1.8 – 1.9						
1.9 – 2.0						



DYNAMIC CONE PENETROMETER REPORT

AS 1289.6.3.2

CLIENT: Port Douglas Estate Pty Ltd.

DATE TESTED: 14/01/2026

PROJECT: Andreassen Road Subdivision,
Craiglie.

Tested By: G.N

REPORT DATE: 09/02/2026

SAMPLE DETAILS: Sites "IR7 through
IR11." as per site plan.

DEPTH (Metres)	IR7	IR8	IR9	IR10	IR11
	No Blows	No Blows	No Blows	No Blows	No Blows
0.0 – 0.1	-	-	-	-	-
0.1 – 0.2	-	-	-	-	1
0.2 – 0.3	-	1	-	1	2
0.3 – 0.4	2	1	2	2	2
0.4 – 0.5	2	3	3	2	2
0.5 – 0.6	2	3	2	2	3
0.6 – 0.7	2	2	4	3	3
0.7 – 0.8	3	3	3	4	2
0.8 – 0.9	4	3	4	2	3
0.9 – 1.0	3	4	4	2	3
1.0 – 1.1	3	3	3	2	2
1.1 – 1.2	3	3	4	2	3
1.2 – 1.3	2	3	3	2	3
1.3 – 1.4	3	2	3	4	4
1.4 – 1.5	3	2	3	3	3
1.5 – 1.6					
1.6 – 1.7					
1.7 – 1.8					
1.8 – 1.9					
1.9 – 2.0					



INDICATIVE SITE CLASSIFICATION

Andreassen Road Subdivision, Craiglie

Dynamic Cone Penetrometer Results indicate soft results to approximately 1.5m.

The Atterberg Limits test results indicate a moderately reactive soil.

The characteristic surface movement (y_s) is estimated to be in the $20 < y_s \leq 40\text{mm}$ range.

According to TABLE 2.3 of AS 2870-2011 the site indicates the soil to be a **CLASS-“M”**.

The classification is to be used as a guide only and not to be used for construction purposes.

All site works shall be carried out in accordance with the requirements of AS 3798 Guidelines on earthworks for commercial and residential developments, Level 1 Inspection & Testing. The fill shall be of low plasticity, deleterious materials and free of any organic materials. The fill shall be placed in no greater than 200mm compacted layers within 2% of optimum moisture content. Test results shall produce A minimum density of 95% of maximum standard dry density as per AS1289 for residential projects or 98% of maximum standard dry density as per AS1289 for commercial projects. All site testing shall be conducted by a NATA endorsed laboratory.

If the depth of any cut exceeds 0.5m or uncontrolled fill exceeds 0.4m the classification shall be reconsidered.

Because this investigation is limited in scope and extent, it is possible that areas may exist which differ from those shown on the test hole records and used in the site classification. Should any variation from the reported conditions be encountered during excavation work, this office must be notified immediately so that reappraisal of the classification can be made.



Site testing Andreassen Road Subdivision, Craiglie



Site testing Andreassen Road Subdivision, Craiglie



Site testing Andreassen Road Subdivision, Craiglie



Site testing Andreassen Road Subdivision, Craiglie

Summary Of Laboratory Results



Consoil Solutions Pty. Ltd. T/A Earth Test QBCC #. 15092731

LABORATORY TEST RESULTS

TP NO:	Sample Level	% Passing 37.5mm	% Passing 19.0mm	% Passing 9.5mm	% Passing 4.75mm	% Passing 2.36mm	% Passing 0.425mm	% Passing 0.075mm	Liquid Limit %	Plasticity Index %	Linear Shrinkage %	STD. CBR %	Insitu MC %
CCH1	Pavement	99	94	71	57	45	19	8	26	7	3.0	80	4.8
CCH1-P	Subgrade	100	100	98	93	90	86	70	26	8	5.0	9.0	8.6
CCH2	Pavement	100	97	74	59	46	18	7	27	6	3.0	35	3.6
CCH2-P	Subgrade	98	97	93	87	83	72	64	27	9	5.5	6.0	8.1
CCH3	Pavement	100	82	63	49	38	15	6	20	5	1.5	110	4.3
CCH3-P	Subgrade	98	91	81	69	59	38	26	25	7	4.0	12	7.8
CCH4	Pavement	100	98	86	69	53	22	10	30	8	2.5	110	4.4
CCH4-P	Subgrade	98	95	79	66	55	32	21	25	7	3.0	40	5.6
CCH5	Pavement	99	79	63	54	44	32	22	23	5	1.0	70	6.5
CCH5-P	Subgrade	99	94	85	78	72	59	48	30	12	7.0	3.5	5.8
AR1-P	Pavement	97	91	72	59	50	32	21	22	7	3.0	35	7.0
AR1	Subgrade	100	99	96	93	90	84	80	39	21	7.5	2.5	10.0
AR2-P	Pavement	99	96	87	75	63	36	21	24	7	4.0	25	5.5
AR2	Subgrade	100	99	96	93	89	79	73	47	24	12.0	1.5	13.4
AR3-P	Pavement	99	83	63	49	39	19	10	22	6	2.5	60	5.6
AR3	Subgrade	100	99	98	94	88	80	76	42	23	11.0	1.5	8.9

