



DOUGLAS SHIRE COUNCIL	
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Attention:	LAD
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04 March 2020

Neil Beck
Douglas Shire Council
64-66 Front St,
Mossman, QLD 4873

Our ref: 12520641

Dear Neil,

**Andrews Close 15-Lot Subdivision
Operational Works Submission**

On behalf of our client, KS5 Pty. Ltd., we hereby submit our application for an Operational Works Development Permit for the civil and landscaping works for the abovementioned project.

Attached for your information and action are the following:

- Development assessment receipt sheet noting fees to be invoiced amounting to \$10,859 (\$3,969 (2 lots) + 13 lots x \$530);
- Civil Construction Drawings (1 x A3 set);
- Landscape For Approval Drawings (1 x A3 set);
- Design Submission Report (OW REP-12520641);
- Contract Job Specification (JS-REP-12520641);
- A certified Statement of Compliance – Engineering Design; and
- DA Form 1.

Digital copies of the civil and landscaping construction drawings and associated documentation have also been issued via USB.

We trust that the attached provides sufficient supporting information to enable Council to approve the development and provide an Operational Works Permit for the civil and landscaping designs. If you have any queries or require further information, please do not hesitate to contact this office.

Kind Regards,

Greg Applin

BEng (Civil) RPEQ Team Leader Cairns – Urban Development/Civil
+617 4042 2261

T 987

44.2020.3493.1

\$10859.00 Not Paid

FNQROC DEVELOPMENT MANUAL

Council Douglas Shire Council
(INSERT COUNCIL NAME)

STATEMENT OF COMPLIANCE OPERATIONAL WORKS DESIGN

This form duly completed and signed by an authorised agent of the Designer shall be submitted with the Operational Works Application for Council Approval.

Name of Development Andrews Close Subdivision

Location of Development 20-30 Langley Road, Port Douglas

Applicant KS5 Pty Ltd

Designer GHD - Greg Applin

It is hereby certified that the Calculations, Drawings, Specifications and related documents submitted herewith have been prepared, checked and amended in accordance with the requirements of the FNQROC Development Manual and that the completed works comply with the requirements therein, **except** as noted below.

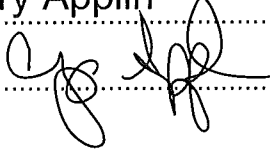
Compliance with the requirements of the Operational Works Design Guidelines	Non-Compliance refer to non-compliance report / drawing number
Plan Presentation	
Geotechnical requirements	Refer Douglas Partners Report 90871.00
Geometric Road Design	
Pavements	
Structures / Bridges	NA
Subsurface Drainage	
Stormwater Drainage	Non-standard trench grate drainage - refer design report/DSC email correspondence
Site Re-grading	In accordance with updated BMT advice L.B2458.01
Erosion Control and Stormwater Management	
Pest Plant Management	
Cycleway / Pathways	

Landscaping	By LA3 Landscape Architects
Water Source and Disinfection/Treatment Infrastructure (if applicable)	NA
Water Reticulation, Pump Stations and water storages	No pump station proposed
Sewer Reticulation and Pump Stations	No pump station proposed
Electrical Reticulation and Street Lighting	By SPA Consulting Engineers P/L
Public Transport	NA
Associated Documentation/ Specification	
Priced Schedule of Quantities	NA
Referral Agency Conditions	NA
Supporting Information (AP1.08)	
Other	

Conscientiously believing the above statements to be true and correct, signed on behalf of:

Designer GHD- Greg Applin **RPEQ No** 6073

Name in Full Gregory Applin

Signature  **Date** 04/03/2020

DA Form 1 – Development application details

Approved form (version 1.1 effective 22 JUNE 2018) 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 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)	KS5 Pty. Ltd.
Contact name (only applicable for companies)	C/- Greg Applin – GHD
Postal address (P.O. Box or street address)	P.O. Box 819
Suburb	Cairns
State	QLD
Postcode	4870
Country	Australia
Contact number	07 4044 2261
Email address (non-mandatory)	greg.applin@ghd.com
Mobile number (non-mandatory)	0414 768 109
Fax number (non-mandatory)	07 4044 2288
Applicant's reference number(s) (if applicable)	N/A

2) Owner's consent
2.1) Is written consent of the owner required for this development application?
<input type="checkbox"/> Yes – the written consent of the owner(s) is attached to this development application
<input checked="" type="checkbox"/> 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
		20-30	Langley Road	Port Douglas
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
	4877	5	RP804926	Douglas Shire Council
b)	Unit No.	Street No.	Street Name and Type	Suburb
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)

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. Only one set of coordinates is required for this part.

☐ Coordinates of premises by longitude and latitude

Longitude(s)	Latitude(s)	Datum	Local Government Area(s) (if applicable)
		<input type="checkbox"/> WGS84 <input type="checkbox"/> GDA94 <input type="checkbox"/> Other:	

☐ Coordinates of premises by easting and northing

Easting(s)	Northing(s)	Zone Ref.	Datum	Local Government Area(s) (if applicable)
		<input type="checkbox"/> 54 <input type="checkbox"/> 55 <input type="checkbox"/> 56	<input type="checkbox"/> WGS84 <input type="checkbox"/> GDA94 <input type="checkbox"/> Other:	

3.3) Additional premises

☐ Additional premises are relevant to this development application and their details have been attached in a schedule to this 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:

☐ On strategic port land under the *Transport Infrastructure Act 1994*

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):

Douglas Shire Council

Name of port authority for tidal area (if applicable):

☐ On airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*

Name of airport:

<input type="checkbox"/> Listed on the Environmental Management Register (EMR) under the <i>Environmental Protection Act 1994</i>	
EMR site identification:	
<input type="checkbox"/> 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>			
<input type="checkbox"/> Material change of use	<input type="checkbox"/> Reconfiguring a lot	<input checked="" type="checkbox"/> Operational work	<input type="checkbox"/> Building work
b) What is the approval type? <i>(tick only one box)</i>			
<input checked="" type="checkbox"/> Development permit	<input type="checkbox"/> Preliminary approval	<input type="checkbox"/> Preliminary approval that includes a variation approval	
c) What is the level of assessment?			
<input checked="" type="checkbox"/> Code assessment	<input type="checkbox"/> 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> :			
15-lot residential subdivision.			
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>			
<input checked="" type="checkbox"/> 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>			
<input type="checkbox"/> Material change of use	<input type="checkbox"/> Reconfiguring a lot	<input type="checkbox"/> Operational work	<input type="checkbox"/> Building work
b) What is the approval type? <i>(tick only one box)</i>			
<input type="checkbox"/> Development permit	<input type="checkbox"/> Preliminary approval	<input type="checkbox"/> Preliminary approval that includes a variation approval	
c) What is the level of assessment?			
<input type="checkbox"/> Code assessment	<input type="checkbox"/> 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>			
<input type="checkbox"/> 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

Section 2 – Further development details

7) Does the proposed development application involve any of the following?

Material change of use	<input type="checkbox"/> Yes – complete division 1 if assessable against a local planning instrument
Reconfiguring a lot	<input type="checkbox"/> Yes – complete division 2
Operational work	<input checked="" type="checkbox"/> Yes – complete division 3
Building work	<input type="checkbox"/> Yes – complete DA Form 2 – Building work details

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?

<input type="checkbox"/> Yes		
<input type="checkbox"/> No		

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?

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

<input type="checkbox"/> Subdivision (complete 10))	<input type="checkbox"/> Dividing land into parts by agreement (complete 11))
<input type="checkbox"/> Boundary realignment (complete 12))	<input type="checkbox"/> Creating or changing an easement giving access to a lot from a construction 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?

<input type="checkbox"/> Yes – provide additional details below
<input type="checkbox"/> 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?		
<input checked="" type="checkbox"/> Road work	<input checked="" type="checkbox"/> Stormwater	<input checked="" type="checkbox"/> Water infrastructure
<input checked="" type="checkbox"/> Drainage work	<input checked="" type="checkbox"/> Earthworks	<input checked="" type="checkbox"/> Sewage infrastructure
<input checked="" type="checkbox"/> Landscaping	<input checked="" type="checkbox"/> Signage	<input checked="" type="checkbox"/> Clearing vegetation
<input type="checkbox"/> Other – please specify: _____		
14.2) Is the operational work necessary to facilitate the creation of new lots? (e.g. subdivision)		
<input checked="" type="checkbox"/> Yes – specify number of new lots:	15	
<input type="checkbox"/> No		
14.3) What is the monetary value of the proposed operational work? (include GST, materials and labour)		
\$990,000		

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?	
<input type="checkbox"/> Yes – a copy of the decision notice is attached to this development application	
<input type="checkbox"/> Local government is taken to have agreed to the superseded planning scheme request – relevant documents attached	
<input checked="" type="checkbox"/> No	

PART 5 – REFERRAL DETAILS

17) Do any aspects of the proposed development require referral for 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 Regulation 2017:**

- ☐ Clearing native vegetation
- ☐ Contaminated land (*unexploded ordnance*)
- ☐ Environmentally relevant activities (ERA) (*only if the ERA have not been devolved to a local government*)
- ☐ Fisheries – aquaculture
- ☐ Fisheries – declared fish habitat area
- ☐ Fisheries – marine plants
- ☐ Fisheries – waterway barrier works
- ☐ Hazardous chemical facilities
- ☐ Queensland heritage place (*on or near a Queensland heritage place*)
- ☐ Infrastructure – designated premises
- ☐ Infrastructure – state transport infrastructure
- ☐ Infrastructure – state transport corridors and future state transport corridors
- ☐ Infrastructure – state-controlled transport tunnels and future state-controlled transport tunnels
- ☐ Infrastructure – near a state-controlled road intersection
- ☐ On Brisbane core port land near a State transport corridor or future State transport corridor
- ☐ On Brisbane core port land – ERA
- ☐ On Brisbane core port land – tidal works or work in a coastal management district
- ☐ On Brisbane core port land – hazardous chemical facility
- ☐ On Brisbane core port land – taking or interfering with water
- ☐ On Brisbane core port land – referable dams
- ☐ On Brisbane core port land - fisheries
- ☐ Land within Port of Brisbane's port limits
- ☐ 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
- ☐ 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 – construction of new levees or modification of existing 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 have been devolved to local government*)
- ☐ Local heritage places

Matters requiring referral to the chief executive of the distribution entity or transmission entity : <input type="checkbox"/> Electricity infrastructure
Matters requiring referral to: <ul style="list-style-type: none"> • 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 <input type="checkbox"/> Oil and gas infrastructure
Matters requiring referral to the Brisbane City Council : <input type="checkbox"/> Brisbane core port land
Matters requiring referral to the Minister under the Transport Infrastructure Act 1994 : <input type="checkbox"/> Brisbane core port land (inconsistent with Brisbane port LUP for transport reasons) <input type="checkbox"/> Strategic port land
Matters requiring referral to the relevant port operator : <input type="checkbox"/> Land within Port of Brisbane's port limits (below high-water mark)
Matters requiring referral to the Chief Executive of the relevant port authority : <input type="checkbox"/> Land within limits of another port (below high-water mark)
Matters requiring referral to the Gold Coast Waterways Authority : <input type="checkbox"/> Tidal works, or work in a coastal management district in Gold Coast waters
Matters requiring referral to the Queensland Fire and Emergency Service : <input type="checkbox"/> Tidal works marina (<i>more than six vessel berths</i>)

18) Has any referral agency provided a referral response for this development application?		
<input checked="" type="checkbox"/> Yes – referral response(s) received and listed below are attached to this development application <input type="checkbox"/> No		
Referral requirement	Referral agency	Date of referral response
Wetland protection area.	Dept. State Development, Manufacturing, Infrastructure and Planning	30/05/2019
Identify and describe any changes made to the proposed development application that was the subject of the referral response and the development application the subject of this form, or include details in a schedule to this development application (<i>if applicable</i>).		
<i>Relevant notation added to project plans.</i>		

PART 6 – INFORMATION REQUEST

19) Information request under Part 3 of the DA Rules
<input checked="" type="checkbox"/> I agree to receive an information request if determined necessary for this development application <input type="checkbox"/> 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: <ul style="list-style-type: none"> • 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 of the DA Rules will still apply if the application is an application listed under section 11.3 of the DA Rules. Further advice about information requests is contained in the <u>DA Forms Guide</u> .

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
<input checked="" type="checkbox"/> Approval <input type="checkbox"/> Development application	ROL 2019_3061/1	03/12/2019	Douglas Shire Council
<input type="checkbox"/> Approval <input type="checkbox"/> 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
\$		

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 69: 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 conservation

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

☐ Yes

☒ No

Note: See guidance materials at www.des.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 Natural Resources, Mines and Energy at www.dnrm.qld.gov.au for further information.

DA templates are available from <https://planning.dsdmip.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 <https://planning.dsdmip.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 Natural Resources, Mines and Energy at www.dnrme.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 and Science at www.des.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.dnrme.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.des.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.des.qld.gov.au for information requirements regarding development of Queensland heritage places.

Name of the heritage place:		Place ID:	
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Brothels

23.14) Does this development application involve a **material change of use for a brothel**?

- ☐ Yes – this development application demonstrates how the proposal meets the code for a development application for a brothel under Schedule 3 of the *Prostitution Regulation 2014*
☒ No

Decision under section 62 of the Transport Infrastructure Act 1994

23.15) 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

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 <i>Note: See the Planning Regulation 2017 for referral requirements</i>	<input checked="" type="checkbox"/> Yes
If building work is associated with the proposed development, Parts 4 to 6 of <i>DA Form 2 – Building work details</i> have been completed and attached to this development application	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
Supporting information addressing any applicable assessment benchmarks is with development application <i>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.</i>	<input checked="" type="checkbox"/> Yes
Relevant plans of the development are attached to this development application <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>	<input checked="" type="checkbox"/> Yes
The portable long service leave levy for QLeave has been paid, or will be paid before a development permit is issued (<i>see 21</i>)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Not applicable

25) Applicant declaration
<input checked="" type="checkbox"/> By making this development application, I declare that all information in this development application is true and correct <input checked="" type="checkbox"/> 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 <i>Electronic Transactions Act 2001</i> <i>Note: It is unlawful to intentionally provide false or misleading information.</i>
<p>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.</p> <p>Personal information will not be disclosed for a purpose unrelated to the <i>Planning Act 2016</i>, <i>Planning Regulation 2017</i> and the <i>DA Rules</i> except where:</p> <ul style="list-style-type: none"> such disclosure is in accordance with the provisions about public access to documents contained in the <i>Planning Act 2016</i> and the <i>Planning Regulation 2017</i>, and the access rules made under the <i>Planning Act 2016</i> and <i>Planning Regulation 2017</i>; or required by other legislation (including the <i>Right to Information Act 2009</i>); or otherwise required by law. <p>This information may be stored in relevant databases. The information collected will be retained as required by the <i>Public Records Act 2002</i>.</p>

PART 9 – 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	
Date receipted form sighted by assessment manager	
Name of officer who sighted the form	



KS5 PTY LTD

20-30 LANGLEY ROAD, PORT DOUGLAS

SUBDIVISION



DRAWING LIST	
DRG No.	DRAWING TITLE
42-12520641-C001	COVER SHEET AND SITE PLAN
42-12520641-C002	STANDARD NOTES
42-12520641-C003	GENERAL ARRANGEMENT PLAN
42-12520641-C004	DEMOLITION / CLEARING PLAN
42-12520641-C005	CONTROL LINE SETOUT
42-12520641-C006	TYPE CROSS SECTIONS AND DETAILS
42-12520641-C007	MISCELLANEOUS DETAILS
42-12520641-C008	LONGITUDINAL SECTIONS - ROAD 01 AND DRAIN 01
42-12520641-C009	LANGLEY ROAD CROSS SECTIONS - SHEET 1 OF 2
42-12520641-C010	LANGLEY ROAD CROSS SECTIONS - SHEET 2 OF 2
42-12520641-C011	ROAD 01 CROSS SECTIONS
42-12520641-C012	DRAIN 01 CROSS SECTIONS
42-12520641-C013	LANGLEY ROAD ROADWORKS PLAN
42-12520641-C014	LANGLEY ROAD SETOUT PLAN
42-12520641-C015	LANGLEY ROAD / ROAD 01 INTERSECTION PLAN
42-12520641-C016	TRENCH GRATE DETAILS
42-12520641-C017	ROAD 01 CUL-DE-SAC SETOUT PLAN
42-12520641-C018	SOLANDER BOULEVARD ACCESS - PLAN & DETAILS
42-12520641-C019	EARTHWORKS PLAN
42-12520641-C020	RETAINING WALLS AND FENCING PLAN
42-12520641-C021	RETAINING WALL DETAILS
42-12520641-C022	BEACH ACCESS STAIRS
42-12520641-C023	SEWER RETICULATION PLAN
42-12520641-C024	SEWER LONG SECTIONS
42-12520641-C025	WATER RETICULATION PLAN
42-12520641-C026	EROSION AND SEDIMENT CONTROL STRATEGY - PLAN
42-12520641-C027	EROSION AND SEDIMENT CONTROL STRATEGY - DETAILS SHEET 1 OF 2
42-12520641-C028	EROSION AND SEDIMENT CONTROL STRATEGY - DETAILS SHEET 2 OF 2

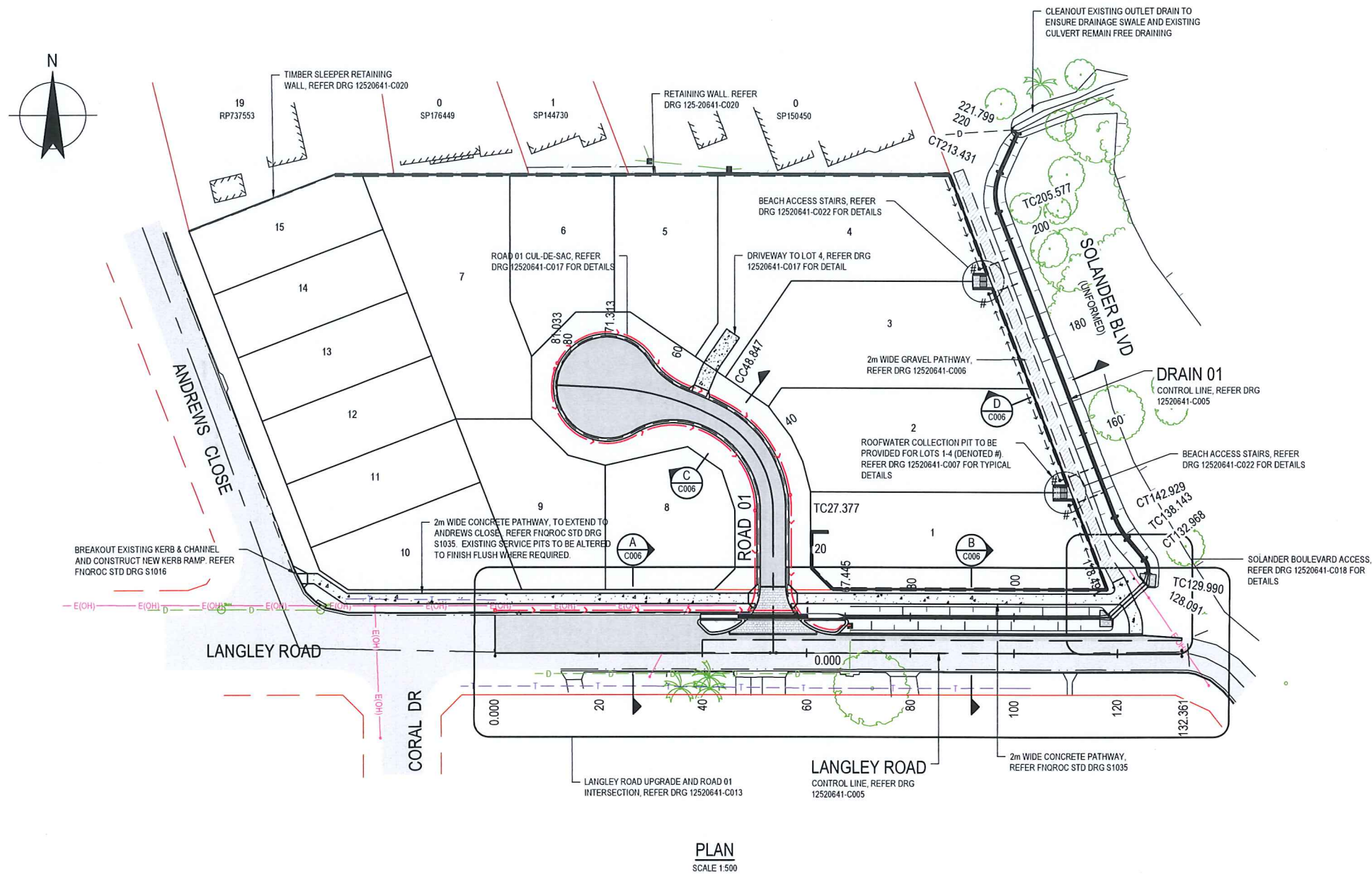
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No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Manager	Project Director	Date
Plot Date: 3 March 2020 - 4:10 PM Plotted by: Gary Browning Cad File No: G:\42\12520641\CADD\Drawings\42-12520641-C001.dwg						

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Drafting Check G. APPLIN	Design Check G. APPLIN	Project LANGLEY ROAD SUBDIVISION
Approved (Project Director) P. FLANAGAN	Date 03.03.20	Title COVER SHEET AND SITE PLAN
Scale 1:500	This Drawing must not be used for Construction unless signed as Approved	Original Size A1 Drawing No: 42-12520641-C001 Rev: 0



LEGEND

	CONCRETE FOOTPATH/DRIVEWAY
	GRAVEL PATHWAY
	SUBSURFACE DRAINAGE (WITH FLUSH POINTS & OUTLETS)
	PEDESTRIAN KERB RAMP
	BATTER TOP
	RETAINING WALL
	ROOFWATER COLLECTION PIT, REFER DRG 12520641-C007
	EXISTING PAVEMENT
	NEW FLEXIBLE PAVEMENT
	NEW CONCRETE PAVEMENT WITH PORPHYRY COBBLE STONE FINISH

NOTES

- REFER DRG 12520641-C002 FOR STANDARD NOTES.
- REFER DRG 12520641-C005 FOR CONTROL LINE SETOUT.

No	Revision	Note	Drawn	Project Manager	Date
0	FOR APPROVAL		GB	PF	03.03.20



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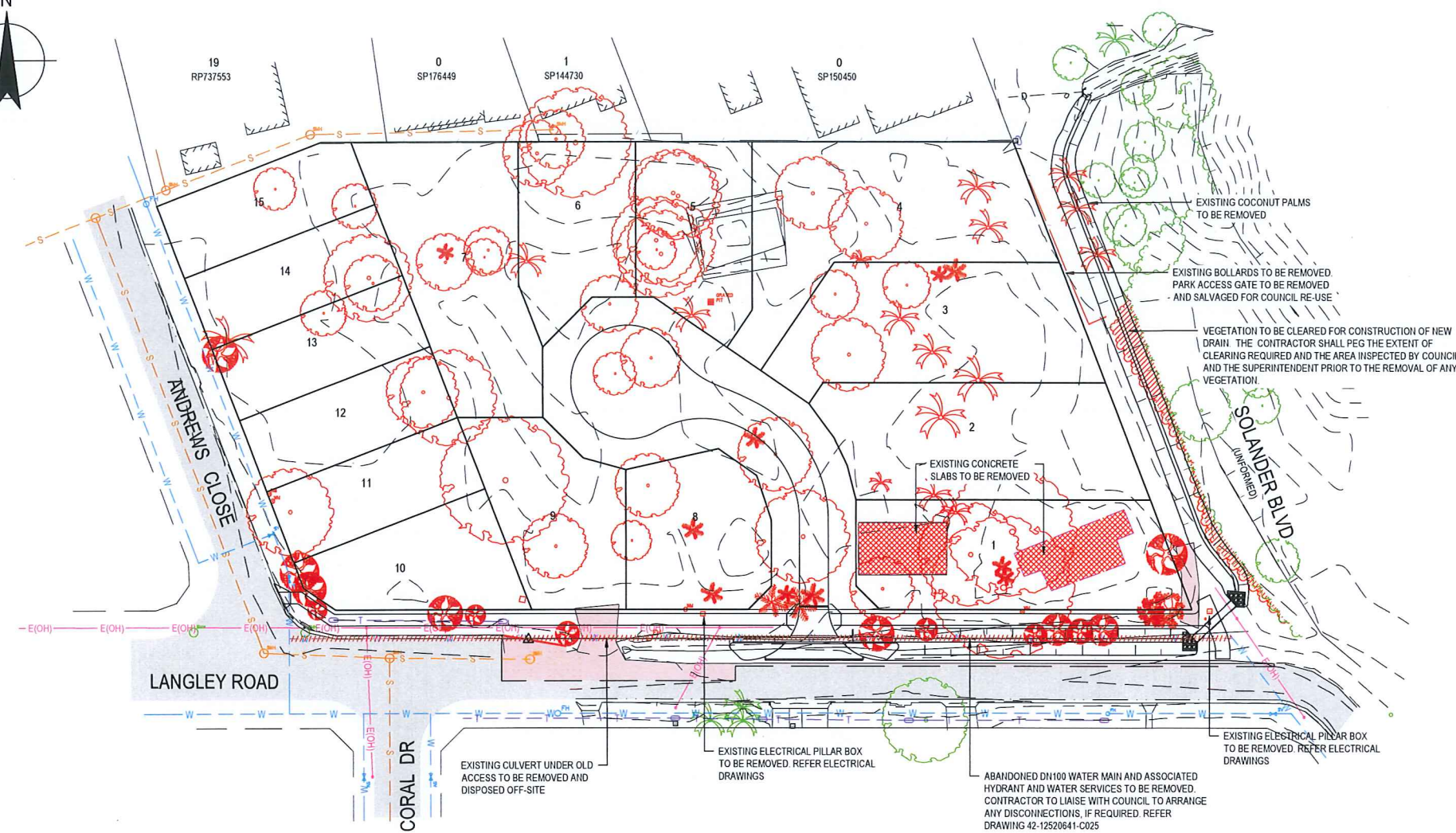
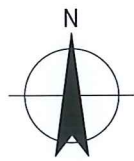
Drawn	G. BROWNING	Designer	G. BROWNING
Drafting Check	G. APPLIN	Design Check	G. APPLIN
Approved (Project Director)	P. FLANAGAN		
Date	03.03.20		
Scale	1:500		

This Drawing must not be used for construction unless signed as Approved

Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **GENERAL ARRANGEMENT PLAN**

Original Size **A1** Drawing No: **42-12520641-C003**

Rev: 0



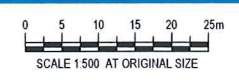
LEGEND

- EXISTING KERB & CHANNEL TO BE REMOVED
- EXISTING PAVEMENT TO BE REMOVED
- EXISTING FENCE / BOLLARDS TO BE REMOVED
- EXISTING REDUNDANT SERVICE
- EXISTING TREE/PALM TO BE REMOVED
- EXISTING VEGETATION TO BE REMOVED
- EXISTING BUILDING LINE
- EXISTING FENCE
- EXISTING SEWER MAIN
- EXISTING OH ELECTRICITY
- EXISTING WATER MAIN
- EXISTING TELSTRA
- EXISTING PALMTREE TO REMAIN
- EXISTING VEGETATION LINE

NOTES

- REFER TO DRG 12520641-C002 FOR STANDARD NOTES.

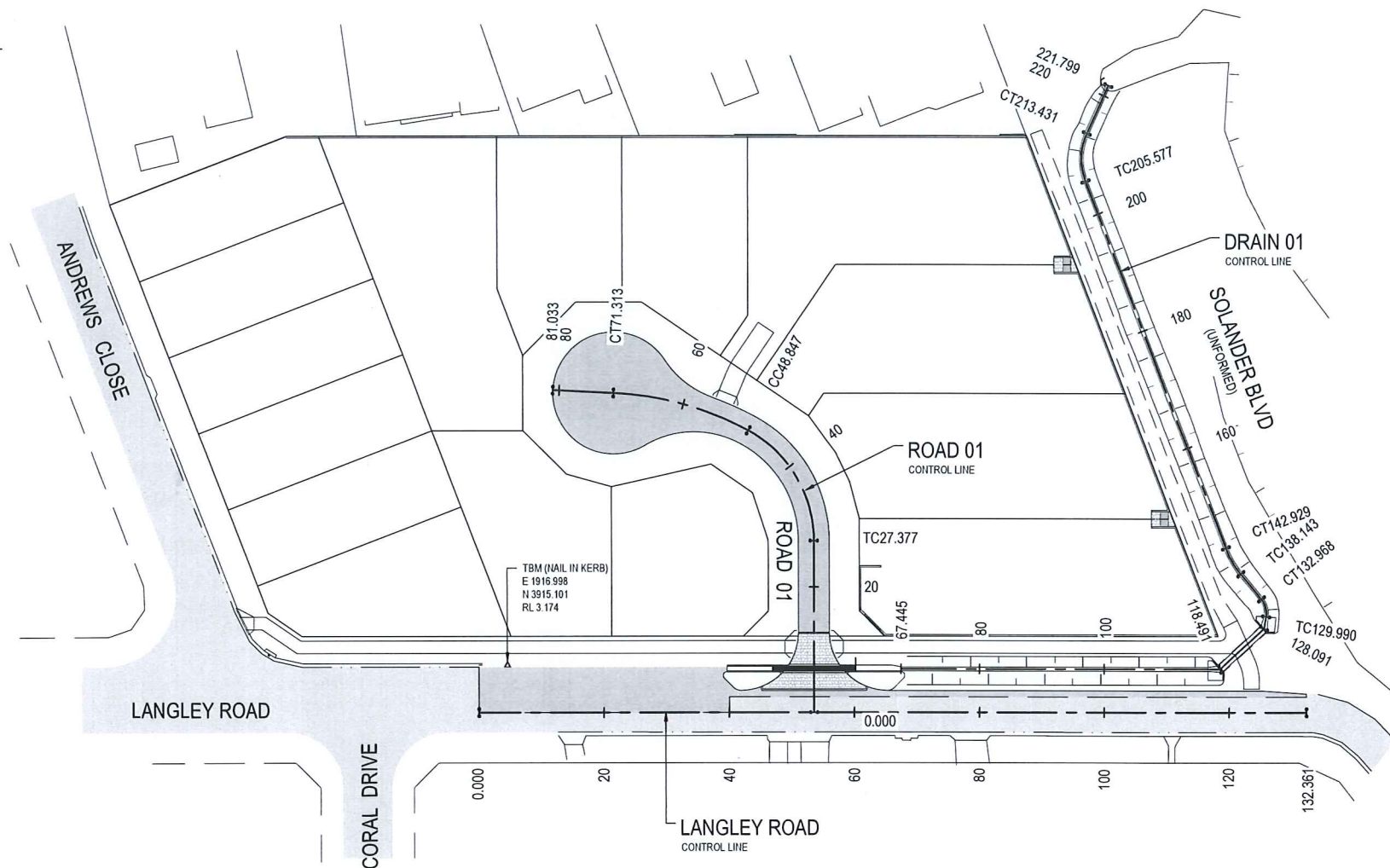
PLAN
SCALE 1:500



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	Approved (Project Director) P. FLANAGAN		Title DEMOLITION / CLEARING PLAN	
	Date 03.03.20			
	Scale 1:500	This Drawing must not be used for Construction unless signed as Approved		Original Size A1 Drawing No: 42-12520641-C004 Rev: 0

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No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager
			Project Director	Date



PLAN
SCALE 1:500

CONTROL LINE - ROAD 01

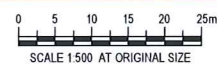
PT	CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	ARC LENGTH	DEFL ANGLE
IP 1	0.000	1965.976	3908.027	0°00'00.00"			
TC	27.377	1965.976	3935.405	0°00'00.00"			
IP 2	38.112	1965.976	3947.305		R = -20.000	21.469	61°30'27.89"
CT	48.847	1955.517	3952.982	298°29'32.11"			
TC	48.847	1955.517	3952.982	298°29'32.11"			
IP 3	60.080	1945.475	3958.432		R = -50.000	22.465	25°44'36.24"
CT	71.313	1934.062	3958.980	272°44'55.87"			
IP 4	81.033	1924.354	3959.446	272°44'55.87"			

CONTROL LINE - LANGLEY RD

PT	CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	ARC LENGTH	DEFL ANGLE
IP 1	0.000	1912.429	3908.026	89°59'55.17"			
IP 2	132.361	2044.790	3908.029	89°59'55.17"			

CONTROL LINE - DRAIN 01

PT	CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	ARC LENGTH	DEFL ANGLE
IP 1	67.445	1979.874	3914.953	89°59'56.93"			
IP 2	118.491	2030.919	3914.953				
IP 3	128.091	2037.980	3921.458				
TC	129.990	2038.292	3923.331	9°28'35.93"			
IP 4	131.479	2038.553	3924.895		R = -3.500	2.978	48°45'13.39"
CT	132.968	2037.549	3926.123	320°43'22.54"			
TC	138.143	2034.273	3930.129	320°43'22.54"			
IP 5	140.536	2032.745	3931.997		R = 15.000	4.785	18°16'43.91"
CT	142.929	2031.881	3934.250	339°00'06.45"			
TC	205.577	2009.431	3992.738	339°00'06.45"			
IP 6	209.504	2007.947	3996.605		R = 10.000	7.854	45°00'01.28"
CT	213.431	2009.632	4000.389	24°00'07.73"			
IP 7	221.799	2013.036	4008.034	24°00'07.73"			



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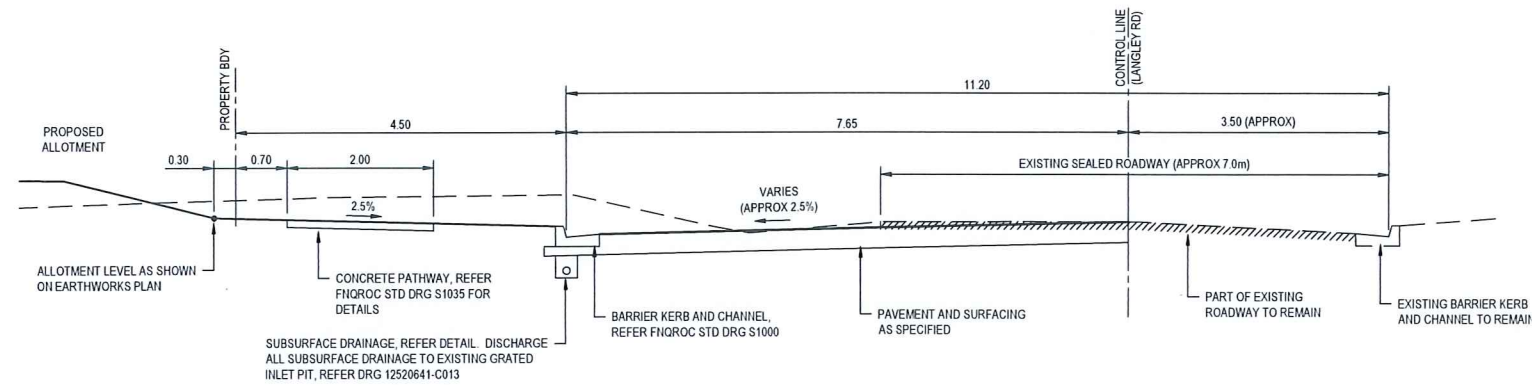
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Approved (Project Director)	P. FLANAGAN		
Date	03.03.20		
Scale	1:500	This Drawing must not be used for Construction unless signed as Approved.	

Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **CONTROL LINE SETOUT**

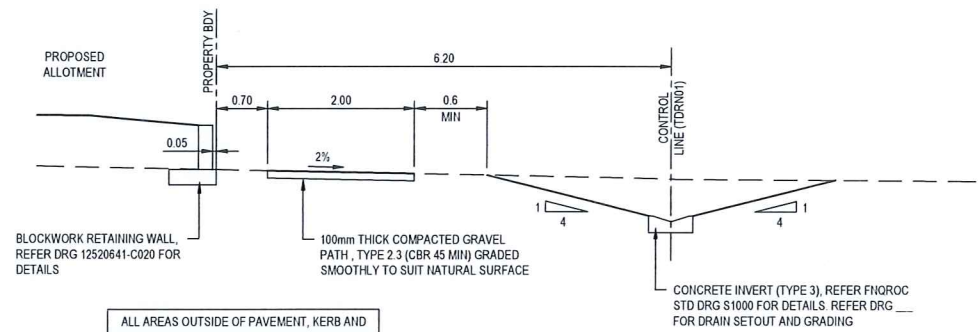
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Drawing No: **42-12520641-C005**

Rev: 0



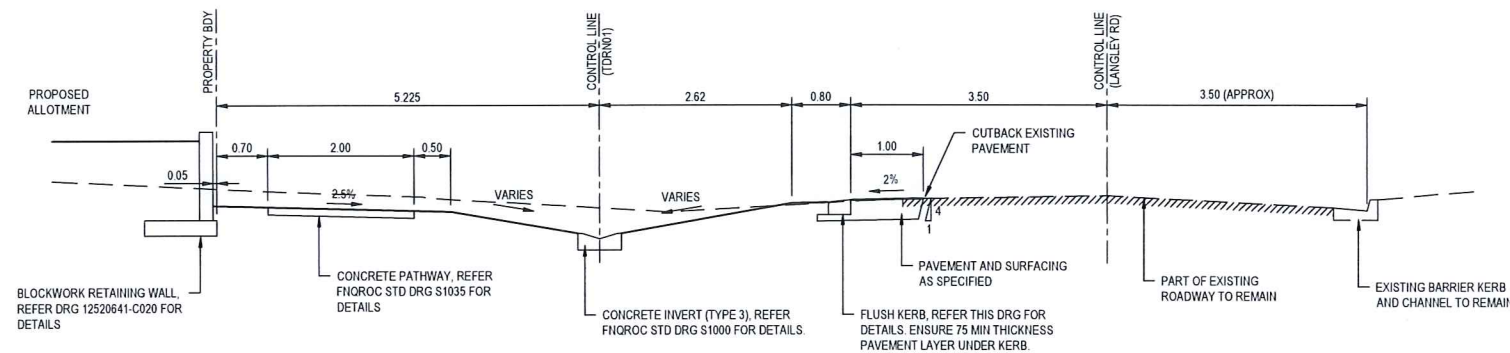
LANGLEY ROAD (CH 50 - END)

A SECTION
C003 C013 SCALE 1:50



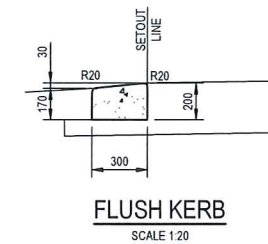
SOLANDER BOULEVARD (PATH AND DRAIN)

D SECTION
C003 C013 SCALE 1:50

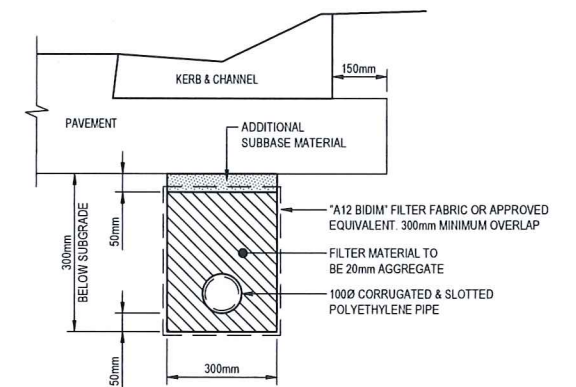


LANGLEY ROAD (START - CH 50)

B SECTION
C003 C013 SCALE 1:50



FLUSH KERB
SCALE 1:20



SUBSURFACE DRAINAGE
NOT TO SCALE

LANGLEY ROAD - PAVEMENT DETAILS

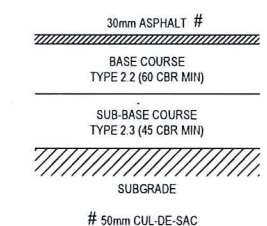
SUBGRADE CBR	BASE (mm)	SUB-BASE (mm)
3	100	280
5	100	190
7	100	140
10	100	100

DESIGN TRAFFIC 1 x 10⁵ (ACCESS STREET)

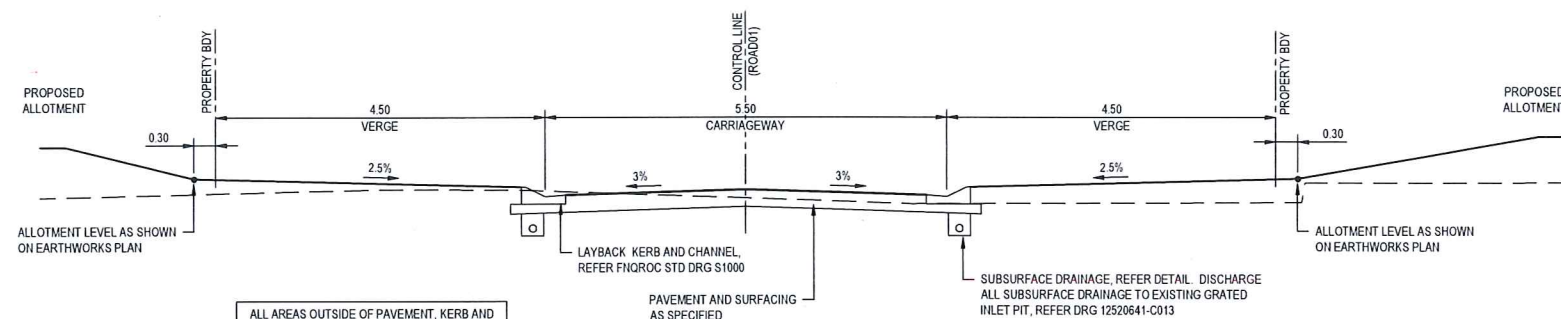
ROAD 01 - PAVEMENT DETAILS

SUBGRADE CBR	BASE (mm)	SUB-BASE (mm)
3	100	270
5	100	180
7	100	130
10	100	100

DESIGN TRAFFIC 5 x 10⁴ (ACCESS PLACE)



FLEXIBLE PAVEMENT DETAILS
NOT TO SCALE



ROAD 01

C SECTION
C003 C013 SCALE 1:50

No	Revision	Note	Drawn	Checked	Project Director	Date
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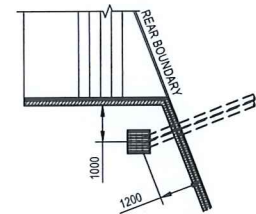
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Scale	1:100		

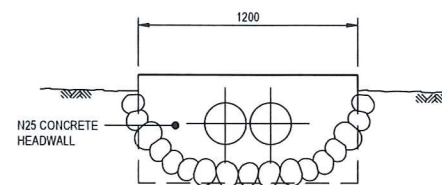
Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **TYPE CROSS SECTIONS AND DETAILS**

Original Size **A1**
Drawing No: **42-12520641-C006**

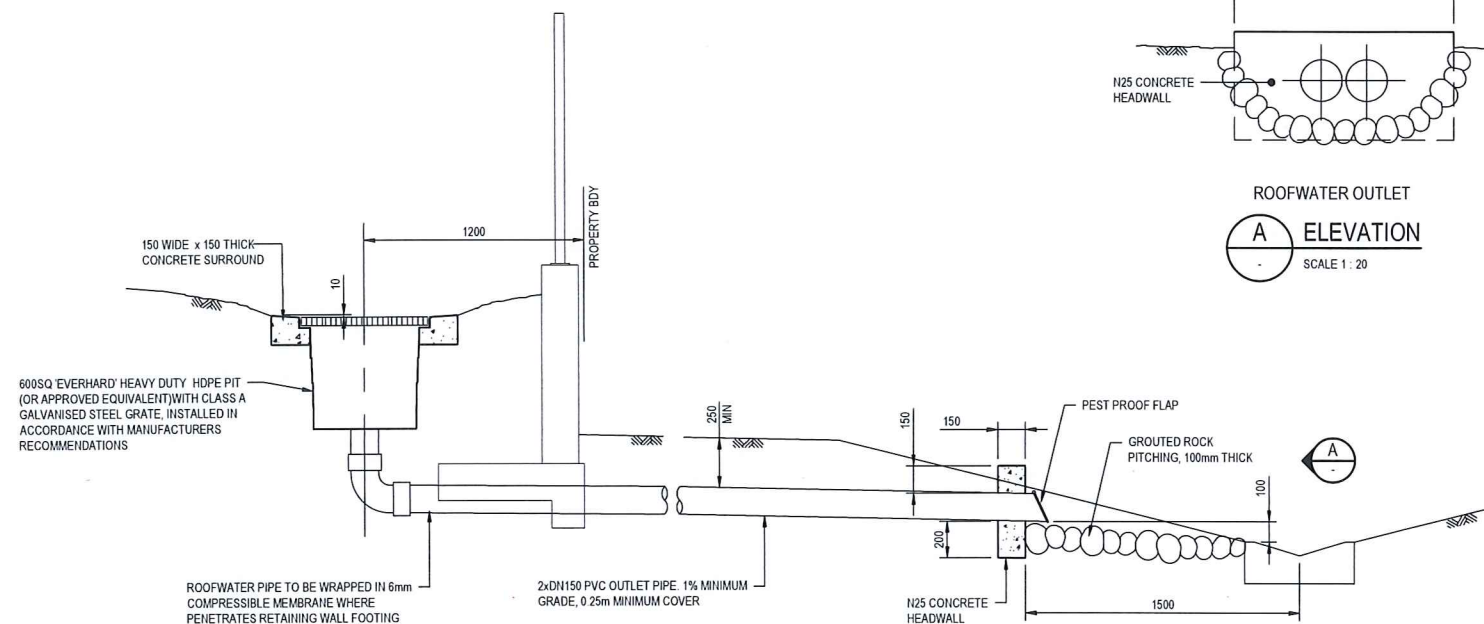
Rev: 0




TYPICAL LOCATION
ROOFWATER COLLECTION PIT
SCALE 1:100



ROOFWATER OUTLET
A ELEVATION
SCALE 1:20



REAR OF ALLOTMENT DRAINAGE - OUTLET
SCALE 1:20

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0 1 2 3 4 5m
SCALE 1:100 AT ORIGINAL SIZE

0 0.2 0.4 0.6 0.8 1.0m
SCALE 1:20 AT ORIGINAL SIZE



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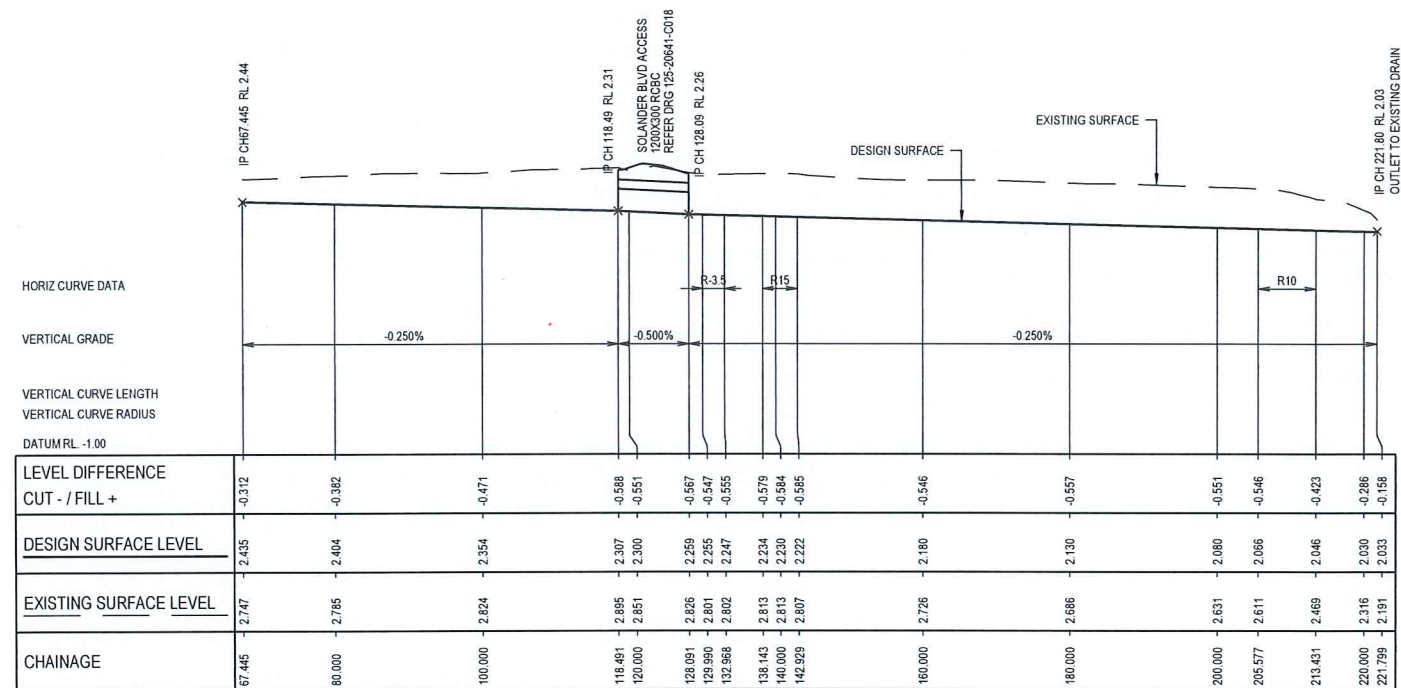
Drawn	G. BROWNING	Designer	G. BROWNING
Drafting	G. APPLIN	Design	G. APPLIN
Check		Check	
Approved	P. FLANAGAN		
(Project Director)			
Date	03.03.20		
Scale	AS SHOWN		

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Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **MISCELLANEOUS DETAILS**

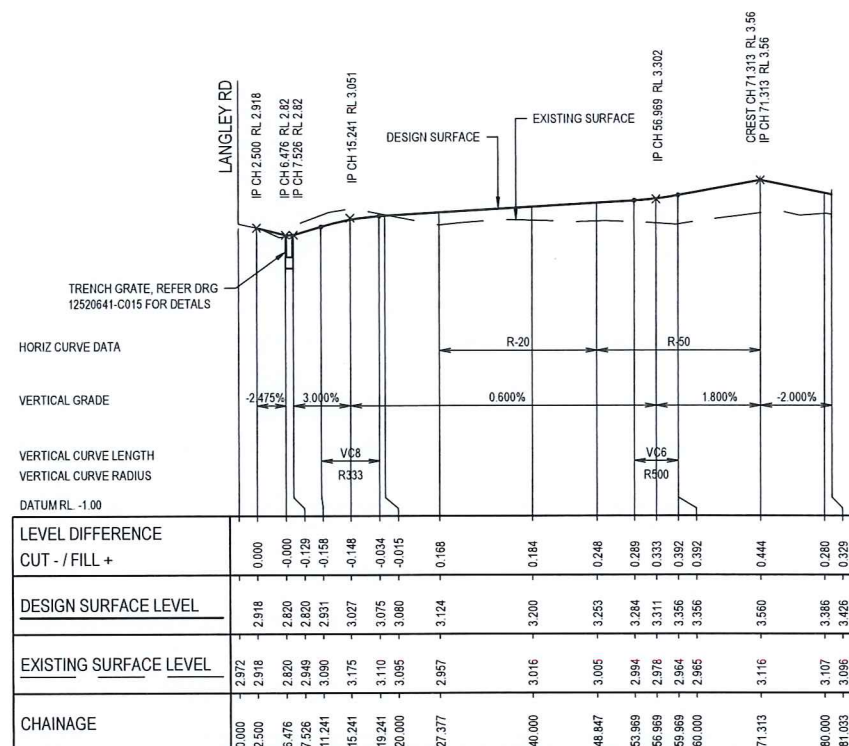
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Rev: 0



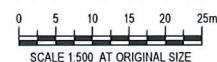
LONGITUDINAL SECTION - DRAIN 01

HORZ 1:500 VERT 1:50



LONGITUDINAL SECTION - ROAD 01

HORZ 1:500 VERT 1:50



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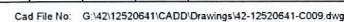
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Drafting Check	G. APPLIN	Design Check	G. APPLIN
Approved (Project Director)	P. FLANAGAN		
Date	03.03.20		
Scale	1:500 H / 1:50 V		

This Drawing must not be used for Construction unless signed as Approved

Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **LONGITUDINAL SECTIONS
ROAD 01 AND DRAIN 01**

Original Size **A1**
Drawing No: **42-12520641-C008**

Rev: **0**

Plot Date: 3 March 2020 - 4:10 PM Plotted by: Gary Browning

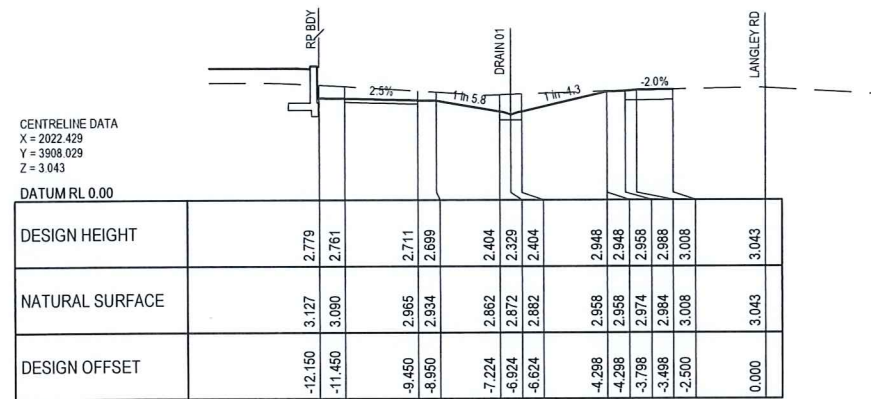
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nt)	Date	03.03.20
red		

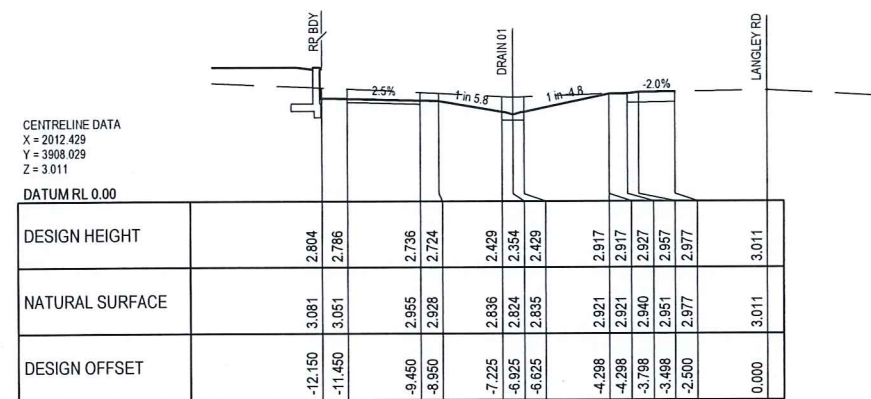
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This Drawing must not be

Original Size
A1 Drawing No: 42-12520641-C009

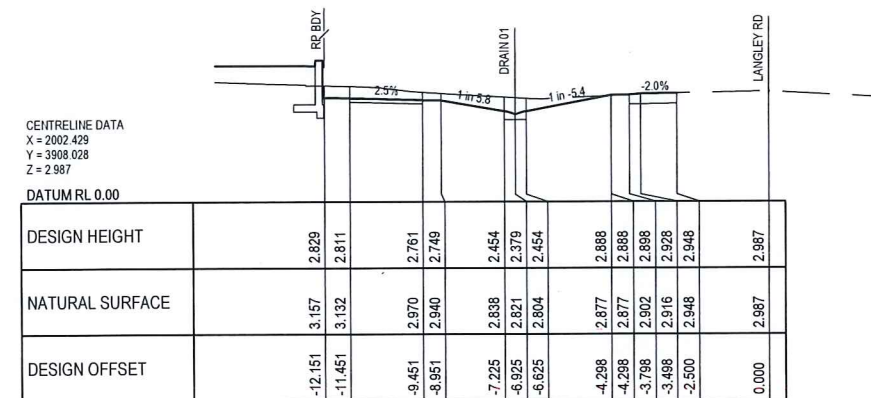
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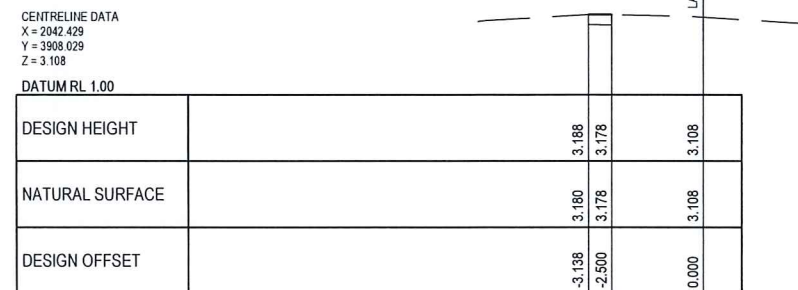
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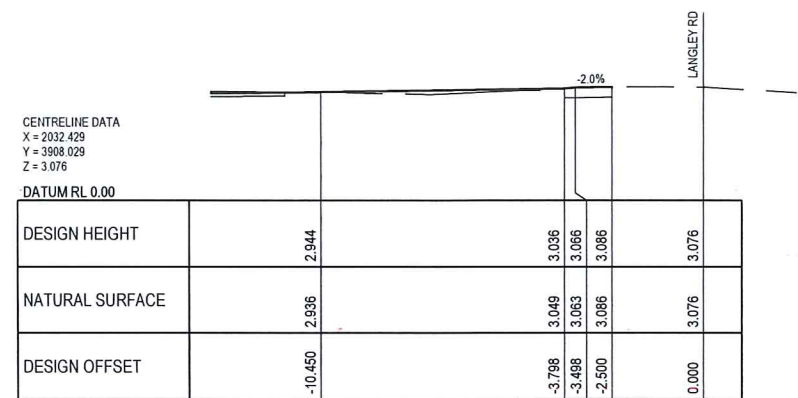
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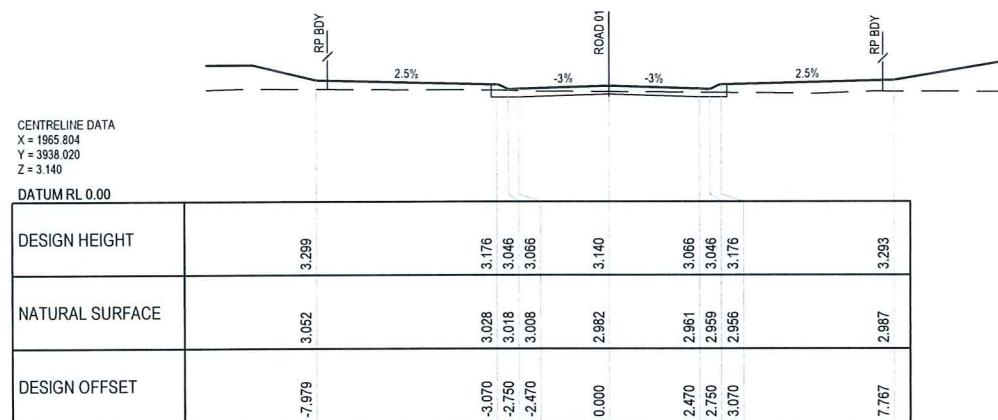


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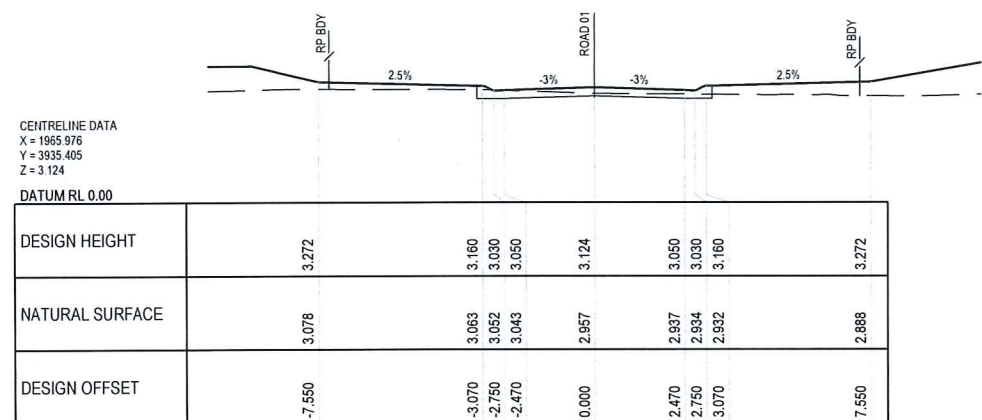


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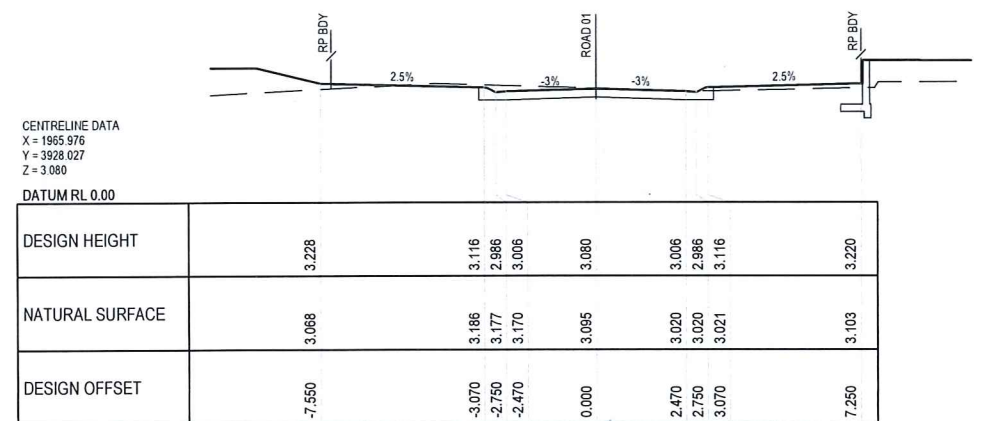
								 Level 4, 211 Victoria Square Adelaide SA 5000 Australia GPO Box 2052 Adelaide SA 5001 T 61 8 8111 6600 F 61 8 8111 6699 E admin@ghd.com.au W www.ghd.com	DO NOT SCALE		Drawn G. BROWNING	Designer G. BROWNING	Client KS5 PTY LTD
									Drafting Check G. APPLIN	Design Check G. APPLIN	Project LANGLEY ROAD SUBDIVISION		
									Approved (Project Director)	P. FLANAGAN	Title LANGLEY ROAD CROSS SECTIONS		
									Date	03.03.20	SHEET 2 OF 2		
									Scale	1:100	Original Size A1		
									This Drawing must not be used for Construction unless signed as Approved		Drawing No: 42-12520641-C010		
0 FOR APPROVAL				GB		PF	03.03.20				Rev: 0		
No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing		Drawn	Job Manager	Project Director	Date						



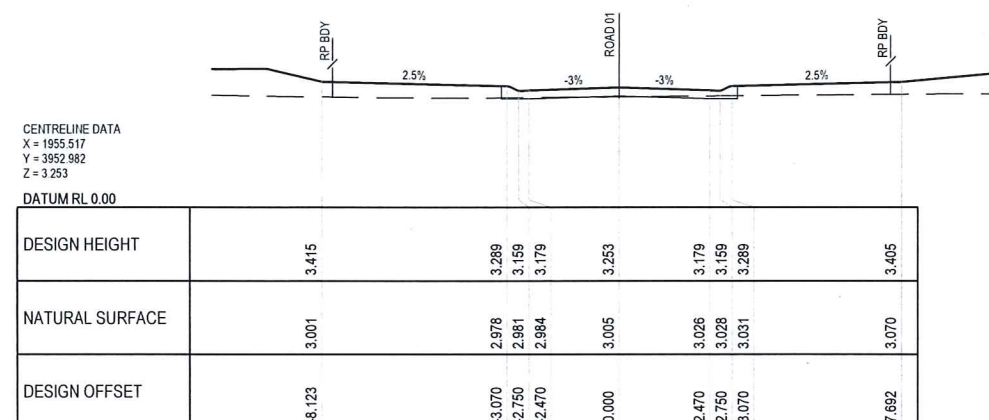
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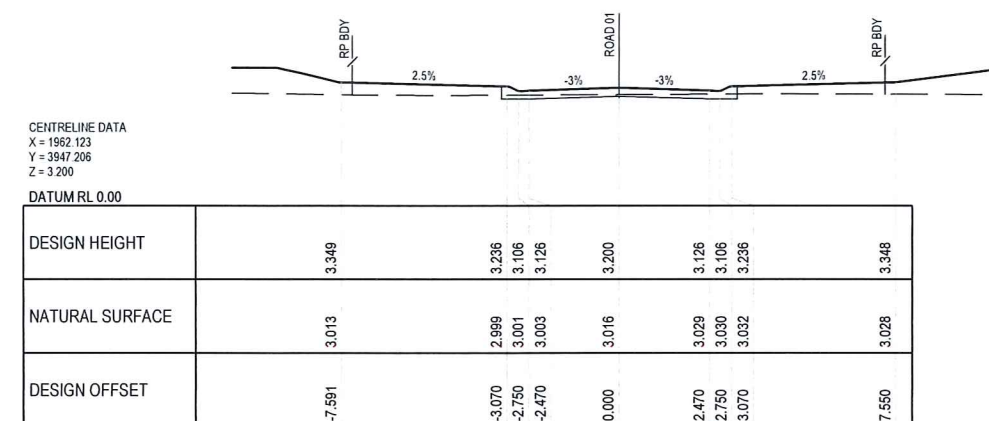
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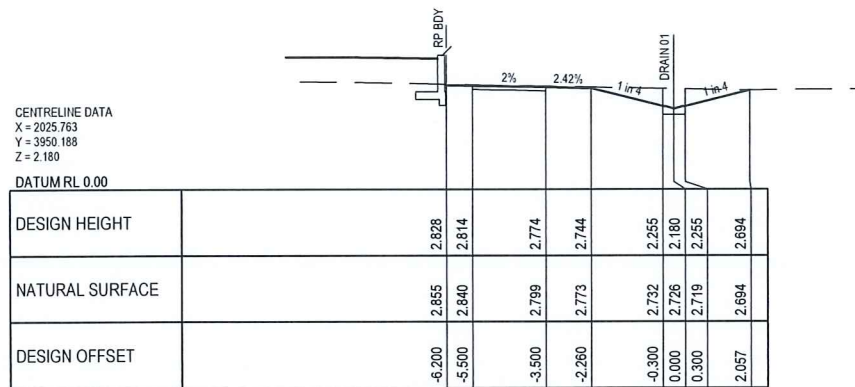
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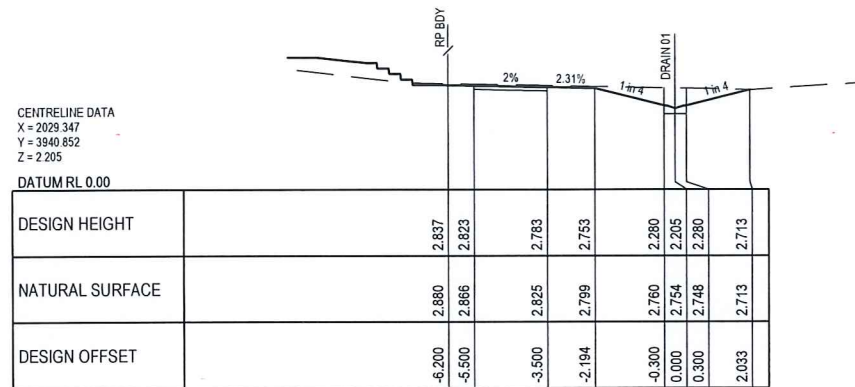
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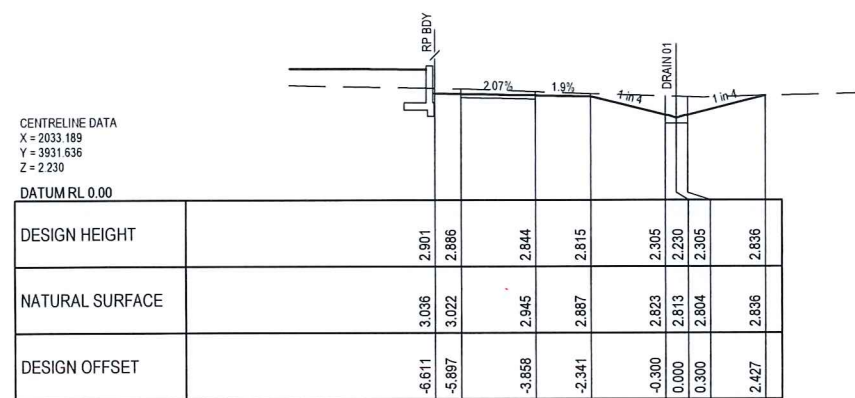
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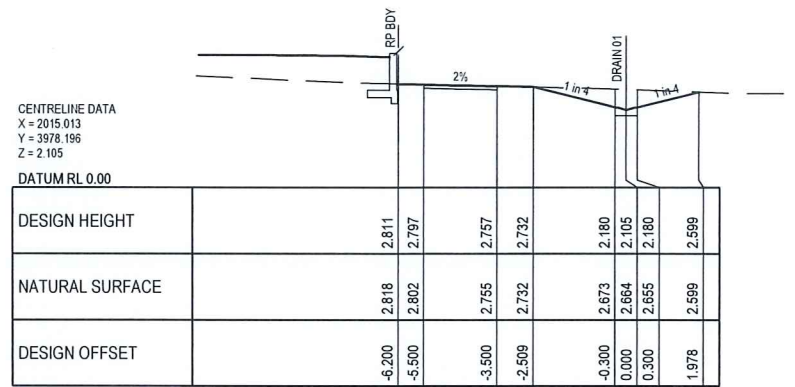
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150.000



140.000



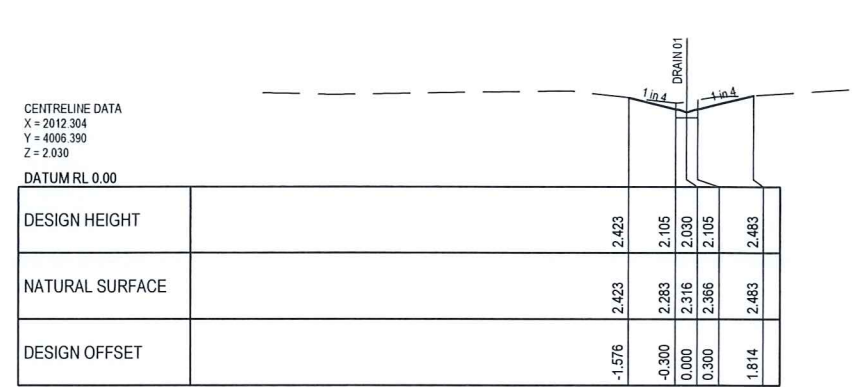
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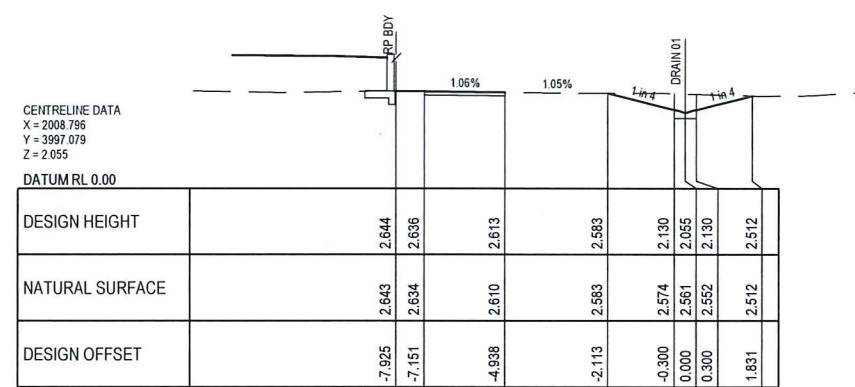
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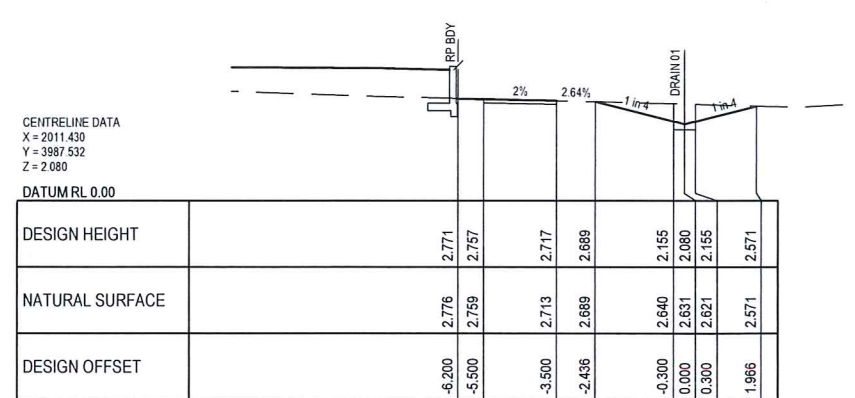
170.000



220.000



210.000



200.000

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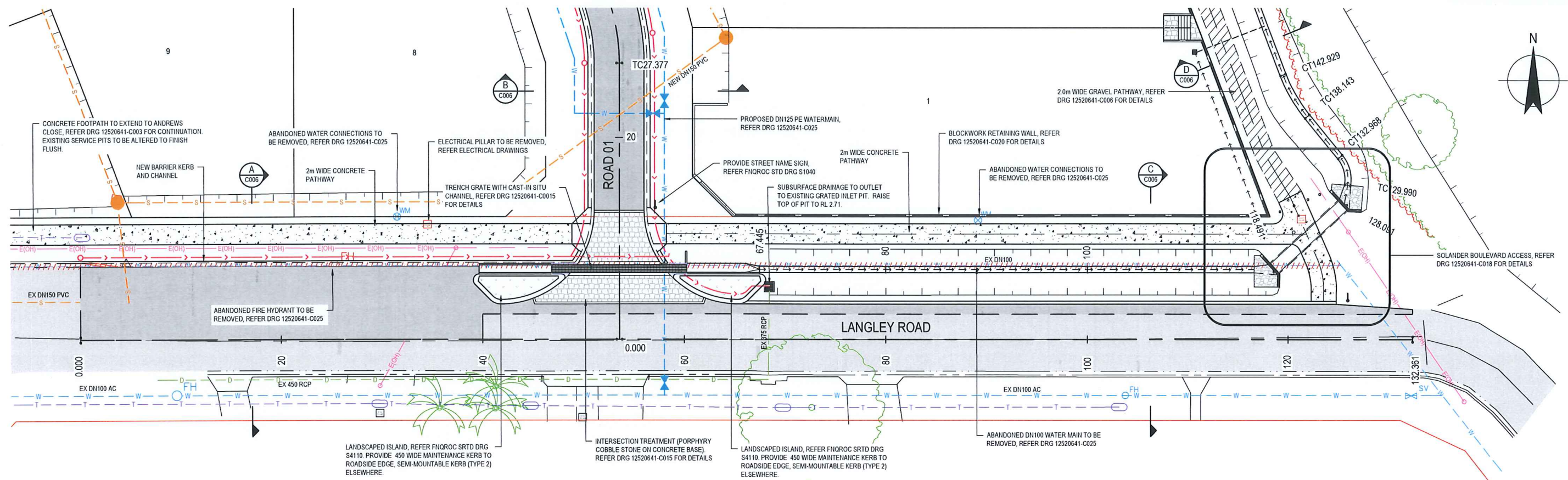
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Approved (Project Director)	P. FLANAGAN		
Date	03.03.20		
Scale	1:100		

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Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **DRAIN 01 CROSS SECTIONS**

Original Size **A1** Drawing No: **42-12520641-C012**

Rev: 0



PLAN
SCALE 1:200

LEGEND

	EXISTING PAVEMENT		EXISTING OH ELECTRICITY
	NEW PAVEMENT		EXISTING WATER MAIN
	NEW CONCRETE PATHWAY		EXISTING WATER MAIN TO BE REMOVED
	NEW GRAVEL PATHWAY		PROPOSED FENCE
	INTERSECTION TREATMENT (PORPHYRY COBBLE STONE ON CONCRETE BASE)		SUBSURFACE DRAINAGE
	LANDSCAPED ISLAND		BATTER TOP
	GROUTED ROCK APRON		EXISTING VEGETATION LINE
			BOLLARD
			REMOVABLE BOLLARD
			SIGN

NOTES

1. REFER TO DRG 12520641-C002 FOR STANDARD NOTES.
2. FOR DEMOLITION WORKS, REFER DRAWING 12520641-C004
3. REFER DRG 12520641-C014 FOR SETOUT.

0	FOR APPROVAL	GB	PF	03.03.20
No	Revision	Note	Drawn	Job Manager
			Project Director	Date



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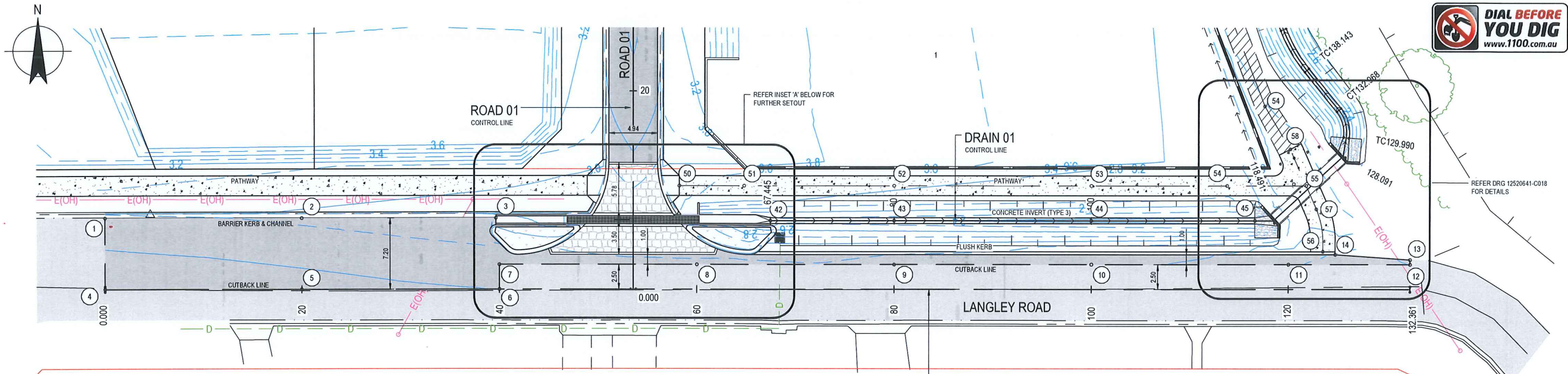
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Approved (Project Director)	P. FLANAGAN		
Date	03.03.20		
Scale	1:200		

Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **LANGLEY ROAD ROADWORKS PLAN**

Original Size **A1**
Drawing No: **42-12520641-C013**

Rev: 0



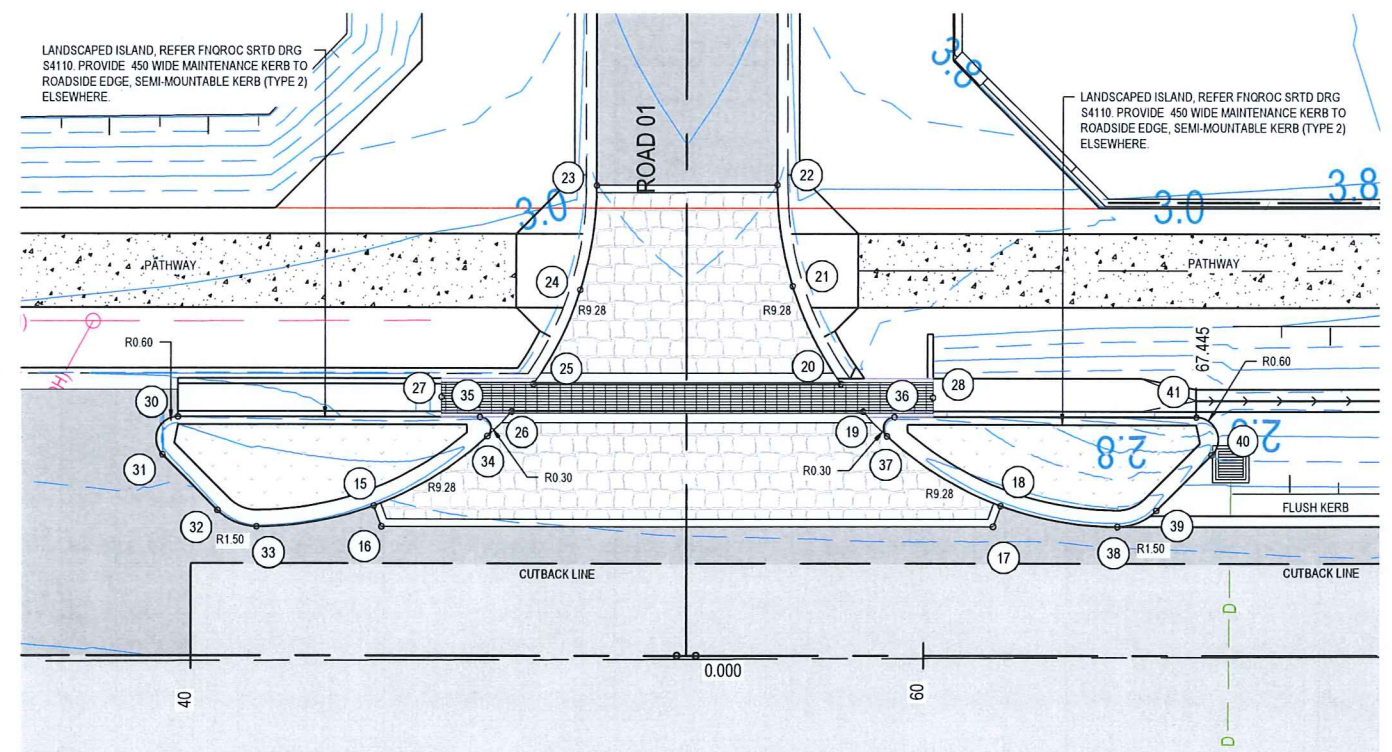
PLAN
SCALE 1:200

LEGEND

	EXISTING PAVEMENT		NEW GRAVEL PATHWAY
	NEW PAVEMENT		LANDSCAPED ISLAND
	INTERSECTION TREATMENT (PORPHYRY COBBLE STONE ON CONCRETE BASE)		SETOUT POINT
	NEW CONCRETE PATHWAY		EXISTING OH ELECTRICITY
			FINISHED SURFACE CONTOUR (0.05m INTERVAL)

NOTES

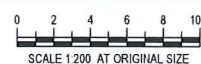
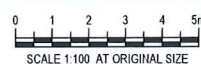
- REFER TO DRG 12520641-C002 FOR STANDARD NOTES.
- REFER TO DRG 12520641-C005 FOR CONTROL LINE SETOUT.



INSET 'A'
SCALE 1:100

SETOUT POINTS				
POINT	EASTING	NORTHING		COMMENT
1	1912.429	3915.229	2.933	LIP OF KERB & CHANNEL
2	1932.428	3915.229	2.883	LIP OF KERB & CHANNEL
3	1952.076	3915.229	2.834	LIP OF KERB & CHANNEL
4	1912.429	3908.026	3.085	PAVEMENT CUTBACK
5	1932.429	3908.027	3.049	PAVEMENT CUTBACK
6	1952.429	3908.027	2.998	PAVEMENT CUTBACK
7	1952.429	3910.527	2.959	PAVEMENT CUTBACK
8	1972.429	3910.528	2.913	PAVEMENT CUTBACK
9	1992.429	3910.528	2.922	PAVEMENT CUTBACK
10	2012.429	3910.529	2.977	PAVEMENT CUTBACK
11	2032.429	3910.529	3.086	PAVEMENT CUTBACK
12	2044.790	3910.529	3.199	PAVEMENT CUTBACK
13	2044.790	3911.004	3.213	EDGE OF PAVEMENT
14	2037.204	3911.529	3.108	EDGE OF PAVEMENT
15	1957.411	3912.091	2.907	EDGE OF CONCRETE
16	1957.617	3911.527	2.919	EDGE OF CONCRETE
17	1974.335	3911.527	2.893	EDGE OF CONCRETE
18	1974.540	3912.089	2.882	EDGE OF CONCRETE
19	1970.782	3914.652	2.820	EDGE OF CONCRETE
20	1970.181	3915.404	2.820	LIP OF KERB
21	1968.864	3918.057	2.848	LIP OF KERB
22	1968.445	3920.808	2.900	LIP OF KERB
23	1963.506	3920.795	2.900	LIP OF KERB
24	1963.059	3917.962	2.846	LIP OF KERB
25	1961.773	3915.404	2.820	LIP OF KERB
26	1961.175	3914.654	2.820	EDGE OF CONCRETE
27	1959.264	3915.046	2.520	TRENCH GRATE INVERT

SETOUT POINTS				
POINT	EASTING	NORTHING		COMMENT
28	1972.686	3915.029	2.453	TRENCH GRATE INVERT
30	1952.076	3914.503	2.900	FACE OF KERB
31	1951.652	3913.480	2.879	FACE OF KERB
32	1953.165	3911.966	2.914	FACE OF KERB
33	1954.226	3911.527	2.933	FACE OF KERB
34	1960.515	3913.983	2.836	FACE OF KERB
35	1960.312	3914.504	2.820	FACE OF KERB
36	1971.640	3914.504	2.820	FACE OF KERB
37	1971.437	3913.983	2.831	FACE OF KERB
38	1977.726	3911.528	2.889	FACE OF KERB
39	1978.786	3911.967	2.890	FACE OF KERB
40	1980.299	3913.479	2.695	FACE OF KERB
41	1979.874	3914.503	2.440	FACE OF KERB
42	1979.874	3914.953	2.435	CONCRETE INVERT
43	1992.428	3914.953	2.404	CONCRETE INVERT
44	2012.428	3914.953	2.354	CONCRETE INVERT
45	2029.028	3914.953	2.312	CONCRETE INVERT
50	1970.647	3918.479	2.946	PATH CENTRELINE
51	1977.226	3918.479	2.849	PATH CENTRELINE
52	1992.429	3918.479	2.811	PATH CENTRELINE
53	2012.429	3918.479	2.761	PATH CENTRELINE
54	2026.230	3918.478	2.727	PATH CENTRELINE
55	2034.230	3918.479	2.933	PATH CENTRELINE
56	2035.954	3911.829	3.065	PATH CENTRELINE
57	2035.274	3916.109	2.953	PATH CENTRELINE
58	2032.602	3922.171	2.910	PATH CENTRELINE
59	2030.034	3926.504	2.881	PATH CENTRELINE



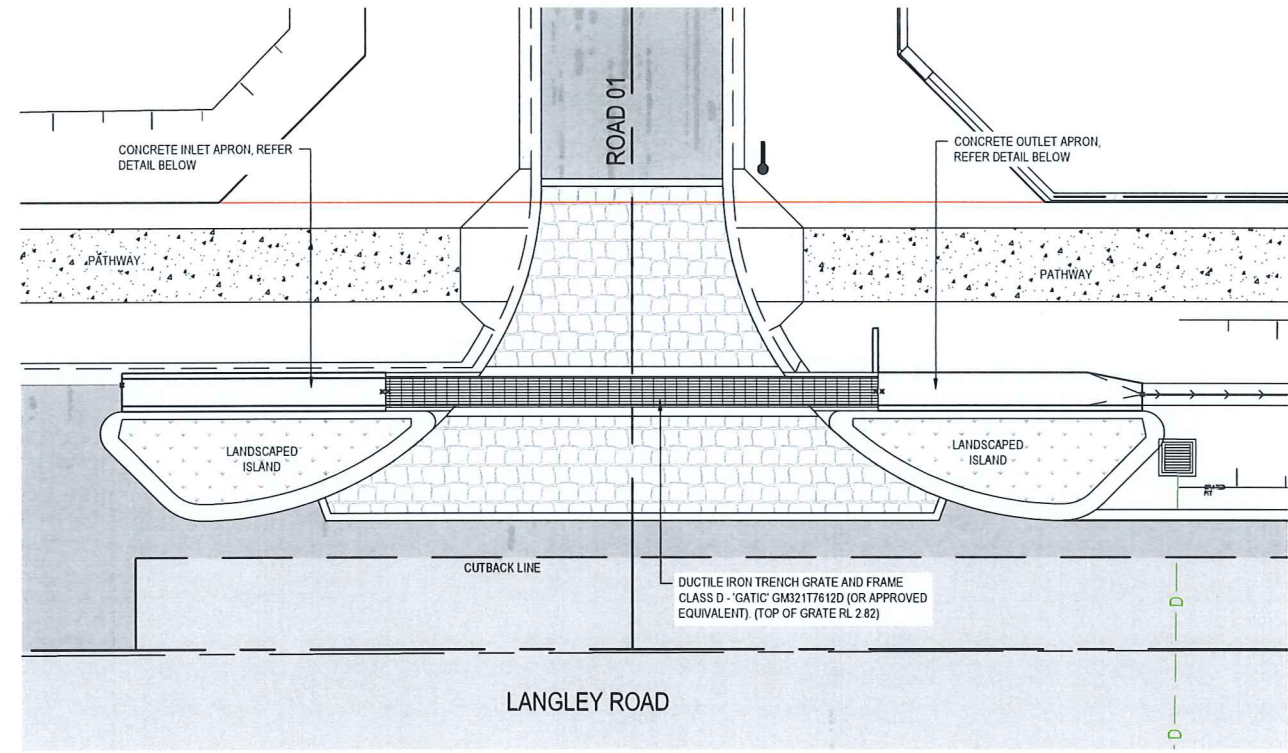
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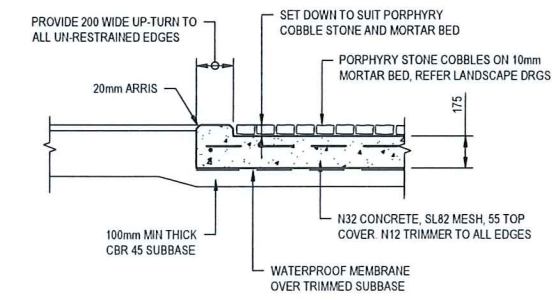
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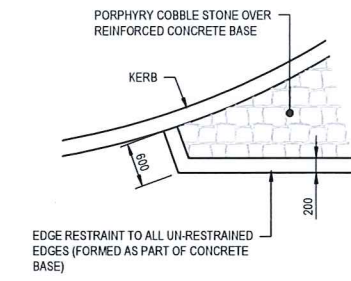
Client	KS5 PTY LTD		
Project	LANGLEY ROAD SUBDIVISION		
Title	LANGLEY ROAD SETOUT PLAN		
Original Size	A1	Drawing No:	42-12520641-C014
Rev:	0		



PLAN
SCALE 1:100



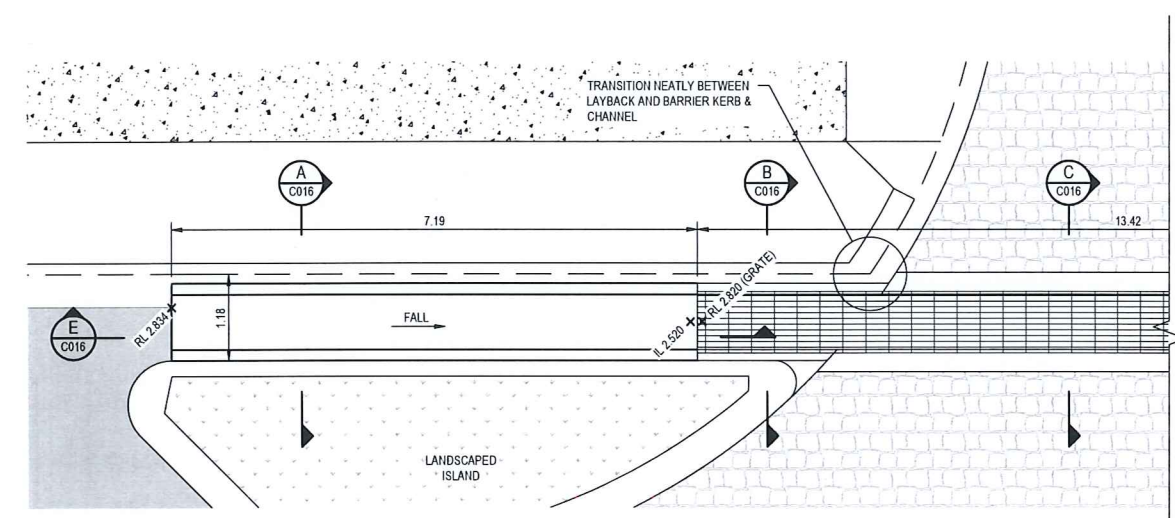
INTERSECTION TREATMENT
SCALE 1:20



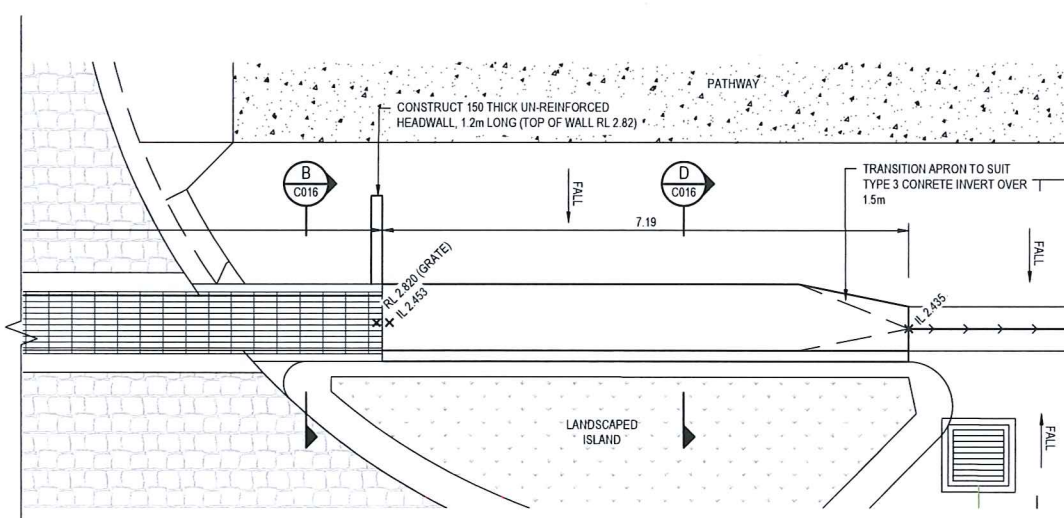
INTERSECTION THRESHOLD DETAIL
NOT TO SCALE

- LEGEND**
- EXISTING PAVEMENT
 - NEW PAVEMENT
 - CONCRETE PATHWAY
 - LANDSCAPED ISLAND
 - INTERSECTION TREATMENT (PORPHYRY COBBLE STONE ON CONCRETE BASE)

- NOTES**
- REFER TO DRG 12520641-C002 FOR STANDARD NOTES.
 - REFER TO DRG 12520641-C005 FOR SETOUT.