Ph: 4095 4734

Feb-26

038-26Report



Consoil Solutions Pty. Ltd. T/A Earth Test QBCC #. 15092731

LABORATORY TEST RESULTS

TP NO:	Sample Level	% Passing 37.5mm	% Passing 19.0mm	% Passing 9.5mm	% Passing 4.75mm	% Passing 2.36mm	% Passing 0.425mm	% Passing 0.075mm	Liquid Limit %	Plasticity Index %	Linear Shrinkage %	STD. CBR %	Insitu MC %
IR1	Insitu Subgrade Material	100	100	97	82	74	70	62	38	20	9.5	4.5	16.2
IR2	Insitu Subgrade Material	100	100	98	92	85	82	79	52	27	12.0	2.0	17.6
IR3	Insitu Subgrade Material	100	100	97	90	85	81	70	38	20	10.5	4.5	14.1
IR4	Insitu Subgrade Material	100	100	99	94	87	82	80	52	28	13.5	2.5	19.0
IR5	Insitu Subgrade Material	100	100	99	95	92	89	78	42	21	9.5	6.0	19.9
IR6	Insitu Subgrade Material	100	100	100	99	96	92	88	44	22	12.0	3.0	18.7
IR7	Insitu Subgrade Material	100	100	100	99	96	91	90	47	25	9.0	1.5	16.6
IR8	Insitu Subgrade Material	100	100	100	98	94	90	86	46	24	10.5	2.5	22.4
IR9	Insitu Subgrade Material	100	100	100	100	100	96	94	51	30	13.0	1.0	14.9
IR10	Insitu Subgrade Material	100	100	100	99	95	89	83	48	26	11.0	2.5	17.8
IR11	Insitu Subgrade Material	100	100	100	100	100	96	86	47	24	11.5	3.5	15.7