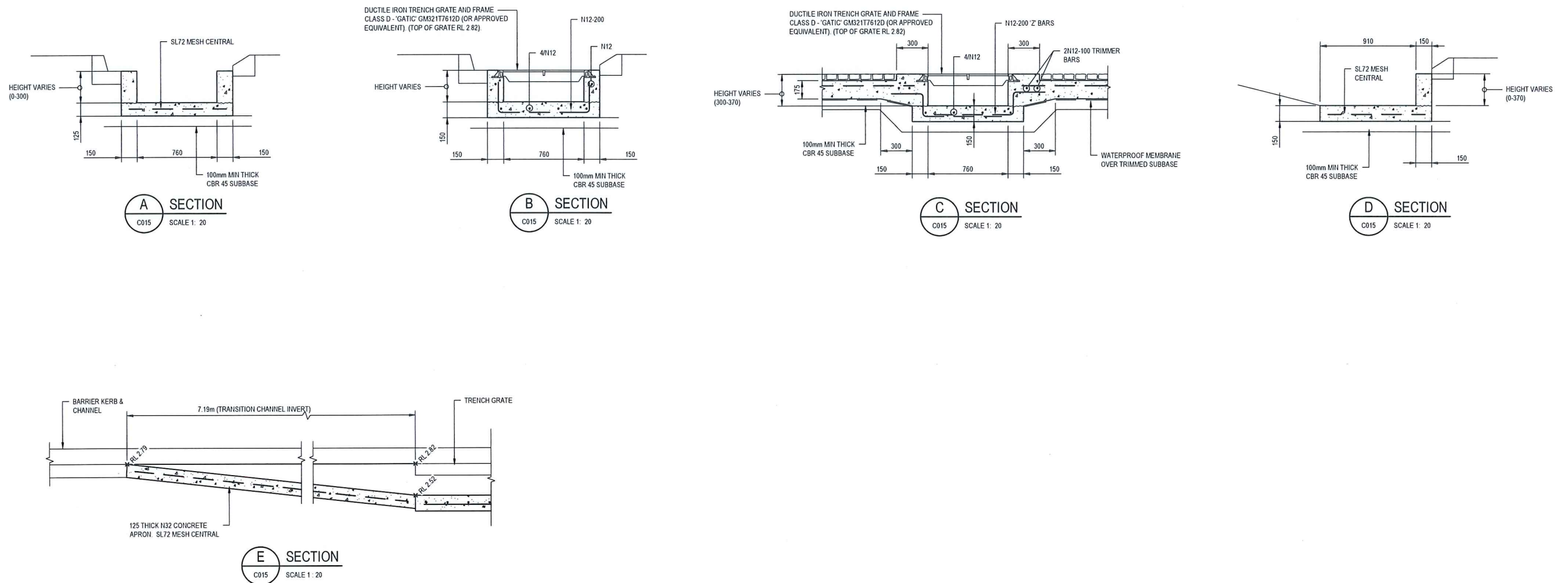
CONCRETE INLET APRON
SCALE 1:50



CONCRETE OUTLET APRON
SCALE 1:50

0 0.2 0.4 0.6 0.8 1.0m SCALE 1:20 AT ORIGINAL SIZE		0 0.5 1.0 1.5 2.0 2.5m SCALE 1:50 AT ORIGINAL SIZE		 Level 4, 211 Victoria Square Adelaide SA 5000 Australia GPO Box 2052 Adelaide SA 5001 T 61 8 8111 6600 F 61 8 8111 6699 E admin@ghd.com.au W www.ghd.com	DO NOT SCALE Conditions of Use: This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.	Drawn G. BROWNING	Designer G. BROWNING	Client KS5 PTY LTD Project LANGLEY ROAD SUBDIVISION Title LANGLEY ROAD / ROAD 01 INTERSECTION PLAN
0 1 2 3 4 5m SCALE 1:100 AT ORIGINAL SIZE		Drafting G. APPLIN	Design Check G. APPLIN			Approved (Project Director) P. FLANAGAN Date 03.03.20	Scale AS SHOWN	
0 FOR APPROVAL		GB	PF	03.03.20				
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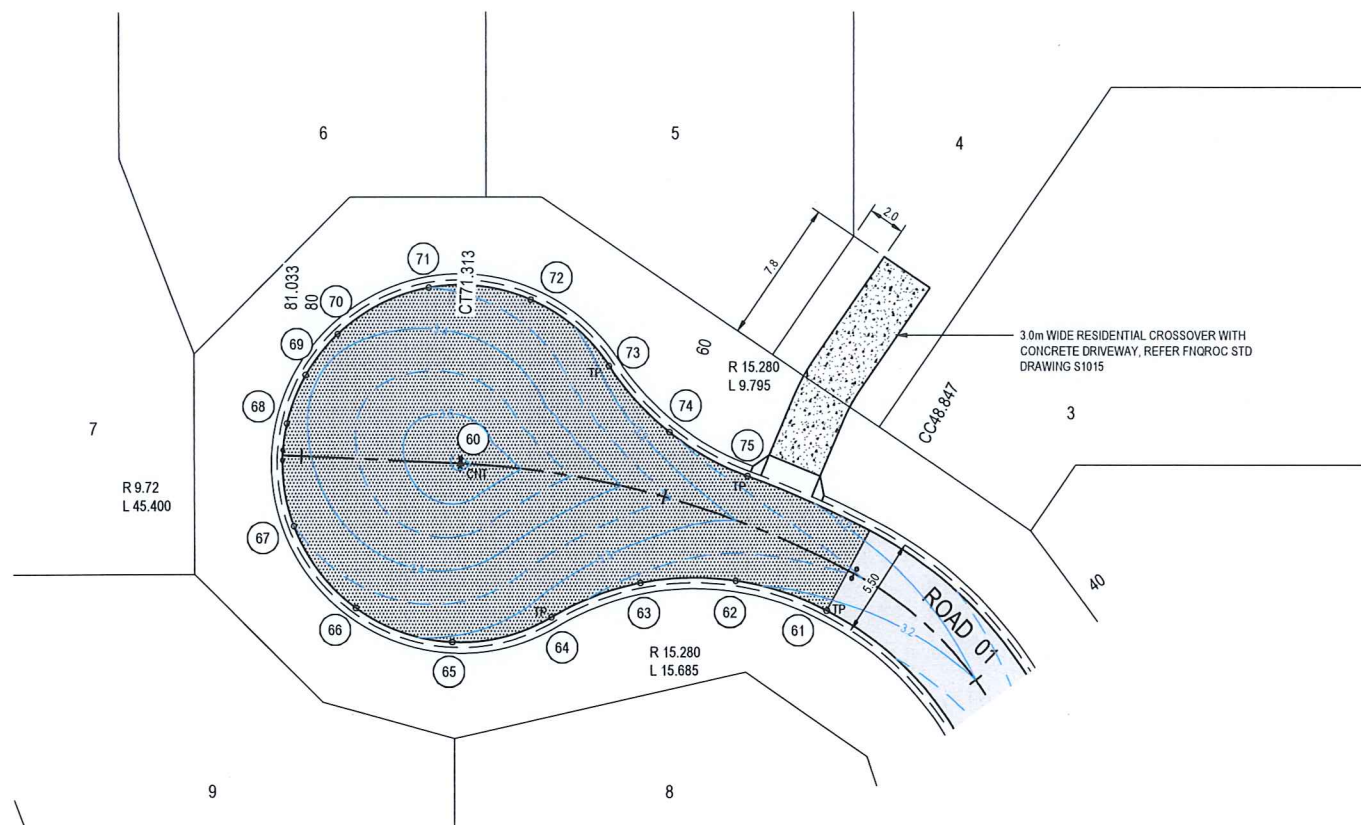
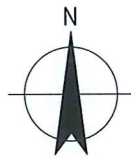
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NOTES

- REFER TO DRG 125XXXXX-C??? FOR STANDARD NOTES.
- ALL CONCRETE TO BE N32 MIN (UNLESS NOTED OTHERWISE) IN ACCORDANCE WITH AS1379 AND AS3600

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																Drafting Check G. APPLIN		Design Check G. APPLIN		Project LANGLEY ROAD SUBDIVISION					
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PLAN
SCALE 1:200

LEGEND

R 15.280
L 9.795

KERB RADIUS
KERB ARC LENGTH

TP 11

SETOUT POINT

8.6

FINISHED SURFACE CONTOUR
(0.05m INTERVAL)


LIMITS OF 50mm ASPHALT

SETOUT POINTS

POINT	EASTING	NORTHING	
60	1934.062	3958.980	3.560
61	1954.033	3950.975	3.181
62	1949.092	3952.607	3.208
63	1943.890	3952.486	3.235
64	1939.031	3950.626	3.261
65	1933.603	3949.271	3.290
66	1928.327	3951.133	3.320
67	1924.951	3955.594	3.349
68	1924.594	3961.178	3.378
69	1925.627	3963.810	3.388
70	1927.374	3966.033	3.384
71	1932.370	3968.552	3.351
72	1937.926	3967.899	3.317
73	1942.203	3964.292	3.283
74	1945.485	3960.686	3.254
75	1949.736	3958.297	3.227

NOTES

- FOR STANDARD NOTES, REFER DRG 12520641-C002.
- SETOUT SHOWN IS TO LIP OF KERB AND CHANNEL.

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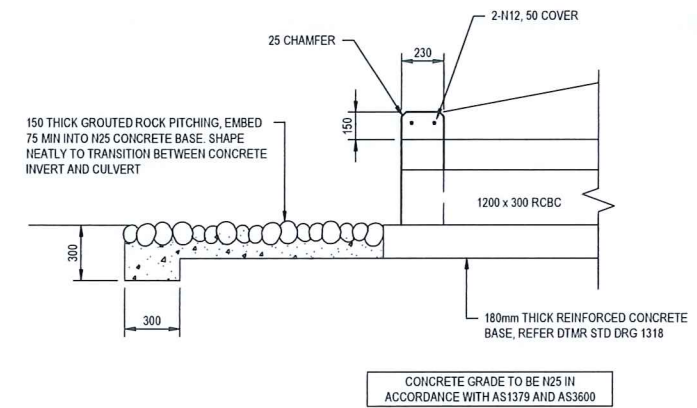
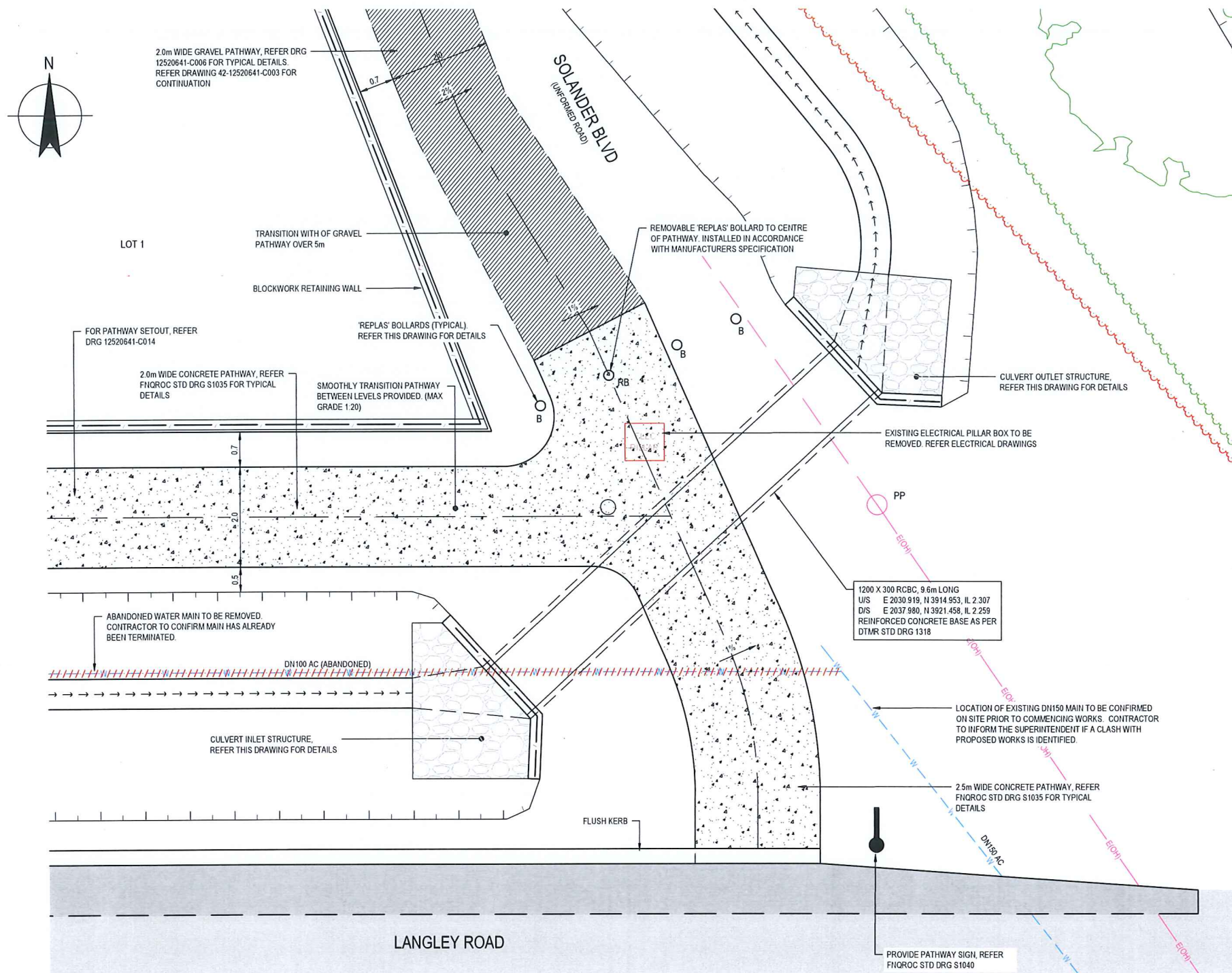
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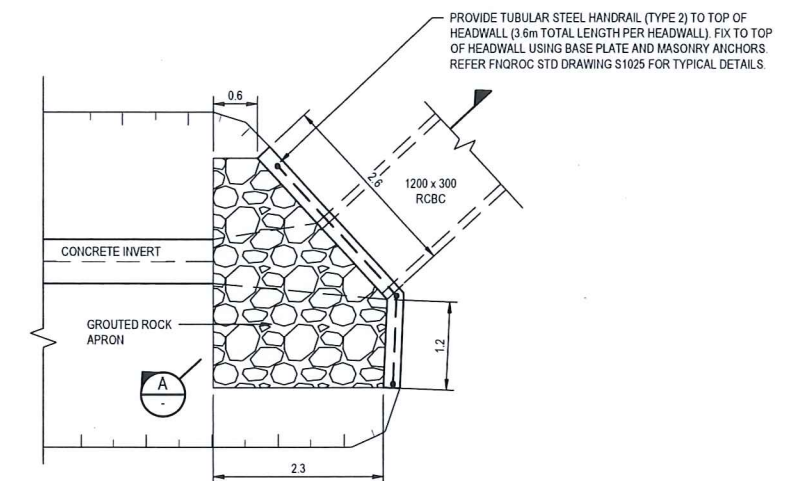
Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **ROAD 01 CUL-DE-SAC SETOUT PLAN**

Original Size **A1** Drawing No: **42-12520641-C017**

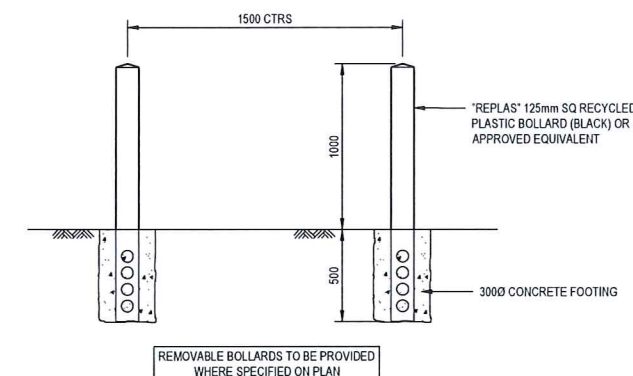
Rev: 0



SECTION A
SCALE 1:20



CULVERT INLET/OUTLET
SCALE 1:50



BOLLARDS
SCALE 1:50

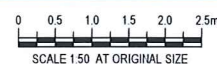
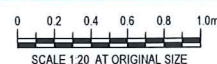
LEGEND

	EXISTING PAVEMENT		EXISTING WATER MAIN
	NEW PAVEMENT		EXISTING WATER MAIN TO BE REMOVED
	NEW CONCRETE PATHWAY		PROPOSED FENCE
	NEW GRAVEL PATHWAY		BATTER TOP
	GROUTED ROCK APRON		EXISTING VEGETATION LINE
	EXISTING OH ELECTRICITY		BOLLARD
			REMOVABLE BOLLARD
			SIGN

SOLANDER BOULEVARD ACCESS
SCALE 1:50

NOTES

- FOR STANDARD NOTES, REFER DRG 12520641-C002.
- FOR PATH SETOUT, REFER DRG 12520641-C014.



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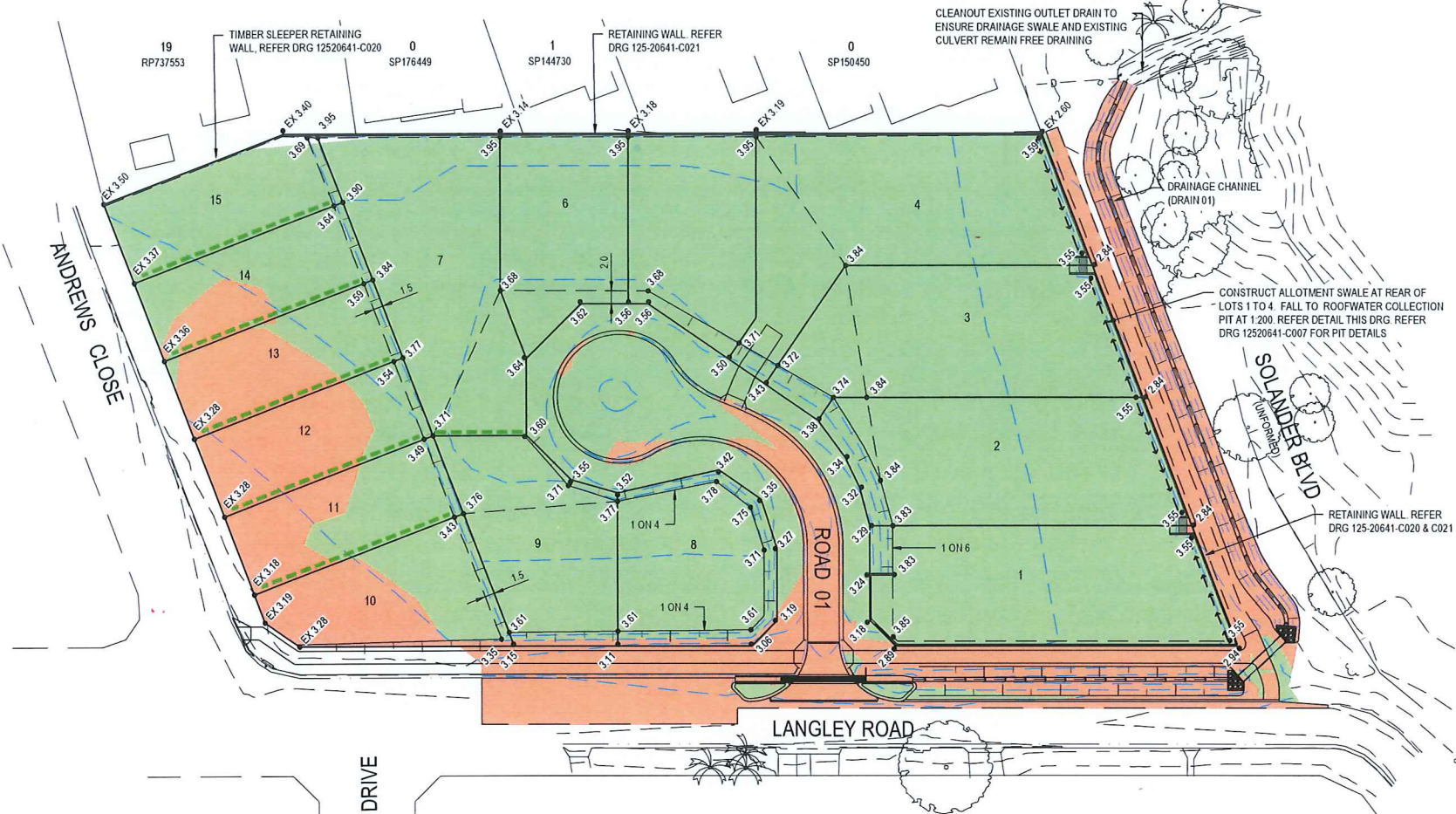
Drawn	G. BROWNING	Designer	G. BROWNING
Drafting Check	G. APPLIN	Design Check	G. APPLIN
Approved (Project Director)	P. FLANAGAN		
Date	03.03.20		
Scale	AS SHOWN		

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Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **SOLANDER BOULEVARD ACCESS PLAN & DETAILS**

Original Size **A1** Drawing No: **42-12520641-C018**

Rev: 0



PLAN
SCALE 1:500

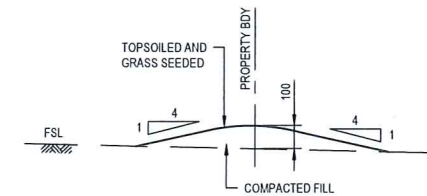
EARTHWORKS VOLUMES

CUT 673m³
FILL 5163m³

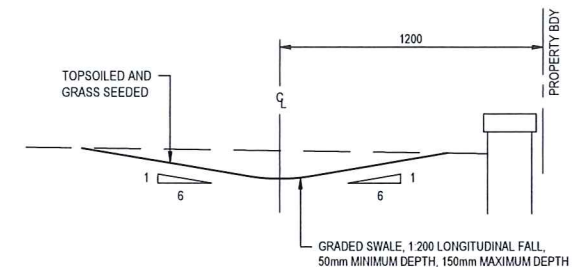
- VOLUMES SHOWN ARE MEASURED IN-PLACE VOLUMES AND INCLUDE NO ALLOWANCE FOR BULKING/COMPACTION.
- STRIPPING OF TOPSOIL TO A DEPTH OF 100mm AND RESPREADING TOPSOIL ON COMPLETING OF EARTHWORKS TO A DEPTH OF 100mm HAS BEEN ACCOUNTED FOR.
- EARTHWORKS VOLUMES INCLUDE BOXING OUT FOR ROAD PAVEMENTS, KERBS AND FOOTPATHS.

LEGEND

- 8.0 — EXISTING SURFACE CONTOUR (0.2m INTERVAL)
- 8.6 — FINISHED SURFACE CONTOUR (0.2m INTERVAL)
- 10.85 FINISHED SURFACE LEVEL
- EX 10.85 EXISTING SURFACE LEVEL
- PERIMETER BUND
- → → → → ALLOTMENT SWALE
- [Green Box] EARTHWORKS IN FILL
- [Orange Box] EARTHWORKS IN CUT



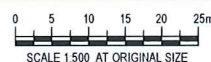
PERIMETER BUND
NOT TO SCALE



ALLOTMENT SWALE
NOT TO SCALE

NOTES

- REFER TO DRG 12520641-C002 FOR STANDARD NOTES.
- ALL BATTERS WITHIN ALLOTMENTS SHALL AS FOLLOWS (UNLESS NOTED OTHERWISE):
 - ROAD FRONTAGE 1 ON 4
 - SIDE BOUNDARY 1 ON 2
 - REAR BOUNDARY 1 ON 2



SCALE 1:500 AT ORIGINAL SIZE



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Approved (Project Director)	P. FLANAGAN		
Date	03.03.20		
Scale	AS SHOWN		

Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **EARTHWORKS PLAN**

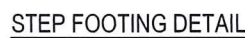
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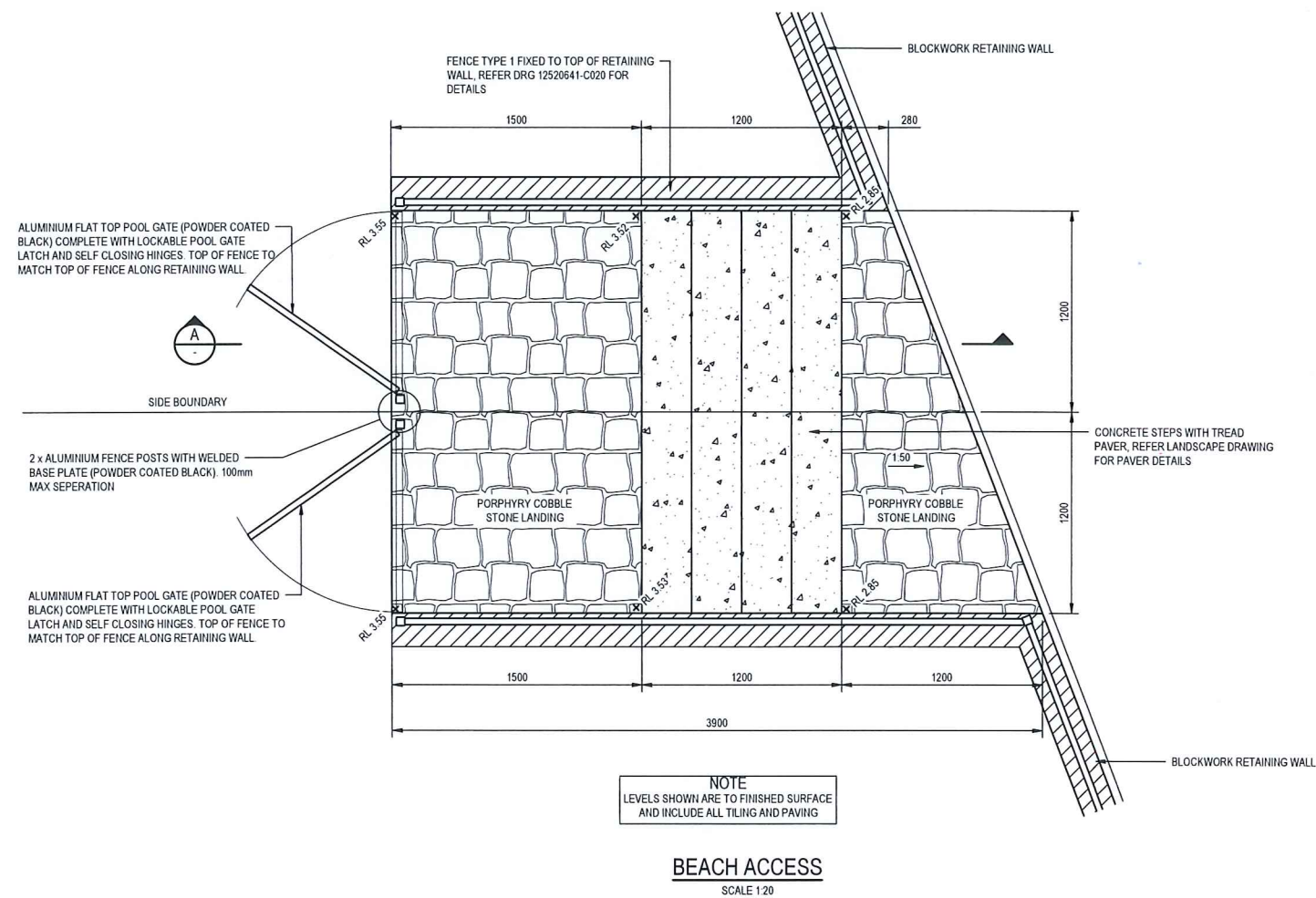
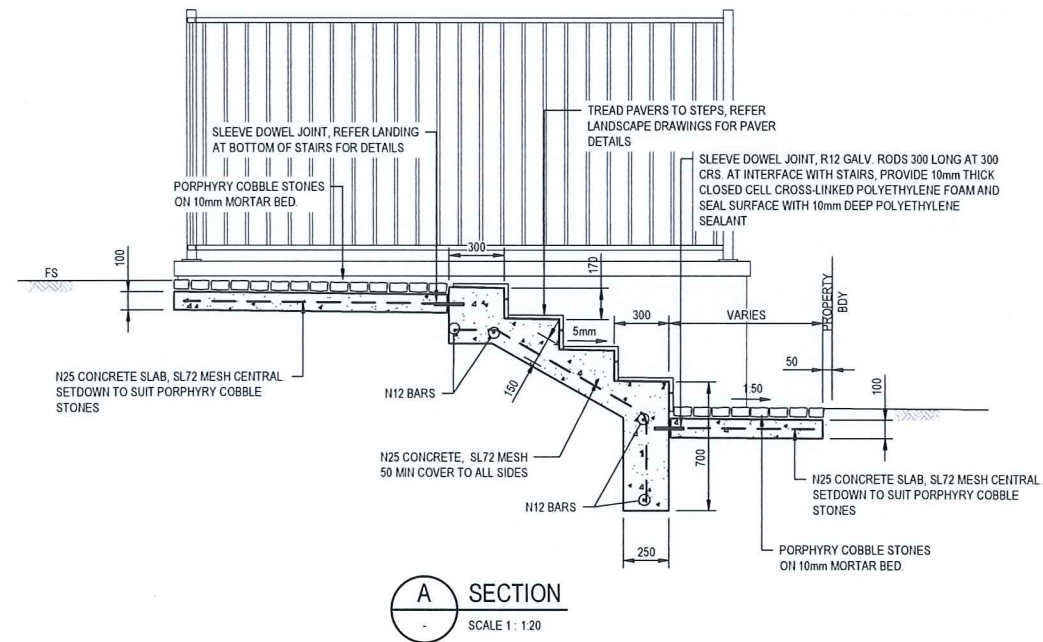
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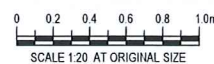


NOTE:
RETAINING WALL DETAILS SHOWN ASSUME A SOIL INTERNAL
FRICTION ANGLE GREATER THAN OR EQUAL TO 25° .
ASSUMES LEVEL FILL WITH 5kPa SURCHARGE





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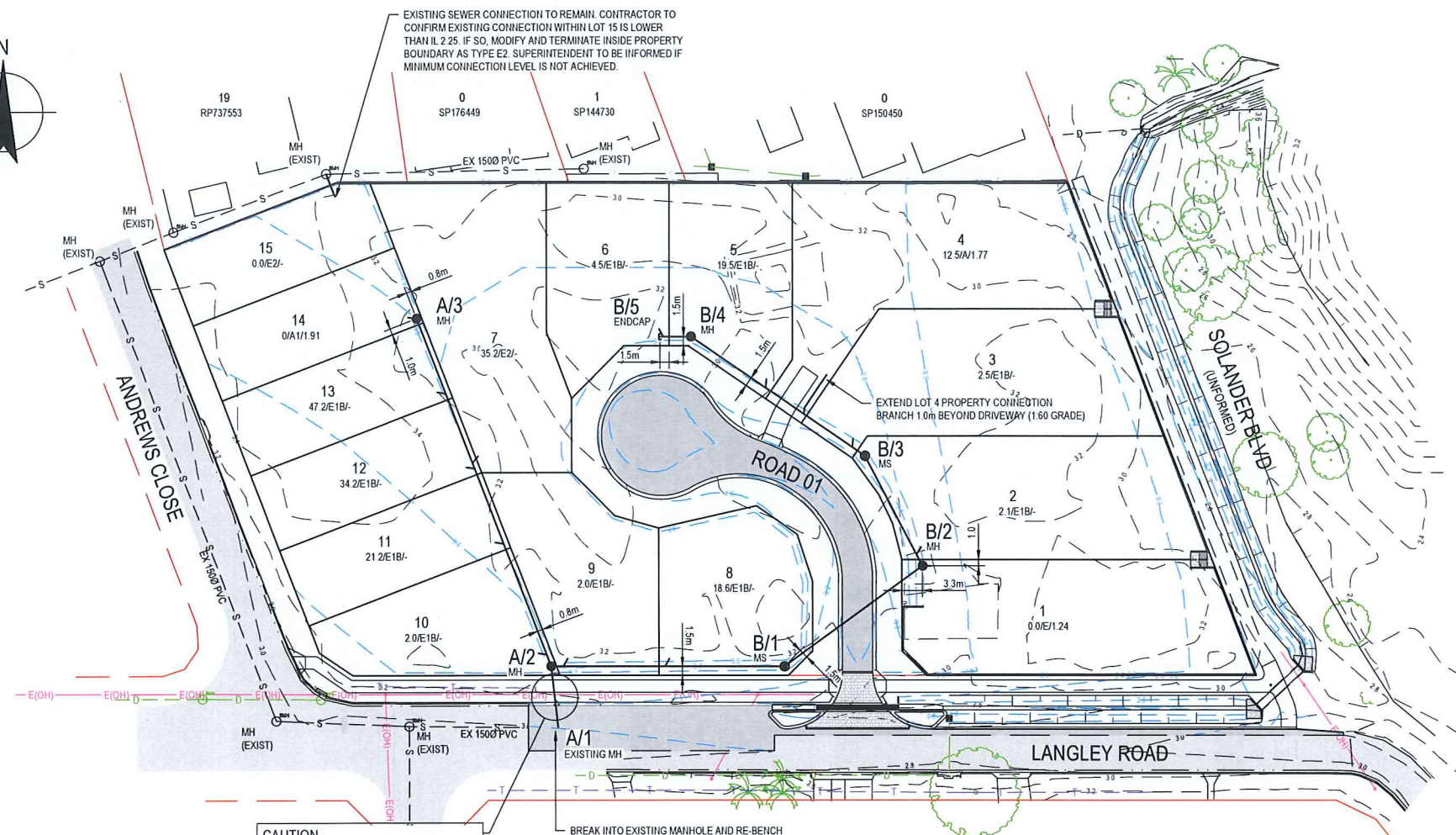
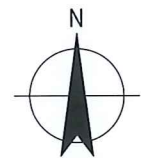
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Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **BEACH ACCESS STAIRS**

Original Size **A1** Drawing No: **42-12520641-C022** Rev: **0**

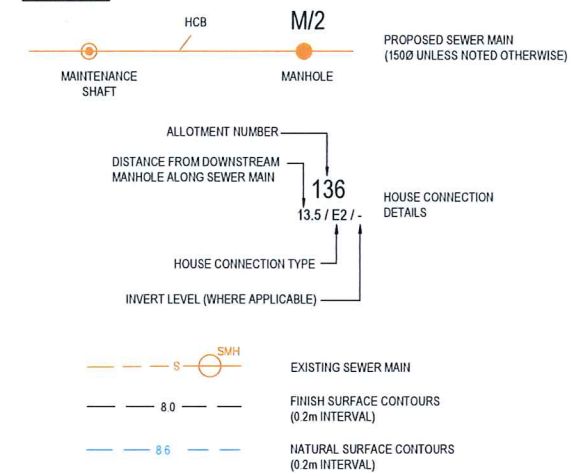


CAUTION
EXISTING U/G SERVICES EXIST IN THIS AREA.
THE CONTRACTOR IS TO CONFIRM LOCATION OF
EXISTING SERVICES PRIOR TO COMMENCING
WORKS

BREAK INTO EXISTING MANHOLE AND RE-BENCH
TO SUIT. NEW PAVEMENT TO MATCH NEATLY
WITH EXISTING MANHOLE COVER

PLAN
SCALE 1:500


LEGEND

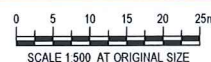


CAUTION
EXISTING SERVICES EXIST WITHIN THE PROJECT SITE
AND NOT ALL SERVICES MAYBE SHOWN ON PLAN. THE
CONTRACTOR MUST CONTACT RELEVANT AUTHORITIES
FOR POSSIBLE LOCATION OF FURTHER SERVICES AND
DETAILED LOCATIONS OF ALL SERVICES

NOTES

1. REFER TO DRG 12520641-C002 FOR STANDARD NOTES

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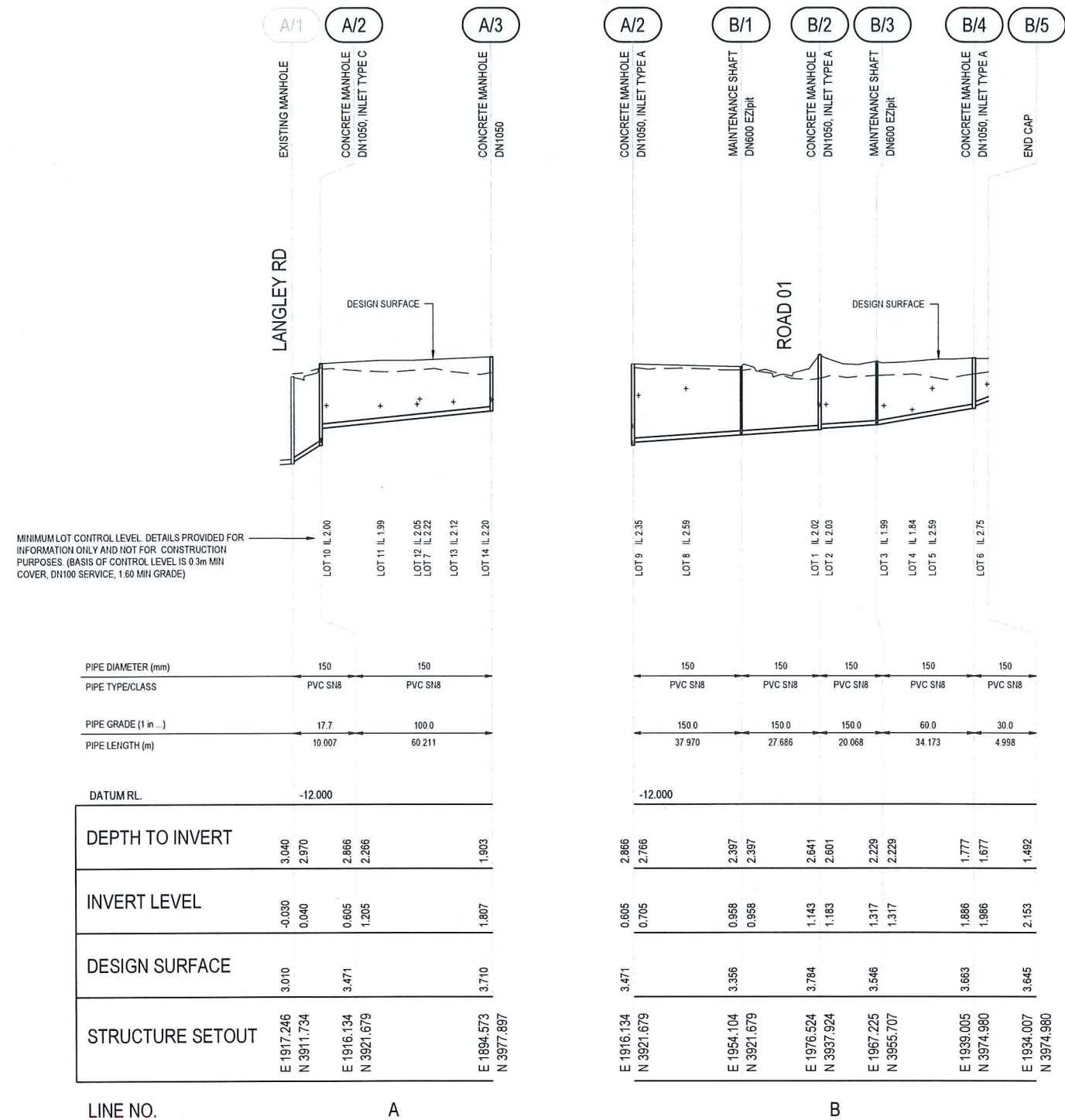
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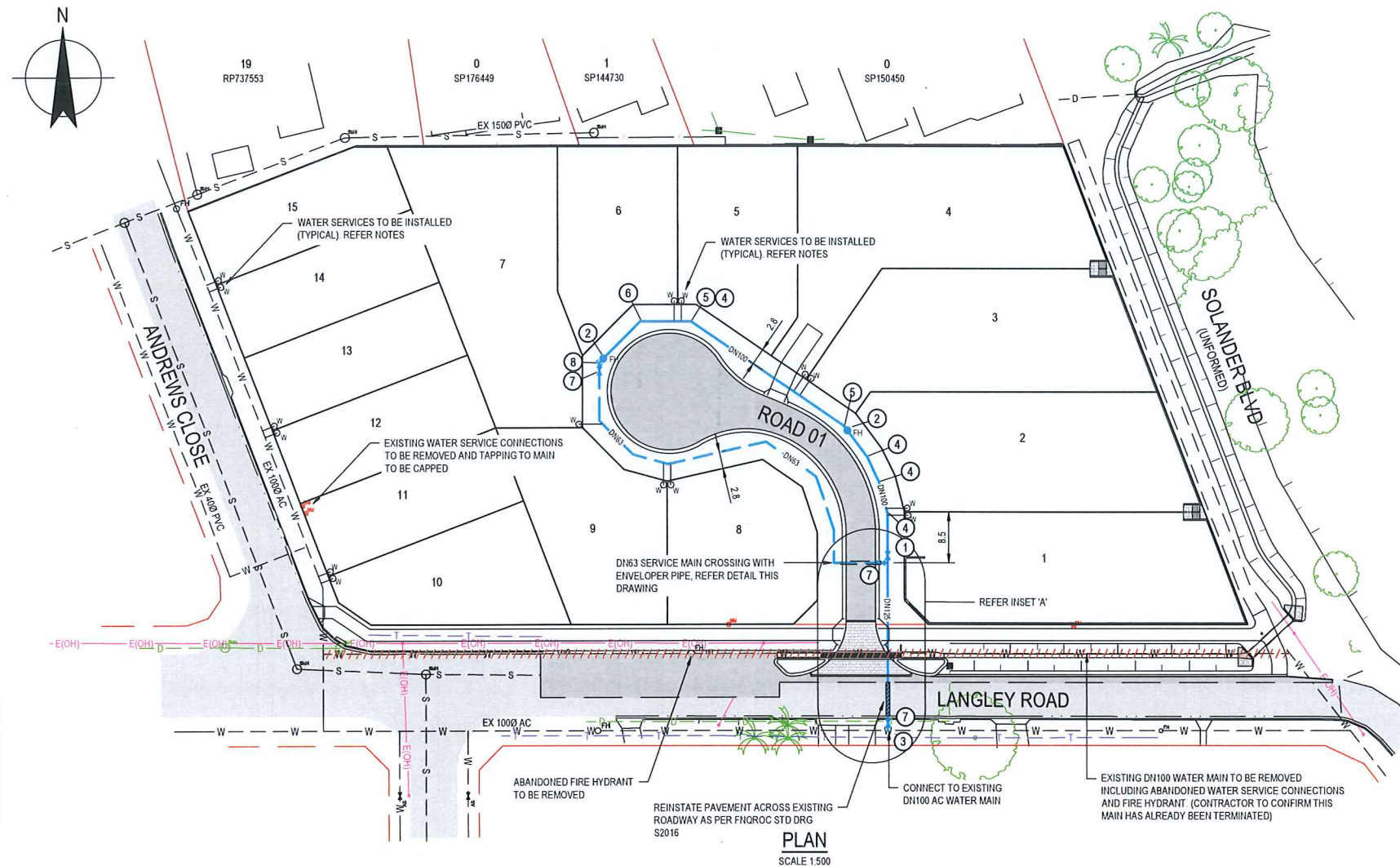
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Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **SEWER RETICULATION PLAN**

Original Size **A1** Drawing No: **42-12520641-C023**

Rev: 0





PLAN
SCALE 1:500

LEGEND

- W — EXISTING WATER MAIN
- DN125 — DN125 PE100 MAIN PN16
- DN100 — DN100 PVC MAIN PN16
- DN63 — DN63 PE100 MAIN PN16
- W WATER SERVICE CONNECTION (PARTIALLY INSTALLED BY CONTRACTOR. REFER NOTES)
- FH FIRE HYDRANT
- V VALVE



CAUTION

EXISTING SERVICES EXIST WITHIN THE PROJECT SITE AND NOT ALL SERVICES MAYBE SHOWN ON PLAN. THE CONTRACTOR MUST CONTACT RELEVANT AUTHORITIES FOR POSSIBLE LOCATION OF FURTHER SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

WATER SCHEDULE

- ① DIA 100 VALVE
- ② DIA 100 HYDRANT
- ③ DIA 100 x 100 TEE
- ④ DIA 100 x 11.25° BEND
- ⑤ DIA 100 x 22.5° BEND
- ⑥ DIA 100 x 45° BEND
- ⑦ DIA 63 - 100 MAIN CONNECTOR WITH DIA 50 VALVE AND BOX
- ⑧ DIA 100 END CAP

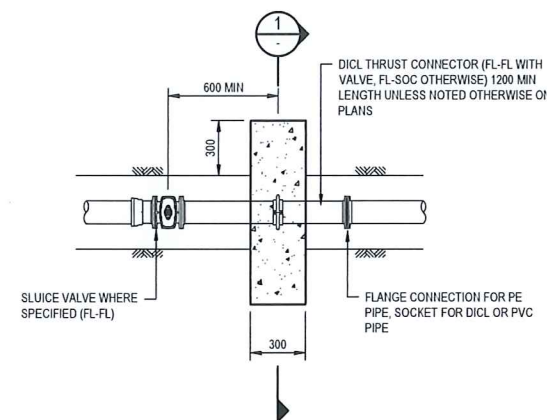
NOTES

- REFER TO DRG 12520641-C002 FOR STANDARD NOTES.

WATER SERVICE CONNECTIONS NOTES

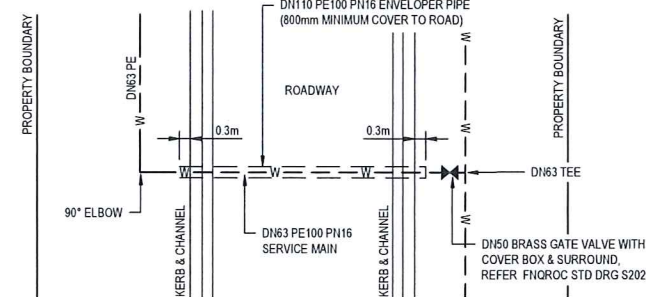
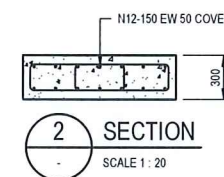
- CONTRACTOR TO PROVIDE 20mm COPPER SERVICE INTO PROPERTY.
- WATER SERVICE TO HAVE 0.3m COVER AND BE LOCATED 0.5m INSIDE THE FRONT BOUNDARY AND OFFSET 0.5m FROM THE SIDE BOUNDARY.
- PROVIDE TAPPING BAND AND TPFIR FERRULE AT CONNECTION TO MAIN. TERMINATE INSIDE PROPERTY WITH RIGHT ANGLE BALL VALVE WITH SUITABLE COVER BOX AND LID.

MINIMUM 'Z' DIMENSION FOR IN-LINE THRUST BLOCK			
SPECIFIED DIMENSIONS ARE FOR A TEST PRESSURE OF 1200 kPa			
PIPE DIA	SOFT CLAY 50 kPa	MEDIUM CLAY / SANDY LOAM 100 kPa	SAND & GRAVEL / HARD CLAY 150 kPa
100/125 DN	700	500	500



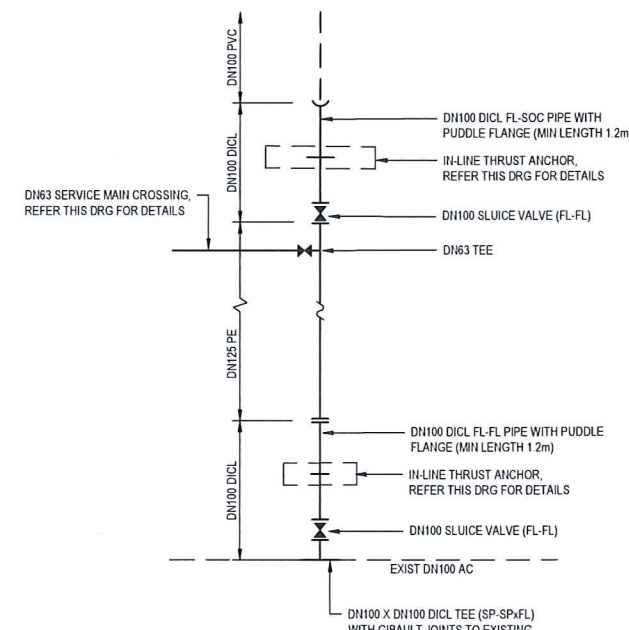
IN-LINE THRUST ANCHOR

1:20

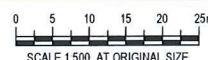


TYPICAL SERVICE MAIN CROSSING

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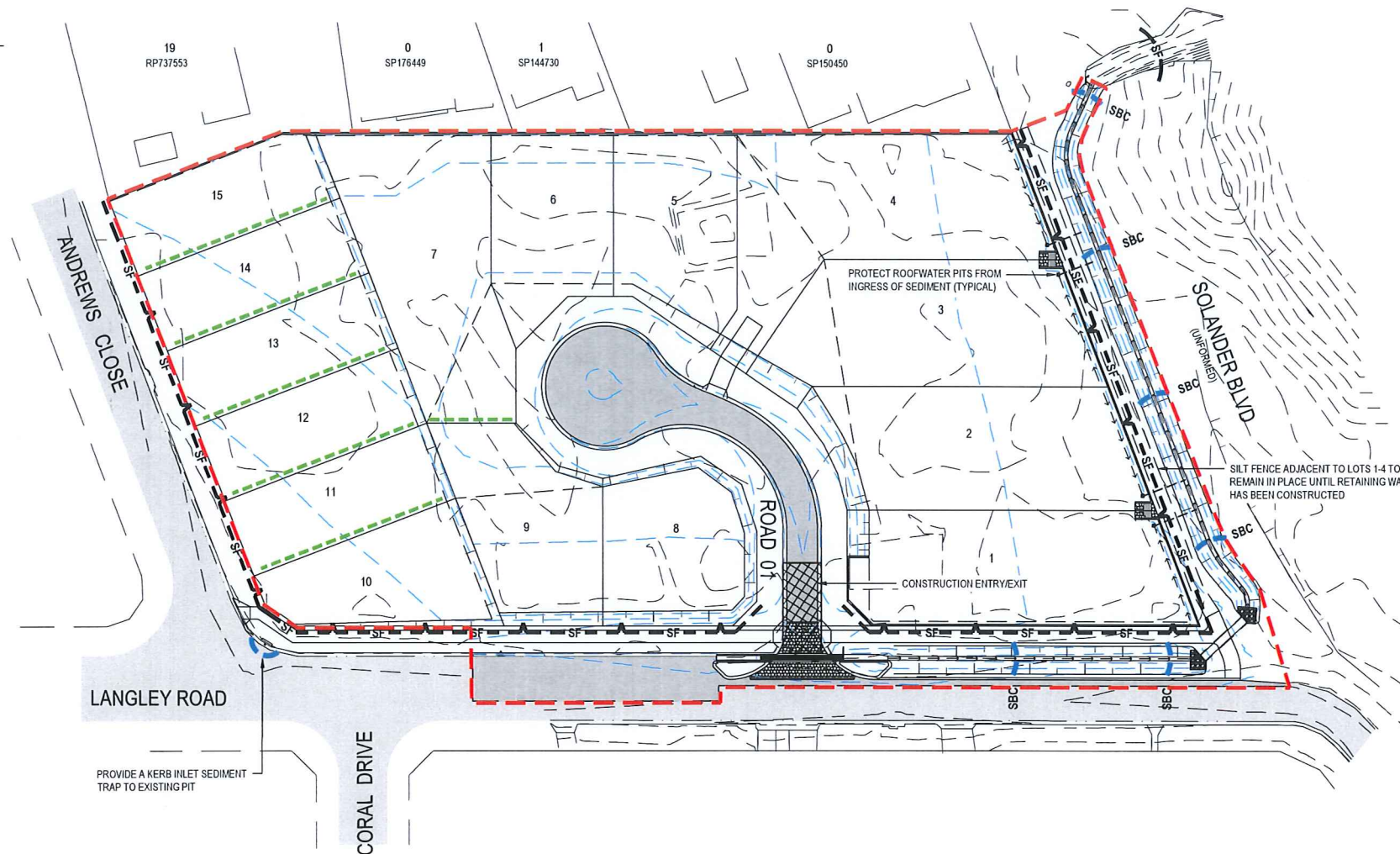
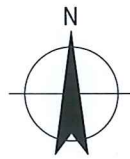
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Drafting Check	G. APPLIN	Design Check	G. APPLIN
Approved (Project Director)	P. FLANAGAN		
Date	03.03.20		
Scale	1:500		

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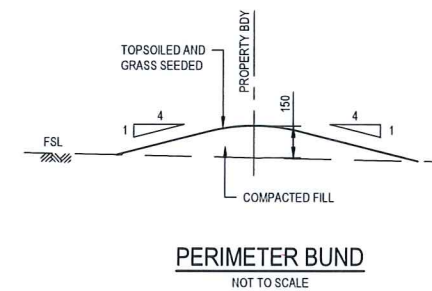
Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **WATER RETICULATION PLAN**

Original Size **A1** Drawing No: **42-12520641-C025**

Rev: 0



PLAN
SCALE 1:500

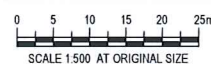


LEGEND

- 8.0 FINISH SURFACE CONTOURS (0.2m INTERVAL)
- 8.6 NATURAL SURFACE CONTOURS (0.2m INTERVAL)
- TEMPORARY CONSTRUCTION ENTRY/EXIT
- PERIMETER BUND
- SF SILT FENCING
- EXTENT OF DISTURBANCE
- SBC SAND BAG CHECK DAM (200mm HIGH)

NOTES

- REFER TO DRG 12520641-C002 FOR STANDARD NOTES.
- REFER TO DRG 12520641-C027 AND C028 FOR EROSION AND SEDIMENTATION CONTROL DETAILS.



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Client	KS5 PTY LTD		
Project	LANGLEY ROAD SUBDIVISION		
Title	EROSION AND SEDIMENT CONTROL STRATEGY PLAN		
Original Size	A1	Drawing No:	42-12520641-C026
Rev:	0		

SEDIMENT FENCE

MATERIAL

FABRIC:
POLYPROPYLENE, POLYAMIDE, NYLON, POLYESTER, OR POLYETHYLENE WOVEN OR NON-WOVEN FABRIC, AT LEAST 700mm IN WIDTH AND A MINIMUM UNIT WEIGHT OF 140GSM. ALL FABRICS TO CONTAIN ULTRAVIOLET INHIBITORS AND STABILISERS TO PROVIDE A MINIMUM OF 6 MONTHS OF USEABLE CONSTRUCTION LIFE (ULTRAVIOLET STABILITY EXCEEDING 70%).

FABRIC REINFORCEMENT:
WIRE OR STEEL MESH MINIMUM 14-GAUGE WITH A MAXIMUM MESH SPACING OF 200mm.

SUPPORT POSTS/STAKES:
1500mm² (MIN) HARDWOOD, 2500mm² (MIN) SOFTWOOD, OR 1.5kg/m (MIN) STEEL STAR PICKETS SUITABLE FOR ATTACHING FABRIC.

INSTALLATION

- REFER TO APPROVED PLANS FOR LOCATION, EXTENT AND REQUIRED TYPE OF FABRIC (IF SPECIFIED). IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, FABRIC TYPE, OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
- TO THE MAXIMUM DEGREE PRACTICAL, AND WHERE THE PLANS ALLOW, ENSURE THE FENCE IS LOCATED:
 - TOTALLY WITHIN THE PROPERTY BOUNDARIES.
 - ALONG A LINE OF CONSTANT ELEVATION WHEREVER PRACTICAL.
 - AT LEAST 2m FROM THE TOE OF ANY FILLING OPERATIONS THAT MAY RESULT IN SHIFTING SOIL/FILL DAMAGING THE FENCE.
- INSTALL RETURNS WITHIN THE FENCE AT MAXIMUM 20m INTERVALS IF THE FENCE IS INSTALLED ALONG THE CONTOUR, OR 5 TO 10m MAXIMUM SPACING (DEPENDENT ON SLOPE) IF THE FENCE IS INSTALLED AT AN ANGLE TO THE CONTOUR. THE 'RETURNS' SHALL CONSIST OF EITHER:
 - V-SHAPED SECTION EXTENDING AT LEAST 1.5m UP THE SLOPE; OR
 - SANDBAG OR ROCK/AGGREGATE CHECK DAM A MINIMUM 1/3 AND MAXIMUM 1/2 FENCE HEIGHT, AND EXTENDING AT LEAST 1.5m UP THE SLOPE.
- ENSURE THE EXTREME ENDS OF THE FENCE ARE TURNED UP THE SLOPE AT LEAST 1.5m, OR AS NECESSARY, TO MINIMISE WATER BYPASSING AROUND THE FENCE.
- ENSURE THE SEDIMENT FENCE IS INSTALLED IN A MANNER THAT AVOIDS THE CONCENTRATION OF FLOW ALONG THE FENCE, AND THE UNDESIRABLE DISCHARGE OF WATER AROUND THE ENDS OF THE FENCE.
- IF THE SEDIMENT FENCE IS TO BE INSTALLED ALONG THE EDGE OF EXISTING TREES, ENSURE CARE IS TAKEN TO PROTECT THE TREES AND THEIR ROOT SYSTEMS DURING INSTALLATION OF THE FENCE. DO NOT ATTACH THE FABRIC TO THE TREES.
- UNLESS DIRECTED BY THE SITE SUPERVISOR OR THE APPROVED PLANS, EXCAVATE A 200mm WIDE BY 200mm DEEP TRENCH ALONG THE PROPOSED FENCE LINE, PLACING THE EXCAVATED MATERIAL ON THE UP-SLOPE SIDE OF THE TRENCH.
- ALONG THE LOWER SIDE OF THE TRENCH, APPROPRIATELY SECURE THE STAKES INTO THE GROUND SPACED NO GREATER THAN 3m IF SUPPORTED BY A TOP SUPPORT WIRE OR WEIR MESH BACKING, OTHERWISE NO GREATER THAN 2m.
- IF SPECIFIED, SECURELY ATTACH THE SUPPORT WIRE OR MESH TO THE UP-SLOPE SIDE OF THE STAKES WITH THE MESH EXTENDING AT LEAST 200mm INTO THE EXCAVATED TRENCH. ENSURE THE MESH AND FABRIC IS ATTACHED TO THE UP-SLOPE SIDE OF THE STAKES EVEN WHEN DIRECTING A FENCE AROUND A CORNER OR SHARP CHANGE OF DIRECTION.
- WHEREVER POSSIBLE, CONSTRUCT THE SEDIMENT FENCE FROM A CONTINUOUS ROLL OF FABRIC. TO JOIN FABRIC EITHER:
 - ATTACH EACH END TO TWO OVERLAPPING STAKES WITH THE FABRIC FOLDING AROUND THE ASSOCIATED STAKE ONE TURN, AND WITH THE TWO STAKES TIED TOGETHER WITH WIRE; OR
 - OVERLAP THE FABRIC TO THE NEXT ADJACENT SUPPORT POST.
- SECURELY ATTACH THE FABRIC TO THE SUPPORT POSTS USING 25 X 12.5mm STAPLES, OR TIE WIRE AT MAXIMUM 150mm SPACING.
- SECURELY ATTACH THE FABRIC TO THE SUPPORT WIRE/MESH (IF ANY) AT A MAXIMUM SPACING OF 1m.
- ENSURE THE COMPLETED SEDIMENT FENCE IS AT 450mm, BUT NOT MORE THAN 700mm HIGH. IF A SPILL-THROUGH WEIR IS INSTALLED, ENSURE THE CREST OF THE WEIR IS AT LEAST 300mm ABOVE GROUND LEVEL.
- BACKFILL THE TRENCH AND TAMP THE FILL TO FIRMLY ANCHOR THE BOTTOM OF THE FABRIC AND MESH TO PREVENT WATER FROM FLOWING UNDER THE FENCE.

ADDITIONAL REQUIREMENTS FOR THE INSTALLATION OF SPILL-THROUGH WEIR

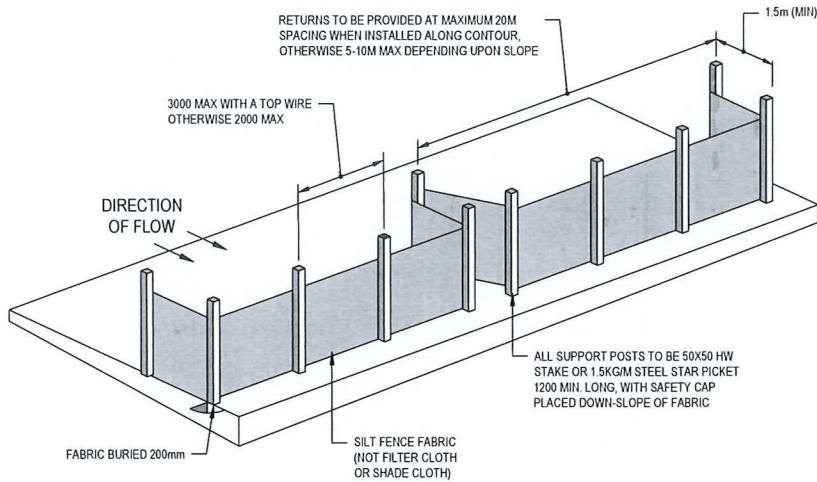
- LOCATE THE SPILL-THROUGH WEIR SUCH THAT THE WEIR CREST WILL BE LOWER THAN THE GROUND LEVEL AT EACH END OF THE FENCE.
- ENSURE THE CREST OF THE SPILL-THROUGH WEIR IS AT LEAST 300mm THE GROUND ELEVATION.
- SECURELY TIE A HORIZONTAL CROSS MEMBER (WEIR) TO THE SUPPORT POSTS/STAKES EACH SIDE OF THE WEIR. CUT THE FABRIC DOWN THE SIDE OF EACH POST AND FOLD THE FABRIC OVER THE CROSS MEMBER AND APPROPRIATELY SECURE THE FABRIC.
- INSTALL A SUITABLE SPLASH PAD AND/OR CHUTE IMMEDIATELY DOWN-SLOPE OF THE SPILL-THROUGH WEIR TO CONTROL SOIL EROSION AND APPROPRIATELY DISCHARGE THE CONCENTRATED FLOW PASSING OVER THE WEIR.

MAINTENANCE

- INSPECT THE SEDIMENT FENCE AT LEAST WEEKLY AND AFTER ANY SIGNIFICANT RAIN. MAKE NECESSARY REPAIRS IMMEDIATELY.
- REPAIR ANY TORN SECTIONS WITH A CONTINUOUS PIECE OF FABRIC FROM POST TO POST.
- WHEN MAKING REPAIRS, ALWAYS RESTORE THE SYSTEM TO ITS ORIGINAL CONFIGURATION UNLESS AN AMENDED LAYOUT IS REQUIRED OR SPECIFIED.
- IF THE FENCE IS SAGGING BETWEEN STAKES, INSTALL ADDITIONAL SUPPORT POSTS.
- REMOVE ACCUMULATED SEDIMENT IF THE SEDIMENT DEPOSIT EXCEEDS A DEPTH OF 1/3 THE HEIGHT OF THE FENCE.
- DISPOSE OF SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
- REPLACE THE FABRIC IF THE SERVICE LIFE OF THE EXISTING FABRIC EXCEEDS 6 MONTHS.

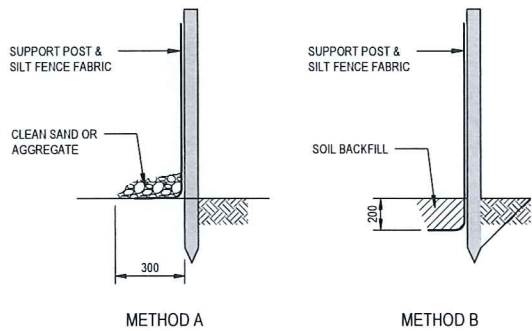
REMOVAL

- WHEN DISTURBED AREAS UP-SLOPE OF THE SEDIMENT FENCE ARE SUFFICIENTLY STABILISED TO RESTRAIN EROSION, THE FENCE MUST BE REMOVED.
- REMOVE MATERIALS AND COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
- REHABILITATE/REVEGETATE THE DISTURBED GROUND AS NECESSARY TO MINIMISE THE EROSION HAZARD.



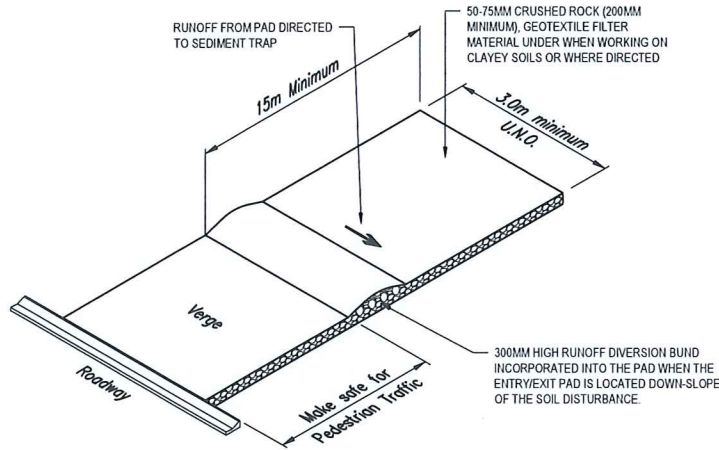
SEDIMENT FENCE

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ANCHORING BASE OF FABRIC

NOT TO SCALE



TEMPORARY CONSTRUCTION ENTRY / EXIT

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TEMPORARY CONSTRUCTION ENTRY / EXIT

MATERIAL

ROCK:
WELL GRADED, HARD, ANGULAR, EROSION RESISTANT ROCK, NOMINAL DIAMETER OF 50 TO 75mm (SMALL DISTURBANCES) OR 100 TO 150mm (LARGE DISTURBANCES). ALL REASONABLE MEASURES MUST BE TAKEN TO OBTAIN ROCK OF NEAR UNIFORM SIZE.

FOOTPATH STABILISING AGGREGATE:
25 TO 50mm GRAVEL OR AGGREGATE.

GEOTEXTILE FABRIC:
HEAVY-DUTY, NEEDLE-PUNCHES, NON-WOVEN FILTER CLOTH (BIDIM A24 OR EQUIVALENT).

INSTALLATION

- REFER TO APPROVED PLANS FOR LOCATION AND DIMENSIONAL DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
- CLEAR THE LOCATION OF THE ROCK PAD, REMOVING STUMPS, ROOTS AND OTHER VEGETATION TO PROVIDE A FIRM FOUNDATION SO THAT THE ROCK IS NOT PRESSED INTO SOFT GROUND. CLEAR SUFFICIENT WIDTH TO ALLOW PASSAGE OF LARGE VEHICLES, BUT CLEAR ONLY THAT NECESSARY FOR THE EXIT. DO NOT CLEAR ADJACENT AREAS UNTIL THE REQUIRED EROSION AND SEDIMENT CONTROL DEVICES ARE IN PLACE.
- IF THE EXPOSED SOIL IS SOFT, PLASTIC OR CLAYEY, PLACE A SUB-BASE OF CRUSHED ROCK OR A LAYER OF HEAVY-DUTY FILTER CLOTH TO PROVIDE A FIRM FOUNDATION.
- PLACE THE ROCK PAD FORMING A MINIMUM 200mm THICK LAYER OF CLEAN, OPEN-VOID ROCK.
- IF THE ASSOCIATED CONSTRUCTION SITE IS UP-SLOPE OF THE ROCK PAD, THUS CAUSING STORMWATER RUNOFF TO FLOW TOWARDS THE ROCK PAD, THEN FORM A MINIMUM 300mm HIGH FLOW CONTROL BERM ACROSS THE ROCK PAD TO DIVERT SUCH RUNOFF TO A SUITABLE SEDIMENT TRAP.
- THE LENGTH OF THE ROCK PAD SHOULD BE AT LEAST 15M WHERE PRACTICABLE, AND AS WISE AS THE FULL WIDTH OF THE ENTRY OR EXIT AND AT LEAST 3m. THE ROCK PAD SHOULD COMMENCE AT THE EDGE OF THE OFF-SITE SEALED ROAD OR PAVEMENT.
- FLARE THE END OF THE ROCK PAD WHERE IT MEETS THE PAVEMENT SO THAT THE WHEELS OF TURNING VEHICLES DO NOT TRAVEL OVER UNPROTECTED SOIL.
- IF THE FOOTPATH IS OPEN TO PEDESTRIAN MOVEMENT, THE COVER THE COARSE ROCK WITH FINE AGGREGATE OR GRAVEL. OR OTHERWISE TAKE WHATEVER MEASURES ARE NEEDED TO MAKE THE AREA SAFE.

MAINTENANCE

- INSPECT ALL SITE ENTRY AND EXIT POINTS PRIOR TO FORECAST RAIN, DAILY DURING EXTENDED PERIODS OF RAINFALL, AFTER RUNOFF-PRODUCING RAINFALL, OR OTHERWISE AT FORTNIGHTLY INTERVALS.
- IF SAND, SOIL, SEDIMENT OR MUD IS TRACKED OR WASHED ONTO THE ADJACENT SEALED ROADWAY, THEN SUCH MATERIAL MUST BE PHYSICALLY REMOVED, FIRST USING A SQUARE-EDGED SHOVEL, AND THEN A STIFF-BRISTLED BROOM, AND THEN BY A MECHANICAL VACUUM UNIT, IF AVAILABLE.
- IF NECESSARY FOR SAFETY REASONS, THE ROADWAY SHALL ONLY BE WASHED CLEAN AFTER ALL REASONABLE EFFORTS HAVE BEEN TAKEN TO SHOVEL AND SWEEP THE MATERIAL FROM THE ROADWAY.
- WHEN THE VOIDS BETWEEN THE ROCK BECOMES FILLED WITH MATERIAL AND THE EFFECTIVENESS OF THE ROCK PAD IS REDUCED TO A POINT WHERE SEDIMENT IS BEING TRACKED OFF THE SITE, A NEW 100MM LAYER OF ROCK MUST BE ADDED AND/OR THE ROCK PAD MUST BE EXTENDED.
- ENSURE ANY ASSOCIATED DRAINAGE CONTROL MEASURES (e.g. FLOW CONTROL BERM) ARE MAINTAINED IN ACCORDANCE WITH THEIR DESIRED OPERATIONAL CONDITIONS.
- DISPOSE OF SEDIMENT AND DEBRIS IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.

REMOVAL

- THE ROCK PAD SHOULD BE REMOVED ONLY AFTER IT IS NO LONGER NEEDED AS A SEDIMENT TRAP.
- REMOVE MATERIALS AND COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
- RE-GRADE AND STABILISE THE DISTURBED GROUND AS NECESSARY TO MINIMISE THE EROSION HAZARD.

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No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director

Plot Date: 3 March 2020 - 4:12 PM

Plotted by: Gary Browning

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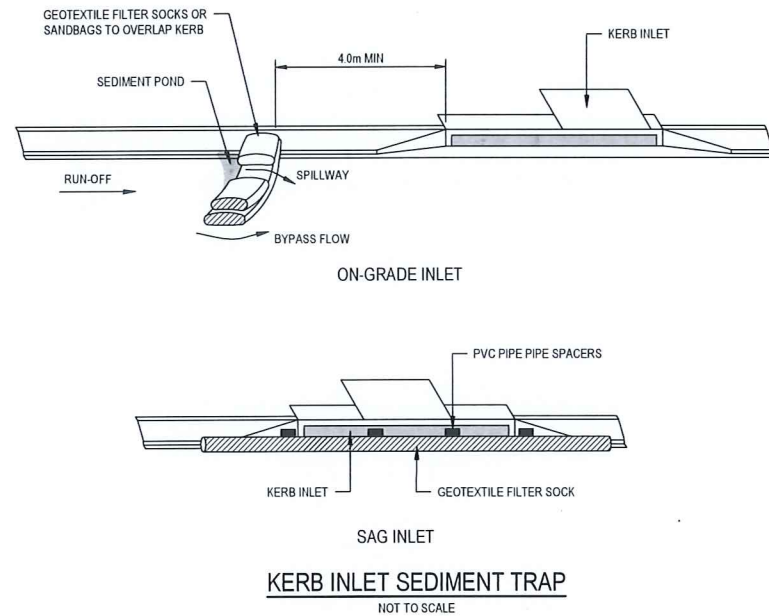
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Scale	AS SHOWN		
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Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **EROSION AND SEDIMENT CONTROL STRATEGY**
DETAILS SHEET 1 OF 2

Original Size **A1** Drawing No: **42-12520641-C027**

Rev: 0



KERB INLET SEDIMENT TRAP

MATERIAL

SOCKS:

MINIMUM 200mm DIAMETER SYNTHETIC OR BIODEGRADABLE TUBES MANUFACTURED FROM NON-WOVEN OR COMPOSITE FABRIC SUITABLE FOR THE 'FILTRATION' OF COARSE SEDIMENT.

FILL MATERIAL:

STRAW CANE MULCH, COMPOSITE MATERIAL (AS4454), COURSE SAND OR CLEAN AGGREGATE.

INSTALLATION

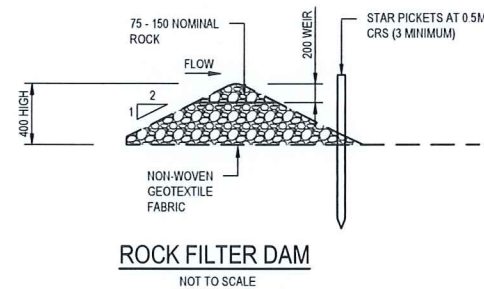
- REFER TO APPROVED PLANS FOR THE LOCATION AND INSTALLATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
- ENSURE THE SOCKS ARE PLACED INDIVIDUALLY OR COLLECTIVELY (AS A SINGLE SEDIMENT TRAP) SUCH THAT:
 - LEAKAGE AROUND OR UNDER THE SOCKS IS MINIMISED;
 - ADJOINING SOCKS ARE TIGHTLY BUTTED OR OVERLAPPED AT LEAST 450mm;
 - THE SURFACE AREA OF POTENTIAL WATER PONDING UP-SLOPE OF EACH SEDIMENT TRAP IS MAXIMISED;
 - TO THE MAXIMUM DEGREE PRACTICAL, ALL SEDIMENT-LADEN WATER WILL PASS THROUGH THE FORMED POND BEFORE FLOWING OVER THE DOWN-SLOPE END OF THE SEDIMENT TRAP.
- WHEN PLACED ACROSS THE INVERT OF MINOR DRAINS, ENSURE THE SOCKS ARE PLACED SUCH THAT:
 - THE CREST OF THE DOWNSTREAM SOCK IS LEVEL WITH THE CHANNEL INVERT AT THE IMMEDIATE UPSTREAM SOCK (IF ANY);
 - EACH SOCK EXTENDS UP THE CHANNEL BANKS SUCH THAT THE CREST OF THE SOCK AT ITS LOWEST POINT IS LOWER THAN GROUND LEVEL AT EITHER END OF THE SOCK.
- IF STAKES ARE REQUIRED TO ANCHOR THE SOCKS, THEIR SPACING DOES NOT EXCEED 1.2m OR SIX TIMES THE SOCK DIAMETER (WHICHEVER IS THE LESSER). A MAXIMUM STAKE SPACING OF 0.3m APPLIES WHEN USED TO FORM CHECK DAMS.

MAINTENANCE

- INSPECT ALL FILTER SOCKS PRIOR TO FORECAST RAIN DAILY DURING EXTENDED PERIODS OF RAINFALL, AFTER SIGNIFICANT RUNOFF PRODUCING STORMS OR OTHERWISE AT WEEKLY INTERVALS.
- REPAIR OR REPLACE DAMAGED SOCKS.
- THE BULK OF THE SEDIMENT COLLECTED BEHIND THE FILTER SOCKS SHOULD BE REMOVED BY SHOVEL AFTER EACH STORM EVENT.
- REMOVE COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

REMOVAL

- ALL SAND, SOIL, SEDIMENT OR MUD MUST BE PHYSICALLY REMOVED FROM SEALED SURFACES, FIRST USING A SQUARE-EDGED SHOVEL, AND THEN A STIFF-BRISTLED BROOM, AND THEN BY A MECHANICAL VACUUM UNIT, IF AVAILABLE.
- IF NECESSARY FOR SAFETY REASONS, THE SEALED SURFACE SHALL ONLY BE WASHED CLEAN AFTER ALL REASONABLE EFFORTS HAVE BEEN TAKEN TO SHOVEL AND SWEEP THE MATERIALS FROM THE SURFACE.
- DISPOSE OF COLLECTED SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
- ALL SYNTHETIC (PLASTIC) MESH OR OTHER NON READILY BIODEGRADABLE MATERIALS MUST BE REMOVED FROM THE SITE ONCE THE SLOPE OR DRAIN IS STABILISED, OR THE SOCKS HAVE DETERIORATED TO A POINT WHERE THEY ARE NO LONGER PROVIDING THEIR INTENDED DRAINAGE OR SEDIMENT CONTROL FUNCTION.



ROCK FILTER DAM

MATERIALS

ROCK:

75 TO 100mm NOMINAL DIAMETER, HARD, EROSION RESISTANT ROCK.

GEOTEXTILE FABRIC:

HEAVY-DUTY, NEEDLE-PUNCHES, NON-WOVEN FILTER CLOTH (BIDIM A24 OR EQUIVALENT).

INSTALLATION

- REFER TO APPROVED PLANS FOR LOCATION AND INSTALLATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
- PRIOR TO PLACEMENT OF THE FILTER DAM, ENSURE THE TYPE AND SIZE OF EACH CHECK DAMS WILL NOT CAUSE A SAFETY HAZARD OR CAUSE WATER TO SPILL OUT OF THE DRAIN.
- CONSTRUCT THE FILTER DAM TO THE DIMENSIONS AND PROFILE SHOWN WITHIN THE APPROVED PLAN.
- WHERE SPECIFIED, THE FILTER DAM SHALL BE CONSTRUCTED ON A SHEET OF GEOTEXTILE FABRIC USED AS A DOWNSTREAM SPLASH PAD.

MAINTENANCE

- INSPECT EACH FILTER DAM AND THE DRAINAGE CHANNEL AT LEAST WEEKLY AND AFTER RUNOFF-PRODUCING RAINFALL.
- CHECK FOR DISPLACEMENT OF THE FILTER DAM.
- CHECK FOR SOIL SCOUR AROUND THE ENDS OF THE FILTER DAM. IF SUCH EROSION IS OCCURRING, CONSIDER EXTENDING THE WIDTH OF THE FILTER DAM TO AVOID SUCH PROBLEMS.
- IF SEVERE SOIL EROSION OCCURS EITHER UNDER OR AROUND THE FILTER DAM, THEN SEEK EXPERT ADVICE ON AN ALTERNATIVE TREATMENT MEASURE.
- REMOVE AND SEDIMENT ACCUMULATED BY THE FILTER DAM, UNLESS IT IS INTENDED THAT THIS SEDIMENT WILL REMAIN WITHIN THE CHANNEL.
- DISPOSE OF COLLECTED SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

REMOVAL

- WHEN CONSTRUCTION WORK WITHIN THE DRAINAGE AREA ABOVE THE FILTER DAM HAS BEEN COMPLETED, AND THE DISTURBED AREAS AND THE DRAINAGE CHANNEL ARE SUFFICIENTLY STABILISED TO RESTRAIN EROSION, ALL TEMPORARY CHECK DAMS MUST BE REMOVED.
- REMOVE THE FILTER DAM AND ASSOCIATED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

0	FOR APPROVAL	GB	PF	03.03.20	
No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director



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Drawn	G. BROWNING	Designer	G. BROWNING
Drafting Check	G. APPLIN	Design Check	G. APPLIN
Approved (Project Director)	P. FLANAGAN		
Date	03.03.20		
Scale	AS SHOWN		

This Drawing must not be used for Construction unless signed as Approved.

Client	KS5 PTY LTD		
Project	LANGLEY ROAD SUBDIVISION		
Title	EROSION AND SEDIMENT CONTROL STRATEGY		
	DETAILS SHEET 2 OF 2		
Original Size	A1	Drawing No:	42-12520641-C028
Rev:	0		

LANDSCAPE DESIGN

LANGLEY ROAD SUBDIVISION

LANGLEY ROAD, PORT DOUGLAS, QLD

FEBRUARY 2020 - FOR APPROVAL

DRAWING LIST

DWG NO.	REV	DRAWING NAME	SCALE (A3 SIZE)
198-L00	A	COVER PAGE & PLANTING SCHEDULE	As Shown
198-L01	A	LANDSCAPE PLAN 01	1:500
198-L02	A	LANDSCAPE PLAN 02 & DETAIL PLANS	As Shown
198-L03	A	TYP. DETAILS & PLANTING SCHEDULE	As Shown
198-L04	A	ENTRY WALL, RET. WALL AND STAIRS DETAILS	As Shown

PLANTING SCHEDULE					
QTY	CODE	BOTANICAL NAME	COMMON NAME	supply size	min. spacing
TREES / PALMS					
7	CUP ana	Cupaniopsis anacardioides	Tueckeroo	25L	8000mm
13	TER mue	Terminalia muelleri	Mueller's Damson	25L	8000mm
6	LIV mue	Livistona muelleri	Dwarf Fan Palm	100L	3000mm
SHRUBS & GROUNDCOVERS					
	COR v PIN	Cordyline fruticosa 'Pink Diamond'	Pink Diamond Cordyline	200mm	800
	FIC v GRE	Ficus 'Green Island'	Green Island Fig	140mm	600
	GAR v GLE	Gardenia psidioides 'Glennie River'	Glennie River Gardenia	140mm	600
	LOM hys	Lomandra hystrix	Green Mat-rush	140mm	600
	PHI xan	Philodendron xanadu	Xanadu	140mm	600
	PHY mul	Phyllanthus multiflorus	Waterfall Plant	200mm	800

STANDARD NOTES

1. SETOUT AND DIMENSIONS
- THE CONTRACTOR SHALL SET OUT ALL PATHS, WALLS, HARD SURFACES AND ELEMENTS EITHER ON OR OFF SITE PRIOR TO CONSTRUCTION AND SHALL OBTAIN THE SUPERINTENDENTS SET OUT APPROVAL PRIOR TO WORKS COMMENCING. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALE, CHECK ALL DRAWINGS SCALES IN CONJUNCTION WITH DRAWINGS SIZE. COORDINATE ALL WORKS WITH OTHER TRADES AND HEAD CONTRACTOR.
2. SERVICES AND SITE ASSETS
- THE CONTRACTOR SHALL INVESTIGATE THE NATURE AND LOCATION OF ALL EXISTING SERVICES AND RETAINED SITE ASSETS AFFECTED BY THEIR WORKS. FAILURE TO TAKE DUE CARE SHALL NOT LIMIT THE CONTRACTORS LIABILITIES.
3. REFERENCES
- THE CONTRACTOR SHALL REFER TO ALL CONTRACT DOCUMENTS, THE SPECIFICATION AND DRAWINGS PRIOR TO AND DURING THE WORKS.
4. DISCREPANCIES
- NOTIFY SUPERINTENDENT OF ANY SUSPECTED OR KNOWN DISCREPANCIES OR ERRORS PRIOR TO THE ORDERING OF AFFECTED MATERIALS AND/OR CONSTRUCTION OF AFFECTED WORKS.
5. RELEVANT STANDARDS
- THE CONTRACTOR SHALL UNDERTAKE ALL PRICING AND WORKS IN ACCORDANCE WITH CURRENT INDUSTRY BEST PRACTICE AND ALL RELEVANT AUSTRALIAN AND LOCAL STANDARDS AND THE FNQROC.
6. SERVICE LOCATOR
- THE CONTRACTOR SHALL UNDERTAKE A DIAL BEFORE YOU DIG PROCESS PRIOR TO COMMENCING WORKS ON SITE. THE CONTRACTOR SHALL ENGAGE A SERVICE LOCATOR TO MAP THE SPECIFIC LOCATIONS AND DEPTH OF ALL SERVICES AND ADVISE ALL RELEVANT STAFF AND SUBCONTRACTORS IN WRITING PRIOR TO COMMENCING WORKS ON SITE.
7. SOFT LANDSCAPE
1. ALL CONTAINER STOCK SHALL BE INSPECTED IN THE NURSERY PRIOR TO TRANSPORT TO SITE.
2. ALL CONTAINER STOCK PLANTING SHALL BE INSPECTED PRIOR TO PLANTING ON SITE. GIVE (5) WORKING DAYS NOTICE PRIOR TO SUCH ACTIVITY TO ALLOW LANDSCAPE ARCHITECT'S REPRESENTATIVE TO ATTEND.
3. ALL SOIL BLENDS APPROVED TO AUSTRALIAN STANDARDS / AS4419.
4. TURF SHALL CONSIST OF 25MM DEPTH OF DENSE, WELL ROOTED, VIGOROUS GRASS GROWTH WITH 25MM DEPTH OF TOPSOIL.
5. TURF TO BE USED SHOULD BE ROLLED B GRADE TURF MIX OF SPECIES 80% BUFFALO GRASS (AXONOPUS COMPRESSUS) & 20% COUCH GRASS VARIETIES.
6. EXCAVATE EXISTING SITE SOIL ON ALL GARDEN BEDS TO 300mm DEPTH AND REPLACE WITH APPROVED SOIL BLENDS. USE SITE STOCKED TOPSOIL AND AMEND WHERE POSSIBLE. LANDSCAPE CONTRACTOR TO ASSESS SUITABILITY FOR REUSE. IF UNSUITABLE, TOPSOIL TO BE REMOVED BY OTHERS.
7. ENSURE COMPACTED ROAD BASE IS NOT LOCATED DIRECTLY BELOW THE GARDEN BED. IF SO THEN REMOVE/EXCAVATE THE COMPACTED ROAD BASE SO SOIL PROFILE CAN DRAIN TO NATURAL GROUND.

8. HARD LANDSCAPE
- SAMPLES: UNLESS OTHERWISE NOTED, ALL ITEMS MUST BE APPROVED PRIOR TO INSTALLATION AND MUST MEET CURRENT AUSTRALIAN STANDARDS AND BEST PRACTICE GUIDELINES. PROVIDE SAMPLES OF ALL SURFACE FINISHES AND MATERIALS TO BE PLACED IN THE CONSTRUCTED LANDSCAPE, ESPECIALLY ALTERNATIVES TO PROPRIETARY ITEMS SPECIFIED. GIVE FIVE (5) WORK DAYS NOTICE TO THE SUPERINTENDENTS REPRESENTATIVE TO ATTEND OR REVIEW THE SAMPLE FOR COMMENT OR REJECTION. PROVIDE MANUFACTURER'S GUIDES AND REPLACEMENT WARRANTIES AND INSTALLATION SPECIFICATIONS WHERE APPLICABLE.
9. IRRIGATION
- DESIGN AND CONSTRUCT IRRIGATION SYSTEM TO FNQROC STANDARDS, CERTIFIED BY AN IAA CID (IRRIGATION AUSTRALIAN ASSOCIATION CERTIFIED IRRIGATION DESIGNER) AND TO CLIENT'S APPROVAL
10. PLANT ESTABLISHMENT & MAINTENANCE
- AREAS OF PLANTING CAN ONLY BE GIVEN FINAL COMPLETION AFTER MINIMUM 13 WEEKS ESTABLISHMENT POST PRACTICAL COMPLETION. REPLACE ALL DEAD PLANT STOCK DURING THIS PERIOD AND NEW STOCK ESTABLISHED FOR MINIMUM 13 WEEKS. FINAL COMPLETION IS GIVEN AT 13 WEEKS POST PRACTICAL COMPLETION AND ONGOING MAINTENANCE BEGINS.
11. WORK HEALTH & SAFETY (WHS)
- THE CONTRACTOR SHALL FOLLOW THE APPROVED & CURRENT PROJECT WORK HEALTH & SAFETY MANUAL.

Drawing Revisions			
Issue	Date	Subject	Authorised
A	21.02.2019	FOR APPROVAL	JMC
Issue	Date	Revision Description	Initial



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SEYMOUR GROUP

PROJECT TITLE:

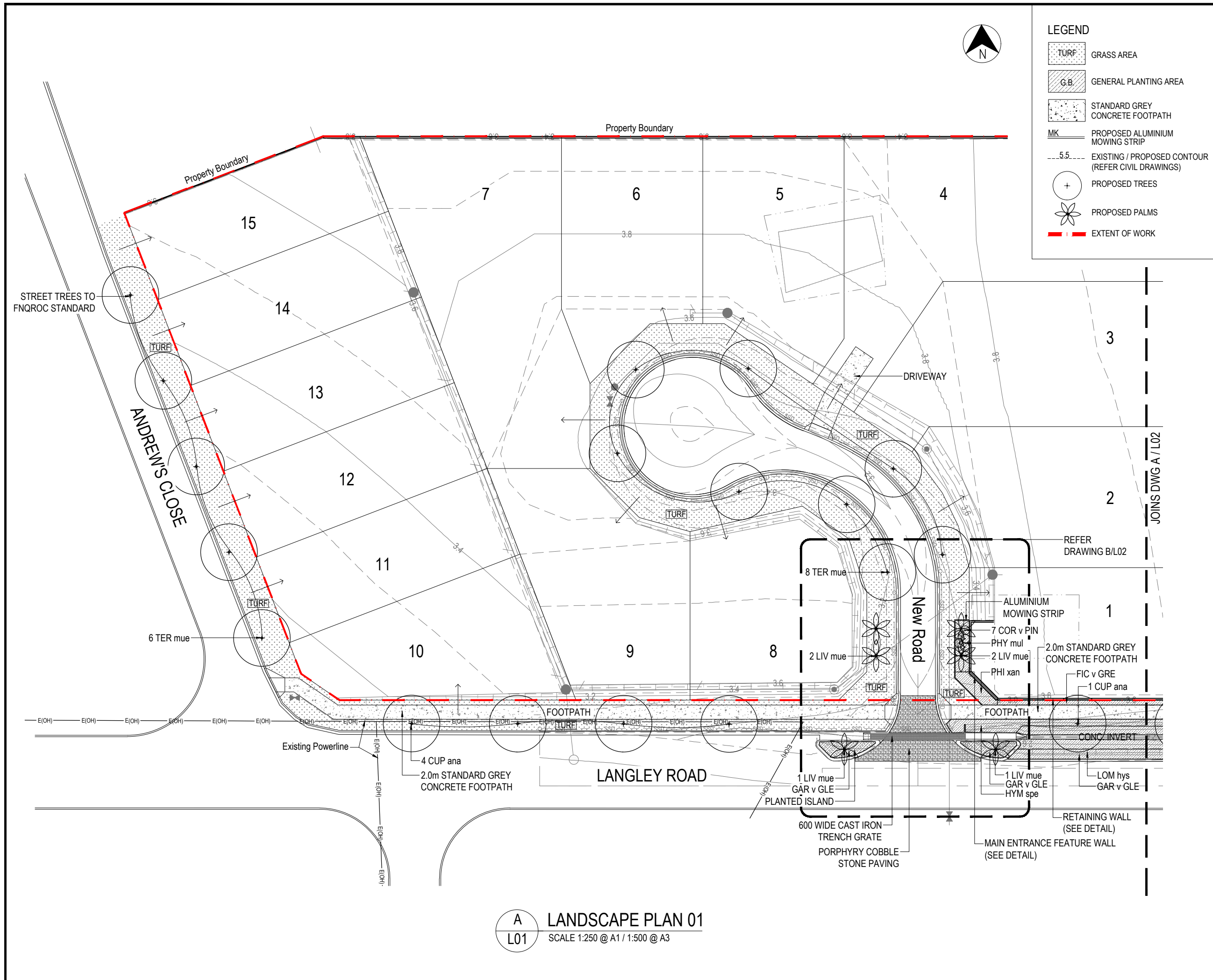
15 LOT SUBDIVISION

Langley Road, Port Douglas, Queensland
Lot 5 on RP 804926

DRAWING TITLE:

COVER PAGE & PLANTING SCHEDULE

Scale:	As Shown	Drawn:	JAE	Checked:	JTB	Authorized:	JMC
At:	A3 SIZE	Date: 21 February 2020					
Drawing No:				Issue	Sheet No.		
198-L00				A	1		



STREETSCAPE TREE NOTES

- 1. TYPICAL LOT**
- a) TYPICALLY ONE TREE PER LOT (FRONT VERGE)
 - b) TREE TO BE LOCATED BETWEEN 600 - 1000mm FROM THE BACK OF KERB
 - c) TREE SHOWN CENTRALLY ON THE PLAN AND ON THE LOT BOUNDARY. FINAL LOCATION TO BE DETERMINED FOLLOWING INSTALLATION OF THE DRIVEWAY AND CONFIRMATION OF SITE SERVICES
 - d) TREE TO BE IRRIGATED.
- 2. TYPICAL CORNER LOT**
- a) TYPICALLY ONE TREE PER CORNER LOT (FRONT VERGE AND SIDE VERGE)
 - b) TREE TO SIDE VERGE TO BE LOCATED CENTRALLY ALONG THE SIDE OF THE LOT.
 - c) TREE TO BE IRRIGATED.
- 3. TREE LOCATIONS**
- THE ALIGNMENT AND PLACEMENT OF STREET TREES MEASURED FROM THE TREE AT THE ESTIMATED ULTIMATE SIZE SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
- a) GREATER THAN 4.0 METRES FROM ELECTRICITY OR TELECOMMUNICATION POLES OR PILLARS.
 - b) GREATER THAN 7.5 METRES FROM STREETLIGHTS TO ENSURE EFFECTIVE STREET LIGHTING.
 - c) GREATER THAN 4.0 METRE RADIUS FROM HIGH VOLTAGE TRANSMISSION LINES.
 - d) GREATER THAN 2.0 METRES FROM STORMWATER DRAINAGE PITS.
 - e) TREES ARE TO BE PLANTED IN THE FRONT OF PROPERTIES AT THE CENTRE OF THE LOT AT A RATE OF ONE PER LOT, OR AT THE NECESSARY RATE TO PROVIDE A MAXIMUM 20 METRE SPACING.
 - f) TREES ARE TO BE PLACED A MINIMUM OF 800mm AND A MAXIMUM OF 1000mm FROM THE BACK OF KERB.
 - g) TREES ARE TO BE PLACED A MINIMUM OF THREE (3) METRES FROM DRIVEWAY.
 - h) AT INTERSECTIONS, TREES ARE TO BE PLACED A MINIMUM OF TEN (10) METRES BACK FROM THE FACE OF THE KERB OF THE ADJOINING TREES.
 - i) TREES ARE TO BE LOCATED SO AS NOT TO OBSTRUCT ACCESS TO ANY SERVICES OR SIGNAGE.
 - j) TREES ARE TO BE LOCATED SO AS NOT TO OBSTRUCT PEDESTRIAN OR VEHICULAR TRAFFIC, NOR CREATE TRAFFIC HAZARD OR CAUSE DAMAGE TO EXISTING TREES.

Drawing Revisions			
Issue	Date	Subject	Authorised
A	21.02.2019	FOR APPROVAL	JMC
Issue	Date	Revision Description	Initial

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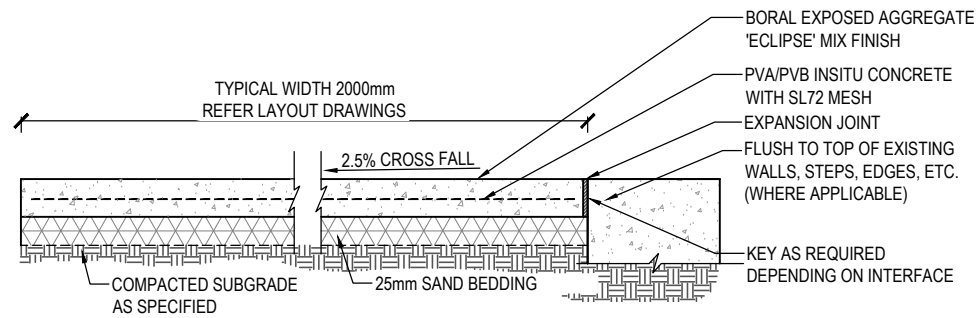
PROJECT TITLE:
15 LOT SUBDIVISION
Langley Road, Port Douglas, Queensland
Lot 5 on RP 804926

DRAWING TITLE:
LANDSCAPE PLAN 01

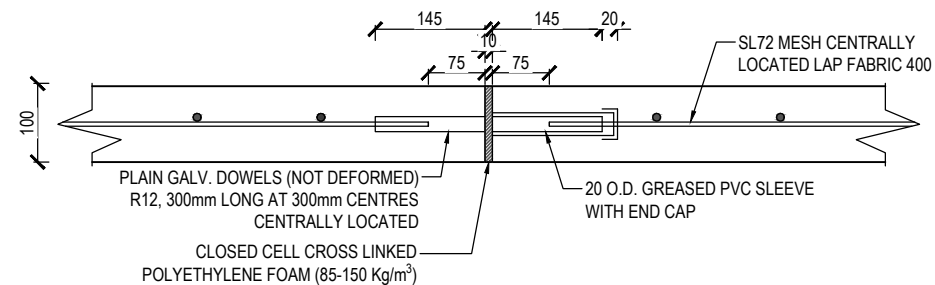
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At: A3 SIZE	Date: 21 February 2020		
Drawing No: 198-L01	Issue: A	Sheet No: 2	



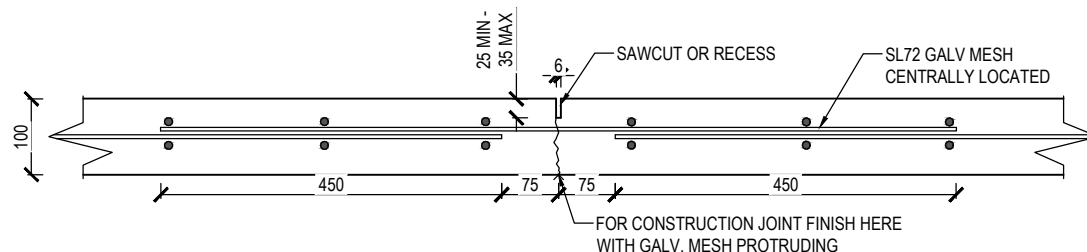
Drawing No:	198-L02	Issue	A	Sheet No	3
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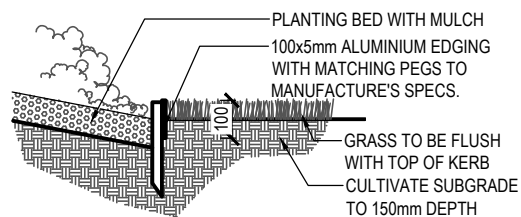
A
L03
2.0m WIDE CONCRETE FOOTPATH
SCALE 1:10 @ A1
1:20 @ A3



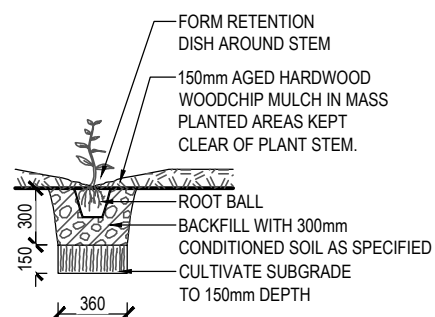
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L03
FOOTPATH - EXPANSION JOINT
SCALE 1:5 @ A1
1:10 @ A3



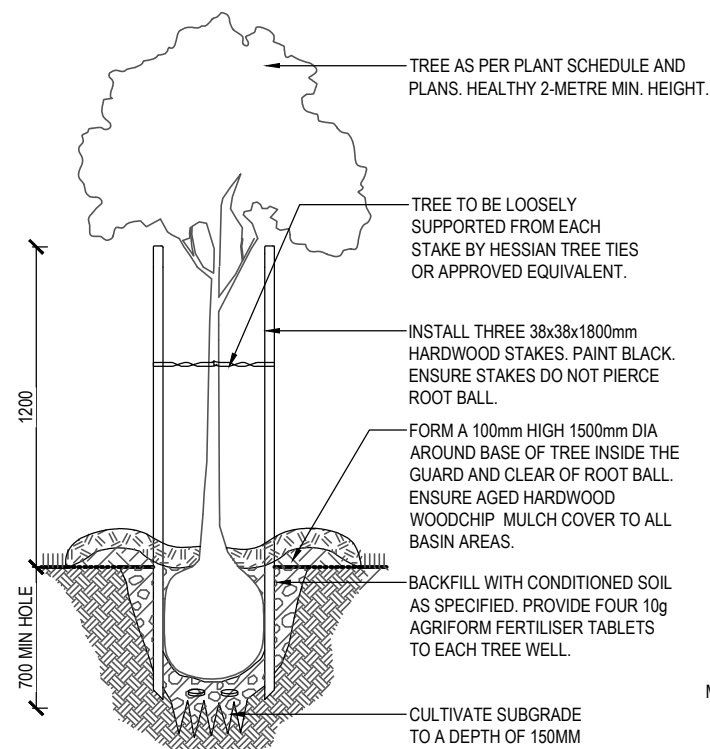
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L03
FOOTPATH - CONTROL JOINT
SCALE 1:5 @ A1
1:10 @ A3



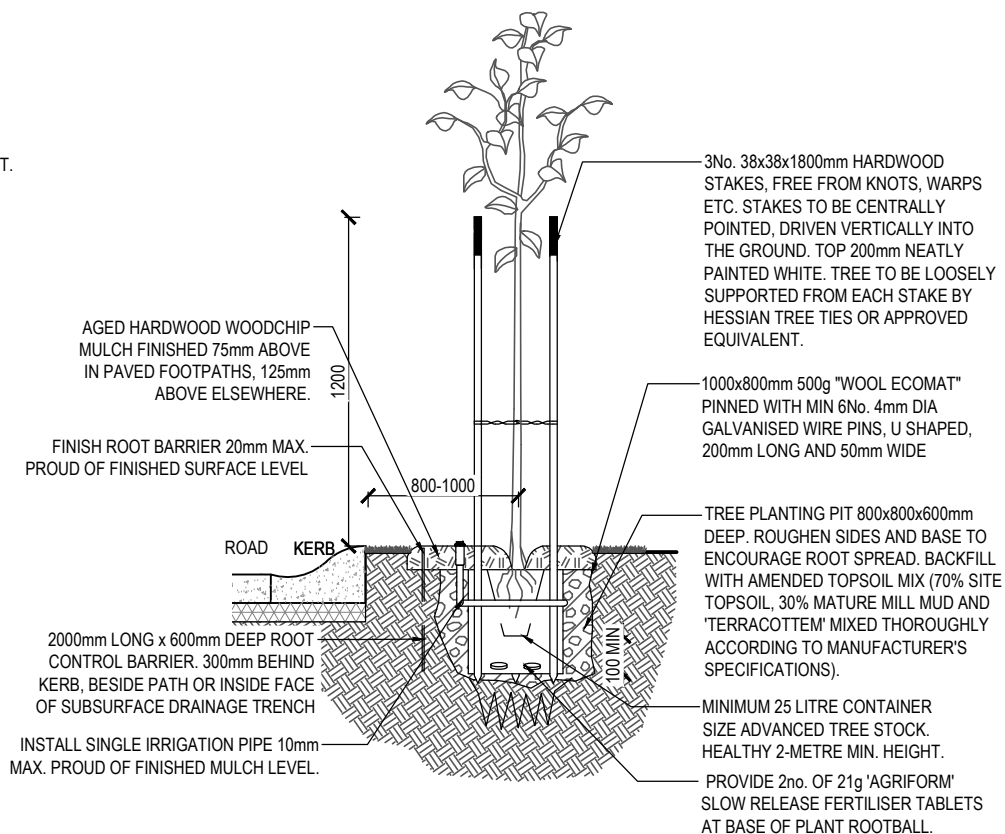
D
L03
MOWIG STRIP DETAIL
SCALE 1:10 @ A1
1:20 @ A3



E
L03
TYPICAL POT PLANTING
SCALE 1:20 @ A1
1:40 @ A3



F
L03
TYP 25-L TREE PLANTING IN GARDEN BED
SCALE 1:20 @ A1
1:40 @ A3



G
L03
STREET TREE TO FNQROC STANDARDS
SECTION 1:20 @ A1
1:40 @ A3

STANDARD NOTES

CONCRETE FOOTPATH REQUIREMENTS AND GUIDELINES TO BE INSTALLED AS PER FNQROC DETAILS

1. PATHWAYS LOCATED IN ROAD RESERVES ARE TO BE CONSTRUCTED 600mm CLEAR OF PROPERTY BOUNDARY UNLESS APPROVED OTHERWISE BY COUNCIL.
2. PRIOR TO CONSTRUCTION OF PATHWAY / BIKEWAY, THE CONTRACTOR SHALL LIAISE WITH TELSTRA TO ENSURE THAT ANY REQUIRED CABLE CONNECTION PITS ARE INSTALLED TO MATCH TOP OF PATHWAY LEVEL AND ENABLE CONCRETE PATHWAY / BIKEWAY TO BE CONSTRUCTED IN A SINGLE POUR.
3. FINISHED SURFACE LEVEL OF CONCRETE TO BE NOT MORE THAN 20mm ABOVE FINISHED SURFACE LEVEL OF ADJOINING GROUND AND SHALL FINISH FLUSH WITH ADJOINING SURFACES.
4. CONCRETE PATHWAYS, ADJOINING EXISTING DRIVEWAYS ARE TO BE TRANSITIONED OVER MINIMUM 500mm LENGTH.
5. CONCRETE N25 IN ACCORDANCE WITH AS1379 AND AS3600.
6. ALL CONCRETE TO BE BROOM FINISHED.
7. DOWELS TO BE GRADE 250 STEEL TO AS1302. MESH TO AS1304.
8. GALVANISING TO AS1650.
9. ALL DIMENSIONS IN MILLIMETRES.
10. THE MAXIMUM GRADIENT SHALL BE 16 PER CENT WITH A MAXIMUM CROSSFALL OF 2.5 PER CENT. WHERE THE PATHWAY IS PARALLEL WITH A ROAD WITH A GRADE GREATER THAN 16 PER CENT FOOTPATH GRADIENT SHALL MATCH THAT OF THE ROAD.

NOTE:

- FULL CONSTRUCTION JOINT EVERY 30m² MIN.
- 12mm EXPANSION JOINT AS SPECIFIED WHERE PATH ABUTS WALLS, KERBS AND THE LIKE.

Drawing Revisions

Issue	Date	Subject	Authorised
A	21.02.2019	FOR APPROVAL	JMC



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Client:

SEYMOUR GROUP

PROJECT TITLE:

15 LOT SUBDIVISION

Langley Road, Port Douglas, Queensland
Lot 5 on RP 804926

DRAWING TITLE:

**HARD & SOFT LANDSCAPE
DETAILS & PLANTING SCHEDULE**

Scale: AS SHOWN	Drawn: JAE	Checked: JTB	Authorised: JMC
At: A3 SIZE	Date: 21 February 2020		

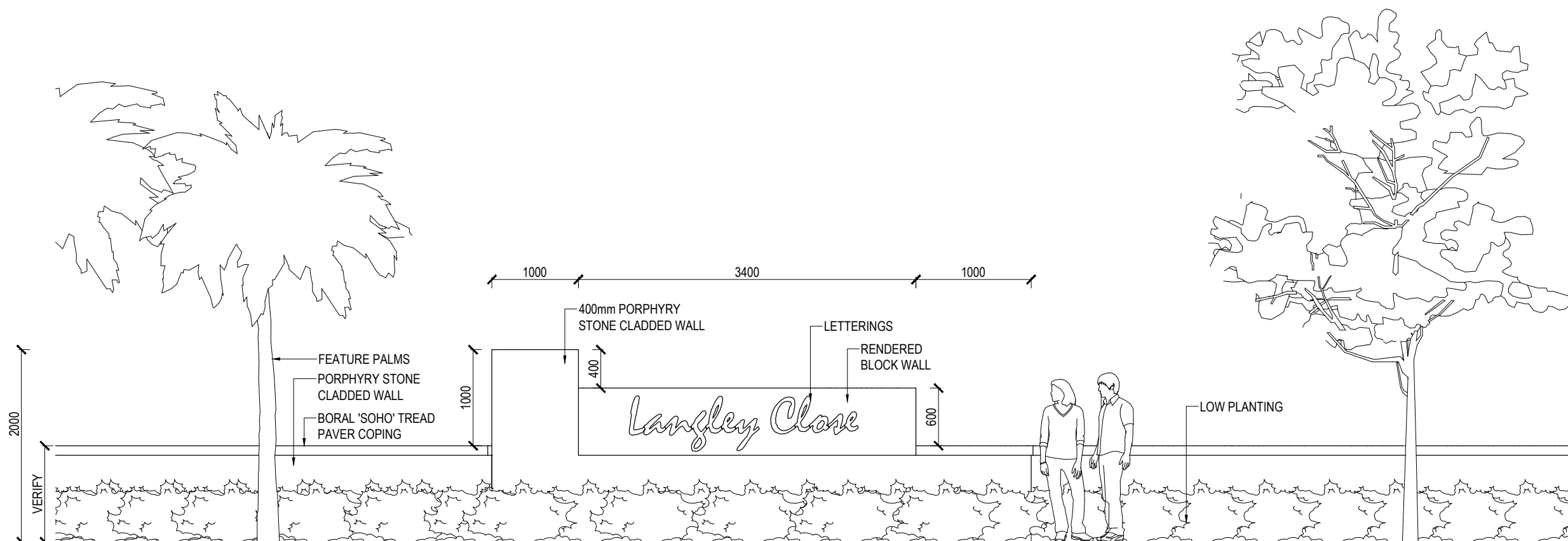
Drawing No:	Issue	Sheet No.
198 - L03	A	4



A
L04 ENTRY WALL PERSPECTIVE
NTS



B
L04 STAIRS PERSPECTIVE
NTS



C
L04 ENTRY WALL ELEVATION
SCALE 1:20 @ A1
1:40 @ A3

Drawing Revisions			
Issue	Date	Subject	Authorised
A	21.02.2019	FOR APPROVAL	JMC
Issue	Date	Revision Description	Initial

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Client:
SEYMOUR GROUP

PROJECT TITLE:
15 LOT SUBDIVISION
Langley Road, Port Douglas, Queensland
Lot 5 on RP 804926

DRAWING TITLE:
**MAIN ENTRY WALL
AND STAIRS DETAILS**

Scale: AS SHOWN	Drawn: JAE	Checked: JTB	Authorized: JMC
At:	Date: 21 February 2020		
Drawing No:	198-L04		Issue A Sheet No. 5



KS5 PTY LTD
ANDREWS CLOSE SUBDIVISION
CIVIL WORKS JOB SPECIFICATION

March 2020

Table of contents

1.1	Site Location	3
1.2	Scope of Works.....	3
1.3	General Safety	3
1.4	Working Hours	3
1.5	Site Access	3
1.6	Setting Out	3
1.7	Existing Site Levels.....	4
1.8	Existing Services.....	4
1.9	Provision for Traffic.....	4
1.10	Contractor's Facilities.....	5
1.11	Services used for Contract Works	5
1.12	Materials - General	5
1.13	Testing	5
1.14	Diverting Water and De-watering.....	6
1.15	Clearing Limits and Tree Preservation	6
1.16	Culturally Significant Items	6
1.17	Clearing and Grubbing.....	6
1.18	Topsoil Operations.....	7
1.19	Earthworks	7
1.20	CBR Testing of Subgrade.....	8
1.21	Subgrade Treatment – Types A and C	8
1.22	Road Subgrade Replacement Material – Type B	9
1.23	Subgrade Treatment – Type I.....	10
1.24	Removal of Unsuitable Material.....	11
1.25	Road Pavements	11
1.26	Subsoil Drainage.....	11
1.27	Asphalt Surfacing.....	11
1.28	Grass Seeding, Turfing and Hydromulching.....	12
1.29	Landscape Planting	12
1.30	Soil and Water Quality Management	12
1.31	ESCS Audits	13
1.32	Dust Nuisance.....	13
1.33	Concrete	14
1.34	Stormwater Drainage.....	14
1.35	Water Reticulation.....	14
1.36	Sewer Reticulation	14
1.37	Underground Conduits – Ergon Energy & NBN Co Ltd	15
1.38	Road Furniture and Pavement Marking.....	15

1.39	Urgent Repairs.....	15
1.40	Inspection and Test Plan	16
1.41	Cleaning Up	16
1.42	'As Constructed' Drawings.....	16
1.43	Project Documentation	17
1.44	Measurement of Quantities.....	17
1.45	Pest Plant Management	Error! Bookmark not defined.
1.46	Native Wildlife and Notification of Vegetation Clearing	17
1.47	Pruning of Trees	17
1.48	Ant Plants.....	Error! Bookmark not defined.

1.1 Site Location

The site of works is located at 20-30 Langley Road, Port Douglas Lot 5 RP804926.

1.2 Scope of Works

The scope of works covered by this specification comprises all earthworks, roadworks, stormwater drainage, water reticulation, sewerage reticulation, vegetation clearing and underground conduits for the construction of a 15-lot residential subdivision.

1.3 General Safety

The Contractor is to protect all persons undertaking legal activities on and adjacent to the site, from personal injury and property damage until the Principal retakes possession of the site. The Superintendent may direct reasonable specific safety precautions, which will be undertaken by the Contractor at the Contractor's cost. Such instructions do not relieve the Contractor of his responsibility for the safety of workers and the public on and adjacent to the site.

The Contractor will erect suitable delineation and signage to prevent the general public from entering the work site. No work on the site will be permitted prior to the complete erection of such facilities. The Contractor will be responsible for maintaining the integrity of the delineation and signage 24 hours a day during the full Contract duration. All costs for erection and maintenance of the delineation are deemed to be included in the Contract Sum.

The Contractor must take all action necessary to ensure building materials and/or machinery on construction sites are secured immediately following the first potential cyclone warning, and that relevant emergency telephone contacts are provided to Council Officers prior to commencement of works.

1.4 Working Hours

Work involving the use of machinery of any description will only be carried out from 7.00am to 6.00pm, Monday to Friday and 8.00am to 1.00pm on Saturdays, with no work to be carried out on Sundays or Public Holidays, unless the approval of the Superintendent is given.

1.5 Site Access

Access to the site for all construction traffic shall be via Langley Road. Alternative accesses may be considered but are subject to approval by the Superintendent.

1.6 Setting Out

The Contractor shall be responsible for the setting out of all works in accordance with the Project Drawings. Prior to commencing construction, the Contractor shall establish from the survey datum data provided on the Project Drawings, a system of temporary bench marks sufficient for the setting out of the works.

Before using survey control marks, the Contractor is to confirm that they correspond to the marks shown on the Project Drawings, that they have not been disturbed and that their levels are correct.

All survey works necessary for the accurate setting out and construction of the works will be at the Contractor's expense and is deemed to be included in the Contract Sum.

On completion of the construction, the Contractor shall reinstate any permanent survey marks and boundary pegs which may have been disturbed by the construction works.

1.7 Existing Site Levels

The Contractor is to check all levels before commencing work. If the levels on Project Drawings appear to be incorrect, the Contractor will notify the Superintendent and obtain an instruction prior to proceeding with the works.

Should the Contractor fail to undertake these checks prior to commencing work, establishing or disturbing the site, no claim will be considered from the Contractor in relation to variations associated with differences in existing surface levels or disturbed benchmarks.

1.8 Existing Services

Notwithstanding that some existing services are shown on the Drawings; the Contractor will consult with the relevant Authorities to ascertain the position of all existing services.

The Contractor will take every precaution to protect existing water or drain pipes, electricity conduits, telephone or power poles or cables and all other existing works. All damage to existing works or services will be repaired immediately to the satisfaction of the Superintendent and the relevant Authority, at the Contractor's cost. The cost of protection and maintenance of existing works and services is deemed to be included in the Contract Sum.

Should the removal or alteration of any existing service necessitate any variation of the work shown on the Drawings or included in the Specification, the Contractor will give the Superintendent written notice specifying the variation proposed to be made and the reason for making it and request instructions thereon. Payment for any variation authorised by the Superintendent will be made in accordance with the provisions of the General Conditions of Contract AS 2124-1992.

1.9 Provision for Traffic

The Contractor shall provide and maintain all necessary temporary bridges, footpaths, side-tracks, drains, and pipes to ensure continuity and safety of all vehicular and pedestrian traffic.

The Contractor will be held entirely responsible for the safety of all pedestrian and vehicular traffic and will provide all necessary watchmen, lights, barriers, notices and signs and will provide any maintenance to the satisfaction of the Superintendent and the Principal.

In the event of the Contractor failing to comply with their responsibilities under this clause of the Specification, the Principal will have the power, without further notice, to take such steps as the Superintendent considers necessary, to provide for the safe passage and safety of traffic or pedestrians, or to remove any obstruction or to repair any damage including, if he

considers it necessary, the employment of workmen and watchmen. The cost thereof will be deducted from any monies due to the Contractor under this Contract.

All signs, lights and barricades shall be provided, erected and maintained in accordance with Department of Transport and Main Roads 'Manual of Uniform Traffic Control Devices' (MUTCD).

The Contractor will be responsible for any necessary approvals for the transport of any materials.

1.10 Contractor's Facilities

Before erecting an office, store, toilets, washing facilities, sheds or other buildings for use on site, the Contractor will obtain agreement from the Superintendent as to their location. The Contractor will obtain the necessary approvals from all Public Utility Authorities and the Local Authority for construction and to connect the necessary services. No claim will be approved by the Superintendent for relocation of site facilities as necessitated by site works.

The Contractor will install and maintain adequate portable fire-fighting equipment to all temporary facilities. Personnel will be instructed in the emergency use of this fire-fighting equipment.

The Contractor will provide equipment and maintain an adequate first aid treatment centre for this Project. This will be centrally located at the site of the Works. The Contractor will have an experienced first aid person available at all times when work is in progress.

1.11 Services used for Contract Works

The Contractor will make arrangements for all services that are required during the performance of the Contract. The Contractor will pay all fees and charges to the appropriate Authority in connection with the services, which may be used and will be responsible for arranging the supply and installation of all necessary meters etc.

1.12 Materials - General

All materials to be used in the construction of this project will, unless otherwise specified, be supplied by the Contractor and will be in accordance with the relevant specifications. In cases where materials, in accordance with the relevant specification, cannot be sourced, an equivalent material may be used, if approved by the Superintendent.

1.13 Testing

All the testing of soils, gravels and concrete to verify compliance with the Standards set down in the Specification will be at the Contractor's expense and is deemed to be included in the Contract Sum.

The Superintendent will have the right to be present at, or have a representative present at all tests, at the time of taking of samples and specimens and at the time of preparation of material for testing. The Superintendent may reject the results of tests carried out without reasonable notice to him and may direct that such tests will be repeated at the Contractor's expense.

If any portion of the work fails to reach the specified testing requirements, that portion of the works so affected will be re-tested after rectification by the Contractor at the Contractor's expense.

The only reimbursable testing costs are those tests directed by the Superintendent in excess of the testing requirements contained in the Specification whose results meet the requirements.

The Contractor is to provide, free of charge, any materials, labour, compressed air and equipment that may be necessary to carry out tests.

1.14 Diverting Water and De-watering

Any water interfering with the progress of the works will be dewatered, trenches are to be kept free from water and any damage to the works due to flooding or other causes is to be prevented. Any work or material damaged by water will, if ordered, be taken up and replaced with new material.

The Contractor shall provide, where considered necessary, a sand trap on the discharge line of any pump to prevent the deposit of material in downstream channels and stormwater drains.

1.15 Clearing Limits and Tree Preservation

Prior to commencement of clearing operations, the limits of clearing are to be clearly established and marked. All trees identified as "to be retained" on the Project Drawings shall be protected from damage and clearly marked with an easily visible non-injurious and removable means of identification.

1.16 Culturally Significant Items

Should any items of cultural heritage value be discovered on site, the Superintendent and Douglas Shire Council is to be notified immediately and the items left undisturbed where possible until further instructed by the Superintendent and Douglas Shire Council.

1.17 Clearing and Grubbing

All clearing and grubbing will be in accordance with the current FNQROC Development Manual, Operational Works Specification - S1 Earthworks.

Prior to the commencement of earthworks, all areas subject to earthworks operations will be cleared and grubbed.

All concrete slabs, drains and other structures, services or debris are to be removed from site as necessary to properly construct the works.

Excavations as a result of debris removal will be backfilled and compacted to the standard appropriate for the relevant location of the works.

1.18 Topsoil Operations

All topsoiling will be in accordance with the current FNQROC Development Manual, Operational Works Specification - S1 Earthworks.

Any area affected by earthworks will be stripped of all topsoil and any other organic matter in stockpile for re-spreading as required.

The Contractor shall notify the Superintendent of the average depths of topsoil material and any significant variations in the depth of topsoil material encountered during stripping operations.

Topsoil stockpiles are to be protected from sediment runoff by a catch drain constructed along uphill sides and a suitable silt fence/sediment trap constructed on the downhill sides.

At the completion of earthworks, the stockpile topsoil materials are to be re-spread, firstly to new road verges. Any remaining material shall then be placed at an even depth on the disturbed areas of the allotments.

Any surplus topsoil materials will be either stockpiled on site or removed from site as directed by the Superintendent.

Topsoil is to be measured in accordance with Clause 5.1.6(c) of AS 1181-1982.

1.19 Earthworks

All earthworks construction will be undertaken in accordance with the current FNQROC Operational Works Specification - S1 Earthworks.

The frequency of field density testing shall be in accordance with AS3798 for large scale operation.

The Contractor shall engage a NATA registered test authority to undertake geotechnical testing to a level 1 standard in accordance with AS3798 except that:

- The Contractor shall be responsible for providing the position and level of the tests.
- The test authority shall show the location of the tests on their test certificates.

In addition to the requirements of AS3798, all earthworks placed under roadways shall comply with the following material requirements:

Location	WPI	PI %	Max stone size (mm)
Within 200mm of Road Subgrade Level	1200 - 2200	≥7	37.5
Greater than 200mm of Road Subgrade Level	-	≥7 and ≤40	150

Testing Commentary

- In smaller backfill areas such as gullies etc, the frequency of field density testing should be increased to Type 3 in accordance with Table 8.1 of AS3798.
- Imported fill should have a shrink-swell index of 1.0% per pF or less for a Class "S" fill material.

1.20 CBR Testing of Subgrade

After completion of earthworks to near subgrade level, the Contractor shall engage a NATA registered test authority to undertake 4-day soaked CBR testing of the subgrade. Testing frequency shall be not less than 1 test per 100 lineal metres of road, 1 test per 1000m² or 3 tests per sample area being tested.

The subgrade test results are to be forwarded to the Superintendent for consideration. Based on the test results, the Superintendent will advise the Contractor of the actual pavement depths required to enable the Contractor to complete earthworks to subgrade level.

The cost of subgrade CBR testing shall be included in the rate for trimming and compaction of subgrade in the Priced Bill of Quantities.

Any variation in pavement depth shall be the subject of a variation order by the Superintendent. The value of the variation shall be calculated on the basis of the rates as set out in the priced Bill of Quantities.

1.21 Subgrade Treatment – Types A and C

The subgrade shall be compacted and trimmed to the profile required to conform with the Project Drawings and the tolerances specified.

Additional subgrade treatment may be required where soft spots are identified during the proof roll inspection. The Superintendent will advise the Contractor of the type of treatment to be used and also define the extents of such treatment. Different subgrade treatments may be required in different areas.

Work operations shall include those items as listed in MRS04 “General Earthworks” relating to the relevant item. Measurement and payment for these works shall be volumetric measurement in cubic metres and based on the extents advised by the Superintendent and including survey if requested.

1.22 Road Subgrade Replacement Material – Type B

Road subgrade replacement material - Select Fill shall have a minimum 4-day soaked CBR value of 15 and satisfy the following material requirements:

Location	WPI	PI %	Max stone size (mm)
Within 200mm of Road Subgrade Level	1200 - 2200	≥7	37.5
Greater than 200mm of Road Subgrade Level	-	≥7 and ≤40	150

The following work operations will be included in the Priced Bill of Quantities Rate for Road Subgrade Replacement Material – Select Fill:

- Where appropriate, loosening the in-situ material to a depth of 200mm, mix and re-compact;
- Supply, load, haul, and deliver embankment material from sources off site;
- Spread embankment fill material;
- Incorporate moisture as required, mix and compact fill material; and
- Final trimming and shaping of surfaces and batters as necessary.

An agreed trial area of the proposed subgrade replacement regime will be carried out so that its performance can be assessed. Once this assessment has been made, the Superintendent will then either direct the Contractor to continue or advise an alternative treatment.

Payment under this item will be by the measured volume of unsuitable material removed from under the road embankment only. The Contractor will gain the agreement of the Superintendent as to these measurements prior to making any claim under this item.

1.23 Subgrade Treatment – Type I

Where directed, Subgrade Treatment Type I shall be undertaken. This treatment shall include the excavation to be backfilled with dumped rock wrapped and enclosed in geotextile fabric. The rock shall consist of clean, hard durable rock of nominal size 50mm to 150mm. Weathered rock will be rejected. Geotextile fabric shall be a non-woven type complying with the following requirements:

Property	
Grab Strength (N)	≥ 1100
Tearing Strength (N)	≥ 400
CBR Burst (N)	≥ 3500
G Rating	≥ 2500
Flow Rate (l/m ² /s)	≥ 50
Permittivity (s ⁻¹)	≥ 50
EOS (mm)	≤ 0.25

Where otherwise directed by the Superintendent to use dumped rock, subgrade replacement material shall have a minimum depth of 400mm unless advised otherwise.

An agreed trial area of the proposed subgrade replacement regime will be carried out so that its performance can be assessed. Once this assessment has been made, the Superintendent will then either direct the Contractor to continue or advise an alternative treatment.

Work operations shall include identification of unsuitable material, excavating, disposal and compaction of base of excavation. Measurement and payment for these works shall be volumetric measurement in cubic metres based on the extents advised by the Superintendent and confirmed by survey.

Payment under this item will be by the measured volume of unsuitable material removed from under the road embankment only. The Contractor will gain the agreement of the Superintendent as to these measurements prior to making any claim under this item.

1.24 Removal of Unsuitable Material

Unsuitable material will be managed as described in AS3798.

Where unsuitable material or potentially unsuitable material is encountered on site, the Contractor shall notify the Superintendent before proceeding to remove the material or place fill on top of it. The Superintendent will advise the Contractor of the required treatment, if any, and the extent of such treatment.

Material deemed unsuitable shall be removed from the site and disposed of in accordance with all relevant Statutory Requirements.

Work operations included in the excavation and disposal work item shall include identification of Unsuitable Material, excavating, disposal and compaction of base of excavation.

Work operations included in backfilling of excavation of unsuitable material shall include supplying all material, placing and compacting.

Measurements and payment for these works shall be volumetric measurement in cubic metres based on the extents advised by the Superintendent and confirmed by survey.

1.25 Road Pavements

All roadworks construction will be undertaken in accordance with the current FNQROC Operational Works Specification - S2 Road Pavements.

Pavement thicknesses for a range of Subgrade CBR Values are shown on the Project Drawings. The Contractor is to verify the Subgrade CBR on site and adopt the corresponding pavement thickness shown on the Project Drawings. The Contractor shall inform the Superintendent of the Subgrade CBR values of the site.

The Contractor shall submit to the Superintendent test certificates for the paving materials proposed to be used prior to paving commencing.

All pipe and conduit installations under road pavements, shoulders and kerb and channel shall be constructed before any pavement construction is to commence.

1.26 Subsoil Drainage

All subsoil drainage construction shall be undertaken in accordance with the current FNQROC Operational Works Specification - S2 Road Pavements.

Subsoil drainage trenches shall be located as shown on the Project Drawings.

1.27 Asphalt Surfacing

All asphalt works shall be undertaken in accordance with the current FNQROC Development Manual, Operational Works Specification S2 - Road Pavements.

Asphalt layer thicknesses shall be as shown on the Project Drawings.

1.28 Grass Seeding, Turfing and Hydromulching

All grass seeding, turfing and hydromulching shall be undertaken in accordance with the current FNQROC Development Manual, Operational Works Specification S8 - Landscaping.

All allotments, footpath verges, parks and any other areas disturbed by the Contractor during the construction of the works shall be grass seeded except where an alternate treatment is noted on the Project Drawings.

A minimum of 80% grass coverage (of the specified grass) to all allotment and verge areas is to be established and maintained.

1.29 Landscape Planting

All landscaping and tree planting shall be undertaken in accordance with the current FNQROC Development Manual, Operational Works Specification S8 - Landscaping.

All landscaping works to footpath verges, buffer zones and public open spaces shall be as detailed on the Project Landscaping Drawings. The landscaping design was undertaken by RPS Australia East Pty. Ltd. and the landscaping specification has been incorporated into the contract documents.

1.30 Soil and Water Quality Management

Prior to construction commencing, the Contractor will prepare an Erosion and Sediment Control Plan (ESCP) to manage the site during the Construction and Maintenance Periods. The ESCP will generally be in accordance with the approved Erosion and Sediment Control Strategy (ESCS) and shall be undertaken in accordance with the requirements of the current FNQROC Development Manual.

Additionally, the Contractor's Erosion and Sediment Control Plan should consider the following issues:

- Limiting the area of disturbance to a minimum;
- Re-establishing vegetation;
- Protecting stockpiles from traffic, run-off and wind erosion;
- Protecting exposed areas against water and wind erosion and controlling drainage of exposed areas;
- Limiting site traffic and restricting access;
- Restricting vehicles on site during muddy or dusty conditions;
- Prohibiting the placement of material in kerbs/kerb and channel to improve site access;
- Intercepting drainage from disturbed areas and installing temporary sediment barriers to filter soil particles;

- Diverting larger flows into sediment traps to allow soil particles to settle or to be treated prior to discharging into receiving waters;
- Protecting the edges of driveways from erosion caused by concentration of run-off;
- Maintaining sediment control structures, to ensure their effective operation;
- Covering of all truckloads entering and exiting the site; and
- Stormwater runoff from the site is directed to a lawful point of discharge such that it does not adversely affect surrounding properties or properties downstream of the works.

The Contractor will at all times during the Contract period employ appropriate sediment control measures to ensure minimal sediment loss from the site and accordingly minimal deposition of sediment in downstream receivable areas. The cost of any rectification works deemed appropriate by the Superintendent to ensure compliance with this requirement will be recovered from the Contractor's claim should such rectification works not be carried out within 2 days of the rainfall event.

The Contractor will be responsible for the incorporation of appropriate sediment control measures conforming to the approved Erosion and Sediment Control Plan and to the satisfaction of Douglas Shire Council. Such measures are deemed to be part of the works, and must be installed to the satisfaction of the Superintendent prior to commencement of any significant earthworks on site. All appropriate measures will be maintained as required during the construction period and the Maintenance/Defects Liability period.

1.31 ESCS Audits

An erosion and sediment control audit will be carried out by the Superintendent at approximately six-weekly intervals during the construction period. This audit will review on site activities against the approved Erosion and Sediment Control Strategy and the Erosion and Sediment Control Plan prepared by the Contractor, and evaluate the effectiveness and adequacy of the measures that are in place.

A copy of the audit reports resulting from these inspections will be forwarded to the Contractor's Project Manager for appropriate action.

1.32 Dust Nuisance

The Contractor will take measures to minimise the generation of dust that may degrade the environment of the adjoining lands, create a work place traffic safety hazard or cause discomfort or nuisance to the general public. The Contractor will regularly apply water to all exposed soils to minimise the generation of dust.

The Superintendent or Local Authority may request application of water to exposed soils if he is not satisfied with the amount of dust being generated from the site. This requested application of water will be done at no additional cost.

Should prevailing weather conditions, in the opinion of the Superintendent, be such that the above measures prove to be inadequate for dust control, the Contractor will cease operations

that are causing the dust nuisance and recommence when the ambient conditions are more favourable.

All permits and costs associated with the supply of water used for dust suppression works are deemed to be included in the Contract Sum.

1.33 Concrete

All concrete works shall be constructed in accordance with the current FNQROC Development Manual, Operational Works Specification S7 - Concrete Works unless noted otherwise on the Project Drawings.

1.34 Stormwater Drainage

Stormwater drainage shall be constructed in accordance with the current FNQROC Development Manual, Operational Works Specification S4 - Stormwater Drainage.

Stormwater Quality Improvement Devices (SQID's) shall be installed on drainage lines where shown on the Project Drawings. Where a proprietary SQID model is nominated on the Project Drawings it is to be installed in accordance with the manufacturer's recommendations.

Alternate proprietary SQID's may only be installed by the Contractor with the approval of the Superintendent and only if the Contractor can demonstrate to the Superintendent that the alternate device is of an equivalent industry standard to the specified device.

1.35 Water Reticulation

All water reticulation works will be undertaken in accordance with the current FNQROC Development Manual, Operational Works Specification S5 - Water Reticulation.

The Contractor shall liaise with the Local Authority regarding connection to existing mains. The Contractor shall be responsible for the supply of all fitting, materials and labour required by Council to facilitate all connections to existing mains.

1.36 Sewer Reticulation

All sewer reticulation works shall be undertaken in accordance with the current FNQROC Development Manual, Operational Works Specification S6 - Sewerage Reticulation.

Unless noted otherwise on the Project Drawings, or ordered by the Superintendent, all gravity sewer reticulation mains will be rubber jointed uPVC pipes. The Contractor shall liaise with the Local Authority regarding connection to all existing manhole and live sewer mains.

CCTV inspections of all constructed sewers must be undertaken. An assessment of the CCTV records must be undertaken by the developer's consultant and a report along with the footage submitted to Council for approval. Identified defects are to be rectified to the satisfaction of the Chief Executive Officer at no cost to Council prior to issue of a Compliance Certificate for the Plan of Survey.

1.37 Underground Conduits – Ergon Energy & NBN Co Ltd

The Contractor shall carry out all trenching, bedding, laying, jointing and backfilling of underground conduits to suit the installation of electricity and communication cables by Ergon Energy or a nominated electrical contractor and NBN Co. Ltd.

Shared trenching is generally utilised by both authorities and the Contractor shall liaise with these authorities to effect the installation of these services. All conduits and fittings to be installed are to be in accordance with Ergon Energy and NBN Co. Ltd. standard specifications for such works. The cost of all materials except those nominated to be supplied by Ergon Energy and NBN Co. Ltd. are deemed to be included in the tendered rates.

The Contractor is to liaise with the nominated subcontractors of Ergon Energy and NBN Co. Ltd. to enable the works to be incorporated within the trenching works.

Arrangements are to be made with Ergon Energy or an electrical contractor appointed by the Principal, and NBN Co. Ltd. for the pickup/delivery to the site of all materials nominated as supplied by Ergon Energy and for the coordination of NBN Co. Ltd. works, two weeks prior to the date the materials and works are required.

Prior to Ergon Energy or an electrical contractor proceeding with cable installation, the conduits installed shall be flushed out with water to demonstrate that they are continuous and completely free of sand and stone particles. NB: This test is not to be carried out on completion of the conduit installation; it is to be completed at a later stage when cable installation is to proceed. All costs associated with this testing requirement are deemed to be included in the tendered rates.

If installation of the cables is impeded in any way (i.e. during cable installation by Ergon Energy or a nominated electrical contractor) as a consequence of the Contractor's conduit installation, all cost incurred as a result will be recoverable by Ergon Energy or the Principal from the Contractor.

1.38 Road Furniture and Pavement Marking

Supply and construction of road furniture and pavement marking shall be in accordance with the current FNQROC Development Manual, Operational Works Specification S2 – Road Pavements.

If not indicated on the Project Drawings, the street names of all new roads shall be advised by the Superintendent, following receipt of confirmation of the adopted names from the Local Authority.

1.39 Urgent Repairs

If, during the Period of Construction, by reason of any emergent circumstances which arise in connection with the execution of the Works, any remedial, protective, repair or other like work shall, in the opinion of the Superintendent, be urgently required to prevent damage or loss to the works and the Contractor upon being advised of such urgency shall be unable or be unwilling to carry out such work immediately, the Principal may arrange for the work to be carried out by others.

If the work so arranged by the Principal shall be work which the Superintendent determines is work that the Contractor was required to carry out under the Contract, all costs properly incurred by the Principal in respect of carrying out the work shall be recoverable from the Contractor as a debt due to the Principal.

1.40 Inspection and Test Plan

The Contractor will carry out all testing in accordance with the nominated inspection and test plan. The Contractor will progressively throughout the works furnish the Superintendent with all test results for the works prior to practical completion.

HOLD POINTS in the construction process are a status of completion of the works at which the Contractor is not permitted to proceed beyond without the expressed direction of the Superintendent as to the acceptance of the works being presented. Hold points are subject to a notification period for the Superintendent to be notified of an impending hold point.

WITNESS POINTS in the construction process are a nominated status of completion of the works at which the Contractor is permitted to proceed beyond, but which is nominated as being subject to a random witness inspection by the Superintendent. Witness points are subject to a notification period for the Superintendent to be notified of an impending nominated witness point.

Random audit type inspections of the works may be undertaken by the Superintendent at any time.

The Superintendent requires a minimum of 48 hours' notice to be provided prior to reaching a status of completed works for a hold point or witness point.

The Inspection and Test Requirements shall comply with the current FNQROC Development Manual, Construction Procedures, Clause CP1.16 and CP1 Appendix A.

1.41 Cleaning Up

Prior to the issue of the Certificate of Practical Completion, the site will be cleared of all construction debris, residue of stockpiles and heaps of material, and generally will be left in a neat and tidy condition subject to the approval of the Superintendent.

Prior to final acceptance of the works at the end of the maintenance period, the Contractor will neatly fill and trim all scours, clean all roadways, grates, and channels of silt, gravel, debris, grass and weeds and generally bring the works to a neat and tidy condition subject to the satisfaction of the Superintendent and the Local Authority.

1.42 'As Constructed' Drawings

The Contractor is to commission a registered surveyor to submit to the Superintendent 'As Constructed' Drawings and a Compliance Statement in accordance with the current FNQROC Development Manual Operational Works CP1 - Construction Procedures Clauses CP1.21 to CP1.24 before receiving Practical Completion for Early Plan Sealing or Works Acceptance.

The Contractor is to include in their tender relevant costs associated with liaising with the Surveyor and undertaking the quality assessment of the as constructed plans and the completion of the RPEQ compliance statement.

1.43 Project Documentation

The Contractor is to prepare and submit to the Superintendent completed project testing records for the Contract before receiving Practical Completion. The completed document is to be in accordance with the current FNQROC Development Manual Operational Works CP1 - Construction Procedures Clauses CP1.25.

1.44 Measurement of Quantities

Where an item is a Provisional Quantity or a variation to the earthworks documented on the Contract Drawings, the following methods of measurement shall apply to the quantities of earthworks measured under the Contract:

- (a) Cut – the volume determined from the three-dimensional shape bounded by the existing natural surface levels, the road box formations and the finished design surface levels and the finished shapes and dimensions as shown on Project Drawings
- (b) Excavation of Unsuitable Material – the volume determined by a method approved by the Superintendent, which will require surveys to be carried out before and after the excavation of material
- (c) Fill – the volume determined from the three-dimensional shape bounded by the finished design surface levels, existing natural surface levels and the finished shapes and dimensions as shown on the Project Drawings
- (d) Trim and Compact Subgrade – the area at subgrade level

1.45 Native Wildlife and Notification of Vegetation Clearing

An inspection to determine the possible presence of native wildlife should be undertaken by a suitably qualified person prior to the removal of any tree and/or vegetation as per the requirements of Sect. 332 of the Nature Conservation (Wildlife Management) Regulation 2006. The Department of Environment & Heritage Protection should be contacted if native wildlife is found to be present.

Council's Planning Approvals Branch must be notified two (2) business days prior to the proposed date of commencement of any approved vegetation clearing.

1.46 Pruning of Trees

Any pruning of trees identified as 'Significant Tree to be protected' and trees external to the site boundary must be undertaken in accordance with the Australian Standard *Pruning of Amenity Trees* AS4373-2007.



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Douglas Partners
Geotechnics | Environment | Groundwater

Report on
Acid Sulfate Soil Investigation

Proposed Residential Subdivision
20-30 Langley Road, Port Douglas

Prepared for
GHD Pty Ltd

Project 90871.00
March 2020

Integrated Practical Solutions





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Geotechnics | Environment | Groundwater

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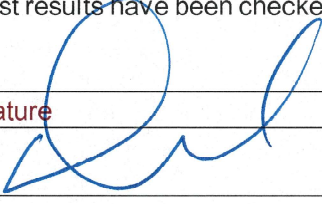
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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

Signature	Date
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Reviewer	



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Table of Contents

	Page
1. Introduction.....	1
2. Site Description	1
3. Geology	2
4. Field Work Methods	2
5. Field Work Results	3
6. Laboratory Testing	3
7. Comments.....	4
7.1 Proposed Development	4
7.2 Acid Sulfate Soils	5
8. Limitations	5
9. References.....	6
 Appendix A:	
About This Report	
Sampling Method	
Soil Description	
Symbols and Abbreviations	
Appendix B:	Drawing – Site and Location Plan
Appendix C:	Field Work Results (Bores 1 to 4)
Appendix D:	Laboratory Results

Report on Acid Sulfate Soil Investigation

Proposed Residential Subdivision

20-30 Langley Road, Port Douglas

1. Introduction

This report presents the results of an acid sulfate soils (ASS) investigation undertaken for a proposed residential subdivision at 20-30 Langley Road, Port Douglas. The investigation was commissioned in an email dated 19 December 2019 by GHD Pty Ltd, and was undertaken in accordance with Douglas Partners Pty Ltd (DP) proposal CNS190257 also dated 19 December 2019.

It is understood that the development will include construction of a residential subdivision, which will require placement of fill to achieve design surface elevations. It is understood that the proposed depth of fill is of the order of up to 1 m.

The aim of the investigation was to assess the subsurface soil and groundwater conditions across the site to 2 m depth in order to provide interpretative comments on the results of the ASS laboratory testing, and or the presence, or otherwise, of ASS.

The investigation included the drilling of four boreholes and laboratory testing of selected samples. The details of the field work are presented in this report, together with comments and recommendations on the items listed above.

This report must be read in conjunction with the notes entitled "About This Report" in Appendix A, and any other explanatory notes, and should be kept in its entirety without separation of individual pages or sections.

2. Site Description

The site is located at 20 to 30 Langley Road Port Douglas, and comprises a relatively flat and vacant site of approximately trapezoidal shape and approximately 1.2 hectares area, as shown in Drawing 1 in Appendix B.

At the time of the field work, the site was undeveloped, and vegetated with grass and trees, with some localised tree free areas. Two old remnant concrete slabs, presumably from demolished buildings, were observed in the south eastern corner of the site.

The site is bordered to the north by residential development, to the east by esplanade parkland fronting the beach, to the south by Langley Road and then further residential development, and to the west by Andrews Close and then residential development.

A photograph of a typical view of the site is presented in Figure 1.



Figure 1: Typical view of site.

3. Geology

Reference to the 1:100 000 digital surface geology map indicates that the site is underlain by Holocene aged alluvial deposits, which are described as typically comprising “fine to coarse-grained quartzose to shelly sand and some gravel: beach ridges and cheniers”.

The subsurface conditions encountered at the test locations comprised silty sand and sand, which is considered consistent with part of the geological description and DP’s past experience.

4. Field Work Methods

The field work was carried out on 10 February 2020 and comprised four test bores (designated Bores 1 to 4). The approximate test locations are shown on Drawing 1 in Appendix B.

The test bores were undertaken using hand auger equipment to 2 m depth.

Samples intended for ASS testing purposes were collected at 0.25 m depth intervals in the bores. Samples were placed into ‘snap lock’ bags, with air excluded and were placed in an ice filled ‘esky’, prior to transportation to DP’s laboratory, where they were frozen. Upon completion, after checking for groundwater ingress, the boreholes were reinstated by backfilling with the drill cuttings.

The field work was carried out by an experience engineer geologist, who logged the subsurface profile, collected samples, and recorded groundwater observations.

A hand-held GPS unit (accurate to approximately 5 m) was used to record UTM co-ordinates of the test locations using GDA94 datum, and these are shown on the borehole logs in Appendix C. The existing

ground surface level at each test location was determined using standard dump levelling techniques relative to a nearly permanent survey mark.

5. Field Work Results

The subsurface conditions encountered in the bores are presented on the borehole logs in Appendix C. These should be read in conjunction with the general notes in Appendix A, which explain descriptive terms and classification methods used in their preparation.

The ground conditions encountered at the test locations comprised:

- Topsoil** Silty sand topsoil was encountered in Bores 1 and 4 to 0.2 m depth.
- Alluvium** Alluvial sand was encountered from the surface in Bores 2 and 3, and below the topsoil in Bores 1 and 4, and continued to bore termination depth. The sand was estimated to be medium dense.

Groundwater was observed following borehole drilling at each test location at the depths and levels presented in Table 1. It should be noted that groundwater levels are affected by climatic conditions, and by soil permeability, and will therefore vary with time. Furthermore, the site is located in the tropics, and hence distinct seasonal variations in groundwater depth can be expected.

Table 1: Summary of Groundwater Observations

Bore	Existing Surface Level RL (m AHD)	Observed Groundwater Depth (m)	Groundwater Level RL (m AHD)
1	3.6	1.9	1.7
2	3.0	1.35	1.65
3	3.0	1.2	1.8
4	3.3	1.5	1.8

6. Laboratory Testing

Field screening and chemical laboratory testing for ASS was carried out with reference to the QASSIT Guidelines (1998), the Soil Management Guidelines (2014), and the Laboratory Methods Guidelines (2004).

All ASS samples collected from Bores 1 to 4 were screened by measurement of pH after the addition of distilled water (pH_F) and peroxide (pH_{FOX}) by SGS Pty Ltd. This was in order to give an approximate indication of either the presence of actual acid sulfate soils (AASS) or potential acid sulfate soils (PASS) conditions. The ASS screening results are presented in Table 2.

Based on the results of the screening tests, eight samples were subjected to detailed analysis using the Chromium Suite of tests. These samples were selected based on the results of the screening tests. The Chromium Suite tests were conducted by SGS Pty Ltd, which is NATA accredited for this testing. The results of the Chromium Suite laboratory tests are provided in Appendix D and are also summarised in Table 2.

Table 2: Results of ASS Field Screening and Chemical Laboratory Testing

Bore	Depth (m)	Sample Description	Screening Test Results				pH _{KCL}	Chromium Suite Test Results (% w/w S)		
			pH _F	pH _{FOX}	ΔpH	Reaction		Potential Sulfidic Acidity (S _{CR})	Total Actual Acidity (s-TAA)	Existing + Potential Acidity
1	0.25	Sand	6.2	2.4	3.8	Slight	-	-	-	-
	0.50	Sand	6.7	2.8	3.9	Slight	6.2	0.008	<0.01	<0.02
	0.75	Sand	6.8	4.0	2.8	Slight	-	-	-	-
	1.00	Sand	6.8	3.8	3.0	Slight	6.2	0.008	<0.01	<0.02
	1.25	Sand	6.8	5.2	1.6	Slight	-	-	-	-
	1.50	Sand	6.7	5.1	1.6	Slight	-	-	-	-
	1.75	Sand	6.8	5.1	1.7	Slight	-	-	-	-
	2.00	Sand	6.7	5.0	1.2	Slight	-	-	-	-
2	0.25	Sand	6.3	2.3	4.0	Slight	6.0	0.008	<0.01	<0.02
	0.50	Sand	6.8	4.8	2.0	Slight	-	-	-	-
	0.75	Sand	6.8	5.1	1.7	Slight	-	-	-	-
	1.00	Sand	6.8	4.4	2.4	Slight	6.2	0.006	<0.01	<0.02
	1.25	Sand	6.9	4.9	2.0	Slight	-	-	-	-
	1.50	Sand	6.8	4.9	1.9	Slight	-	-	-	-
	1.75	Sand	6.5	4.9	1.6	Slight	-	-	-	-
	2.00	Sand	6.7	4.7	2.0	Slight	-	-	-	-
3	0.25	Sand	6.7	2.9	3.8	Slight	6.1	0.008	<0.01	<0.02
	0.50	Sand	6.8	5.1	1.7	Slight	-	-	-	-
	0.75	Sand	6.9	3.9	3.0	Slight	-	-	-	-
	1.00	Sand	7.1	5.4	1.7	Slight	-	-	-	-
	1.25	Sand	7.1	3.6	3.5	Slight	6.5	0.008	<0.01	<0.02
	1.50	Sand	7.1	5.3	1.8	Slight	-	-	-	-
	1.75	Sand	7.3	6.4	0.9	Slight	-	-	-	-
	2.00	Sand	7.5	5.7	1.8	Slight	-	-	-	-
4	0.25	Sand	7.0	3.8	3.2	Slight	-	-	-	-
	0.50	Sand	6.8	5.1	1.7	Slight	-	-	-	-
	0.75	Sand	6.7	4.5	2.2	Slight	-	-	-	-
	1.00	Sand	6.8	4.7	2.1	Slight	-	-	-	-
	1.25	Sand	7.0	4.5	2.5	Slight	6.4	0.006	<0.01	<0.02
	1.50	Sand	6.9	5.1	1.8	Slight	-	-	-	-
	1.75	Sand	7.3	5.4	1.9	Slight	-	-	-	-
	2.00	Sand	7.2	4.9	2.3	Slight	6.4	<0.005	<0.01	<0.02

7. Comments

7.1 Proposed Development

It is understood that the proposed development will comprise the construction of a residential subdivision on the site, which is anticipated to require site disturbance up to 1 m depth.

7.2 Acid Sulfate Soils

Testing for ASS was undertaken on the 32 samples collected from the test locations, as presented in Table 2 (refer Section 6).

The criteria used to assess the results of the screening tests (pH_F and pH_{FOX}) as possibly indicative of AASS or PASS were based on the QASSIT Guidelines (Ahern CR A. M., 1998) as follows:

- $pH_F < 4$ indicates oxidation has occurred in the past and that AASS may be present.
- $pH_{FOX} < 3$, plus a pH_{FOX} reading at least one pH unit below pH_F , plus a strong reaction with peroxide, strongly indicates the presence of PASS.

The lowest pH_F test result recorded during the screening tests was 6.2 (refer Table 2), indicating that AASS are not present. Four samples from the 32 screened resulted in a pH_{FOX} of less than 3 (refer Table 2), with each of these being recovered from shallow depth. Based on the screening results, eight samples from the test locations were selected for more rigorous and quantitative chromium suite testing to determine more definitively if AASS or PASS are present.

The action criterion on which the presence of ASS is assessed on the 'existing plus potential' acidity value, based on the Soil Management Guidelines (2014) and the Laboratory Methods Guidelines (2004), and comprises:

$$\begin{array}{l} \text{Existing plus Potential} \\ \text{Acidity} \end{array} = \text{Potential Acidity (S}_{CR}\text{)} + \text{Actual Acidity (TAA)}$$

For greater than 1000 tonnes of soil disturbance, as is expected to be the case for the proposed works, the action criterion which triggers a requirement for ASS disturbance to be managed is independent of the soil type, and is equal to a calculated 'existing plus potential' acidity of greater than or equal to 0.03% sulfur.

Of the eight submitted samples, none exceeded the 'existing plus potential' acidity action criteria value, and hence an acid sulfate soils management plan (ASSMP) would not be required for the proposed development with disturbance up to a maximum of 1 m depth.

8. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report for this project at 20 to 30 Langley Street, Port Douglas, in accordance with DP's proposal CNS190257 dated 19 December 2019, and acceptance received from GHD Pty Ltd dated 19 December 2019. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of GHD Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

The scope for work for this investigation/report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of filling of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such filling may contain contaminants and hazardous building materials.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the geotechnical components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

9. References

Ahern CR, Ahern MR, and Powell B (1998), Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998, QASSIT, Department of Natural Resources.

Ahern CR, McElnea AE, Sullivan LA (2004), "Acid Sulfate Soils Laboratory Methods Guidelines", in "Queensland Acid Sulfate Soils Manual 2004.

Dear SE, Moore NG, Dobos SK, Watting KM and Ahern CR (2014), The Soil Management Guidelines,” a chapter of “Queensland Acid Sulfate Soil Technical Manual, Indooroopilly, Queensland, Dept Natural Resources and Mines.

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Appendix A

About This Report
Sampling Method
Soil Description
Symbols and Abbreviations

About this Report

Douglas Partners



Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.



Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low

reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:
4,6,7
N=13
- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:
15, 30/40 mm

Sampling Methods

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.



Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are generally based on Australian Standard AS1726:2017, Geotechnical Site Investigations. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	19 - 63
Medium gravel	6.7 - 19
Fine gravel	2.36 – 6.7
Coarse sand	0.6 - 2.36
Medium sand	0.21 - 0.6
Fine sand	0.075 - 0.21

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

The proportions of secondary constituents of soils are described as follows:

In fine grained soils (>35% fines)

Term	Proportion of sand or gravel	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	>30%	Sandy Clay
With	15 – 30%	Clay with sand
Trace	0 - 15%	Clay with trace sand

In coarse grained soils (>65% coarse)

- with clays or silts

Term	Proportion of fines	Example
And	Specify	Sand (70%) and Clay (30%)
Adjective	>12%	Clayey Sand
With	5 - 12%	Sand with clay
Trace	0 - 5%	Sand with trace clay

In coarse grained soils (>65% coarse)

- with coarser fraction

Term	Proportion of coarser fraction	Example
And	Specify	Sand (60%) and Gravel (40%)
Adjective	>30%	Gravelly Sand
With	15 - 30%	Sand with gravel
Trace	0 - 15%	Sand with trace gravel

The presence of cobbles and boulders shall be specifically noted by beginning the description with 'Mix of Soil and Cobbles/Boulders' with the word order indicating the dominant first and the proportion of cobbles and boulders described together.

Soil Descriptions

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	VS	<12
Soft	S	12 - 25
Firm	F	25 - 50
Stiff	St	50 - 100
Very stiff	VSt	100 - 200
Hard	H	>200
Friable	Fr	-

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	Density Index (%)
Very loose	VL	<15
Loose	L	15-35
Medium dense	MD	35-65
Dense	D	65-85
Very dense	VD	>85

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Extremely weathered material – formed from in-situ weathering of geological formations. Has soil strength but retains the structure or fabric of the parent rock;
- Alluvial soil – deposited by streams and rivers;

- Estuarine soil – deposited in coastal estuaries;
- Marine soil – deposited in a marine environment;
- Lacustrine soil – deposited in freshwater lakes;
- Aeolian soil – carried and deposited by wind;
- Colluvial soil – soil and rock debris transported down slopes by gravity;
- Topsoil – mantle of surface soil, often with high levels of organic material.
- Fill – any material which has been moved by man.

Moisture Condition – Coarse Grained Soils

For coarse grained soils the moisture condition should be described by appearance and feel using the following terms:

- Dry (D) Non-cohesive and free-running.
- Moist (M) Soil feels cool, darkened in colour.
Soil tends to stick together.
Sand forms weak ball but breaks easily.
- Wet (W) Soil feels cool, darkened in colour.
Soil tends to stick together, free water forms when handling.

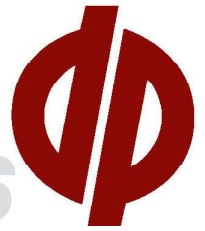
Moisture Condition – Fine Grained Soils

For fine grained soils the assessment of moisture content is relative to their plastic limit or liquid limit, as follows:

- 'Moist, dry of plastic limit' or 'w < PL' (i.e. hard and friable or powdery).
- 'Moist, near plastic limit' or 'w ≈ PL' (i.e. soil can be moulded at moisture content approximately equal to the plastic limit).
- 'Moist, wet of plastic limit' or 'w > PL' (i.e. soils usually weakened and free water forms on the hands when handling).
- 'Wet' or 'w ≈ LL' (i.e. near the liquid limit).
- 'Wet' or 'w > LL' (i.e. wet of the liquid limit).

Symbols & Abbreviations

Douglas Partners



Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U ₅₀	Undisturbed tube sample (50mm)
W	Water sample
pp	Pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	Lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

Symbols & Abbreviations

Graphic Symbols for Soil and Rock

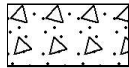
General



Asphalt



Road base

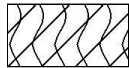


Concrete



Filling

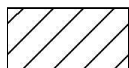
Soils



Topsoil



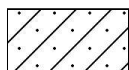
Peat



Clay



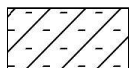
Silty clay



Sandy clay



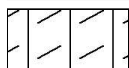
Gravelly clay



Shaly clay



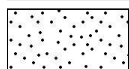
Silt



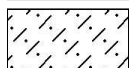
Clayey silt



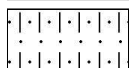
Sandy silt



Sand



Clayey sand



Silty sand



Gravel



Sandy gravel

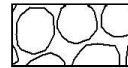


Cobbles, boulders



Talus

Sedimentary Rocks



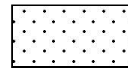
Boulder conglomerate



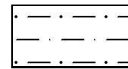
Conglomerate



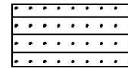
Conglomeratic sandstone



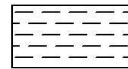
Sandstone



Siltstone



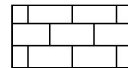
Laminite



Mudstone, claystone, shale

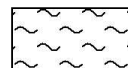


Coal

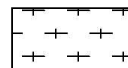


Limestone

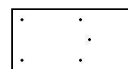
Metamorphic Rocks



Slate, phyllite, schist

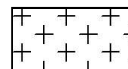


Gneiss

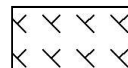


Quartzite

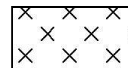
Igneous Rocks



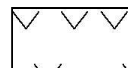
Granite



Dolerite, basalt, andesite



Dacite, epidote



Tuff, breccia



Porphyry

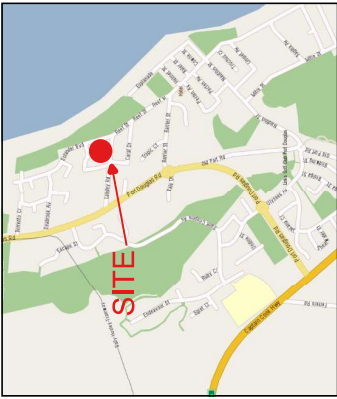
Appendix B

Drawing – Site and Location Plan



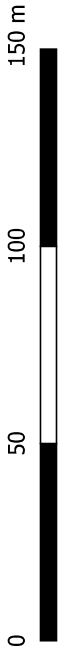
Notes:



1. Base image from Queensland Globe
2. Locality image from Google Maps.
3. Test locations are approximate only and are shown with reference to existing site features.



LOCALITY

Legend
◆ Bore Locations



 Douglas Partners <i>Geotechnics • Environment • Groundwater</i>	CLIENT: GHD Pty Ltd		TITLE: Site and Test Location Plan Proposed Residential Subdivision 20-30 Langley Road, Port Douglas		PROJECT No: 90871.00	
	OFFICE: Cairns	DRAWN BY: CM			DRAWING No: 1	
	SCALE: As Shown	DATE: February 2020			REVISION: 0	

Appendix C

Field Work Results (Bores 1 to 4)

BOREHOLE LOG

CLIENT: GHD Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 20-30 Langley Road, Port Douglas

SURFACE LEVEL: 3.6 m AHD
EASTING: 336491
NORTHING: 8173307
DIP/AZIMUTH: 90°/-

BORE No: 1
PROJECT No: 90871.00
DATE: 10/2/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
		Silty SAND (SM): fine to medium grained, brown, moist, estimated medium dense to dense, (Topsoil)								
	0.2	SAND (SP): fine to medium grained, grey brown, trace silt, moist, estimated medium dense, (Alluvial)		D	0.25					
		- band of silt between 0.3 to 0.4 m depth								
		- dark brown 0.5 m depth to 0.75 m depth		D	0.5					
				D	0.75					
	1	- pale yellow grey brown below 1.0 m depth		D	1.0					
				D	1.25					
		- increase moisture below 1.5 m depth		D	1.5					
				D	1.75					
		- wet below 1.75 m depth								
	2.0	Bore discontinued at 2.0m depth - limit of investigation		D	2.0					

RIG: Hand Tools

DRILLER: B. Runge

LOGGED: B. Runge

CASING: Nil

TYPE OF BORING: 75 mm hand auger

WATER OBSERVATIONS: Free groundwater observed at 1.9 m depth

REMARKS: Location coordinates are in GDA94 Zone 55K.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: GHD Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 20-30 Langley Road, Port Douglas

SURFACE LEVEL: 3.0 m AHD
EASTING: 336597
NORTHING: 8173297
DIP/AZIMUTH: 90°/--

BORE No: 2
PROJECT No: 90871.00
DATE: 10/2/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
		SAND (SP): fine to medium grained, brown, with silt, moist, estimated medium dense, (Alluvial)								
		- pale yellow grey brown and no silt below 0.4 m depth		D	0.25					
		- orange yellow brown below 0.7 m depth		D	0.5					
				D	0.75					
				D	1.0					
		- pale yellow grey brown and wet below 1.2 m depth		D	1.25					
		- caving below 1.5 m depth		D	1.5					
				D	1.75					
-2	2.0	Bore discontinued at 2.0m depth - limit of investigation		D	2.0					

RIG: Hand Tools

DRILLER: B. Runge

LOGGED: B. Runge

CASING: Nil

TYPE OF BORING: 75 mm hand auger

WATER OBSERVATIONS: Free groundwater observed at 1.35 m depth

REMARKS: Location coordinates are in GDA94 Zone 55K.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)



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BOREHOLE LOG

CLIENT: GHD Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 20-30 Langley Road, Port Douglas

SURFACE LEVEL: 3.0 m AHD
EASTING: 336539
NORTHING: 8173265
DIP/AZIMUTH: 90°/--

BORE No: 3
PROJECT No: 90871.00
DATE: 10/2/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
		SAND (SP): fine to medium grained, brown, with silt, moist, estimated medium dense, (Alluvial)								
		- pale yellow grey brown and no silt below 0.4 m depth		D	0.25					
				D	0.5					
		- increase moisture below 0.8 m depth, and laminations of dark brown silt between 0.8 m depth and 0.85 m depth		D	0.75					
	1			D	1.0					
		- wet below 1.25 m depth		D	1.25					
		- caving in below 1.3 m depth (hard to auger)								
		- orange yellow brown below 1.5 m depth		D	1.5					
				D	1.75					
	2	2.0		D	2.0					
		Bore discontinued at 2.0m depth - limit of investigation								

RIG: Hand Tools

DRILLER: B. Runge

LOGGED: B. Runge

CASING: Nil

TYPE OF BORING: 75 mm hand auger

WATER OBSERVATIONS: Free groundwater observed at 1.2 m depth

REMARKS: Location coordinates are in GDA94 Zone 55K.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)



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BOREHOLE LOG

CLIENT: GHD Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 20-30 Langley Road, Port Douglas

SURFACE LEVEL: 3.3 m AHD
EASTING: 336619
NORTHING: 8173256
DIP/AZIMUTH: 90°/-

BORE No: 4
PROJECT No: 90871.00
DATE: 10/2/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.2	Silty SAND (SM): fine to medium grained, brown, dry, estimated medium dense, (Topsoil)								
		SAND (SP): fine to medium grained, pale yellow brown, moist, estimated medium dense, (Alluvial)		D	0.25					
		- yellow mottled orange grey brown below 0.5 m depth		D	0.5					
				D	0.75					
	1			D	1.0					
				D	1.25					
		- wet below 1.5 m depth		D	1.5					
		- pale grey yellow brown below 1.7 m depth		D	1.75					
-2	2.0	Bore discontinued at 2.0m depth - limit of investigation		D	2.0					

RIG: Hand Tools

DRILLER: B. Runge

LOGGED: B. Runge

CASING: Nil

TYPE OF BORING: 75 mm hand auger

WATER OBSERVATIONS: Free groundwater observed at 1.5 m depth

REMARKS: Location coordinates are in GDA94 Zone 55K.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U _s	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)



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Appendix D

Laboratory Results

CLIENT DETAILS

Contact **Dan Martin**
 Client **DOUGLAS PARTNERS PTY LTD**
 Address **NATIONAL ACCOUNTS PAYABLE
 PO BOX 472
 WEST RYDE NSW 2114**

Telephone **07 4055 1550**
 Facsimile **07 4055 1774**
 Email **dan.martin@douglaspartners.com.au**

Project **90871**
 Order Number **149734**
 Samples **32**

LABORATORY DETAILS

Manager **Anthony Nilsson**
 Laboratory **SGS Cairns Environmental**
 Address **Unit 2, 58 Comport St
 Portsmith QLD 4870**

Telephone **+61 07 4035 5111**
 Facsimile **+61 07 4035 5122**
 Email **AU.Environmental.Cairns@sgs.com**

SGS Reference **CE144447 R0**
 Date Received **11 Feb 2020**
 Date Reported **13 Feb 2020**

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(3146).

SIGNATORIES



Anthony NILSSON
 Operations Manager



Jon Dicker
 Manager Northern QLD

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.001 Soil BH1 0.25M	CE144447.002 Soil BH1 0.5M	CE144447.003 Soil BH1 0.75M	CE144447.004 Soil BH1 1.0M
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Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	6.2	6.7	6.8	6.8
pHfox	pH Units	-	2.4	2.8	4.0	3.8
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	3.8	3.9	2.8	3.0

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.005 Soil BH1 1.25M	CE144447.006 Soil BH1 1.5M	CE144447.007 Soil BH1 1.75M	CE144447.008 Soil BH1 2M
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Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	6.8	6.7	6.8	6.7
pHfox	pH Units	-	5.2	5.1	5.1	5.0
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	1.6	1.6	1.7	1.7

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.009 Soil BH2 0.25M	CE144447.010 Soil BH2 0.5M	CE144447.011 Soil BH2 0.75M	CE144447.012 Soil BH2 1M
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Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	6.3	6.8	6.8	6.8
pHfox	pH Units	-	2.3	4.8	5.1	4.4
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	4.0	2.0	1.7	2.4

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.013 Soil BH2 1.25M	CE144447.014 Soil BH2 1.5M	CE144447.015 Soil BH2 1.75M	CE144447.016 Soil BH2 2M
-----------	-------	-----	---	-----------------------------------	----------------------------------	-----------------------------------	--------------------------------

Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	6.9	6.8	6.5	6.7
pHfox	pH Units	-	4.9	4.9	4.9	4.7
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	2.0	1.9	1.6	2.0

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.017 Soil BH3 0.25M	CE144447.018 Soil BH3 0.5M	CE144447.019 Soil BH3 0.75M	CE144447.020 Soil BH3 1M
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Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	6.7	6.8	6.9	7.1
pHfox	pH Units	-	2.9	5.1	3.9	5.4
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	3.8	1.7	3.0	1.7

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.021 Soil BH3 1.25M	CE144447.022 Soil BH3 1.5M	CE144447.023 Soil BH3 1.75M	CE144447.024 Soil BH3 2M
-----------	-------	-----	---	-----------------------------------	----------------------------------	-----------------------------------	--------------------------------

Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	7.1	7.1	7.3	7.5
pHfox	pH Units	-	3.6	5.3	6.4	5.7
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	3.5	1.8	0.9	1.8

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.025 Soil BH4 0.25M	CE144447.026 Soil BH4 0.5M	CE144447.027 Soil BH4 0.75M	CE144447.028 Soil BH4 1M
-----------	-------	-----	---	-----------------------------------	----------------------------------	-----------------------------------	--------------------------------

Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	7.0	6.8	6.7	6.8
pHfox	pH Units	-	3.8	5.1	4.5	4.7
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	3.2	1.7	2.2	2.1

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.029 Soil BH4 1.25M	CE144447.030 Soil BH4 1.5M	CE144447.031 Soil BH4 1.75M	CE144447.032 Soil BH4 2M
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Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	7.0	6.9	7.3	7.2
pHfox	pH Units	-	4.5	5.1	5.4	4.9
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	2.5	1.8	1.9	2.3

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

METHOD

METHODOLOGY SUMMARY

AN104 pHF is determined on an extract of approximately 2g of as received sample in approximately 10 mL of deionised water with pH determined after standing 30 minutes.

AN104 pHFox is determined on an extract of approximately 2g of as received sample with a few mLs of 30% hydrogen peroxide (adjusted to pH 4.5 to 5.5) with the extract reaction being rated from slight to extreme, with pH determined after reaction is complete and extract has cooled. Referenced to ASS Laboratory Methods Guidelines, method 23Af-Bf, 2004.

X Slight Reaction
 XX Moderate Reaction
 XXX Strong/High Reaction
 XXXX Extreme/Vigorous Reaction (gas evolution and heat generation)

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
		-	The sample was not analysed for this analyte
		NVL	Not Validated

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
 Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the "Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.

Note that in terms of units of radioactivity:

- 1 Bq is equivalent to 27 pCi
- 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

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CLIENT DETAILS

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 WEST RYDE NSW 2114

Telephone 07 4055 1550
Facsimile 07 4055 1774
Email dan.martin@douglaspartners.com.au

Project **90871 - Chromium Suite**
Order Number **149734**
Samples 32

LABORATORY DETAILS

Manager Anthony Nilsson
Laboratory SGS Cairns Environmental
Address Unit 2, 58 Comport St
 Portsmith QLD 4870

Telephone +61 07 4035 5111
Facsimile +61 07 4035 5122
Email AU.Environmental.Cairns@sgs.com

SGS Reference **CE144447A R0**
Date Received 20 Feb 2020
Date Reported 26 Feb 2020

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(3146).

SIGNATORIES



Anthony NILSSON
 Operations Manager



Jon Dicker
 Manager Northern QLD

Parameter	Units	LOR
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Moisture Content Method: AN002 Tested: 24/2/2020

% Moisture	%w/w	0.5	-	5.9	-	5.4
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 26/2/2020

pH KCl	pH Units	-	-	6.2	-	6.2
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	-	<0.25	-	<0.25
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	-	<5	-	<5
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	-	<0.01	-	<0.01

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 26/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	-	0.008	-	0.008
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	-	<5	-	<5

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	-	0.012	-	0.012
s-Net Acidity without ANC	%w/w S	0.005	-	0.012	-	0.012
a-Net Acidity	moles H ⁺ /T	5	-	7	-	7
Liming Rate	kg CaCO ₃ /T	0.1	-	NA	-	NA
Verification s-Net Acidity	%w/w S	-20	-	0.01	-	0.01
a-Net Acidity without ANCBT	moles H ⁺ /T	5	-	7	-	7
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	-	NA	-	NA

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447A.005 Soil BH1 1.25M	CE144447A.006 Soil BH1 1.5M	CE144447A.007 Soil BH1 1.75M	CE144447A.008 Soil BH1 2M
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Moisture Content Method: AN002 Tested: 24/2/2020

% Moisture	%w/w	0.5	-	-	-	-
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 26/2/2020

pH KCl	pH Units	-	-	-	-	-
Titratable Actual Acidity	kg H ₂ SO ₄ /T	0.25	-	-	-	-
Titratable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	-	-	-	-
Titratable Actual Acidity (TAA) S%w/w	%w/w S	0.01	-	-	-	-

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 26/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	-	-	-	-
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	-	-	-	-

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	-	-	-	-
s-Net Acidity without ANC	%w/w S	0.005	-	-	-	-
a-Net Acidity	moles H ⁺ /T	5	-	-	-	-
Liming Rate	kg CaCO ₃ /T	0.1	-	-	-	-
Verification s-Net Acidity	%w/w S	-20	-	-	-	-
a-Net Acidity without ANCBT	moles H ⁺ /T	5	-	-	-	-
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447A.009 Soil BH2 0.25M	CE144447A.010 Soil BH2 0.5M	CE144447A.011 Soil BH2 0.75M	CE144447A.012 Soil BH2 1M
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Moisture Content Method: AN002 Tested: 21/2/2020

% Moisture	%w/w	0.5	4.4	-	-	16
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TAA (Titrateable Actual Acidity) Method: AN219 Tested: 25/2/2020

pH KCl	pH Units	-	6.0	-	-	6.2
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	<0.25	-	-	<0.25
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	<5	-	-	<5
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	<0.01	-	-	<0.01

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 25/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	0.008	-	-	0.006
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	<5	-	-	<5

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	0.012	-	-	0.010
s-Net Acidity without ANC	%w/w S	0.005	0.012	-	-	0.010
a-Net Acidity	moles H ⁺ /T	5	7	-	-	6
Liming Rate	kg CaCO ₃ /T	0.1	NA	-	-	NA
Verification s-Net Acidity	%w/w S	-20	0.01	-	-	0.01
a-Net Acidity without ANCBT	moles H ⁺ /T	5	7	-	-	6
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	NA	-	-	NA

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447A.013 Soil BH2 1.25M	CE144447A.014 Soil BH2 1.5M	CE144447A.015 Soil BH2 1.75M	CE144447A.016 Soil BH2 2M
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Moisture Content Method: AN002 Tested: 24/2/2020

% Moisture	%w/w	0.5	-	-	-	-
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 26/2/2020

pH KCl	pH Units	-	-	-	-	-
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	-	-	-	-
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	-	-	-	-
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	-	-	-	-

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 26/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	-	-	-	-
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	-	-	-	-

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	-	-	-	-
s-Net Acidity without ANC	%w/w S	0.005	-	-	-	-
a-Net Acidity	moles H ⁺ /T	5	-	-	-	-
Liming Rate	kg CaCO ₃ /T	0.1	-	-	-	-
Verification s-Net Acidity	%w/w S	-20	-	-	-	-
a-Net Acidity without ANCBT	moles H ⁺ /T	5	-	-	-	-
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447A.017 Soil BH3 0.25M	CE144447A.018 Soil BH3 0.5M	CE144447A.019 Soil BH3 0.75M	CE144447A.020 Soil BH3 1M
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Moisture Content Method: AN002 Tested: 21/2/2020

% Moisture	%w/w	0.5	6.4	-	-	-
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 25/2/2020

pH KCl	pH Units	-	6.1	-	-	-
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	<0.25	-	-	-
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	<5	-	-	-
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	<0.01	-	-	-

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 25/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	0.008	-	-	-
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	<5	-	-	-

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	0.012	-	-	-
s-Net Acidity without ANC	%w/w S	0.005	0.012	-	-	-
a-Net Acidity	moles H ⁺ /T	5	7	-	-	-
Liming Rate	kg CaCO ₃ /T	0.1	NA	-	-	-
Verification s-Net Acidity	%w/w S	-20	0.01	-	-	-
a-Net Acidity without ANCBT	moles H ⁺ /T	5	7	-	-	-
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	NA	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447A.021 Soil BH3 1.25M	CE144447A.022 Soil BH3 1.5M	CE144447A.023 Soil BH3 1.75M	CE144447A.024 Soil BH3 2M
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Moisture Content Method: AN002 Tested: 21/2/2020

% Moisture	%w/w	0.5	25	-	-	-
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 25/2/2020

pH KCl	pH Units	-	6.5	-	-	-
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	<0.25	-	-	-
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	<5	-	-	-
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	<0.01	-	-	-

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 25/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	0.008	-	-	-
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	<5	-	-	-

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	<0.005	-	-	-
s-Net Acidity without ANC	%w/w S	0.005	0.008	-	-	-
a-Net Acidity	moles H ⁺ /T	5	<5	-	-	-
Liming Rate	kg CaCO ₃ /T	0.1	<0.1	-	-	-
Verification s-Net Acidity	%w/w S	-20	0.01	-	-	-
a-Net Acidity without ANCBT	moles H ⁺ /T	5	<5	-	-	-
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	<0.1	-	-	-

Parameter	Units	LOR	Sample Number	CE144447A.025	CE144447A.026	CE144447A.027	CE144447A.028
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Name	BH4 0.25M	BH4 0.5M	BH4 0.75M	BH4 1M

Moisture Content Method: AN002 Tested: 24/2/2020

% Moisture	%w/w	0.5	-	-	-	-
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 26/2/2020

pH KCl	pH Units	-	-	-	-	-
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	-	-	-	-
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	-	-	-	-
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	-	-	-	-

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 26/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	-	-	-	-
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	-	-	-	-

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	-	-	-	-
s-Net Acidity without ANC	%w/w S	0.005	-	-	-	-
a-Net Acidity	moles H ⁺ /T	5	-	-	-	-
Liming Rate	kg CaCO ₃ /T	0.1	-	-	-	-
Verification s-Net Acidity	%w/w S	-20	-	-	-	-
a-Net Acidity without ANCBT	moles H ⁺ /T	5	-	-	-	-
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447A.029 Soil BH4 1.25M	CE144447A.030 Soil BH4 1.5M	CE144447A.031 Soil BH4 1.75M	CE144447A.032 Soil BH4 2M
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Moisture Content Method: AN002 Tested: 21/2/2020

% Moisture	%w/w	0.5	18	-	-	25
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 25/2/2020

pH KCl	pH Units	-	6.4	-	-	6.4
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	<0.25	-	-	<0.25
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	<5	-	-	<5
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	<0.01	-	-	<0.01

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 25/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	0.006	-	-	<0.005
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	<5	-	-	<5

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	<0.005	-	-	<0.005
s-Net Acidity without ANC	%w/w S	0.005	0.008	-	-	<0.005
a-Net Acidity	moles H ⁺ /T	5	<5	-	-	<5
Liming Rate	kg CaCO ₃ /T	0.1	<0.1	-	-	<0.1
Verification s-Net Acidity	%w/w S	-20	0.01	-	-	0.00
a-Net Acidity without ANCBT	moles H ⁺ /T	5	<5	-	-	<5
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	<0.1	-	-	<0.1

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Chromium Reducible Sulphur (CRS) Method: ME-(AU)-[ENV]AN217

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Chromium Reducible Sulphur (Scr)	LB076362	%	0.005	<0.005	0%	103%
Chromium Reducible Sulphur (Scr)	LB076362	moles H+/T	5	<5		

TAA (Titratable Actual Acidity) Method: ME-(AU)-[ENV]AN219

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
pH KCl	LB076365	pH Units	-	6.0	0%	101%
Titratable Actual Acidity	LB076365	kg H2SO4/T	0.25	<0.25	0 - 1%	NA
Titratable Actual Acidity (TAA) moles H+/tonne	LB076365	moles H+/T	5	<5	0 - 1%	96%
Titratable Actual Acidity (TAA) S%/w	LB076365	%w/w S	0.01	<0.01	0 - 1%	97%

METHOD

METHODOLOGY SUMMARY

AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN217	Dried pulped sample is mixed with acid and chromium metal in a rapid distillation unit to produce hydrogen sulfide (H ₂ S) which is collected and titrated with iodine (I ₂ (aq)) to measure SCR.
AN219	Dried pulped sample is extracted for 4 hours in a 1 M KCl solution. The ratio of sample to solution is 1:40. The extract is titrated for acidity. Calcium, magnesium, and sulfur are determined by ICP-AES.
AN220	Chromium Suite: Scheme for the calculation of net acidities and liming rates using a Fineness Factor of 1.5.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
		-	The sample was not analysed for this analyte
		NVL	Not Validated

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the "Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.

Note that in terms of units of radioactivity:

- 1 Bq is equivalent to 27 pCi
- 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

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DA Form 1 – Development application details

Approved form (version 1.1 effective 22 JUNE 2018) 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 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) <i>(individual or company full name)</i>	KS5 Pty. Ltd.
Contact name <i>(only applicable for companies)</i>	C/- Greg Applin – GHD
Postal address <i>(P.O. Box or street address)</i>	P.O. Box 819
Suburb	Cairns
State	QLD
Postcode	4870
Country	Australia
Contact number	07 4044 2261
Email address <i>(non-mandatory)</i>	greg.applin@ghd.com
Mobile number <i>(non-mandatory)</i>	0414 768 109
Fax number <i>(non-mandatory)</i>	07 4044 2288
Applicant's reference number(s) <i>(if applicable)</i>	N/A

2) Owner's consent	
2.1) Is written consent of the owner required for this development application?	
<input type="checkbox"/> Yes – the written consent of the owner(s) is attached to this development application	
<input checked="" type="checkbox"/> 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
		20-30	Langley Road	Port Douglas
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
	4877	5	RP804926	Douglas Shire Council
b)	Unit No.	Street No.	Street Name and Type	Suburb
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)

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. Only one set of coordinates is required for this part.

☐ Coordinates of premises by longitude and latitude

Longitude(s)	Latitude(s)	Datum	Local Government Area(s) (if applicable)
		<input type="checkbox"/> WGS84 <input type="checkbox"/> GDA94 <input type="checkbox"/> Other:	

☐ Coordinates of premises by easting and northing

Easting(s)	Northing(s)	Zone Ref.	Datum	Local Government Area(s) (if applicable)
		<input type="checkbox"/> 54 <input type="checkbox"/> 55 <input type="checkbox"/> 56	<input type="checkbox"/> WGS84 <input type="checkbox"/> GDA94 <input type="checkbox"/> Other:	

3.3) Additional premises

☐ Additional premises are relevant to this development application and their details have been attached in a schedule to this 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:

☐ On strategic port land under the *Transport Infrastructure Act 1994*

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):

Douglas Shire Council

Name of port authority for tidal area (if applicable):

☐ On airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*

Name of airport:

<input type="checkbox"/> Listed on the Environmental Management Register (EMR) under the <i>Environmental Protection Act 1994</i>	
EMR site identification:	
<input type="checkbox"/> 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? *(tick only one box)*

- ☐ Material change of use ☐ Reconfiguring a lot ☒ Operational work ☐ Building work

b) What is the approval type? *(tick only one box)*

- ☒ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

- ☒ Code assessment ☐ Impact assessment *(requires public notification)*

d) Provide a brief description of the proposal *(e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):*

15-lot residential subdivision.

e) Relevant plans

Note: *Relevant plans are required to be submitted for all aspects of this development application. For further information, see [DA Forms guide: Relevant plans](#).*

- ☒ 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? *(tick only one box)*

- ☐ Material change of use ☐ Reconfiguring a lot ☐ Operational work ☐ Building work

b) What is the approval type? *(tick only one box)*

- ☐ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

- ☐ Code assessment ☐ Impact assessment *(requires public notification)*

d) Provide a brief description of the proposal *(e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):*

e) Relevant plans

Note: *Relevant plans are required to be submitted for all aspects of this development application. For further information, see [DA Forms Guide: Relevant plans](#).*

- ☐ 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

Section 2 – Further development details

7) Does the proposed development application involve any of the following?

Material change of use	<input type="checkbox"/> Yes – complete division 1 if assessable against a local planning instrument
Reconfiguring a lot	<input type="checkbox"/> Yes – complete division 2
Operational work	<input checked="" type="checkbox"/> Yes – complete division 3
Building work	<input type="checkbox"/> 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?

<input type="checkbox"/> Yes		
<input type="checkbox"/> No		

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)

<input type="checkbox"/> Subdivision (complete 10))	<input type="checkbox"/> Dividing land into parts by agreement (complete 11))
<input type="checkbox"/> Boundary realignment (complete 12))	<input type="checkbox"/> Creating or changing an easement giving access to a lot from a construction 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?

- | | | |
|--|--|---|
| <input checked="" type="checkbox"/> Road work | <input checked="" type="checkbox"/> Stormwater | <input checked="" type="checkbox"/> Water infrastructure |
| <input checked="" type="checkbox"/> Drainage work | <input checked="" type="checkbox"/> Earthworks | <input checked="" type="checkbox"/> Sewage infrastructure |
| <input checked="" type="checkbox"/> Landscaping | <input checked="" type="checkbox"/> Signage | <input checked="" type="checkbox"/> Clearing vegetation |
| <input type="checkbox"/> Other – please specify: <table border="1" style="display: inline-table; width: 300px; height: 20px;"></table> | | |

14.2) Is the operational work necessary to facilitate the creation of new lots? (e.g. subdivision)

- | | |
|---|----|
| <input checked="" type="checkbox"/> Yes – specify number of new lots: | 15 |
| <input type="checkbox"/> No | |

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

\$990,000

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
- ☐ Local government is taken to have agreed to the superseded planning scheme request – relevant documents attached
- ☒ No

PART 5 – REFERRAL DETAILS

17) Do any aspects of the proposed development require referral for 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 Regulation 2017:**

- ☐ Clearing native vegetation
- ☐ Contaminated land (*unexploded ordnance*)
- ☐ Environmentally relevant activities (ERA) (*only if the ERA have not been devolved to a local government*)
- ☐ Fisheries – aquaculture
- ☐ Fisheries – declared fish habitat area
- ☐ Fisheries – marine plants
- ☐ Fisheries – waterway barrier works
- ☐ Hazardous chemical facilities
- ☐ Queensland heritage place (*on or near a Queensland heritage place*)
- ☐ Infrastructure – designated premises
- ☐ Infrastructure – state transport infrastructure
- ☐ Infrastructure – state transport corridors and future state transport corridors
- ☐ Infrastructure – state-controlled transport tunnels and future state-controlled transport tunnels
- ☐ Infrastructure – near a state-controlled road intersection
- ☐ On Brisbane core port land near a State transport corridor or future State transport corridor
- ☐ On Brisbane core port land – ERA
- ☐ On Brisbane core port land – tidal works or work in a coastal management district
- ☐ On Brisbane core port land – hazardous chemical facility
- ☐ On Brisbane core port land – taking or interfering with water
- ☐ On Brisbane core port land – referable dams
- ☐ On Brisbane core port land - fisheries
- ☐ Land within Port of Brisbane's port limits
- ☐ 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
- ☐ 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 – construction of new levees or modification of existing 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 have been devolved to local government*)
- ☐ Local heritage places

Matters requiring referral to the chief executive of the distribution entity or transmission entity : <input type="checkbox"/> Electricity infrastructure
Matters requiring referral to: <ul style="list-style-type: none"> • 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 <input type="checkbox"/> Oil and gas infrastructure
Matters requiring referral to the Brisbane City Council : <input type="checkbox"/> Brisbane core port land
Matters requiring referral to the Minister under the Transport Infrastructure Act 1994 : <input type="checkbox"/> Brisbane core port land (inconsistent with Brisbane port LUP for transport reasons) <input type="checkbox"/> Strategic port land
Matters requiring referral to the relevant port operator : <input type="checkbox"/> Land within Port of Brisbane's port limits (below high-water mark)
Matters requiring referral to the Chief Executive of the relevant port authority : <input type="checkbox"/> Land within limits of another port (below high-water mark)
Matters requiring referral to the Gold Coast Waterways Authority : <input type="checkbox"/> Tidal works, or work in a coastal management district in Gold Coast waters
Matters requiring referral to the Queensland Fire and Emergency Service : <input type="checkbox"/> Tidal works marina (<i>more than six vessel berths</i>)

18) Has any referral agency provided a referral response for this development application?		
<input checked="" type="checkbox"/> Yes – referral response(s) received and listed below are attached to this development application <input type="checkbox"/> No		
Referral requirement	Referral agency	Date of referral response
Wetland protection area.	Dept. State Development, Manufacturing, Infrastructure and Planning	30/05/2019
Identify and describe any changes made to the proposed development application that was the subject of the referral response and the development application the subject of this form, or include details in a schedule to this development application (<i>if applicable</i>).		
<i>Relevant notation added to project plans.</i>		

PART 6 – INFORMATION REQUEST

19) Information request under Part 3 of the DA Rules
<input checked="" type="checkbox"/> I agree to receive an information request if determined necessary for this development application <input type="checkbox"/> 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:
<ul style="list-style-type: none"> • 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 of the DA Rules will still apply if the application is an application listed under section 11.3 of the DA Rules.
Further advice about information requests is contained in the <u>DA Forms Guide</u> .

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
<input checked="" type="checkbox"/> Approval <input type="checkbox"/> Development application	ROL 2019_3061/1	03/12/2019	Douglas Shire Council
<input type="checkbox"/> Approval <input type="checkbox"/> 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
\$		

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 69: 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 conservation

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

☐ Yes

☒ No

Note: See guidance materials at www.des.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 Natural Resources, Mines and Energy at www.dnrme.qld.gov.au for further information.

DA templates are available from <https://planning.dsdmip.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 <https://planning.dsdmip.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 Natural Resources, Mines and Energy at www.dnrme.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 and Science at www.des.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.dnrme.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.des.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.des.qld.gov.au for information requirements regarding development of Queensland heritage places.

Name of the heritage place:		Place ID:	
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Brothels

23.14) Does this development application involve a **material change of use for a brothel**?

- ☐ Yes – this development application demonstrates how the proposal meets the code for a development application for a brothel under Schedule 3 of the *Prostitution Regulation 2014*
- ☒ No

Decision under section 62 of the Transport Infrastructure Act 1994

23.15) 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

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 <i>Note: See the Planning Regulation 2017 for referral requirements</i>	<input checked="" type="checkbox"/> Yes
If building work is associated with the proposed development, Parts 4 to 6 of <i>DA Form 2 – Building work details</i> have been completed and attached to this development application	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
Supporting information addressing any applicable assessment benchmarks is with development application <i>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.</i>	<input checked="" type="checkbox"/> Yes
Relevant plans of the development are attached to this development application <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>	<input checked="" type="checkbox"/> Yes
The portable long service leave levy for QLeave has been paid, or will be paid before a development permit is issued (<i>see 21</i>)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Not applicable

25) Applicant declaration
<input checked="" type="checkbox"/> By making this development application, I declare that all information in this development application is true and correct <input checked="" type="checkbox"/> 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 <i>Electronic Transactions Act 2001</i> <i>Note: It is unlawful to intentionally provide false or misleading information.</i>
<p>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.</p> <p>Personal information will not be disclosed for a purpose unrelated to the <i>Planning Act 2016</i>, Planning Regulation 2017 and the DA Rules except where:</p> <ul style="list-style-type: none"> such disclosure is in accordance with the provisions about public access to documents contained in the <i>Planning Act 2016</i> and the Planning Regulation 2017, and the access rules made under the <i>Planning Act 2016</i> and Planning Regulation 2017; or required by other legislation (including the <i>Right to Information Act 2009</i>); or otherwise required by law. <p>This information may be stored in relevant databases. The information collected will be retained as required by the <i>Public Records Act 2002</i>.</p>

PART 9 – 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	
Date receipted form sighted by assessment manager	
Name of officer who sighted the form	

3 December 2019

Enquiries: Jenny Elphinstone
Our Ref: ROL 2019_3061/1 (Doc ID 931072)
Your Ref: FGC: 6038/01 L-EC2114

Administration Office
64 - 66 Front St Mossman
P 07 4099 9444
F 07 4098 2902

KS3 Pty Ltd
C/- Flanagan Consulting Group
C/ GHD
71 Stanley Street
TOWNSVILLE QLD 4810

Email: Erin.Campbell@ghd.com

Attention Ms Erin Campbell

Dear Madam

**Development Application for Reconfiguring of a Lot (1 Lot into 15 Lots)
At 20-30 Langley Road Port Douglas
On land described as Lot 5 on RP804926**

Please find attached the Decision Notice for the above-mentioned development application.

Please quote Council's application number: ROL 2019_3061/1 in all subsequent correspondence relating to this development application.

Should you require any clarification regarding this, please contact Jenny Elphinstone on telephone 07 4099 9482.

Yours faithfully


Paul Hoyer
Manager Environment & Planning

cc. State Assessment and Referral Agency (SARA) E: CairnsSARA@dilgp.qld.gov.au

encl.

- Decision Notice
 - Approved Drawing(s) and/or Document(s)
 - Concurrence Agency Response
 - Reasons for Decision - non-compliance with assessment benchmark.
- Advice For Making Representations and Appeals (Decision Notice)
- Adopted Infrastructure Charges Notice
- Advice For Making Representations and Appeals (Infrastructure Charges)



Decision Notice

Approval (with conditions)

Given under section 63 of the Planning Act 2016

Applicant Details

Name: KS3 Pty Ltd
Postal Address: C/- Flanagan Consulting Group
C/ GHD
71 Stanley Street
Townsville Qld 4810
Email: Erin.Campbell@ghd.com

Property Details

Street Address: 20-30 Langley Road, Port Douglas
Real Property Description: Lot 5 on RP804926
Local Government Area: Douglas Shire Council

Details of Proposed Development

Development Permit for Reconfiguring of a Lot (1 Lot into 15 Lots).

Decision

Date of Decision: 3 December 2019
Decision Details: Development Permit Approved (subject to conditions).

Approved Drawing(s) and/or Document(s)

Copies of the following plans, specifications and/or drawings are enclosed.

The term 'approved drawing(s) and / or document(s)' or other similar expressions means generally the following plans together with any amendments as required by the Conditions of the approval:

Drawing or Document	Reference	Date
Proposal Plan	Flanagan Consulting Group Drawing 6038-SK01 F (Council Document ID 912385).	13 September 2019
Roadworks and Drainage Plan	Flanagan Consulting Group Drawing 6038-SK02 e (Council Document ID 928437).	12 November 2019.
Concept Site Grading	Flanagan Consulting Group Drawing 6038-SK05 e (Council Document ID 928437).	12 November 2019.
Sewerage Reticulation Plan	Flanagan Consulting Group Drawing 6038-SK04 D (Council Document ID 928437).	12 November 2019.
Water Reticulation Plan	Flanagan Consulting Group Drawing 6038-SK03 E dated 19 December 2019 and as annotated by Council (Council Document ID 930021)	26 November 2019.

Note – The plans referenced above will require amending in order to comply with conditions of this Decision Notice.

Assessment Manager Conditions & Advices

Assessment Manager Conditions:

1. Carry out the approved development generally in accordance with the approved drawing(s) and/or document(s), and in accordance with:
 - a. The specifications, facts and circumstances as set out in the application submitted to Council; and
 - b. The following conditions of approval and the requirements of Council's Planning Scheme and the FNQROC Development Manual.

Except where modified by these conditions of approval.

Timing of Effect

2. The conditions of the Development Permit must be effected prior to the lodgement of the Survey Plan for signing and dating, except where specified otherwise in these conditions of approval.

Access

3.
 - a. No lot is to have vehicle access to or from Solander Boulevard.
 - b. Vehicle Access to proposed Lot 9 is limited to Langley Road. No vehicle access to and from Lot 9 is permitted to the internal cul-de-sac.

Building and Structure setbacks

4. No buildings or structures are to be located within 3 m of the Solander Boulevard frontage of the site on Lots 1-4 unless otherwise approved by the Chief Executive Officer.

Street Layout and Design

5. The street layout and design is to be generally in accordance with Flanagan Consulting Group Proposal Plan 6038-SK02e dated 19 November 2019 and must comply with Queensland Streets and the FNQROC Development Manual, to the satisfaction of the Chief Executive Officer. In particular:

- a. The new internal road must have a minimum road reserve width of 14.5 metres;
- b. Langley Road must be upgraded to reflect the road form and geometry of the existing constructed Langley Road west from Andrews Close for the full frontage of the site. Unless otherwise approved, the road upgrade must include new kerb and channel, subsoil drains and road pavement to the crown of the road;
- c. The upgrade of Langley Road must include the provision of a two (2) metre wide concrete footpath along the frontage of the site including a new kerb ramp on Andrews Close;
- d. The upgrade of Langley Road must be designed to ensure that the intersection with Solander Boulevard is designed to suitable enable Council vehicle access and public pedestrian access onto Solander Boulevard;
- e. Detail of proposed retaining structure along the Solander Boulevard frontage of the site that may include a single pedestrian access for each lot fronting Solander Boulevard and must be provided prior to seeking a Development Permit for Operational Work. The retaining structure is to have regard to protection from future storm tide inundation and amenity to the neighbouring Solander Boulevard. These works are to be undertaken at the time of other civil work associated with the development.

f. Provision of a fill on each lot whereby:

- i. Fill areas for the lots are at a level to provide an immunity to a 1% storm tide event (having regard to a 0.8m sea level rise for the year 2100 or a lower level if nominated under a State Planning Policy at the time of lodgement of the application for Operational Work) and a 1% flood event.

The nominated fill level to provide immunity to the 1% AEP stormtide event is to be as per the Cairns BMT-WMB Cairns Region Storm Tide Inundation Study, Final Report and Mapping January 2013 (Council reference Doc ID: 462510) or another superseding report or individual study approved or found satisfactory to the satisfaction of the Chief Executive Officer.

Where the freeboard applied relevant to the BMT WMB report (Page 45 of the Study report) is less than the report recommendation, such lesser height must be qualified by the study author as suitable for the land to the satisfaction of the Chief Executive Officer. Alternatively, the qualification may be provided by a peer coastal engineer to the satisfaction of the Chief Executive Officer;

- ii. All fill is to drain to lawful point of discharge and must not detrimentally impact on upstream, downstream or surrounding land and/or proposed lots;
- iii. Fill areas must be suitably retained with suitably revetment protection from coastal erosion and impacts of storm tide inundation;
- v. Where the minimum fill results in an increase of ground level of 1m or greater to the neighbouring northern boundary for proposed lots 4, 5, 6 and 7, section and site plans are to be provided, for each of the adjacent lots and at least at the highest point, detailing the proposed height and proposed treatment(s) including landscaping to ensure the continued amenity of the neighbouring lots. The design is to ensure no ponding occurs to neighbouring properties and all drainage received from the neighbouring land is adequately catered for. These works are to be undertaken at the time of other civil work associated with the development;

- vi. Where the minimum fill results in an increase of ground level of less than 1m, to the neighbouring northern boundary for proposed lots 4, 5, 6 and 7, the fill may be constructed to the boundary provided no ponding occurs to neighbouring properties and all drainage received from the neighbouring land is adequately catered for;

- g. All lots must provide for suitable vehicle access.

An amended plan incorporating the above requirements must be submitted prior to the issue of a Development Permit for Operational Work.

All works must be carried out in accordance with the approved plans, to the requirements and satisfaction of the Chief Executive Officer prior to the lodgement of a Survey Plan for signing and dating.

Water Supply and Sewerage Works Internal

- 6. Undertake the following water supply and sewerage works internal to the subject land generally in accordance with Flanagan Consulting Group Sketches 6038-SK03D and 6038-SK04D:

- a. Provide a single internal sewer connection to each lot in accordance with the FNQROC Development Manual;
- b. If any existing sewer connections or property connection branches are proposed to be retained, further detail is to be provided to support the condition and capacity of the connection. CCTV footage is required to confirm the suitability of the existing connections for reuse. Existing sewer connections not retained must be decommissioned.
- c. Provide a minimum 100mm (PN16, Blue Brute) diameter water main in the new cul-de-sac with a 63mm (HDPE, PN16 blue) OD loop main in accordance with the FNQROC Development Manual requirements;
- d. Provide a minimum 125mm HDPE SDR11 PN 16 road crossing connecting to the 100mm main on the southern side of Langley Road connected with Hot Tap (tapping under pressure) and under DSC water supervision. The 100mm road crossing must be on the eastern side of the new cul-de-sac;
- e. Services to be installed and tapped during the main laying, bring service into property boundary 500mm and 300mm deep, If driveways/cross overs have not been allocated then service is to be installed in the middle of block, this avoids the chance of the service being under a driveway,
- f. Provide all fittings and valving in accordance with the FNQROC Development Manual requirements; and
- g. Decommission and remove the existing AC water main along the Langley Road frontage of the site and any existing water meters or water supply connections into the site.

All the above works must be designed and constructed in accordance with the FNQROC Development Manual and generally as the annotated water reticulation plan.

Engineering design plans incorporating the above requirements must be submitted prior to the issue of a Development Permit for Operational Work.

All works must be carried out in accordance with the approved plans, to the requirements and satisfaction of the Chief Executive Officer prior to the lodgement of the Survey Plan for signing and dating.

Damage to Infrastructure

7. In the event that any part of Council's existing sewer / water infrastructure is damaged as a result of construction activities occurring on the site, including but not limited to, mobilisation of heavy earthmoving equipment, stripping and grubbing, the applicant / owner must notify Council immediately of the affected infrastructure and have it repaired or replaced by Council, at the developer's cost, prior to the lodgement of the Survey Plan for signing and dating.

Acid Sulfate Soil Management Plan

8. a. Undertake an Acid Sulfate Soil sampling, investigation and analysis in the area to be affected by this development in accordance with:
 - i. the Queensland Acid Sulfate Soil Technical Manual Soil Management Guidelines version 4.0 (2014);
 - ii. the Acid Sulfate Soils - Laboratory Methods Guidelines (version. 2.1, June 2004; and
 - iii. the State Planning Policy 2017.
- b. Provide a statement to Council that
 - i. present Acid Sulfate Soils and/or Possible Acid Sulfate Soils are not present; or
 - ii. that management of present Acid Sulfate Soils and/or Possible Acid Sulfate Soils has been incorporated into an Acid Sulfate Soils Environmental Management Plan prepared in accordance with the abovementioned documents.

Identification of soils with a pyrite content in excess of the action levels will trigger a Acid Sulfate Soil Environmental Management Plan which must be prepared to the satisfaction of the Chief Executive Officer.

Where earthworks are undertaken without a Development Permit for Operational Work, the results of this investigation must be submitted to Council for approval, ten (10) business days prior to any earthworks or clearing being commenced on the site.

Where earthworks are undertaken in association with a Development Permit for Operational Work, the results must accompany such application lodged to Council.

Drainage Study of Site and drainage Design Plan

9. Undertake a local drainage study of the site to determine the drainage impacts on upstream and downstream properties and the mitigation measures required to minimise such impacts. In particular, the study must address the following:
 - a. The contributing catchment boundaries, including specifically the drainage from northern properties entering the site and discharging via surface drainage and pipe systems through proposed lot 4 and within Solander Boulevard to the east of proposed lot 4;
 - b. The extent of the 100 year ARI flood event in relation to the site both pre- and post-development;
 - d. Primary and secondary flow paths for the 5 and 100 year ARI flood events, including external flows currently discharging through the site;
 - e. Identify any requirement for drainage easements;
 - f. Identify the need and tenure for flood detention areas to ensure a no-worsening impact on downstream properties for the entire development;

- g. In the absence of flood detention, the drainage study provides a concept design to limit the primary piped drainage flows entering the existing drainage system that drains to the west to no more than the pre-development flows and ensure that all overland flows are able to be conveyed to Langley Road east to Solander Boulevard to the existing drainage swale outlet near the northern property boundary on Solander Boulevard. Depth and width of flows in Langley Road east from the cul-de-sac in the minor event are to be provided in the supporting calculations for the operational works submission;
- h. Information on the proposed works and any impacts proposed at the drainage outlet from the proposed development; and
- i. Lawful point of discharge.

A plan of proposed drainage works must then be prepared to show the study outcomes and include the following considerations:

- i. Drainage infrastructure in accordance with FNQROC Development Manual except as modified under (g) above.
- ii. All new allotments shall have immunity from flooding associated with the ARI 100 year rainfall event and the 100 year storm tide event;
- iii. Where practical, all new allotments must be drained to the road frontages, drainage easements or drainage reserves and discharged to the existing drainage system via stormwater quality device(s);
- iv. Existing surface drainage along the northern property boundary must be addressed in the plan of drainage works unless otherwise approved by Council following review of the outcomes of the drainage study; and
- v. The underground drainage network to the west is to be limited to the predevelopment flows and any additional runoff is to be conveyed overland in Langley Road east to Solander Boulevard

The study and the proposed drainage works plan must be endorsed by the Chief Executive Officer prior to the issue of a Development Permit for Operational Work.

Access Construction

- 10. Construct a concrete driveway or other approved surface to the nominated building area located in Lot 4.

All works must be carried out in accordance with the approved plans and must be to the requirements and satisfaction of the Chief Executive Officer prior to the lodgement of the Survey Plan for signing and dating.

Demolish Structures

- 11. All structures not associated with the approved development (including disused services and utilities) must be demolished and/or removed from the subject land prior to the lodgement of the Survey Plan for signing and dating.