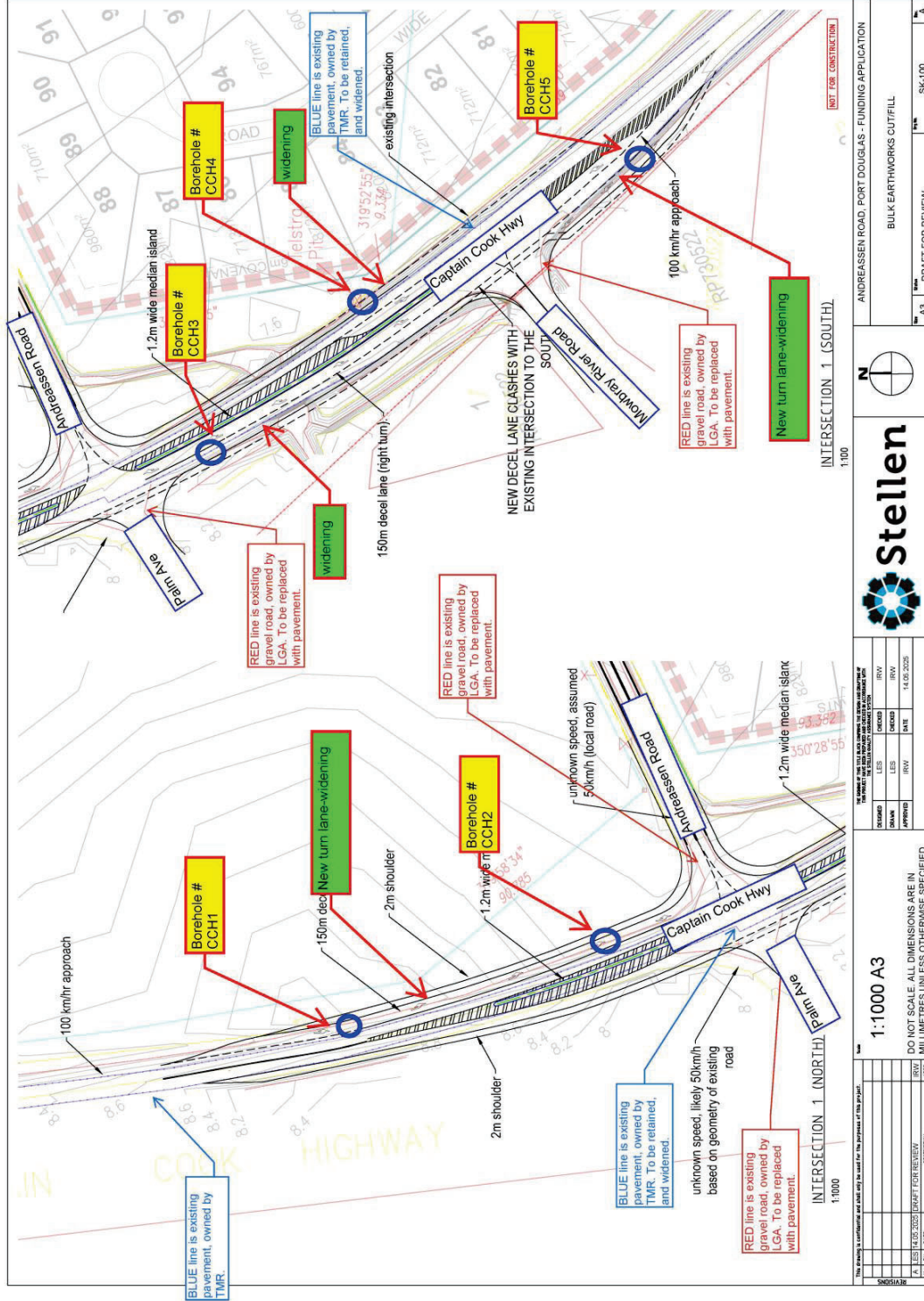
Ph: 4095 4734

Feb-26

038-26Report



Consoil Solutions Pty. Ltd. T/A Earth Test QBCC #. 15092731



Ph: 4095 4734

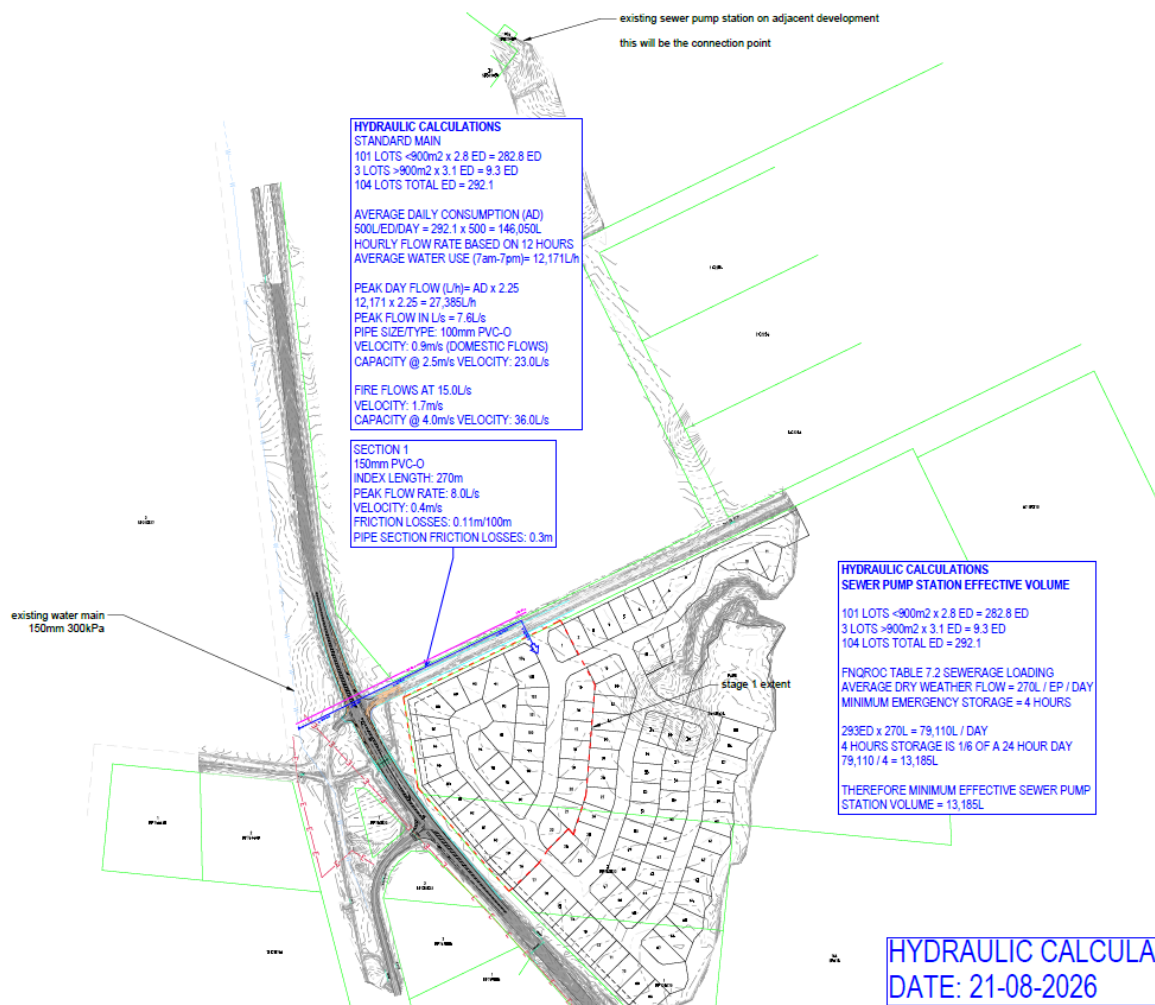
Feb-26

038-26Report

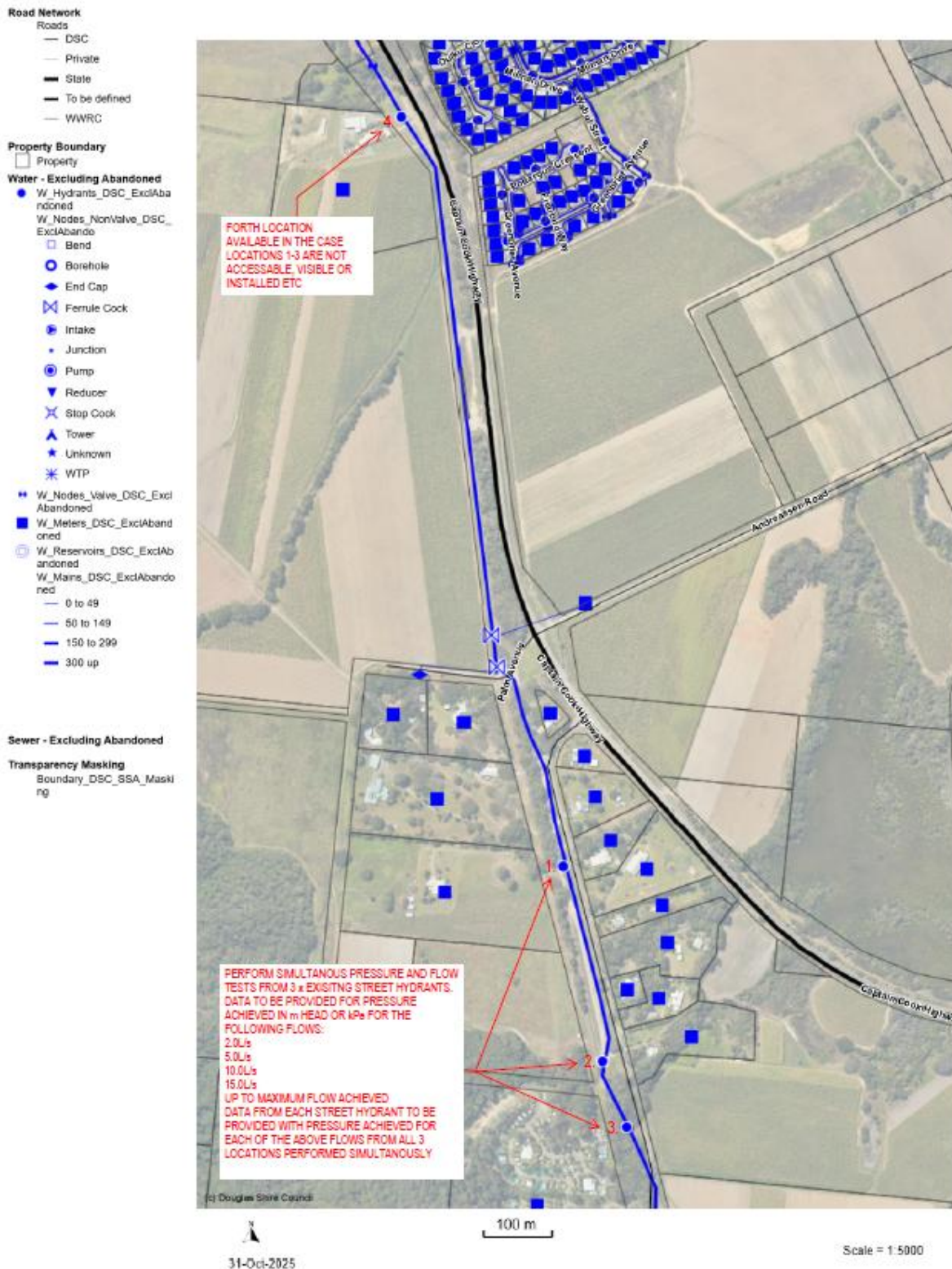




Appendix E Hydraulic Services Calculations



Appendix F Pressure and Flow information



Fire Hydrant Test - FH#1 Flow Test			
Location: Mowbray River Road			
Date: 06/02/26	Time: 9:55am		
	FH #1 (flow & pressure)	FH #2 (residual pressure only)	FH #3 (residual pressure only)
Static	560 kPa	600 kPa	560 kPa
2 L/S	490 kPa	550 kPa	540 kPa
2.5 L/S	480 kPa	520 kPa	580 kPa
5 L/S	450 kPa	500 kPa	540 kPa
7.5 L/S	425 kPa	475 kPa	520 kPa
10 L/S	400 kPa	450 kPa	480 kPa
12.5 L/S	350 kPa	420 kPa	460 kPa
15 L/S	325 kPa	380 kPa	440 kPa
17.5 L/S	275 kPa	370 kPa	425 kPa
20 L/S	225 kPa	360 kPa	400 kPa