Stockpiling and Transportation of Fill Material

- 12. Soil used for filling or spoil from the excavation is not to be stockpiled in locations that can be viewed from adjoining premises or a road frontage for any longer than one (1) month from the commencement of works.

Transportation of fill or spoil to and from the site must not occur within:

- a. peak traffic times; or
- b. before 7:00 am or after 6:00 pm Monday to Friday; or
- c. before 7:00 am or after 1:00 pm Saturdays; or

d. on Sundays or Public Holidays.

13. Dust emissions or other air pollutants must not extend beyond the boundary of the site and cause a nuisance to surrounding properties.

Storage of Machinery and Plant

14. The storage of any machinery, material and vehicles must not cause a nuisance to surrounding properties, to the satisfaction of the Chief Executive Officer.

Construction Access

15. Vehicular access to the site for construction and demolition purposes must be provided from Langley Road only, unless authorised by the Chief Executive Officer.

Sediment and Erosion Control

16. A sediment and erosion control plan must be submitted prior the issue of a Development Permit for Operational Works. Such plans must be installed / implemented prior to discharge of water from the site, such that no external stormwater flow from the site adversely affects surrounding or downstream properties (in accordance with the requirements of the Environmental Protection Act 1994, and the FNQROC Development Manual).

Existing Services

17. Written confirmation of the location of existing services for the land must be provided. In any instance where existing services are contained within another lot, the following applies, either:
 - a. Relocate the services to comply with this requirement; or
 - b. Arrange registration of necessary easements over services located within another lot prior to, or in conjunction with, the lodgement of a Survey Plan for signing and dating to create a lot.

Electricity Supply

18. Written evidence from Ergon Energy advising if distribution substation/s are required within the development must be provided. If required, details regarding the location of these facilities must be submitted to the Chief Executive Officer accompanied by written confirmation from Ergon Energy. Details regarding electricity supply must be provided prior to the issue of a Development Permit for Operational Work.

Electricity and Telecommunications

19. Written evidence of negotiations with Ergon Energy and the telecommunication authority must be submitted to Council stating that both an underground electricity supply and telecommunications service will be provided to the development prior to the lodgement of a Survey Plan for signing and dating.

Street Lighting

20. The following arrangements for the installation of street lighting within the proposed subdivision must be prior to the lodgement of a Survey Plan for signing and dating:
 - a. Prior to the issue of a Development Permit for Operational Work a Rate 2 lighting scheme is to be prepared by an Ergon Energy approved consultant and submitted to the Chief Executive Officer for approval. The Rate 2 lighting scheme is to be designed in accordance with the relevant Road Lighting Standard AS/NZS 1158 and the FNQROC Development Manual. The applicable lighting category is to be determined from the Road Hierarchy Table D1.1 and the corresponding applicable Lighting Categories Table D8.1 as identified in the FNQROC Development Manual.

The lighting scheme must show light pole locations that align with property boundaries that represent the permitted design spacing and demonstrates no conflicts with stormwater, kerb inlet pits and other services.

The design must provide the applicable illumination level specified in the Road Lighting Standard AS/NZS 1158 at the following road elements:

- i. Intersections
- ii. Pedestrian Refuges
- iii. Cul-de-sacs
- iv. LATM Devices

LATM Devices are to be shown on the civil layout design, the electrical services and street lighting design must be submitted in accordance with Ergon Energy's latest Distribution Design Drafting Standard.

- b. Prior to the issue of a Compliance Certificate for the Plan of Survey written confirmation that the relevant capital contribution required by Ergon Energy has been paid must be submitted, to ensure that the street lighting will be constructed.
- c. Where a new intersection is formed on an existing roadway for the purpose of accessing a new subdivision development, the intersection and existing road approaches must be provided with street lighting for a distance equivalent to at least two (2) spans either side of the intersection to the relevant Lighting Category.
- d. Where an existing intersection is required to be upgraded as part of a development approval, the intersection and existing road approaches must be provided with street lighting for a distance equivalent to at least two (2) spans either side of the intersection to the relevant Lighting Category.

Damage to Council Infrastructure

- 21. In the event that any part of Council's existing infrastructure is damaged as a result of construction activities occurring on the site, including but not limited to; mobilisation of heavy construction equipment, stripping and grubbing, the applicant/owner must notify Council immediately of the affected infrastructure and have it repaired or replaced at the developer's/owners/builders cost, prior to the lodgement of the Survey Plan for signing and dating.

Landscape Plan

- 22. Undertake landscaping of the street frontages of new roads, Langley Road and Andrews Close in accordance with FNQROC Development Manual and in accordance with a landscape plan.

Where Solander Boulevard is disturbed for drainage purposes, the area is to be grassed and in a mowable condition with a maximum profile of 1:4.

The landscape plan must be to the satisfaction of the Chief Executive Officer prior to the issue of a Development Permit for Operational Work. In particular, the plan must show:

- a. Planting of the footpath with trees, using appropriate species with regard to any overhead powerline constraints;
- b. The revegetation of cut and fill batters;
- c. Species to have regard to the Planning Scheme Landscaping Policy;
- d. Remediation and revegetation works to be undertaken within the both the major drainage line and the drainage reserve, including any works in Solander Boulevard;
- e. Inclusion of all requirements as detailed in other relevant conditions included in this Approval, with a copy of this Development Approval to be given to the applicant's Landscape Architect / Designer.

The landscape plan must be endorsed by the Chief Executive Officer prior to the issue of a Development Permit for Operational Work. Areas to be landscaped must be established prior to lodgement of the survey Plan for signing and dating. Landscaping must be maintained for the duration of the on-maintenance period to the satisfaction of the Chief Executive Officer.

Construction Signage

23. Prior to the commencement of any construction works associated with the development, a sign detailing the project team must be placed on the road frontage of the site and must be located in a prominent position. The sign must detail the relevant project coordinator for the works being undertaken on the site, and must list the following parties (where relevant) including telephone contacts:
 - a. Developer;
 - b. Project Coordinator;
 - c. Civil Engineer; and
 - d. Civil Contractor.

Advice

1. This approval, granted under the provisions of the *Planning Act 2016*, shall lapse four (4) years from the day the approval takes effect in accordance with sections 85(1)(b) and 71 of the *Planning Act 2016*.
2. This approval does not negate the requirement for compliance with all relevant Local Laws and statutory requirements.
3. For information relating to the *Planning Act 2016* log on to www.dsdmip.qld.gov.au. To access the *FNQROC Development Manual*, Local Laws and other applicable Policies, log on to www.douglas.qld.gov.au.
4. The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* applies to action that has, will have or is likely to have a significant impact on matters of national environmental significance.

Further information on the *EPBC Act* can be obtained from the Department of the Environment, Water, Heritage and the Arts website www.environment.gov.au/epbc EPBC Act Policy Statement 1.1 Significant Impact Guidelines Matters of National Environmental Significance (Oct. 2009).

Infrastructure Charges Notice

5. A charge levied for the supply of trunk infrastructure is payable to Council towards the provision of trunk infrastructure in accordance with the Infrastructure Charges Notice, a copy of which is attached for reference purposes only. The original Infrastructure Charges Notice will be provided under cover of a separate letter.

The amount in the Infrastructure Charges Notice has been calculated according to Council's Infrastructure Charges Resolution.

Please note that this Decision Notice and the Infrastructure Charges Notice are stand-alone documents. The *Planning Act 2016* confers rights to make representations and appeal in relation to a Decision Notice and an Infrastructure Charges Notice separately.

The amount in the Infrastructure Charges Notice is subject to index adjustments and may be different at the time of payment. Please contact the Development Assessment Team at council for review of the charge amount prior to payment.

The time when payment is due is contained in the Infrastructure Charges Notice.

Further Development Permits

Please be advised that the following development permits are required to be obtained before the development can be carried out:

- All Operational Work

All Plumbing and Drainage Work must only be carried in compliance with the Queensland *Plumbing and Drainage Act 2018*.

Concurrence Agency Response

Concurrence Agency	Concurrence Agency Reference	Date	Council Electronic Reference
State Department Manufacturing, Infrastructure and Planning	1904-10894 SRA	30 May 2019	904465

Note – Concurrence Agency Response is attached. This Concurrence Agency Response maybe amended by agreement with the respective agency.

Currency Period for the Approval

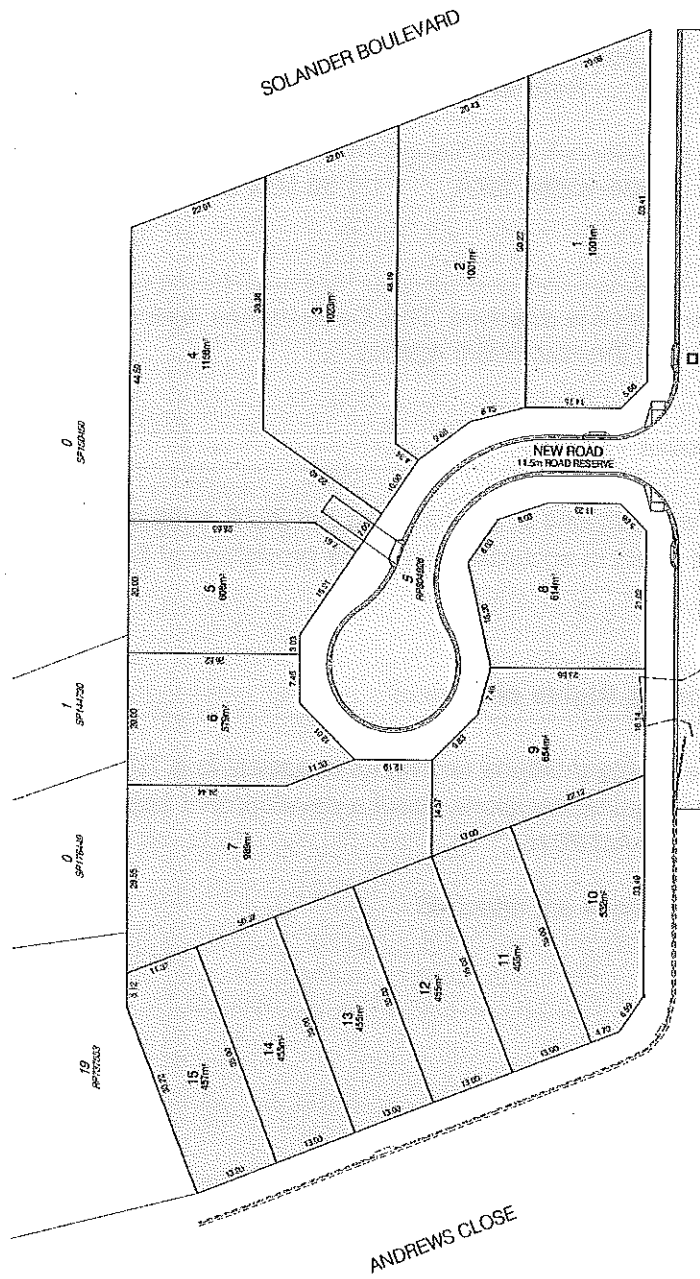
This approval, granted under the provisions of the *Planning Act 2016*, shall lapse four (4) years from the day the approval takes effect in accordance with the provisions of Section 85 of the *Planning Act 2016*.

Rights to make Representations & Rights of Appeal

The rights of applicants to make representations and rights to appeal to a Tribunal or the Planning and Environment Court against decisions about a development application are set out in Chapter 6, Part 1 of the *Planning Act 2016*.

A copy of the relevant appeal provisions are attached.

Two teams of 250,000 and 500,000 people of American ancestry group, a restricted number that is under 100,000 people. The law that was passed in 1952 and was not in accordance with American legislation.



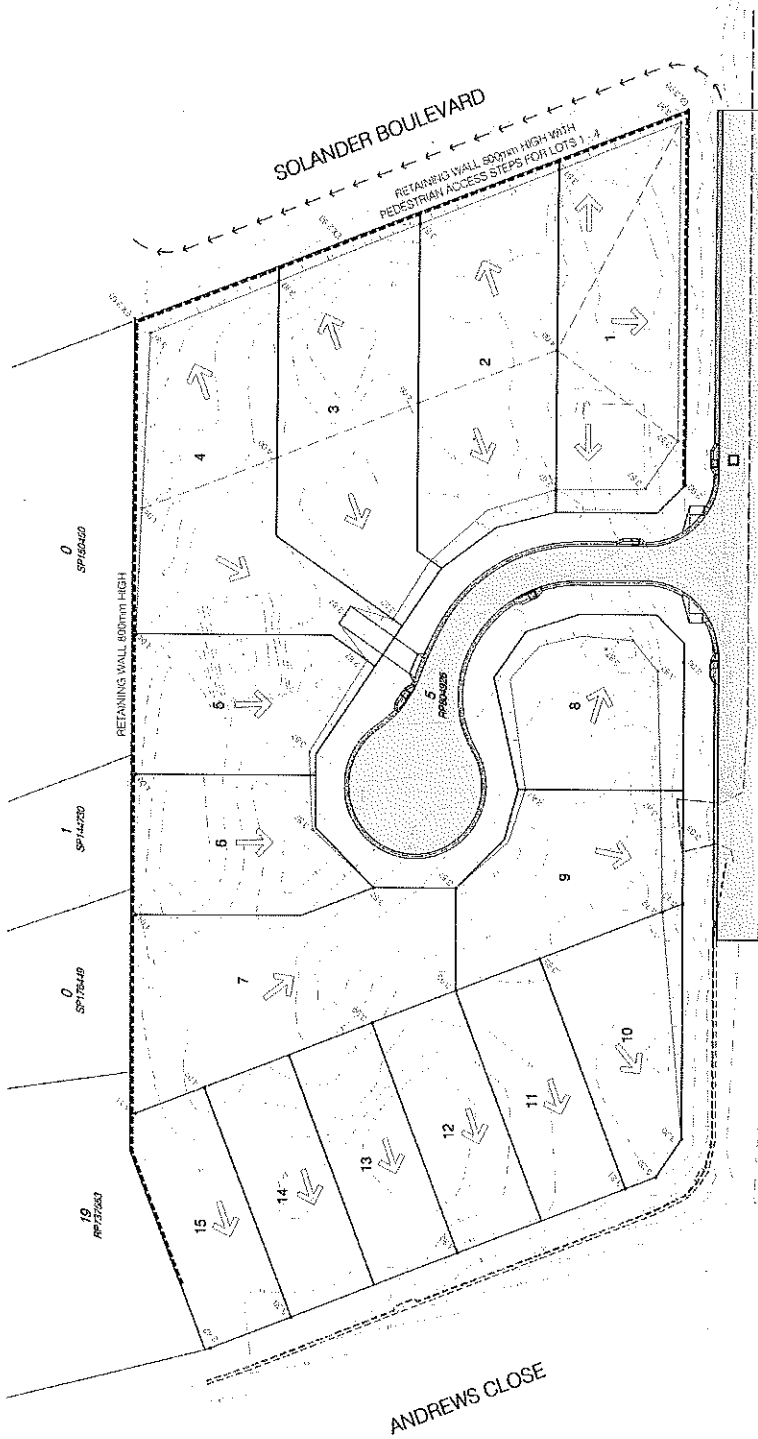
FLANAGAN
CONSULTING GROUP
ENVIRONMENTAL CONSULTANTS • PROJECT MANAGEMENT • FINANCIAL PLANNING
CARRIS DARTMOUTH HANCOCK TOWNVILLE
207-431-7744 401-846-1626 227-446-1326
www.flanagancg.com

PROPOSAL PLAN

6038-SK01 F 1.300
At File Size
Accessed 06/03/2019
13 September 2019



The owner is advised that the information contained herein is for general information only and should not be relied upon for any specific purpose. The owner is advised to consult with a qualified professional for any specific purpose.



LEGEND

- EXISTING SURFACE CONTOURS
- FINISHED SURFACE LEVEL
- DIRECTION OF FLOW
- PROPOSED TOP OF WATER ALL BATTERS SHOWN INDICATIVELY AT 1:1 (H:V)
- CHANGE OF GRADE
- PROPOSED RETAINING WALL

MINIMUM ALLOWABLE FILL LEVELS
 3.87 MHD < 200m SETBACK FROM COASTLINE
 2.70 MHD > 200m SETBACK FROM COASTLINE
 (REF Cairns Region Storm Tide inundation Study - 2017 prepared by BMT WBM)

FLANAGAN CONSULTING GROUP
 CONSULTING ENGINEERS
 CURRAN DARWIN MACQUAY TOWNESVILLE
 08 9421 1166 08 9421 1166 08 9421 1166
 08 9421 1166 08 9421 1166 08 9421 1166

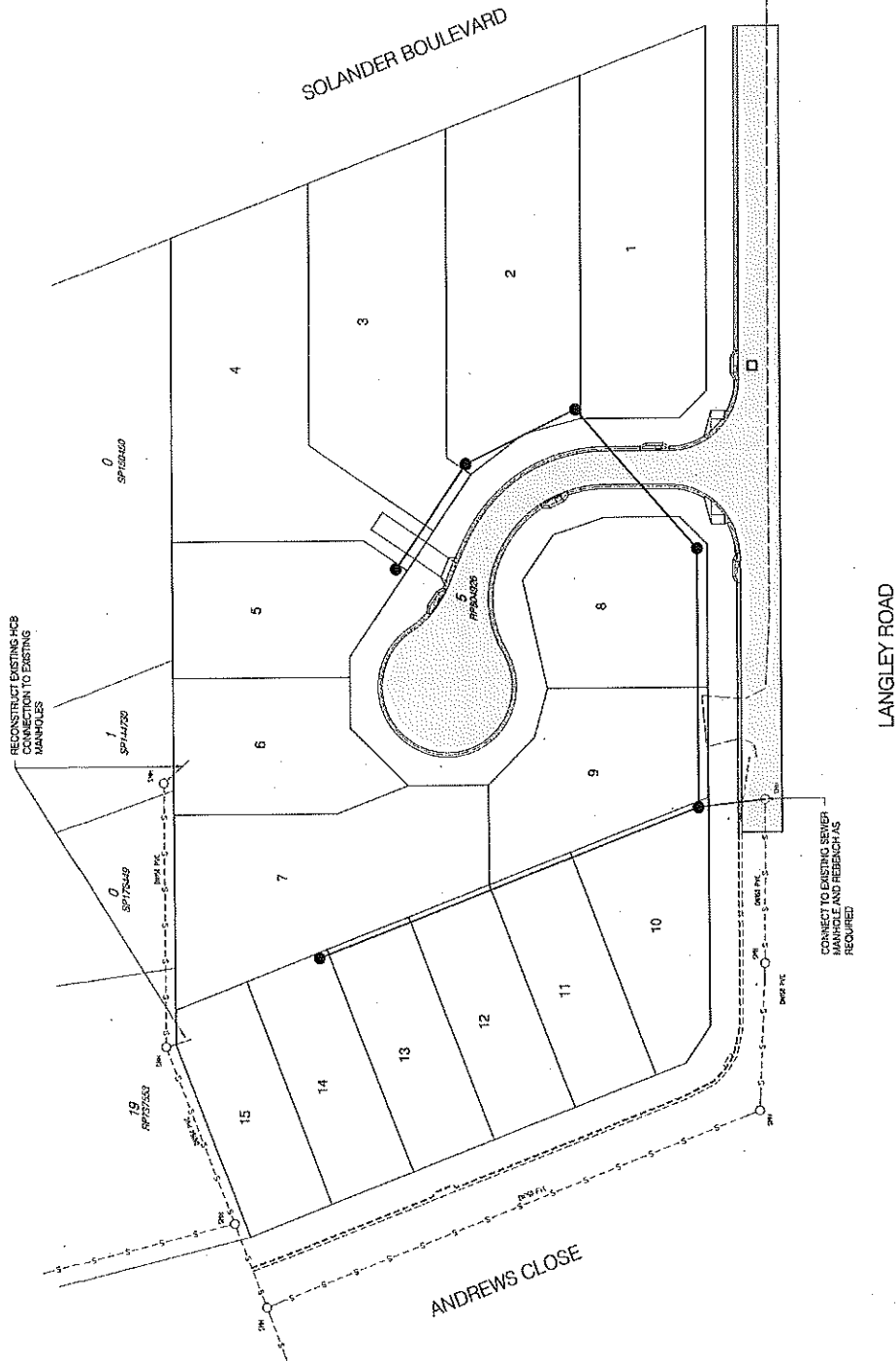
RECONFIGURATION OF LOT
 LOT 5 on RP 804926
 15 Lot Subdivision

CONCEPT SITE GRADING

6038-SK05 E
 1:300
 A1 PLS
 12 November 2019

1.5. DRAINAGE & SEWERAGE: THE LOCATION OF EXISTING SEWERAGE DRAINAGE
 AND PROPOSED SEWERAGE DRAINAGE ARE SHOWN ON THIS PLAN. ALL
 NEW SEWERAGE DRAINAGE SHALL BE INSTALLED IN ACCORDANCE WITH THE
 NOTES.

NOTES



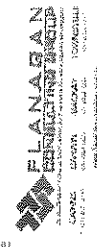
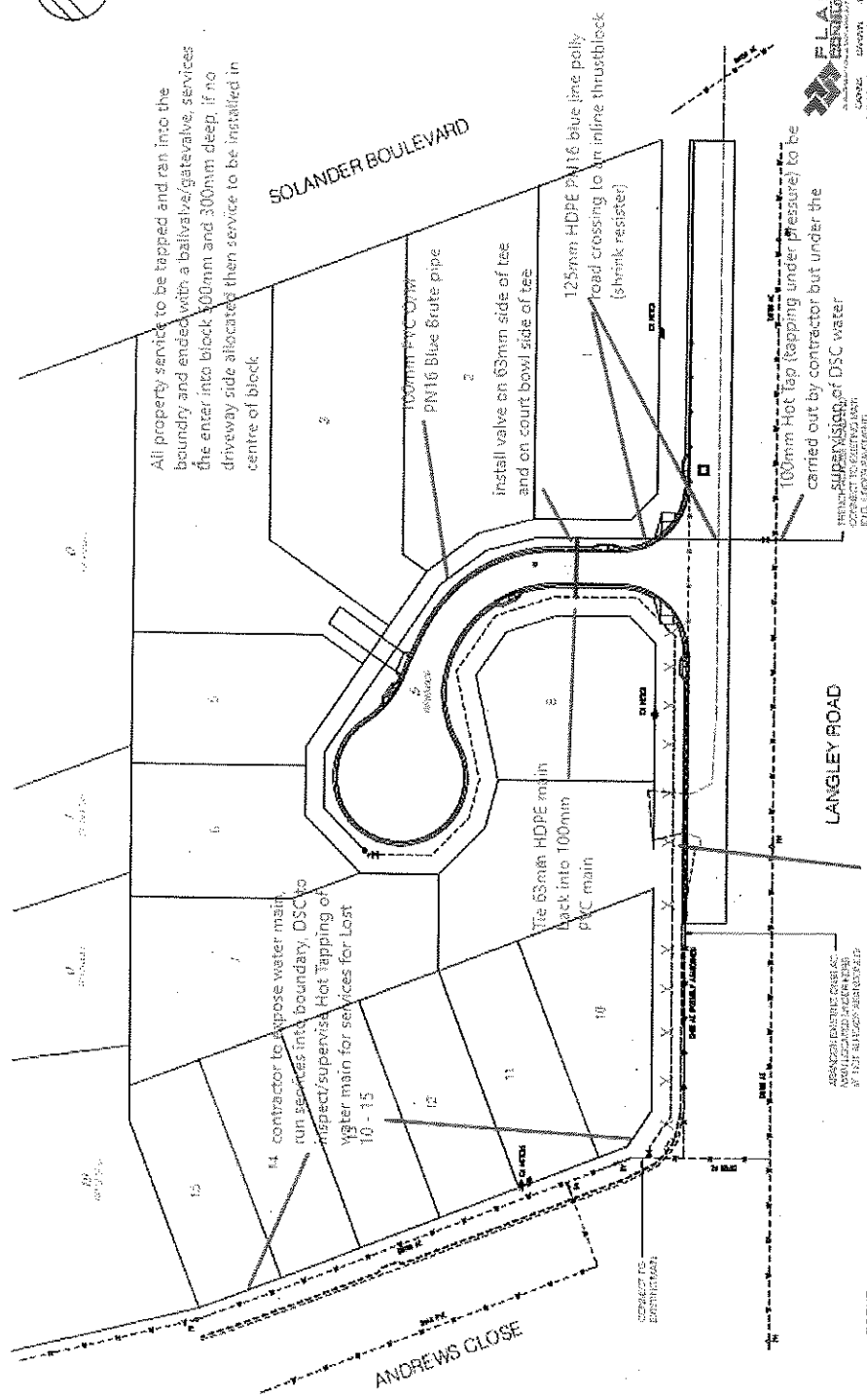
LEGEND
 —●— EXISTING SEWER MAIN
 —●— PROPOSED SEWER MAIN

ELANAGAN CONSULTING GROUP
 CONSULTING ENGINEERS
 15/161/1
 CAIRNS HOCKEY TOWNSHIP
 15/161/1
 15/161/1

RECONFIGURATION OF LOT
 LOT 5 on RP 804926
 15 Lot Subdivision
 SEWERAGE RETICULATION

6038-SK04 D	1:300
ALP 12/20	12/20
ALP 12/20	12/20
ALP 12/20	12/20

1. All work to be done in accordance with the relevant standards and specifications.
2. All work to be done in accordance with the relevant standards and specifications.
3. All work to be done in accordance with the relevant standards and specifications.



RECONFIGURATION OF LOT	
LOT 15 (P/S) SURVEY	1:200
12 Lot Subdivision	1:200
WATER RETICULATION	
8038-SK03 D	1:200
Author: 08/01/2019	1:200
12/01/2019	1:200

ADOPTED INFRASTRUCTURE CHARGES NOTICE

KS3 Pty Ltd		0	0
DEVELOPERS NAME		ESTATE NAME	STAGE
20-30 Langley Road		L5 RP804926	1528
STREET No. & NAME		LOT & RP No.s	PARCEL No.
ROL 16 lots		ROL 2019_3061	4
DEVELOPMENT TYPE		COUNCIL FILE NO.	VALIDITY PERIOD (year)
Doc ID: 921611		Payment prior to lodgment of survey plan for endorsement	
DSC Reference Doc. No.		VERSION No.	
1			

Adopted Charges as resolved by Council at the Ordinary Meeting held on 5 June 2018, Local Government Infrastructure Plan, Planning Scheme Amendment (effect on and from 2 July 2018)

Locality	Charge per Use	rate	Floor area/No.	Amount	Amount Paid	Receipt Code & GL Code
Port Douglas						
Proposed Demand						
Residential Lots	Separate house	Per House lot	15	292,365.00		
	Total Demand			292,365.00		
Existing Credit						
Residential Lot	Vacant Lot	Per House lot	1	19,491.00		
	Total Credit			19,491.00		
						Code 895 GL 07600.0135.0825

Required Payment or Credit

TOTAL

\$272,874.00

Prepared by

J Elphinstone

26-Sep-19

Amount Paid

Checked by

D Lamond

30-Sep-19

Date Paid

Date Payable

Prior to endorsement of survey plan

Receipt No.

Amendments

Date

Cashier

Note:

The Infrastructure Charges in this Notice are payable in accordance with Sections 119 and 120 of the *Planning Act 2016* as from Council's resolution from the Ordinary Meeting held on 5 June 2018.

Charge rates under the current Policy are not currently subject to indexing.

Any Infrastructure Agreement for trunk works must be determined and agreed to prior to issue of Development Permit for Operational Work.

Charges are payable to: Douglas Shire Council. You can make payment at any of Council's Business Offices or by mail with your cheque or money order to Douglas Shire Council, PO Box 723, Mossman QLD 4873. Cheques must be made payable to Douglas Shire Council and marked 'Not Negotiable.' Acceptance of a cheque is subject to collection of the proceeds. Post dated cheques will not be accepted

Any enquiries regarding Infrastructure Charges can be directed to the Development & Environment, Douglas Shire Council on 07 4099 9444 or by email on enquiries@douglas.qld.gov.au

Concurrence Agency Conditions

RA6-N



Department of
State Development,
Manufacturing,
Infrastructure and Planning

SARA reference: 1904-10894 SRA
Council reference: ROL 3061/2019
Applicant reference: 6038/01-L-EC2114

30 May 2019

Chief Executive Officer
Douglas Shire Council
PO Box 723
Mossman Qld 4873
enquiries@douglas.qld.gov.au

Attention: Jenny Elphinstone

Dear Sir/Madam

SARA response—20-30 Langley Road, Port Douglas
(Referral agency response given under section 56 of the *Planning Act 2016*)

The development application described below was confirmed as properly referred by the Department of State Development, Manufacturing, Infrastructure and Planning on 30 April 2019.

Response

Outcome:	Referral agency response – with conditions.
Date of response:	30 May 2019
Conditions:	The conditions in Attachment 1 must be attached to any development approval.
Advice:	Advice to the applicant is in Attachment 2 .
Reasons:	The reasons for the referral agency response are in Attachment 3 .

Development details

Description:	Development permit	Reconfiguring a lot (1 lot into 13 lots)
SARA role:	Referral Agency	
SARA trigger:	Schedule 10, Part 20, Division 4, Table 2, Table 1 (Planning Regulation 2017)	
	Wetland protection area	
SARA reference:	1904-10894 SRA	
Assessment Manager:	Douglas Shire Council	

Page 1 of 6

Far North Queensland regional office
Ground Floor, Orr Graham and Hantley
Street, Cairns
PO Box 2358, Cairns QLD 4870

Street address: 20-30 Langley Road, Port Douglas
Real property description: Lot 5 on RP804926
Applicant name: KS3 Pty Ltd
Applicant contact details: PO Box 891
TOWNSVILLE QLD 4810
erin@flanaganconsulting.com.au

Representations

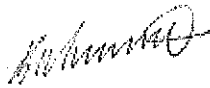
An applicant may make representations to a concurrence agency, at any time before the application is decided, about changing a matter in the referral agency response (s.30 Development Assessment Rules)

Copies of the relevant provisions are in **Attachment 4**.

A copy of this response has been sent to the applicant for their information.

For further information please contact Joanne Manson, Principal Planning Officer, SARA Far North QLD on 40373228 or via email CairnsSARA@dsdmip.qld.gov.au who will be pleased to assist.

Yours sincerely



Brett Nancarrow
Manager (Planning)

cc KS3 Pty Ltd, c/- Flanagan Consulting, erin@flanaganconsulting.com.au

enc Attachment 1 - Referral agency conditions
Attachment 2 - Advice to the applicant
Attachment 3 - Reasons for referral agency response
Attachment 4 - Change representation provisions

Attachment 1—Referral agency conditions

(Under section 56(1)(b)(i) of the *Planning Act 2016* the following conditions must be attached to any development approval relating to this application)

No.	Conditions	Condition timing
Reconfiguring a lot		
Schedule 10, Part 20, Division 4, Table 2, Table 1 - Wetland protection area —The chief executive administering the <i>Planning Act 2016</i> nominates the Director-General of the Department of Environment and Science to be the enforcement authority for the development to which this development approval relates for the administration and enforcement of any matter relating to the following conditions:		
1.	<p>Erosion and sediment control measures which are in accordance with the <i>Best Practice Erosion and Sediment Control (BPESC) guidelines for Australia (International Erosion Control Association)</i>, are to be installed and maintained to prevent the release of sediment to the HES wetland as shown on the map of referable wetlands as defined in the Environmental Protection Regulation 2008.</p> <p>Note: HES referable wetlands are wetlands shown on the <u>map of referable wetlands</u> as defined in the Environmental Protection Regulation 2008.</p>	For the duration of the works
2.	<p>Stormwater discharge must be treated in accordance with the Queensland Best Practice Environmental Management Guidelines before stormwater flow enters the HES wetland as shown on the map of referable wetlands as defined in the Environmental Protection Regulation 2008.</p> <p>Note: HES referable wetlands are wetlands shown on the <u>map of referable wetlands</u> as defined in the Environmental Protection Regulation 2008.</p>	At all times
3.	<p>(a) A Fauna Spotter Catcher (an authorised person who holds a rehabilitation permit with a spotter catcher endorsement under the <i>Nature Conservation Act 1992</i>), must be present on site to monitor earthworks and to respond to any situations that may arise from the discovery of native wildlife.</p> <p>(b) If any native wildlife are identified onsite, work must cease. The Fauna Spotter Catcher must supervise the relocation of any identified wildlife prior to clearing and earthwork operations recommencing and relocate any found wildlife species at an appropriate location in close proximity of the subject site.</p>	<p>(a) Prior to works commencing</p> <p>(b) While clearing/earthworks are occurring</p>

Attachment 2—Advice to the applicant

General advice	
1.	Terms and phrases used in this document are defined in the <i>Planning Act 2016</i> its regulation or the State Development Assessment Provisions (SDAP) [v2.4]. If a word remains undefined it has its ordinary meaning.
Tampering with an Animal Breeding Place of a Protected Species	
2.	<p>Under the Nature Conservation (Wildlife Management) Regulation 2006, in order to tamper with the breeding place of a protected species (identified in the <i>Nature Conservation Act 1992</i>) appropriate authorisation is required.</p> <p>For further guidance on this please see the Species Management Program information on the Department of Environment and Science's website.</p>
Protected plants	
3.	<p>A clearing permit under the <i>Nature Conservation Act 1992</i> will be required to remove any protected plants from the premises.</p> <p>More information on the clearing of protected plants can be found on the Department of Environment and Science's website.</p> <p>It is recommended you meet with the Department of Environment and Science prior to applying for a permit under the <i>Nature Conservation Act 1992</i>.</p> <p>The completed pre-design conference application form should submit to palm@des.qld.gov.au.</p> <p>The Department of Environment and Science can be contacted via email at palm@des.qld.gov.au or by contacting 1300 130 372 (option 4) for information regarding clearing requirements under the <i>Nature Conservation Act 1992</i>.</p>

Attachment 3—Reasons for referral agency response
(Given under section 56(7) of the Planning Act 2016)

The reasons for the department's decision are:

- The department carried out an assessment of the development application against the relevant state codes and complies with the relevant performance outcomes.
- The proposed development is not located in a high ecological significance wetland.
- The proposed development avoids adverse impacts on the adjacent high ecological significance wetland.
- With conditions the proposed development does not impact on matters of state environmental significance.

Material used in the assessment of the application:

- The development application material and submitted plans
- *Planning Act 2016*
- *Planning Regulation 2017*
- The *State Development Assessment Provisions* (version 2.4), as published by the department
- The Development Assessment Rules
- SARA DA Mapping system
- State Planning Policy mapping system

Attachment 4—Change representation provisions

(page left intentionally blank – attached separately)

Reasons for Decision

The reasons for this decision are:

1. Sections 60, 62 and 63 of the *Planning Act 2016*:
 - a. to ensure the development satisfies the benchmarks of the 2018 Douglas Shire Planning Scheme Version 1.0; and
 - b. to ensure compliance with the *Planning Act 2016*.
2. Findings on material questions of fact:
 - a. the development application was properly lodged to the Douglas Shire Council on the 26 March 2019 under section 51 of the *Planning Act 2016* and Part 1 of the *Development Assessment Rules*; and
 - b. the development application contained information from the applicant which Council reviewed together with Council's own assessment against the 2017 State Planning Policy and the 2018 Douglas Shire Planning Scheme Version 1.0 in making its assessment manager decision; and
3. Evidence or other material on which findings were based:
 - a. the development triggered assessable development under the Assessment Table associated with the Tourist Accommodation Zone Code;
 - b. Council undertook an assessment in accordance with the provisions of sections 60, 62 and 63 of the *Planning Act 2016*; and
 - c. the applicant's reasons have been considered and the following findings are made:
 - i. Subject to conditions, the development satisfactorily meets the Planning Scheme benchmarks.

Non-Compliance with Assessment Benchmarks

Benchmark Reference	Alternative Measure/Comment
<p>Tourist Accommodation Zone Code: PO10-PO12:</p> <p>New lots contain a minimum area of 1,000m².</p> <p>New lots have a minimum road frontage of 20 metres.</p> <p>New lots contain a 25m x 20m rectangle.</p>	<p>Some of the proposed lots do not meet the Performance Outcomes. The development meets the Code Purpose (3)(a) providing for "a range of accommodation activities, with an emphasis on short-term accommodation is established at a scale and density to service tourist needs." The layout provides a range of lot sizes that can provide for a range of accommodation activities including self-assessable dwelling houses and code assessable short-term accommodation, both activities that meet the Code Purpose. The development complies with the code.</p>
<p>Local Plan Code:</p> <p>AO2.1 Development provides for the retention and enhancement of existing mature trees and character vegetation that contribute to the lush tropical character of the town.</p> <p>PO2 Development retains and enhances key landscape elements including character trees and areas of significant vegetation contributing to the character and quality of the local plan area and significant views and vistas and other landmarks important in the context of the Port Douglas/ Craiglie Township Plan map contained in Schedule 2).</p>	<p>The development is unable to retain mature vegetation that currently exists on the land due to the need to fill to achieve suitable ground heights respective to coastal processes (storm tide inundation). The vegetation was reviewed and found to not be of state significance. The land is not at a gateway. The vegetation on the nearby road and Reserve provides a physical and aesthetic buffer to the coastline. The development meets the Performance Outcome.</p>
<p>Reconfiguring of a Lot Code</p> <p>PO1 Lots comply with the lot reconfiguration outcomes of the applicable Zone Code.</p>	<p>Despite the non achievement of the lot configuration outcomes, the development achieves many of the ROL Code Purposes, namely</p> <ul style="list-style-type: none"> (a) development results in a well-designed pattern of streets supporting walkable communities; (b) lots have sufficient areas, dimensions and shapes to be suitable for their intend use taking into account environmental features and site constraints; (c) road networks provide connectivity that is integrated with adjoining existing or planned development while also catering for the safe and efficient access for pedestrians, cyclists and for public transport;

Benchmark Reference	Alternative Measure/Comment
	<p>(d) lots are arranged to front all streets and parkland such that development enhances personal safety, traffic safety, property safety and security; and contributes to streetscape and open space quality;</p> <p>(f) people and property are not placed at risk from natural hazards;</p> <p>The development complies with the Code.</p>
<p>Vegetation Management Code</p> <p>AO1 An acceptable outcome provides for vegetation damage where the removal facilitates an approved development.</p> <p>PO1 (includes) Vegetation is protected to ensure that:</p> <p>(a) the character and amenity of the local area is maintained;</p> <p>(b) vegetation damage does not result in fragmentation of habitats;</p> <p>(c) vegetation damage is undertaken in a sustainable manner;</p> <p>(d) the Shire's biodiversity and ecological values are maintained and protected;</p> <p>Code Purpose includes:</p> <p>(a) vegetation is protected from inappropriate damage; (b) where vegetation damage does occur it is undertaken in a sustainable manner; c) significant trees are maintained and protected;</p> <p>(d) biodiversity and ecological values are protected and maintained;</p> <p>(e) habitats for rare, threatened and endemic species of flora and fauna are protected and maintained;</p> <p>(f) landscape character and scenic amenity is protected and maintained;</p>	<p>The development is supported despite the conflict with the vegetation management code. The development meets the State Planning Policy (SPP) regarding Natural Hazards of Storm Tide Inundation. Under section 1.5 of the Planning Scheme, the Overlay Code and the State Planning Policy prevail over the Vegetation Management Code.</p>

Division 2 Changing development approvals

Subdivision 1 Changes during appeal period

74 What this subdivision is about

- (1) This subdivision is about changing a development approval before the applicant's appeal period for the approval ends.
- (2) This subdivision also applies to an approval of a change application, other than a change application for a minor change to a development approval.
- (3) For subsection (2), sections 75 and 76 apply—
 - (a) as if a reference in section 75 to a development approval were a reference to an approval of a change application; and
 - (b) as if a reference in the sections to the assessment manager were a reference to the responsible entity; and
 - (c) as if a reference in section 76 to a development application were a reference to a change application; and
 - (d) as if the reference in section 76(3)(b) to section 63(2) and (3) were a reference to section 83(4); and
 - (e) with any other necessary changes.

75 Making change representations

- (1) The applicant may make representations (*change representations*) to the assessment manager, during the applicant's appeal period for the development approval, about changing—
 - (a) a matter in the development approval, other than—
 - (i) a matter stated because of a referral agency's response; or

- (ii) a development condition imposed under a direction made by the Minister under chapter 3, part 6, division 2; or
- (b) if the development approval is a deemed approval—the standard conditions taken to be included in the deemed approval under section 64(8)(c).
- (2) If the applicant needs more time to make the change representations, the applicant may, during the applicant's appeal period for the approval, suspend the appeal period by a notice given to the assessment manager.
- (3) Only 1 notice may be given.
- (4) If a notice is given, the appeal period is suspended—
 - (a) if the change representations are not made within a period of 20 business days after the notice is given to the assessment manager—until the end of that period; or
 - (b) if the change representations are made within 20 business days after the notice is given to the assessment manager, until—
 - (i) the applicant withdraws the notice, by giving another notice to the assessment manager; or
 - (ii) the applicant receives notice that the assessment manager does not agree with the change representations; or
 - (iii) the end of 20 business days after the change representations are made, or a longer period agreed in writing between the applicant and the assessment manager.
- (5) However, if the assessment manager gives the applicant a negotiated decision notice, the appeal period starts again on the day after the negotiated decision notice is given.

76 Deciding change representations

- (1) The assessment manager must assess the change representations against and having regard to the matters that

must be considered when assessing a development application, to the extent those matters are relevant.

- (2) The assessment manager must, within 5 business days after deciding the change representations, give a decision notice to—
 - (a) the applicant; and
 - (b) if the assessment manager agrees with any of the change representations—
 - (i) each principal submitter; and
 - (ii) each referral agency; and
 - (iii) if the assessment manager is not a local government and the development is in a local government area—the relevant local government; and
 - (iv) if the assessment manager is a chosen assessment manager—the prescribed assessment manager; and
 - (v) another person prescribed by regulation.
- (3) A decision notice (a *negotiated decision notice*) that states the assessment manager agrees with a change representation must—
 - (a) state the nature of the change agreed to; and
 - (b) comply with section 63(2) and (3).
- (4) A negotiated decision notice replaces the decision notice for the development application.
- (5) Only 1 negotiated decision notice may be given.
- (6) If a negotiated decision notice is given to an applicant, a local government may give a replacement infrastructure charges notice to the applicant.

Extracts from the Planning Act 2016 – Appeal Rights

Planning Act 2016
Chapter 6 Dispute resolution

[s 229]

- (2) The person is taken to have engaged in the representative's conduct, unless the person proves the person could not have prevented the conduct by exercising reasonable diligence.

- (3) In this section—

conduct means an act or omission.

representative means—

- (a) of a corporation—an executive officer, employee or agent of the corporation; or
- (b) of an individual—an employee or agent of the individual.

state of mind, of a person, includes the person's—

- (a) knowledge, intention, opinion, belief or purpose; and
- (b) reasons for the intention, opinion, belief or purpose.

Chapter 6 Dispute resolution

Part 1 Appeal rights

229 Appeals to tribunal or P&E Court

- (1) Schedule 1 states—

- (a) matters that may be appealed to—
 - (i) either a tribunal or the P&E Court; or
 - (ii) only a tribunal; or
 - (iii) only the P&E Court; and
- (b) the person—
 - (i) who may appeal a matter (the *appellant*); and
 - (ii) who is a respondent in an appeal of the matter; and

Page 212

Current as at 1 July 2019

Authorised by the Parliamentary Counsel

- (iii) who is a co-respondent in an appeal of the matter;
and
 - (iv) who may elect to be a co-respondent in an appeal
of the matter.
- (2) An appellant may start an appeal within the appeal period.
- (3) The *appeal period* is—
- (a) for an appeal by a building advisory agency—10
business days after a decision notice for the decision is
given to the agency; or
 - (b) for an appeal against a deemed refusal—at any time
after the deemed refusal happens; or
 - (c) for an appeal against a decision of the Minister, under
chapter 7, part 4, to register premises or to renew the
registration of premises—20 business days after a notice
is published under section 269(3)(a) or (4); or
 - (d) for an appeal against an infrastructure charges notice—
20 business days after the infrastructure charges notice
is given to the person; or
 - (e) for an appeal about a deemed approval of a development
application for which a decision notice has not been
given—30 business days after the applicant gives the
deemed approval notice to the assessment manager; or
 - (f) for an appeal relating to the *Plumbing and Drainage Act*
2018—
 - (i) for an appeal against an enforcement notice given
because of a belief mentioned in the *Plumbing and*
Drainage Act 2018, section 143(2)(a)(i), (b) or
(c)—5 business days after the day the notice is
given; or
 - (ii) for an appeal against a decision of a local
government or an inspector to give an action notice
under the *Plumbing and Drainage Act 2018*—5
business days after the notice is given; or

(iii) otherwise—20 business days after the day the notice is given; or

(g) for any other appeal—20 business days after a notice of the decision for the matter, including an enforcement notice, is given to the person.

Note—

See the P&E Court Act for the court's power to extend the appeal period.

- (4) Each respondent and co-respondent for an appeal may be heard in the appeal.
- (5) If an appeal is only about a referral agency's response, the assessment manager may apply to the tribunal or P&E Court to withdraw from the appeal.
- (6) To remove any doubt, it is declared that an appeal against an infrastructure charges notice must not be about—
 - (a) the adopted charge itself; or
 - (b) for a decision about an offset or refund—
 - (i) the establishment cost of trunk infrastructure identified in a LGIP; or
 - (ii) the cost of infrastructure decided using the method included in the local government's charges resolution.

230 Notice of appeal

- (1) An appellant starts an appeal by lodging, with the registrar of the tribunal or P&E Court, a notice of appeal that—
 - (a) is in the approved form; and
 - (b) succinctly states the grounds of the appeal.
- (2) The notice of appeal must be accompanied by the required fee.
- (3) The appellant or, for an appeal to a tribunal, the registrar, must, within the service period, give a copy of the notice of appeal to—

- (a) the respondent for the appeal; and
 - (b) each co-respondent for the appeal; and
 - (c) for an appeal about a development application under schedule 1, section 1, table 1, item 1—each principal submitter for the application whose submission has not been withdrawn; and
 - (d) for an appeal about a change application under schedule 1, section 1, table 1, item 2—each principal submitter for the application whose submission has not been withdrawn; and
 - (e) each person who may elect to be a co-respondent for the appeal other than an eligible submitter for a development application or change application the subject of the appeal; and
 - (f) for an appeal to the P&E Court—the chief executive; and
 - (g) for an appeal to a tribunal under another Act—any other person who the registrar considers appropriate.
- (4) The *service period* is—
- (a) if a submitter or advice agency started the appeal in the P&E Court—2 business days after the appeal is started; or
 - (b) otherwise—10 business days after the appeal is started.
- (5) A notice of appeal given to a person who may elect to be a co-respondent must state the effect of subsection (6).
- (6) A person elects to be a co-respondent to an appeal by filing a notice of election in the approved form—
- (a) if a copy of the notice of appeal is given to the person—within 10 business days after the copy is given to the person; or
 - (b) otherwise—within 15 business days after the notice of appeal is lodged with the registrar of the tribunal or the P&E Court.

- (7) Despite any other Act or rules of court to the contrary, a copy of a notice of appeal may be given to the chief executive by emailing the copy to the chief executive at the email address stated on the department's website for this purpose.

231 Non-appealable decisions and matters

- (1) Subject to this chapter, schedule 1 and the P&E Court Act, unless the Supreme Court decides a decision or other matter under this Act is affected by jurisdictional error, the decision or matter is non-appealable.
- (2) The *Judicial Review Act 1991*, part 5 applies to the decision or matter to the extent it is affected by jurisdictional error.
- (3) A person who, but for subsection (1) could have made an application under the *Judicial Review Act 1991* in relation to the decision or matter, may apply under part 4 of that Act for a statement of reasons in relation to the decision or matter.
- (4) In this section—
decision includes—
 - (a) conduct engaged in for the purpose of making a decision; and
 - (b) other conduct that relates to the making of a decision; and
 - (c) the making of a decision or the failure to make a decision; and
 - (d) a purported decision; and
 - (e) a deemed refusal.

non-appealable, for a decision or matter, means the decision or matter—

- (a) is final and conclusive; and
- (b) may not be challenged, appealed against, reviewed, quashed, set aside or called into question in any other way under the *Judicial Review Act 1991* or otherwise,

whether by the Supreme Court, another court, any tribunal or another entity; and

- (c) is not subject to any declaratory, injunctive or other order of the Supreme Court, another court, any tribunal or another entity on any ground.

232 Rules of the P&E Court

- (1) A person who is appealing to the P&E Court must comply with the rules of the court that apply to the appeal.
- (2) However, the P&E Court may hear and decide an appeal even if the person has not complied with rules of the P&E Court.

Part 2 Development tribunal

Division 1 General

233 Appointment of referees

- (1) The Minister, or chief executive, (the *appointer*) may appoint a person to be a referee, by an appointment notice, if the appointer considers the person—
 - (a) has the qualifications or experience prescribed by regulation; and
 - (b) has demonstrated an ability—
 - (i) to negotiate and mediate outcomes between parties to a proceeding; and
 - (ii) to apply the principles of natural justice; and
 - (iii) to analyse complex technical issues; and
 - (iv) to communicate effectively, including, for example, to write informed succinct and well-organised decisions, reports, submissions or other documents.

3 December 2019

Enquiries: Jenny Elphinstone
Our Ref: ROL 2019_3061 (Doc ID)
Your Ref: 6038/01 L-EC2114

Administration Office
64 - 66 Front St Mossman
P 07 4099 9444
F 07 4098 2902

KS3 Pty Ltd
C/- Flanagan Consulting Group
C/ GHD
71 Stanley Street
TOWNSVILLE QLD 4810

Email: Erin.Campbell@ghd.com

Attention Ms Erin Campbell

Dear Madam

**Adopted Infrastructure Charge Notice
For Development Application for Reconfiguring of a Lot (1 Lot into 15 Lots)
At 20-30 Langley Road Port Douglas
On land described as Lot 5 on RP804926**

Please find attached the Adopted Infrastructure Charges Notice issued in accordance with section 119 of the *Planning Act 2016*.

The amount in the Adopted Infrastructure Charges Notice has been calculated according to Council's Adopted Infrastructure Charges Resolution.

Please also find attached extracts from the Act regarding the following:

- your right to make representations to Council about the Adopted Infrastructure Charges Notice; and
- your Appeal rights with respect to the Adopted Infrastructure Charges Notice.

Please quote Council's application number: ROL 2019_3061 in all subsequent correspondence relating to this matter.

Should you require any clarification regarding this, please contact Jenny Elphinstone on telephone 07 4099 9444.

Yours faithfully


Paul Hoyer
Manager Environment & Planning

encl.

- Adopted Infrastructure Charges Notice
- Rights to Make Representations and Appeals Regarding Infrastructure Charges

Adopted Infrastructure Charges Notice



2018 Douglas Shire Planning Scheme version 1.0 Applications

ADOPTED INFRASTRUCTURE CHARGES NOTICE

KS3 Pty Ltd		0	0
DEVELOPERS NAME		ESTATE NAME	STAGE
20-30 Langley Road		L5 RP804926	1528
STREET No. & NAME		LOT & RP No.s	PARCEL No.
ROL 15 lots		ROL 2019_3061	4
DEVELOPMENT TYPE		COUNCIL FILE NO.	VALIDITY PERIOD (year)
Doc ID: 921611		Payment prior to lodgment of survey plan for endorsement	
DSC Reference Doc. No.		VERSION No.	

Adopted Charges as resolved by Council at the Ordinary Meeting held on 5 June 2018, Local Government Infrastructure Plan, Planning Scheme Amendment (effect on and from 2 July 2018)

Locality	Charge per Use	rate	Floor area/No.	Amount	Amount Paid	Receipt Code & GL Code
Port Douglas						
Proposed Demand						
Residential Lots	Separate house	Per House lot	15	292,365.00		
	Total Demand			292,365.00		
Existing Credit						
Residential Lot	Vacant Lot	Per House lot	1	19,491.00		
	Total Credit			19,491.00		
						Code 895 GL 07500.0135.0825

Required Payment or Credit **TOTAL** \$272,874.00

Prepared by	J Elphinstone	26-Sep-19	Amount Paid
Checked by	D Lamond	30-Sep-19	Date Paid
Date Payable	Prior to endorsement of survey plan		Receipt No.
Amendments		Date	Cashier

Note:

The Infrastructure Charges in this Notice are payable in accordance with Sections 119 and 120 of the *Planning Act 2016* as from Council's resolution from the Ordinary Meeting held on 5 June 2018.

Charge rates under the current Policy are not currently subject to indexing.
Any Infrastructure Agreement for trunk works must be determined and agreed to prior to issue of Development Permit for Operational Work.

Charges are payable to: Douglas Shire Council. You can make payment at any of Council's Business Offices or by mail with your cheque or money order to Douglas Shire Council, PO Box 723, Mossman QLD 4873. Cheques must be made payable to Douglas Shire Council and marked 'Not Negotiable'. Acceptance of a cheque is subject to collection of the proceeds. Post dated cheques will not be accepted

Any enquiries regarding Infrastructure Charges can be directed to the Development & Environment, Douglas Shire Council on 07 4099 9444 or by email on enquiries@douglas.qld.gov.au

Subdivision 5 Changing charges during relevant appeal period

124 Application of this subdivision

This subdivision applies to the recipient of an infrastructure charges notice given by a local government.

125 Representations about infrastructure charges notice

- (1) During the appeal period for the infrastructure charges notice, the recipient may make representations to the local government about the infrastructure charges notice.
- (2) The local government must consider the representations.
- (3) If the local government—
 - (a) agrees with a representation; and
 - (b) decides to change the infrastructure charges notice;the local government must, within 10 business days after making the decision, give a new infrastructure charges notice (a *negotiated notice*) to the recipient.
- (4) The local government may give only 1 negotiated notice.
- (5) A negotiated notice—
 - (a) must be in the same form as the infrastructure charges notice; and
 - (b) must state the nature of the changes; and
 - (c) replaces the infrastructure charges notice.
- (6) If the local government does not agree with any of the representations, the local government must, within 10 business days after making the decision, give a decision notice about the decision to the recipient.
- (7) The appeal period for the infrastructure charges notice starts again when the local government gives the decision notice to the recipient.

126 Suspending relevant appeal period

- (1) If the recipient needs more time to make representations, the recipient may give a notice suspending the relevant appeal period to the local government.
- (2) The recipient may give only 1 notice.
- (3) If the representations are not made within 20 business days after the notice is given, the balance of the relevant appeal period restarts.
- (4) If representations are made within the 20 business days and the recipient gives the local government a notice withdrawing the notice of suspension, the balance of the relevant appeal period restarts the day after the local government receives the notice of withdrawal.

**Division 3 Development approval conditions
about trunk infrastructure**

**Subdivision 1 Conditions for necessary trunk
infrastructure**

127 Application and operation of subdivision

- (1) This subdivision applies if—
 - (a) trunk infrastructure—
 - (i) has not been provided; or
 - (ii) has been provided but is not adequate; and
 - (b) the trunk infrastructure is or will be located on—
 - (i) premises (the *subject premises*) that are the subject of a development application, whether or not the infrastructure is necessary to service the subject premises; or
 - (ii) other premises, but is necessary to service the subject premises.

Extracts from the Planning Act 2016 –Appeal Rights

Planning Act 2016
Chapter 6 Dispute resolution

[s 229]

- (2) The person is taken to have engaged in the representative's conduct, unless the person proves the person could not have prevented the conduct by exercising reasonable diligence.

- (3) In this section—

conduct means an act or omission.

representative means—

- (a) of a corporation—an executive officer, employee or agent of the corporation; or
- (b) of an individual—an employee or agent of the individual.

state of mind, of a person, includes the person's—

- (a) knowledge, intention, opinion, belief or purpose; and
- (b) reasons for the intention, opinion, belief or purpose.

Chapter 6 Dispute resolution

Part 1 Appeal rights

229 Appeals to tribunal or P&E Court

- (1) Schedule 1 states—

- (a) matters that may be appealed to—
- (i) either a tribunal or the P&E Court; or
- (ii) only a tribunal; or
- (iii) only the P&E Court; and
- (b) the person—
- (i) who may appeal a matter (the *appellant*); and
- (ii) who is a respondent in an appeal of the matter; and

- (iii) who is a co-respondent in an appeal of the matter;
and
 - (iv) who may elect to be a co-respondent in an appeal of the matter.
- (2) An appellant may start an appeal within the appeal period.
- (3) The *appeal period* is—
- (a) for an appeal by a building advisory agency—10 business days after a decision notice for the decision is given to the agency; or
 - (b) for an appeal against a deemed refusal—at any time after the deemed refusal happens; or
 - (c) for an appeal against a decision of the Minister, under chapter 7, part 4, to register premises or to renew the registration of premises—20 business days after a notice is published under section 269(3)(a) or (4); or
 - (d) for an appeal against an infrastructure charges notice—20 business days after the infrastructure charges notice is given to the person; or
 - (e) for an appeal about a deemed approval of a development application for which a decision notice has not been given—30 business days after the applicant gives the deemed approval notice to the assessment manager; or
 - (f) for an appeal relating to the *Plumbing and Drainage Act 2018*—
 - (i) for an appeal against an enforcement notice given because of a belief mentioned in the *Plumbing and Drainage Act 2018*, section 143(2)(a)(i), (b) or (c)—5 business days after the day the notice is given; or
 - (ii) for an appeal against a decision of a local government or an inspector to give an action notice under the *Plumbing and Drainage Act 2018*—5 business days after the notice is given; or

- (iii) otherwise—20 business days after the day the notice is given; or
- (g) for any other appeal—20 business days after a notice of the decision for the matter, including an enforcement notice, is given to the person.

Note—

See the P&E Court Act for the court's power to extend the appeal period.

- (4) Each respondent and co-respondent for an appeal may be heard in the appeal.
- (5) If an appeal is only about a referral agency's response, the assessment manager may apply to the tribunal or P&E Court to withdraw from the appeal.
- (6) To remove any doubt, it is declared that an appeal against an infrastructure charges notice must not be about—
 - (a) the adopted charge itself; or
 - (b) for a decision about an offset or refund—
 - (i) the establishment cost of trunk infrastructure identified in a LGIP; or
 - (ii) the cost of infrastructure decided using the method included in the local government's charges resolution.

230 Notice of appeal

- (1) An appellant starts an appeal by lodging, with the registrar of the tribunal or P&E Court, a notice of appeal that—
 - (a) is in the approved form; and
 - (b) succinctly states the grounds of the appeal.
- (2) The notice of appeal must be accompanied by the required fee.
- (3) The appellant or, for an appeal to a tribunal, the registrar, must, within the service period, give a copy of the notice of appeal to—

- (a) the respondent for the appeal; and
 - (b) each co-respondent for the appeal; and
 - (c) for an appeal about a development application under schedule 1, section 1, table 1, item 1—each principal submitter for the application whose submission has not been withdrawn; and
 - (d) for an appeal about a change application under schedule 1, section 1, table 1, item 2—each principal submitter for the application whose submission has not been withdrawn; and
 - (e) each person who may elect to be a co-respondent for the appeal other than an eligible submitter for a development application or change application the subject of the appeal; and
 - (f) for an appeal to the P&E Court—the chief executive; and
 - (g) for an appeal to a tribunal under another Act—any other person who the registrar considers appropriate.
- (4) The *service period* is—
- (a) if a submitter or advice agency started the appeal in the P&E Court—2 business days after the appeal is started; or
 - (b) otherwise—10 business days after the appeal is started.
- (5) A notice of appeal given to a person who may elect to be a co-respondent must state the effect of subsection (6).
- (6) A person elects to be a co-respondent to an appeal by filing a notice of election in the approved form—
- (a) if a copy of the notice of appeal is given to the person—within 10 business days after the copy is given to the person; or
 - (b) otherwise—within 15 business days after the notice of appeal is lodged with the registrar of the tribunal or the P&E Court.

- (7) Despite any other Act or rules of court to the contrary, a copy of a notice of appeal may be given to the chief executive by emailing the copy to the chief executive at the email address stated on the department's website for this purpose.

231 Non-appealable decisions and matters

- (1) Subject to this chapter, schedule 1 and the P&E Court Act, unless the Supreme Court decides a decision or other matter under this Act is affected by jurisdictional error, the decision or matter is non-appealable.
- (2) The *Judicial Review Act 1991*, part 5 applies to the decision or matter to the extent it is affected by jurisdictional error.
- (3) A person who, but for subsection (1) could have made an application under the *Judicial Review Act 1991* in relation to the decision or matter, may apply under part 4 of that Act for a statement of reasons in relation to the decision or matter.
- (4) In this section—
- decision** includes—
- (a) conduct engaged in for the purpose of making a decision; and
 - (b) other conduct that relates to the making of a decision; and
 - (c) the making of a decision or the failure to make a decision; and
 - (d) a purported decision; and
 - (e) a deemed refusal.

non-appealable, for a decision or matter, means the decision or matter—

- (a) is final and conclusive; and
- (b) may not be challenged, appealed against, reviewed, quashed, set aside or called into question in any other way under the *Judicial Review Act 1991* or otherwise,

whether by the Supreme Court, another court, any tribunal or another entity; and

- (c) is not subject to any declaratory, injunctive or other order of the Supreme Court, another court, any tribunal or another entity on any ground.

232 Rules of the P&E Court

- (1) A person who is appealing to the P&E Court must comply with the rules of the court that apply to the appeal.
- (2) However, the P&E Court may hear and decide an appeal even if the person has not complied with rules of the P&E Court.

Part 2 Development tribunal

Division 1 General

233 Appointment of referees

- (1) The Minister, or chief executive, (the *appointer*) may appoint a person to be a referee, by an appointment notice, if the appointer considers the person—
 - (a) has the qualifications or experience prescribed by regulation; and
 - (b) has demonstrated an ability—
 - (i) to negotiate and mediate outcomes between parties to a proceeding; and
 - (ii) to apply the principles of natural justice; and
 - (iii) to analyse complex technical issues; and
 - (iv) to communicate effectively, including, for example, to write informed succinct and well-organised decisions, reports, submissions or other documents.

FNQROC DEVELOPMENT MANUAL

Council
(INSERT COUNCIL NAME)

STATEMENT OF COMPLIANCE OPERATIONAL WORKS DESIGN

This form duly completed and signed by an authorised agent of the Designer shall be submitted with the Operational Works Application for Council Approval.

Name of Development

Location of Development

Applicant

Designer

It is hereby certified that the Calculations, Drawings, Specifications and related documents submitted herewith have been prepared, checked and amended in accordance with the requirements of the FNQROC Development Manual and that the completed works comply with the requirements therein, **except** as noted below.

Compliance with the requirements of the Operational Works Design Guidelines	Non-Compliance refer to non-compliance report / drawing number
Plan Presentation	
Geotechnical requirements	
Geometric Road Design	
Pavements	
Structures / Bridges	
Subsurface Drainage	
Stormwater Drainage	
Site Re-grading	
Erosion Control and Stormwater Management	
Pest Plant Management	
Cycleway / Pathways	

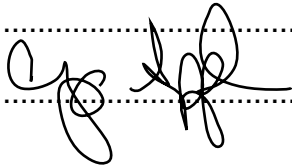
Landscaping	
Water Source and Disinfection/Treatment Infrastructure (if applicable)	
Water Reticulation, Pump Stations and water storages	
Sewer Reticulation and Pump Stations	
Electrical Reticulation and Street Lighting	
Public Transport	
Associated Documentation/ Specification	
Priced Schedule of Quantities	
Referral Agency Conditions	
Supporting Information (AP1.08)	
Other	

Conscientiously believing the above statements to be true and correct, signed on behalf of:

Designer **RPEQ No**

Name in Full

Signature **Date**





04 March 2020

Neil Beck
Douglas Shire Council
64-66 Front St,
Mossman, QLD 4873

Our ref: 12520641

Dear Neil,

**Andrews Close 15-Lot Subdivision
Operational Works Submission**

On behalf of our client, KS5 Pty. Ltd., we hereby submit our application for an Operational Works Development Permit for the civil and landscaping works for the abovementioned project.

Attached for your information and action are the following:

- Development assessment receipt sheet noting fees to be invoiced amounting to \$10,859 (\$3,969 (2 lots) + 13 lots x \$530);
- Civil Construction Drawings (1 x A3 set);
- Landscape For Approval Drawings (1 x A3 set);
- Design Submission Report (OW REP-12520641);
- Contract Job Specification (JS-REP-12520641);
- A certified Statement of Compliance – Engineering Design; and
- DA Form 1.

Digital copies of the civil and landscaping construction drawings and associated documentation have also been issued via USB.

We trust that the attached provides sufficient supporting information to enable Council to approve the development and provide an Operational Works Permit for the civil and landscaping designs. If you have any queries or require further information, please do not hesitate to contact this office.

Kind Regards,

A handwritten signature in black ink, appearing to read 'Greg Applin', written over a white background.

Greg Applin

BEng (Civil) RPEQ Team Leader Cairns – Urban Development/Civil
+617 4042 2261



KS5 Pty Ltd

Operation Works Submission

Andrews Close Subdivision, Port Douglas.

4 March 2020

Table of contents

1.	Introduction	1
1.1	Contact details	1
2.	Engineering Documentation	2
2.1	GHD Civil Project Construction Drawings	2
2.2	LA3 Project Landscape Drawings	3
2.3	Contract Civil Job Specification	3
3.	Compliance with Development Approval Conditions	4
	ASSESSMENT MANAGER CONDITIONS	4
4.	Supporting Information.....	15
4.1	Flexible Pavement Design	15
4.2	Pedestrian Connectivity	15
4.3	Site Grading.....	15
4.4	Stormwater Drainage.....	16
4.5	External Catchments Flows	17
4.6	Internal Catchment Flows	17
4.7	Sewerage Reticulation.....	18
4.8	Water Reticulation	18
4.9	Erosion and Sediment Control Strategy	18
4.10	Landscape Plans	19
5.	Recommendations	19

Appendices

Appendix A	ROL 2019_3061/1 APPROVAL
Appendix B	DSC PRE-LODGMET CORRESPONDENCE
Appendix C	DOUGLAS PARTNERS ASS INVESTIGATION REPORT
Appendix D	DRAINAGE CALCULATIONS
Appendix E	LANDSCAPE PLANS (LA3)
Appendix F	PAVEMENT DESIGN CALCULATIONS

1. Introduction

GHD has been commissioned by KS5 Pty. Ltd. to undertake the detailed design and documentation of vegetation clearing, earthworks, roadworks, stormwater drainage, water reticulation, sewer reticulation and underground conduits for the construction of a 15-lot subdivision on existing Lot 5 on RP804926, Port Douglas.

A Reconfiguration of Lot Application for the development was approved subject to conditions by Douglas Shire Council on the 3rd of December 2019 (ROL 2019_3061/1). For Council's reference, a copy of the ROL Decision Notice is attached in **Appendix A**. The application submitted has been prepared in accordance with the conditions of the original Decision Notice where relevant.

1.1 Contact details

Should you have any queries in relation to this project, the contact details of our Project Director and Project Manager are provided below.



Project Director

Patrick Flanagan

P: 07 4044 2215 or

M: 0417 710 313

E: pat.flanagan@ghd.com

Cairns Office



Project Manager

Greg Applin

P: 07 4044 2261 or

M: 0414 768 109

E: greg.applin@ghd.com

Cairns Office

2. Engineering Documentation

Attached in accordance with Council's requirements are the following:

2.1 GHD Civil Project Construction Drawings

- 42-12520641-C001 – Cover Sheet and Site Plan
- 42-12520641-C002 – Standard Notes
- 42-12520641-C003 – General Arrangement Plan
- 42-12520641-C004 – Demolition / Clearing Plan
- 42-12520641-C005 – Control Line Setout
- 42-12520641-C006 – Type Cross Sections and Details
- 42-12520641-C007 – Miscellaneous Details
- 42-12520641-C008 – Longitudinal Sections – Road 01 and Drain 01
- 42-12520641-C009 – Langley Road Cross Sections – Sheet 1 of 2
- 42-12520641-C010 – Langley Road Cross Sections – Sheet 2 of 2
- 42-12520641-C011 – Road 01 Cross Sections
- 42-12520641-C012 – Drain 01 Cross Sections
- 42-12520641-C013 – Langley Road Roadworks Plan
- 42-12520641-C014 – Langley Road Setout Plan
- 42-12520641-C015 – Langley Road / Road 01 Intersection Plan
- 42-12520641-C016 – Trench Grate Details
- 42-12520641-C017 – Road 01 Cul-De-Sac Setout Plan
- 42-12520641-C018 – Solander Boulevard Access – Plan & Details
- 42-12520641-C019 – Earthworks Plan
- 42-12520641-C020 – Retaining Walls and Fencing Plan
- 42-12520641-C021 – Retaining Wall Details
- 42-12520641-C022 – Beach Access Stairs
- 42-12520641-C023 – Sewer Reticulation Plan
- 42-12520641-C024 – Sewer Long Sections
- 42-12520641-C025 – Water Reticulation Plan
- 42-12520641-C026 – Erosion and Sediment Control Strategy – Plan
- 42-12520641-C027 – Erosion and Sediment Control Strategy – Details Sheet 1 of 2

2.2 LA3 Project Landscape Drawings

198-L00 – Cover Page & Planting Schedule

198-L01 – Landscape Plan 01

198-L02 – Landscape Plan 02 & Detail Plans

198-L03 – Typ. Details & Planting Schedule

198-L04 – Entry Wall, Ret. Wall and Stairs Details

2.3 Contract Civil Job Specification

12520641 – Andrews Close Subdivision Civil Job Specification

3. Compliance with Development Approval Conditions

This Operational Works application is being lodged in association with the Reconfiguration of Lot Application and current development conditions have been prepared by Council which apply to this development.

To demonstrate compliance, responses have been prepared to address each condition of the Reconfiguration of Lot Decision Notice (ROL 2019_3061/1):

ASSESSMENT MANAGER CONDITIONS

1. Carry out the approved development generally in accordance with the approved drawing(s) and/or document(s), and in accordance with:

a. The specifications, facts and circumstances as set out in the application submitted to Council, including recommendations and findings confirmed within technical reports; and

b. The following conditions of approval and the requirements of Council's Planning Scheme and the FNQROC Development Manual.

Except where modified by these conditions of approval.

The design of this subdivision has generally been carried out in accordance with the approved drawings, documents, specifications, ROL approval, Council Planning Scheme and the FNQROC Development Manual. For reference, a copy of the ROL decision notice is attached at **Appendix A**.

Timing of Effect

2. The conditions of the Development Permit must be satisfied prior to issue of a Compliance Certificate for the Plan of Survey, except where specified otherwise in these conditions of approval.

The conditions of the development permit will be effected prior to the issue of a compliance certificate for the Plan of Survey.

Access

3a. No lot is to have vehicle access to or from Solander Boulevard.

No lot has vehicle access to or from Solander Boulevard.

b. Vehicle Access to proposed Lot 9 is limited to Langley Road. No vehicle access to and from Lot 9 is permitted to the internal cul-de-sac.

Noted, however this will be addressed once the landowner commences building works and is not associated with civil works.

Building and Structure Setbacks

4. No buildings or structures are to be located within 3 m of the Solander Boulevard frontage of the site on Lots 1-4 unless otherwise approved by the Chief Executive Officer.

Noted, however this will be addressed once the landowner commences building works and is not associated with civil works.

Street Layout and Design

5. The street layout and design is to be generally in accordance with Flanagan Consulting Group Proposal Plan 6038-SK02e dated 19 November 2019 and must comply with Queensland Streets and the FNQROC Development Manual, to the satisfaction of the Chief Executive Officer. In particular:

a. The new internal road must have a minimum road reserve width of 14.5 metres;

Road 01 has been designed to have a road reserve width of 14.5 metres.

b. Langley Road must be upgraded to reflect the road form and geometry of the existing constructed Langley Road west from Andrews Close for the full frontage of the site. Unless otherwise approved, the road upgrade must include new kerb and channel, subsoil drains and road pavement to the crown of the road;

Reference is made to Greg Applin's (RPEQ) email to Council officers on 14/02/2020 which is attached at **Appendix B**. In order to provide adequate drainage for the surrounding areas, a roadside table drain is proposed in the northern verge of Langley Road to the east of the Road 01 access. Council officers have previously expressed concerns with drainage in the area, and GHD believe provision of this drain assists to alleviate load on the existing network. In order to provide this drain however, Langley Road cannot be upgraded to the full width of the existing constructed road. The existing pavement in the northern verge will be cut back and flush kerb provided based on current geometry.

c. The upgrade of Langley Road must include the provision of a two (2) metre wide concrete footpath along the frontage of the site including a new kerb ramp on Andrews Close;

A 2m wide concrete footpath extending the length of the Langley Road frontage is provided with a new kerb ramp to Andrews Close.

d. The upgrade of Langley Road must be designed to ensure that the intersection with Selander Boulevard is designed to suitable enable Council vehicle access and public pedestrian access onto Selander Boulevard;

A 2.5m wide concrete flush kerb and pathway is provided for access to Solander Boulevard from Langley Road. This transitions to a 2m wide gravel pathway which is sufficient for pedestrian and Council maintenance vehicle access (utes, ride on mowers etc.).

e. Detail of proposed retaining structure along the Selander Boulevard frontage of the site that may include a single pedestrian access for each lot fronting Selander Boulevard and must be provided prior to seeking a Development Permit for Operational Work. The retaining structure is to have regard to protection from future storm tide inundation and amenity to the neighbouring Selander Boulevard. These works are to be undertaken at the time of other civil work associated with the development.

2 sets of beach access stairs are provided at the common boundary of lots 1 & 2 and 3 & 4. The retaining wall and fencing arrangement is detailed on drawing C020. Structural details for the walls and access stairs are shown on C021 and C022.

f. Provision of a fill on each lot whereby:

i. Fill areas for the lots are at a level to provide an immunity to a 1% storm tide event (having regard to a 0.8m sea level rise for the year 2100 or a lower level if nominated under a State Planning Policy at the time of lodgement of the application for Operational Work) and a 1 % flood event.

The nominated fill level to provide immunity to the 1 % AEP storm tide event is to be as per the Cairns BMT-WMB Cairns Region Storm Tide Inundation Study, Final Report and Mapping January 2013 (Council reference Doc ID: 462510) or another superseding report or individual study approved or found satisfactory to the satisfaction of the Chief Executive Officer.

Where the freeboard applied relevant to the BMT WMB report (Page 45 of the Study report) is less than the report recommendation, such lesser height must be qualified by the study author as suitable for the land to the satisfaction of the Chief Executive Officer. Alternatively, the qualification may be provided by a peer coastal engineer to the satisfaction of the Chief Executive Officer;

ii. All fill is to drain to lawful point of discharge and must not detrimentally impact on upstream, downstream or surrounding land and/or proposed lots;

iii. Fill areas must be suitably retained with suitably revetment protection from coastal erosion and impacts of storm tide inundation;

v. Where the minimum fill results in an increase of ground level of 1 m or greater to the neighbouring northern boundary for proposed lots 4, 5, 6 and 7, section and site plans are to be provided, for each of the adjacent lots and at least at the highest point, detailing the proposed height and proposed treatment(s) including landscaping to ensure the continued amenity of the neighbouring lots. The design is to ensure no ponding occurs to neighbouring properties and all drainage received from the neighbouring land is adequately catered for. These works are to be undertaken at the time of other civil work associated with the development;

vi. Where the minimum fill results in an increase of ground level of less than 1 m, to the neighbouring northern boundary for proposed lots 4, 5, 6 and 7, the fill may be constructed to the boundary provided no ponding occurs to neighbouring properties and all drainage received from the neighbouring land is adequately catered for;

Reference is made to Greg Applin's (RPEQ) email to Council officers on 05/02/2020 which is attached at **Appendix B**. The email provides a summary of BMT's reassessment of the abovementioned report (Doc ID: 462510). The reassessment provides recommendations for lot levels to appropriately manage the 1% AEP in 2100 storm tide event as: eastern side: 3.57m, western side: 3.01m. Lot grading has been developed such that each lot is filled to have immunity to this event including freeboard requirements. Lots 1-4 drain to the rear towards Solander Boulevard drainage channel, whilst the remaining lots all drain to the road network.

Regarding v; minimum fill shall not result in an increase of ground level of 1m or greater for lots 4-7.

g. All lots must provide for suitable vehicle access.

Lot grading has been developed such that suitable vehicle access can be provided. Accesses will be detailed and delivered with house building works.

An amended plan incorporating the above requirements must be submitted prior to the issue of a Development Permit for Operational Work.

All works must be carried out in accordance with the approved plans, to the requirements and satisfaction of the Chief Executive Officer prior to the lodgement of a Survey Plan for signing and dating.

Noted and agreed.

Water Supply and Sewerage Works Internal

6. Undertake the following water supply and sewerage works internal to the subject land generally in accordance with Flanagan Consulting Group Sketches 6038-SK03D and 6038-SK04D:

a. Provide a single internal sewer connection to each lot in accordance with the FNQROC Development Manual;

A single internal sewer connection is detailed to be provided to each lot as shown on the sewer reticulation plan on drawing C023.

b. If any existing sewer connections or property connection branches are proposed to be retained, further detail is to be provided to support the condition and capacity of the connection. CCTV footage is required to confirm the suitability of the existing connections for reuse. Existing sewer connections not retained must be decommissioned.

An existing sewer connection is proposed to be used to service lot 15. Photographic evidence confirming that the existing connection is suitable for reuse shall be provided prior to connection works.

c. Provide a minimum 100mm (PN16, Blue Brute) diameter water main in the new cul-de-sac with a 63mm (HDPE, PN16 blueline) OD loop main in accordance with the FNQROC Development Manual requirements;

A 100mm dia PN16 Blue Brute watermain is provided to the new cul-de-sac with a 63mm PE OD loop main as detailed on the water reticulation plan on drawing C025.

d. Provide a minimum 125mm HDPE SDR11 PN 16 road crossing connecting to the 100mm main on the southern side of Langley Road connected with Hot Tap (tapping under pressure) and under DSC water supervision. The 100mm road crossing must be on the eastern side of the new cul-de-sac;

A 125mm PE road crossing is provided to the eastern side of the new cul-de-sac.

e. Services to be installed and tapped during the main laying, bring service into property boundary 500mm and 300mm deep, If driveways/cross overs have not been allocated then service is to be installed in the middle of block, this avoids the chance of the service being under a driveway.

Noted and addressed on project drawing notes.

f. Provide all fittings and valving in accordance with the FNQROC Development Manual requirements; and

Noted and addressed in job specification.

g. Decommission and remove the existing AC water main along the Langley Road frontage of the site and any existing water meters or water supply

connections into the site. All the above works must be designed and constructed in accordance with the FNQROC Development Manual.

Noted and detailed on project drawings.

All the above works must be designed and constructed in accordance with the FNQROC Development Manual and generally as the annotated water reticulation plan.

Engineering design plans incorporating the above requirements must be submitted prior to the issue of a Development Permit for Operational Work.

All works must be carried out in accordance with the approved plans, to the requirements and satisfaction of the Chief Executive Officer prior to the lodgement of the Survey Plan for signing and dating.

Noted and agreed.

Damage to Infrastructure

7. In the event that any part of Council's existing sewer/water infrastructure is damaged as a result of construction activities occurring on the site, including but not limited to, mobilisation of heavy earthmoving equipment, stripping and grubbing, the applicant /owner must notify Council immediately of the affected infrastructure and have it repaired or replaced by Council, at the developer's cost, prior to the lodgement of the Survey Plan for signing and dating.

Noted and addressed in job specification.

Acid Sulfate Soil Management Plan

Undertake an Acid Sulfate Soil sampling, investigation and analysis in the area to be affected by this development in accordance with:

- i. the Queensland Acid Sulfate Soil Technical Manual Soil Management Guidelines version 4.0 (2014);**
- ii. the Acid Sulfate Soils - Laboratory Methods Guidelines (version. 2.1, June 2004; and**
- iii. the State Planning Policy 2017.**

An acid sulfate soil investigation has been undertaken by Douglas Partners noting no requirement for an acid sulfate soils management plan.

b. Provide a statement to Council that

- i. present Acid Sulfate Soils and/or Possible Acid Sulfate Soils are not present; or**
- ii. that management of present Acid Sulfate Soils and/or Possible Acid Sulfate Soils has been incorporated into an Acid Sulfate Soils Environmental Management Plan prepared in accordance with the abovementioned documents.**

Refer to Douglas Partners report #90871.00 attached at **Appendix C** which state that for the proposed development, an ASS/PASS management plan is not required. Of the 8 submitted samples taken from site, none exceeded the 'existing plus potential' acidity action criteria value.

Identification of soils with a pyrite content in excess of the action levels will trigger a Acid Sulfate Soil Environmental Management Plan which must be prepared to the satisfaction of the Chief Executive Officer.

Where earthworks are undertaken without a Development Permit for Operational Work, the results of this investigation must be submitted to Council for approval, ten (10) business days prior to any earthworks or clearing being commenced on the site.

Where earthworks are undertaken in association with a Development Permit for Operational Work, the results must accompany such application lodged to Council.

Refer to Douglas Partners report #90871.00 attached at Appendix C which state that for the proposed development, an ASS/PASS management plan is not required.

Drainage Study of Site and Drainage Design Plan

9. Undertake a local drainage study of the site to determine the drainage impacts on upstream and downstream properties and the mitigation measures required to minimise such impacts. In particular, the study must address the following:

a. The contributing catchment boundaries, including specifically the drainage from northern properties entering the site and discharging via surface drainage and pipe systems through proposed lot 4 and within Solander Boulevard to the east of proposed lot 4;

A catchment plan and associated hydrology is attached at **Appendix D**. Survey shows that northern properties do not contribute flows to the development – with local drainage generally flowing E-W.

b. The extent of the 100 year ARI flood event in relation to the site both pre- and post-development;

Drainage has been developed to cater for the 100 year ARI flood event based on the BMT WBM Cairns Region Storm Tide Inundation Study and subsequent advice – attached at **Appendix D**.

d. Primary and secondary flow paths for the 5 and 100 year ARI flood events, including external flows currently discharging through the site;

Drainage has been designed for primary and secondary flow paths in accordance with the FNQROC development manual (catering for the 5 and 100 year events).

e. Identify any requirement for drainage easements;

No new drainage easements are proposed within the development.

f. Identify the need and tenure for flood detention areas to ensure a no-worsening impact on downstream properties for the entire development;

Flood detention areas are not required to ensure a no worsening effect on downstream properties. As this development is directly adjacent to the ocean, any detention (which limits the discharge to peak flows) would have slightly detrimental effect (i.e. it is better to let the runoff discharge rather than detain it and extend the peak discharge periods). Formalising a concrete invert and drain next to the new

Solander Boulevard footpath now provides sufficient conveyance to the LPOD at the beach.

g. In the absence of flood detention, the drainage study provides a concept design to limit the primary piped drainage flows entering the existing drainage system that drains to the west to no more than the pre-development flows and ensure that all overland flows are able to be conveyed to Langley Road east to Solander Boulevard to the existing drainage swale outlet near the northern property boundary on Solander Boulevard. Depth and width of flows in Langley Road east from the cul-de-sac in the minor event are to be provided in the supporting calculations for the operational works submission;

It is acknowledged that the existing piped network which drains west is at capacity. The drainage philosophy proposed does not utilise the existing pit in Langley Road (excl. subsoils), and conveys flows overland to the east alleviating load on existing infrastructure. Associated drainage calculations are attached at **Appendix D**.

h. Information on the proposed works and any impacts proposed at the drainage outlet from the proposed development; and

Drainage and outlet works are detailed on drawing C003 (general arrangement plan).

i. Lawful point of discharge.

Taken as the existing road network and the outlet to the beach at Solander Boulevard.

A plan of proposed drainage works must then be prepared to show the study outcomes and include the following considerations:

i. Drainage infrastructure in accordance with FNQROC Development Manual except as modified under (g) above.

Refer project drawing C003.

ii. All new allotments shall have immunity from flooding associated with the ARI 100 year rainfall event and the 100 year storm tide event;

Allotments have been elevated to provide immunity from the ARI 100 year rainfall and storm tide event in accordance with the updated BMT modelling referenced in **Appendix B**.

iii. Where practical, all new allotments must be drained to the road frontages, drainage easements or drainage reserves and discharged to the existing drainage system via stormwater quality device(s);

Newly created allotments are designed to drain to the road frontage or provisioned drains.

iv. Existing surface drainage along the northern property boundary must be addressed in the plan of drainage works unless otherwise approved by Council following review of the outcomes of the drainage study; and

Allotment grading is developed such that surface drainage at the northern property boundary is conveyed to the road frontage or provided open drains.

v. The underground drainage network to the west is to be limited to the predevelopment flows and any additional runoff is to be conveyed overland in Langley Road east to Solander Boulevard.

The underground drainage network to the west will see a reduction in flows when compared to pre-development as new drainage will be taking a portion of these flows to the LPOD at Solander Boulevard to the east.

The study and the proposed drainage works plan must be endorsed by the Chief Executive Officer prior to the issue of a Development Permit for Operational Work.

Access Construction

10. Construct a concrete driveway or other approved surface to the nominated building area located in Lot 4.

The concrete driveway proposed to Lot 4 has been designed as a 3m wide residential crossover with driveway – refer project drawing C017 for details.

All works must be carried out in accordance with the approved plans and must be to the requirements and satisfaction of the Chief Executive Officer prior to the lodgement of the Survey Plan for signing and dating.

Demolish Structures

11. All structures not associated with the approved development (including disused services and utilities) must be demolished and/or removed from the subject land prior to the lodgement of the Survey Plan for signing and dating.

Noted; refer to project drawing C004 which is a demolition/clearing plan detailing the removal of disused services, utilities and other structures not associated with the approved development.

Stockpiling and Transportation of Fill Material

12. Soil used for filling or spoil from the excavation is not to be stockpiled in locations that can be viewed from adjoining premises or a road frontage for any longer than one (1) month from the commencement of works.

Transportation of fill or spoil to and from the site must not occur within:

- a. peak traffic times; or**
- b. before 7:00 am or after 6:00 pm Monday to Friday; or**
- c. before 7:00 am or after 1:00 pm Saturdays; or**
- d. on Sundays or Public Holidays.**

Noted and addressed in job specification.

13. Dust emissions or other air pollutants must not extend beyond the boundary of the site and cause a nuisance to surrounding properties.

Noted and addressed in job specification.

Storage of Machinery and Plant

14. The storage of any machinery, material and vehicles must not cause a nuisance to surrounding properties, to the satisfaction of the Chief Executive Officer.

Noted and addressed in job specification.

Construction Access

15. Vehicular access to the site for construction and demolition purposes must be provided from Langley Road only, unless authorised by the Chief Executive Officer.

Noted and addressed in job specification.

Sediment and Erosion Control

16. A sediment and erosion control plan must be submitted prior the issue of a Development Permit for Operational Works. Such plans must be installed / implemented prior to discharge of water from the site, such that no external stormwater flow from the site adversely affects surrounding or downstream properties (in accordance with the requirements of the Environmental Protection Act 1994, and the FNQROC Development Manual).

An Erosion and Sediment Control Strategy is detailed on drawings C026-C028 for the nominated civil contractor to adopt when preparing an Erosion and Sediment Control Plan for construction. This ESCP will be submitted to Council prior to works commencing for approval.

Existing Services

17. Written confirmation of the location of existing services for the land must be provided. In any instance where existing services are contained within another lot, the following applies, either:

- a. Relocate the services to comply with this requirement; or**
- b. Arrange registration of necessary easements over services located within another lot prior to, or in conjunction with, the lodgement of a Survey Plan for signing and dating to create a lot.**

Noted and addressed in job specification.

Electricity Supply

Conditions related to electricity and telecommunication supply to be addressed under separate cover by SPA Consulting Engineers who are responsible for the design of elec and telecom reticulation for this project.

18. Written evidence from Ergon Energy advising if distribution substation/s are required within the development must be provided. If required, details regarding the location of these facilities must be submitted to the Chief Executive Officer accompanied by written confirmation from Ergon Energy. Details regarding electricity supply must be provided prior to the issue of a Development Permit for Operational Work.

Electricity and Telecommunications

19. Written evidence of negotiations with Ergon Energy and the telecommunication authority must be submitted to Council stating that both an underground electricity supply and telecommunications service will be

provided to the development prior to the lodgement of a Survey Plan for signing and dating.

Street Lighting

20. The following arrangements for the installation of street lighting within the proposed subdivision must be prior to the lodgement of a Survey Plan for signing and dating:

a. Prior to the issue of a Development Permit for Operational Work a Rate 2 lighting scheme is to be prepared by an Ergon Energy approved consultant and submitted to the Chief Executive Officer for approval. The Rate 2 lighting scheme is to be designed in accordance with the relevant Road Lighting Standard AS/NZS 1158 and the FNQROC Development Manual. The applicable lighting category is to be determined from the Road Hierarchy Table D1.1 and the corresponding applicable Lighting Categories Table D8.1 as identified in the FNQROC Development Manual.

The lighting scheme must show light pole locations that align with property boundaries that represent the permitted design spacing and demonstrates no conflicts with stormwater, kerb inlet pits and other services.

The design must provide the applicable illumination level specified in the Road Lighting Standard AS/NZS 1158 at the following road elements:

The design must provide the applicable illumination level specified in the Road Lighting Standard AS/NZS 1158 at the following road elements:

i. Intersections

ii. Pedestrian Refuges

iii. Cul-de-sacs

iv. LATM Devices

LATM Devices are to be shown on the civil layout design, the electrical services and street lighting design must be submitted in accordance with Ergon Energy's latest Distribution Design Drafting Standard.

b. Prior to the issue of a Compliance Certificate for the Plan of Survey written confirmation that the relevant capital contribution required by Ergon Energy has been paid must be submitted, to ensure that the street lighting will be constructed.

c. Where a new intersection is formed on an existing roadway for the purpose of accessing a new subdivision development, the intersection and existing road approaches must be provided with street lighting for a distance equivalent to at least two (2) spans either side of the intersection to the relevant Lighting Category.

d. Where an existing intersection is required to be upgraded as part of a development approval, the intersection and existing road approaches must be provided with street lighting for a distance equivalent to at least two (2) spans either side of the intersection to the relevant Lighting Category.

Damage to Council Infrastructure

In the event that any part of Council's existing infrastructure is damaged as a result of construction activities occurring on the site, including but not limited to; mobilisation of heavy construction equipment, stripping and grubbing, the applicant/owner must notify Council immediately of the affected infrastructure and have it repaired or replaced at the developer's/owners/builders cost, prior to the lodgement of the Survey Plan for signing and dating.

Noted and addressed in job specification.

Damage to Council Infrastructure

21. In the event that any part of Council's existing infrastructure is damaged as a result of 21 construction activities occurring on the site, including but not limited to; mobilisation of heavy construction equipment, stripping and grubbing, the applicant/owner must notify Council immediately of the affected infrastructure and have it repaired or replaced at the developer's/ owners/builders cost, prior to the lodgment of the Survey Plan for signing and dating.

Noted and addressed in job specification.

Landscape Plan

22. Undertake landscaping of the street frontages of new roads, Langley Road and Andrews Close in accordance with FNQROC Development Manual and in accordance with a landscape plan.

Where Selander Boulevard is disturbed for drainage purposes, the area is to be grassed and in a mowable condition with a maximum profile of 1 :4.

The landscape plan must be to the satisfaction of the Chief Executive Officer prior to the issue of a Development Permit for Operational Work. In particular, the plan must show:

- a. Planting of the footpath with trees, using appropriate species with regard to any overhead powerline constraints;
- b. The revegetation of cut and fill batters;
- c. Species to have regard to the Planning Scheme Landscaping Policy;
- d. Remediation and revegetation works to be undertaken within the both the major drainage line and the drainage reserve, including any works in Selander Boulevard;
- e. Inclusion of all requirements as detailed in other relevant conditions included in this Approval, with a copy of this Development Approval to be given to the applicant's Landscape Architect/ Designer.

The landscape plan must be endorsed by the Chief Executive Officer prior to the issue of a Development Permit for Operational Work. Areas to be landscaped must be established prior to lodgment of the survey Plan for signing and dating. Landscaping must be maintained for the duration of the on-maintenance period to the satisfaction of the Chief Executive Officer.

Landscaping plans have been developed by LA3 Landscape Architects. Detailed operational works drawings are attached at **Appendix E** for Council approval.

Construction Signage

23. Prior to the commencement of any construction works associated with the development, a sign detailing the project team must be placed on the road frontage of the site and must be located in a prominent position. The sign must detail the relevant project coordinator for the works being undertaken on the site, and must list the following parties (where relevant) including telephone contacts:

- a. Developer;
- b. Project Coordinator;
- c. Civil Engineer; and
- d. Civil Contractor.

Noted and addressed in job specification.

4. Supporting Information

4.1 Flexible Pavement Design

The design traffic loads for Road 01 and the upgrade of Langley Road were calculated in accordance with “AUSTROADS Pavement Design: A Guide to the Structural Design of Road Pavements” and “FNQROC Design Guidelines D3 – Road Pavements.”

Generation for proposed Road 01 and Langley Road has been calculated and compared with the minimum traffic loadings specified in the “FNQROC Design Guidelines D3 – Road Pavements.” Traffic generation has been based on 10 trips per day per lot, with Road 01 yielding 90 trips per day, and Langley Road conservatively assumed to have 500 trips per day. Road 01 shall be delivered as an access place, with the upgrade to Langley Road being in line with an access street as defined by FNQROC.

The flexible pavement has been designed for a range of CBR values as detailed in the ‘Pavement Depths’ table on drawing C006. On site CBR testing will be carried out during construction to determine suitable pavement thicknesses.

Detailed flexible pavement design output is attached in **Appendix F**.

4.2 Pedestrian Connectivity

In accordance with Condition 5g of the Development Approval, a 2m wide footpath is proposed to be constructed for the length of the property boundary from Andrews Close to Solander Boulevard. This transitions to a 2m wide gravel pathway along the eastern boundary of the site. No footpath is provided in the Road 01 verge as it is not required for an access place.

4.3 Site Grading

Reference is made to Greg Applin’s (RPEQ) email to Council officers on 05/02/2020 which is attached at **Appendix B**. The email provides a summary of BMT’s reassessment of the BMT WBM Cairns Region Storm Tide Inundation Study (Doc ID: 462510). The reassessment provides recommendations for lot levels to

appropriately manage the 1% AEP in 2100 storm tide event. Lot grading has been developed such that each lot is filled to have immunity to this event including freeboard requirements. The majority of lots 1-4 are designed to drain to the Solander Boulevard drainage channel at the rear. The remaining lots all drain to the road network and therefore LPOD.

Site drainage constraints and internal road grading dictate final lot levels, which are ultimately higher than those proposed by BMT's amendment:

- I. To appropriately manage the 1% AEP in 2100 storm tide event:
 - (a) Lot levels recommended are:
 - Eastern side of development – 3.57m
 - Western side of development – 3.01m
 - (b) Minimum habitable floor levels recommended are:
 - Eastern side of development – 3.87m
 - Western side of development – 3.31m
 - (c) For lot and house levels between the eastern and western sides of the development, linear interpolation is to be applied.

Proposed lot levels and compliance:

Lot No	Internal Road Frontage Level	Rear Boundary Level	Approx Mid Lot level (Approx FFL ¹)	Interpolated Mid Lot BMT 2070 level (BMT FFL)	Interpolated Mid Lot BMT 2100 level (BMT FFL)	Comply (Yes / No)
1	3.85 m	3.45 m (top of wall)	3.65 m (3.80 m)	3.13 m (3.43 m)	3.43 m (3.73 m)	Yes
2	3.85 m	3.45 m (top of wall)	3.65 m (3.80 m)	3.13 m (3.43 m)	3.43 m (3.73 m)	Yes
3	3.85 m	3.45 m (top of wall)	3.65 m (3.80 m)	3.13 m (3.43 m)	3.43 m (3.73 m)	Yes
4	3.85 m	3.45 m (top of wall)	3.65 m (3.80 m)	3.13 m (3.43 m)	3.43 m (3.73 m)	Yes
5	3.7 m	3.95 m (top of wall)	3.80 m (3.95m)	2.94 m (3.24 m)	3.24 m (3.54 m)	Yes
6	3.7 m	3.95 m (top of wall)	3.80 m (3.95m)	2.82 m (3.12 m)	3.12 m (3.42 m)	Yes
7	3.7 m	3.95 m (top of wall)	3.80 m (3.95m)	2.71 m (3.01 m)	3.01 m (3.31 m)	Yes
8	3.7 m	3.9 m	3.80 m (3.95m)	2.71 m (3.01 m)	3.01 m (3.31 m)	Yes
9	3.7 m	3.6 m	3.65 m (3.80m)	2.71 m (3.01 m)	3.01 m (3.31 m)	Yes
10-15	Existing lot levels vary between RL 3.2 m and 3.5 m. with minor shaping proposed to ensure min level is RL 3.3m					Yes

4.4 Stormwater Drainage

Drainage infrastructure has been designed to manage both primary and secondary flows from the external catchment and within the development.

During pre-lodgement discussions with Council it became apparent that the existing piped drainage system in Langley Road is at/over capacity. It is not proposed to utilise the existing network to the west, with the exception of connecting subsoil drainage. Rather, the site drainage will be taken overland (via table drains with concrete inverters) to the LPOD to the east. In order to pick up Q₅ flows from Road 01 and Langley Road, a non-standard trench grate is proposed at the intersection due to level constraints. GHD consider provision of this trench to be a better outcome for DSC as it will pick up Q₁₀₀ flows which bypass the existing gully pit on the corner of Andrews Close and Langley Road.

Email correspondence with DSC detailing the non-standard layout with associated capacity checks are attached at **Appendix B** for reference.

4.5 External Catchments Flows

Survey has confirmed that allotments to the north of the development do not contribute flows. In fact, the only external catchment which will be picked up by the new drainage system are the bypass flows from the existing sag pit at the corner of Andrews Close and Langley Road. The balance of the Q_{100} event from this catchment has been calculated as $0.097\text{m}^3/\text{s}$ which has been included in downstream capacity checks.

4.6 Internal Catchment Flows

The internal drainage system in this development has been designed to convey a 5-year ARI event overland in accordance with FNQROC Design Guidelines and the Queensland Urban Drainage Manual. A copy of the Catchment Plan and Drainage Calculations for the drainage system is attached in **Appendix D**.

A summary of capacity checks at each point of interest was provided to DSC via email on 14/02/20. Results at each section are provided below, with section references available on the Catchment Plan in **Appendix D**:

Section	Comments
A – Langley Rd U/S	Half road capacity more than sufficient to cater for Q_{100} flows. Capacity = 363l/s ; Q_{100} Flow = 234l/s Proposed flat grades of 0.25% - okay Q_{100} doesn't overtop crown Level of service - okay
B – Langley Rd D/S	Swale capacity = 572l/s Q_{100} flows = 565l/s All Q_{100} is contained within the swale Verge is flood free during Q_{100} . Level of service - okay
C – Internal Rd	Half road capacity = 87l/s Q_5 max half road = 82l/s Half road flows do not overtop crown Q_{100} capacity far exceeds Q_{100} flows Level of service - okay
D – Solander Blvd Swale	Capacity running full = $1,085\text{l/s}$ Q_{100} flows = 833l/s Swale caters for Q_{100} flows Level of service - okay
E – Trench Grate	Q_5 capacity = 268l/s ; Q_5 flows = 214l/s Trench grate contains ALL Q_5 flows No flows around the kerb return as grate picks up all flows Level of service - okay

The 100-year ARI event has been contained within the overland drainage and the road pavement corridor with all potential overland flow paths implemented in the event of network failure or overtopping in a major event.

4.7 Sewerage Reticulation

The sewerage reticulation network has been designed in accordance with FNQROC Design Guidelines and the Water Services Association of Australia "WSA 02-2002 Sewerage Code of Australia".

The allotments shall be seweraged by breaking into the existing manhole in Langley Road and providing two 150mm dia gravity fed lines from the allotments. For lot 15, it is proposed to utilise the existing sewer connection once verified on-site by the contractor.

No capacity analysis has been undertaken, however it is assumed that for a small infill development, sufficient capacity will be available in the Council network.

The sewer reticulation plan and long sections are shown on drawings C023 and C024.

4.8 Water Reticulation

The water reticulation network has been designed in accordance with the FNQROC Design Guidelines and WSA 03-2002 – Water Supply Code of Australia.

A simple loop is proposed to service the cul-de-sac development with a 100 dia. line down to the end of the cul-de-sac connecting with a 63 PE line to complete the loop. Connection to the existing 100dia main shall be by hot tapping with a 125mm PE road crossing provided on the eastern side of the cul-de-sac in accordance with condition 6 of the development approval. The existing 100 dia water main in the northern verge of Langley Road is to be removed including abandoned water services and hydrants.

No capacity analysis has been undertaken, however it is assumed that for a small infill development, sufficient capacity will be available in the Council network.

The water reticulation plan is shown on drawing C025 in the drawing set.

4.9 Erosion and Sediment Control Strategy

An Erosion and Sediment Control Strategy has been produced to assist in minimising erosion and the transportation of sediment from the site and as a guide for the contractor in producing an Erosion and Sediment Control Plan.

The strategy includes controlling upstream water through the site until it can be replaced by permanent drainage works and protecting natural watercourses and drainage infrastructure from sediment run-off.

The ESCS is shown on project drawings C026, C027 and C028 of the project drawings.

4.10 Landscape Plans

The landscape design documentation for this development has been prepared by LA3 Landscape Architects.

Landscaping design drawings by LA3 are provided in **Appendix E**.

5. Recommendations

Following consideration of this design submission report and the accompanying design documentation it is requested that Council approve the design and documentation of the subdivision as presented in this report and issue an Operational Works Permit for both the civil and landscaping works associated.

Appendix A

ROL 2019_3061/1 APPROVAL

3 December 2019

Enquiries: Jenny Elphinstone
Our Ref: ROL 2019_3061/1 (Doc ID 931072)
Your Ref: FGC: 6038/01 L-EC2114

Administration Office
64 - 66 Front St Mossman
P 07 4099 9444
F 07 4098 2902

KS3 Pty Ltd
C/- Flanagan Consulting Group
C/ GHD
71 Stanley Street
TOWNSVILLE QLD 4810

Email: Erin.Campbell@ghd.com

Attention Ms Erin Campbell

Dear Madam

**Development Application for Reconfiguring of a Lot (1 Lot into 15 Lots)
At 20-30 Langley Road Port Douglas
On land described as Lot 5 on RP804926**

Please find attached the Decision Notice for the above-mentioned development application.

Please quote Council's application number: ROL 2019_3061/1 in all subsequent correspondence relating to this development application.

Should you require any clarification regarding this, please contact Jenny Elphinstone on telephone 07 4099 9482.

Yours faithfully


Paul Hoyer
Manager Environment & Planning

cc. State Assessment and Referral Agency (SARA) E: CairnsSARA@dilgp.qld.gov.au

encl.

- Decision Notice
 - Approved Drawing(s) and/or Document(s)
 - Concurrence Agency Response
 - Reasons for Decision - non-compliance with assessment benchmark.
- Advice For Making Representations and Appeals (Decision Notice)
- Adopted Infrastructure Charges Notice
- Advice For Making Representations and Appeals (Infrastructure Charges)



Decision Notice

Approval (with conditions)

Given under section 63 of the Planning Act 2016

Applicant Details

Name: KS3 Pty Ltd
Postal Address: C/- Flanagan Consulting Group
C/ GHD
71 Stanley Street
Townsville Qld 4810
Email: Erin.Campbell@ghd.com

Property Details

Street Address: 20-30 Langley Road, Port Douglas
Real Property Description: Lot 5 on RP804926
Local Government Area: Douglas Shire Council

Details of Proposed Development

Development Permit for Reconfiguring of a Lot (1 Lot into 15 Lots).

Decision

Date of Decision: 3 December 2019
Decision Details: Development Permit Approved (subject to conditions).

Approved Drawing(s) and/or Document(s)

Copies of the following plans, specifications and/or drawings are enclosed.

The term 'approved drawing(s) and / or document(s)' or other similar expressions means generally the following plans together with any amendments as required by the Conditions of the approval:

Drawing or Document	Reference	Date
Proposal Plan	Flanagan Consulting Group Drawing 6038-SK01 F (Council Document ID 912385).	13 September 2019
Roadworks and Drainage Plan	Flanagan Consulting Group Drawing 6038-SK02 e (Council Document ID 928437).	12 November 2019.
Concept Site Grading	Flanagan Consulting Group Drawing 6038-SK05 e (Council Document ID 928437).	12 November 2019.
Sewerage Reticulation Plan	Flanagan Consulting Group Drawing 6038-SK04 D (Council Document ID 928437).	12 November 2019.
Water Reticulation Plan	Flanagan Consulting Group Drawing 6038-SK03 E dated 19 December 2019 and as annotated by Council (Council Document ID 930021)	26 November 2019.

Note – The plans referenced above will require amending in order to comply with conditions of this Decision Notice.

Assessment Manager Conditions & Advices

Assessment Manager Conditions:

1. Carry out the approved development generally in accordance with the approved drawing(s) and/or document(s), and in accordance with:
 - a. The specifications, facts and circumstances as set out in the application submitted to Council; and
 - b. The following conditions of approval and the requirements of Council's Planning Scheme and the FNQROC Development Manual.

Except where modified by these conditions of approval.

Timing of Effect

2. The conditions of the Development Permit must be effected prior to the lodgement of the Survey Plan for signing and dating, except where specified otherwise in these conditions of approval.

Access

3.
 - a. No lot is to have vehicle access to or from Solander Boulevard.
 - b. Vehicle Access to proposed Lot 9 is limited to Langley Road. No vehicle access to and from Lot 9 is permitted to the internal cul-de-sac.

Building and Structure setbacks

4. No buildings or structures are to be located within 3 m of the Solander Boulevard frontage of the site on Lots 1-4 unless otherwise approved by the Chief Executive Officer.

Street Layout and Design

5. The street layout and design is to be generally in accordance with Flanagan Consulting Group Proposal Plan 6038-SK02e dated 19 November 2019 and must comply with Queensland Streets and the FNQROC Development Manual, to the satisfaction of the Chief Executive Officer. In particular:

- a. The new internal road must have a minimum road reserve width of 14.5 metres;
- b. Langley Road must be upgraded to reflect the road form and geometry of the existing constructed Langley Road west from Andrews Close for the full frontage of the site. Unless otherwise approved, the road upgrade must include new kerb and channel, subsoil drains and road pavement to the crown of the road;
- c. The upgrade of Langley Road must include the provision of a two (2) metre wide concrete footpath along the frontage of the site including a new kerb ramp on Andrews Close;
- d. The upgrade of Langley Road must be designed to ensure that the intersection with Solander Boulevard is designed to suitable enable Council vehicle access and public pedestrian access onto Solander Boulevard;
- e. Detail of proposed retaining structure along the Solander Boulevard frontage of the site that may include a single pedestrian access for each lot fronting Solander Boulevard and must be provided prior to seeking a Development Permit for Operational Work. The retaining structure is to have regard to protection from future storm tide inundation and amenity to the neighbouring Solander Boulevard. These works are to be undertaken at the time of other civil work associated with the development.

f. Provision of a fill on each lot whereby:

- i. Fill areas for the lots are at a level to provide an immunity to a 1% storm tide event (having regard to a 0.8m sea level rise for the year 2100 or a lower level if nominated under a State Planning Policy at the time of lodgement of the application for Operational Work) and a 1% flood event.

The nominated fill level to provide immunity to the 1% AEP stormtide event is to be as per the Cairns BMT-WMB Cairns Region Storm Tide Inundation Study, Final Report and Mapping January 2013 (Council reference Doc ID: 462510) or another superseding report or individual study approved or found satisfactory to the satisfaction of the Chief Executive Officer.

Where the freeboard applied relevant to the BMT WMB report (Page 45 of the Study report) is less than the report recommendation, such lesser height must be qualified by the study author as suitable for the land to the satisfaction of the Chief Executive Officer. Alternatively, the qualification may be provided by a peer coastal engineer to the satisfaction of the Chief Executive Officer;

- ii. All fill is to drain to lawful point of discharge and must not detrimentally impact on upstream, downstream or surrounding land and/or proposed lots;
- iii. Fill areas must be suitably retained with suitably revetment protection from coastal erosion and impacts of storm tide inundation;
- v. Where the minimum fill results in an increase of ground level of 1m or greater to the neighbouring northern boundary for proposed lots 4, 5, 6 and 7, section and site plans are to be provided, for each of the adjacent lots and at least at the highest point, detailing the proposed height and proposed treatment(s) including landscaping to ensure the continued amenity of the neighbouring lots. The design is to ensure no ponding occurs to neighbouring properties and all drainage received from the neighbouring land is adequately catered for. These works are to be undertaken at the time of other civil work associated with the development;

- vi. Where the minimum fill results in an increase of ground level of less than 1m, to the neighbouring northern boundary for proposed lots 4, 5, 6 and 7, the fill may be constructed to the boundary provided no ponding occurs to neighbouring properties and all drainage received from the neighbouring land is adequately catered for;

- g. All lots must provide for suitable vehicle access.

An amended plan incorporating the above requirements must be submitted prior to the issue of a Development Permit for Operational Work.

All works must be carried out in accordance with the approved plans, to the requirements and satisfaction of the Chief Executive Officer prior to the lodgement of a Survey Plan for signing and dating.

Water Supply and Sewerage Works Internal

- 6. Undertake the following water supply and sewerage works internal to the subject land generally in accordance with Flanagan Consulting Group Sketches 6038-SK03D and 6038-SK04D:

- a. Provide a single internal sewer connection to each lot in accordance with the FNQROC Development Manual;
- b. If any existing sewer connections or property connection branches are proposed to be retained, further detail is to be provided to support the condition and capacity of the connection. CCTV footage is required to confirm the suitability of the existing connections for reuse. Existing sewer connections not retained must be decommissioned.
- c. Provide a minimum 100mm (PN16, Blue Brute) diameter water main in the new cul-de-sac with a 63mm (HDPE, PN16 blue) OD loop main in accordance with the FNQROC Development Manual requirements;
- d. Provide a minimum 125mm HDPE SDR11 PN 16 road crossing connecting to the 100mm main on the southern side of Langley Road connected with Hot Tap (tapping under pressure) and under DSC water supervision. The 100mm road crossing must be on the eastern side of the new cul-de-sac;
- e. Services to be installed and tapped during the main laying, bring service into property boundary 500mm and 300mm deep, If driveways/cross overs have not been allocated then service is to be installed in the middle of block, this avoids the chance of the service being under a driveway,
- f. Provide all fittings and valving in accordance with the FNQROC Development Manual requirements; and
- g. Decommission and remove the existing AC water main along the Langley Road frontage of the site and any existing water meters or water supply connections into the site.

All the above works must be designed and constructed in accordance with the FNQROC Development Manual and generally as the annotated water reticulation plan.

Engineering design plans incorporating the above requirements must be submitted prior to the issue of a Development Permit for Operational Work.

All works must be carried out in accordance with the approved plans, to the requirements and satisfaction of the Chief Executive Officer prior to the lodgement of the Survey Plan for signing and dating.

Damage to Infrastructure

7. In the event that any part of Council's existing sewer / water infrastructure is damaged as a result of construction activities occurring on the site, including but not limited to, mobilisation of heavy earthmoving equipment, stripping and grubbing, the applicant / owner must notify Council immediately of the affected infrastructure and have it repaired or replaced by Council, at the developer's cost, prior to the lodgement of the Survey Plan for signing and dating.

Acid Sulfate Soil Management Plan

8. a. Undertake an Acid Sulfate Soil sampling, investigation and analysis in the area to be affected by this development in accordance with:
 - i. the Queensland Acid Sulfate Soil Technical Manual Soil Management Guidelines version 4.0 (2014);
 - ii. the Acid Sulfate Soils - Laboratory Methods Guidelines (version. 2.1, June 2004; and
 - iii. the State Planning Policy 2017.
- b. Provide a statement to Council that
 - i. present Acid Sulfate Soils and/or Possible Acid Sulfate Soils are not present; or
 - ii. that management of present Acid Sulfate Soils and/or Possible Acid Sulfate Soils has been incorporated into an Acid Sulfate Soils Environmental Management Plan prepared in accordance with the abovementioned documents.

Identification of soils with a pyrite content in excess of the action levels will trigger a Acid Sulfate Soil Environmental Management Plan which must be prepared to the satisfaction of the Chief Executive Officer.

Where earthworks are undertaken without a Development Permit for Operational Work, the results of this investigation must be submitted to Council for approval, ten (10) business days prior to any earthworks or clearing being commenced on the site.

Where earthworks are undertaken in association with a Development Permit for Operational Work, the results must accompany such application lodged to Council.

Drainage Study of Site and drainage Design Plan

9. Undertake a local drainage study of the site to determine the drainage impacts on upstream and downstream properties and the mitigation measures required to minimise such impacts. In particular, the study must address the following:
 - a. The contributing catchment boundaries, including specifically the drainage from northern properties entering the site and discharging via surface drainage and pipe systems through proposed lot 4 and within Solander Boulevard to the east of proposed lot 4;
 - b. The extent of the 100 year ARI flood event in relation to the site both pre- and post-development;
 - d. Primary and secondary flow paths for the 5 and 100 year ARI flood events, including external flows currently discharging through the site;
 - e. Identify any requirement for drainage easements;
 - f. Identify the need and tenure for flood detention areas to ensure a no-worsening impact on downstream properties for the entire development;

- g. In the absence of flood detention, the drainage study provides a concept design to limit the primary piped drainage flows entering the existing drainage system that drains to the west to no more than the pre-development flows and ensure that all overland flows are able to be conveyed to Langley Road east to Solander Boulevard to the existing drainage swale outlet near the northern property boundary on Solander Boulevard. Depth and width of flows in Langley Road east from the cul-de-sac in the minor event are to be provided in the supporting calculations for the operational works submission;
- h. Information on the proposed works and any impacts proposed at the drainage outlet from the proposed development; and
- i. Lawful point of discharge.

A plan of proposed drainage works must then be prepared to show the study outcomes and include the following considerations:

- i. Drainage infrastructure in accordance with FNQROC Development Manual except as modified under (g) above.
- ii. All new allotments shall have immunity from flooding associated with the ARI 100 year rainfall event and the 100 year storm tide event;
- iii. Where practical, all new allotments must be drained to the road frontages, drainage easements or drainage reserves and discharged to the existing drainage system via stormwater quality device(s);
- iv. Existing surface drainage along the northern property boundary must be addressed in the plan of drainage works unless otherwise approved by Council following review of the outcomes of the drainage study; and
- v. The underground drainage network to the west is to be limited to the predevelopment flows and any additional runoff is to be conveyed overland in Langley Road east to Solander Boulevard

The study and the proposed drainage works plan must be endorsed by the Chief Executive Officer prior to the issue of a Development Permit for Operational Work.

Access Construction

- 10. Construct a concrete driveway or other approved surface to the nominated building area located in Lot 4.

All works must be carried out in accordance with the approved plans and must be to the requirements and satisfaction of the Chief Executive Officer prior to the lodgement of the Survey Plan for signing and dating.

Demolish Structures

- 11. All structures not associated with the approved development (including disused services and utilities) must be demolished and/or removed from the subject land prior to the lodgement of the Survey Plan for signing and dating.

Stockpiling and Transportation of Fill Material

- 12. Soil used for filling or spoil from the excavation is not to be stockpiled in locations that can be viewed from adjoining premises or a road frontage for any longer than one (1) month from the commencement of works.

Transportation of fill or spoil to and from the site must not occur within:

- a. peak traffic times; or
- b. before 7:00 am or after 6:00 pm Monday to Friday; or
- c. before 7:00 am or after 1:00 pm Saturdays; or

d. on Sundays or Public Holidays.

13. Dust emissions or other air pollutants must not extend beyond the boundary of the site and cause a nuisance to surrounding properties.

Storage of Machinery and Plant

14. The storage of any machinery, material and vehicles must not cause a nuisance to surrounding properties, to the satisfaction of the Chief Executive Officer.

Construction Access

15. Vehicular access to the site for construction and demolition purposes must be provided from Langley Road only, unless authorised by the Chief Executive Officer.

Sediment and Erosion Control

16. A sediment and erosion control plan must be submitted prior the issue of a Development Permit for Operational Works. Such plans must be installed / implemented prior to discharge of water from the site, such that no external stormwater flow from the site adversely affects surrounding or downstream properties (in accordance with the requirements of the Environmental Protection Act 1994, and the FNQROC Development Manual).

Existing Services

17. Written confirmation of the location of existing services for the land must be provided. In any instance where existing services are contained within another lot, the following applies, either:
 - a. Relocate the services to comply with this requirement; or
 - b. Arrange registration of necessary easements over services located within another lot prior to, or in conjunction with, the lodgement of a Survey Plan for signing and dating to create a lot.

Electricity Supply

18. Written evidence from Ergon Energy advising if distribution substation/s are required within the development must be provided. If required, details regarding the location of these facilities must be submitted to the Chief Executive Officer accompanied by written confirmation from Ergon Energy. Details regarding electricity supply must be provided prior to the issue of a Development Permit for Operational Work.

Electricity and Telecommunications

19. Written evidence of negotiations with Ergon Energy and the telecommunication authority must be submitted to Council stating that both an underground electricity supply and telecommunications service will be provided to the development prior to the lodgement of a Survey Plan for signing and dating.

Street Lighting

20. The following arrangements for the installation of street lighting within the proposed subdivision must be prior to the lodgement of a Survey Plan for signing and dating:
 - a. Prior to the issue of a Development Permit for Operational Work a Rate 2 lighting scheme is to be prepared by an Ergon Energy approved consultant and submitted to the Chief Executive Officer for approval. The Rate 2 lighting scheme is to be designed in accordance with the relevant Road Lighting Standard AS/NZS 1158 and the FNQROC Development Manual. The applicable lighting category is to be determined from the Road Hierarchy Table D1.1 and the corresponding applicable Lighting Categories Table D8.1 as identified in the FNQROC Development Manual.

The lighting scheme must show light pole locations that align with property boundaries that represent the permitted design spacing and demonstrates no conflicts with stormwater, kerb inlet pits and other services.

The design must provide the applicable illumination level specified in the Road Lighting Standard AS/NZS 1158 at the following road elements:

- i. Intersections
- ii. Pedestrian Refuges
- iii. Cul-de-sacs
- iv. LATM Devices

LATM Devices are to be shown on the civil layout design, the electrical services and street lighting design must be submitted in accordance with Ergon Energy's latest Distribution Design Drafting Standard.

- b. Prior to the issue of a Compliance Certificate for the Plan of Survey written confirmation that the relevant capital contribution required by Ergon Energy has been paid must be submitted, to ensure that the street lighting will be constructed.
- c. Where a new intersection is formed on an existing roadway for the purpose of accessing a new subdivision development, the intersection and existing road approaches must be provided with street lighting for a distance equivalent to at least two (2) spans either side of the intersection to the relevant Lighting Category.
- d. Where an existing intersection is required to be upgraded as part of a development approval, the intersection and existing road approaches must be provided with street lighting for a distance equivalent to at least two (2) spans either side of the intersection to the relevant Lighting Category.

Damage to Council Infrastructure

- 21. In the event that any part of Council's existing infrastructure is damaged as a result of construction activities occurring on the site, including but not limited to; mobilisation of heavy construction equipment, stripping and grubbing, the applicant/owner must notify Council immediately of the affected infrastructure and have it repaired or replaced at the developer's/owners/builders cost, prior to the lodgement of the Survey Plan for signing and dating.

Landscape Plan

- 22. Undertake landscaping of the street frontages of new roads, Langley Road and Andrews Close in accordance with FNQROC Development Manual and in accordance with a landscape plan.

Where Solander Boulevard is disturbed for drainage purposes, the area is to be grassed and in a mowable condition with a maximum profile of 1:4.

The landscape plan must be to the satisfaction of the Chief Executive Officer prior to the issue of a Development Permit for Operational Work. In particular, the plan must show:

- a. Planting of the footpath with trees, using appropriate species with regard to any overhead powerline constraints;
- b. The revegetation of cut and fill batters;
- c. Species to have regard to the Planning Scheme Landscaping Policy;
- d. Remediation and revegetation works to be undertaken within the both the major drainage line and the drainage reserve, including any works in Solander Boulevard;
- e. Inclusion of all requirements as detailed in other relevant conditions included in this Approval, with a copy of this Development Approval to be given to the applicant's Landscape Architect / Designer.

The landscape plan must be endorsed by the Chief Executive Officer prior to the issue of a Development Permit for Operational Work. Areas to be landscaped must be established prior to lodgement of the survey Plan for signing and dating. Landscaping must be maintained for the duration of the on-maintenance period to the satisfaction of the Chief Executive Officer.

Construction Signage

23. Prior to the commencement of any construction works associated with the development, a sign detailing the project team must be placed on the road frontage of the site and must be located in a prominent position. The sign must detail the relevant project coordinator for the works being undertaken on the site, and must list the following parties (where relevant) including telephone contacts:
 - a. Developer;
 - b. Project Coordinator;
 - c. Civil Engineer; and
 - d. Civil Contractor.

Advice

1. This approval, granted under the provisions of the *Planning Act 2016*, shall lapse four (4) years from the day the approval takes effect in accordance with sections 85(1)(b) and 71 of the *Planning Act 2016*.
2. This approval does not negate the requirement for compliance with all relevant Local Laws and statutory requirements.
3. For information relating to the *Planning Act 2016* log on to www.dsdmip.qld.gov.au. To access the *FNQROC Development Manual*, Local Laws and other applicable Policies, log on to www.douglas.qld.gov.au.
4. The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* applies to action that has, will have or is likely to have a significant impact on matters of national environmental significance.

Further information on the *EPBC Act* can be obtained from the Department of the Environment, Water, Heritage and the Arts website www.environment.gov.au/epbc EPBC Act Policy Statement 1.1 Significant Impact Guidelines Matters of National Environmental Significance (Oct. 2009).

Infrastructure Charges Notice

5. A charge levied for the supply of trunk infrastructure is payable to Council towards the provision of trunk infrastructure in accordance with the Infrastructure Charges Notice, a copy of which is attached for reference purposes only. The original Infrastructure Charges Notice will be provided under cover of a separate letter.

The amount in the Infrastructure Charges Notice has been calculated according to Council's Infrastructure Charges Resolution.

Please note that this Decision Notice and the Infrastructure Charges Notice are stand-alone documents. The *Planning Act 2016* confers rights to make representations and appeal in relation to a Decision Notice and an Infrastructure Charges Notice separately.

The amount in the Infrastructure Charges Notice is subject to index adjustments and may be different at the time of payment. Please contact the Development Assessment Team at council for review of the charge amount prior to payment.

The time when payment is due is contained in the Infrastructure Charges Notice.

Further Development Permits

Please be advised that the following development permits are required to be obtained before the development can be carried out:

- All Operational Work

All Plumbing and Drainage Work must only be carried in compliance with the Queensland *Plumbing and Drainage Act 2018*.

Concurrence Agency Response

Concurrence Agency	Concurrence Agency Reference	Date	Council Electronic Reference
State Department Manufacturing, Infrastructure and Planning	1904-10894 SRA	30 May 2019	904465

Note – Concurrence Agency Response is attached. This Concurrence Agency Response maybe amended by agreement with the respective agency.

Currency Period for the Approval

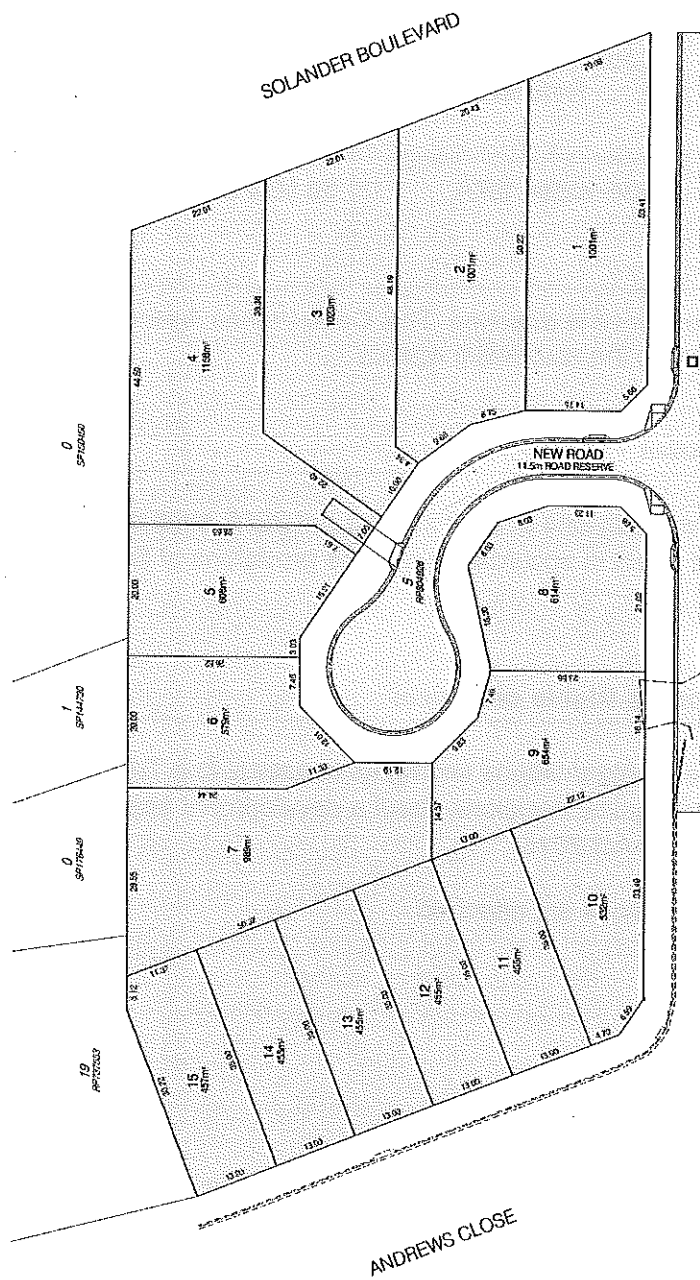
This approval, granted under the provisions of the *Planning Act 2016*, shall lapse four (4) years from the day the approval takes effect in accordance with the provisions of Section 85 of the *Planning Act 2016*.

Rights to make Representations & Rights of Appeal

The rights of applicants to make representations and rights to appeal to a Tribunal or the Planning and Environment Court against decisions about a development application are set out in Chapter 6, Part 1 of the *Planning Act 2016*.

A copy of the relevant appeal provisions are attached.

THE ABOVE IS A SUMMARY OF THE PROGRESS OF THE INVESTIGATION SINCE THE LAST REPORT WAS SUBMITTED. THE FOLLOWING INFORMATION IS BEING FURNISHED FOR YOUR INFORMATION.

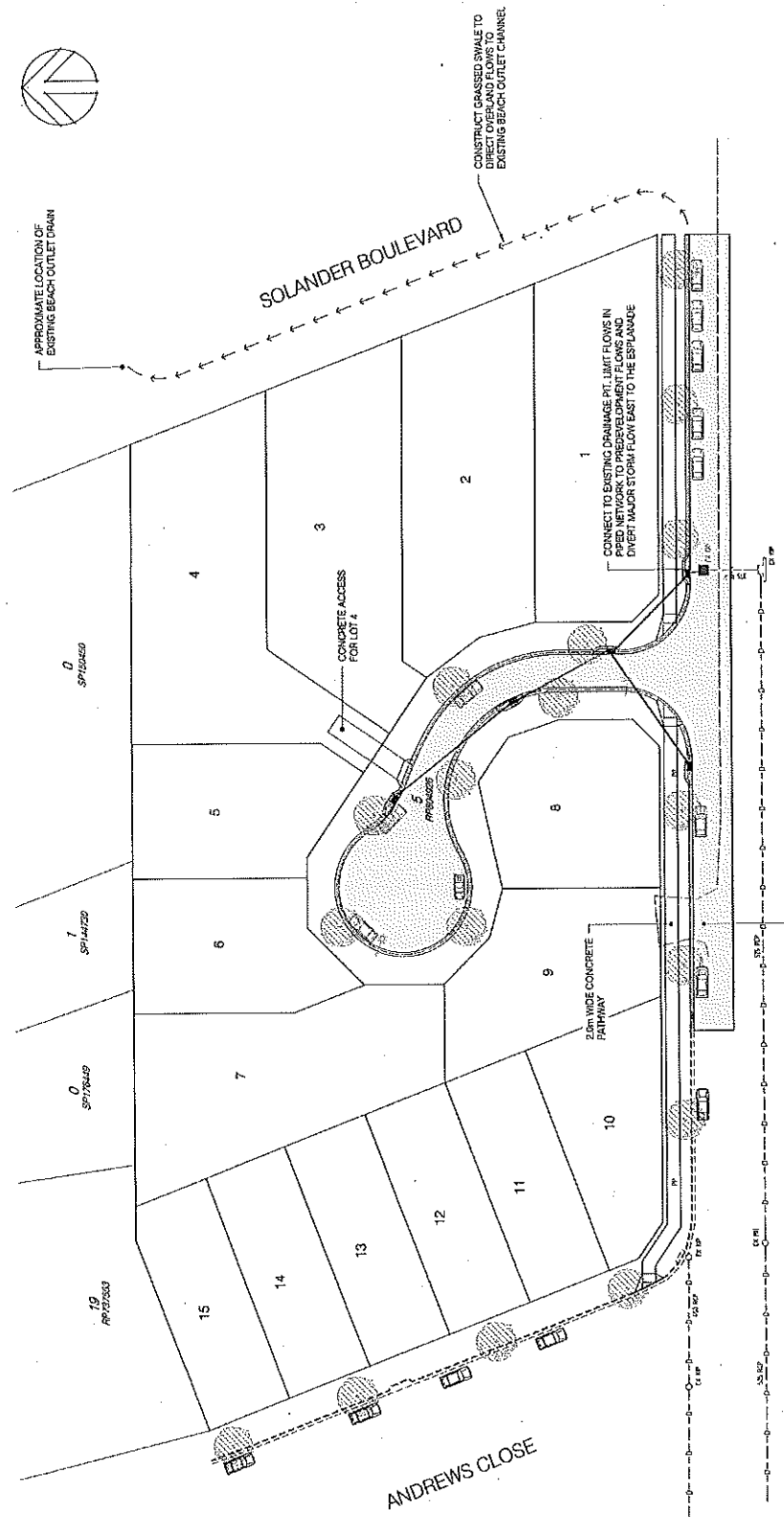


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CARRIS DARTMOUTH HANCOCK TOWNVILLE
207-431-7744 401-846-1626 227-446-1326
www.flanagancg.com

PROPOSAL PLAN

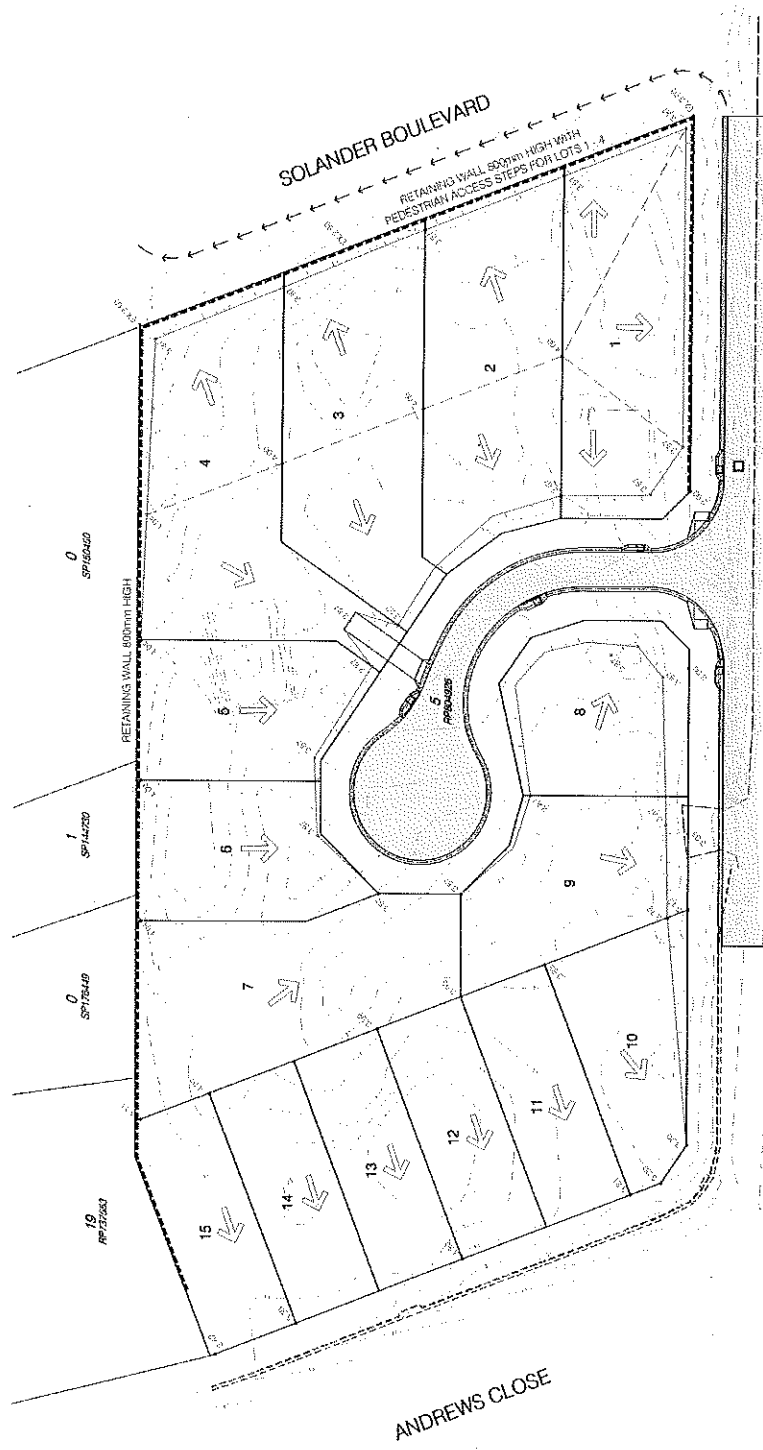
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Accession No. 6038-SK01
13 September 2019

1. All drainage is shown on the basis of the information provided by the owner and is not intended to be used for any other purpose.
2. The drainage system is shown on the basis of the information provided by the owner and is not intended to be used for any other purpose.
3. The drainage system is shown on the basis of the information provided by the owner and is not intended to be used for any other purpose.



ELANAGAN CONSULTING GROUP
 DEVELOPMENT CONSULTANTS AND DESIGNERS
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The owner is advised that the information contained herein is for informational purposes only and should not be relied upon for any legal or financial decision. The information is provided as is, without any warranty, express or implied.



LEGEND

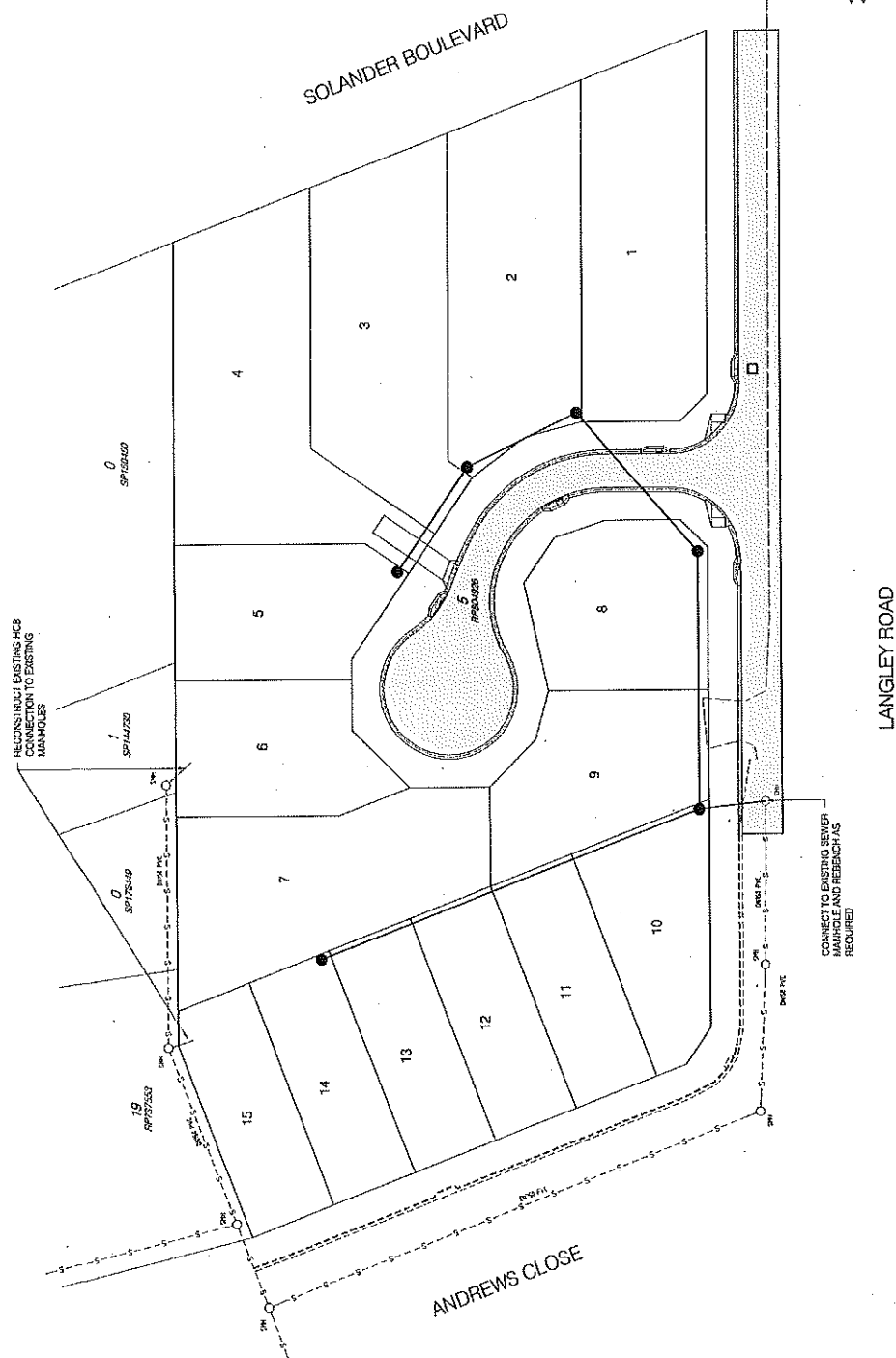
- EXISTING SURFACE CONTOURS
- FINISHED SURFACE LEVEL
- DIRECTION OF FALL
- PROPOSED TOP OF WATER ALL BATTERS SHOWN INDICATIVELY AT 1:1 (NO)
- CHANGE OF GRADE
- PROPOSED RETAINING WALL

MINIMUM ALLOWABLE RILL LEVELS
 3.87 MHD < 200m SETBACK FROM COASTLINE
 2.70 MHD > 200m SETBACK FROM COASTLINE
 (REF Cairns Region Storm Tide inundation Study - 2017 prepared by BMT WBM)

FLANAGAN CONSULTING GROUP
 CONSULTING ENGINEERS
 CURRAN DARWIN MACQUAY TOWNSVILLE
 08 9421 1166 08 9421 1166 08 9421 1166
 08 9421 1166 08 9421 1166 08 9421 1166

RECONFIGURATION OF LOT	
LOT 5 on RP 804926	
15 Lot Subdivision	
CONCEPT SITE GRADING	
6038-SK05 E	1:300
At Full Sea	At Full Sea
Access: 6038-SK05	12 November 2018

Abstract.



LEGEND

—○— EXISTING SEWER MAIN

—●— PROPOSED SEWER MAIN

FLANAGAN CONSULTING GROUP
OVER 10 YEARS OF SPECIALTY TRUCK PROJECT SUPPORTING AROUND THE GLOBE

CARNS DARWIN MACKAY TOWNSVILLE
(08) 943 9632 (07) 464 1300 (07) 479 2727
187 421 1206

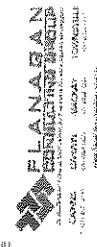
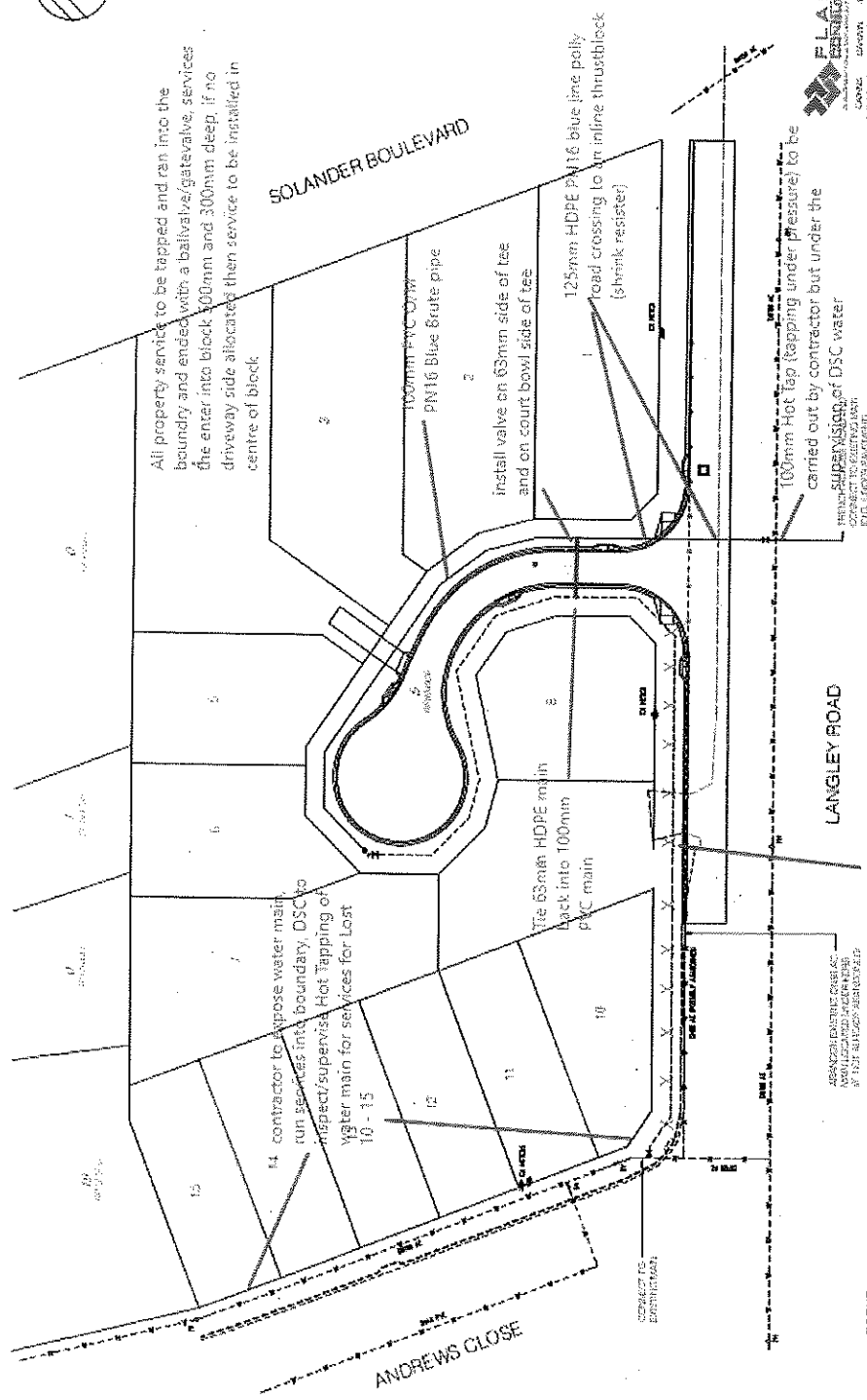
www.flanagancgroup.com.au

RECONFIGURATION OF LOT
LOT 5 on RP 804926
15 Lot Subdivision
SEWERAGE RETICULATION

SEWERAGE RETICULATION

6038-SK04 D
T:300
At Full Size
12 November 2019
Access No. 6038-SK04

1. All work to be done in accordance with the relevant standards and specifications.
2. All work to be done in accordance with the relevant standards and specifications.
3. All work to be done in accordance with the relevant standards and specifications.



RECONFIGURATION OF LOT 12	
LOT 12 SANITARY	
12 LOT SANITARY	
WATER RETICULATION	
8038-SK03 D	1:200
Author: 08/01/2019	12/01/2019

ADOPTED INFRASTRUCTURE CHARGES NOTICE

KS3 Pty Ltd		0	0
DEVELOPERS NAME		ESTATE NAME	STAGE
20-30 Langley Road		L5 RP804926	1628
STREET No. & NAME		LOT & RP No.s	PARCEL No.
ROL 16 lots		ROL 2019_3061	4
DEVELOPMENT TYPE		COUNCIL FILE NO.	VALIDITY PERIOD (year)
Doc ID: 921611		Payment prior to lodgment of survey plan for endorsement	
DSC Reference Doc. No.		VERSION No.	
1			

Adopted Charges as resolved by Council at the Ordinary Meeting held on 5 June 2018, Local Government Infrastructure Plan, Planning Scheme Amendment (effect on and from 2 July 2018)

Locality	Charge per Use	rate	Floor area/No.	Amount	Amount Paid	Receipt Code & GL Code
Port Douglas						
Proposed Demand						
Residential Lots	Separate house	Per House lot	15	292,365.00		
	Total Demand			292,365.00		
Existing Credit						
Residential Lot	Vacant Lot	Per House lot	1	19,491.00		
	Total Credit			19,491.00		
						Code 895 GL 07600.0135.0825

Required Payment or Credit

TOTAL

\$272,874.00

Prepared by	J Elphinstone	26-Sep-19	Amount Paid	
Checked by	D Lamond	30-Sep-19	Date Paid	
Date Payable	Prior to endorsement of survey plan		Receipt No.	
Amendments		Date		
			Cashier	

Note:

The Infrastructure Charges in this Notice are payable in accordance with Sections 119 and 120 of the *Planning Act 2016* as from Council's resolution from the Ordinary Meeting held on 5 June 2018.

Charge rates under the current Policy are not currently subject to indexing.

Any Infrastructure Agreement for trunk works must be determined and agreed to prior to issue of Development Permit for Operational Work.

Charges are payable to: Douglas Shire Council. You can make payment at any of Council's Business Offices or by mail with your cheque or money order to Douglas Shire Council, PO Box 723, Mossman QLD 4873. Cheques must be made payable to Douglas Shire Council and marked 'Not Negotiable.' Acceptance of a cheque is subject to collection of the proceeds. Post dated cheques will not be accepted

Any enquiries regarding Infrastructure Charges can be directed to the Development & Environment, Douglas Shire Council on 07 4099 9444 or by email on enquiries@douglas.qld.gov.au

Concurrence Agency Conditions

RA6-N



Department of
State Development,
Manufacturing,
Infrastructure and Planning

SARA reference: 1904-10894 SRA
Council reference: ROL 3061/2019
Applicant reference: 6038/01-L-EC2114

30 May 2019

Chief Executive Officer
Douglas Shire Council
PO Box 723
Mossman Qld 4873
enquiries@douglas.qld.gov.au

Attention: Jenny Elphinstone

Dear Sir/Madam

SARA response—20-30 Langley Road, Port Douglas
(Referral agency response given under section 56 of the *Planning Act 2016*)

The development application described below was confirmed as properly referred by the Department of State Development, Manufacturing, Infrastructure and Planning on 30 April 2019.

Response

Outcome:	Referral agency response – with conditions.
Date of response:	30 May 2019
Conditions:	The conditions in Attachment 1 must be attached to any development approval.
Advice:	Advice to the applicant is in Attachment 2 .
Reasons:	The reasons for the referral agency response are in Attachment 3 .

Development details

Description:	Development permit	Reconfiguring a lot (1 lot into 13 lots)
SARA role:	Referral Agency	
SARA trigger:	Schedule 10, Part 20, Division 4, Table 2, Table 1 (Planning Regulation 2017)	
	Wetland protection area	
SARA reference:	1904-10894 SRA	
Assessment Manager:	Douglas Shire Council	

Page 1 of 6

Far North Queensland regional office
Ground Floor, Orr Graham and Hantley
Street, Cairns
PO Box 2358, Cairns QLD 4870

Street address: 20-30 Langley Road, Port Douglas
Real property description: Lot 5 on RP804926
Applicant name: KS3 Pty Ltd
Applicant contact details: PO Box 891
TOWNSVILLE QLD 4810
erin@flanaganconsulting.com.au

Representations

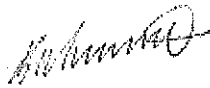
An applicant may make representations to a concurrence agency, at any time before the application is decided, about changing a matter in the referral agency response (s.30 Development Assessment Rules)

Copies of the relevant provisions are in **Attachment 4**.

A copy of this response has been sent to the applicant for their information.

For further information please contact Joanne Manson, Principal Planning Officer, SARA Far North QLD on 40373228 or via email CairnsSARA@dsdmip.qld.gov.au who will be pleased to assist.

Yours sincerely



Brett Nancarrow
Manager (Planning)

cc KS3 Pty Ltd, c/- Flanagan Consulting, erin@flanaganconsulting.com.au

enc Attachment 1 - Referral agency conditions
Attachment 2 - Advice to the applicant
Attachment 3 - Reasons for referral agency response
Attachment 4 - Change representation provisions

Attachment 1—Referral agency conditions

(Under section 56(1)(b)(i) of the *Planning Act 2016* the following conditions must be attached to any development approval relating to this application)

No.	Conditions	Condition timing
Reconfiguring a lot		
Schedule 10, Part 20, Division 4, Table 2, Table 1 - Wetland protection area —The chief executive administering the <i>Planning Act 2016</i> nominates the Director-General of the Department of Environment and Science to be the enforcement authority for the development to which this development approval relates for the administration and enforcement of any matter relating to the following conditions:		
1.	<p>Erosion and sediment control measures which are in accordance with the <i>Best Practice Erosion and Sediment Control (BPESC) guidelines for Australia (International Erosion Control Association)</i>, are to be installed and maintained to prevent the release of sediment to the HES wetland as shown on the map of referable wetlands as defined in the Environmental Protection Regulation 2008.</p> <p>Note: HES referable wetlands are wetlands shown on the <u>map of referable wetlands</u> as defined in the Environmental Protection Regulation 2008.</p>	For the duration of the works
2.	<p>Stormwater discharge must be treated in accordance with the Queensland Best Practice Environmental Management Guidelines before stormwater flow enters the HES wetland as shown on the map of referable wetlands as defined in the Environmental Protection Regulation 2008.</p> <p>Note: HES referable wetlands are wetlands shown on the <u>map of referable wetlands</u> as defined in the Environmental Protection Regulation 2008.</p>	At all times
3.	<p>(a) A Fauna Spotter Catcher (an authorised person who holds a rehabilitation permit with a spotter catcher endorsement under the <i>Nature Conservation Act 1992</i>), must be present on site to monitor earthworks and to respond to any situations that may arise from the discovery of native wildlife.</p> <p>(b) If any native wildlife are identified onsite, work must cease. The Fauna Spotter Catcher must supervise the relocation of any identified wildlife prior to clearing and earthwork operations recommencing and relocate any found wildlife species at an appropriate location in close proximity of the subject site.</p>	<p>(a) Prior to works commencing</p> <p>(b) While clearing/earthworks are occurring</p>

Attachment 2—Advice to the applicant

General advice	
1.	Terms and phrases used in this document are defined in the <i>Planning Act 2016</i> its regulation or the State Development Assessment Provisions (SDAP) [v2.4]. If a word remains undefined it has its ordinary meaning.
Tampering with an Animal Breeding Place of a Protected Species	
2.	<p>Under the Nature Conservation (Wildlife Management) Regulation 2006, in order to tamper with the breeding place of a protected species (identified in the <i>Nature Conservation Act 1992</i>) appropriate authorisation is required.</p> <p>For further guidance on this please see the Species Management Program information on the Department of Environment and Science's website.</p>
Protected plants	
3.	<p>A clearing permit under the <i>Nature Conservation Act 1992</i> will be required to remove any protected plants from the premises.</p> <p>More information on the clearing of protected plants can be found on the Department of Environment and Science's website.</p> <p>It is recommended you meet with the Department of Environment and Science prior to applying for a permit under the <i>Nature Conservation Act 1992</i>.</p> <p>The completed pre-design conference application form should submit to palm@des.qld.gov.au.</p> <p>The Department of Environment and Science can be contacted via email at palm@des.qld.gov.au or by contacting 1300 130 372 (option 4) for information regarding clearing requirements under the <i>Nature Conservation Act 1992</i>.</p>

Attachment 3—Reasons for referral agency response
(Given under section 56(7) of the Planning Act 2016)

The reasons for the department's decision are:

- The department carried out an assessment of the development application against the relevant state codes and complies with the relevant performance outcomes.
- The proposed development is not located in a high ecological significance wetland.
- The proposed development avoids adverse impacts on the adjacent high ecological significance wetland.
- With conditions the proposed development does not impact on matters of state environmental significance.

Material used in the assessment of the application:

- The development application material and submitted plans
- *Planning Act 2016*
- *Planning Regulation 2017*
- The *State Development Assessment Provisions* (version 2.4), as published by the department
- The Development Assessment Rules
- SARA DA Mapping system
- State Planning Policy mapping system

Attachment 4—Change representation provisions

(page left intentionally blank – attached separately)

Reasons for Decision

The reasons for this decision are:

1. Sections 60, 62 and 63 of the *Planning Act 2016*:
 - a. to ensure the development satisfies the benchmarks of the 2018 Douglas Shire Planning Scheme Version 1.0; and
 - b. to ensure compliance with the *Planning Act 2016*.
2. Findings on material questions of fact:
 - a. the development application was properly lodged to the Douglas Shire Council on the 26 March 2019 under section 51 of the *Planning Act 2016* and Part 1 of the *Development Assessment Rules*; and
 - b. the development application contained information from the applicant which Council reviewed together with Council's own assessment against the 2017 State Planning Policy and the 2018 Douglas Shire Planning Scheme Version 1.0 in making its assessment manager decision; and
3. Evidence or other material on which findings were based:
 - a. the development triggered assessable development under the Assessment Table associated with the Tourist Accommodation Zone Code;
 - b. Council undertook an assessment in accordance with the provisions of sections 60, 62 and 63 of the *Planning Act 2016*; and
 - c. the applicant's reasons have been considered and the following findings are made:
 - i. Subject to conditions, the development satisfactorily meets the Planning Scheme benchmarks.

Non-Compliance with Assessment Benchmarks

Benchmark Reference	Alternative Measure/Comment
<p>Tourist Accommodation Zone Code: PO10-PO12:</p> <p>New lots contain a minimum area of 1,000m².</p> <p>New lots have a minimum road frontage of 20 metres.</p> <p>New lots contain a 25m x 20m rectangle.</p>	<p>Some of the proposed lots do not meet the Performance Outcomes. The development meets the Code Purpose (3)(a) providing for "a range of accommodation activities, with an emphasis on short-term accommodation is established at a scale and density to service tourist needs." The layout provides a range of lot sizes that can provide for a range of accommodation activities including self-assessable dwelling houses and code assessable short-term accommodation, both activities that meet the Code Purpose. The development complies with the code.</p>
<p>Local Plan Code:</p> <p>AO2.1 Development provides for the retention and enhancement of existing mature trees and character vegetation that contribute to the lush tropical character of the town.</p> <p>PO2 Development retains and enhances key landscape elements including character trees and areas of significant vegetation contributing to the character and quality of the local plan area and significant views and vistas and other landmarks important in the context of the Port Douglas/ Craiglie Township Plan map contained in Schedule 2).</p>	<p>The development is unable to retain mature vegetation that currently exists on the land due to the need to fill to achieve suitable ground heights respective to coastal processes (storm tide inundation). The vegetation was reviewed and found to not be of state significance. The land is not at a gateway. The vegetation on the nearby road and Reserve provides a physical and aesthetic buffer to the coastline. The development meets the Performance Outcome.</p>
<p>Reconfiguring of a Lot Code</p> <p>PO1 Lots comply with the lot reconfiguration outcomes of the applicable Zone Code.</p>	<p>Despite the non achievement of the lot configuration outcomes, the development achieves many of the ROL Code Purposes, namely</p> <ul style="list-style-type: none"> (a) development results in a well-designed pattern of streets supporting walkable communities; (b) lots have sufficient areas, dimensions and shapes to be suitable for their intend use taking into account environmental features and site constraints; (c) road networks provide connectivity that is integrated with adjoining existing or planned development while also catering for the safe and efficient access for pedestrians, cyclists and for public transport;

Benchmark Reference	Alternative Measure/Comment
	<p>(d) lots are arranged to front all streets and parkland such that development enhances personal safety, traffic safety, property safety and security; and contributes to streetscape and open space quality;</p> <p>(f) people and property are not placed at risk from natural hazards;</p> <p>The development complies with the Code.</p>
<p>Vegetation Management Code</p> <p>AO1 An acceptable outcome provides for vegetation damage where the removal facilitates an approved development.</p> <p>PO1 (includes) Vegetation is protected to ensure that:</p> <p>(a) the character and amenity of the local area is maintained;</p> <p>(b) vegetation damage does not result in fragmentation of habitats;</p> <p>(c) vegetation damage is undertaken in a sustainable manner;</p> <p>(d) the Shire's biodiversity and ecological values are maintained and protected;</p> <p>Code Purpose includes:</p> <p>(a) vegetation is protected from inappropriate damage; (b) where vegetation damage does occur it is undertaken in a sustainable manner; c) significant trees are maintained and protected;</p> <p>(d) biodiversity and ecological values are protected and maintained;</p> <p>(e) habitats for rare, threatened and endemic species of flora and fauna are protected and maintained;</p> <p>(f) landscape character and scenic amenity is protected and maintained;</p>	<p>The development is supported despite the conflict with the vegetation management code. The development meets the State Planning Policy (SPP) regarding Natural Hazards of Storm Tide Inundation. Under section 1.5 of the Planning Scheme, the Overlay Code and the State Planning Policy prevail over the Vegetation Management Code.</p>

Division 2 Changing development approvals

Subdivision 1 Changes during appeal period

74 What this subdivision is about

- (1) This subdivision is about changing a development approval before the applicant's appeal period for the approval ends.
- (2) This subdivision also applies to an approval of a change application, other than a change application for a minor change to a development approval.
- (3) For subsection (2), sections 75 and 76 apply—
 - (a) as if a reference in section 75 to a development approval were a reference to an approval of a change application; and
 - (b) as if a reference in the sections to the assessment manager were a reference to the responsible entity; and
 - (c) as if a reference in section 76 to a development application were a reference to a change application; and
 - (d) as if the reference in section 76(3)(b) to section 63(2) and (3) were a reference to section 83(4); and
 - (e) with any other necessary changes.

75 Making change representations

- (1) The applicant may make representations (*change representations*) to the assessment manager, during the applicant's appeal period for the development approval, about changing—
 - (a) a matter in the development approval, other than—
 - (i) a matter stated because of a referral agency's response; or

- (ii) a development condition imposed under a direction made by the Minister under chapter 3, part 6, division 2; or
- (b) if the development approval is a deemed approval—the standard conditions taken to be included in the deemed approval under section 64(8)(c).
- (2) If the applicant needs more time to make the change representations, the applicant may, during the applicant's appeal period for the approval, suspend the appeal period by a notice given to the assessment manager.
- (3) Only 1 notice may be given.
- (4) If a notice is given, the appeal period is suspended—
 - (a) if the change representations are not made within a period of 20 business days after the notice is given to the assessment manager—until the end of that period; or
 - (b) if the change representations are made within 20 business days after the notice is given to the assessment manager, until—
 - (i) the applicant withdraws the notice, by giving another notice to the assessment manager; or
 - (ii) the applicant receives notice that the assessment manager does not agree with the change representations; or
 - (iii) the end of 20 business days after the change representations are made, or a longer period agreed in writing between the applicant and the assessment manager.
- (5) However, if the assessment manager gives the applicant a negotiated decision notice, the appeal period starts again on the day after the negotiated decision notice is given.

76 Deciding change representations

- (1) The assessment manager must assess the change representations against and having regard to the matters that

must be considered when assessing a development application, to the extent those matters are relevant.

- (2) The assessment manager must, within 5 business days after deciding the change representations, give a decision notice to—
 - (a) the applicant; and
 - (b) if the assessment manager agrees with any of the change representations—
 - (i) each principal submitter; and
 - (ii) each referral agency; and
 - (iii) if the assessment manager is not a local government and the development is in a local government area—the relevant local government; and
 - (iv) if the assessment manager is a chosen assessment manager—the prescribed assessment manager; and
 - (v) another person prescribed by regulation.
- (3) A decision notice (a *negotiated decision notice*) that states the assessment manager agrees with a change representation must—
 - (a) state the nature of the change agreed to; and
 - (b) comply with section 63(2) and (3).
- (4) A negotiated decision notice replaces the decision notice for the development application.
- (5) Only 1 negotiated decision notice may be given.
- (6) If a negotiated decision notice is given to an applicant, a local government may give a replacement infrastructure charges notice to the applicant.

Extracts from the Planning Act 2016 – Appeal Rights

Planning Act 2016
Chapter 6 Dispute resolution

[s 229]

- (2) The person is taken to have engaged in the representative's conduct, unless the person proves the person could not have prevented the conduct by exercising reasonable diligence.

- (3) In this section—

conduct means an act or omission.

representative means—

- (a) of a corporation—an executive officer, employee or agent of the corporation; or
- (b) of an individual—an employee or agent of the individual.

state of mind, of a person, includes the person's—

- (a) knowledge, intention, opinion, belief or purpose; and
- (b) reasons for the intention, opinion, belief or purpose.

Chapter 6 Dispute resolution

Part 1 Appeal rights

229 Appeals to tribunal or P&E Court

- (1) Schedule 1 states—

- (a) matters that may be appealed to—
 - (i) either a tribunal or the P&E Court; or
 - (ii) only a tribunal; or
 - (iii) only the P&E Court; and
- (b) the person—
 - (i) who may appeal a matter (the *appellant*); and
 - (ii) who is a respondent in an appeal of the matter; and

Page 212

Current as at 1 July 2019

Authorised by the Parliamentary Counsel

- (iii) who is a co-respondent in an appeal of the matter;
and
 - (iv) who may elect to be a co-respondent in an appeal
of the matter.
- (2) An appellant may start an appeal within the appeal period.
- (3) The *appeal period* is—
- (a) for an appeal by a building advisory agency—10
business days after a decision notice for the decision is
given to the agency; or
 - (b) for an appeal against a deemed refusal—at any time
after the deemed refusal happens; or
 - (c) for an appeal against a decision of the Minister, under
chapter 7, part 4, to register premises or to renew the
registration of premises—20 business days after a notice
is published under section 269(3)(a) or (4); or
 - (d) for an appeal against an infrastructure charges notice—
20 business days after the infrastructure charges notice
is given to the person; or
 - (e) for an appeal about a deemed approval of a development
application for which a decision notice has not been
given—30 business days after the applicant gives the
deemed approval notice to the assessment manager; or
 - (f) for an appeal relating to the *Plumbing and Drainage Act*
2018—
 - (i) for an appeal against an enforcement notice given
because of a belief mentioned in the *Plumbing and*
Drainage Act 2018, section 143(2)(a)(i), (b) or
(c)—5 business days after the day the notice is
given; or
 - (ii) for an appeal against a decision of a local
government or an inspector to give an action notice
under the *Plumbing and Drainage Act 2018*—5
business days after the notice is given; or

(iii) otherwise—20 business days after the day the notice is given; or

(g) for any other appeal—20 business days after a notice of the decision for the matter, including an enforcement notice, is given to the person.

Note—

See the P&E Court Act for the court's power to extend the appeal period.

- (4) Each respondent and co-respondent for an appeal may be heard in the appeal.
- (5) If an appeal is only about a referral agency's response, the assessment manager may apply to the tribunal or P&E Court to withdraw from the appeal.
- (6) To remove any doubt, it is declared that an appeal against an infrastructure charges notice must not be about—
 - (a) the adopted charge itself; or
 - (b) for a decision about an offset or refund—
 - (i) the establishment cost of trunk infrastructure identified in a LGIP; or
 - (ii) the cost of infrastructure decided using the method included in the local government's charges resolution.

230 Notice of appeal

- (1) An appellant starts an appeal by lodging, with the registrar of the tribunal or P&E Court, a notice of appeal that—
 - (a) is in the approved form; and
 - (b) succinctly states the grounds of the appeal.
- (2) The notice of appeal must be accompanied by the required fee.
- (3) The appellant or, for an appeal to a tribunal, the registrar, must, within the service period, give a copy of the notice of appeal to—

- (a) the respondent for the appeal; and
 - (b) each co-respondent for the appeal; and
 - (c) for an appeal about a development application under schedule 1, section 1, table 1, item 1—each principal submitter for the application whose submission has not been withdrawn; and
 - (d) for an appeal about a change application under schedule 1, section 1, table 1, item 2—each principal submitter for the application whose submission has not been withdrawn; and
 - (e) each person who may elect to be a co-respondent for the appeal other than an eligible submitter for a development application or change application the subject of the appeal; and
 - (f) for an appeal to the P&E Court—the chief executive; and
 - (g) for an appeal to a tribunal under another Act—any other person who the registrar considers appropriate.
- (4) The *service period* is—
- (a) if a submitter or advice agency started the appeal in the P&E Court—2 business days after the appeal is started; or
 - (b) otherwise—10 business days after the appeal is started.
- (5) A notice of appeal given to a person who may elect to be a co-respondent must state the effect of subsection (6).
- (6) A person elects to be a co-respondent to an appeal by filing a notice of election in the approved form—
- (a) if a copy of the notice of appeal is given to the person—within 10 business days after the copy is given to the person; or
 - (b) otherwise—within 15 business days after the notice of appeal is lodged with the registrar of the tribunal or the P&E Court.

- (7) Despite any other Act or rules of court to the contrary, a copy of a notice of appeal may be given to the chief executive by emailing the copy to the chief executive at the email address stated on the department's website for this purpose.

231 Non-appealable decisions and matters

- (1) Subject to this chapter, schedule 1 and the P&E Court Act, unless the Supreme Court decides a decision or other matter under this Act is affected by jurisdictional error, the decision or matter is non-appealable.
- (2) The *Judicial Review Act 1991*, part 5 applies to the decision or matter to the extent it is affected by jurisdictional error.
- (3) A person who, but for subsection (1) could have made an application under the *Judicial Review Act 1991* in relation to the decision or matter, may apply under part 4 of that Act for a statement of reasons in relation to the decision or matter.
- (4) In this section—
decision includes—
 - (a) conduct engaged in for the purpose of making a decision; and
 - (b) other conduct that relates to the making of a decision; and
 - (c) the making of a decision or the failure to make a decision; and
 - (d) a purported decision; and
 - (e) a deemed refusal.

non-appealable, for a decision or matter, means the decision or matter—

- (a) is final and conclusive; and
- (b) may not be challenged, appealed against, reviewed, quashed, set aside or called into question in any other way under the *Judicial Review Act 1991* or otherwise,

whether by the Supreme Court, another court, any tribunal or another entity; and

- (c) is not subject to any declaratory, injunctive or other order of the Supreme Court, another court, any tribunal or another entity on any ground.

232 Rules of the P&E Court

- (1) A person who is appealing to the P&E Court must comply with the rules of the court that apply to the appeal.
- (2) However, the P&E Court may hear and decide an appeal even if the person has not complied with rules of the P&E Court.

Part 2 Development tribunal

Division 1 General

233 Appointment of referees

- (1) The Minister, or chief executive, (the *appointer*) may appoint a person to be a referee, by an appointment notice, if the appointer considers the person—
 - (a) has the qualifications or experience prescribed by regulation; and
 - (b) has demonstrated an ability—
 - (i) to negotiate and mediate outcomes between parties to a proceeding; and
 - (ii) to apply the principles of natural justice; and
 - (iii) to analyse complex technical issues; and
 - (iv) to communicate effectively, including, for example, to write informed succinct and well-organised decisions, reports, submissions or other documents.

3 December 2019

Enquiries: Jenny Elphinstone
Our Ref: ROL 2019_3061 (Doc ID)
Your Ref: 6038/01 L-EC2114

Administration Office
64 - 66 Front St Mossman
P 07 4099 9444
F 07 4098 2902

KS3 Pty Ltd
C/- Flanagan Consulting Group
C/ GHD
71 Stanley Street
TOWNSVILLE QLD 4810

Email: Erin.Campbell@ghd.com

Attention Ms Erin Campbell

Dear Madam

**Adopted Infrastructure Charge Notice
For Development Application for Reconfiguring of a Lot (1 Lot into 15 Lots)
At 20-30 Langley Road Port Douglas
On land described as Lot 5 on RP804926**

Please find attached the Adopted Infrastructure Charges Notice issued in accordance with section 119 of the *Planning Act 2016*.

The amount in the Adopted Infrastructure Charges Notice has been calculated according to Council's Adopted Infrastructure Charges Resolution.

Please also find attached extracts from the Act regarding the following:

- your right to make representations to Council about the Adopted Infrastructure Charges Notice; and
- your Appeal rights with respect to the Adopted Infrastructure Charges Notice.

Please quote Council's application number: ROL 2019_3061 in all subsequent correspondence relating to this matter.

Should you require any clarification regarding this, please contact Jenny Elphinstone on telephone 07 4099 9444.

Yours faithfully


Paul Hoyer
Manager Environment & Planning

encl.

- Adopted Infrastructure Charges Notice
- Rights to Make Representations and Appeals Regarding Infrastructure Charges

Adopted Infrastructure Charges Notice



2018 Douglas Shire Planning Scheme version 1.0 Applications

ADOPTED INFRASTRUCTURE CHARGES NOTICE

KS3 Pty Ltd		0	0
DEVELOPERS NAME		ESTATE NAME	STAGE
20-30 Langley Road		L5 RP804926	1528
STREET No. & NAME		LOT & RP No.s	PARCEL No.
ROL 15 lots		ROL 2019_3061	4
DEVELOPMENT TYPE		COUNCIL FILE NO.	VALIDITY PERIOD (year)
Doc ID: 921611		Payment prior to lodgment of survey plan for endorsement	
DSC Reference Doc. No.		VERSION No.	

Adopted Charges as resolved by Council at the Ordinary Meeting held on 5 June 2018, Local Government Infrastructure Plan, Planning Scheme Amendment (effect on and from 2 July 2018)

Locality	Charge per Use	rate	Floor area/No.	Amount	Amount Paid	Receipt Code & GL Code
Port Douglas						
Proposed Demand						
Residential Lots	Separate house	Per House lot	15	292,365.00		
	Total Demand			292,365.00		
Existing Credit						
Residential Lot	Vacant Lot	Per House lot	1	19,491.00		
	Total Credit			19,491.00		
						Code 895 GL 07500.0135.0825

Required Payment or Credit **TOTAL** \$272,874.00

Prepared by	J Elphinstone	26-Sep-19	Amount Paid	
Checked by	D Lamond	30-Sep-19	Date Paid	
Date Payable	Prior to endorsement of survey plan		Receipt No.	
Amendments		Date	Cashier	

Note:

The Infrastructure Charges in this Notice are payable in accordance with Sections 119 and 120 of the *Planning Act 2016* as from Council's resolution from the Ordinary Meeting held on 5 June 2018.

Charge rates under the current Policy are not currently subject to indexing.
Any Infrastructure Agreement for trunk works must be determined and agreed to prior to issue of Development Permit for Operational Work.

Charges are payable to: Douglas Shire Council. You can make payment at any of Council's Business Offices or by mail with your cheque or money order to Douglas Shire Council, PO Box 723, Mossman QLD 4873. Cheques must be made payable to Douglas Shire Council and marked 'Not Negotiable'. Acceptance of a cheque is subject to collection of the proceeds. Post dated cheques will not be accepted

Any enquiries regarding Infrastructure Charges can be directed to the Development & Environment, Douglas Shire Council on 07 4099 9444 or by email on enquiries@douglas.qld.gov.au

Subdivision 5 Changing charges during relevant appeal period

124 Application of this subdivision

This subdivision applies to the recipient of an infrastructure charges notice given by a local government.

125 Representations about infrastructure charges notice

- (1) During the appeal period for the infrastructure charges notice, the recipient may make representations to the local government about the infrastructure charges notice.
- (2) The local government must consider the representations.
- (3) If the local government—
 - (a) agrees with a representation; and
 - (b) decides to change the infrastructure charges notice;the local government must, within 10 business days after making the decision, give a new infrastructure charges notice (a *negotiated notice*) to the recipient.
- (4) The local government may give only 1 negotiated notice.
- (5) A negotiated notice—
 - (a) must be in the same form as the infrastructure charges notice; and
 - (b) must state the nature of the changes; and
 - (c) replaces the infrastructure charges notice.
- (6) If the local government does not agree with any of the representations, the local government must, within 10 business days after making the decision, give a decision notice about the decision to the recipient.
- (7) The appeal period for the infrastructure charges notice starts again when the local government gives the decision notice to the recipient.

126 Suspending relevant appeal period

- (1) If the recipient needs more time to make representations, the recipient may give a notice suspending the relevant appeal period to the local government.
- (2) The recipient may give only 1 notice.
- (3) If the representations are not made within 20 business days after the notice is given, the balance of the relevant appeal period restarts.
- (4) If representations are made within the 20 business days and the recipient gives the local government a notice withdrawing the notice of suspension, the balance of the relevant appeal period restarts the day after the local government receives the notice of withdrawal.

**Division 3 Development approval conditions
about trunk infrastructure**

**Subdivision 1 Conditions for necessary trunk
infrastructure**

127 Application and operation of subdivision

- (1) This subdivision applies if—
 - (a) trunk infrastructure—
 - (i) has not been provided; or
 - (ii) has been provided but is not adequate; and
 - (b) the trunk infrastructure is or will be located on—
 - (i) premises (the *subject premises*) that are the subject of a development application, whether or not the infrastructure is necessary to service the subject premises; or
 - (ii) other premises, but is necessary to service the subject premises.

Extracts from the Planning Act 2016 –Appeal Rights

Planning Act 2016
Chapter 6 Dispute resolution

[s 229]

- (2) The person is taken to have engaged in the representative's conduct, unless the person proves the person could not have prevented the conduct by exercising reasonable diligence.

- (3) In this section—

conduct means an act or omission.

representative means—

- (a) of a corporation—an executive officer, employee or agent of the corporation; or
- (b) of an individual—an employee or agent of the individual.

state of mind, of a person, includes the person's—

- (a) knowledge, intention, opinion, belief or purpose; and
- (b) reasons for the intention, opinion, belief or purpose.

Chapter 6 Dispute resolution

Part 1 Appeal rights

229 Appeals to tribunal or P&E Court

- (1) Schedule 1 states—

- (a) matters that may be appealed to—
- (i) either a tribunal or the P&E Court; or
- (ii) only a tribunal; or
- (iii) only the P&E Court; and
- (b) the person—
- (i) who may appeal a matter (the *appellant*); and
- (ii) who is a respondent in an appeal of the matter; and

- (iii) who is a co-respondent in an appeal of the matter;
and
 - (iv) who may elect to be a co-respondent in an appeal of the matter.
- (2) An appellant may start an appeal within the appeal period.
- (3) The *appeal period* is—
- (a) for an appeal by a building advisory agency—10 business days after a decision notice for the decision is given to the agency; or
 - (b) for an appeal against a deemed refusal—at any time after the deemed refusal happens; or
 - (c) for an appeal against a decision of the Minister, under chapter 7, part 4, to register premises or to renew the registration of premises—20 business days after a notice is published under section 269(3)(a) or (4); or
 - (d) for an appeal against an infrastructure charges notice—20 business days after the infrastructure charges notice is given to the person; or
 - (e) for an appeal about a deemed approval of a development application for which a decision notice has not been given—30 business days after the applicant gives the deemed approval notice to the assessment manager; or
 - (f) for an appeal relating to the *Plumbing and Drainage Act 2018*—
 - (i) for an appeal against an enforcement notice given because of a belief mentioned in the *Plumbing and Drainage Act 2018*, section 143(2)(a)(i), (b) or (c)—5 business days after the day the notice is given; or
 - (ii) for an appeal against a decision of a local government or an inspector to give an action notice under the *Plumbing and Drainage Act 2018*—5 business days after the notice is given; or

- (iii) otherwise—20 business days after the day the notice is given; or
- (g) for any other appeal—20 business days after a notice of the decision for the matter, including an enforcement notice, is given to the person.

Note—

See the P&E Court Act for the court's power to extend the appeal period.

- (4) Each respondent and co-respondent for an appeal may be heard in the appeal.
- (5) If an appeal is only about a referral agency's response, the assessment manager may apply to the tribunal or P&E Court to withdraw from the appeal.
- (6) To remove any doubt, it is declared that an appeal against an infrastructure charges notice must not be about—
 - (a) the adopted charge itself; or
 - (b) for a decision about an offset or refund—
 - (i) the establishment cost of trunk infrastructure identified in a LGIP; or
 - (ii) the cost of infrastructure decided using the method included in the local government's charges resolution.

230 Notice of appeal

- (1) An appellant starts an appeal by lodging, with the registrar of the tribunal or P&E Court, a notice of appeal that—
 - (a) is in the approved form; and
 - (b) succinctly states the grounds of the appeal.
- (2) The notice of appeal must be accompanied by the required fee.
- (3) The appellant or, for an appeal to a tribunal, the registrar, must, within the service period, give a copy of the notice of appeal to—

- (a) the respondent for the appeal; and
 - (b) each co-respondent for the appeal; and
 - (c) for an appeal about a development application under schedule 1, section 1, table 1, item 1—each principal submitter for the application whose submission has not been withdrawn; and
 - (d) for an appeal about a change application under schedule 1, section 1, table 1, item 2—each principal submitter for the application whose submission has not been withdrawn; and
 - (e) each person who may elect to be a co-respondent for the appeal other than an eligible submitter for a development application or change application the subject of the appeal; and
 - (f) for an appeal to the P&E Court—the chief executive; and
 - (g) for an appeal to a tribunal under another Act—any other person who the registrar considers appropriate.
- (4) The *service period* is—
- (a) if a submitter or advice agency started the appeal in the P&E Court—2 business days after the appeal is started; or
 - (b) otherwise—10 business days after the appeal is started.
- (5) A notice of appeal given to a person who may elect to be a co-respondent must state the effect of subsection (6).
- (6) A person elects to be a co-respondent to an appeal by filing a notice of election in the approved form—
- (a) if a copy of the notice of appeal is given to the person—within 10 business days after the copy is given to the person; or
 - (b) otherwise—within 15 business days after the notice of appeal is lodged with the registrar of the tribunal or the P&E Court.

- (7) Despite any other Act or rules of court to the contrary, a copy of a notice of appeal may be given to the chief executive by emailing the copy to the chief executive at the email address stated on the department's website for this purpose.

231 Non-appealable decisions and matters

- (1) Subject to this chapter, schedule 1 and the P&E Court Act, unless the Supreme Court decides a decision or other matter under this Act is affected by jurisdictional error, the decision or matter is non-appealable.
- (2) The *Judicial Review Act 1991*, part 5 applies to the decision or matter to the extent it is affected by jurisdictional error.
- (3) A person who, but for subsection (1) could have made an application under the *Judicial Review Act 1991* in relation to the decision or matter, may apply under part 4 of that Act for a statement of reasons in relation to the decision or matter.
- (4) In this section—
- decision** includes—
- (a) conduct engaged in for the purpose of making a decision; and
 - (b) other conduct that relates to the making of a decision; and
 - (c) the making of a decision or the failure to make a decision; and
 - (d) a purported decision; and
 - (e) a deemed refusal.

non-appealable, for a decision or matter, means the decision or matter—

- (a) is final and conclusive; and
- (b) may not be challenged, appealed against, reviewed, quashed, set aside or called into question in any other way under the *Judicial Review Act 1991* or otherwise,

whether by the Supreme Court, another court, any tribunal or another entity; and

- (c) is not subject to any declaratory, injunctive or other order of the Supreme Court, another court, any tribunal or another entity on any ground.

232 Rules of the P&E Court

- (1) A person who is appealing to the P&E Court must comply with the rules of the court that apply to the appeal.
- (2) However, the P&E Court may hear and decide an appeal even if the person has not complied with rules of the P&E Court.

Part 2 Development tribunal

Division 1 General

233 Appointment of referees

- (1) The Minister, or chief executive, (the *appointer*) may appoint a person to be a referee, by an appointment notice, if the appointer considers the person—
 - (a) has the qualifications or experience prescribed by regulation; and
 - (b) has demonstrated an ability—
 - (i) to negotiate and mediate outcomes between parties to a proceeding; and
 - (ii) to apply the principles of natural justice; and
 - (iii) to analyse complex technical issues; and
 - (iv) to communicate effectively, including, for example, to write informed succinct and well-organised decisions, reports, submissions or other documents.

Appendix B

DSC PRE-LODGMET CORRESPONDENCE

From: [Gregory Applin](#)
To: [Paul Steele](#); [Neil Beck \(InTouch\)](#)
Cc: [Daniel Farquhar](#); [Gary Browning](#); [Patrick Flanagan](#); [Jake Donnan](#)
Subject: Fill levels Andrews Close Port Douglas
Date: Wednesday, 5 February 2020 4:21:11 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image006.png](#)
[L.B24258.001.Coastal_Engineering_Advice.pdf](#)

Paul / Neil,

As part of the conditions associated with 20-30 Langley Rd (Lot 5 RP804926), Council allowed for BMT to reassess their previous report to qualify the fill height requirements for the site (Condition 5f(i)).

After consultation with BMT, it became evident that the fill heights being interpreted from their report were slightly unclear and advice from BMT was then sought to clarify the appropriate fill levels.

A copy of that advice is now attached (L.B24258.01. Coastal Engineering Advice).

Based on the attached advice we now confirm to DSC the adoption of the minimum levels summarised in Section 6 I (below) **and request confirmation of DSC's acceptance** so we can finalise our OW plans:

6. Summary

Based on our site-specific investigations, we provide the following recommendations.

- I. To appropriately manage the 1% AEP in 2100 storm tide event:
 - (a) Lot levels recommended are:
 - Eastern side of development – 3.57m
 - Western side of development – 3.01m
 - (b) Minimum habitable floor levels recommended are:
 - Eastern side of development – 3.87m
 - Western side of development – 3.31m
 - (c) For lot and house levels between the eastern and western sides of the development, linear interpolation is to be applied.

Upon further detailed design, it has become apparent that the site drainage and internal road will govern the lot levels, so levels slightly higher than those proposed above will apply.

Proposed levels (approx. subject to final design) will all comply and are summarised below:

Lot No	Internal Road Frontage Level	Rear Boundary Level	Approx Mid Lot level (Approx FFL ¹)	Interpolated Mid Lot BMT 2070 level (BMT FFL)	Interpolated Mid Lot BMT 2100 level (BMT FFL)	Comply (Yes / No)
1	3.85 m	3.45 m (top of wall)	3.65 m (3.80 m)	3.13 m (3.43 m)	3.43 m (3.73 m)	Yes
2	3.85 m	3.45 m (top of wall)	3.65 m (3.80 m)	3.13 m (3.43 m)	3.43 m (3.73 m)	Yes
3	3.85 m	3.45 m (top of wall)	3.65 m (3.80 m)	3.13 m (3.43 m)	3.43 m (3.73 m)	Yes
4	3.85 m	3.45 m (top of wall)	3.65 m (3.80 m)	3.13 m (3.43 m)	3.43 m (3.73 m)	Yes
5	3.7 m	3.95 m (top of wall)	3.80 m (3.95m)	2.94 m (3.24 m)	3.24 m (3.54 m)	Yes
6	3.7 m	3.95 m (top of wall)	3.80 m (3.95m)	2.82 m (3.12 m)	3.12 m (3.42 m)	Yes
7	3.7 m	3.95 m (top of wall)	3.80 m (3.95m)	2.71 m (3.01 m)	3.01 m (3.31 m)	Yes
8	3.7 m	3.9 m	3.80 m (3.95m)	2.71 m (3.01 m)	3.01 m (3.31 m)	Yes
9	3.7 m	3.6 m	3.65 m (3.80m)	2.71 m (3.01 m)	3.01 m (3.31 m)	Yes
10-15	Existing lot levels vary between RL 3.2 m and 3.5 m. with minor shaping proposed to ensure min level is RL 3.3m					Yes

¹ – FFL is based on adding 150mm to the pad level for slab and bedding

The above will be detailed in our OW Engineering Report.

Regards,

Greg Applin
BEng RPEQ

Team Leader Cairns – Urban Development/Civil

GHD

Proudly employee owned

T: +61 7 4044 2261 | M: +61 414 768 109 | E: greg.applin@ghd.com
Level 8, Cairns Corporate Tower 15 Lake Street Cairns Qld 4870 Australia | www.ghd.com

Please note our address has changed

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From: Elizabeth Farla <Liz.Farla@bmtglobal.com>

Sent: Friday, 31 January 2020 4:55 PM

To: Daniel Farquhar <dfarquhar@seymourgroupp.com.au>

Cc: Matthew Barnes <Matthew.Barnes@bmtglobal.com>; Patrick Flanagan <Pat.Flanagan@ghd.com>; Neil Collins <Neil.Collins@bmtglobal.com>; Gregory Applin <Greg.Applin@ghd.com>

Subject: Fill levels Andres Close Port Douglas

Hi Daniel,

Attached please find Coastal Engineering Advice for the above as requested.

Regards,

Elizabeth Farla

PA Expert Witness Services

Tel: +61 (0) 7 3831 6744

Fax: +61 (0) 7 3832 3627

Web: www.bmt.org



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Our Ref: If: L.B24258.001.Coastal Engineering Advice

Tel: +61 7 3831 6744
Fax: + 61 7 3832 3627

ABN 54 010 830 421

www.bmt.org

31 January 2020

Seymour Group
GPO Box 2487
Brisbane Qld 4001

Attention: Daniel Farquhar

Dear Daniel,

RE: COASTAL ENGINEERING ADVICE IN RELATION TO REQUIRED FILL LEVELS - ANDRES CLOSE / LANGLEY ROAD PORT DOUGLAS

We write to provide coastal engineering advice in relation to storm tide inundation, specifically to address an approval condition set by Douglas Shire Council for your Development Application over land at 20 to 30 Langley Road Port Douglas (Lot 5 on RP804926). The application relates to a 15 lot subdivision.

Details are as follows:

1. Council Conditions

Council's approval conditions included the following:

5f. *Provision of a fill on each lot whereby:*

- i. *Fill areas for the lots are at a level to provide an immunity to a 1% storm tide event (having regard to a 0.8m sea level rise for the year 2100 or a lower level if nominated under a State Planning Policy at the time of lodgement of the application for Operational Work) and a 1% flood event*

The nominated fill level to provide immunity to the 1% AEP storm tide event is to be as per the BMT WBM Cairns Region Storm Tide Inundation Study, Final Report and Mapping January 2013 (Council reference Doc ID 462510) or another superseding report or individual study approved or found satisfactory to the satisfaction of the Chief Executive Officer.

Where the freeboard applied relevant to the BMT WBM report (Page 45 of the Study report) is less than the report recommendation, such lesser height must be qualified by the study author as suitable for the land to the satisfaction of the Chief Executive Officer. Alternatively, the qualification maybe provided by a peer coastal engineer to the satisfaction of the Chief Executive Officer.

2. Background

Douglas Shire Council (DSC) adopts the findings of the Cairns Regional Storm Tide Inundation Study (BMT WBM 2013) when providing guidance on minimum requirements for fill and floor levels. Specifically, the 1 in 100 (1%) Annual Exceedance Probability (AEP) storm tide level in the year 2100 has been adopted by DSC. This design water level definition includes a 0.8m allowance for sea level rise.

BMT WBM (2013) report tropical cyclone generated design water levels at 195 unique locations within the DSC local government area. The design water level definitions are as follows:

- The 'storm tide' level which includes the influence of the tide plus surge associated with the tropical cyclone climate.
- The 'storm tide including wave effects' which includes the additional contribution that wave processes can have on the water level (wave setup and runup).

The 'storm tide' level is applicable in areas not directly exposed to waves. This includes tidal extent of rivers and creeks and coastal floodplain more than 200 m inland from the coastline.

The 'storm tide including wave effects' level is applicable to areas directly exposed to breaking waves. This is generally limited to open coast beaches where wave setup and wave runup processes occur.

A subset of output points from BMT WBM (2013) is shown in Figure 2-1 indicating that location '244' is the closest representative reporting location to the proposed development site. Table 2-1 provides a summary of outputs from location 244 for the 1 in 100 (1%) AEP in 2100.

Table 2-1 Summary of Outputs from Location 244 (BMT WBM 2013)

TC Generated Parameters: 1 in 100 (1% AEP) in 2100	Location 244
Significant Wave Height (m)	3.18
Wave Peak Period (s)	7.07
Tide plus Surge (mAHD)	2.71
Tide plus Surge plus Wave Effects (mAHD)	3.83

3. Appropriate Application of Wave Effects

Wave effects diminish with the distance from the shoreline due to topography and resistance from vegetation. At the subject site, there is approximately 100m of good vegetation cover to the closest part of the proposed development to be filled, and 200m to the western most part of the site. For the BMT WBM (2013) Storm Tide Inundation Study, in the absence of the specific investigations, wave effect penetration was conservatively assumed to reach 200m from the shoreline, with a linear reduction in wave effects with distance from the shoreline.

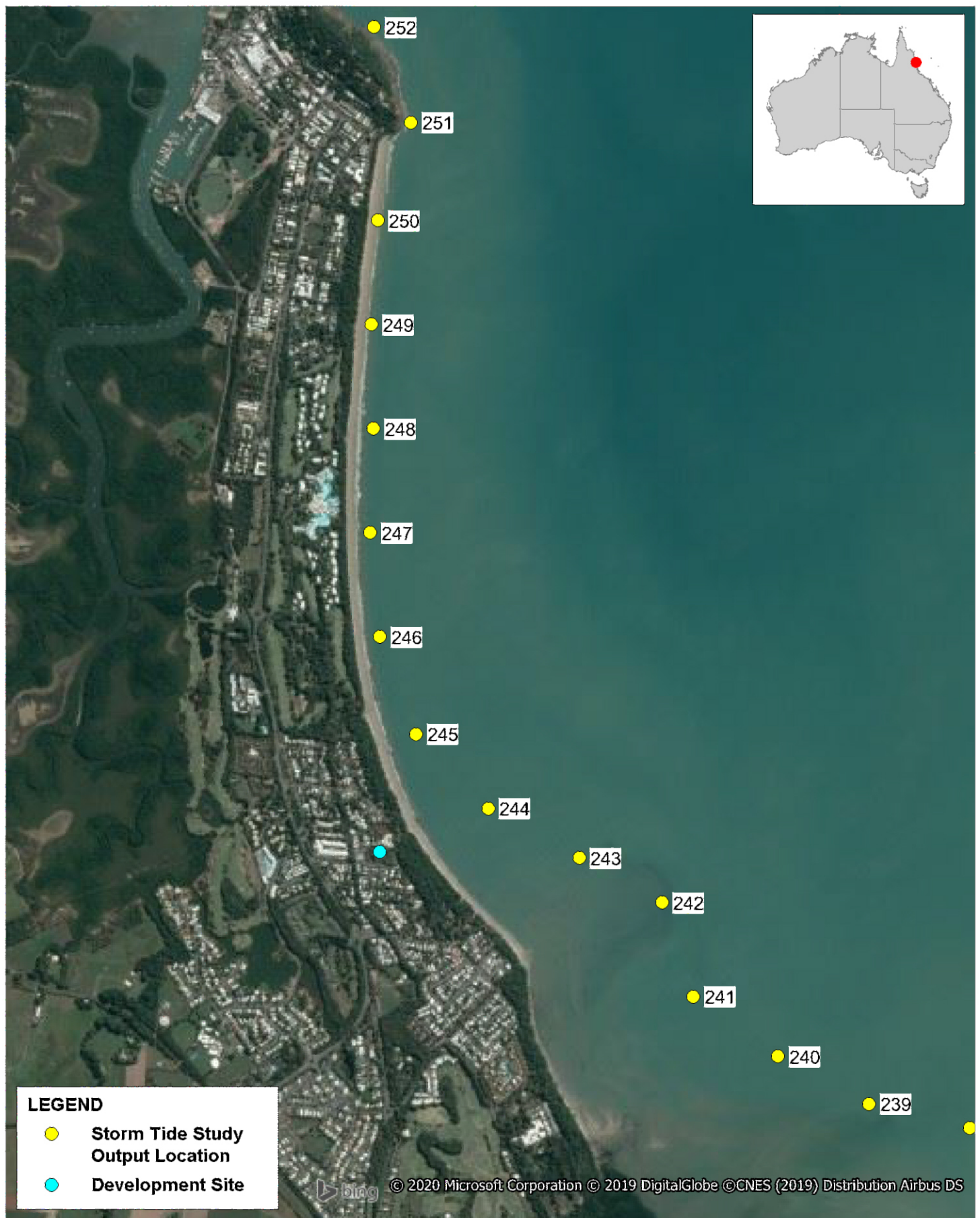
4. Consideration of Appropriate Storm Tide Levels for the Site

Based on the levels in Table 2-1, and on the linear interpolation described above, the appropriate 1 in 100 year, (1% AEP) in the year 2100 levels are:

- Eastern side of development – RL 3.27m.
- Western side of development – RL 2.71m.

It is important to recognise, however, the design life of the proposed development buildings. Based on the 50 year design life required, a possible option for the development is to manage for storm tide levels in the year 2070, recognising that reconstruction may be required after that date. This reduces the sea level rise allowance to 0.5m. This also reduces the 1 in 100 year (1% AEP) levels to:

- Eastern side of development – RL 2.97m.
- Western side of development – RL 2.41m.

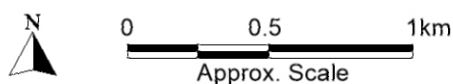


Title:
**Subset of Storm Tide Study Output Points
 (BMT WBM 2013)**

Figure:
2-1

Rev:
A

BMT WBM endeavours to ensure that the information provided in this map is correct at the time of publication. BMT WBM does not warrant, guarantee or make representations regarding the currency and accuracy of information contained in this map.



Filepath: I:\B24258.I.mpb.AndresClose\DRG\COA_001_20200130_ST_output_locations.wor

5. Freeboard and Appropriate Fill Levels

The BMT WBM 2013 Study recommended freeboard allowances as follows:

- 0.5m in the coastal floodplain and within the tidal extent of rivers and creeks.
- 1.0m within the wave runup zone.

For the subject site, the wave runup zone does not reach the proposed lots; only wave setup is predicted to impact the lots for the 1% AEP in 2100 event. Hence, 0.5m freeboard is applicable to the entire new lot areas, based on the 2013 study.

It is important to note that general freeboard provisions are generally set by local authorities. For example, Cairns Regional Council do not apply the 0.5m and 1.0m provisions from the 2013 Study for storm tide allowances.

The other important consideration is current day storm tide levels, which are:

- 1% AEP storm tide plus surge – 1.83m.
- 1% AEP storm tide plus surge plus wave effects – 2.93m

Based on our site-specific assessments, taking particular regard to reduced wave effect penetration to the development area due to the extent of significant vegetation cover, we recommend minimum storm tide levels for the site to provide adequate immunity from the 1% AEP in 2100 event as follows:

- Eastern side of development – 3.57m.
- Western side of development – 3.01m.

This incorporates a reduced freeboard of 300mm in recognition of the reduced wave effect impacts.

Based on a 50 year design life, the levels for the storm tide 1% AEP in 2070 event are as follows:

- Eastern side of development – 3.27m.
- Western side of development – 2.71m.

6. Summary

Based on our site-specific investigations, we provide the following recommendations.

I. To appropriately manage the 1% AEP in 2100 storm tide event:

(a) Lot levels recommended are:

- Eastern side of development – 3.57m
- Western side of development – 3.01m

(b) Minimum habitable floor levels recommended are:

- Eastern side of development – 3.87m
- Western side of development – 3.31m

(c) For lot and house levels between the eastern and western sides of the development, linear interpolation is to be applied.

II. Subject to Council approval, and taking account of the design life of houses, to appropriately manage the 1 % AEP in 2070 event:

(a) Minimum lot levels are:

- Eastern side of development – 3.27m
- Western side of development – 2.71m

(b) Minimum habitable floor levels are¹:

- Eastern side of development – 3.57m
- Western side of development – 3.01m

(c) For lot and house levels between the eastern and western sides of the development, linear interpolation is to be applied.

7. Qualifications

The four study limitations listed in Chapter 6.3 on page 44 of BMT WBM (2013) still apply. The additional factor of safety allowances on page 45 are superseded for the subject site by this site-specific assessment.

Please let us know if you need any further information or detail.

Yours Faithfully
BMT



Neil Collins
Principal Hydraulic and Water Resources Engineer



Dr Matthew Barnes
Principal Coastal Engineer

¹ For this case, Council could as an alternative set minimum habitable floor levels to the 1% AEP in 2100 levels in 1(b) above.

From: [Gregory Applin](#)
To: [Paul Steele](#); [Neil Beck \(InTouch\)](#)
Cc: [Gary Browning](#)
Subject: Non standard entrance and trench grate arrangement
Date: Friday, 14 February 2020 10:04:03 AM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image006.png](#)
[image007.png](#)
[Hand Calc Drainage Review 12510641.pdf](#)
[42-12520641_intersection layout.pdf](#)

Paul / Neil,

Further to our recent meeting we have now progressed our design much further and we are now sure what we are proposing can work.

We note that the outcome of the meeting was for GHD to submit some hand sketches and calculations to show the "level of service" is acceptable for the non-standard intersection. We also note that Condition 5b was included in the conditions and this gives Council the flexibility to approve this proposed variation within the current approval.