22.5 L/S	150 kPa	320 kPa	340 kPa
25 L/S	0 kPa	260 kPa	310 kPa
26 L/S	0 kPa	250 kPa	275 kPa

Fire Hydrant Test - FH#2 Flow Test			
Location: Mowbray River Road			
Date: 06/02/26	Time: 10:00am		
	FH #2 (flow & pressure)	FH #1 (residual pressure only)	FH #3 (residual pressure only)
Static	580 kPa	550 kPa	625 kPa
2 L/S	530 kPa	510 kPa	575 kPa
2.5 L/S	500 kPa	480 kPa	540 kPa
5 L/S	450 kPa	450 kPa	525 kPa
7.5 L/S	430 kPa	450 kPa	510 kPa
10 L/S	400 kPa	400 kPa	490 kPa
12.5 L/S	350 kPa	400 kPa	450 kPa
15 L/S	300 kPa	375 kPa	425 kPa
17.5 L/S	230 kPa	340 kPa	390 kPa
20 L/S	175 kPa	300 kPa	350 kPa
22.5 L/S	100 kPa	275 kPa	310 kPa
23 L/S	40 kPa	250 kPa	275 kPa

Fire Hydrant Test - FH#3 Flow Test			
Location: Mowbray River Road			
Date: 06/02/26	Time: 10:05am		
	FH #3 (flow & pressure)	FH #1 (residual pressure only)	FH #2 (residual pressure only)