Attached is the sketches and hand calculation and I've summarised the outcomes and assumptions below:

- Survey confirms Andrews Close falls away from our site at the nth bdy.
- Survey and site inspections confirm some local drainage in the existing lots behind the nth bdy, so the rear retaining wall defines the catchment
- Q5 flows from Andrews Close catchment collected by existing gully on cnr Andrews/Langley; Q100-Q5 flows continue around cnr down Langley

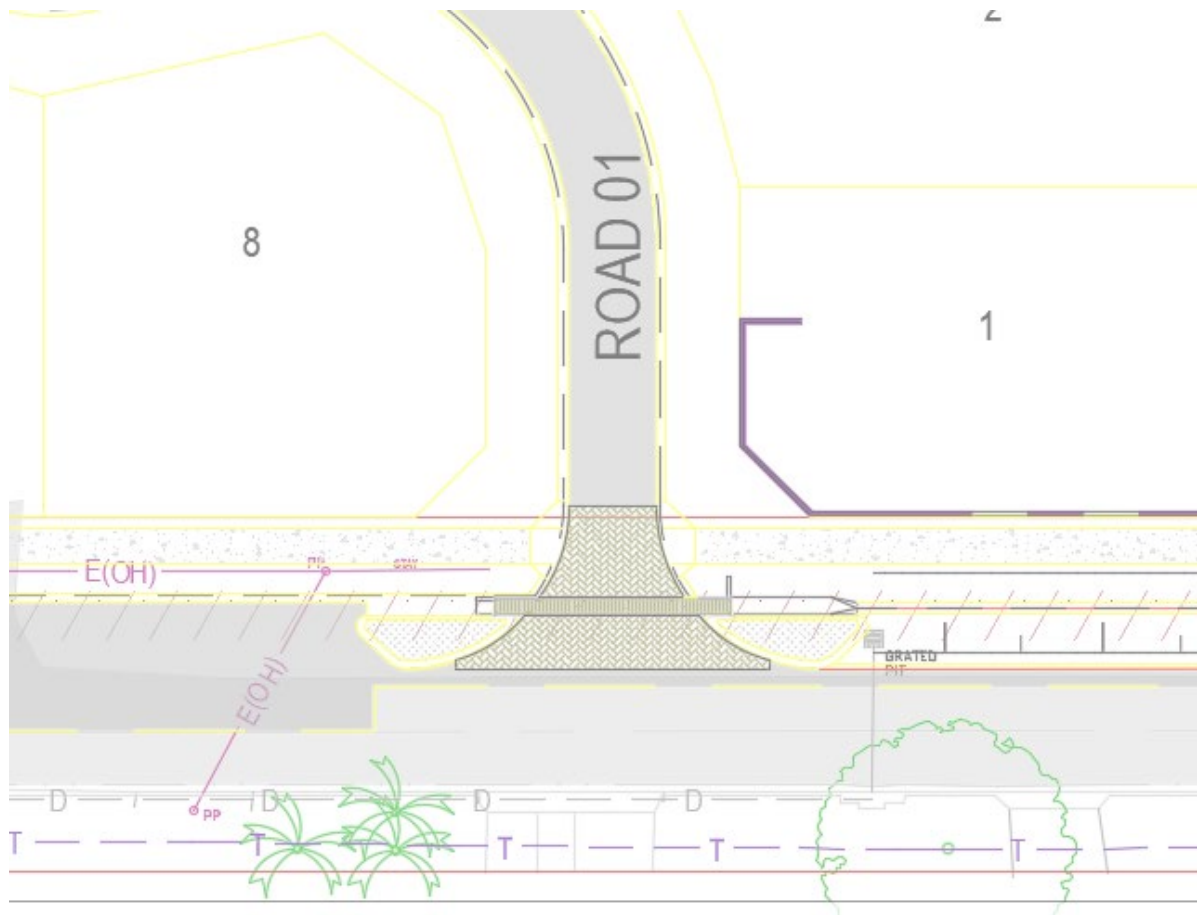
Capacity checks:

Section	Section Location	Comments
A	Langley upstream of proposed entrance	Half road capacity more than sufficient to cater for Q100 flows. Capacity = 363l/s; Q100 Flow = 234l/s Proposed flat grades of 0.25% Ok Q100 doesn't overtop crown Level of service is Okay
B	Langley downstream of proposed intersection in swale drain	Swale capacity = 572l/s Q100 flows = 565l/s All Q100 is contained within the swale Verge is flood free during Q100. Level of service is Okay
C	Internal road	Half road capacity = 87l/s Q5 max half road = 82l/s Half road flows do not overtop crown Q100 capacity far exceeds Q100 flows Level of service is Okay
D	Slander Blvd swale	Capacity running full = 1,085l/s Q100 flows = 833l/s Swale caters for Q100 flows Level of service is Okay
E	Trench grate through intersection	Q5 capacity = 268 l/s; Q5 flows = 214l/s

		<p>Trench grate contains ALL Q5 flows No flows around the kerb return as grate picks up all flows. Level of service is Okay</p>
--	--	---

Based on the above we believe the proposed solution achieves better outcomes than those originally anticipated.

The proposed engineered solution does not utilise the existing drainage line shown circled below (apart from connecting subsoils into it), thus providing additional relief to the already under capacity local western drainage network, which was Council's main concern.



We trust the attached is acceptable and seek confirmation ASAP as our plans are well progressed and we anticipate submitting for OW Approval next week.

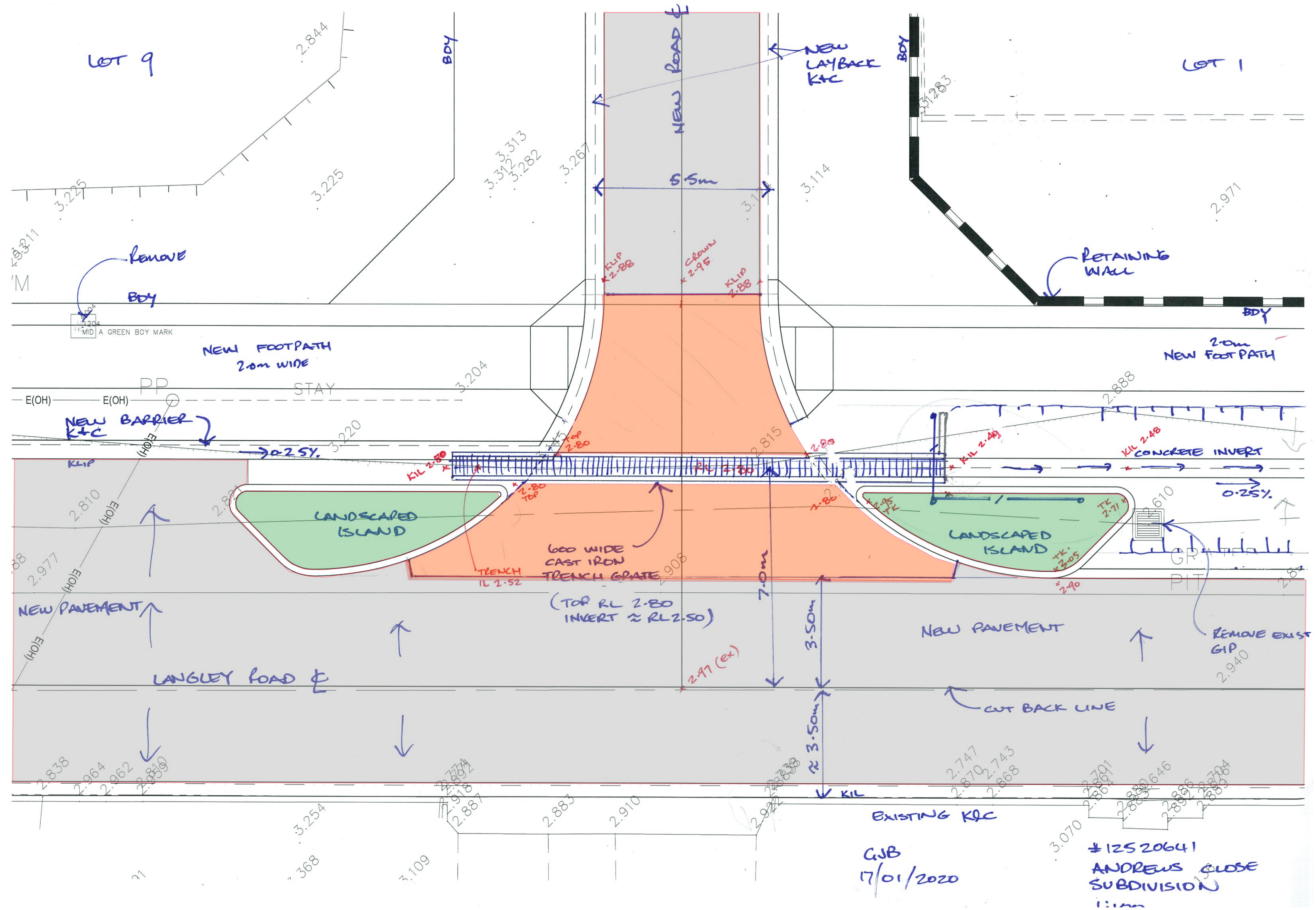
We also believe this proposed drainage solution and the provided calculations addresses *Condition 9 Drainage Study of Site and Drainage Design Plan* and as such we will rely on the wording contained in this email and the submission of the OW plans as compliance of this condition.

Should you wish to discuss further or require additional information please do not hesitate to contact me.

Regards,

Greg Applin
BEng RPEQ

Team Leader Cairns – Urban Development/Civil



Appendix C

DOUGLAS PARTNERS ASS INVESTIGATION REPORT



Douglas Partners
Geotechnics | Environment | Groundwater

Report on
Acid Sulfate Soil Investigation

Proposed Residential Subdivision
20-30 Langley Road, Port Douglas

Prepared for
GHD Pty Ltd

Project 90871.00
March 2020

Integrated Practical Solutions





Douglas Partners

Geotechnics | Environment | Groundwater

Document History

Document details

Project No.	90871.00	Document No.	R.001.Rev0
Document title	Report on Acid Sulfate Soil Investigation Proposed Residential Subdivision		
Site address	20-30 Langley Road, Port Douglas		
Report prepared for	GHD Pty Ltd		
File name	90871.01.R.001.Rev0		

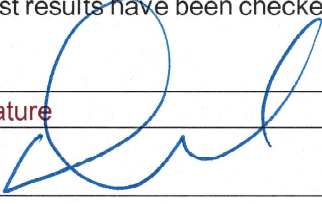
Document status and review

Status	Prepared by	Reviewed by	Date issued
Revision 0	Dan Martin	Chris Bell	3 March 2020

Distribution of copies

Status	Electronic	Paper	Issued to
Revision 0	1	0	Greg Applin, GHD Pty Ltd

The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

Signature	Date
Author 	3 March 2020
Reviewer	



Douglas Partners Pty Ltd
ABN 75 053 980 117
www.douglaspartners.com.au
13 Industrial Avenue
Stratford QLD 4870
Phone (07) 4055 1550

Table of Contents

	Page
1. Introduction.....	1
2. Site Description	1
3. Geology	2
4. Field Work Methods	2
5. Field Work Results	3
6. Laboratory Testing	3
7. Comments.....	4
7.1 Proposed Development	4
7.2 Acid Sulfate Soils	5
8. Limitations	5
9. References.....	6
 Appendix A:	
About This Report	
Sampling Method	
Soil Description	
Symbols and Abbreviations	
Appendix B:	Drawing – Site and Location Plan
Appendix C:	Field Work Results (Bores 1 to 4)
Appendix D:	Laboratory Results

Report on Acid Sulfate Soil Investigation

Proposed Residential Subdivision

20-30 Langley Road, Port Douglas

1. Introduction

This report presents the results of an acid sulfate soils (ASS) investigation undertaken for a proposed residential subdivision at 20-30 Langley Road, Port Douglas. The investigation was commissioned in an email dated 19 December 2019 by GHD Pty Ltd, and was undertaken in accordance with Douglas Partners Pty Ltd (DP) proposal CNS190257 also dated 19 December 2019.

It is understood that the development will include construction of a residential subdivision, which will require placement of fill to achieve design surface elevations. It is understood that the proposed depth of fill is of the order of up to 1 m.

The aim of the investigation was to assess the subsurface soil and groundwater conditions across the site to 2 m depth in order to provide interpretative comments on the results of the ASS laboratory testing, and or the presence, or otherwise, of ASS.

The investigation included the drilling of four boreholes and laboratory testing of selected samples. The details of the field work are presented in this report, together with comments and recommendations on the items listed above.

This report must be read in conjunction with the notes entitled "About This Report" in Appendix A, and any other explanatory notes, and should be kept in its entirety without separation of individual pages or sections.

2. Site Description

The site is located at 20 to 30 Langley Road Port Douglas, and comprises a relatively flat and vacant site of approximately trapezoidal shape and approximately 1.2 hectares area, as shown in Drawing 1 in Appendix B.

At the time of the field work, the site was undeveloped, and vegetated with grass and trees, with some localised tree free areas. Two old remnant concrete slabs, presumably from demolished buildings, were observed in the south eastern corner of the site.

The site is bordered to the north by residential development, to the east by esplanade parkland fronting the beach, to the south by Langley Road and then further residential development, and to the west by Andrews Close and then residential development.

A photograph of a typical view of the site is presented in Figure 1.



Figure 1: Typical view of site.

3. Geology

Reference to the 1:100 000 digital surface geology map indicates that the site is underlain by Holocene aged alluvial deposits, which are described as typically comprising “fine to coarse-grained quartzose to shelly sand and some gravel: beach ridges and cheniers”.

The subsurface conditions encountered at the test locations comprised silty sand and sand, which is considered consistent with part of the geological description and DP’s past experience.

4. Field Work Methods

The field work was carried out on 10 February 2020 and comprised four test bores (designated Bores 1 to 4). The approximate test locations are shown on Drawing 1 in Appendix B.

The test bores were undertaken using hand auger equipment to 2 m depth.

Samples intended for ASS testing purposes were collected at 0.25 m depth intervals in the bores. Samples were placed into ‘snap lock’ bags, with air excluded and were placed in an ice filled ‘esky’, prior to transportation to DP’s laboratory, where they were frozen. Upon completion, after checking for groundwater ingress, the boreholes were reinstated by backfilling with the drill cuttings.

The field work was carried out by an experience engineer geologist, who logged the subsurface profile, collected samples, and recorded groundwater observations.

A hand-held GPS unit (accurate to approximately 5 m) was used to record UTM co-ordinates of the test locations using GDA94 datum, and these are shown on the borehole logs in Appendix C. The existing

ground surface level at each test location was determined using standard dump levelling techniques relative to a nearly permanent survey mark.

5. Field Work Results

The subsurface conditions encountered in the bores are presented on the borehole logs in Appendix C. These should be read in conjunction with the general notes in Appendix A, which explain descriptive terms and classification methods used in their preparation.

The ground conditions encountered at the test locations comprised:

- Topsoil** Silty sand topsoil was encountered in Bores 1 and 4 to 0.2 m depth.
- Alluvium** Alluvial sand was encountered from the surface in Bores 2 and 3, and below the topsoil in Bores 1 and 4, and continued to bore termination depth. The sand was estimated to be medium dense.

Groundwater was observed following borehole drilling at each test location at the depths and levels presented in Table 1. It should be noted that groundwater levels are affected by climatic conditions, and by soil permeability, and will therefore vary with time. Furthermore, the site is located in the tropics, and hence distinct seasonal variations in groundwater depth can be expected.

Table 1: Summary of Groundwater Observations

Bore	Existing Surface Level RL (m AHD)	Observed Groundwater Depth (m)	Groundwater Level RL (m AHD)
1	3.6	1.9	1.7
2	3.0	1.35	1.65
3	3.0	1.2	1.8
4	3.3	1.5	1.8

6. Laboratory Testing

Field screening and chemical laboratory testing for ASS was carried out with reference to the QASSIT Guidelines (1998), the Soil Management Guidelines (2014), and the Laboratory Methods Guidelines (2004).

All ASS samples collected from Bores 1 to 4 were screened by measurement of pH after the addition of distilled water (pH_F) and peroxide (pH_{FOX}) by SGS Pty Ltd. This was in order to give an approximate indication of either the presence of actual acid sulfate soils (AASS) or potential acid sulfate soils (PASS) conditions. The ASS screening results are presented in Table 2.

Based on the results of the screening tests, eight samples were subjected to detailed analysis using the Chromium Suite of tests. These samples were selected based on the results of the screening tests. The Chromium Suite tests were conducted by SGS Pty Ltd, which is NATA accredited for this testing. The results of the Chromium Suite laboratory tests are provided in Appendix D and are also summarised in Table 2.

Table 2: Results of ASS Field Screening and Chemical Laboratory Testing

Bore	Depth (m)	Sample Description	Screening Test Results				pH _{KCL}	Chromium Suite Test Results (% w/w S)		
			pH _F	pH _{FOX}	ΔpH	Reaction		Potential Sulfidic Acidity (S _{CR})	Total Actual Acidity (s-TAA)	Existing + Potential Acidity
1	0.25	Sand	6.2	2.4	3.8	Slight	-	-	-	-
	0.50	Sand	6.7	2.8	3.9	Slight	6.2	0.008	<0.01	<0.02
	0.75	Sand	6.8	4.0	2.8	Slight	-	-	-	-
	1.00	Sand	6.8	3.8	3.0	Slight	6.2	0.008	<0.01	<0.02
	1.25	Sand	6.8	5.2	1.6	Slight	-	-	-	-
	1.50	Sand	6.7	5.1	1.6	Slight	-	-	-	-
	1.75	Sand	6.8	5.1	1.7	Slight	-	-	-	-
	2.00	Sand	6.7	5.0	1.2	Slight	-	-	-	-
2	0.25	Sand	6.3	2.3	4.0	Slight	6.0	0.008	<0.01	<0.02
	0.50	Sand	6.8	4.8	2.0	Slight	-	-	-	-
	0.75	Sand	6.8	5.1	1.7	Slight	-	-	-	-
	1.00	Sand	6.8	4.4	2.4	Slight	6.2	0.006	<0.01	<0.02
	1.25	Sand	6.9	4.9	2.0	Slight	-	-	-	-
	1.50	Sand	6.8	4.9	1.9	Slight	-	-	-	-
	1.75	Sand	6.5	4.9	1.6	Slight	-	-	-	-
	2.00	Sand	6.7	4.7	2.0	Slight	-	-	-	-
3	0.25	Sand	6.7	2.9	3.8	Slight	6.1	0.008	<0.01	<0.02
	0.50	Sand	6.8	5.1	1.7	Slight	-	-	-	-
	0.75	Sand	6.9	3.9	3.0	Slight	-	-	-	-
	1.00	Sand	7.1	5.4	1.7	Slight	-	-	-	-
	1.25	Sand	7.1	3.6	3.5	Slight	6.5	0.008	<0.01	<0.02
	1.50	Sand	7.1	5.3	1.8	Slight	-	-	-	-
	1.75	Sand	7.3	6.4	0.9	Slight	-	-	-	-
	2.00	Sand	7.5	5.7	1.8	Slight	-	-	-	-
4	0.25	Sand	7.0	3.8	3.2	Slight	-	-	-	-
	0.50	Sand	6.8	5.1	1.7	Slight	-	-	-	-
	0.75	Sand	6.7	4.5	2.2	Slight	-	-	-	-
	1.00	Sand	6.8	4.7	2.1	Slight	-	-	-	-
	1.25	Sand	7.0	4.5	2.5	Slight	6.4	0.006	<0.01	<0.02
	1.50	Sand	6.9	5.1	1.8	Slight	-	-	-	-
	1.75	Sand	7.3	5.4	1.9	Slight	-	-	-	-
	2.00	Sand	7.2	4.9	2.3	Slight	6.4	<0.005	<0.01	<0.02

7. Comments

7.1 Proposed Development

It is understood that the proposed development will comprise the construction of a residential subdivision on the site, which is anticipated to require site disturbance up to 1 m depth.

7.2 Acid Sulfate Soils

Testing for ASS was undertaken on the 32 samples collected from the test locations, as presented in Table 2 (refer Section 6).

The criteria used to assess the results of the screening tests (pH_F and pH_{FOX}) as possibly indicative of AASS or PASS were based on the QASSIT Guidelines (Ahern CR A. M., 1998) as follows:

- $pH_F < 4$ indicates oxidation has occurred in the past and that AASS may be present.
- $pH_{FOX} < 3$, plus a pH_{FOX} reading at least one pH unit below pH_F , plus a strong reaction with peroxide, strongly indicates the presence of PASS.

The lowest pH_F test result recorded during the screening tests was 6.2 (refer Table 2), indicating that AASS are not present. Four samples from the 32 screened resulted in a pH_{FOX} of less than 3 (refer Table 2), with each of these being recovered from shallow depth. Based on the screening results, eight samples from the test locations were selected for more rigorous and quantitative chromium suite testing to determine more definitively if AASS or PASS are present.

The action criterion on which the presence of ASS is assessed on the 'existing plus potential' acidity value, based on the Soil Management Guidelines (2014) and the Laboratory Methods Guidelines (2004), and comprises:

$$\begin{array}{l} \text{Existing plus Potential} \\ \text{Acidity} \end{array} = \text{Potential Acidity (S}_{CR}\text{)} + \text{Actual Acidity (TAA)}$$

For greater than 1000 tonnes of soil disturbance, as is expected to be the case for the proposed works, the action criterion which triggers a requirement for ASS disturbance to be managed is independent of the soil type, and is equal to a calculated 'existing plus potential' acidity of greater than or equal to 0.03% sulfur.

Of the eight submitted samples, none exceeded the 'existing plus potential' acidity action criteria value, and hence an acid sulfate soils management plan (ASSMP) would not be required for the proposed development with disturbance up to a maximum of 1 m depth.

8. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report for this project at 20 to 30 Langley Street, Port Douglas, in accordance with DP's proposal CNS190257 dated 19 December 2019, and acceptance received from GHD Pty Ltd dated 19 December 2019. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of GHD Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

The scope for work for this investigation/report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of filling of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such filling may contain contaminants and hazardous building materials.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the geotechnical components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

9. References

Ahern CR, Ahern MR, and Powell B (1998), Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998, QASSIT, Department of Natural Resources.

Ahern CR, McElnea AE, Sullivan LA (2004), "Acid Sulfate Soils Laboratory Methods Guidelines", in "Queensland Acid Sulfate Soils Manual 2004.

Dear SE, Moore NG, Dobos SK, Watting KM and Ahern CR (2014), The Soil Management Guidelines,” a chapter of “Queensland Acid Sulfate Soil Technical Manual, Indooroopilly, Queensland, Dept Natural Resources and Mines.

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Appendix A

About This Report
Sampling Method
Soil Description
Symbols and Abbreviations

About this Report

Douglas Partners



Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

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This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.



Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low

reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:
4,6,7
N=13
- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:
15, 30/40 mm

Sampling Methods

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.



Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are generally based on Australian Standard AS1726:2017, Geotechnical Site Investigations. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	19 - 63
Medium gravel	6.7 - 19
Fine gravel	2.36 – 6.7
Coarse sand	0.6 - 2.36
Medium sand	0.21 - 0.6
Fine sand	0.075 - 0.21

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

The proportions of secondary constituents of soils are described as follows:

In fine grained soils (>35% fines)

Term	Proportion of sand or gravel	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	>30%	Sandy Clay
With	15 – 30%	Clay with sand
Trace	0 - 15%	Clay with trace sand

In coarse grained soils (>65% coarse)

- with clays or silts

Term	Proportion of fines	Example
And	Specify	Sand (70%) and Clay (30%)
Adjective	>12%	Clayey Sand
With	5 - 12%	Sand with clay
Trace	0 - 5%	Sand with trace clay

In coarse grained soils (>65% coarse)

- with coarser fraction

Term	Proportion of coarser fraction	Example
And	Specify	Sand (60%) and Gravel (40%)
Adjective	>30%	Gravelly Sand
With	15 - 30%	Sand with gravel
Trace	0 - 15%	Sand with trace gravel

The presence of cobbles and boulders shall be specifically noted by beginning the description with 'Mix of Soil and Cobbles/Boulders' with the word order indicating the dominant first and the proportion of cobbles and boulders described together.

Soil Descriptions

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	VS	<12
Soft	S	12 - 25
Firm	F	25 - 50
Stiff	St	50 - 100
Very stiff	VSt	100 - 200
Hard	H	>200
Friable	Fr	-

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	Density Index (%)
Very loose	VL	<15
Loose	L	15-35
Medium dense	MD	35-65
Dense	D	65-85
Very dense	VD	>85

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Extremely weathered material – formed from in-situ weathering of geological formations. Has soil strength but retains the structure or fabric of the parent rock;
- Alluvial soil – deposited by streams and rivers;

- Estuarine soil – deposited in coastal estuaries;
- Marine soil – deposited in a marine environment;
- Lacustrine soil – deposited in freshwater lakes;
- Aeolian soil – carried and deposited by wind;
- Colluvial soil – soil and rock debris transported down slopes by gravity;
- Topsoil – mantle of surface soil, often with high levels of organic material.
- Fill – any material which has been moved by man.

Moisture Condition – Coarse Grained Soils

For coarse grained soils the moisture condition should be described by appearance and feel using the following terms:

- Dry (D) Non-cohesive and free-running.
- Moist (M) Soil feels cool, darkened in colour.
Soil tends to stick together.
Sand forms weak ball but breaks easily.
- Wet (W) Soil feels cool, darkened in colour.
Soil tends to stick together, free water forms when handling.

Moisture Condition – Fine Grained Soils

For fine grained soils the assessment of moisture content is relative to their plastic limit or liquid limit, as follows:

- 'Moist, dry of plastic limit' or 'w < PL' (i.e. hard and friable or powdery).
- 'Moist, near plastic limit' or 'w ≈ PL' (i.e. soil can be moulded at moisture content approximately equal to the plastic limit).
- 'Moist, wet of plastic limit' or 'w > PL' (i.e. soils usually weakened and free water forms on the hands when handling).
- 'Wet' or 'w ≈ LL' (i.e. near the liquid limit).
- 'Wet' or 'w > LL' (i.e. wet of the liquid limit).

Symbols & Abbreviations

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Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U ₅₀	Undisturbed tube sample (50mm)
W	Water sample
pp	Pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	Lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

Symbols & Abbreviations

Graphic Symbols for Soil and Rock

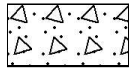
General



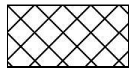
Asphalt



Road base



Concrete



Filling

Soils



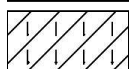
Topsoil



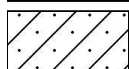
Peat



Clay



Silty clay



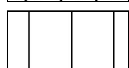
Sandy clay



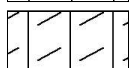
Gravelly clay



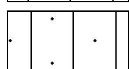
Shaly clay



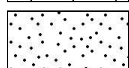
Silt



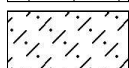
Clayey silt



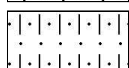
Sandy silt



Sand



Clayey sand



Silty sand



Gravel



Sandy gravel

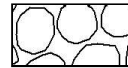


Cobbles, boulders



Talus

Sedimentary Rocks



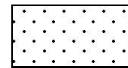
Boulder conglomerate



Conglomerate



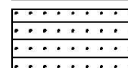
Conglomeratic sandstone



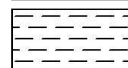
Sandstone



Siltstone



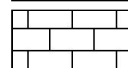
Laminite



Mudstone, claystone, shale

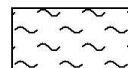


Coal

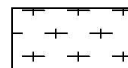


Limestone

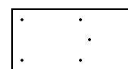
Metamorphic Rocks



Slate, phyllite, schist

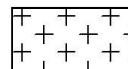


Gneiss

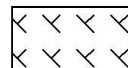


Quartzite

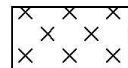
Igneous Rocks



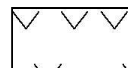
Granite



Dolerite, basalt, andesite



Dacite, epidote



Tuff, breccia



Porphyry

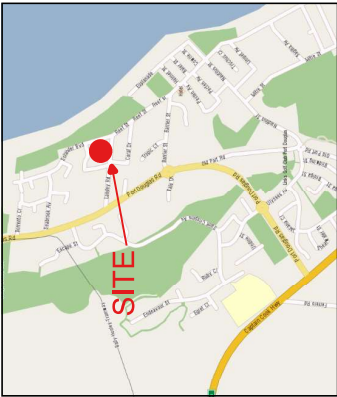
Appendix B

Drawing – Site and Location Plan



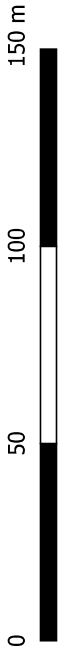
Notes:



1. Base image from Queensland Globe
2. Locality image from Google Maps.
3. Test locations are approximate only and are shown with reference to existing site features.



LOCALITY

Legend
◆ Bore Locations



 Douglas Partners <i>Geotechnics • Environment • Groundwater</i>	CLIENT: GHD Pty Ltd		TITLE: Site and Test Location Plan Proposed Residential Subdivision 20-30 Langley Road, Port Douglas		PROJECT No: 90871.00	
	OFFICE: Cairns	DRAWN BY: CM			DRAWING No: 1	
	SCALE: As Shown	DATE: February 2020			REVISION: 0	

Appendix C

Field Work Results (Bores 1 to 4)

BOREHOLE LOG

CLIENT: GHD Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 20-30 Langley Road, Port Douglas

SURFACE LEVEL: 3.6 m AHD
EASTING: 336491
NORTHING: 8173307
DIP/AZIMUTH: 90°/-

BORE No: 1
PROJECT No: 90871.00
DATE: 10/2/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
		Silty SAND (SM): fine to medium grained, brown, moist, estimated medium dense to dense, (Topsoil)								
	0.2	SAND (SP): fine to medium grained, grey brown, trace silt, moist, estimated medium dense, (Alluvial)		D	0.25					
		- band of silt between 0.3 to 0.4 m depth								
		- dark brown 0.5 m depth to 0.75 m depth		D	0.5					
				D	0.75					
	1	- pale yellow grey brown below 1.0 m depth		D	1.0					
				D	1.25					
		- increase moisture below 1.5 m depth		D	1.5					
				D	1.75					
		- wet below 1.75 m depth								
	2.0	Bore discontinued at 2.0m depth - limit of investigation		D	2.0					

RIG: Hand Tools

DRILLER: B. Runge

LOGGED: B. Runge

CASING: Nil

TYPE OF BORING: 75 mm hand auger

WATER OBSERVATIONS: Free groundwater observed at 1.9 m depth

REMARKS: Location coordinates are in GDA94 Zone 55K.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: GHD Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 20-30 Langley Road, Port Douglas

SURFACE LEVEL: 3.0 m AHD
EASTING: 336597
NORTHING: 8173297
DIP/AZIMUTH: 90°/--

BORE No: 2
PROJECT No: 90871.00
DATE: 10/2/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
		SAND (SP): fine to medium grained, brown, with silt, moist, estimated medium dense, (Alluvial)								
				D	0.25					
		- pale yellow grey brown and no silt below 0.4 m depth		D	0.5					
				D	0.75					
		- orange yellow brown below 0.7 m depth		D	1.0					
				D	1.25					
		- pale yellow grey brown and wet below 1.2 m depth		D	1.5					
				D	1.75					
		- caving below 1.5 m depth		D	2.0					
	2.0	Bore discontinued at 2.0m depth - limit of investigation		D	2.0					

RIG: Hand Tools

DRILLER: B. Runge

LOGGED: B. Runge

CASING: Nil

TYPE OF BORING: 75 mm hand auger

WATER OBSERVATIONS: Free groundwater observed at 1.35 m depth

REMARKS: Location coordinates are in GDA94 Zone 55K.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)



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BOREHOLE LOG

CLIENT: GHD Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 20-30 Langley Road, Port Douglas

SURFACE LEVEL: 3.0 m AHD
EASTING: 336539
NORTHING: 8173265
DIP/AZIMUTH: 90°/--

BORE No: 3
PROJECT No: 90871.00
DATE: 10/2/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
		SAND (SP): fine to medium grained, brown, with silt, moist, estimated medium dense, (Alluvial)								
		- pale yellow grey brown and no silt below 0.4 m depth		D	0.25					
				D	0.5					
		- increase moisture below 0.8 m depth, and laminations of dark brown silt between 0.8 m depth and 0.85 m depth		D	0.75					
	1			D	1.0					
		- wet below 1.25 m depth		D	1.25					
		- caving in below 1.3 m depth (hard to auger)								
		- orange yellow brown below 1.5 m depth		D	1.5					
				D	1.75					
	2	Bore discontinued at 2.0m depth - limit of investigation		D	2.0					

RIG: Hand Tools

DRILLER: B. Runge

LOGGED: B. Runge

CASING: Nil

TYPE OF BORING: 75 mm hand auger

WATER OBSERVATIONS: Free groundwater observed at 1.2 m depth

REMARKS: Location coordinates are in GDA94 Zone 55K.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)



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BOREHOLE LOG

CLIENT: GHD Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 20-30 Langley Road, Port Douglas

SURFACE LEVEL: 3.3 m AHD
EASTING: 336619
NORTHING: 8173256
DIP/AZIMUTH: 90°/-

BORE No: 4
PROJECT No: 90871.00
DATE: 10/2/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.2	Silty SAND (SM): fine to medium grained, brown, dry, estimated medium dense, (Topsoil)								
		SAND (SP): fine to medium grained, pale yellow brown, moist, estimated medium dense, (Alluvial)		D	0.25					
		- yellow mottled orange grey brown below 0.5 m depth		D	0.5					
				D	0.75					
	1			D	1.0					
				D	1.25					
		- wet below 1.5 m depth		D	1.5					
		- pale grey yellow brown below 1.7 m depth		D	1.75					
-2	2.0	Bore discontinued at 2.0m depth - limit of investigation		D	2.0					

RIG: Hand Tools

DRILLER: B. Runge

LOGGED: B. Runge

CASING: Nil

TYPE OF BORING: 75 mm hand auger

WATER OBSERVATIONS: Free groundwater observed at 1.5 m depth

REMARKS: Location coordinates are in GDA94 Zone 55K.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U _s	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)



Douglas Partners
 Geotechnics | Environment | Groundwater

Appendix D

Laboratory Results

CLIENT DETAILS

Contact **Dan Martin**
 Client **DOUGLAS PARTNERS PTY LTD**
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WEST RYDE NSW 2114

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 Facsimile **07 4055 1774**
 Email **dan.martin@douglaspartners.com.au**

Project **90871**
 Order Number **149734**
 Samples **32**

LABORATORY DETAILS

Manager **Anthony Nilsson**
 Laboratory **SGS Cairns Environmental**
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Portsmith QLD 4870

Telephone **+61 07 4035 5111**
 Facsimile **+61 07 4035 5122**
 Email **AU.Environmental.Cairns@sgs.com**

SGS Reference **CE144447 R0**
 Date Received **11 Feb 2020**
 Date Reported **13 Feb 2020**

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(3146).

SIGNATORIES



Anthony NILSSON
 Operations Manager



Jon Dicker
 Manager Northern QLD

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.001 Soil BH1 0.25M	CE144447.002 Soil BH1 0.5M	CE144447.003 Soil BH1 0.75M	CE144447.004 Soil BH1 1.0M
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Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	6.2	6.7	6.8	6.8
pHfox	pH Units	-	2.4	2.8	4.0	3.8
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	3.8	3.9	2.8	3.0

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.005 Soil BH1 1.25M	CE144447.006 Soil BH1 1.5M	CE144447.007 Soil BH1 1.75M	CE144447.008 Soil BH1 2M
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Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	6.8	6.7	6.8	6.7
pHfox	pH Units	-	5.2	5.1	5.1	5.0
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	1.6	1.6	1.7	1.7

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.009 Soil BH2 0.25M	CE144447.010 Soil BH2 0.5M	CE144447.011 Soil BH2 0.75M	CE144447.012 Soil BH2 1M
-----------	-------	-----	---	-----------------------------------	----------------------------------	-----------------------------------	--------------------------------

Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	6.3	6.8	6.8	6.8
pHfox	pH Units	-	2.3	4.8	5.1	4.4
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	4.0	2.0	1.7	2.4

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.013 Soil BH2 1.25M	CE144447.014 Soil BH2 1.5M	CE144447.015 Soil BH2 1.75M	CE144447.016 Soil BH2 2M
-----------	-------	-----	---	-----------------------------------	----------------------------------	-----------------------------------	--------------------------------

Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	6.9	6.8	6.5	6.7
pHfox	pH Units	-	4.9	4.9	4.9	4.7
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	2.0	1.9	1.6	2.0

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.017 Soil BH3 0.25M	CE144447.018 Soil BH3 0.5M	CE144447.019 Soil BH3 0.75M	CE144447.020 Soil BH3 1M
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Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	6.7	6.8	6.9	7.1
pHfox	pH Units	-	2.9	5.1	3.9	5.4
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	3.8	1.7	3.0	1.7

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.021 Soil BH3 1.25M	CE144447.022 Soil BH3 1.5M	CE144447.023 Soil BH3 1.75M	CE144447.024 Soil BH3 2M
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Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	7.1	7.1	7.3	7.5
pHfox	pH Units	-	3.6	5.3	6.4	5.7
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	3.5	1.8	0.9	1.8

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.025 Soil BH4 0.25M	CE144447.026 Soil BH4 0.5M	CE144447.027 Soil BH4 0.75M	CE144447.028 Soil BH4 1M
-----------	-------	-----	---	-----------------------------------	----------------------------------	-----------------------------------	--------------------------------

Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	7.0	6.8	6.7	6.8
pHfox	pH Units	-	3.8	5.1	4.5	4.7
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	3.2	1.7	2.2	2.1

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447.029 Soil BH4 1.25M	CE144447.030 Soil BH4 1.5M	CE144447.031 Soil BH4 1.75M	CE144447.032 Soil BH4 2M
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Field pH for Acid Sulphate Soil Method: AN104 Tested: 12/2/2020

pHf	pH Units	-	7.0	6.9	7.3	7.2
pHfox	pH Units	-	4.5	5.1	5.4	4.9
Reaction	No unit	-	Slight	Slight	Slight	Slight
pH Difference	pH Units	-10	2.5	1.8	1.9	2.3

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

METHOD

METHODOLOGY SUMMARY

AN104 pHF is determined on an extract of approximately 2g of as received sample in approximately 10 mL of deionised water with pH determined after standing 30 minutes.

AN104 pHFox is determined on an extract of approximately 2g of as received sample with a few mLs of 30% hydrogen peroxide (adjusted to pH 4.5 to 5.5) with the extract reaction being rated from slight to extreme, with pH determined after reaction is complete and extract has cooled. Referenced to ASS Laboratory Methods Guidelines, method 23Af-Bf, 2004.

X Slight Reaction
 XX Moderate Reaction
 XXX Strong/High Reaction
 XXXX Extreme/Vigorous Reaction (gas evolution and heat generation)

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
		-	The sample was not analysed for this analyte
		NVL	Not Validated

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
 Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the "Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.

Note that in terms of units of radioactivity:

- 1 Bq is equivalent to 27 pCi
- 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

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CLIENT DETAILS

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 Project **90871 - Chromium Suite**
 Order Number **149734**
 Samples 32

LABORATORY DETAILS

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 SGS Reference **CE144447A R0**
 Date Received 20 Feb 2020
 Date Reported 26 Feb 2020

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(3146).

SIGNATORIES



Anthony NILSSON
 Operations Manager



Jon Dicker
 Manager Northern QLD

Parameter	Units	LOR	Sample Number	CE144447A.001	CE144447A.002	CE144447A.003	CE144447A.004
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Name	BH1 0.25M	BH1 0.5M	BH1 0.75M	BH1 1.M

Moisture Content Method: AN002 Tested: 24/2/2020

% Moisture	%w/w	0.5	-	5.9	-	5.4
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 26/2/2020

pH KCl	pH Units	-	-	6.2	-	6.2
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	-	<0.25	-	<0.25
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	-	<5	-	<5
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	-	<0.01	-	<0.01

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 26/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	-	0.008	-	0.008
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	-	<5	-	<5

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	-	0.012	-	0.012
s-Net Acidity without ANC	%w/w S	0.005	-	0.012	-	0.012
a-Net Acidity	moles H ⁺ /T	5	-	7	-	7
Liming Rate	kg CaCO ₃ /T	0.1	-	NA	-	NA
Verification s-Net Acidity	%w/w S	-20	-	0.01	-	0.01
a-Net Acidity without ANCBT	moles H ⁺ /T	5	-	7	-	7
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	-	NA	-	NA

Parameter	Units	LOR	Sample Number	CE144447A.005	CE144447A.006	CE144447A.007	CE144447A.008
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Name	BH1 1.25M	BH1 1.5M	BH1 1.75M	BH1 2M

Moisture Content Method: AN002 Tested: 24/2/2020

% Moisture	%w/w	0.5	-	-	-	-
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 26/2/2020

pH KCl	pH Units	-	-	-	-	-
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	-	-	-	-
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	-	-	-	-
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	-	-	-	-

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 26/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	-	-	-	-
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	-	-	-	-

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	-	-	-	-
s-Net Acidity without ANC	%w/w S	0.005	-	-	-	-
a-Net Acidity	moles H ⁺ /T	5	-	-	-	-
Liming Rate	kg CaCO ₃ /T	0.1	-	-	-	-
Verification s-Net Acidity	%w/w S	-20	-	-	-	-
a-Net Acidity without ANCBT	moles H ⁺ /T	5	-	-	-	-
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	-	-	-	-

Parameter	Units	LOR
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Moisture Content Method: AN002 Tested: 21/2/2020

% Moisture	%w/w	0.5	4.4	-	-	16
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 25/2/2020

pH KCl	pH Units	-	6.0	-	-	6.2
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	<0.25	-	-	<0.25
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	<5	-	-	<5
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	<0.01	-	-	<0.01

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 25/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	0.008	-	-	0.006
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	<5	-	-	<5

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	0.012	-	-	0.010
s-Net Acidity without ANC	%w/w S	0.005	0.012	-	-	0.010
a-Net Acidity	moles H ⁺ /T	5	7	-	-	6
Liming Rate	kg CaCO ₃ /T	0.1	NA	-	-	NA
Verification s-Net Acidity	%w/w S	-20	0.01	-	-	0.01
a-Net Acidity without ANCBT	moles H ⁺ /T	5	7	-	-	6
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	NA	-	-	NA

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447A.013 Soil BH2 1.25M	CE144447A.014 Soil BH2 1.5M	CE144447A.015 Soil BH2 1.75M	CE144447A.016 Soil BH2 2M
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Moisture Content Method: AN002 Tested: 24/2/2020

% Moisture	%w/w	0.5	-	-	-	-
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 26/2/2020

pH KCl	pH Units	-	-	-	-	-
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	-	-	-	-
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	-	-	-	-
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	-	-	-	-

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 26/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	-	-	-	-
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	-	-	-	-

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	-	-	-	-
s-Net Acidity without ANC	%w/w S	0.005	-	-	-	-
a-Net Acidity	moles H ⁺ /T	5	-	-	-	-
Liming Rate	kg CaCO ₃ /T	0.1	-	-	-	-
Verification s-Net Acidity	%w/w S	-20	-	-	-	-
a-Net Acidity without ANCBT	moles H ⁺ /T	5	-	-	-	-
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447A.017 Soil BH3 0.25M	CE144447A.018 Soil BH3 0.5M	CE144447A.019 Soil BH3 0.75M	CE144447A.020 Soil BH3 1M
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Moisture Content Method: AN002 Tested: 21/2/2020

% Moisture	%w/w	0.5	6.4	-	-	-
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TAA (Titrateable Actual Acidity) Method: AN219 Tested: 25/2/2020

pH KCl	pH Units	-	6.1	-	-	-
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	<0.25	-	-	-
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	<5	-	-	-
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	<0.01	-	-	-

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 25/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	0.008	-	-	-
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	<5	-	-	-

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	0.012	-	-	-
s-Net Acidity without ANC	%w/w S	0.005	0.012	-	-	-
a-Net Acidity	moles H ⁺ /T	5	7	-	-	-
Liming Rate	kg CaCO ₃ /T	0.1	NA	-	-	-
Verification s-Net Acidity	%w/w S	-20	0.01	-	-	-
a-Net Acidity without ANCBT	moles H ⁺ /T	5	7	-	-	-
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	NA	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447A.021 Soil BH3 1.25M	CE144447A.022 Soil BH3 1.5M	CE144447A.023 Soil BH3 1.75M	CE144447A.024 Soil BH3 2M
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Moisture Content Method: AN002 Tested: 21/2/2020

% Moisture	%w/w	0.5	25	-	-	-
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 25/2/2020

pH KCl	pH Units	-	6.5	-	-	-
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	<0.25	-	-	-
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	<5	-	-	-
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	<0.01	-	-	-

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 25/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	0.008	-	-	-
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	<5	-	-	-

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	<0.005	-	-	-
s-Net Acidity without ANC	%w/w S	0.005	0.008	-	-	-
a-Net Acidity	moles H ⁺ /T	5	<5	-	-	-
Liming Rate	kg CaCO ₃ /T	0.1	<0.1	-	-	-
Verification s-Net Acidity	%w/w S	-20	0.01	-	-	-
a-Net Acidity without ANCBT	moles H ⁺ /T	5	<5	-	-	-
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	<0.1	-	-	-

Parameter	Units	LOR	Sample Number	CE144447A.025	CE144447A.026	CE144447A.027	CE144447A.028
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Name	BH4 0.25M	BH4 0.5M	BH4 0.75M	BH4 1M

Moisture Content Method: AN002 Tested: 24/2/2020

% Moisture	%w/w	0.5	-	-	-	-
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 26/2/2020

pH KCl	pH Units	-	-	-	-	-
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	-	-	-	-
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	-	-	-	-
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	-	-	-	-

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 26/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	-	-	-	-
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	-	-	-	-

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	-	-	-	-
s-Net Acidity without ANC	%w/w S	0.005	-	-	-	-
a-Net Acidity	moles H ⁺ /T	5	-	-	-	-
Liming Rate	kg CaCO ₃ /T	0.1	-	-	-	-
Verification s-Net Acidity	%w/w S	-20	-	-	-	-
a-Net Acidity without ANCBT	moles H ⁺ /T	5	-	-	-	-
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Name	CE144447A.029 Soil BH4 1.25M	CE144447A.030 Soil BH4 1.5M	CE144447A.031 Soil BH4 1.75M	CE144447A.032 Soil BH4 2M
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Moisture Content Method: AN002 Tested: 21/2/2020

% Moisture	%w/w	0.5	18	-	-	25
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TAA (Titratable Actual Acidity) Method: AN219 Tested: 25/2/2020

pH KCl	pH Units	-	6.4	-	-	6.4
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	<0.25	-	-	<0.25
Titrateable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	<5	-	-	<5
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	<0.01	-	-	<0.01

Chromium Reducible Sulphur (CRS) Method: AN217 Tested: 25/2/2020

Chromium Reducible Sulphur (Scr)	%	0.005	0.006	-	-	<0.005
Chromium Reducible Sulphur (Scr)	moles H ⁺ /T	5	<5	-	-	<5

Chromium Suite Net Acidity Calculations Method: AN220 Tested: 26/2/2020

s-Net Acidity	%w/w S	0.005	<0.005	-	-	<0.005
s-Net Acidity without ANC	%w/w S	0.005	0.008	-	-	<0.005
a-Net Acidity	moles H ⁺ /T	5	<5	-	-	<5
Liming Rate	kg CaCO ₃ /T	0.1	<0.1	-	-	<0.1
Verification s-Net Acidity	%w/w S	-20	0.01	-	-	0.00
a-Net Acidity without ANCBT	moles H ⁺ /T	5	<5	-	-	<5
Liming Rate without ANCBT	kg CaCO ₃ /T	0.1	<0.1	-	-	<0.1

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Chromium Reducible Sulphur (CRS) Method: ME-(AU)-[ENV]AN217

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Chromium Reducible Sulphur (Scr)	LB076362	%	0.005	<0.005	0%	103%
Chromium Reducible Sulphur (Scr)	LB076362	moles H+/T	5	<5		

TAA (Titratable Actual Acidity) Method: ME-(AU)-[ENV]AN219

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
pH KCl	LB076365	pH Units	-	6.0	0%	101%
Titratable Actual Acidity	LB076365	kg H2SO4/T	0.25	<0.25	0 - 1%	NA
Titratable Actual Acidity (TAA) moles H+/tonne	LB076365	moles H+/T	5	<5	0 - 1%	96%
Titratable Actual Acidity (TAA) S%/w	LB076365	%w/w S	0.01	<0.01	0 - 1%	97%

METHOD

METHODOLOGY SUMMARY

AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN217	Dried pulped sample is mixed with acid and chromium metal in a rapid distillation unit to produce hydrogen sulfide (H ₂ S) which is collected and titrated with iodine (I ₂ (aq)) to measure SCR.
AN219	Dried pulped sample is extracted for 4 hours in a 1 M KCl solution. The ratio of sample to solution is 1:40. The extract is titrated for acidity. Calcium, magnesium, and sulfur are determined by ICP-AES.
AN220	Chromium Suite: Scheme for the calculation of net acidities and liming rates using a Fineness Factor of 1.5.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
		-	The sample was not analysed for this analyte
		NVL	Not Validated

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the "Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.

Note that in terms of units of radioactivity:

- 1 Bq is equivalent to 27 pCi
- 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

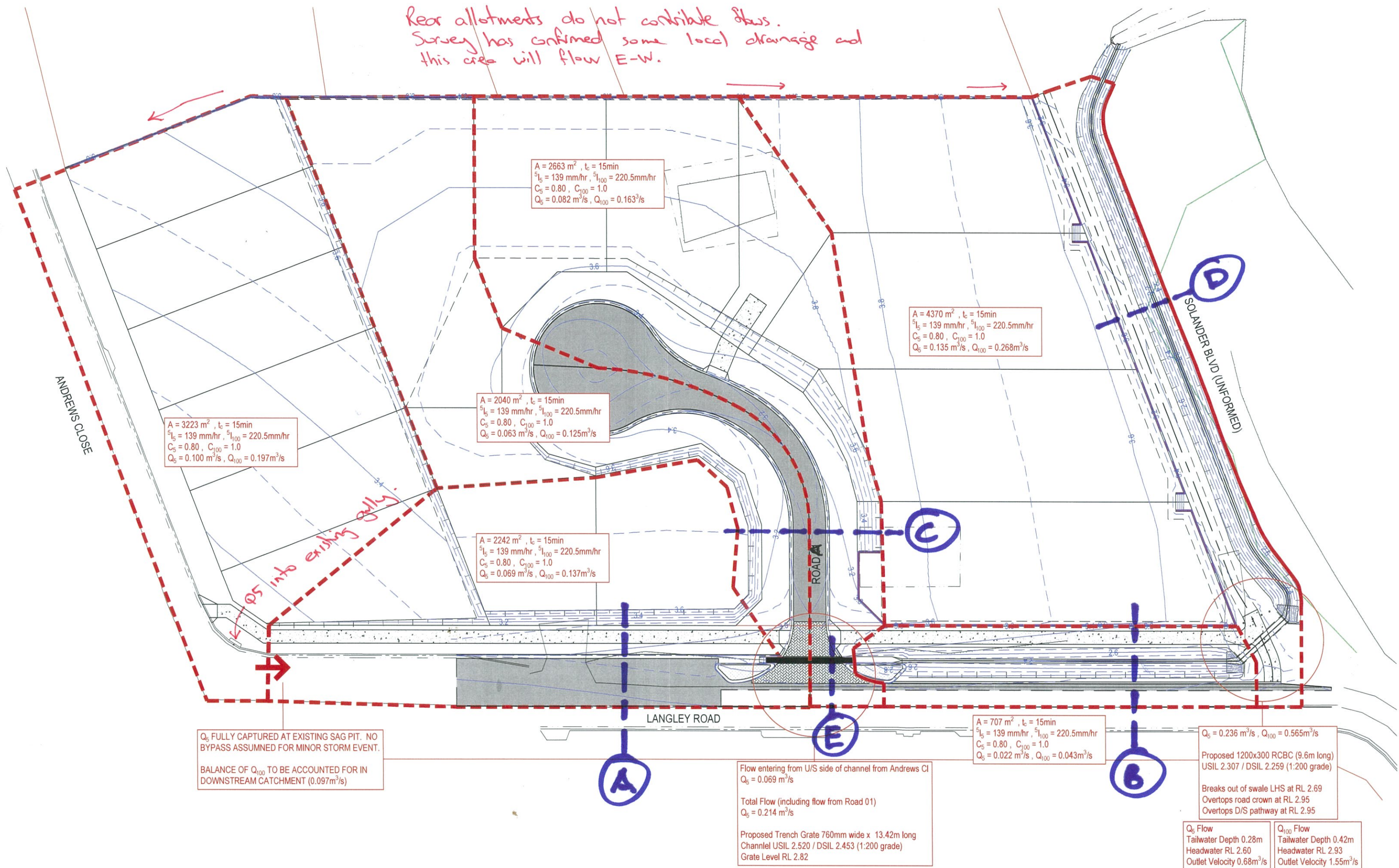
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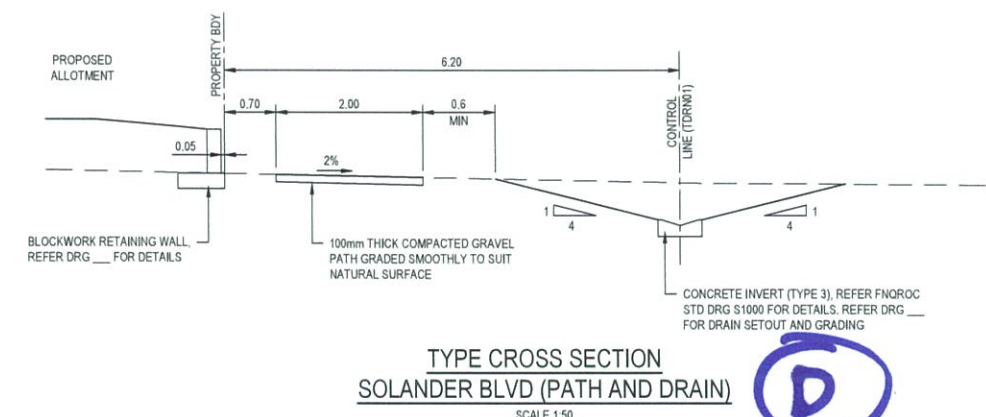
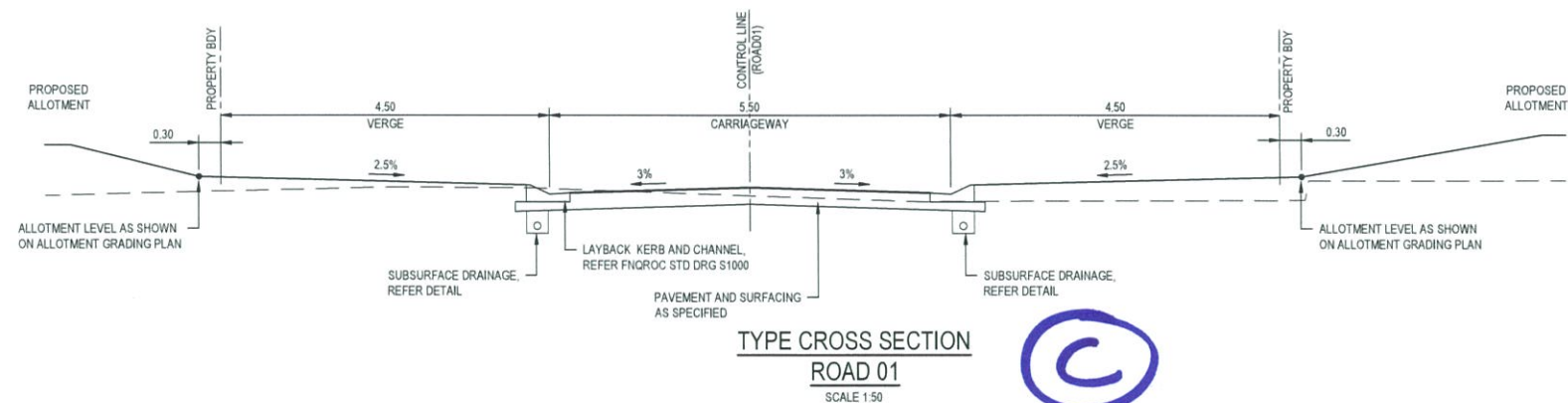
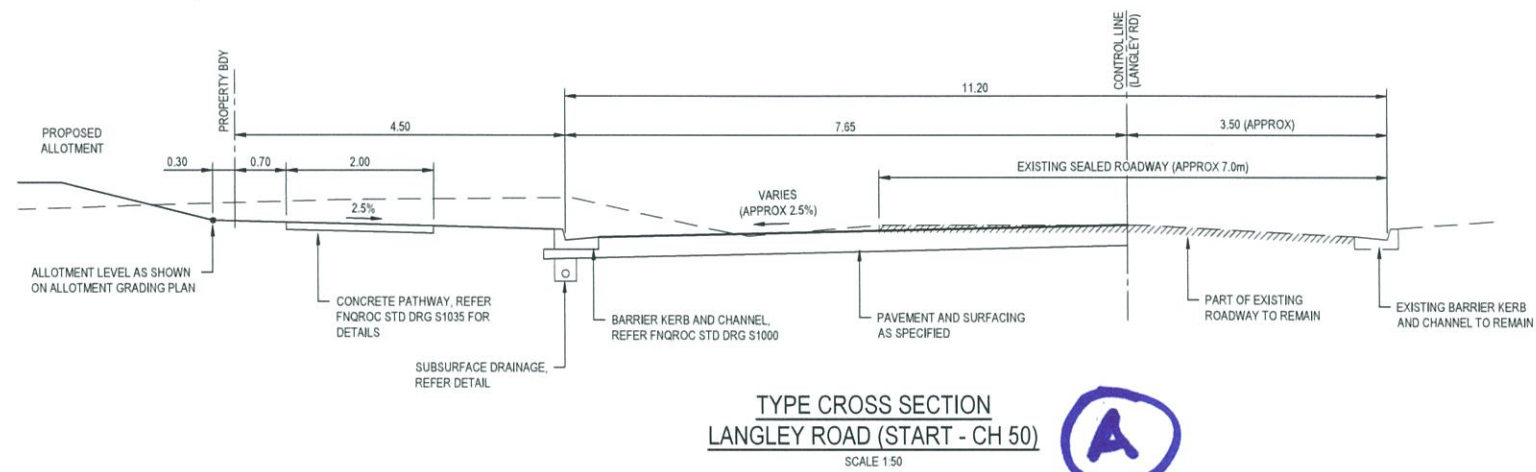
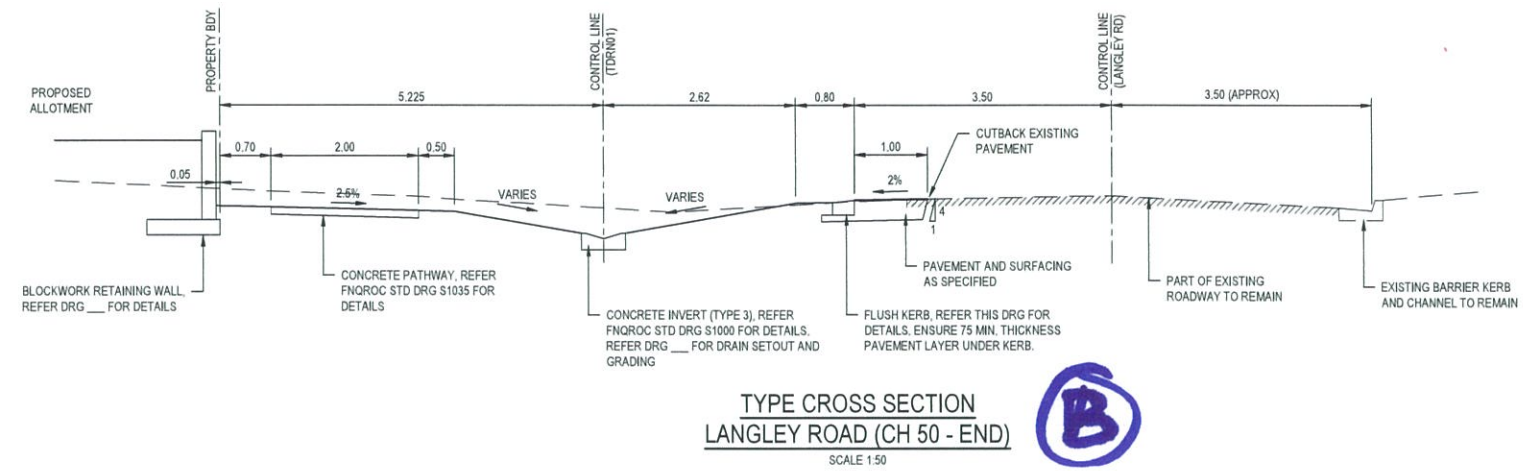
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Appendix D

DRAINAGE CALCULATIONS

Rear allotments do not contribute flows.
 Survey has confirmed some local drainage and
 this area will flow E-W.





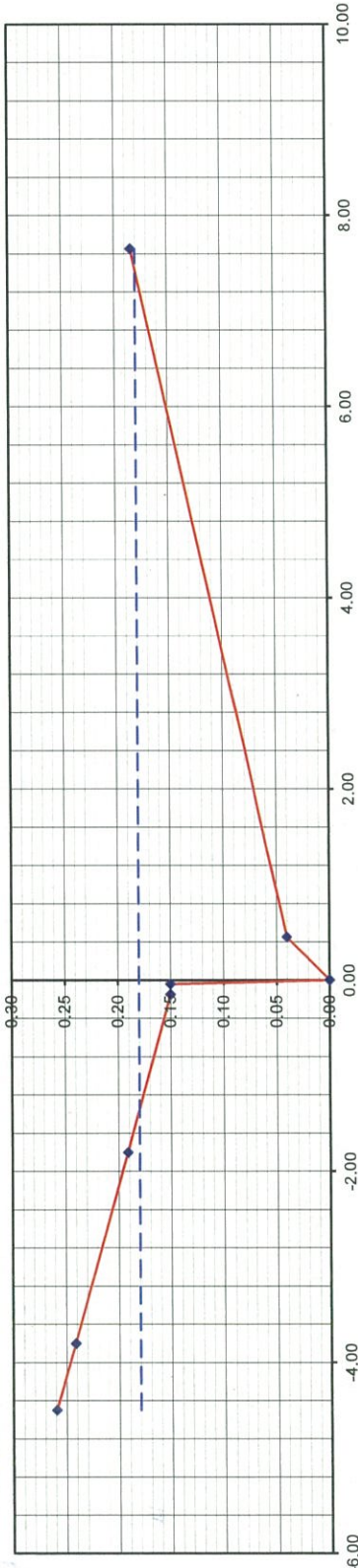
Channel Flow (Irregular shape)

Project No.	12520641
Calc's By	GJB
Checked By	

Location

Langley Road with Kerb & Channel (West of Road A) - Q5 flow & Q100 Flow

Profile



Depth of flow (m)	0.180
Slope (%)	0.250
I.L.	
A	0.588
P	8.926
R	0.066
WSE	0.180

SECTION	Width	Height	n	A	H ₁	H ₂	W	P	A/P	Q	n ^{1.5} xP	A ^{1.66} /P ^{0.66}	A ^{1.66} /P ^{0.66} /n
	0.700	0.018	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2.000	0.050	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1.650	0.041	0.035	0.018	0.000	0.030	1.207	1.208	0.015	0.002	0.008	0.001	0.031
	0.110	0.000	0.013	0.003	0.030	0.030	0.110	0.110	0.030	0.001	0.000	0.000	0.025
	0.040	0.150	0.013	0.004	0.030	0.180	0.040	0.155	0.027	0.001	0.000	0.000	0.029
Centre	0.000	0.000	0.000	0.072	0.140	0.180	0.450	0.452	0.159	0.081	0.001	0.021	1.628
	0.450	0.040	0.013	0.490	0.000	0.140	7.000	7.001	0.070	0.277	0.013	0.083	5.548
	7.200	0.144	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				0.588						0.363	0.022	0.106	7.261

Calculated Design Flows	
Q5	0.069 m ³ /s
Q100	0.137 m ³ /s

Recommended Freeboard Calc's	
	m/s
	m
	m

Comments
Langley Rd with K&C half road flow capacity is 0.363m ³ /s.
Calc'd Q5 flow is 0.069m ³ /s (approx 0.11m deep), therefore OK.
Calc'd Q100 flow is 0.137m ³ /s (approx 0.135m deep) therefore OK.

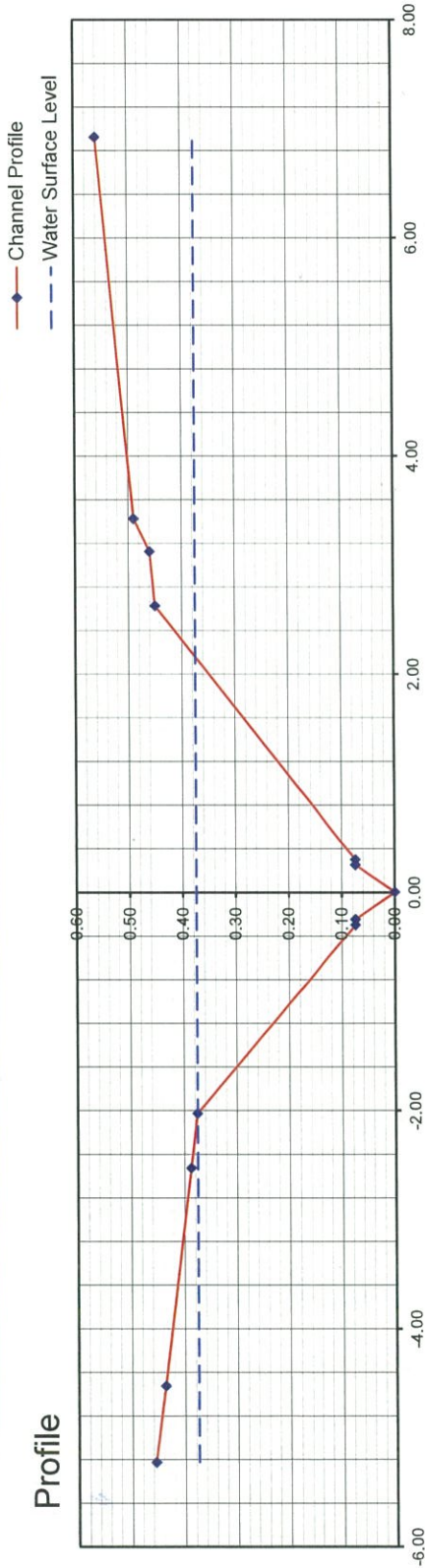
Channel Flow (Irregular shape)

Project No.	12520641
Calc's By	GJB
Checked By	

Location

Langley Road with Swale (East of Road A) - Q5 flow & Q100 Flow

Profile



Depth of flow (m)	0.375
Slope (%)	0.250
I.L.	
A	0.737
P	4.257
R	0.173
WSE	0.375

SECTION	Width	Height	n	A	H ₁	H ₂	W	P	A/P	Q	n ^{1.5} xP	A ^{1.66} /P ^{0.66}	A ^{1.66} /P ^{0.66} /n
	0.700	0.018	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2.000	0.050	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.500	0.012	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1.725	0.300	0.035	0.259	0.000	0.300	1.725	1.751	0.148	0.103	0.011	0.072	2.066
	0.050	0.000	0.013	0.015	0.300	0.300	0.050	0.050	0.300	0.026	0.000	0.007	0.517
	0.250	0.075	0.013	0.084	0.300	0.375	0.250	0.261	0.323	0.153	0.000	0.040	3.057
Centre	0.000	0.000	0.000										
	0.250	0.075	0.013	0.084	0.300	0.375	0.250	0.261	0.323	0.153	0.000	0.040	3.057
	0.050	0.000	0.013	0.015	0.300	0.300	0.050	0.050	0.300	0.026	0.000	0.007	0.517
	2.325	0.375	0.035	0.279	0.000	0.300	1.860	1.884	0.148	0.112	0.012	0.078	2.231
	0.500	0.010	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.300	0.030	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	3.500	0.070	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				0.737						0.572	0.025	0.243	11.446

Calculated Design Flows		
Q5	0.236	m ³ /s
Q100	0.565	m ³ /s
		m ³ /s

Recommended Freeboard Calc's		
		m/s
		m
		m

Comments

Langley Rd half road flow capacity is 0.988m³/s.
Capacity of swale flowing full is 0.572m³/s. Calc'd Q5 flow is 0.236m³/s (approx 0.26m deep), therefore OK.
Calc'd Q100 flow is 0.565m³/s (approx 0.375m deep) which is still contained within the swale, therefore OK.

Project No.	12520641
Calc's By	GJB
Checked By	

Andrews Close Subdivision - Road A Q5 Flows

[illegible]

Depth of flow (m)	0.094
Slope (%)	0.600
I.L.	
A	0.126
P	3.002
R	0.042
WSE	0.094

SECTION	Width	Height	n	A	H ₁	H ₂	W	P	A/P	Q	n ^{1.5} xP	A ^{1.66} /P ^{0.66}	A ^{1.66} /P ^{0.66} /n
				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4.180	0.125	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.050	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.320	0.130	0.013	0.011	0.000	0.094	0.231	0.250	0.044	0.008	0.000	0.001	0.104
Centre	0.000	0.000	0.000										
	0.280	0.020	0.013	0.024	0.074	0.094	0.280	0.281	0.084	0.027	0.000	0.005	0.346
	2.470	0.074	0.015	0.091	0.000	0.074	2.470	2.471	0.037	0.052	0.005	0.010	0.676
				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				0.000	0.000	0.000	0.000	0.000	0.000	0.087	0.005	0.016	1.126

Calculated Design Flows	
Q5	0.082 m ³ /s
	m ³ /s
	m ³ /s

Recommended Freeboard Calc's		

Calculated Q5 flow is $0.087 \text{ m}^3/\text{s}$, therefore OK.

Channel Flow (Irregular shape)

Project No.
12520641

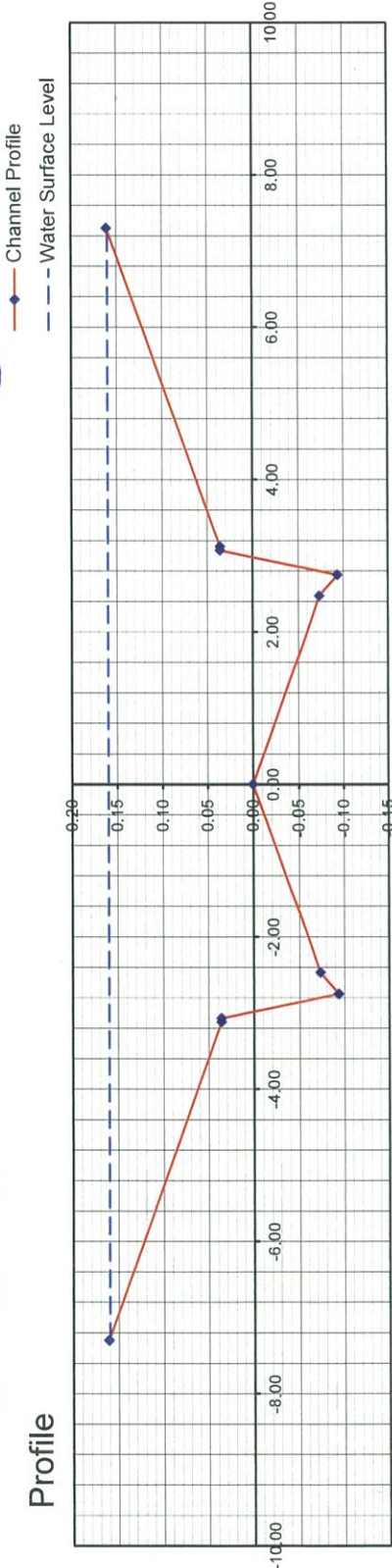
Calc's By
GJB

Checked By

Location

Andrews Close Subdivision - Road A Q100 Flows

Profile



Depth of flow (m)	0.160
Slope (%)	0.600
I.L.	
A	1.757
P	14.591
R	0.120
WSE	0.160

SECTION	Width	Height	n	A	H ₁	H ₂	W	P	A/P	Q	n ^{1.5} x P	A ^{1.66} /P ^{0.66}	A ^{1.66} /P ^{0.66} /n
	4.180	0.125	0.035	0.000	0.000	0.000	0.000	4.148	0.000	0.000	0.000	0.000	0.000
	0.050	0.000	0.013	0.257	0.000	0.124	4.147	0.062	0.062	0.089	0.027	0.040	1.150
	0.320	0.130	0.013	0.006	0.124	0.124	0.050	0.050	0.124	0.009	0.000	0.002	0.119
	0.280	-0.020	0.015	0.060	0.124	0.254	0.320	0.345	0.175	0.113	0.001	0.019	1.456
	0.050	0.000	0.013	0.068	0.254	0.234	0.280	0.281	0.243	0.138	0.001	0.027	1.775
	4.180	0.125	0.035	0.487	0.234	0.160	2.470	2.471	0.197	0.850	0.005	0.165	10.980
Centre	0.000	0.000	0.000										
	2.470	-0.074	0.015	0.487	0.234	0.160	2.470	2.471	0.197	0.850	0.005	0.165	10.980
	0.280	-0.020	0.015	0.068	0.254	0.234	0.280	0.281	0.243	0.138	0.001	0.027	1.775
	0.320	0.130	0.013	0.060	0.124	0.254	0.320	0.345	0.175	0.113	0.001	0.019	1.456
	0.050	0.000	0.013	0.068	0.124	0.124	0.050	0.050	0.124	0.009	0.000	0.002	0.119
	4.180	0.125	0.035	0.257	0.000	0.124	4.147	4.148	0.062	0.089	0.027	0.040	1.150
				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				1.757						2.398	0.066	0.504	30.960

Calculated Design Flows	
Q5	0.145 m ³ /s
Q100	0.288 m ³ /s
	m ³ /s

Recommended Freeboard Calc's	
	m/s
	m
	m

Comments
Maximum full road flow capacity is 2.398 m ³ /s.
Calculated Q100 flow is 0.288m ³ /s, therefore OK.

Channel Flow (Irregular shape)

Location

Langley Road with Swale (East of Road A) - Q5 flow & Q100 Flow

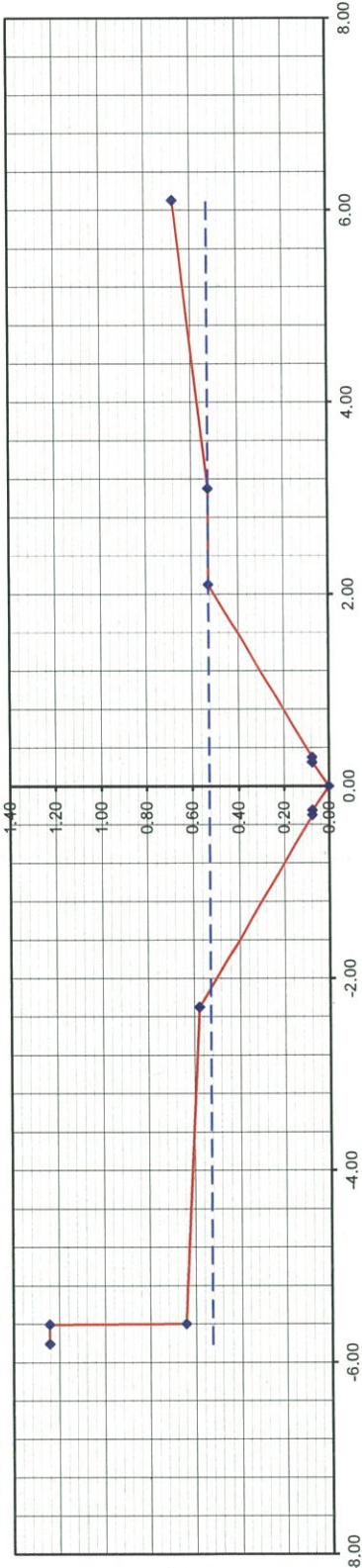


Project No.
Calc's By
Checked By

12520641
GJB

Profile

Channel Profile
Water Surface Level



Depth of flow (m)	0.525
Slope (%)	0.250
I.L.	
A	1.099
P	4.333
R	0.254
WSE	0.525

SECTION	Width	Height	n	A	H ₁	H ₂	W	P	A/P	Q	n ^{1.5} xP	A ^{1.66} /P ^{0.66}	A ^{1.66} /P ^{0.66} /n
	0.200	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.010	0.600	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	3.300	0.066	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2.000	0.500	0.035	0.405	0.000	0.450	1.800	1.855	0.218	0.210	0.012	0.147	4.195
	0.050	0.000	0.013	0.023	0.450	0.450	0.050	0.050	0.450	0.051	0.000	0.013	1.016
	0.250	0.075	0.013	0.122	0.450	0.525	0.250	0.261	0.467	0.282	0.000	0.073	5.643
Centre	0.000	0.000	0.000										
	0.250	0.075	0.013	0.122	0.450	0.525	0.250	0.261	0.467	0.282	0.000	0.073	5.643
	0.050	0.000	0.013	0.023	0.450	0.450	0.050	0.050	0.450	0.051	0.000	0.013	1.016
	1.800	0.450	0.035	0.405	0.000	0.450	1.800	1.855	0.218	0.210	0.012	0.147	4.195
	1.000	0.000	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	3.000	0.150	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				1.099						1.085	0.025	0.467	21.708

Calculated Design Flows	
Q5	0.371 m ³ /s
Q100	0.833 m ³ /s

Recommended Freeboard Calc's	

m/s
m
m

Comments

Capacity of swale flowing full is 1.085 m³/s.

Calc'd Q5 flow is 0.371 m³/s (approx 0.33m deep), therefore OK.

Calc'd Q100 flow is 0.833 m³/s (approx 0.47m deep) which is contained within swale, therefore OK.

Open Trough Capacity

Project No.

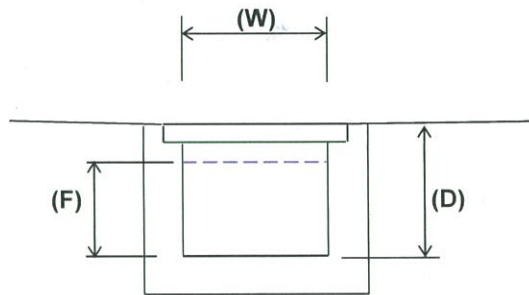
12520641

Calc's By

GJB

Checked By

Location Trench Grate Across Road A Intersection - Channel Capacity



Dimensions & Parameters

(All Dimensions to be in metres)

Width (W)	0.76
Depth (D)	0.30
Mannings 'n'	0.015
Slope (1 in....)	200

Note

These Calculation use Mannings Equation .

Depth of flow (F)	0.260
Freeboard (l)	0.040

Outputs

Velocity 1.357 m/s

Capacity 0.268 m³/s
268.060 l/s

Comments

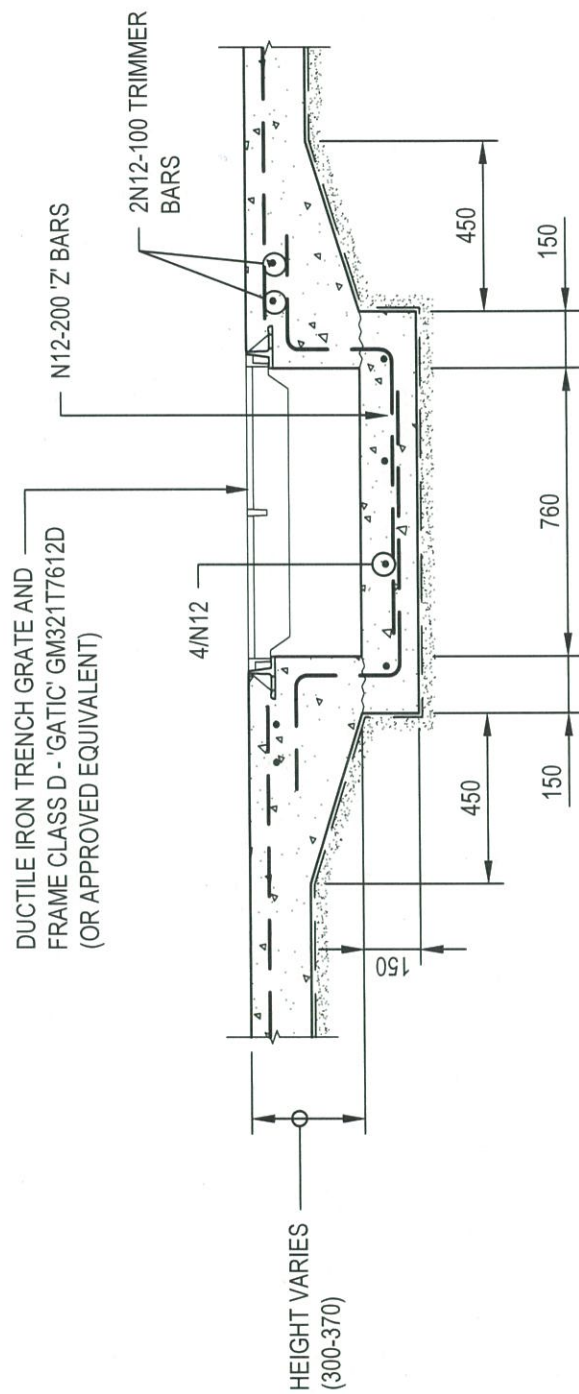
Proposed product

Gatic Trench Grate to suit 760mm wide channel. Grate Class D - 0.11m grate depth.

Proposed total depth of channel to underside of grate at inlet is 0.19m and at outlet is 0.26m.

Calculated Q5 flow from west of intresection entering channel is 0.069 m³/s. Capacity of channel at inlet is 0.172 m³/s (max flow depth of 0.19m), therefore OK.

Calculated total Q5 flow entering channel is 0.214 m³/s (i.e flow from west + flow from Road A). Capacity of channel at outlet is 0.268 m³/s (max flow depth of 0.26m), therefore OK. Flows in excess of channel/grate capacity overtop road and enter downstream swale via break in kerb at d/s end of channel. Therefore OK.

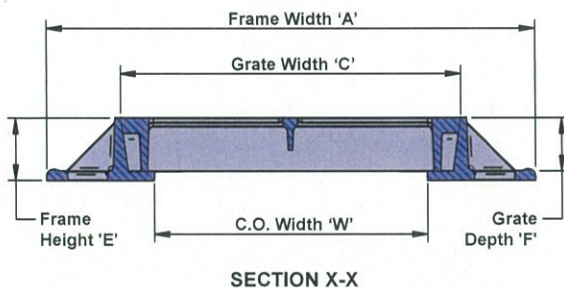
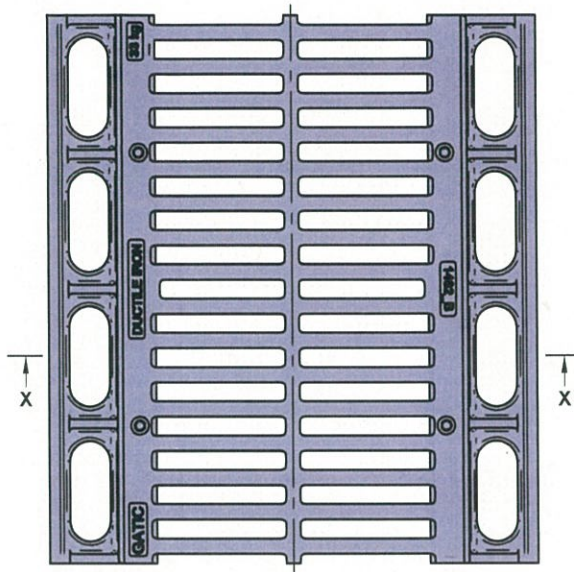


TRENCH GRATE

SCALE 1:20



321T: Trench Grate (Transverse)



Code	Clear Opening (mm)	AS 3996 Class Rating	Functional Dimension (mm)				Grates & Frame Std
	W		A	C	E	F	
GM321T1061B	102	B	252	150	48	37	610
GM321T1012B	102	B	252	150	48	37	1220
GM321T1561B	152	B	302	200	48	37	610
GM321T1561D	152	D	376	228	69	48	610
GM321T1512B	152	B	302	200	48	37	1220
GM321T1512D	152	D	376	228	69	48	1220
GM321T2261B	229	B	379	277	48	37	610
GM321T2261D	229	D	453	305	69	52	610
GM321T2212B	229	B	379	277	48	37	1220
GM321T2212D	229	D	453	305	69	52	1220
GM321T3061B	305	B	455	353	48	37	610
GM321T3061D	305	D	529	381	69	59	610
GM321T3012B	305	B	455	353	48	37	1220
GM321T3012D	305	D	529	381	69	59	1220
GM321T4561B	457	B	607	505	48	49	610
GM321T4512B	457	B	607	505	48	49	1220
GM321T4561D	457	D	771	623	69	73	610
GM321T4512D	457	D	771	623	69	73	1220
GM321T6161B	610	B	760	658	48	51	610
GM321T6161D	610	D	834	686	69	110	610
GM321T6112B	610	B	760	658	48	51	1220
GM321T6112D	610	D	834	686	69	110	1220
GM321T7661D	762	D	986	838	69	110	610
GM321T7612D	762	D	986	838	69	110	1220
GM321T9161D	914	D	1138	990	69	122	610
GM321T9112D	914	D	1138	990	69	122	1220
GM321T3012G	305	G	545	380	69	59	610 *
GM321T3061G	305	G	545	380	69	59	610 *

* NOTE: Only bike safe in one directions



Appendix E

LANDSCAPE PLANS (LA3)

LANDSCAPE DESIGN

LANGLEY ROAD SUBDIVISION

LANGLEY ROAD, PORT DOUGLAS, QLD

FEBRUARY 2020 - FOR APPROVAL

DRAWING LIST

DWG NO.	REV	DRAWING NAME	SCALE (A3 SIZE)
198-L00	A	COVER PAGE & PLANTING SCHEDULE	As Shown
198-L01	A	LANDSCAPE PLAN 01	1:500
198-L02	A	LANDSCAPE PLAN 02 & DETAIL PLANS	As Shown
198-L03	A	TYP. DETAILS & PLANTING SCHEDULE	As Shown
198-L04	A	ENTRY WALL, RET. WALL AND STAIRS DETAILS	As Shown

PLANTING SCHEDULE					
QTY	CODE	BOTANICAL NAME	COMMON NAME	supply size	min. spacing
TREES / PALMS					
7	CUP ana	Cupaniopsis anacardioides	Tueckeroo	25L	8000mm
13	TER mue	Terminalia muelleri	Mueller's Damson	25L	8000mm
6	LIV mue	Livistona muelleri	Dwarf Fan Palm	100L	3000mm
SHRUBS & GROUNDCOVERS					
	COR v PIN	Cordyline fruticosa 'Pink Diamond'	Pink Diamond Cordyline	200mm	800
	FIC v GRE	Ficus 'Green Island'	Green Island Fig	140mm	600
	GAR v GLE	Gardenia psidioides 'Glennie River'	Glennie River Gardenia	140mm	600
	LOM hys	Lomandra hystrix	Green Mat-rush	140mm	600
	PHI xan	Philodendron xanadu	Xanadu	140mm	600
	PHY mul	Phyllanthus multiflorus	Waterfall Plant	200mm	800

STANDARD NOTES

1. SETOUT AND DIMENSIONS
- THE CONTRACTOR SHALL SET OUT ALL PATHS, WALLS, HARD SURFACES AND ELEMENTS EITHER ON OR OFF SITE PRIOR TO CONSTRUCTION AND SHALL OBTAIN THE SUPERINTENDENTS SET OUT APPROVAL PRIOR TO WORKS COMMENCING. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALE, CHECK ALL DRAWINGS SCALES IN CONJUNCTION WITH DRAWINGS SIZE. COORDINATE ALL WORKS WITH OTHER TRADES AND HEAD CONTRACTOR.
2. SERVICES AND SITE ASSETS
- THE CONTRACTOR SHALL INVESTIGATE THE NATURE AND LOCATION OF ALL EXISTING SERVICES AND RETAINED SITE ASSETS AFFECTED BY THEIR WORKS. FAILURE TO TAKE DUE CARE SHALL NOT LIMIT THE CONTRACTORS LIABILITIES.
3. REFERENCES
- THE CONTRACTOR SHALL REFER TO ALL CONTRACT DOCUMENTS, THE SPECIFICATION AND DRAWINGS PRIOR TO AND DURING THE WORKS.
4. DISCREPANCIES
- NOTIFY SUPERINTENDENT OF ANY SUSPECTED OR KNOWN DISCREPANCIES OR ERRORS PRIOR TO THE ORDERING OF AFFECTED MATERIALS AND/OR CONSTRUCTION OF AFFECTED WORKS.
5. RELEVANT STANDARDS
- THE CONTRACTOR SHALL UNDERTAKE ALL PRICING AND WORKS IN ACCORDANCE WITH CURRENT INDUSTRY BEST PRACTICE AND ALL RELEVANT AUSTRALIAN AND LOCAL STANDARDS AND THE FNQROC.
6. SERVICE LOCATOR
- THE CONTRACTOR SHALL UNDERTAKE A DIAL BEFORE YOU DIG PROCESS PRIOR TO COMMENCING WORKS ON SITE. THE CONTRACTOR SHALL ENGAGE A SERVICE LOCATOR TO MAP THE SPECIFIC LOCATIONS AND DEPTH OF ALL SERVICES AND ADVISE ALL RELEVANT STAFF AND SUBCONTRACTORS IN WRITING PRIOR TO COMMENCING WORKS ON SITE.
7. SOFT LANDSCAPE
1. ALL CONTAINER STOCK SHALL BE INSPECTED IN THE NURSERY PRIOR TO TRANSPORT TO SITE.
2. ALL CONTAINER STOCK PLANTING SHALL BE INSPECTED PRIOR TO PLANTING ON SITE. GIVE (5) WORKING DAYS NOTICE PRIOR TO SUCH ACTIVITY TO ALLOW LANDSCAPE ARCHITECT'S REPRESENTATIVE TO ATTEND.
3. ALL SOIL BLENDS APPROVED TO AUSTRALIAN STANDARDS / AS4419.
4. TURF SHALL CONSIST OF 25MM DEPTH OF DENSE, WELL ROOTED, VIGOROUS GRASS GROWTH WITH 25MM DEPTH OF TOPSOIL.
5. TURF TO BE USED SHOULD BE ROLLED B GRADE TURF MIX OF SPECIES 80% BUFFALO GRASS (AXONOPUS COMPRESSUS) & 20% COUCH GRASS VARIETIES.
6. EXCAVATE EXISTING SITE SOIL ON ALL GARDEN BEDS TO 300mm DEPTH AND REPLACE WITH APPROVED SOIL BLENDS. USE SITE STOCKED TOPSOIL AND AMEND WHERE POSSIBLE. LANDSCAPE CONTRACTOR TO ASSESS SUITABILITY FOR REUSE. IF UNSUITABLE, TOPSOIL TO BE REMOVED BY OTHERS.
7. ENSURE COMPACTED ROAD BASE IS NOT LOCATED DIRECTLY BELOW THE GARDEN BED. IF SO THEN REMOVE/EXCAVATE THE COMPACTED ROAD BASE SO SOIL PROFILE CAN DRAIN TO NATURAL GROUND.

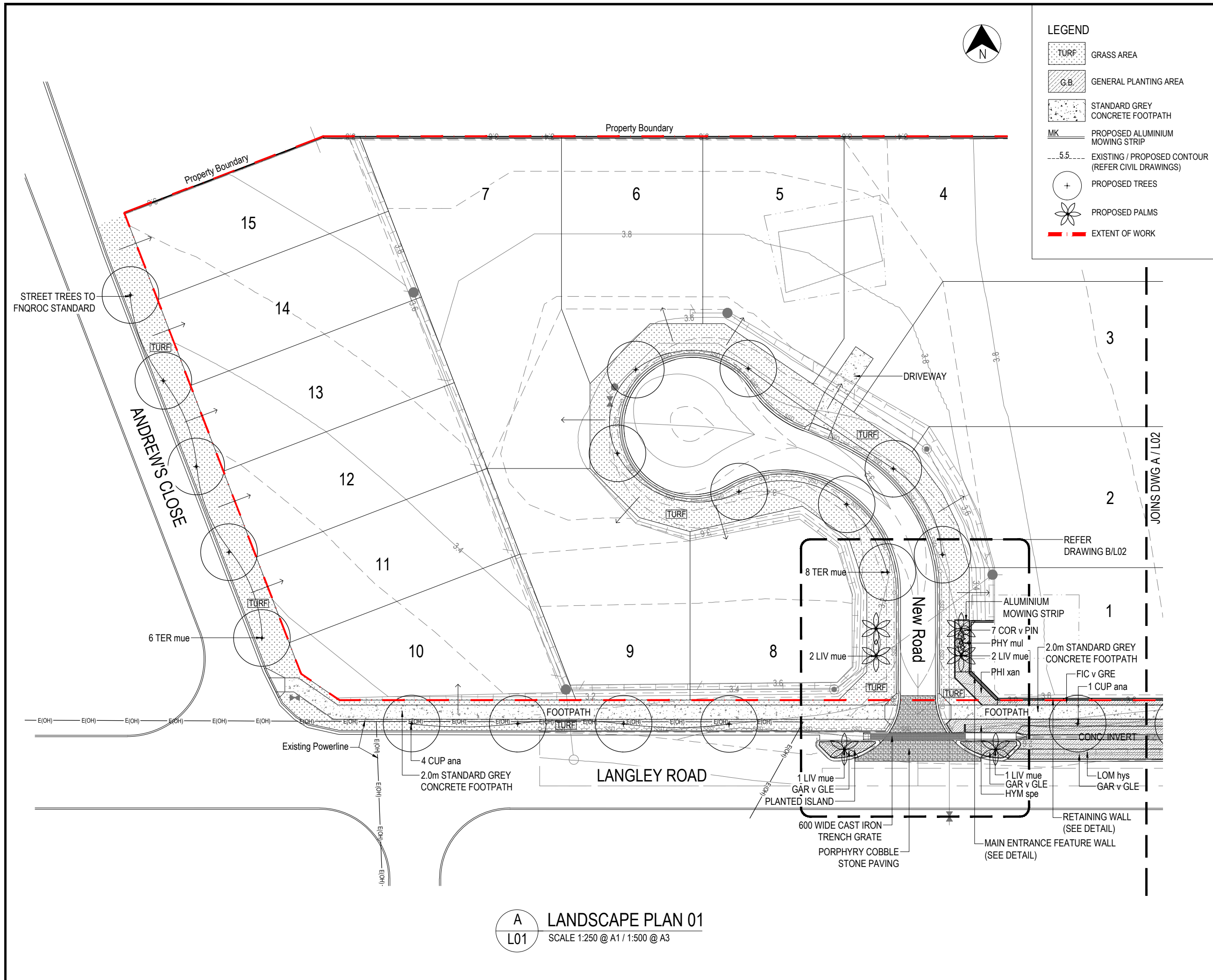
8. HARD LANDSCAPE
- SAMPLES: UNLESS OTHERWISE NOTED, ALL ITEMS MUST BE APPROVED PRIOR TO INSTALLATION AND MUST MEET CURRENT AUSTRALIAN STANDARDS AND BEST PRACTICE GUIDELINES. PROVIDE SAMPLES OF ALL SURFACE FINISHES AND MATERIALS TO BE PLACED IN THE CONSTRUCTED LANDSCAPE, ESPECIALLY ALTERNATIVES TO PROPRIETARY ITEMS SPECIFIED. GIVE FIVE (5) WORK DAYS NOTICE TO THE SUPERINTENDENTS REPRESENTATIVE TO ATTEND OR REVIEW THE SAMPLE FOR COMMENT OR REJECTION. PROVIDE MANUFACTURER'S GUIDES AND REPLACEMENT WARRANTIES AND INSTALLATION SPECIFICATIONS WHERE APPLICABLE.
9. IRRIGATION
- DESIGN AND CONSTRUCT IRRIGATION SYSTEM TO FNQROC STANDARDS, CERTIFIED BY AN IAA CID (IRRIGATION AUSTRALIAN ASSOCIATION CERTIFIED IRRIGATION DESIGNER) AND TO CLIENT'S APPROVAL
10. PLANT ESTABLISHMENT & MAINTENANCE
- AREAS OF PLANTING CAN ONLY BE GIVEN FINAL COMPLETION AFTER MINIMUM 13 WEEKS ESTABLISHMENT POST PRACTICAL COMPLETION. REPLACE ALL DEAD PLANT STOCK DURING THIS PERIOD AND NEW STOCK ESTABLISHED FOR MINIMUM 13 WEEKS. FINAL COMPLETION IS GIVEN AT 13 WEEKS POST PRACTICAL COMPLETION AND ONGOING MAINTENANCE BEGINS.
11. WORK HEALTH & SAFETY (WHS)
- THE CONTRACTOR SHALL FOLLOW THE APPROVED & CURRENT PROJECT WORK HEALTH & SAFETY MANUAL.

Drawing Revisions			
Issue	Date	Subject	Authorised
A	21.02.2019	FOR APPROVAL	JMC
Issue	Date	Revision Description	Initial



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Client:			
SEYMOUR GROUP			
PROJECT TITLE:			
15 LOT SUBDIVISION			
Langley Road, Port Douglas, Queensland Lot 5 on RP 804926			
DRAWING TITLE:			
COVER PAGE & PLANTING SCHEDULE			
Scale: At:	As Shown A3 SIZE	Drawn: Checked: Date:	JAE JTB 21 February 2020
Drawing No:		Issue	Sheet No.
198-L00		A	1



STREETSCAPE TREE NOTES

- 1. TYPICAL LOT**
a) TYPICALLY ONE TREE PER LOT (FRONT VERGE)
b) TREE TO BE LOCATED BETWEEN 600 - 1000mm FROM THE BACK OF KERB
c) TREE SHOWN CENTRALLY ON THE PLAN AND ON THE LOT BOUNDARY. FINAL LOCATION TO BE DETERMINED FOLLOWING INSTALLATION OF THE DRIVEWAY AND CONFIRMATION OF SITE SERVICES
d) TREE TO BE IRRIGATED.
- 2. TYPICAL CORNER LOT**
a) TYPICALLY ONE TREE PER CORNER LOT (FRONT VERGE AND SIDE VERGE)
b) TREE TO SIDE VERGE TO BE LOCATED CENTRALLY ALONG THE SIDE OF THE LOT.
c) TREE TO BE IRRIGATED.
- 3. TREE LOCATIONS**
THE ALIGNMENT AND PLACEMENT OF STREET TREES MEASURED FROM THE TREE AT THE ESTIMATED ULTIMATE SIZE SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
a) GREATER THAN 4.0 METRES FROM ELECTRICITY OR TELECOMMUNICATION POLES OR PILLARS.
b) GREATER THAN 7.5 METRES FROM STREETLIGHTS TO ENSURE EFFECTIVE STREET LIGHTING.
c) GREATER THAN 4.0 METRE RADIUS FROM HIGH VOLTAGE TRANSMISSION LINES.
d) GREATER THAN 2.0 METRES FROM STORMWATER DRAINAGE PITS.
e) TREES ARE TO BE PLANTED IN THE FRONT OF PROPERTIES AT THE CENTRE OF THE LOT AT A RATE OF ONE PER LOT, OR AT THE NECESSARY RATE TO PROVIDE A MAXIMUM 20 METRE SPACING.
f) TREES ARE TO BE PLACED A MINIMUM OF 800mm AND A MAXIMUM OF 1000mm FROM THE BACK OF KERB.
g) TREES ARE TO BE PLACED A MINIMUM OF THREE (3) METRES FROM DRIVEWAY.
h) AT INTERSECTIONS, TREES ARE TO BE PLACED A MINIMUM OF TEN (10) METRES BACK FROM THE FACE OF THE KERB OF THE ADJOINING TREES.
i) TREES ARE TO BE LOCATED SO AS NOT TO OBSTRUCT ACCESS TO ANY SERVICES OR SIGNAGE.
j) TREES ARE TO BE LOCATED SO AS NOT TO OBSTRUCT PEDESTRIAN OR VEHICULAR TRAFFIC, NOR CREATE TRAFFIC HAZARD OR CAUSE DAMAGE TO EXISTING TREES.