Static	640 kPa	560 kPa	580 kPa
2 L/S	600 kPa	550 kPa	525 kPa
2.5 L/S	525 kPa	475 kPa	480 kPa
5 L/S	490 kPa	450 kPa	475 kPa
7.5 L/S	440 kPa	450 kPa	460 kPa
10 L/S	440 kPa	440 kPa	460 kPa
12.5 L/S	400 kPa	425 kPa	425 kPa
15 L/S	325 kPa	375 kPa	400 kPa
17.5 L/S	290 kPa	350 kPa	350 kPa
20 L/S	225 kPa	310 kPa	325 kPa
22.5 L/S	140 kPa	275 kPa	280 kPa
25 L/S	75 kPa	250 kPa	260 kPa
26 L/S	0 kPa	225 kPa	225 kPa

Fire Hydrant Test - FH#1, 2 & 3 Simultaneous Flow Test			
Location: Mowbray River Road			
Date: 06/02/26	Time: 10:10am		
	FH #1 (flow & pressure)	FH #2 (flow & pressure)	FH #3 (flow & pressure)
Static	575 kPa	580 kPa	625 kPa
2 L/S	425 kPa	440 kPa	490 kPa
2.5 L/S	440 kPa	460 kPa	525 kPa
5 L/S	350 kPa	380 kPa	425 kPa
7.5 L/S	250 kPa	280 kPa	300 kPa
10 L/S	140 kPa	150 kPa	175 kPa
L/S	12.5L/S @ 0 kPa	9L/S @ 0 kPa	12.5L/S @ 0 kPa