Drawing Revisions			
Issue	Date	Subject	Authorised
A	21.02.2019	FOR APPROVAL	JMC
Issue	Date	Revision Description	Initial



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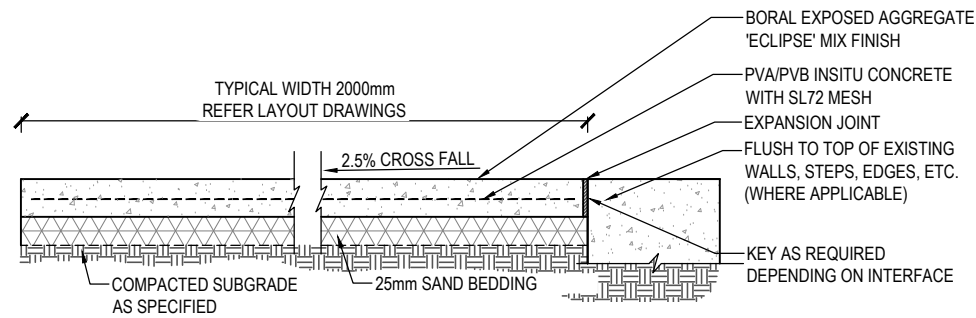
PROJECT TITLE:
15 LOT SUBDIVISION
Langley Road, Port Douglas, Queensland
Lot 5 on RP 804926

DRAWING TITLE:
LANDSCAPE PLAN 01

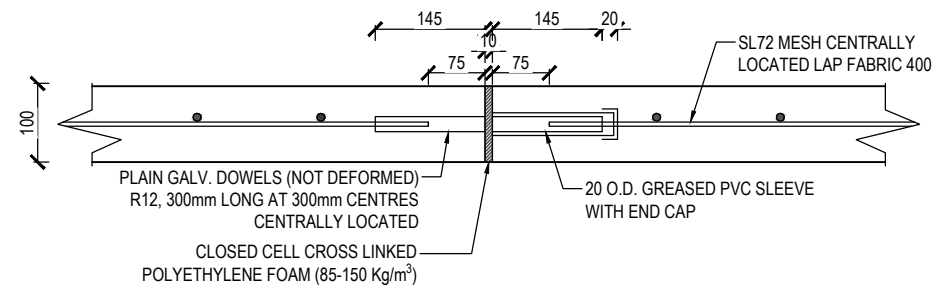
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At: A3 SIZE	Date: 21 February 2020		
Drawing No: 198-L01	Issue: A	Sheet No: 2	



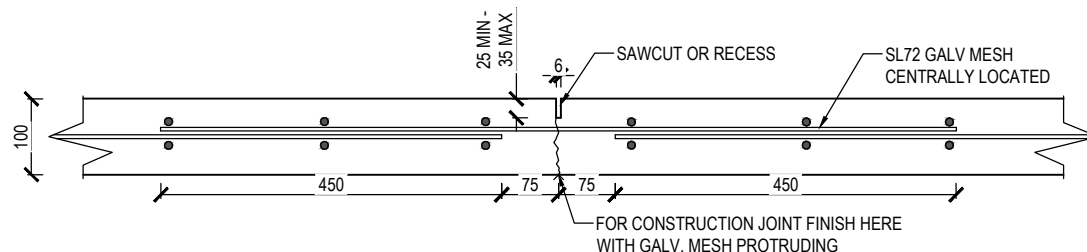
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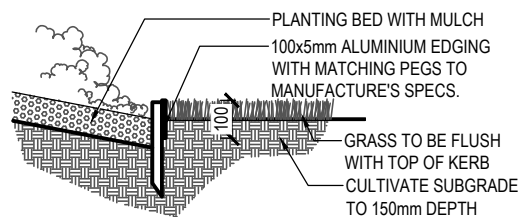
A
L03
2.0m WIDE CONCRETE FOOTPATH
SCALE 1:10 @ A1
1:20 @ A3



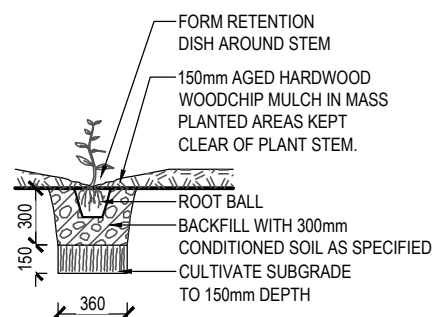
B
L03
FOOTPATH - EXPANSION JOINT
SCALE 1:5 @ A1
1:10 @ A3



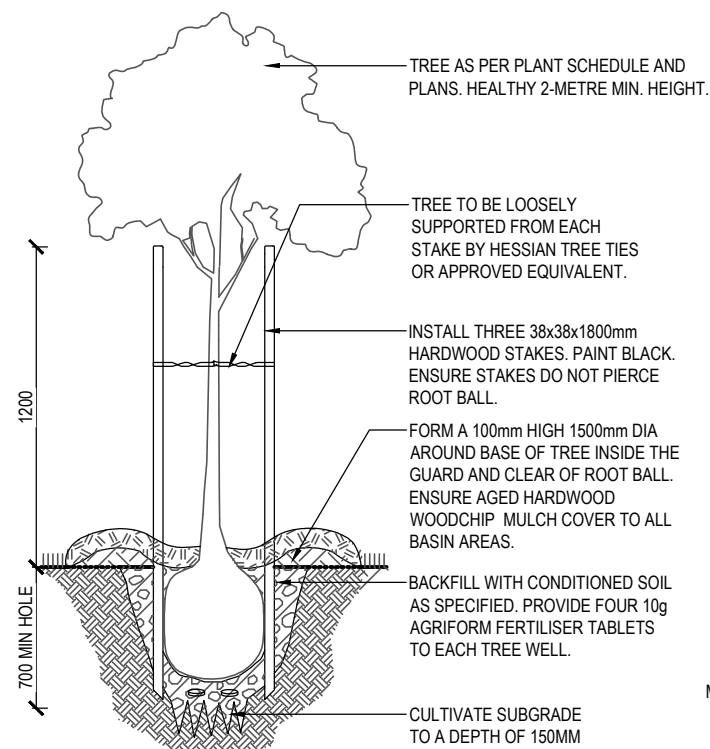
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L03
FOOTPATH - CONTROL JOINT
SCALE 1:5 @ A1
1:10 @ A3



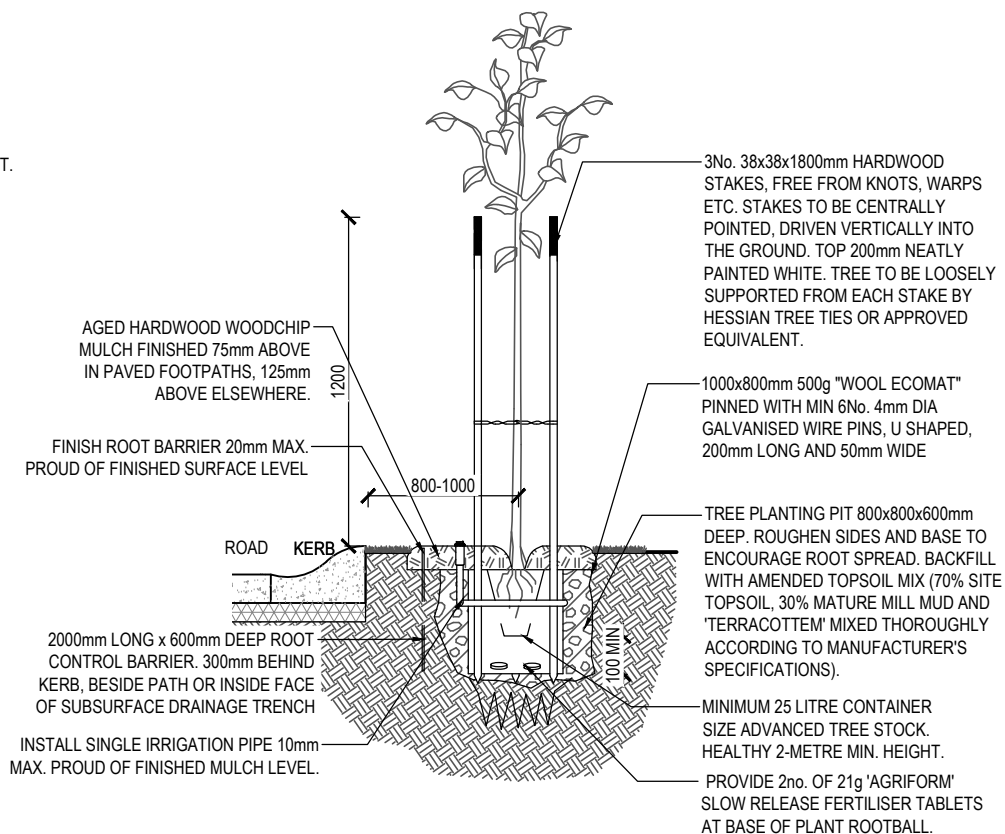
D
L03
MOWIG STRIP DETAIL
SCALE 1:10 @ A1
1:20 @ A3



E
L03
TYPICAL POT PLANTING
SCALE 1:20 @ A1
1:40 @ A3



F
L03
TYP 25-L TREE PLANTING IN GARDEN BED
SCALE 1:20 @ A1
1:40 @ A3



G
L03
STREET TREE TO FNQROC STANDARDS
SECTION 1:20 @ A1
1:40 @ A3

STANDARD NOTES

CONCRETE FOOTPATH REQUIREMENTS AND GUIDELINES TO BE INSTALLED AS PER FNQROC DETAILS

1. PATHWAYS LOCATED IN ROAD RESERVES ARE TO BE CONSTRUCTED 600mm CLEAR OF PROPERTY BOUNDARY UNLESS APPROVED OTHERWISE BY COUNCIL.
2. PRIOR TO CONSTRUCTION OF PATHWAY / BIKEWAY, THE CONTRACTOR SHALL LIAISE WITH TELSTRA TO ENSURE THAT ANY REQUIRED CABLE CONNECTION PITS ARE INSTALLED TO MATCH TOP OF PATHWAY LEVEL AND ENABLE CONCRETE PATHWAY / BIKEWAY TO BE CONSTRUCTED IN A SINGLE POUR.
3. FINISHED SURFACE LEVEL OF CONCRETE TO BE NOT MORE THAN 20mm ABOVE FINISHED SURFACE LEVEL OF ADJOINING GROUND AND SHALL FINISH FLUSH WITH ADJOINING SURFACES.
4. CONCRETE PATHWAYS, ADJOINING EXISTING DRIVEWAYS ARE TO BE TRANSITIONED OVER MINIMUM 500mm LENGTH.
5. CONCRETE N25 IN ACCORDANCE WITH AS1379 AND AS3600.
6. ALL CONCRETE TO BE BROOM FINISHED.
7. DOWELS TO BE GRADE 250 STEEL TO AS1302. MESH TO AS1304.
8. GALVANISING TO AS1650.
9. ALL DIMENSIONS IN MILLIMETRES.
10. THE MAXIMUM GRADIENT SHALL BE 16 PER CENT WITH A MAXIMUM CROSSFALL OF 2.5 PER CENT. WHERE THE PATHWAY IS PARALLEL WITH A ROAD WITH A GRADE GREATER THAN 16 PER CENT FOOTPATH GRADIENT SHALL MATCH THAT OF THE ROAD.

NOTE:

- FULL CONSTRUCTION JOINT EVERY 30m² MIN.
- 12mm EXPANSION JOINT AS SPECIFIED WHERE PATH ABUTS WALLS, KERBS AND THE LIKE.

Drawing Revisions

Issue	Date	Subject	Authorised
A	21.02.2019	FOR APPROVAL	JMC



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Client:

SEYMOUR GROUP

PROJECT TITLE:

15 LOT SUBDIVISION

Langley Road, Port Douglas, Queensland
Lot 5 on RP 804926

DRAWING TITLE:

**HARD & SOFT LANDSCAPE
DETAILS & PLANTING SCHEDULE**

Scale: AS SHOWN	Drawn: JAE	Checked: JTB	Authorised: JMC
At: A3 SIZE	Date: 21 February 2020		

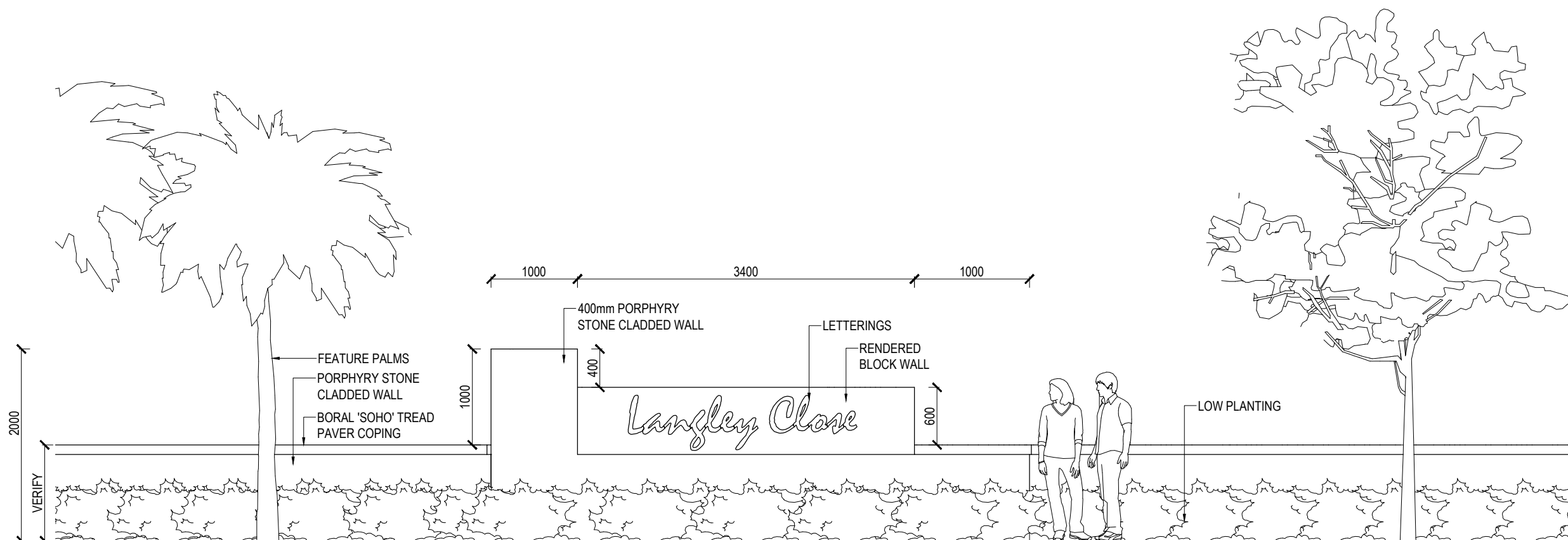
Drawing No:	Issue	Sheet No.
198 - L03	A	4



A
L04 ENTRY WALL PERSPECTIVE
NTS



B
L04 STAIRS PERSPECTIVE
NTS



C
L04 ENTRY WALL ELEVATION
SCALE 1:20 @ A1
1:40 @ A3

Drawing Revisions			
Issue	Date	Subject	Authorised
A	21.02.2019	FOR APPROVAL	JMC
Issue	Date	Revision Description	Initial



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Client:
SEYMOUR GROUP

PROJECT TITLE:
15 LOT SUBDIVISION
Langley Road, Port Douglas, Queensland
Lot 5 on RP 804926

DRAWING TITLE:
**MAIN ENTRY WALL
AND STAIRS DETAILS**

Scale: AS SHOWN	Drawn: JAE	Checked: JTB	Authorized: JMC
At:	Date: 21 February 2020		
Drawing No:	198-L04		Issue A Sheet No. 5

Appendix F

PAVEMENT DESIGN CALCULATIONS

FLEXIBLE PAVEMENT DESIGN

Based on AUSTROADS - A Guide to the Structural Design of Road Pavements and FNQROC Design Guidelines

PROJECT NAME	Andrews Close Subdivision, Port Douglas
ROAD	Road 01

ASSUMPTIONS:

Number of lots:	9	Design Period, P (Years)	20
Assumed Trips per day per lot	10	Annual Growth Rate, R (%)	0
AADT =	90	Cumulative Growth Factor (CGF)	20.00
Direction Factor (DF)	1	ESA's per Heavy Vehicle Axle Group (ESA/HVAG)	1.0
% Heavy Vehicles (Buses, Garbage Trucks,	3.6	Design No. of Equivalent Standard Axles (DESA)	2.4E+04
NHVAG (Average No. of Axle Groups per heavy Vehicle)	1	Road Classification Under FNQROC	Access Place
Lane Distribution Factor (LDF)	1	Design ESA's to be used Under FNQROC	5.0E+04
Design Traffic in Heavy Vehicle Axle Groups (NDT)	2.4E+04		

CBR VALUE	OVERALL THICKNESS (mm)	ASPHALT THICKNESS (mm)	BASE THICKNESS (mm)	SUB -BASE THICKNESS (mm)	ADOPTED SUB - BASE THICKNESS (mm)
5	310	30	100	180	180
7	260	30	100	130	130
10	230	30	100	100	100
15	230	30	100	100	100

COMMENTS:

FLEXIBLE PAVEMENT DESIGN

Based on AUSTROADS - A Guide to the Structural Design of Road Pavements and FNQROC Design Guidelines

PROJECT NAME	Andrews Close Subdivision, Port Douglas
ROAD	Langley Road Upgrade

ASSUMPTIONS:

Number of lots:	50	Design Period, P (Years)	20
Assumed Trips per day per lot	10	Annual Growth Rate, R (%)	0
AADT =	500	Cumulative Growth Factor (CGF)	20.00
Direction Factor (DF)	0.5	ESA's per Heavy Vehicle Axle Group (ESA/HVAG)	1.0
% Heavy Vehicles (Buses, Garbage Trucks,	5.0	Design No. of Equivalent Standard Axles (DESA)	9.1E+04
NHVAG (Average No. of Axle Groups per heavy Vehicle)	1	Road Classification Under FNQROC	Access Street
Lane Distribution Factor (LDF)	1	Design ESA's to be used Under FNQROC	1.0E+05
Design Traffic in Heavy Vehicle Axle Groups (NDT)	9.1E+04		

CBR VALUE	OVERALL THICKNESS (mm)	ASPHALT THICKNESS (mm)	BASE THICKNESS (mm)	SUB -BASE THICKNESS (mm)	ADOPTED SUB -BASE THICKNESS (mm)
5	320	30	100	190	190
7	270	30	100	140	140
10	230	30	100	100	100
15	230	30	100	100	100

COMMENTS:



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Submission\12520641 - Andrews Close Civil OW Submission.docx

Document Status

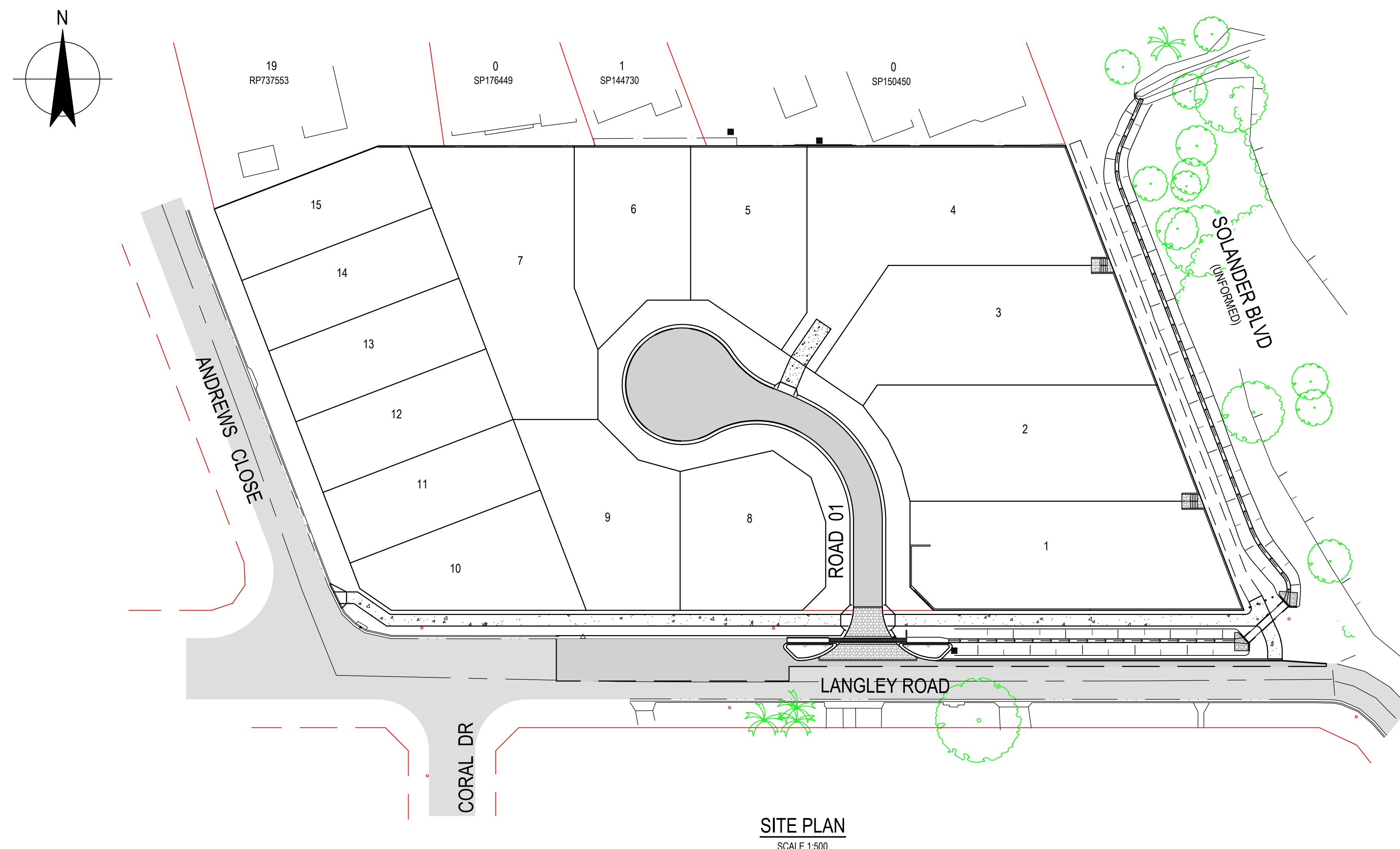
Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
01	JD	GA		GA		04.03.2020




KS5 PTY LTD

20-30 LANGLEY ROAD, PORT DOUGLAS

SUBDIVISION



DRAWING LIST	
DRG No.	DRAWING TITLE
42-12520641-C001	COVER SHEET AND SITE PLAN
42-12520641-C002	STANDARD NOTES
42-12520641-C003	GENERAL ARRANGEMENT PLAN
42-12520641-C004	DEMOLITION / CLEARING PLAN
42-12520641-C005	CONTROL LINE SETOUT
42-12520641-C006	TYPE CROSS SECTIONS AND DETAILS
42-12520641-C007	MISCELLANEOUS DETAILS
42-12520641-C008	LONGITUDINAL SECTIONS - ROAD 01 AND DRAIN 01
42-12520641-C009	LANGLEY ROAD CROSS SECTIONS - SHEET 1 OF 2
42-12520641-C010	LANGLEY ROAD CROSS SECTIONS - SHEET 2 OF 2
42-12520641-C011	ROAD 01 CROSS SECTIONS
42-12520641-C012	DRAIN 01 CROSS SECTIONS
42-12520641-C013	LANGLEY ROAD ROADWORKS PLAN
42-12520641-C014	LANGLEY ROAD SETOUT PLAN
42-12520641-C015	LANGLEY ROAD / ROAD 01 INTERSECTION PLAN
42-12520641-C016	TRENCH GRATE DETAILS
42-12520641-C017	ROAD 01 CUL-DE-SAC SETOUT PLAN
42-12520641-C018	SOLANDER BOULEVARD ACCESS - PLAN & DETAILS
42-12520641-C019	EARTHWORKS PLAN
42-12520641-C020	RETAINING WALLS AND FENCING PLAN
42-12520641-C021	RETAINING WALL DETAILS
42-12520641-C022	BEACH ACCESS STAIRS
42-12520641-C023	SEWER RETICULATION PLAN
42-12520641-C024	SEWER LONG SECTIONS
42-12520641-C025	WATER RETICULATION PLAN
42-12520641-C026	EROSION AND SEDIMENT CONTROL STRATEGY - PLAN
42-12520641-C027	EROSION AND SEDIMENT CONTROL STRATEGY - DETAILS SHEET 1 OF 2
42-12520641-C028	EROSION AND SEDIMENT CONTROL STRATEGY - DETAILS SHEET 2 OF 2

0	FOR APPROVAL			GB		PF	03.03.20
No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing		Drawn	Manager	Project Director	Date



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DO NOT SCALE		Drawn G. BROWNING		Designer G. BROWNING		Client	
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	Approved (Project Director)		P. FLANAGAN		Title		
	Date 03.03.20				Original Size		
	Scale 1:500		This Drawing must not be used for Construction unless signed as Approved		A1 Drawing No: 42-12520641-C001		
						Rev: 0	

SURVEY CONTROL NOTES

1. SURVEY CONDUCTED BY GARY POZZI - CADASTRAL SURVEYOR, PH 07 4057 7177

SURVEY ORIGIN	
LEVEL DATUM:	AHD
ORIGIN OF LEVELS:	PSM 56865 RL 3.041
MERIDIAN:	MGA ZONE 55

GENERAL NOTES

1. ALL WORKS MUST BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT FNQROC DEVELOPMENT MANUAL SPECIFICATIONS. WHERE DIFFERENCES EXIST BETWEEN THE PLANS AND THE DEVELOPMENT MANUAL, THESE PLANS SHALL TAKE PRECEDENCE.
2. THE CONTRACTOR IS TO ENSURE A COPY OF THE OPERATIONAL WORKS APPROVAL IS AVAILABLE ON SITE. THE SITE FOREMAN IS TO ENSURE ALL WORKS ARE UNDERTAKEN IN ACCORDANCE WITH THE APPROVAL.
3. THE LOCATIONS OF UNDERGROUND SERVICES HAVE BEEN APPROXIMATED FROM THE KNOWN POSITIONS OF VALVES, MANHOLES, ETC. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON SITE, THE CONTRACTOR MUST CONTACT RELEVANT AUTHORITIES FOR POSSIBLE LOCATION OF FURTHER SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.
4. EXISTING SERVICES ARE TO BE PROTECTED FROM DAMAGE DURING CONSTRUCTION. WHERE NECESSARY THE CONTRACTOR SHALL CONFIRM THE DEPTH TO EXISTING SERVICES BY POTHOLING BEFORE COMMENCING WORKS. THE SUPERINTENDENT SHALL BE CONSULTED WHERE THE CONTRACTOR CONSIDERS SPECIFIC PROTECTION WORKS NECESSARY TO PROTECT THE SERVICE.
5. ALL DIMENSIONS AND RADII ARE EXPRESSED IN METRES, UNLESS NOTED OTHERWISE.
6. WHERE REFERENCE IS MADE TO THE STANDARD DRAWINGS, THE CONTRACTOR SHALL ENSURE THAT THE LATEST VERSION ISSUED BY THE RELEVANT AUTHORITY, AT THE TIME OF CONSTRUCTION, IS USED.

EROSION AND SEDIMENT CONTROL NOTES

1. PRIOR TO CONSTRUCTION COMMENCING, THE CONTRACTOR MUST PREPARE AN EROSION & SEDIMENT CONTROL PLAN (ESCP) TO MANAGE THE SITE DURING CONSTRUCTION AND THE DEFECT LIABILITY PERIOD.
2. THE ESCP MUST BE CONSISTENT WITH THE APPROVED EROSION & SEDIMENT CONTROL STRATEGY (ESCS) AND SHALL TAKE INTO CONSIDERATION THE CONTRACTOR'S PROPOSED CONSTRUCTION METHODOLOGY AND PROGRAM.
3. AN ESCP THAT DIFFERS TO THE APPROVED ESCS MUST BE SUBMITTED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO SUBMITTING TO COUNCIL.
4. NO EARTHWORKS SHALL COMMENCE ON ANY PART OF THE SITE PRIOR TO APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES BEING INSTALLED DOWNSTREAM OF THE SITE AND IN ACCORDANCE WITH THE APPROVED ESCP.
5. AT ALL TIMES THE CONTRACTOR SHALL MONITOR THE PREVAILING WEATHER CONDITIONS AND TAKE ALL NECESSARY PRECAUTIONS TO CONTROL EROSION AND DOWNSTREAM SEDIMENTATION DURING ALL STAGES OF CONSTRUCTION.
6. THE IMPACT ON THE ENVIRONMENT SHALL BE MINIMISED BY OBSERVING THE FOLLOWING CONSTRUCTION PRACTICES:
- AREAS DISTURBED BY CONSTRUCTION TRAFFIC AND PROCEDURES SHALL BE MINIMISED.
 - MINIMISE TRAFFIC MOVEMENTS AND SPEEDS ON EXPOSED SURFACES.
 - REVEGETATION OF DISTURBED AREAS SHALL BE CARRIED OUT SOON AFTER THE COMPLETION OF TOPSOIL PLACEMENT.
 - FLOW DIVERSION SHALL BE CARRIED OUT BY EARLY INSTALLATION OF DRAINS ALONG TOPS OF BATTERS WITH APPROPRIATE SILTATION CONTROL DEVICES.
 - SEDIMENT INTERCEPTION BY THE PLACEMENT OF SUITABLE RETENTION SYSTEMS ACROSS DRAINAGE LINES AND AT INTERCEPTION POINTS FOR BOTH THE CONSTRUCTION AND STOCKPILE AREAS.
4. ALL ACCESS TO AND FROM THE SITE SHALL BE VIA A TEMPORARY CONSTRUCTION ENTRY/EXIT. THE CONTRACTOR SHALL NOMINATE A PROPOSED ACCESS LOCATION ON THE ESC PLAN FOR APPROVAL BY THE SUPERINTENDENT.
5. STOCKPILES SHALL ONLY BE LOCATED IN AREAS NOMINATED ON THE PROJECT DRAWINGS OR APPROVED BY THE SUPERINTENDENT. ALL STOCKPILES MUST HAVE APPROPRIATE ESC MEASURES INSTALLED TO PREVENT SEDIMENT TRANSPORT. THE MAXIMUM HEIGHT OF ALL STOCKPILES MUST BE LIMITED TO 2.0m
6. ALL PERMANENT AND TEMPORARY UNLINED SWALES AND DRAINS MUST HAVE APPROPRIATE TEMPORARY EROSION PROTECTION.
7. ALL PARTIALLY CONSTRUCTED DRAINAGE STRUCTURES MUST BE PROTECTED AGAINST SEDIMENT INFILTRATION DURING CONSTRUCTION.
8. ALL COMPLETED DRAINAGE STRUCTURES MUST BE PROTECTED AGAINST SEDIMENT INFILTRATION UNTIL GRASSING IS ESTABLISHED.
9. THE CONTRACTOR IS RESPONSIBLE FOR THE CONTROL OF DUST EMANATING FROM THE SITE AT ALL TIMES FOR THE DURATION OF CONSTRUCTION. WET SUPPRESSION METHODS TO BE USED.
10. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE CHECKED FOR DAMAGE, CLEANED OUT AND FULLY REINSTATED AFTER EACH RAINFALL EVENT RESULTING IN RUNOFF.
11. IF EROSION AND SEDIMENT CONTROL DEVICES HAVE BEEN FOUND TO BE DEFICIENT OR FAILED IN SERVICE, DUE TO UNFORESEEN CIRCUMSTANCES, CORRECTIVE ACTION IS TO BE UNDERTAKEN IMMEDIATELY WHICH MAY INCLUDE AMENDMENTS/ADDITIONS TO THE ORIGINAL APPROVED EROSION CONTROL PLANS.
12. THE INSTALLATION, REMOVAL, RELOCATION OR MODIFICATION TO EROSION AND SEDIMENT CONTROL DEVICES MAY BE MADE BY DOUGLAS SHIRE COUNCIL IF DEEMED NECESSARY AND RELEVANT.
13. EROSION AND SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL THE TREATMENT AREA IS SUITABLY STABILISED/VEGETATED.
14. THE CONTRACTOR SHALL UNDERTAKE A FORMAL COMPLIANCE AUDIT OF THE ESC AT SIX WEEKS INTERVALS DURING THE CONSTRUCTION PERIOD OF THE PROJECT. RECORDS OF THE AUDIT SHALL BE RETAINED ON SITE. WHERE IDENTIFIED AS PART OF THE AUDIT THE ESCP SHALL BE UPDATED AND PROVIDED TO THE SUPERINTENDENT.

EARTHWORKS NOTES

1. ALL EARTHWORKS MUST BE CARRIED OUT IN ACCORDANCE WITH AS3798 'GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS'. GEOTECHNICAL TESTING SERVICES SHALL BE AS DETERMINED BY LEVEL 1 IN ACCORDANCE WITH AS 3798. ALL CERTIFICATION AND TEST RESULTS ARE TO BE COMPILED AND PROVIDED TO THE SUPERINTENDENT PRIOR TO WORKS ACCEPTANCE.
2. NO VEGETATION SHALL BE REMOVED WITHOUT PRIOR APPROVAL OF THE SUPERINTENDENT UNLESS NOTED ON THE PROJECT DRAWINGS.
3. FINISHED SURFACE LEVELS SHOWN ON PROJECT DRAWINGS ARE AFTER ALL EARTHWORKS ARE COMPLETE INCLUDING TOPSOILING. ALL AREAS ARE TO BE GRADED EVENLY BETWEEN FINISHED SURFACE LEVELS UNLESS NOTED OTHERWISE.
4. DRY DENSITY RATIO AS REFERRED TO IN THESE NOTES IS THE RATIO DETERMINED IN ACCORDANCE WITH AS1289.5.4.1 OF COMPACTED DRY DENSITY IN ACCORDANCE WITH AS1289.5.3.1 OR AS1289.5.8.1 TO THE STANDARD MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1259.5.1.11 (STANDARD COMPACTION).\
5. ALL VEGETAL MATTER, TOPSOIL AND OTHER UNSUITABLE MATERIAL SHALL BE STRIPPED/REMOVED FROM AREAS TO BE EXCAVATED OR FILLED. ALL VEGETAL MATTER AND UNSUITABLE MATERIAL SHALL BE DISPOSE OF OFF-SITE UNLESS ADVISED OTHERWISE BY THE SUPERINTENDENT. TOPSOIL SHALL BE STOCKPILED ON-SITE FOR REUSE. SURPLUS TOPSOIL SHALL BE DISPOSED OF OFF-SITE.
6. SHOULD ANY SOFT OR UNSUITABLE MATERIAL BE IDENTIFIED, THE CONTRACTOR SHALL INFORM THE SUPERINTENDENT IMMEDIATELY AND SEEK THE ADVICE OF THE SUPERINTENDENT OR GITA.
7. COMPACT FILL TO 95% DRY DENSITY RATIO IN LAYERS OF THICKNESS APPROPRIATE TO THE COMPACTION PLAN EMPLOYED BUT NOT EXCEEDING 300mm.
8. IMPORTED FILL MUST HAVE A MINIMUM SITE CLASIFICATION OF 'M' AS PER TABLE 2.1 OF AS2870 (THAT IS MODERATELY REACTIVE CLAY OR SILT, OR BETTER).

ROADS & PATHWAYS NOTES

1. NEW ROADS PATHS AND KERBING SHALL JOIN SMOOTHLY TO EXISTING WORKS. WHERE NECESSARY, EXISTING WORKS SHALL BE CUT BACK TO FORM A NEAT JOIN.
2. ALL PATHWAYS SHALL BE 2.0m WIDE (UNLESS NOTED OTHERWISE) IN ACCORDANCE WITH FNQROC STD DRAWING S1035. PATHWAY CROSSFALL MUST NOT EXCEED 2.5%.
3. ALL KERB PROFILES TO BE AS PER FNQROC STD DRAWING S1000 UNLESS NOTED OTHERWISE.
4. ALL KERB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FNQROC STD DRG S1016. WIDTH OF RAMP SHALL MATCH PATHWAY WIDTH.
5. ALL STREET SIGNS AND TRAFFIC SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH FNQROC STD DRAWINGS S1040 AND S1041.
6. PAVEMENT DESIGN STATED HEREIN IS FOR A RANGE OF SUBGRADE CBR VALUES. THE CONTRACTOR IS TO CONFIRM THE SUBGRADE CBR BY TESTING IN ACCORDANCE WITH THE SPECIFICATION. RESULTS ARE TO BE PROVIDE TO THE SUPERINTENDENT FOR FINAL PAVEMENT SELECTION.

DRAINAGE NOTES

1. EXCAVATION, BEDDING AND BACKFILL FOR PRECAST BOX CULVERTS SHALL BE CARRIED OUT IN ACCORDANCE WITH FNQROC STD DRAWING S1045.
2. REINFORCED CONCRETE BASES FOR CULVERTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DEPARTMENT OF MAIN ROADS STD DRAWING 1318.
3. SUBSOIL DRAINAGE SHALL BE PROVIDED WHERE SHOWN ON THE PROJECT DRAWINGS. DRAINS SHALL ACHIEVE A MINIMUM 0.5% GRADE. FLUSHING POINTS AND OUTLETS TO BE PROVIDED IN ACCORDANCE WITH FNQROC STD DRAWING S1095.

WATER RETICULATION NOTES


1. ALL PVC AND PE PIPES SHALL BE CLASS PN16. PVC PIPES SHALL BE RUBBER RING JOINTED AND DUCTILE IRON COMPATIBLE.
2. DICI PIPES SHALL BE CLASS PN35 'TYTON' TYPE RUBBER RING JOINTED.
3. FOR MAIN TRENCHING, BEDDING & ANCHORAGE DETAILS REFER FNQROC STD DRGS S2015 & S2016. ENSURE COVER TO WATER MAINS IS 800mm MINIMUM UNDER ROADWAYS AND 600mm MINIMUM ELSEWHERE.
4. ALL WATER MAINS SHALL BE INSTALLED ON A STANDARD 2.8m OFFSET FROM THE PROPERTY BOUNDARY UNLESS NOTED OTHERWISE ON PLANS.
5. FOR MAIN CONNECTION DETAILS, REFER FNQROC STD DRAWING S2020.
6. DOUGLAS SHIRE COUNCIL MUST BE CONTACTED TO PERFORM ANY DIRECT CONNECTION OR ALTERATION TO LIVE WATER MAINS. THE CONTRACTOR SHALL LODGE WITH COUNCIL THE APPROPRIATE APPLICATION FORMS AND FEES FOR THESE WORKS TO BE COMPLETED. IT MAY BE POSSIBLE FOR SOME WORKS TO BE PERFORMED BY THE CONTRACTOR UNDER SPECIAL CIRCUMSTANCES AND SUBJECT TO APPROPRIATE CONDITIONS AGREED TO WITH COUNCIL.
7. ALL HYDRANTS AND VALVES TO BE LOCATED OPPOSITE PROPERTY BOUNDARY TRUNCATIONS AND CORNERS, UNLESS NOTED OTHERWISE ON PLANS. FOR VALVES & HYDRANT BOXES INSTALLATION DETAILS REFER FNQROC STD DRAWINGS S2000 & S2005.
8. HYDRANTS OR VALVES CONSTRUCTED IN CONCRETE ARE TO HAVE A COMPRESSIBLE LAYER (ABLEFLEX) INSTALLED ON THE SURROUND. REFER FNQROC STD DRG 2000.
9. KERB MARKER PLATES SHALL BE PROVIDED TO IDENTIFY THE POSITION OF ALL VALVES AND HYDRANTS IN ACCORDANCE WITH FNQROC STD DRAWING S2010 VERSION 4-2009. IN ADDITION TO KERB MARKER PLATES, HYDRANTS SHALL ALSO HAVE TEARDROP MARKERS AND BLUE RETRO-REFLECTIVE MARKERS PROVIDED ON THE ROAD PAVEMENT IN ACCORDANCE WITH FNQROC STD DRAWING 2010 VERSION 4-2009.

SEWER RETICULATION NOTES

1. ALL NEW SEWER MAINS SHALL BE UNPLASTICISED PVC (PVC-U) CLASS SN8 SUITABLE FOR RUBBER RING JOINTS, UNLESS NOTED OTHERWISE.
2. ALL NEW SEWER MAINS AND MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH FNQROC STD DRAWINS3000 AND S3015.
3. ALL SEWER MANHOLE COVERS SHALL BE CIRCULAR UNLESS NOTED OTHERWISE ON SEWER LONG SECTIONS. COVERS SHALL BE TYPE B INSIDE PROPERTIES AND TYPE C ELSEWHERE.
4. ALL SEWER MANHOLE COVER LEVELS TO BE 50mm ABOVE FINISHED SURFACE LEVEL UNLESS NOTED OTHERWISE.
5. THE CONTRACTOR SHALL ENSURE THAT A FLAT AREA OF 1.5m RADIUS FROM THE CENTRE OF THE MANHOLE IS PROVIDED AROUND ALL MANHOLES.
6. ALL HOUSE CONNECTION BRANCHES TO NEW SEWER MAINS TO BE CONSTRUCTED IN ACCORDANCE WITH FNQROC STD DRAWING S3005. BRANCHES SHALL BE CLEARLY MARKED IN ACCORDANCE WITH THE SPECIFICATION.
7. DOUGLAS SHIRE COUNCIL MUST BE CONTACTED TO PERFORM ANY DIRECT CONNECTION TO LIVE SEWER MAINS. THE CONTRACTOR SHALL LODGE WITH COUNCIL THE APPROPRIATE APPLICATION FORMS AND FEES FOR THESE WORKS TO BE COMPLETED. IT MAY BE POSSIBLE FOR SOME WORKS TO BE PERFORMED BY THE CONTRACTOR UNDER SPECIAL CIRCUMSTANCES AND SUBJECT TO APPROPRIATE CONDITIONS AGREED TO WITH COUNCIL.
8. THE CONTRACTOR SHALL CARRY OUT A CCTV INSPECTION THROUGH ALL SEWERS CONSTRUCTED AS PART OF THIS DEVELOPMENT AND PROVIDE THE FOOTAGE TO THE SUPERINTENDENT FOR ASSESSMENT. ANY SECTIONS OF SEWER CONSIDERED SUB-STANDARD SHALL BE RECTIFIED TO THE SATISFACTION OF COUNCIL.

SITE SPECIFIC NOTES

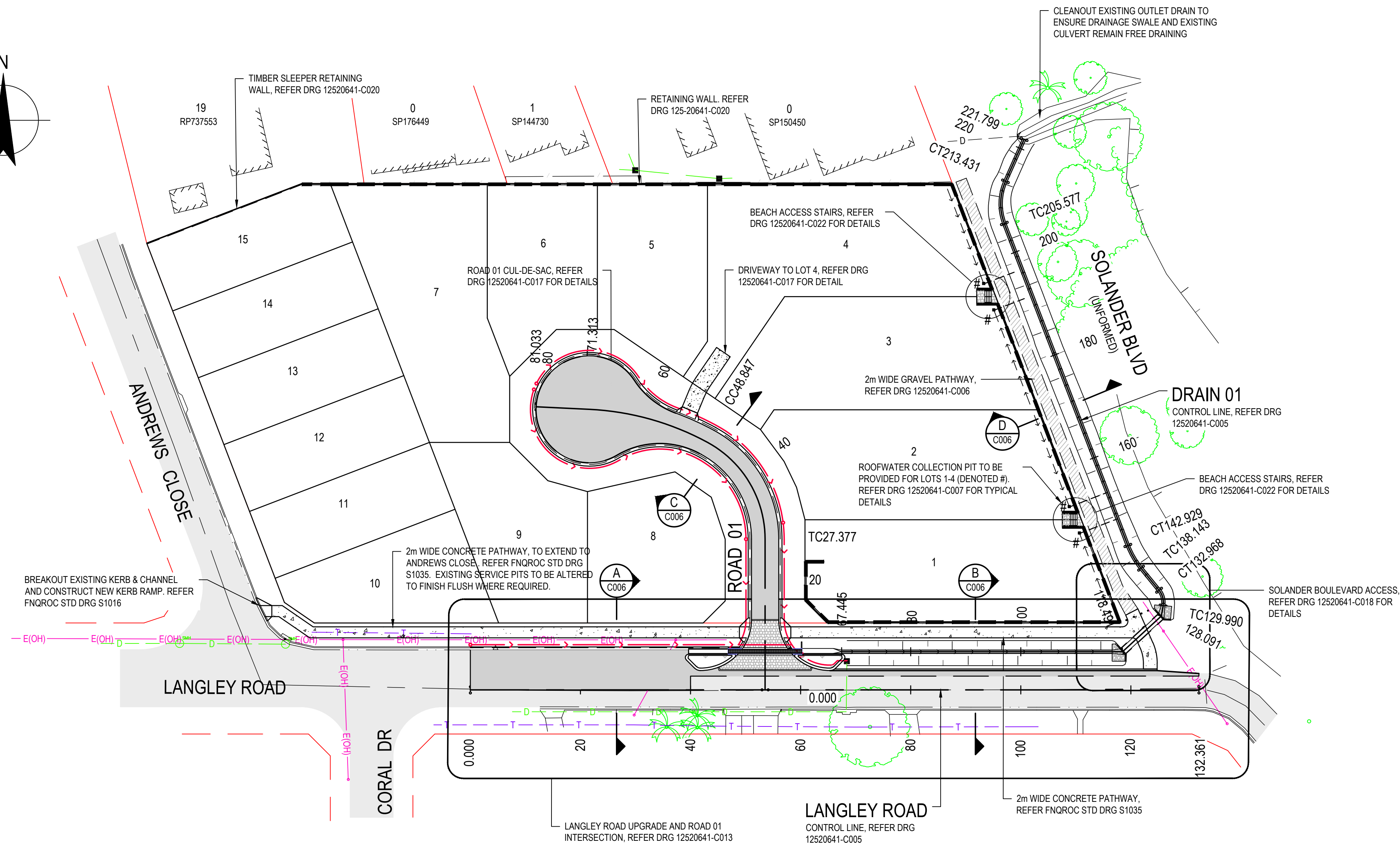
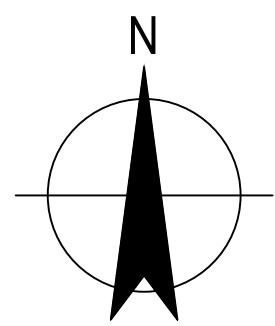
1. NO CLEARING OR VEGETATION REMOVAL IS TO TAKE PLACE UNTIL CERTIFICATION IS PROVIDED FOR ANT PLANT RELOCATION. (ANT PLANT RELOCATION BY OTHERS)

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		Drawn	Job Manager	Project Director	Date



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	Approved (Project Director) P. FLANAGAN		Title	STANDARD NOTES		
	Date 03.03.20		Original Size			
	Scale -	This Drawing must not be used for Construction unless signed as Approved		A1	Drawing No: 42-12520641-C002	Rev: 0




LEGEND

	CONCRETE FOOTPATH/DRIVEWAY
	GRAVEL PATHWAY
	SUBSURFACE DRAINAGE (WITH FLUSH POINTS & OUTLETS)
	PEDESTRIAN KERB RAMP
	BATTER TOP
	RETAINING WALL
	ROOFWATER COLLECTION PIT, REFER DRG 12520641-C007
	EXISTING PAVEMENT
	NEW FLEXIBLE PAVEMENT
	NEW CONCRETE PAVEMENT WITH PORPHYRY COBBLE STONE FINISH

NOTES

- REFER DRG 12520641-C002 FOR STANDARD NOTES.
- REFER DRG 12520641-C005 FOR CONTROL LINE SETOUT.

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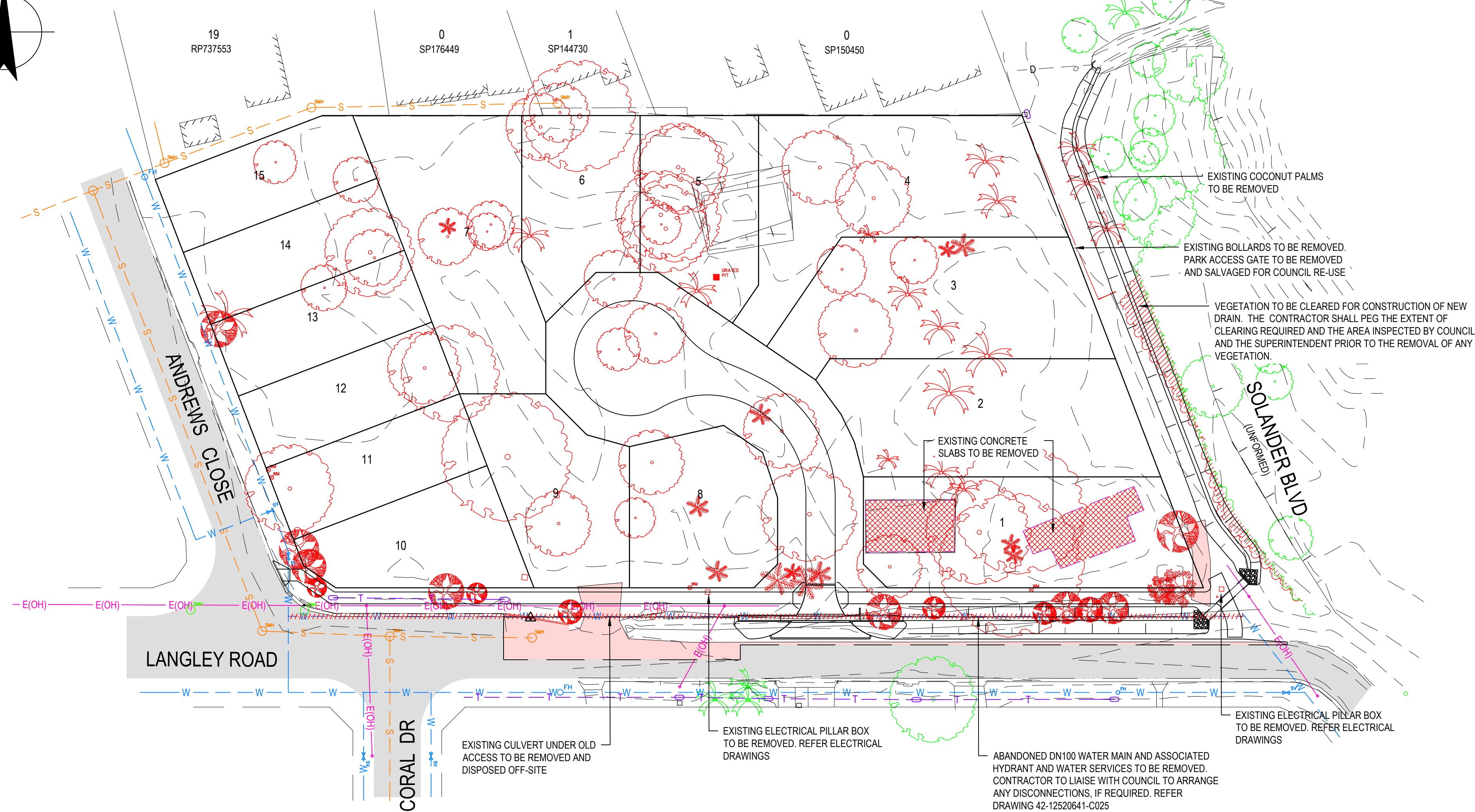
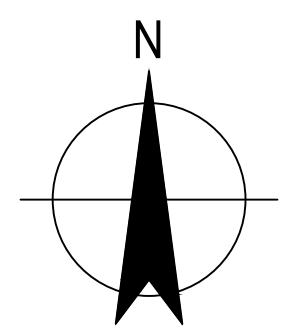
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Approved (Project Director)	P. FLANAGAN		
Date	03.03.20		
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Client	KS5 PTY LTD
Project	LANGLEY ROAD SUBDIVISION
Title	GENERAL ARRANGEMENT PLAN

Original Size
A1 Drawing No: **42-12520641-C003**

Rev: 0



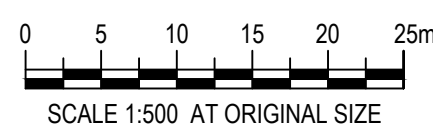
PLAN
SCALE 1:500

LEGEND

- EXISTING KERB & CHANNEL TO BE REMOVED
- EXISTING PAVEMENT TO BE REMOVED
- EXISTING FENCE / BOLLARDS TO BE REMOVED
- EXISTING REDUNDANT SERVICE
- EXISTING TREE/PALM TO BE REMOVED
- EXISTING VEGETATION TO BE REMOVED
- EXISTING BUILDING LINE
- EXISTING FENCE
- EXISTING SEWER MAIN
- EXISTING O/H ELECTRICITY
- EXISTING WATER MAIN
- EXISTING TELSTRA
- EXISTING PALM/TREE TO REMAIN
- EXISTING VEGETATION LINE

NOTES

- REFER TO DRG 12520641-C002 FOR STANDARD NOTES.



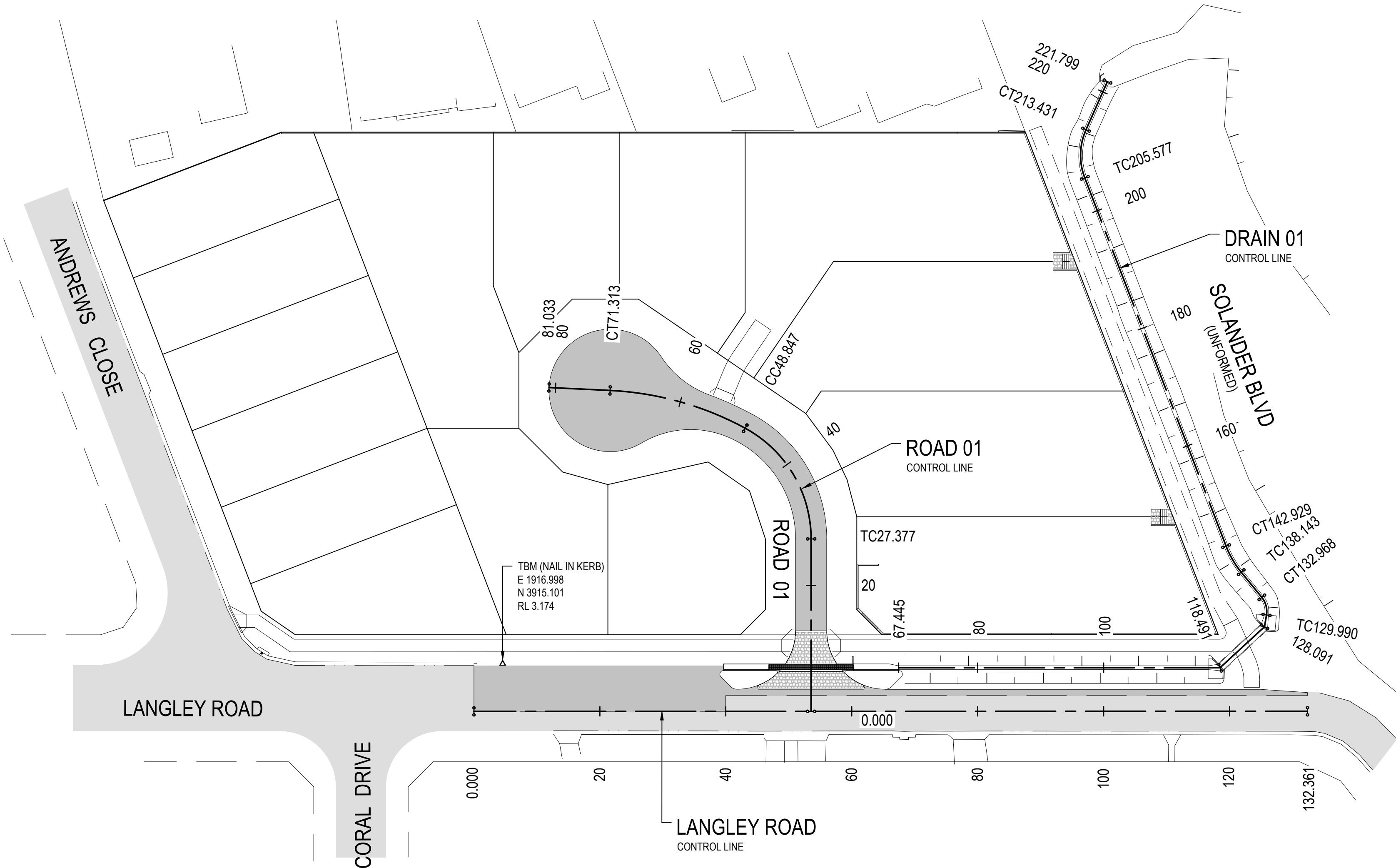
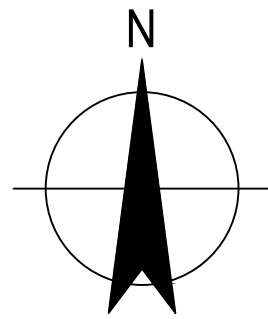
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Approved (Project Director)	P. FLANAGAN		
Date	03.03.20		
Scale	1:500	This Drawing must not be used for Construction unless signed as Approved	

Client	KS5 PTY LTD		
Project	LANGLEY ROAD SUBDIVISION		
Title	DEMOLITION / CLEARING PLAN		
Original Size	A1	Drawing No:	42-12520641-C004
Rev:	0		



PLAN
SCALE 1:500

CONTROL LINE - ROAD 01

PT	CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	ARC LENGTH	DEFLANGLE
IP 1	0.000	1965.976	3908.027	0°00'00.00"			
TC	27.377	1965.976	3935.405	0°00'00.00"			
IP 2	38.112	1965.976	3947.305		R = -20.000	21.469	61°30'27.89"
CT	48.847	1955.517	3952.982	298°29'32.11"			
TC	48.847	1955.517	3952.982	298°29'32.11"			
IP 3	60.080	1945.475	3958.432		R = -50.000	22.465	25°44'36.24"
CT	71.313	1934.062	3958.980	272°44'55.87"			
IP 4	81.033	1924.354	3959.446	272°44'55.87"			

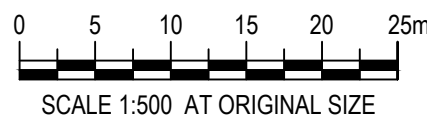
CONTROL LINE - LANGLEY RD

PT	CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	ARC LENGTH	DEFLANGLE
IP 1	0.000	1912.429	3908.026	89°59'55.17"			
IP 2	132.361	2044.790	3908.029	89°59'55.17"			

CONTROL LINE - DRAIN 01

PT	CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	ARC LENGTH	DEFLANGLE
IP 1	67.445	1979.874	3914.953	89°59'56.93"			
IP 2	118.491	2030.919	3914.953				
IP 3	128.091	2037.980	3921.458				
TC	129.990	2038.292	3923.331	9°28'35.93"			
IP 4	131.479	2038.553	3924.895		R = -3.500	2.978	48°45'13.39"
CT	132.968	2037.549	3926.123	320°43'22.54"			
TC	138.143	2034.273	3930.129	320°43'22.54"			
IP 5	140.536	2032.745	3931.997		R = 15.000	4.785	18°16'43.91"
CT	142.929	2031.881	3934.250	339°00'06.45"			
TC	205.577	2009.431	3992.738	339°00'06.45"			
IP 6	209.504	2007.947	3996.605		R = 10.000	7.854	45°00'01.28"
CT	213.431	2009.632	4000.389	24°00'07.73"			
IP 7	221.799	2013.036	4008.034	24°00'07.73"			

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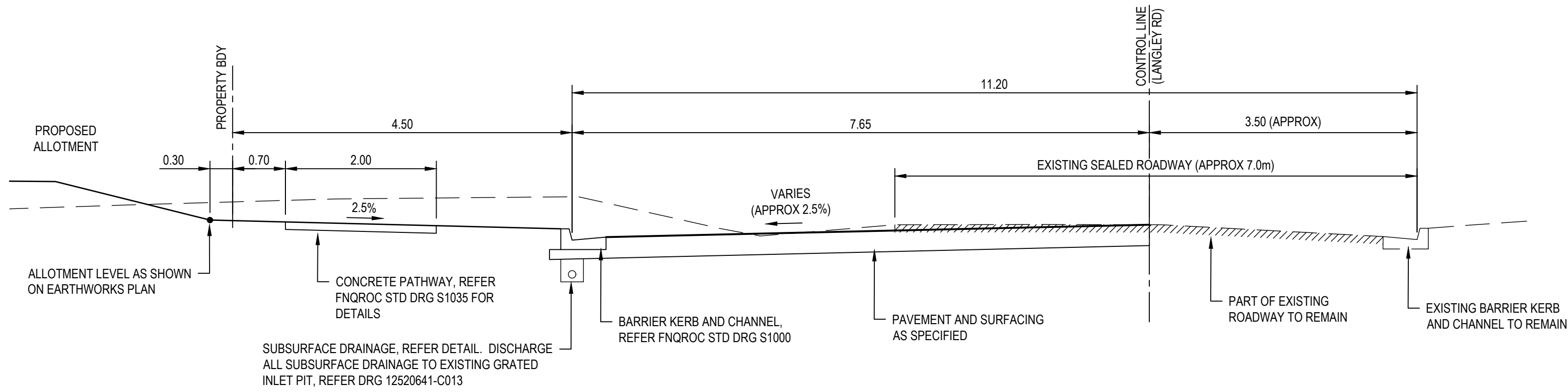
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Approved	P. FLANAGAN		
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Scale	1:500		

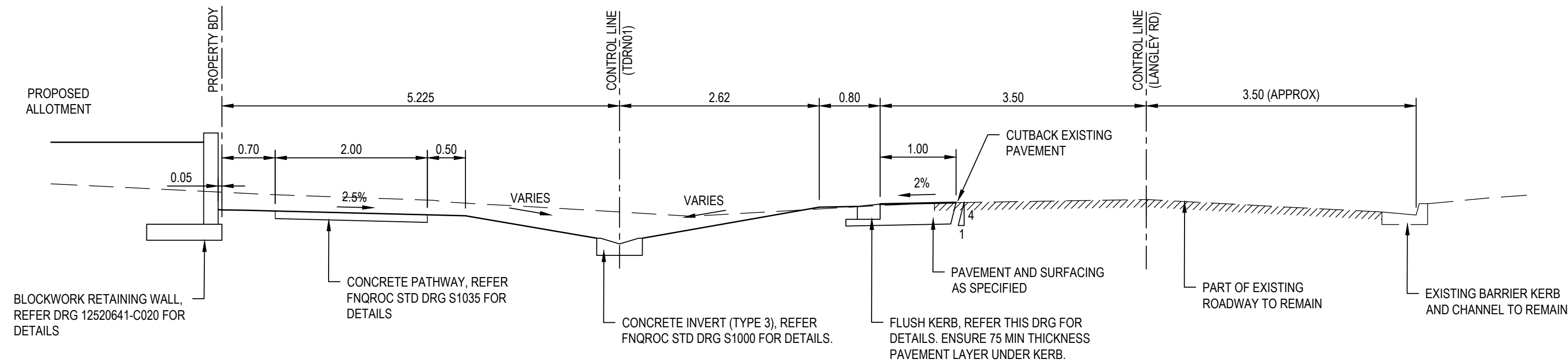
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Project	LANGLEY ROAD SUBDIVISION		
Title	CONTROL LINE SETOUT		
Original Size	A1		
Drawing No:	42-12520641-C005		
Rev:	0		



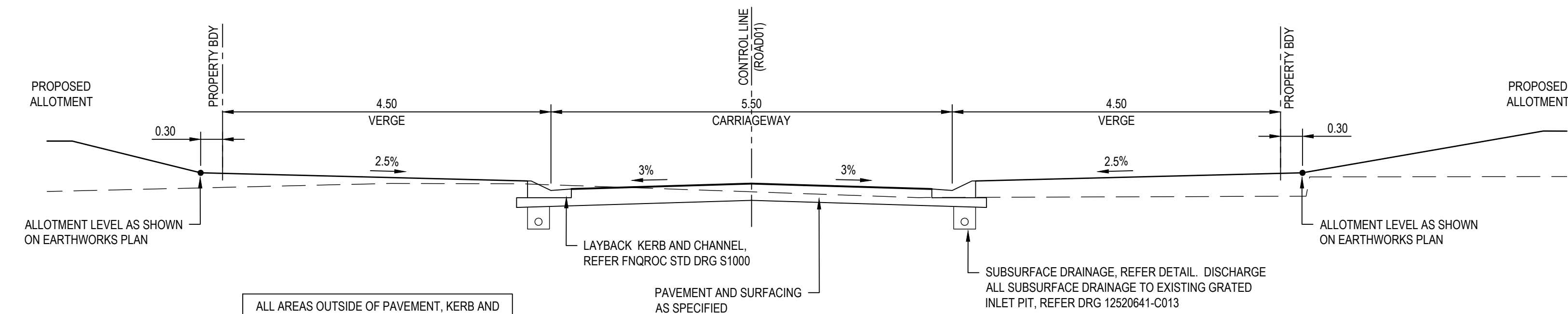
LANGLEY ROAD (CH 50 - END)

A SECTION
C003 C013 SCALE 1 : 50



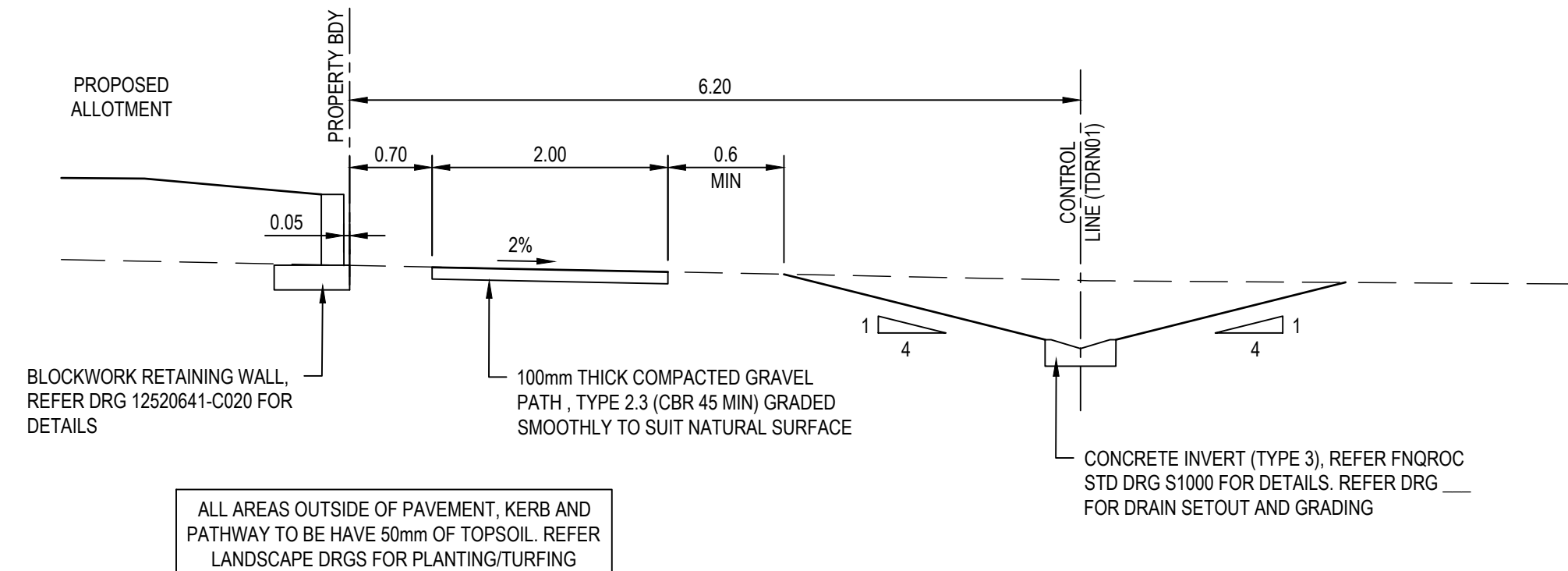
LANGLEY ROAD (START - CH 50)

B SECTION
C003 C013 SCALE 1 : 50



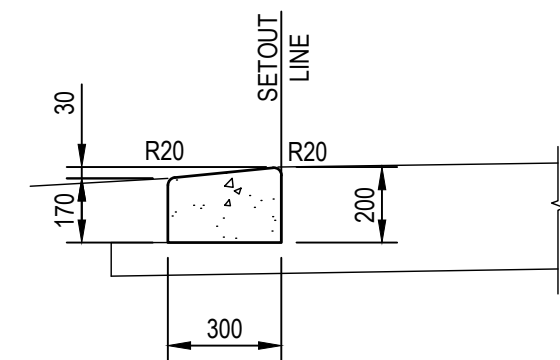
ROAD 01

C SECTION
C003 C013 SCALE 1 : 50

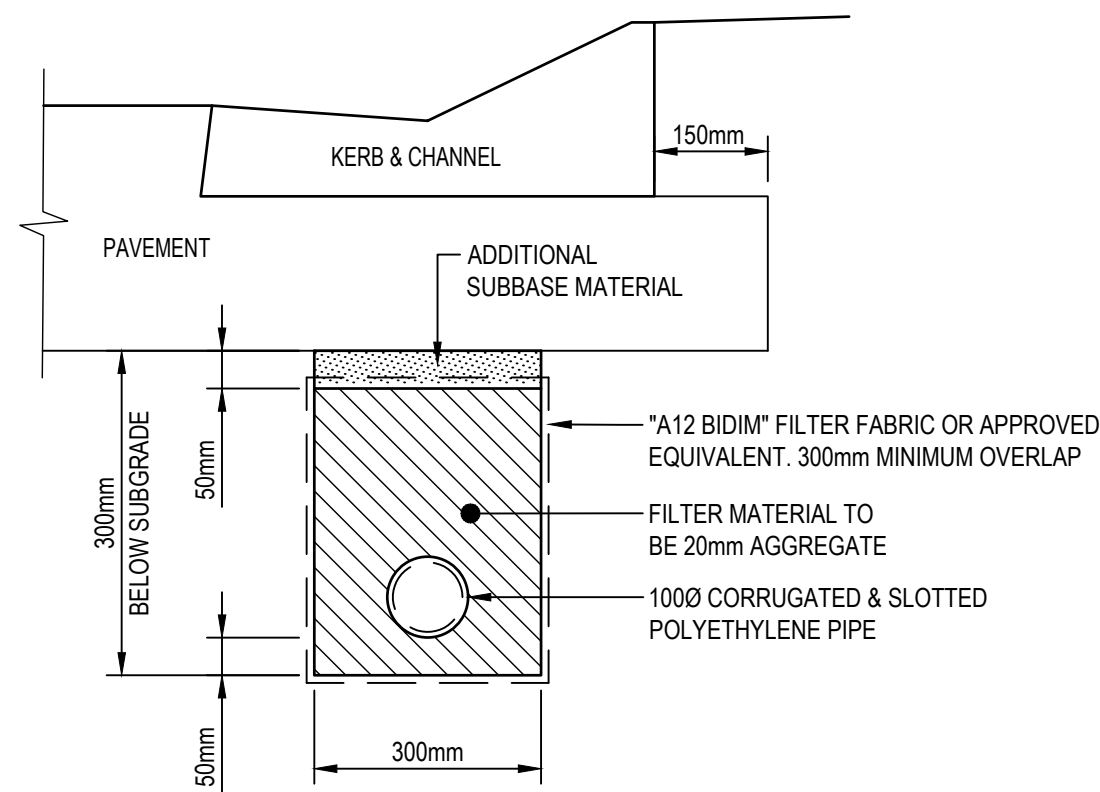


SOLANDER BOULEVARD (PATH AND DRAIN)

D SECTION
C003 C013 SCALE 1 : 50



FLUSH KERB
SCALE 1:20



SUBSURFACE DRAINAGE
NOT TO SCALE

LANGLEY ROAD - PAVEMENT DETAILS

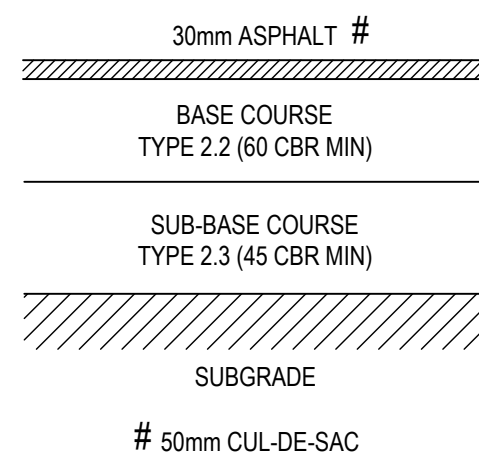
SUBGRADE CBR	BASE (mm)	SUB-BASE (mm)
3	100	280
5	100	190
7	100	140
10	100	100

DESIGN TRAFFIC 1 x10⁵ (ACCESS STREET)


ROAD 01 - PAVEMENT DETAILS

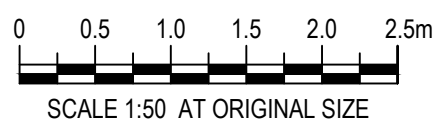
SUBGRADE CBR	BASE (mm)	SUB-BASE (mm)
3	100	270
5	100	180
7	100	130
10	100	100

DESIGN TRAFFIC 5 x10⁴ (ACCESS PLACE)



FLEXIBLE PAVEMENT DETAILS
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Approved (Project Director) P. FLANAGAN

Date 03.03.20

Scale 1:100

Designer G. BROWNING

Design Check G. APPLIN

Signature

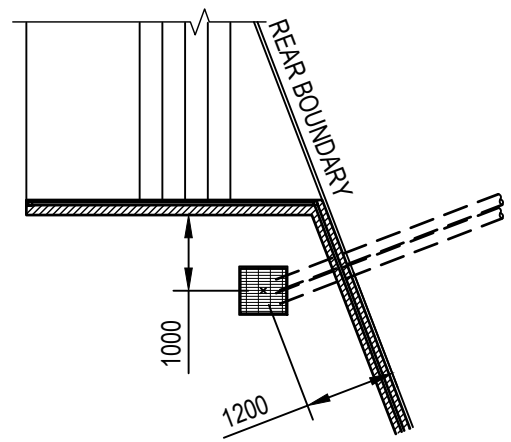
Signature

Signature

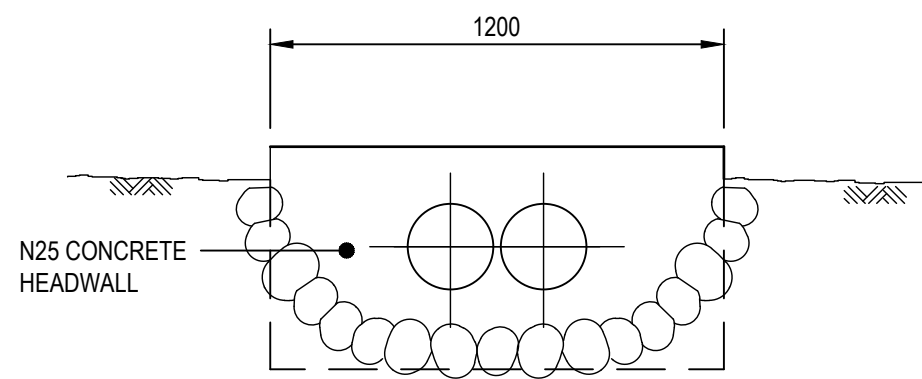
Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **TYPE CROSS SECTIONS AND DETAILS**

Original Size **A1** Drawing No: **42-12520641-C006**

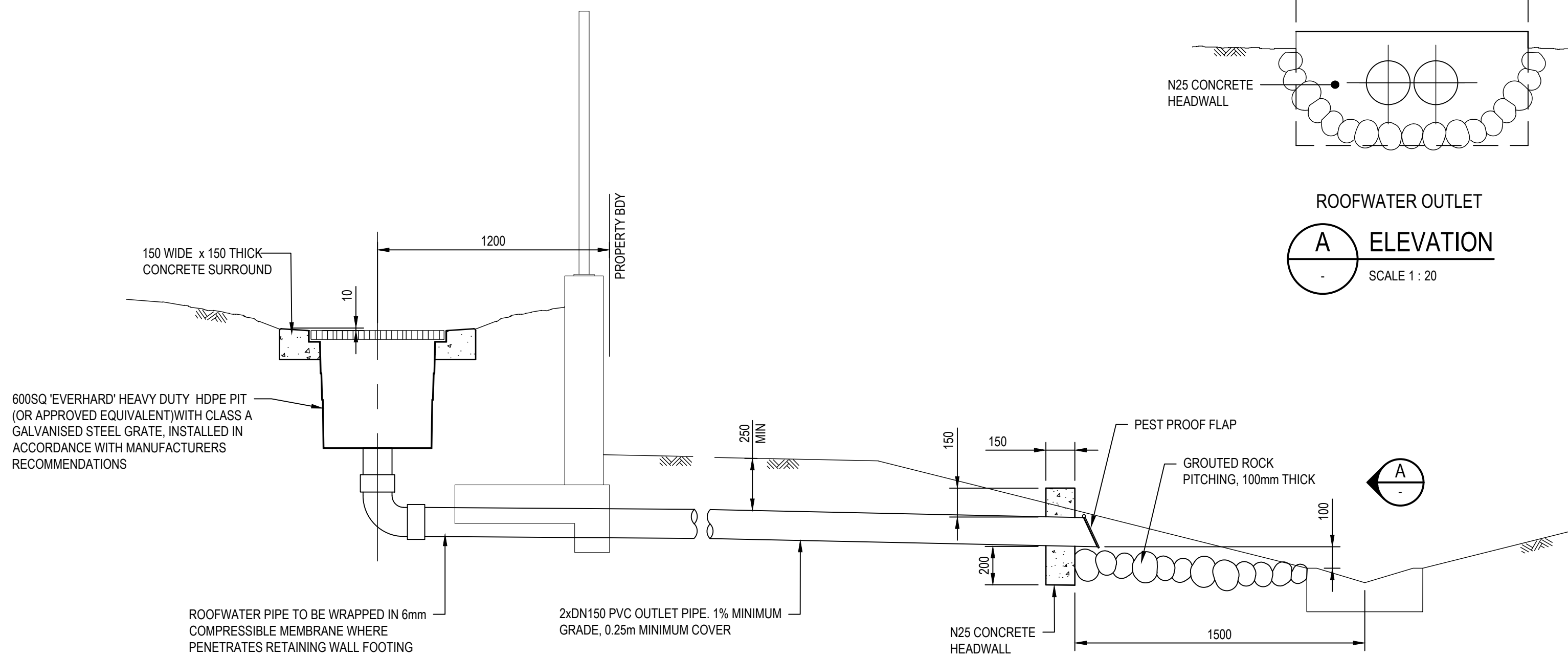
Rev: 0



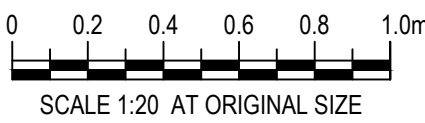
TYPICAL LOCATION
ROOFWATER COLLECTION PIT
SCALE 1:100



ROOFWATER OUTLET
A ELEVATION
SCALE 1:20



REAR OF ALLOTMENT DRAINAGE - OUTLET
SCALE 1:20



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Designer G. BROWNING

Drafting G. APPLIN

Design G. APPLIN

Approved (Project Director)

P. FLANAGAN

Date 03.03.20

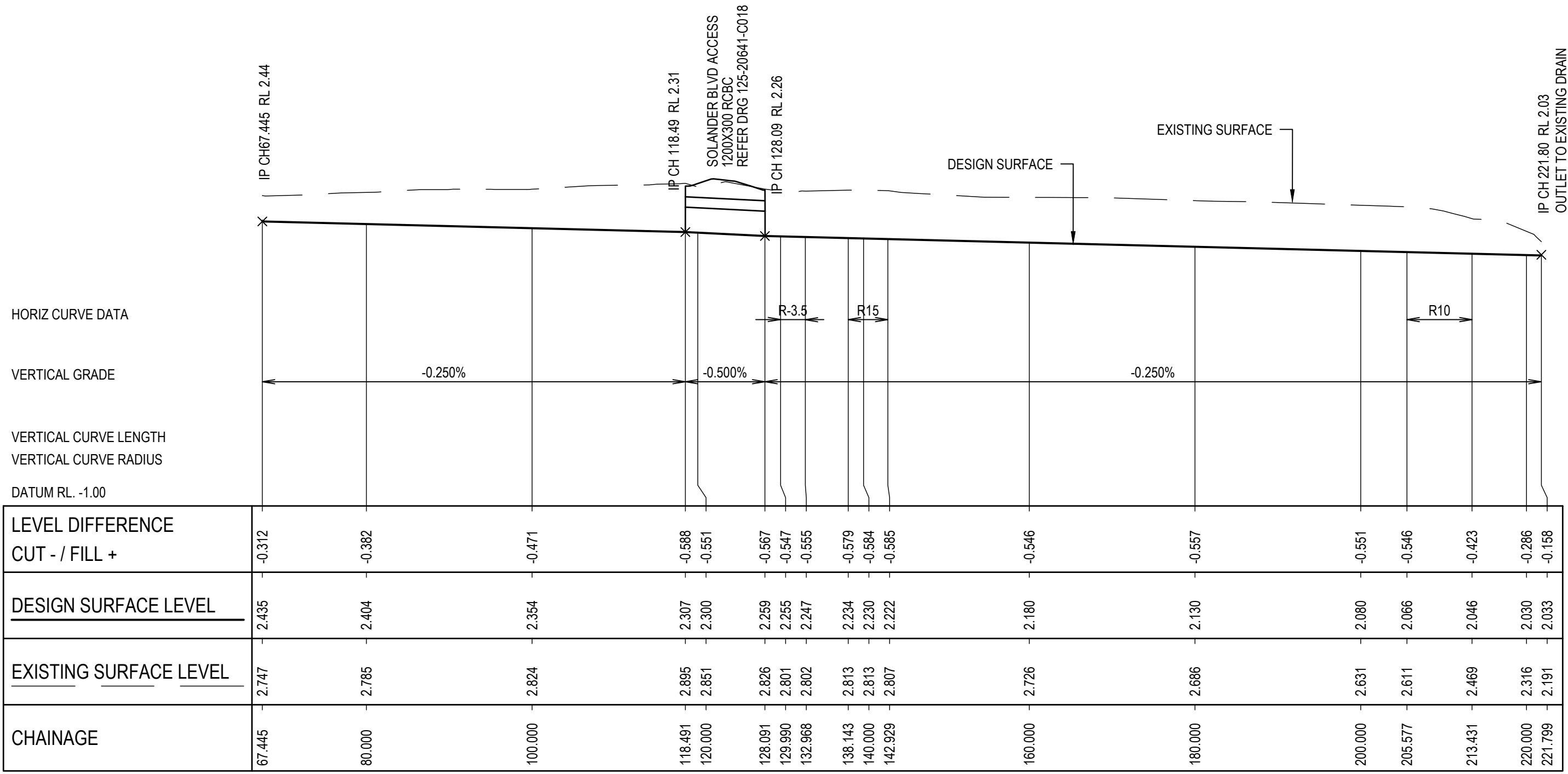
Scale AS SHOWN

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Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **MISCELLANEOUS DETAILS**

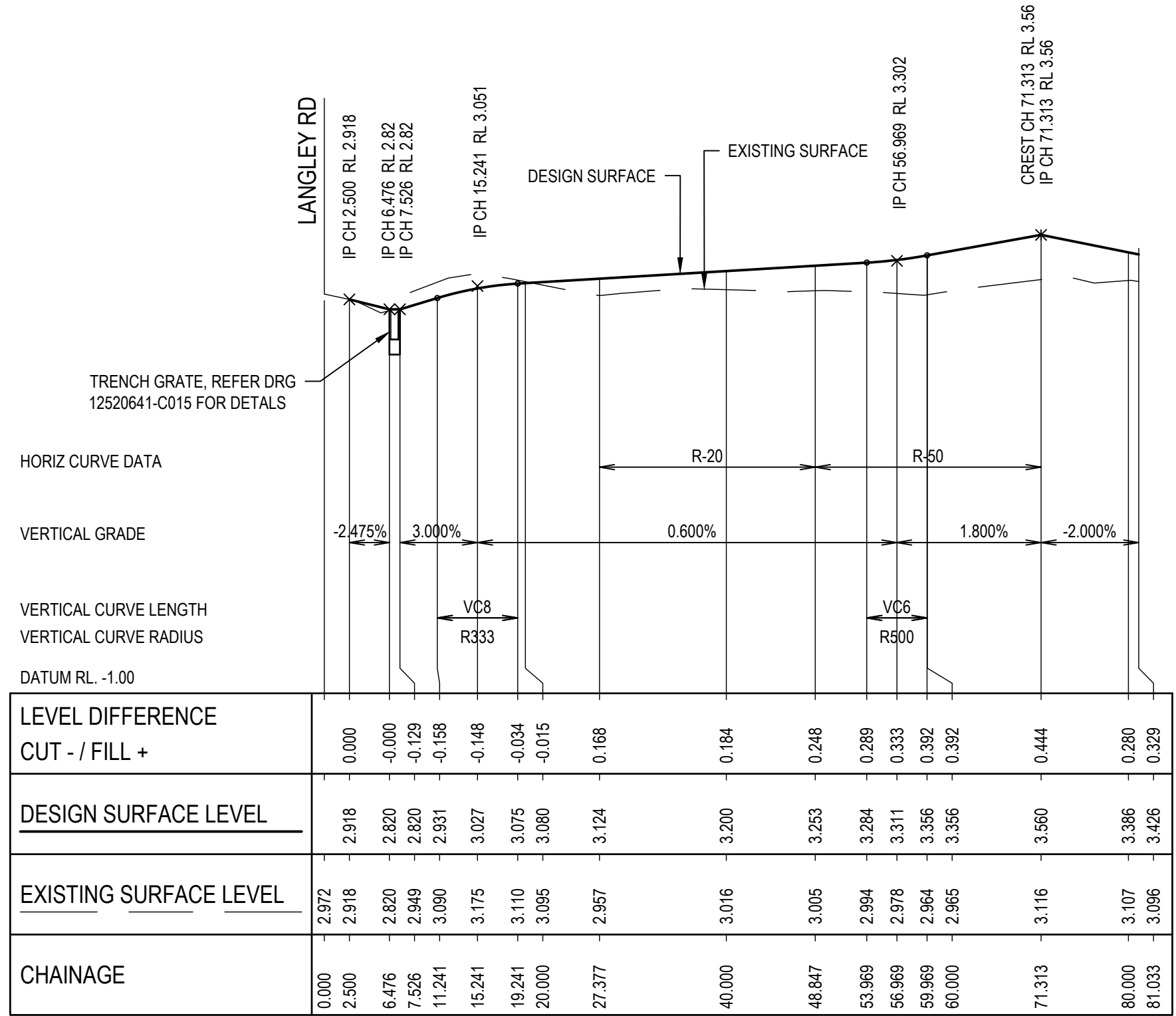
Original Size **A1** Drawing No: **42-12520641-C007**

Rev: 0



LONGITUDINAL SECTION - DRAIN 01

HORZ 1:500 VERT 1:50



LONGITUDINAL SECTION - ROAD 01

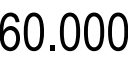
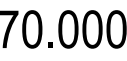
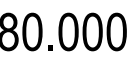
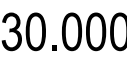
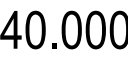
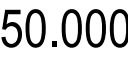
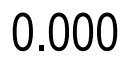
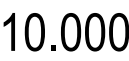
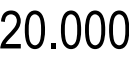
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	Approved (Project Director) P. FLANAGAN		Title	LONGITUDINAL SECTIONS	
	Date 03.03.20			ROAD 01 AND DRAIN 01	
	Scale 1:500 H / 1:50 V		This Drawing must not be used for Construction unless signed as Approved	Original Size A1	Drawing No: 42-12520641-C008

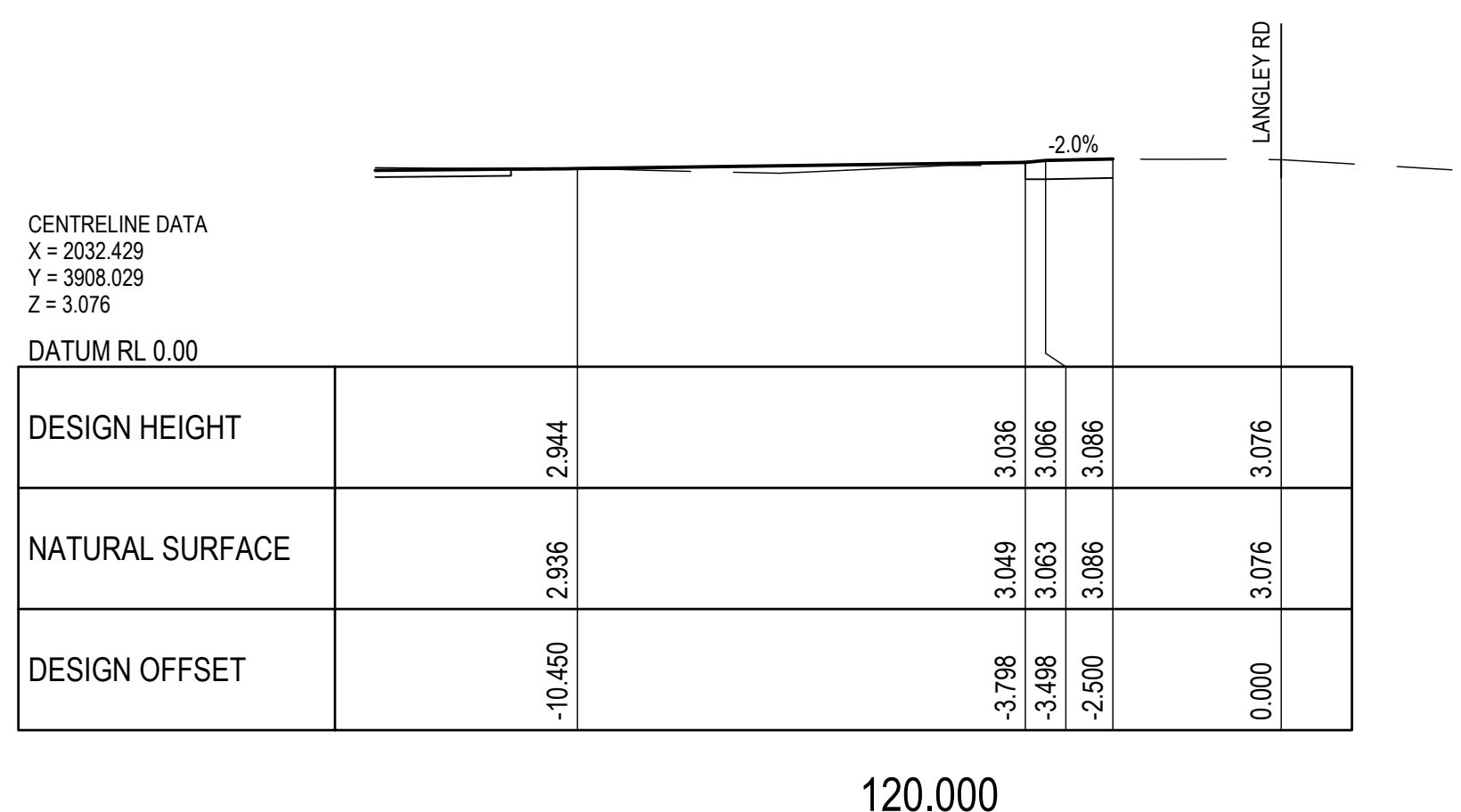
Plot Date: 3 March 2020 - 4:10 PM Plotted by: Gary Browning

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A1 Drawing No: **42-12520641-C009**

Rev: 0



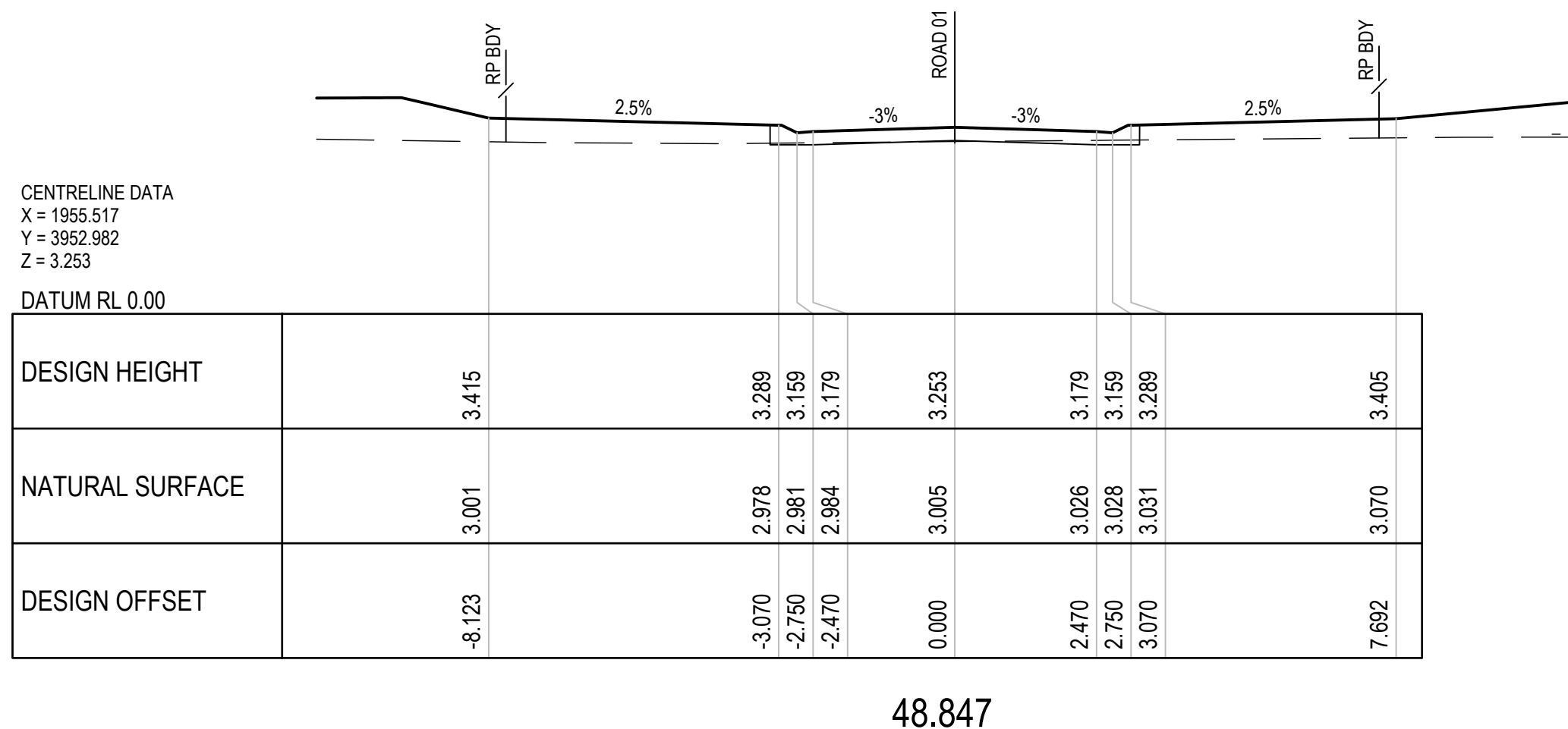
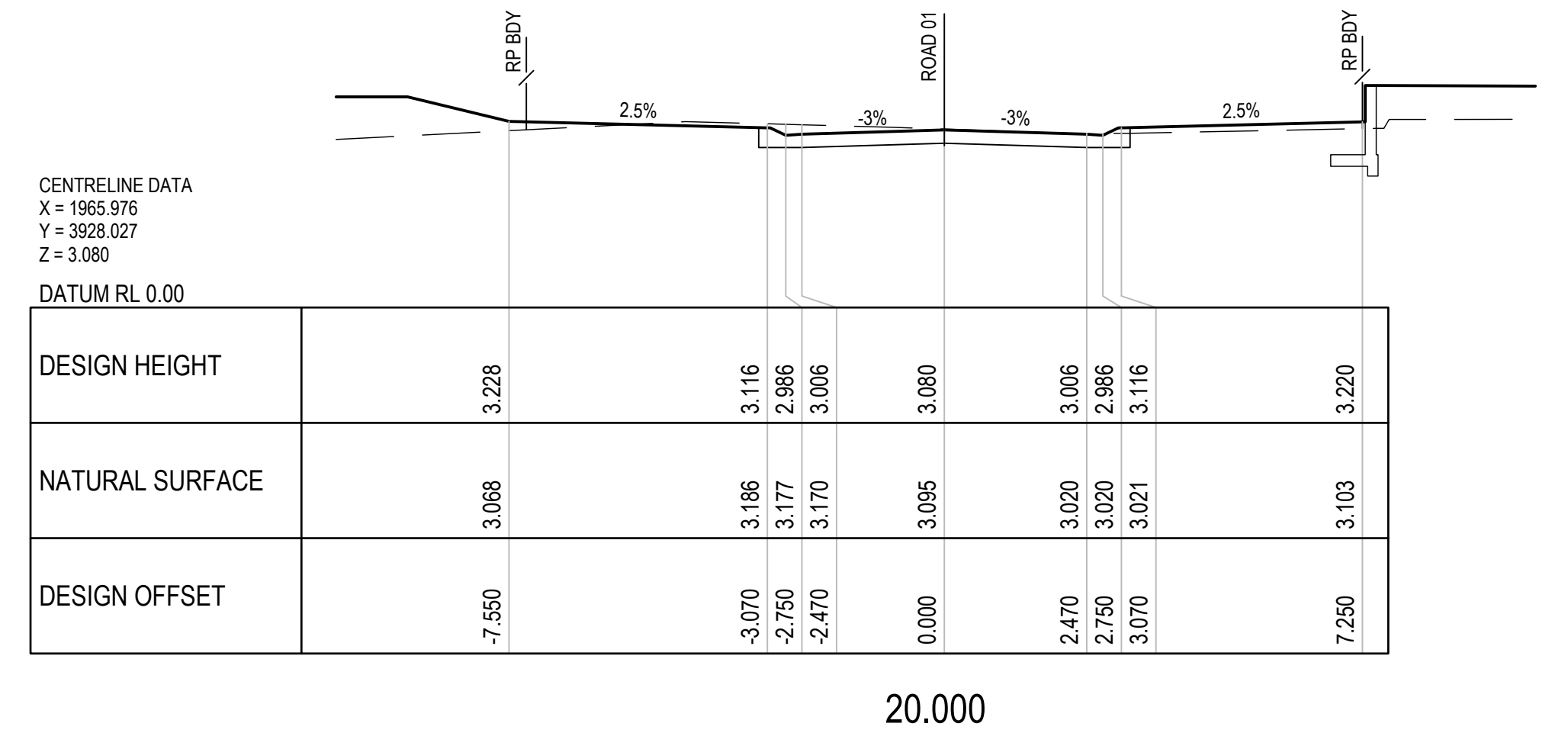
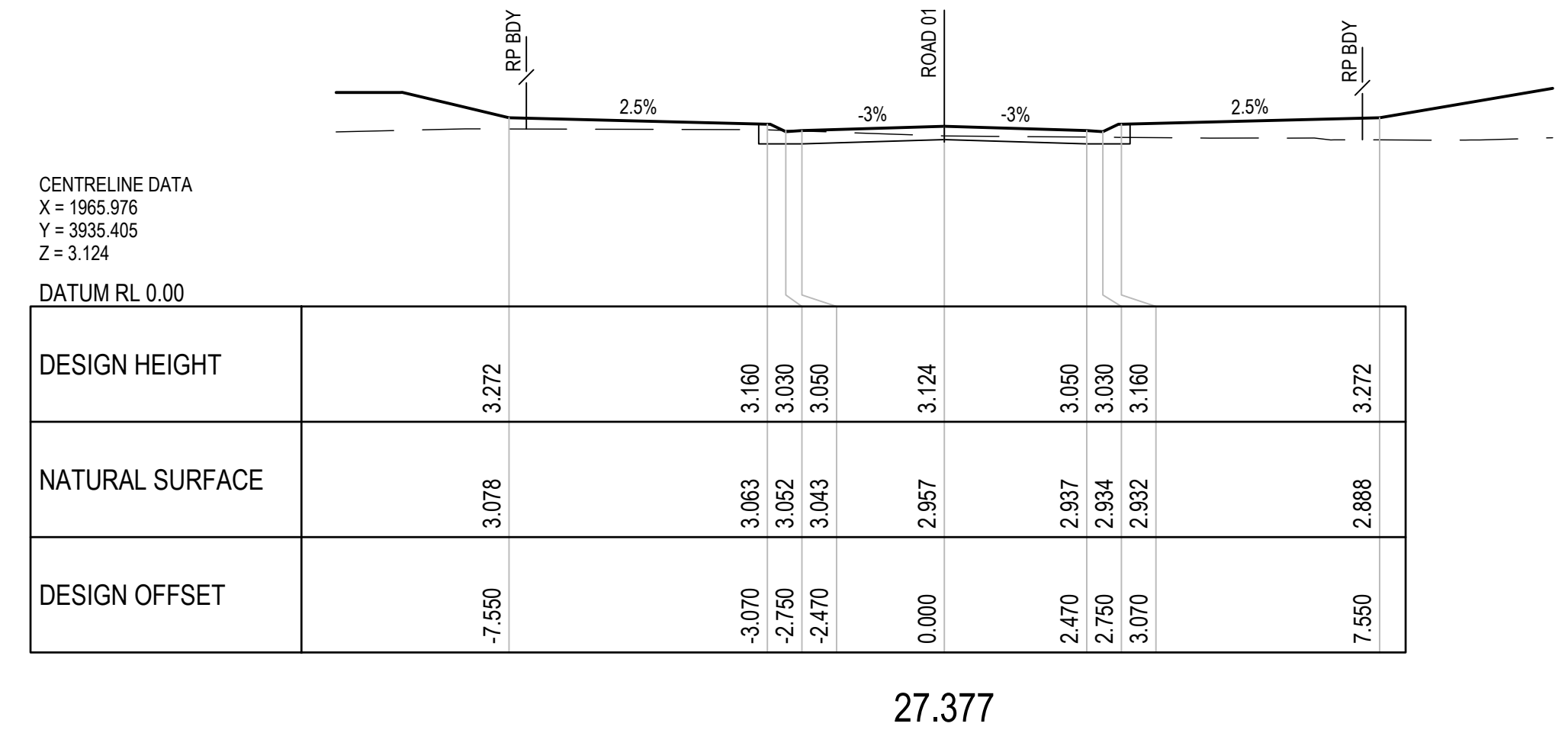
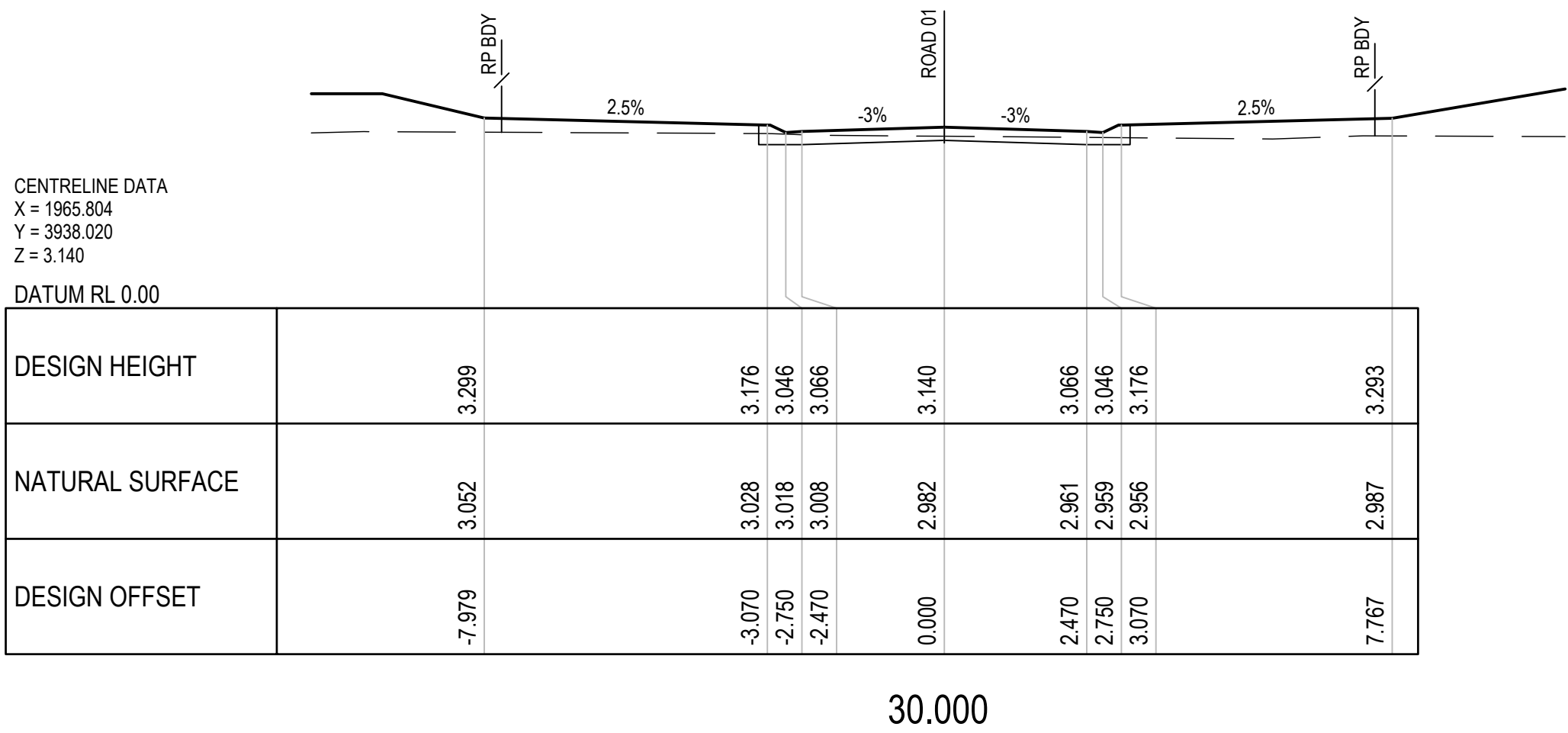
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Drafting Check	G. APPLIN	Design Check	G. APPLIN
Approved (Project Director)	P. FLANAGAN		
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Drafting G. APPLIN

Design Check G. APPLIN

Approved (Project Director)

P. FLANAGAN

Date

03.03.20

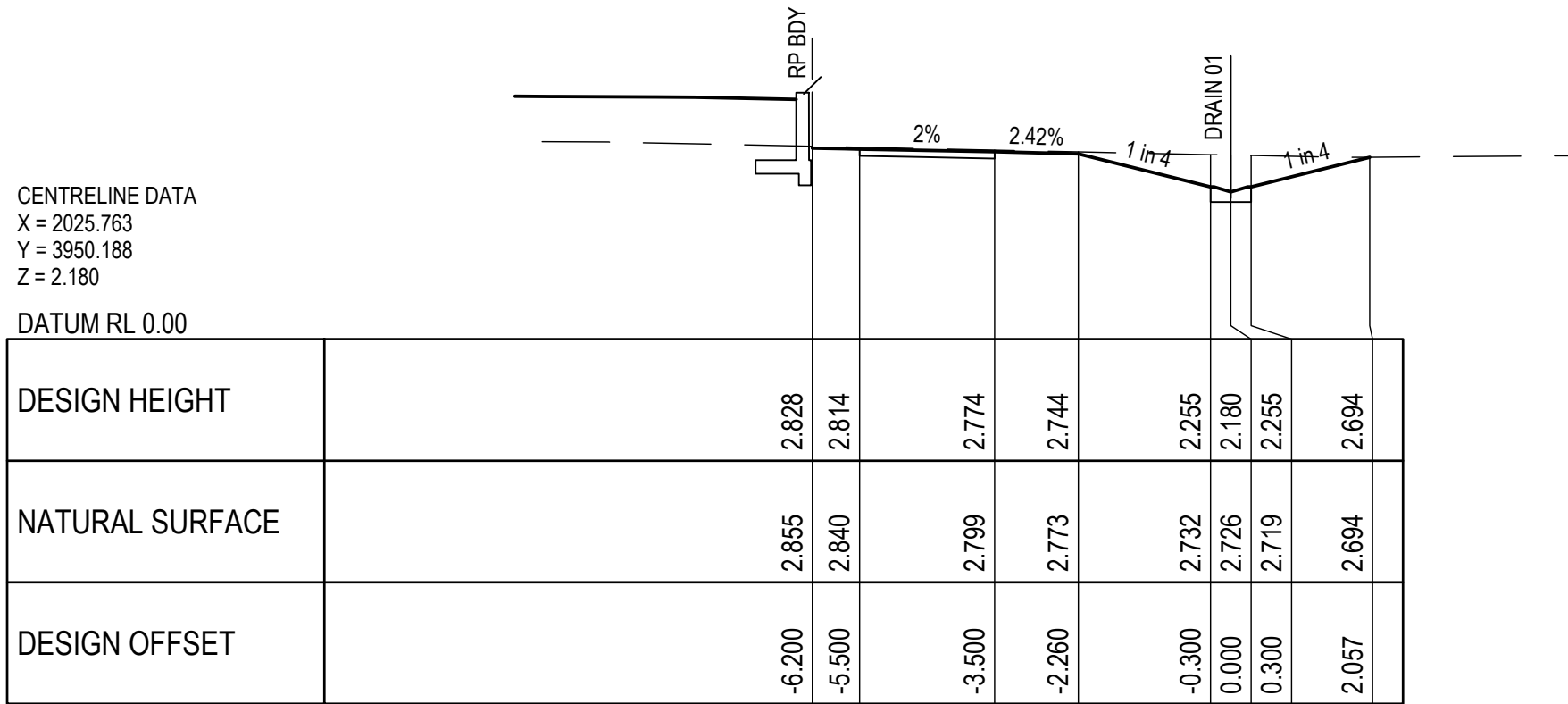
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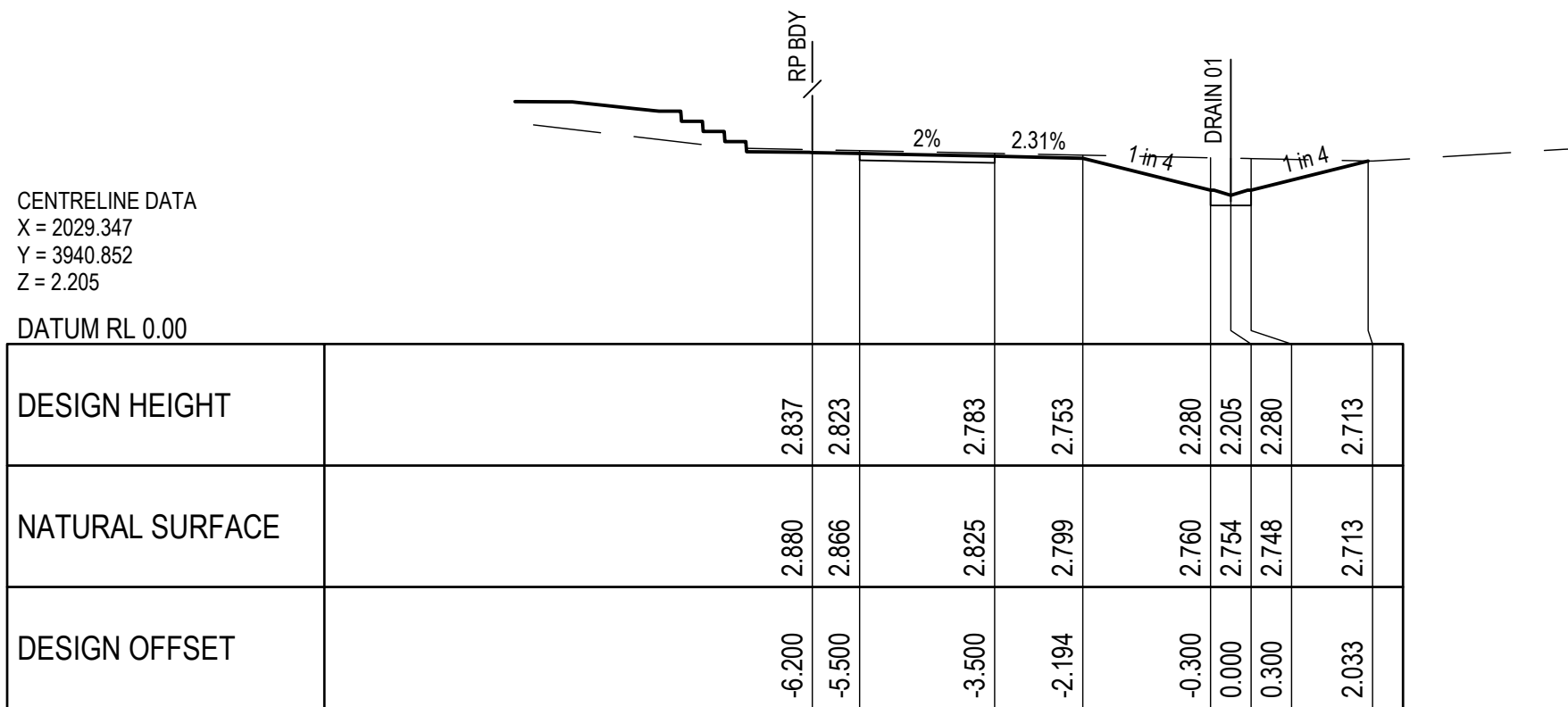
Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **ROAD 01 CROSS SECTIONS**

Original Size **A1** Drawing No: **42-12520641-C011**

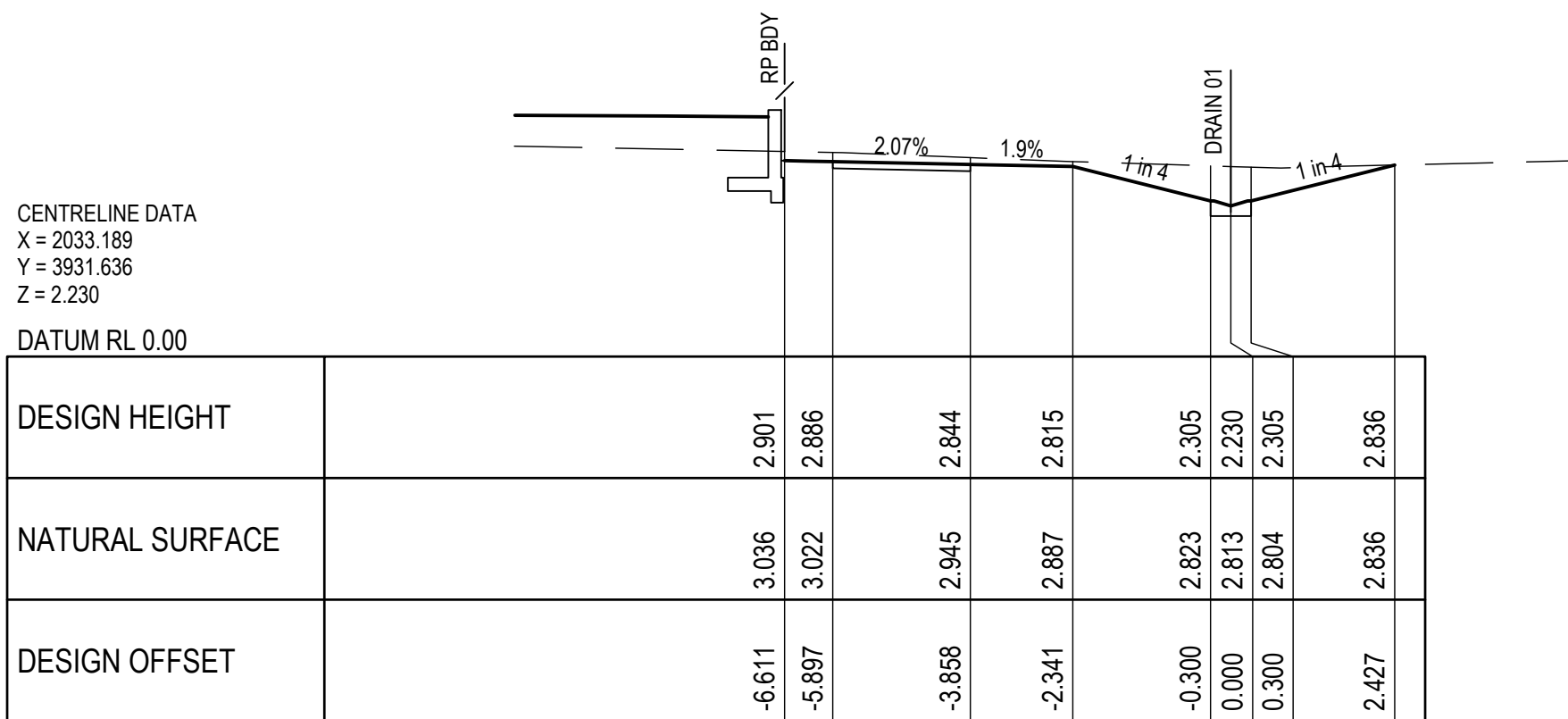
Rev: 0



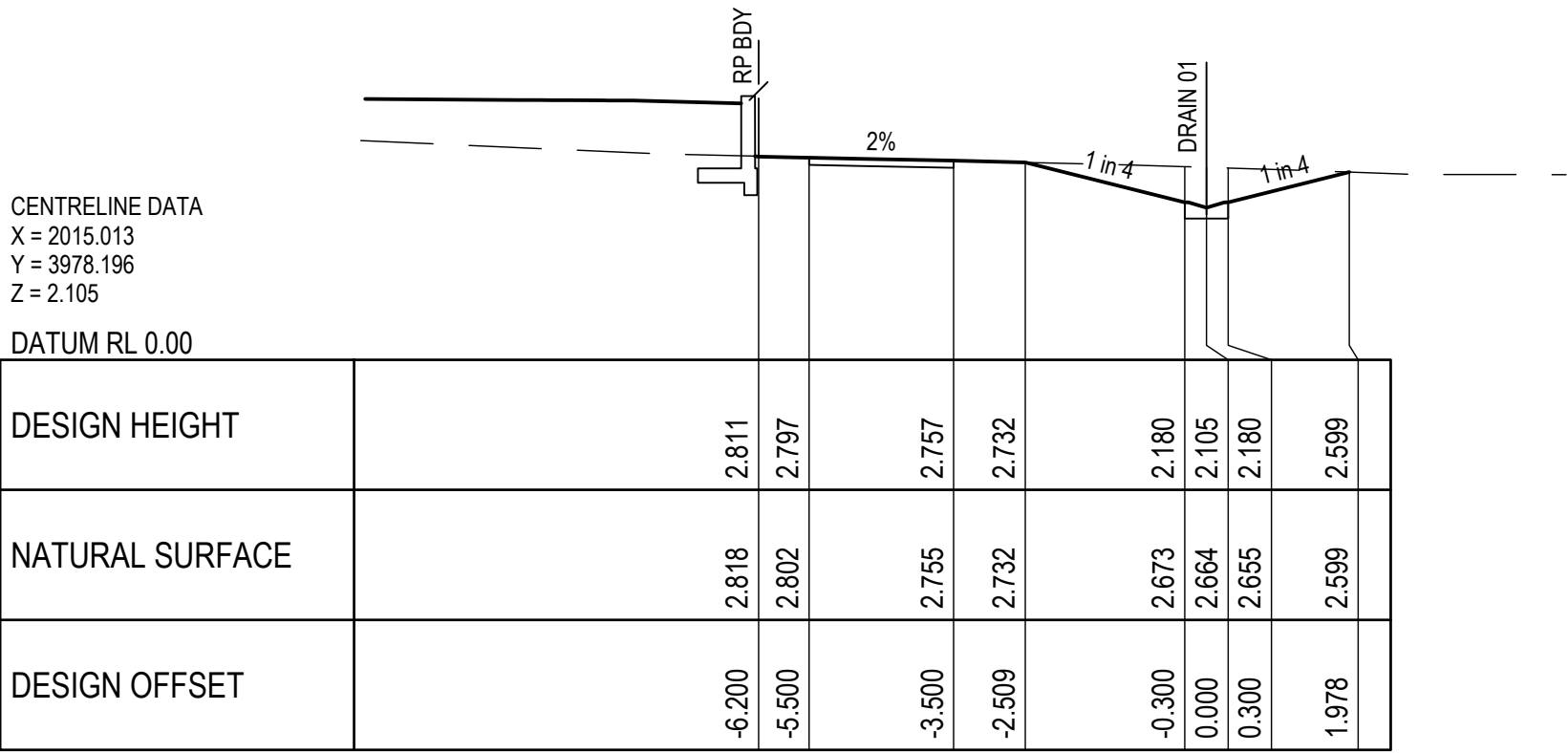
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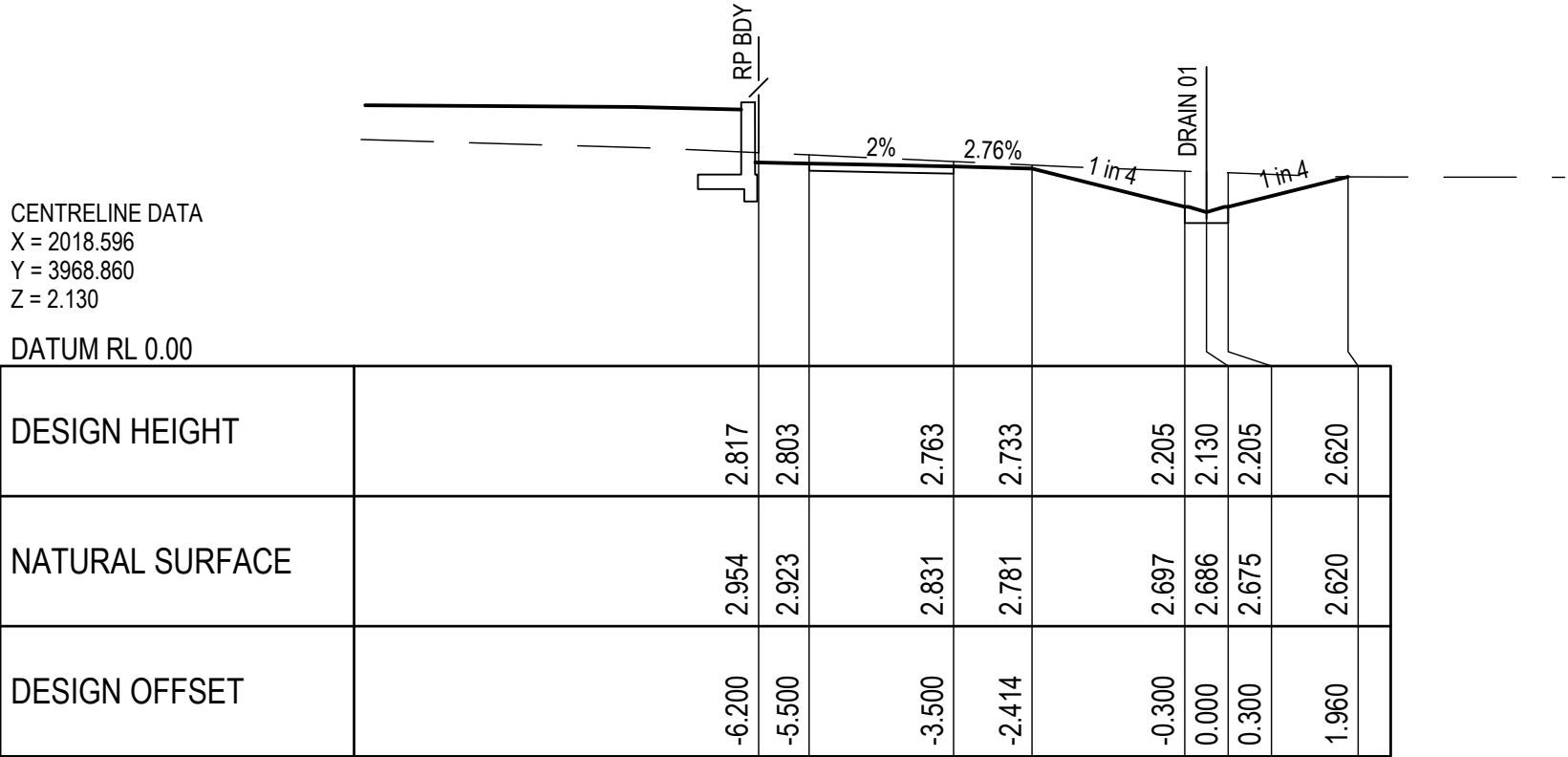
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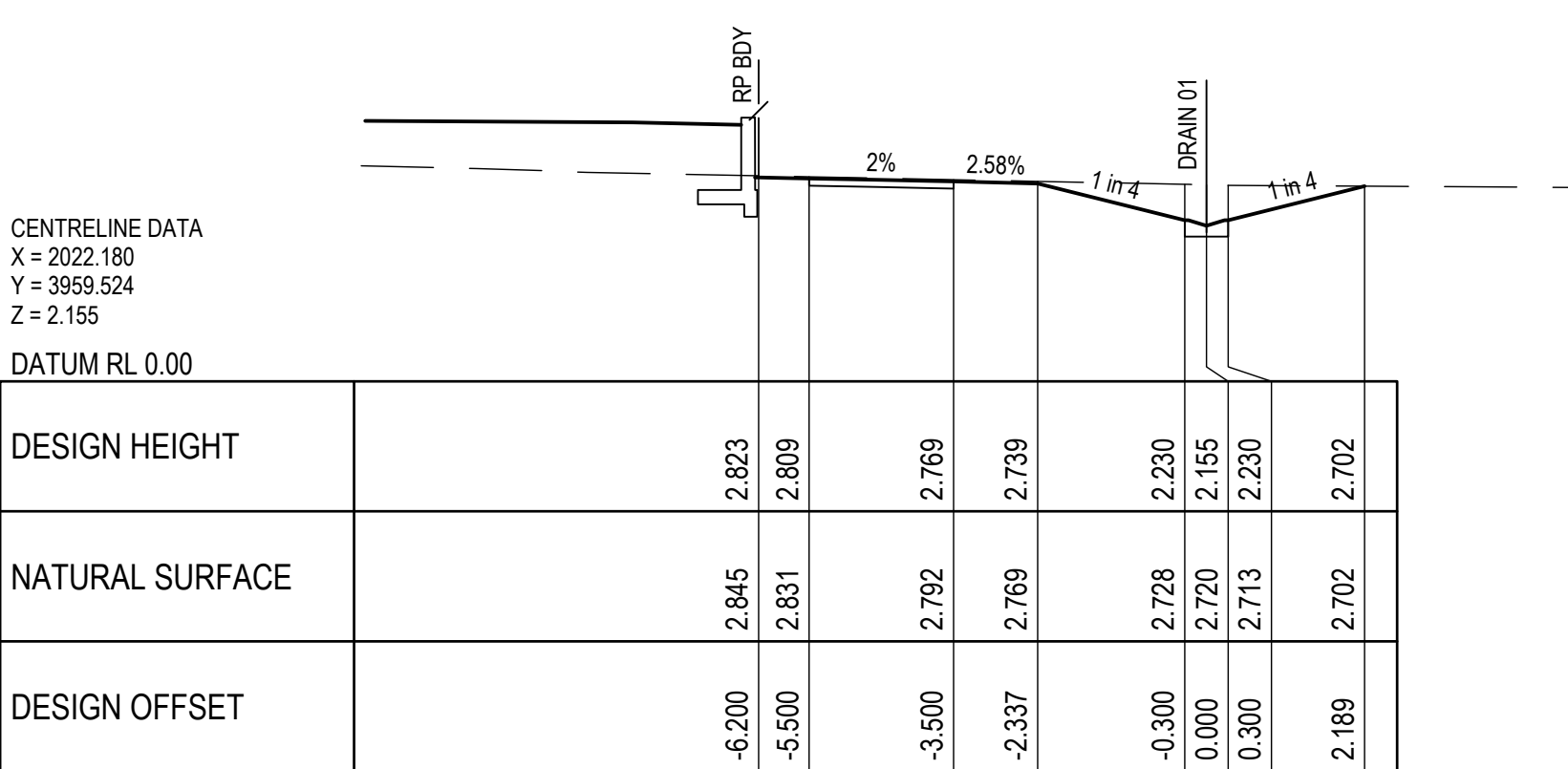
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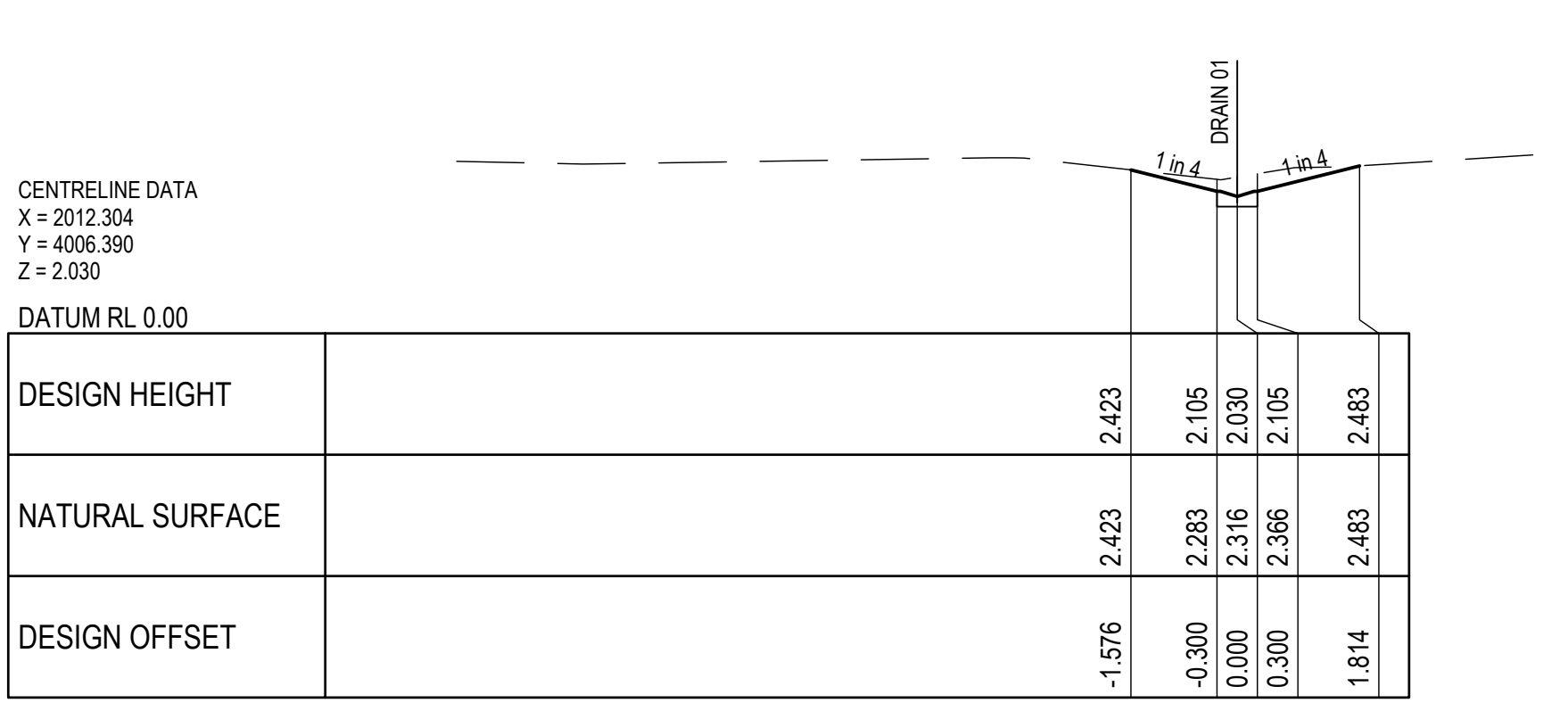
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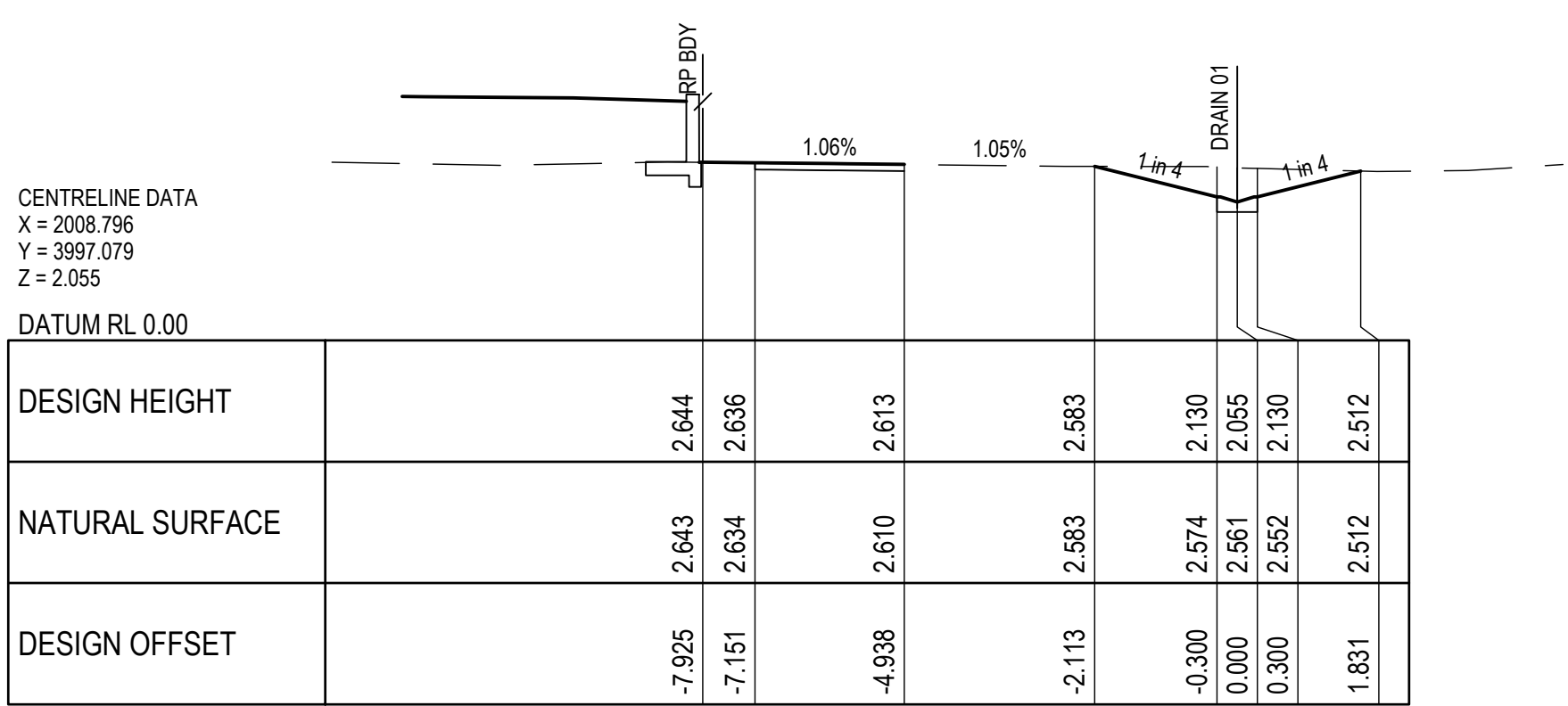
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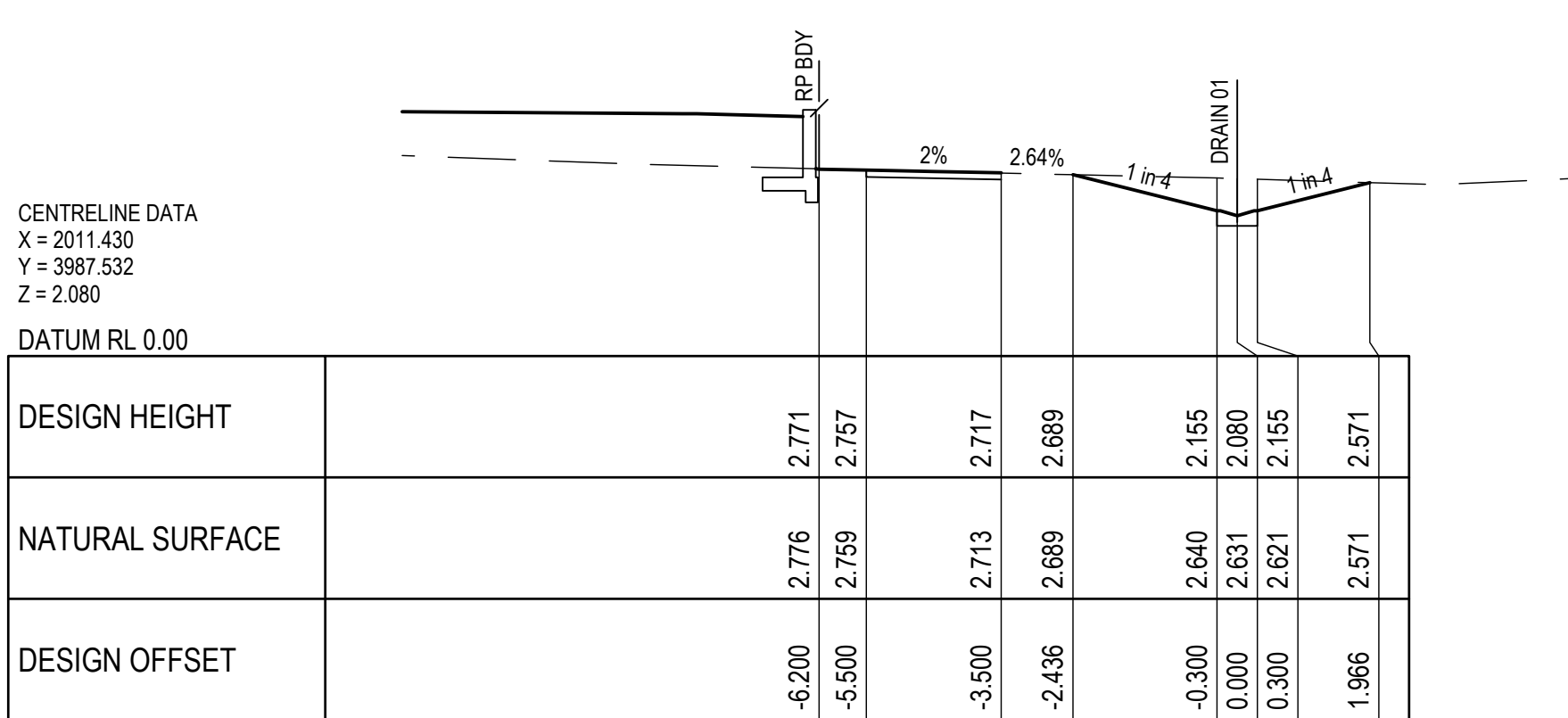
170.000



220.000



210.000



200.000

0	FOR APPROVAL	GB		PF	03.03.20
No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director



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Drawn G. BROWNING

Designer G. BROWNING

Drafting G. APPLIN

Design Check G. APPLIN

Approved (Project Director) P. FLANAGAN

Date 03.03.20

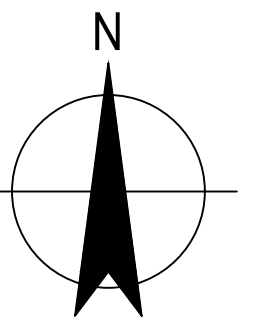
Scale 1:100

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Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **DRAIN 01 CROSS SECTIONS**

Original Size **A1** Drawing No: **42-12520641-C012**

Rev: 0



CONCRETE FOOTPATH TO EXTEND TO ANDREWS CLOSE, REFER DRG 12520641-C003 FOR CONTINUATION. EXISTING SERVICE PITS TO BE ALTERED TO FINISH FLUSH.

NEW BARRIER KERB AND CHANNEL

ABANDONED WATER CONNECTIONS TO BE REMOVED, REFER DRG 12520641-C025

2m WIDE CONCRETE PATHWAY

ELECTRICAL PILLAR TO BE REMOVED, REFER ELECTRICAL DRAWINGS

TRENCH GRATE WITH CAST-IN SITU CHANNEL, REFER DRG 12520641-C0015 FOR DETAILS

PROPOSED DN125 PE WATERMAIN, REFER DRG 12520641-C025

PROVIDE STREET NAME SIGN, REFER FNRQRC STD DRG S1040

2m WIDE CONCRETE PATHWAY

SUBSURFACE DRAINAGE TO OUTLET TO EXISTING GRATED INLET PIT. RAISE TOP OF PIT TO RL 2.71.

BLOCKWORK RETAINING WALL, REFER DRG 12520641-C020 FOR DETAILS

ABANDONED WATER CONNECTIONS TO BE REMOVED, REFER DRG 12520641-C025

2.0m WIDE GRAVEL PATHWAY, REFER DRG 12520641-C006 FOR DETAILS

SOLANDER BOULEVARD ACCESS, REFER DRG 12520641-C018 FOR DETAILS

ABANDONED FIRE HYDRANT TO BE REMOVED, REFER DRG 12520641-C025

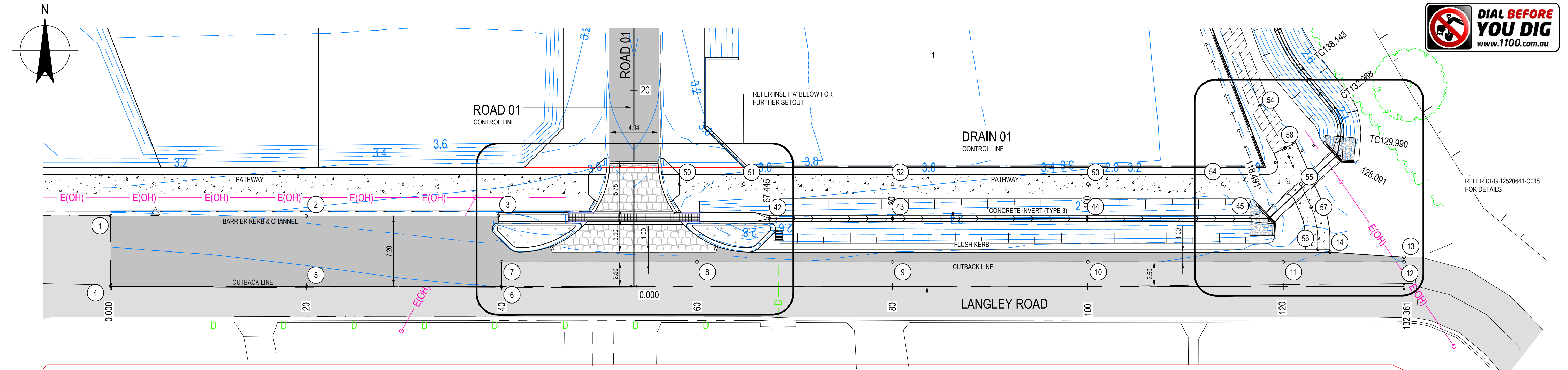
LANDSCAPED ISLAND, REFER FNRQRC SRD DRG S4110. PROVIDE 450 WIDE MAINTENANCE KERB TO ROADSIDE EDGE, SEMI-MOUNTABLE KERB (TYPE 2) ELSEWHERE.

INTERSECTION TREATMENT (PORPHYRY COBBLE STONE ON CONCRETE BASE), REFER DRG 12520641-C015 FOR DETAILS

LANDSCAPED ISLAND, REFER FNRQRC SRD DRG S4110. PROVIDE 450 WIDE MAINTENANCE KERB TO ROADSIDE EDGE, SEMI-MOUNTABLE KERB (TYPE 2) ELSEWHERE.

ABANDONED DN100 WATER MAIN TO BE REMOVED, REFER DRG 12520641-C025

PLAN
SCALE 1:200

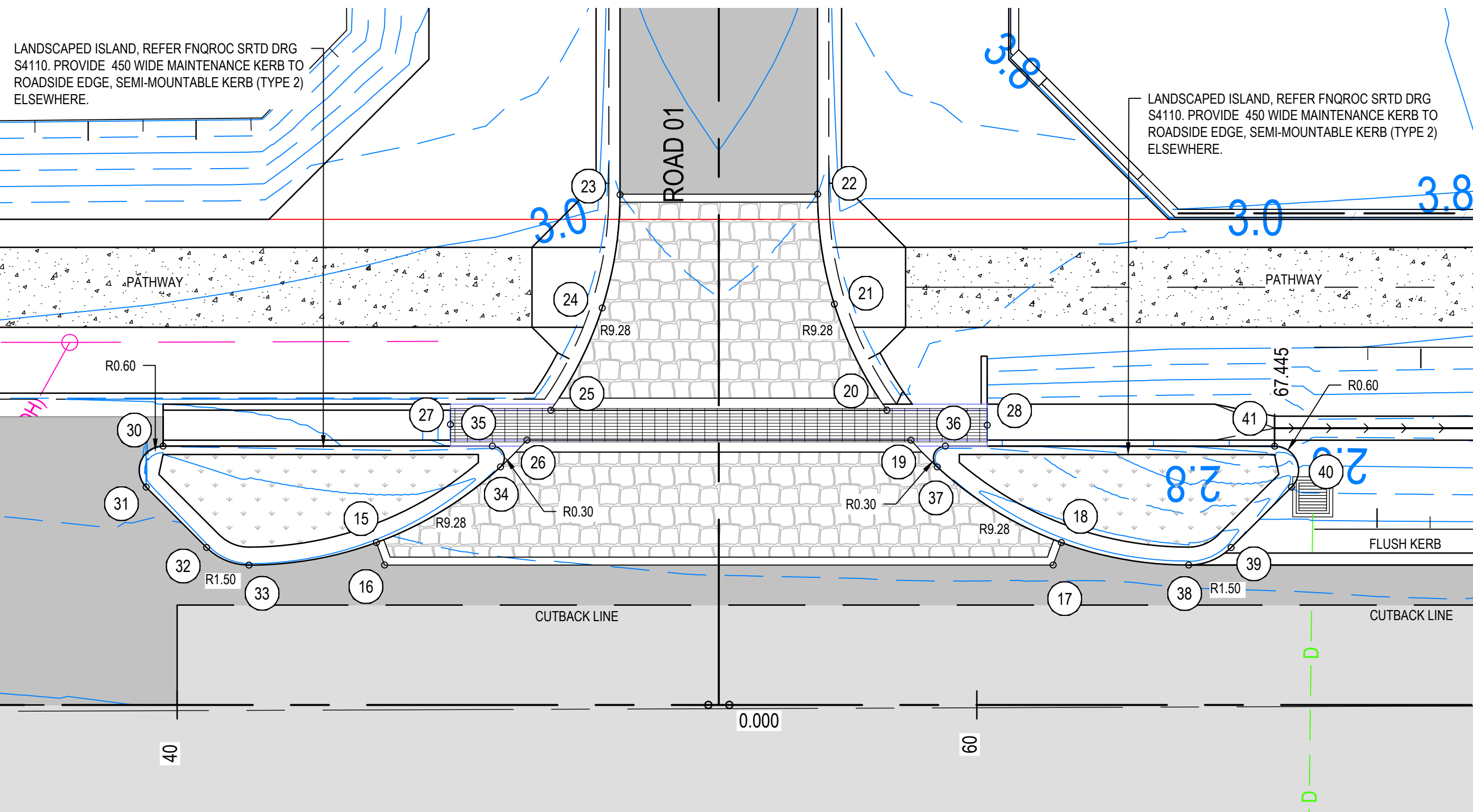


LEGEND

	EXISTING PAVEMENT		NEW GRAVEL PATHWAY
	NEW PAVEMENT		LANDSCAPED ISLAND
	INTERSECTION TREATMENT (PORPHYRY COBBLE STONE ON CONCRETE BASE)		SETOUT POINT
	NEW CONCRETE PATHWAY		EXISTING OH ELECTRICITY
			FINISHED SURFACE CONTOUR (0.05m INTERVAL)

NOTES

- REFER TO DRG 12520641-C002 FOR STANDARD NOTES.
- REFER TO DRG 12520641-C005 FOR CONTROL LINE SETOUT.



SETOUT POINTS				
POINT	EASTING	NORTHING		COMMENT
1	1912.429	3915.229	2.933	LIP OF KERB & CHANNEL
2	1932.428	3915.229	2.883	LIP OF KERB & CHANNEL
3	1952.076	3915.229	2.834	LIP OF KERB & CHANNEL
4	1912.429	3908.026	3.085	PAVEMENT CUTBACK
5	1932.429	3908.027	3.049	PAVEMENT CUTBACK
6	1952.429	3908.027	2.998	PAVEMENT CUTBACK
7	1952.429	3910.527	2.959	PAVEMENT CUTBACK
8	1972.429	3910.528	2.913	PAVEMENT CUTBACK
9	1992.429	3910.528	2.922	PAVEMENT CUTBACK
10	2012.429	3910.529	2.977	PAVEMENT CUTBACK
11	2032.429	3910.529	3.086	PAVEMENT CUTBACK
12	2044.790	3910.529	3.199	PAVEMENT CUTBACK
13	2044.790	3911.004	3.213	EDGE OF PAVEMENT
14	2037.204	3911.529	3.108	EDGE OF PAVEMENT
15	1957.411	3912.091	2.907	EDGE OF CONCRETE
16	1957.617	3911.527	2.919	EDGE OF CONCRETE
17	1974.335	3911.527	2.893	EDGE OF CONCRETE
18	1974.540	3912.089	2.882	EDGE OF CONCRETE
19	1970.782	3914.652	2.820	EDGE OF CONCRETE
20	1970.181	3915.404	2.820	LIP OF KERB
21	1968.864	3918.057	2.848	LIP OF KERB
22	1968.445	3920.808	2.900	LIP OF KERB
23	1963.506	3920.795	2.900	LIP OF KERB
24	1963.059	3917.962	2.846	LIP OF KERB
25	1961.773	3915.404	2.820	LIP OF KERB
26	1961.175	3914.654	2.820	EDGE OF CONCRETE
27	1959.264	3915.046	2.520	TRENCH GRATE INVERT

SETOUT POINTS				
POINT	EASTING	NORTHING		COMMENT
28	1972.686	3915.029	2.453	TRENCH GRATE INVERT
30	1952.076	3914.503	2.900	FACE OF KERB
31	1951.652	3913.480	2.879	FACE OF KERB
32	1953.165	3911.966	2.914	FACE OF KERB
33	1954.226	3911.527	2.933	FACE OF KERB
34	1960.515	3913.983	2.836	FACE OF KERB
35	1960.312	3914.504	2.820	FACE OF KERB
36	1971.640	3914.504	2.820	FACE OF KERB
37	1971.437	3913.983	2.831	FACE OF KERB
38	1977.726	3911.528	2.889	FACE OF KERB
39	1978.786	3911.967	2.890	FACE OF KERB
40	1980.299	3913.479	2.695	FACE OF KERB
41	1979.874	3914.503	2.440	FACE OF KERB
42	1979.874	3914.953	2.435	CONCRETE INVERT
43	1992.428	3914.953	2.404	CONCRETE INVERT
44	2012.428	3914.953	2.354	CONCRETE INVERT
45	2029.028	3914.953	2.312	CONCRETE INVERT
50	1970.647	3918.479	2.946	PATH CENTRELINE
51	1977.226	3918.479	2.849	PATH CENTRELINE
52	1992.429	3918.479	2.811	PATH CENTRELINE
53	2012.429	3918.479	2.761	PATH CENTRELINE
54	2026.230	3918.478	2.727	PATH CENTRELINE
55	2034.230	3918.479	2.933	PATH CENTRELINE
56	2035.954	3911.829	3.065	PATH CENTRELINE
57	2035.274	3916.109	2.953	PATH CENTRELINE
58	2032.602	3922.171	2.910	PATH CENTRELINE
59	2030.034	3926.504	2.881	PATH CENTRELINE



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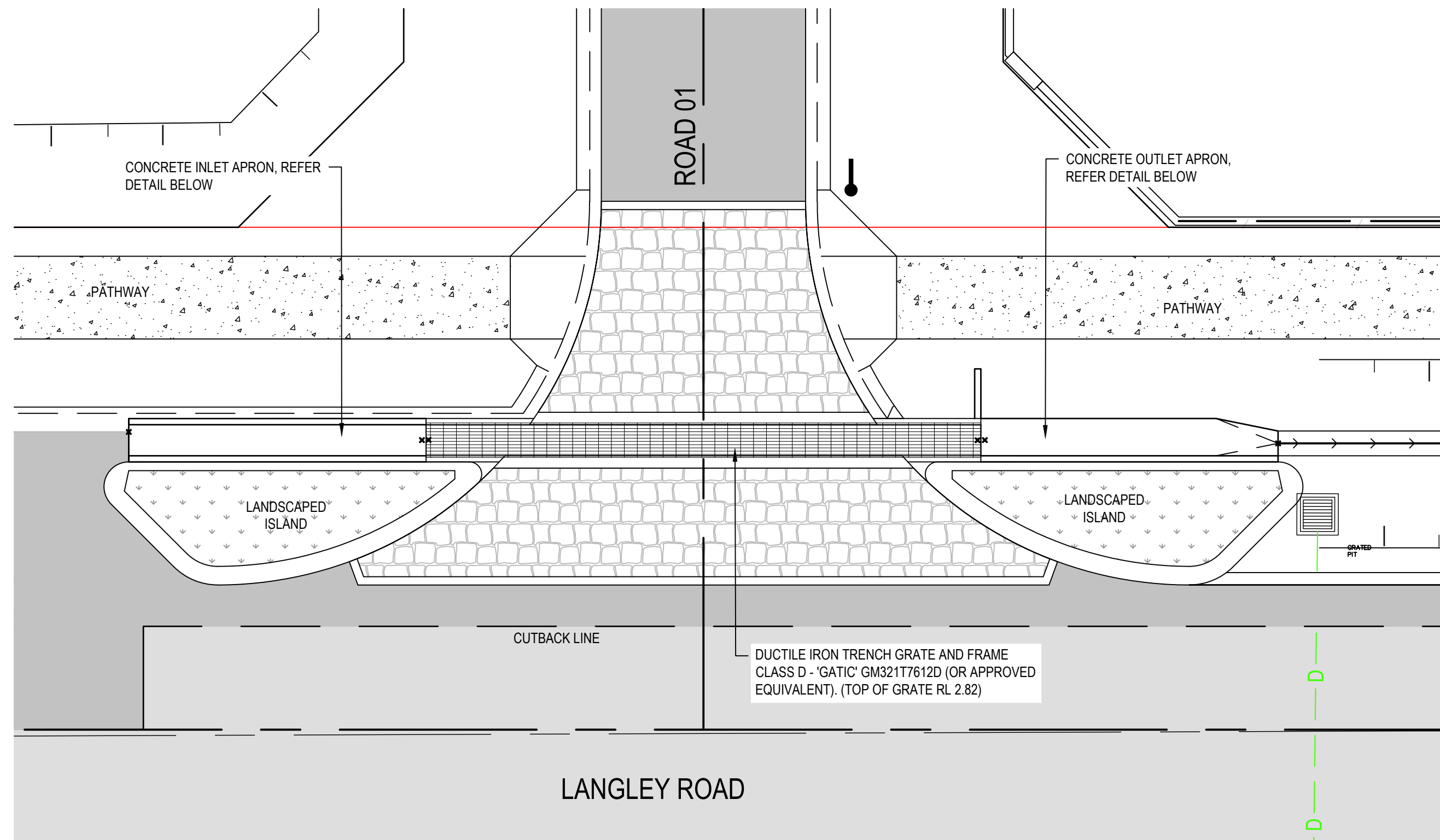
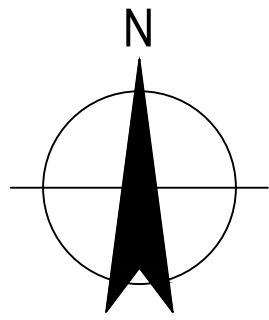
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Drafting Check	G. APPLIN	Design Check	G. APPLIN
Approved (Project Director)	P. FLANAGAN		
Date	03.03.20		
Scale	AS SHOWN		

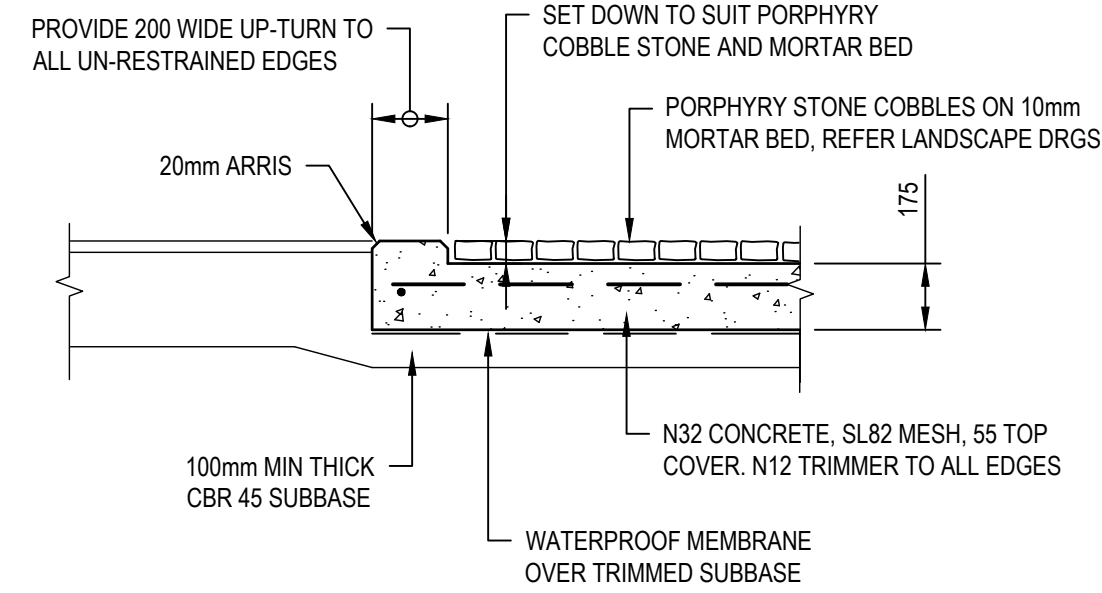
Client	KS5 PTY LTD
Project	LANGLEY ROAD SUBDIVISION
Title	LANGLEY ROAD SETOUT PLAN
Original Size	A1

Drawing No: **42-12520641-C014**

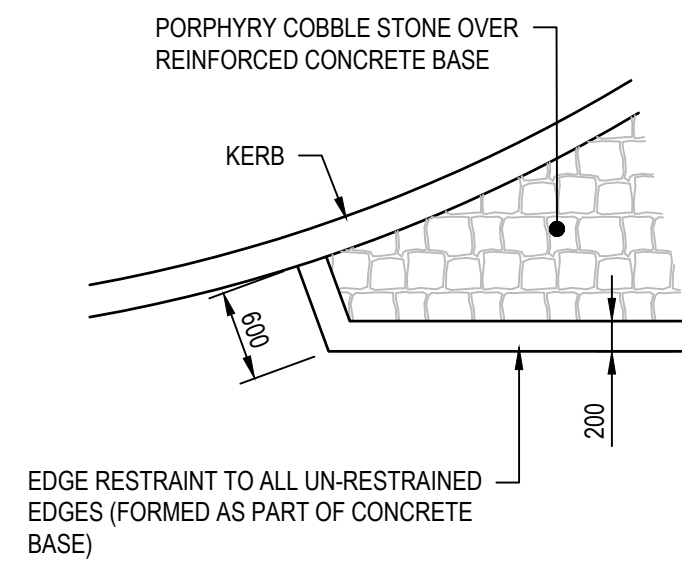
Rev: 0



PLAN
SCALE 1:100



INTERSECTION TREATMENT
SCALE 1:20



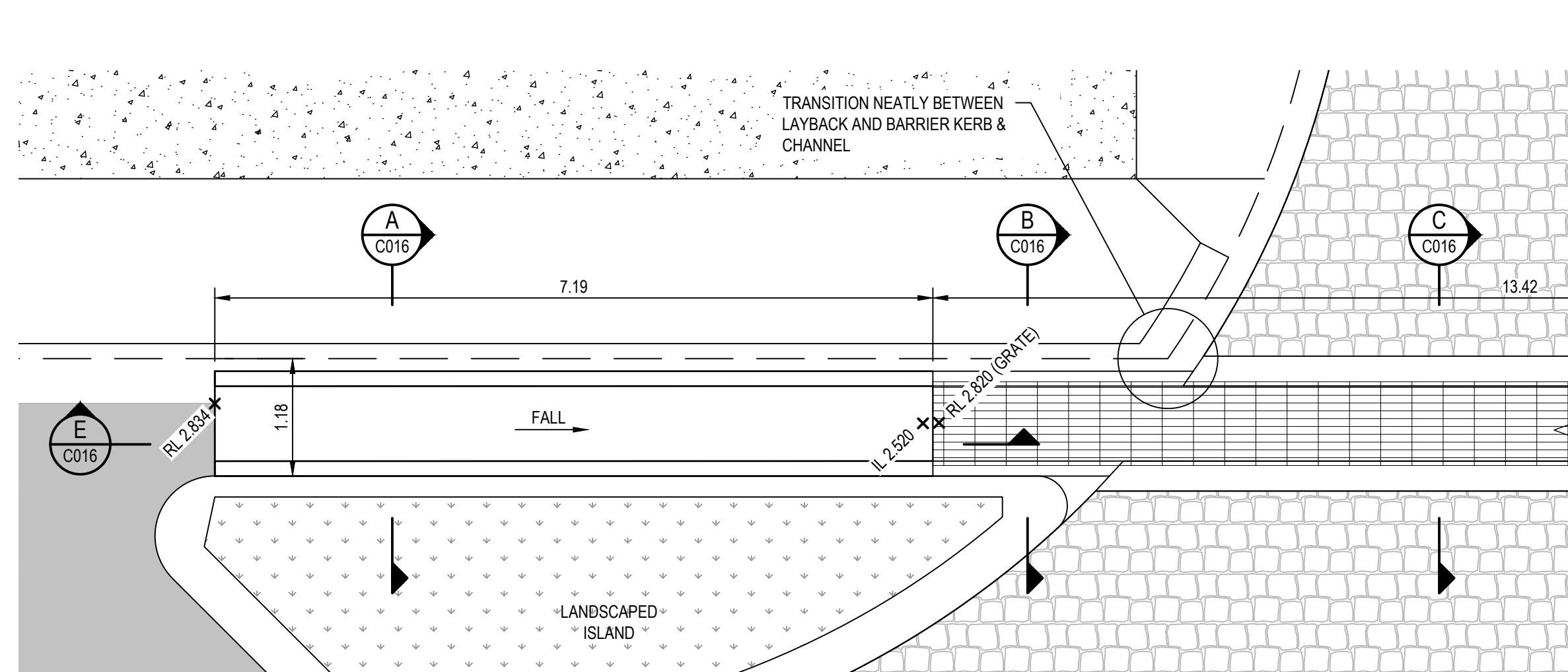
INTERSECTION THRESHOLD DETAIL
NOT TO SCALE

LEGEND

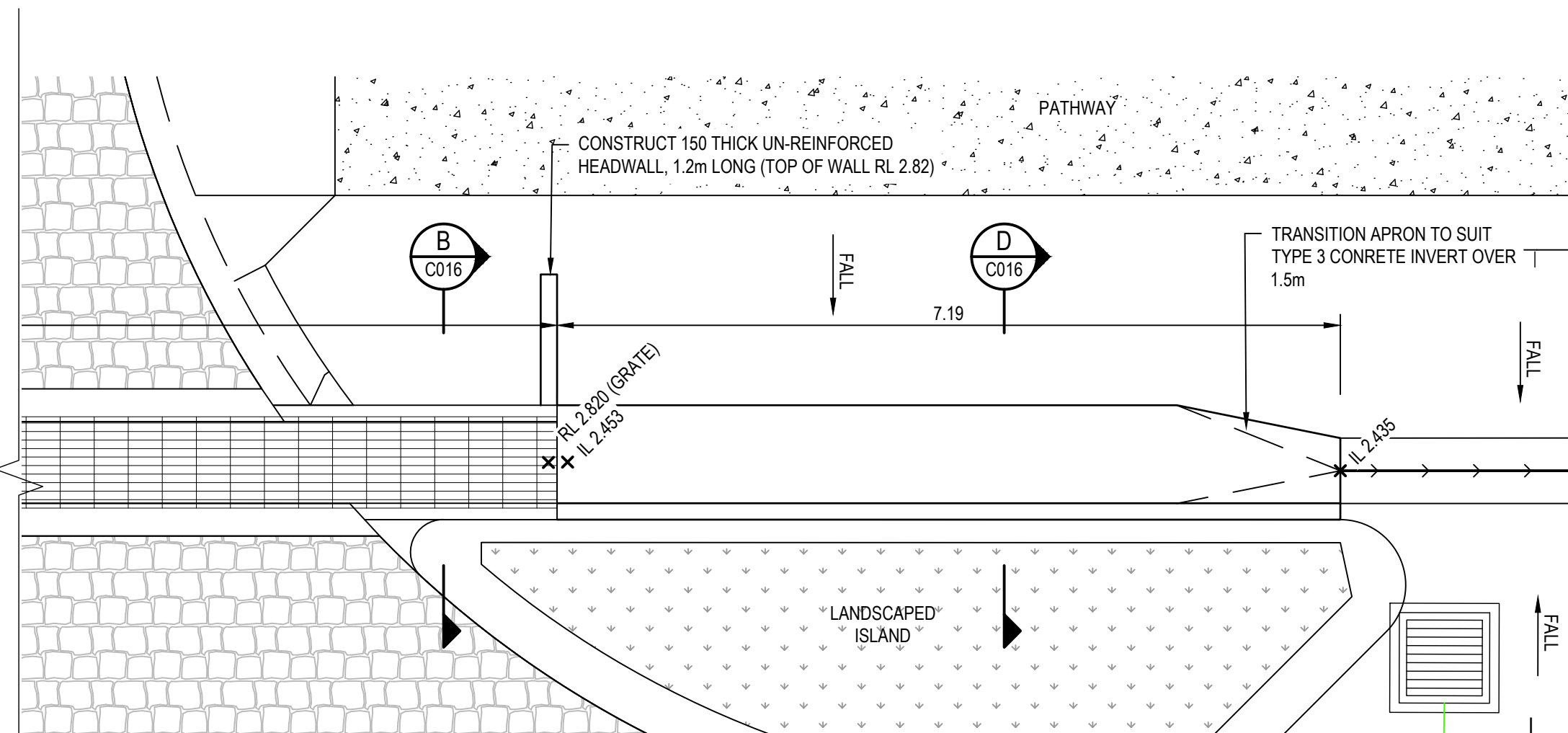
- EXISTING PAVEMENT
- NEW PAVEMENT
- CONCRETE PATHWAY
- LANDSCAPED ISLAND
- INTERSECTION TREATMENT (PORPHYRY COBBLE STONE ON CONCRETE BASE)

NOTES


- REFER TO DRG 12520641-C002 FOR STANDARD NOTES.
- REFER TO DRG 12520641-C005 FOR SETOUT.

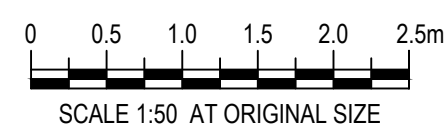
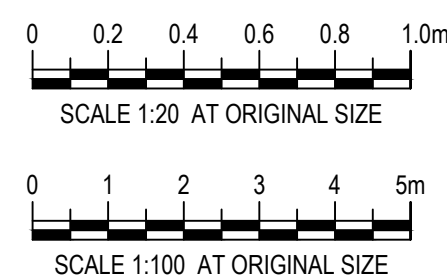


CONCRETE INLET APRON
SCALE 1:50



CONCRETE OUTLET APRON
SCALE 1:50

0	FOR APPROVAL		GB		PF 03.03.20
No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director Date



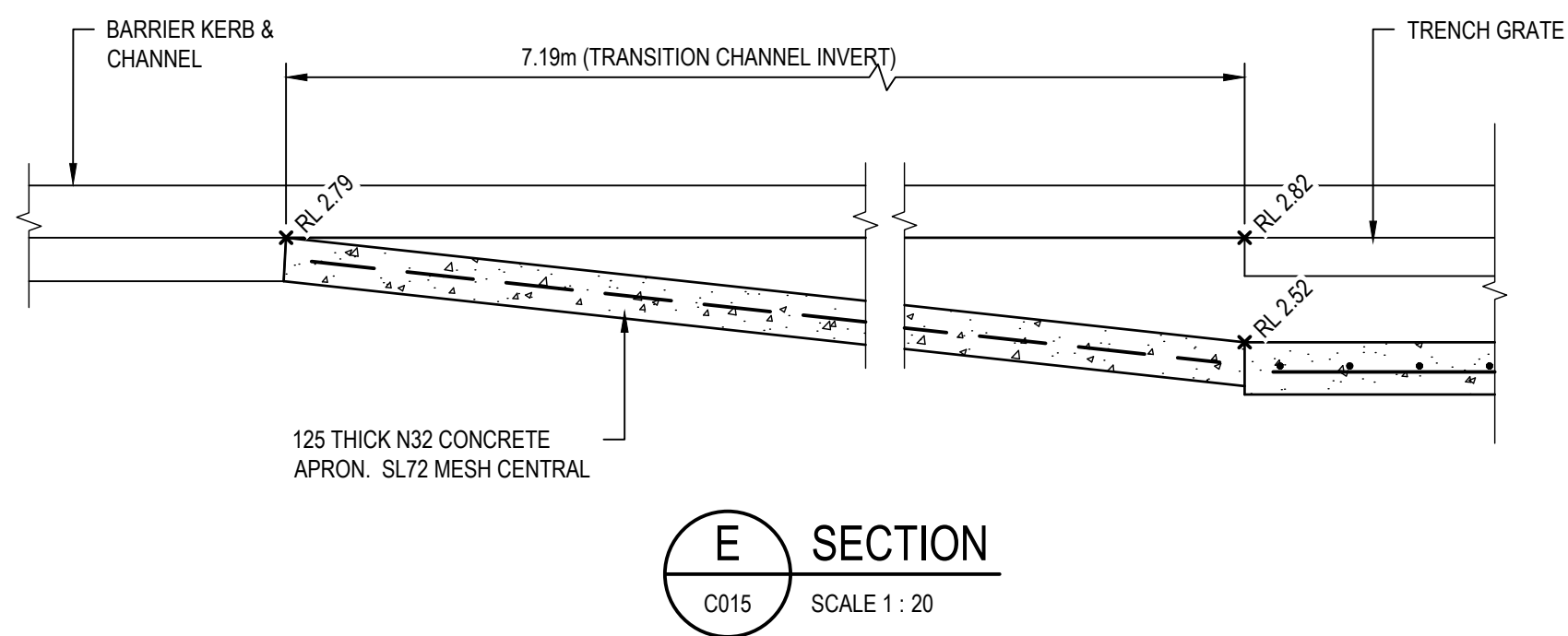
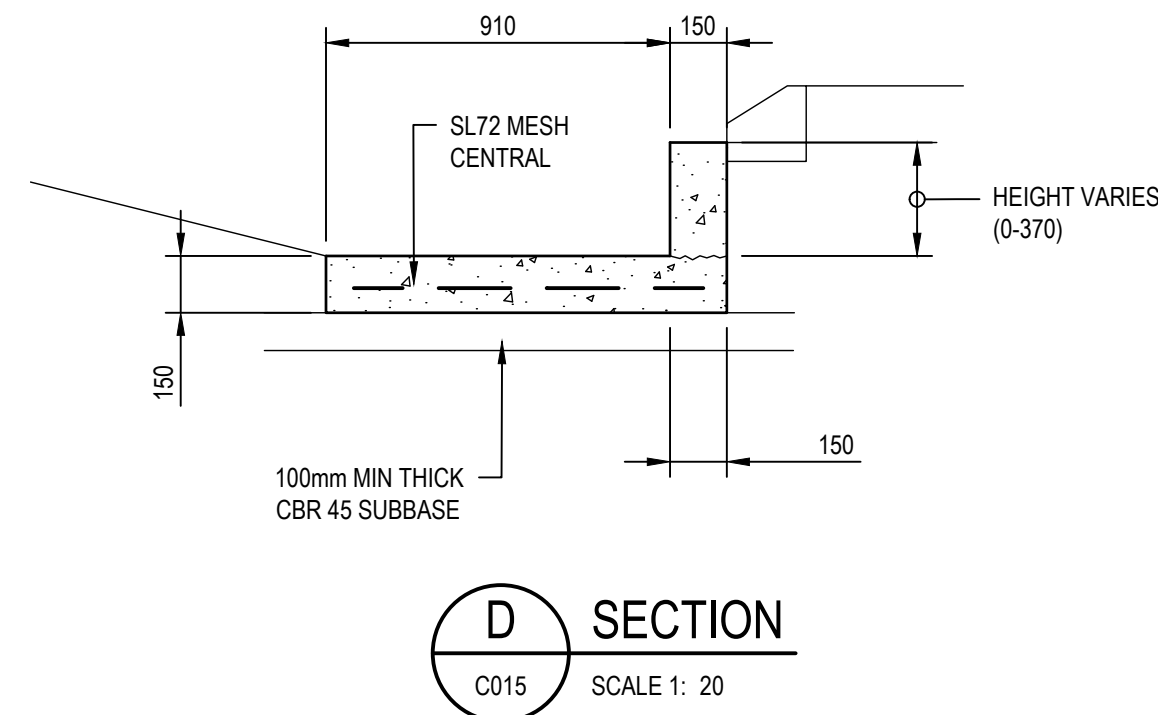
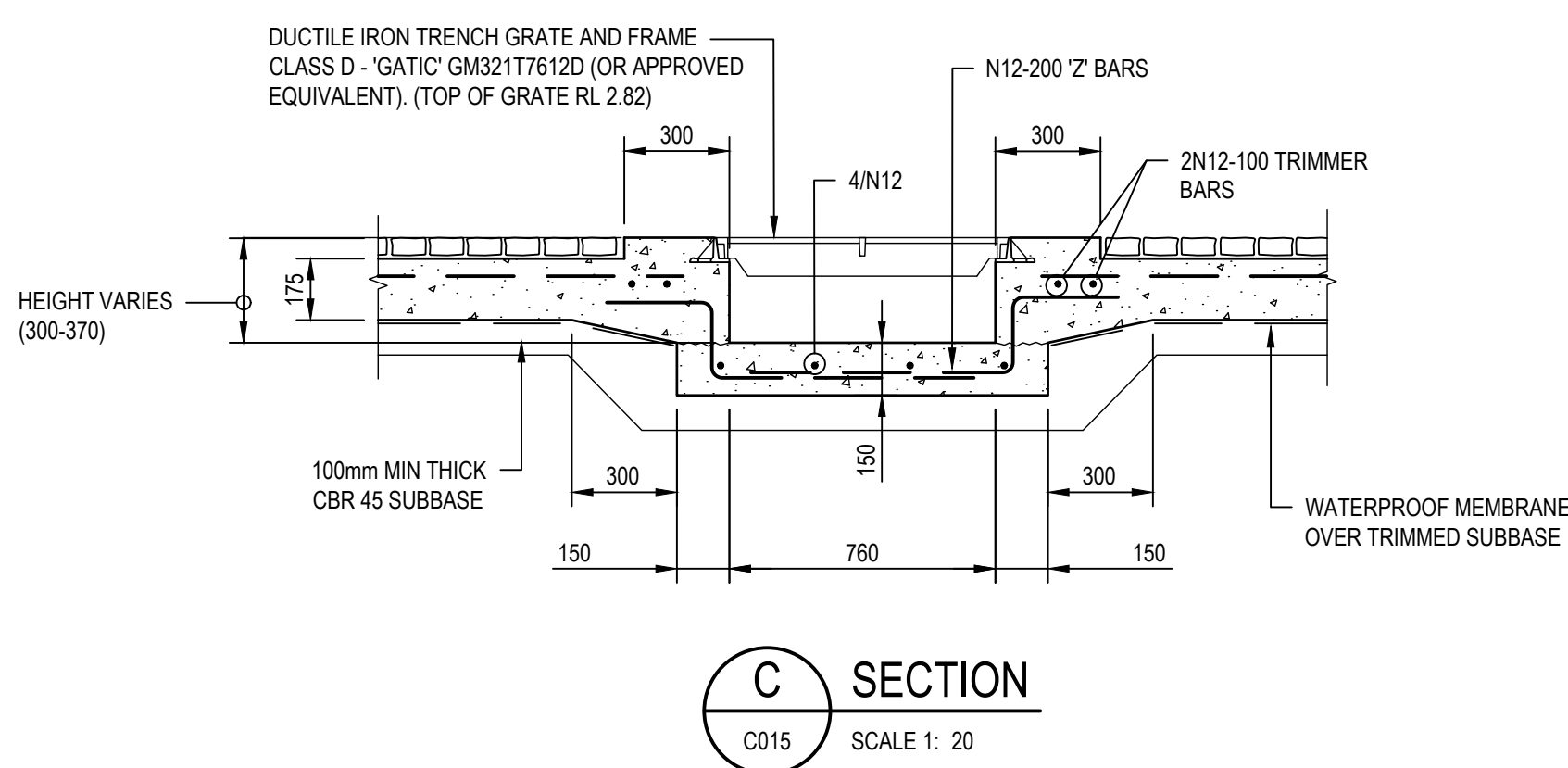
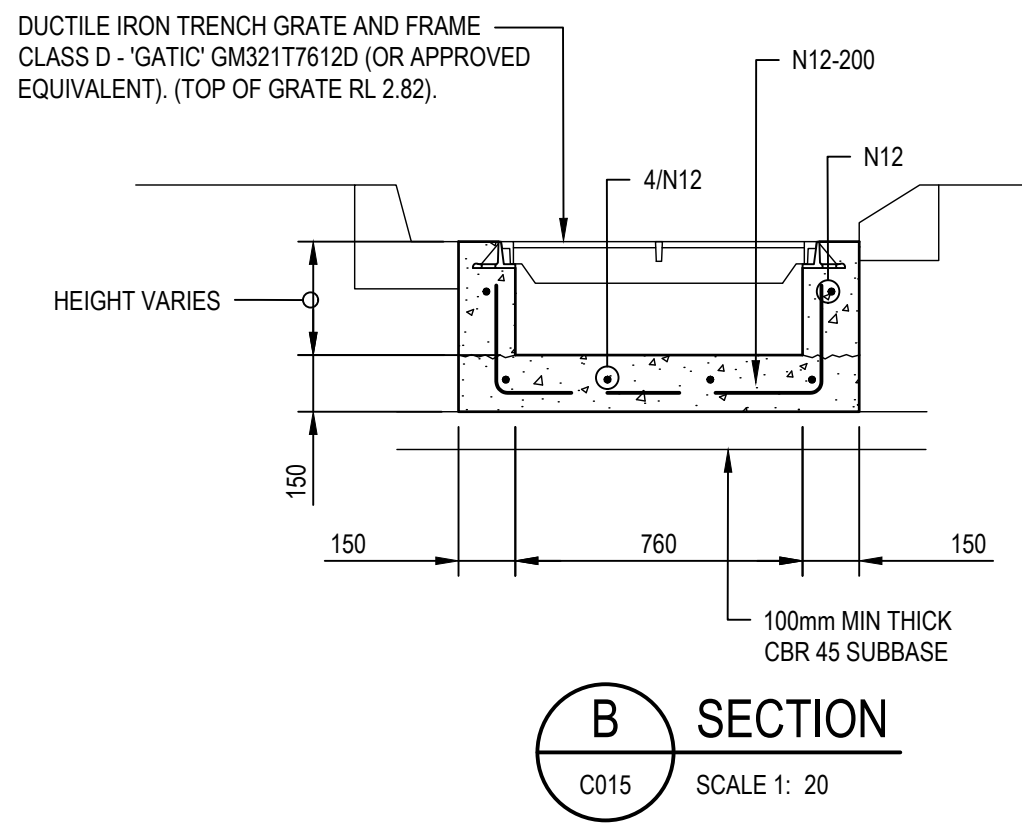
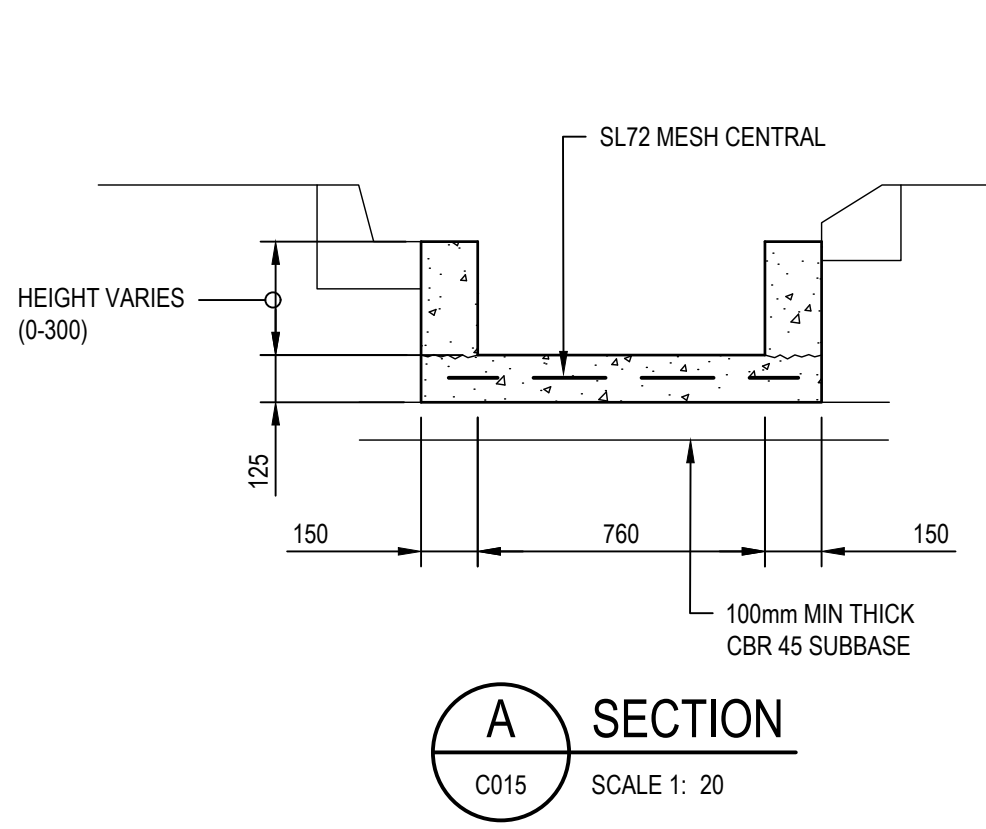
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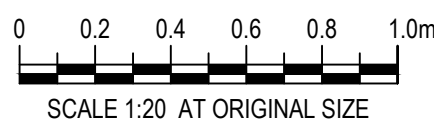
Drawn	G. BROWNING	Designer	G. BROWNING
Drafting Check	G. APPLIN	Design Check	G. APPLIN
Approved (Project Director)	P. FLANAGAN	Date	03.03.20
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client	KS5 PTY LTD
Project	LANGLEY ROAD SUBDIVISION
Title	LANGLEY ROAD / ROAD 01 INTERSECTION PLAN
Original Size	A1
Drawing No:	42-12520641-C015
Rev:	0



NOTES

- REFER TO DRG 125XXXXX-C??? FOR STANDARD NOTES.
- ALL CONCRETE TO BE N32 MIN (UNLESS NOTED OTHERWISE) IN ACCORDANCE WITH AS1379 AND AS3600



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Drawn G. BROWNING

Designer G. BROWNING

Drafting G. APPLIN

Design G. APPLIN

Approved (Project Director) P. FLANAGAN

Date 03.03.20

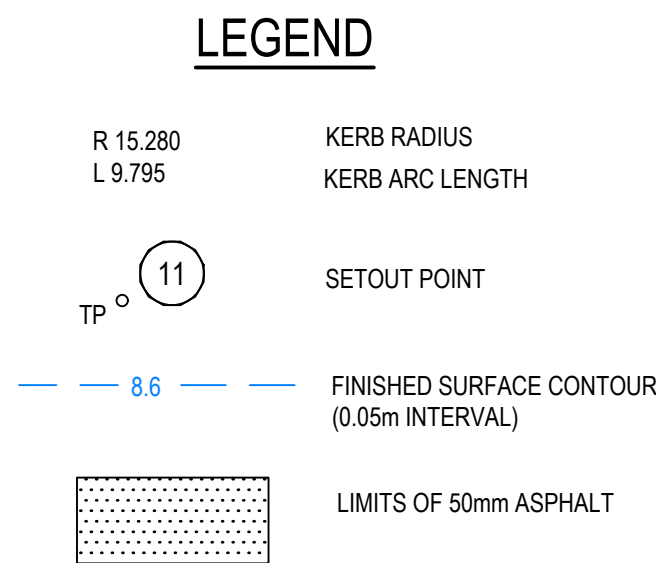
Scale AS SHOWN

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Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **TRENCH GRATE DETAILS**

Original Size **A1** Drawing No: **42-12520641-C016**

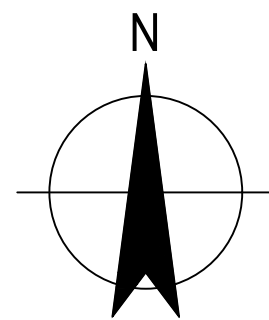
Rev: 0



SETOUT POINTS			
POINT	EASTING	NORTHING	
60	1934.062	3958.980	3.560
61	1954.033	3950.975	3.181
62	1949.092	3952.607	3.208
63	1943.890	3952.486	3.235
64	1939.031	3950.626	3.261
65	1933.803	3949.271	3.290
66	1928.327	3951.133	3.320
67	1924.951	3955.594	3.349
68	1924.594	3961.178	3.378
69	1925.627	3963.810	3.388
70	1927.374	3966.033	3.384
71	1932.370	3968.552	3.351
72	1937.926	3967.899	3.317
73	1942.203	3964.292	3.283
74	1945.485	3960.686	3.254
75	1949.736	3958.297	3.227

1. FOR STANDARD NOTES, REFER DRG 12520641-C002
2. SETOUT SHOWN IS TO LIP OF KERB AND CHANNEL.

[illegible]



2.0m WIDE GRAVEL PATHWAY, REFER DRG 12520641-C006 FOR TYPICAL DETAILS. REFER DRAWING 42-12520641-C003 FOR CONTINUATION

LOT 1

TRANSITION WITH OF GRAVEL PATHWAY OVER 5m

BLOCKWORK RETAINING WALL

'REPLAS' BOLLARDS (TYPICAL). REFER THIS DRAWING FOR DETAILS

FOR PATHWAY SETOUT, REFER DRG 12520641-C014

2.0m WIDE CONCRETE PATHWAY, REFER FNQROC STD DRG S1035 FOR TYPICAL DETAILS

SMOOTHLY TRANSITION PATHWAY BETWEEN LEVELS PROVIDED. (MAX GRADE 1:20)

CULVERT INLET STRUCTURE, REFER THIS DRAWING FOR DETAILS

FLUSH KERB

LANGLEY ROAD

SOLANDER BLVD
(UNFORMED ROAD)

REMOVABLE 'REPLAS' BOLLARD TO CENTRE OF PATHWAY. INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION

CULVERT OUTLET STRUCTURE, REFER THIS DRAWING FOR DETAILS

EXISTING ELECTRICAL PILLAR BOX TO BE REMOVED. REFER ELECTRICAL DRAWINGS

1200 X 300 RCBC, 9.6m LONG
U/S E 2030.919, N 3914.953, IL 2.307
D/S E 2037.980, N 3921.458, IL 2.259
REINFORCED CONCRETE BASE AS PER DTMR STD DRG 1318

LOCATION OF EXISTING DN150 MAIN TO BE CONFIRMED ON SITE PRIOR TO COMMENCING WORKS. CONTRACTOR TO INFORM THE SUPERINTENDENT IF A CLASH WITH PROPOSED WORKS IS IDENTIFIED.

2.5m WIDE CONCRETE PATHWAY, REFER FNQROC STD DRG S1035 FOR TYPICAL DETAILS

PROVIDE PATHWAY SIGN, REFER FNQROC STD DRG S1040

LEGEND

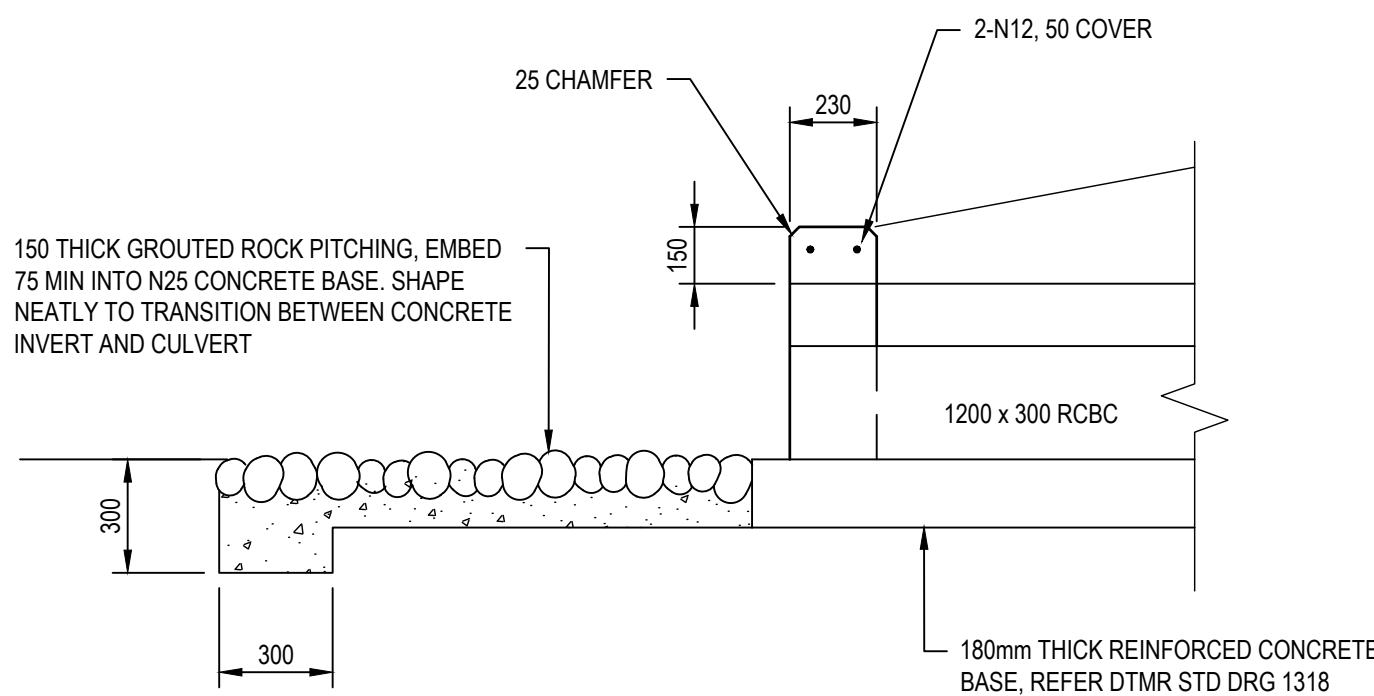
	EXISTING PAVEMENT		EXISTING WATER MAIN
	NEW PAVEMENT		EXISTING WATER MAIN TO BE REMOVED
	NEW CONCRETE PATHWAY		PROPOSED FENCE
	NEW GRAVEL PATHWAY		BATTER TOP
	GROUTED ROCK APRON		EXISTING VEGETATION LINE
	EXISTING O/H ELECTRICITY		BOLLARD
			REMOVABLE BOLLARD
			SIGN

SOLANDER BOULEVARD ACCESS

SCALE 1:50

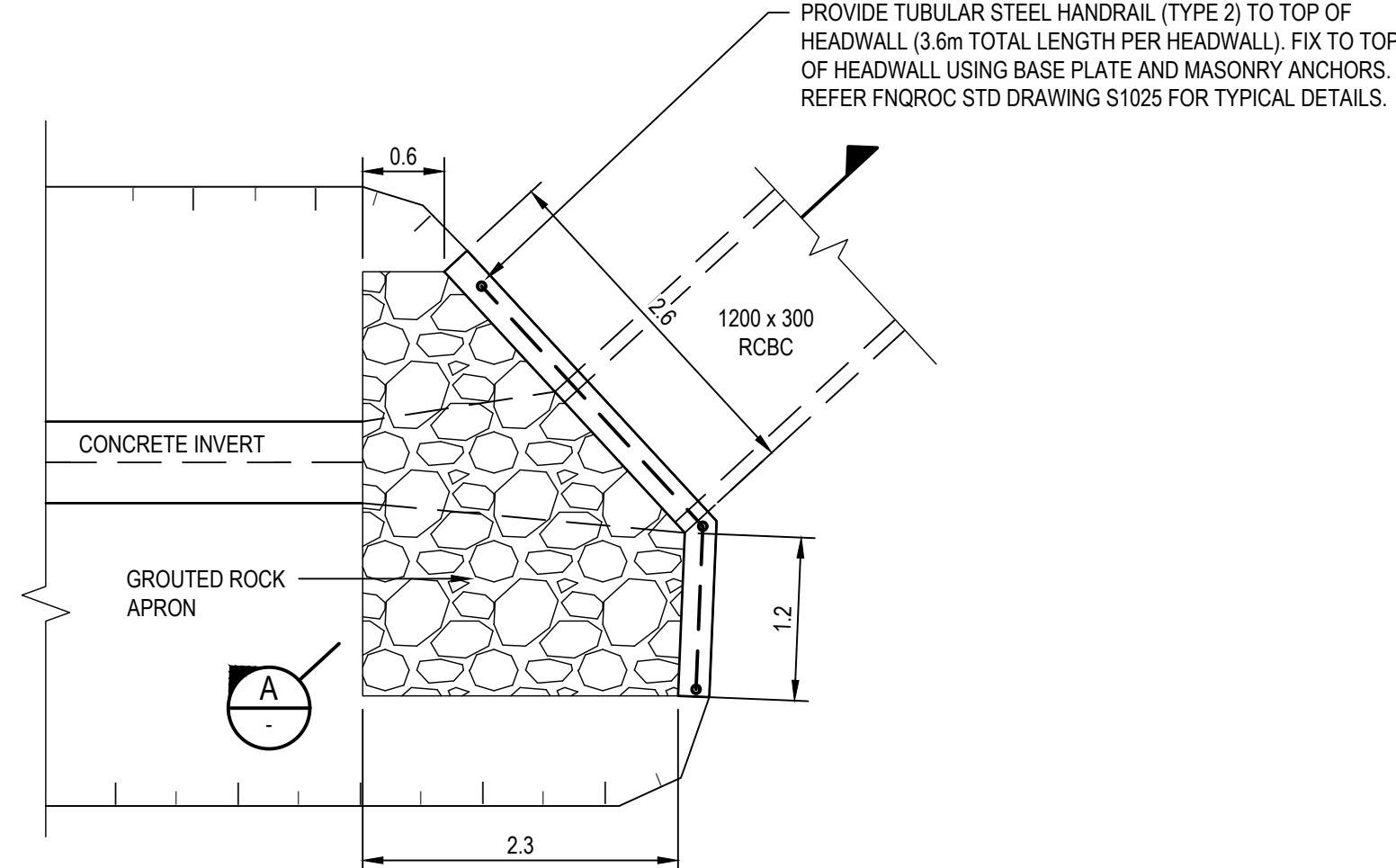
NOTES

- FOR STANDARD NOTES, REFER DRG 12520641-C002.
- FOR PATH SETOUT, REFER DRG 12520641-C014.



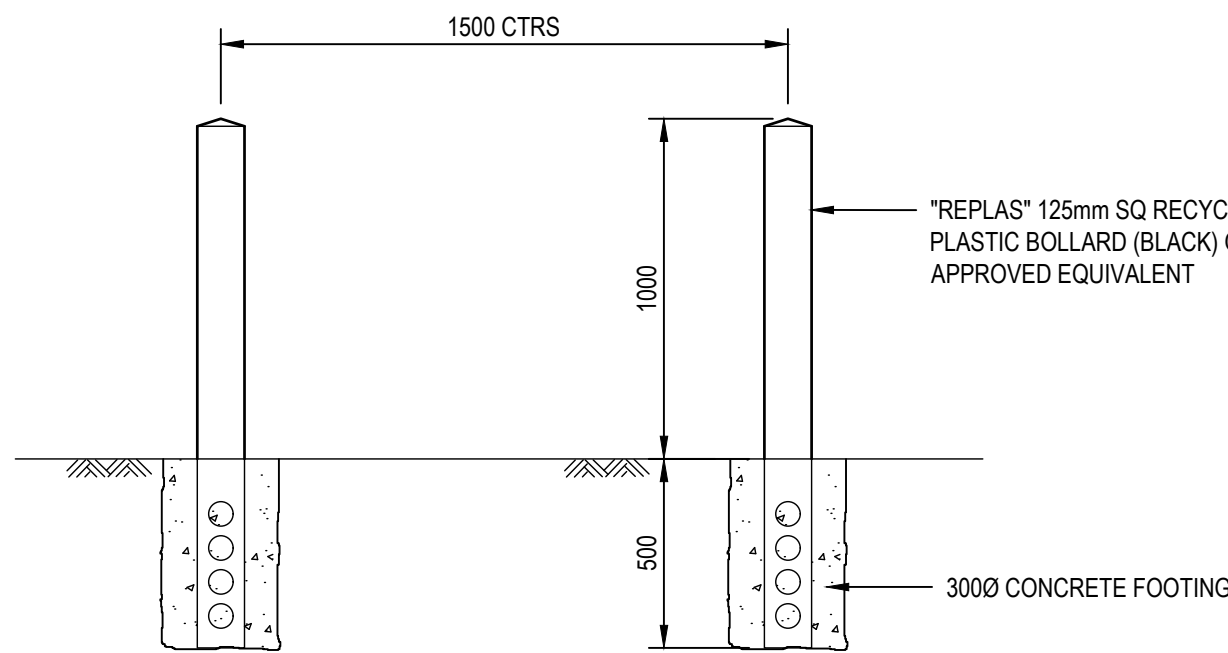
CONCRETE GRADE TO BE N25 IN ACCORDANCE WITH AS1379 AND AS3600

A SECTION
SCALE 1 : 20



CULVERT INLET/OUTLET

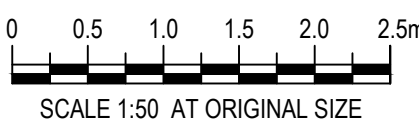
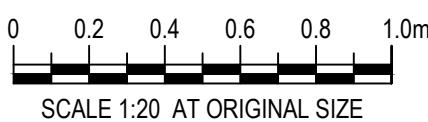
SCALE 1:50



REMOVABLE BOLLARDS TO BE PROVIDED WHERE SPECIFIED ON PLAN

BOLLARDS

SCALE 1:50



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Drawn G. BROWNING

Designer G. BROWNING

Drafting Check G. APPLIN

Design Check G. APPLIN

Approved (Project Director) P. FLANAGAN

Date 03.03.20

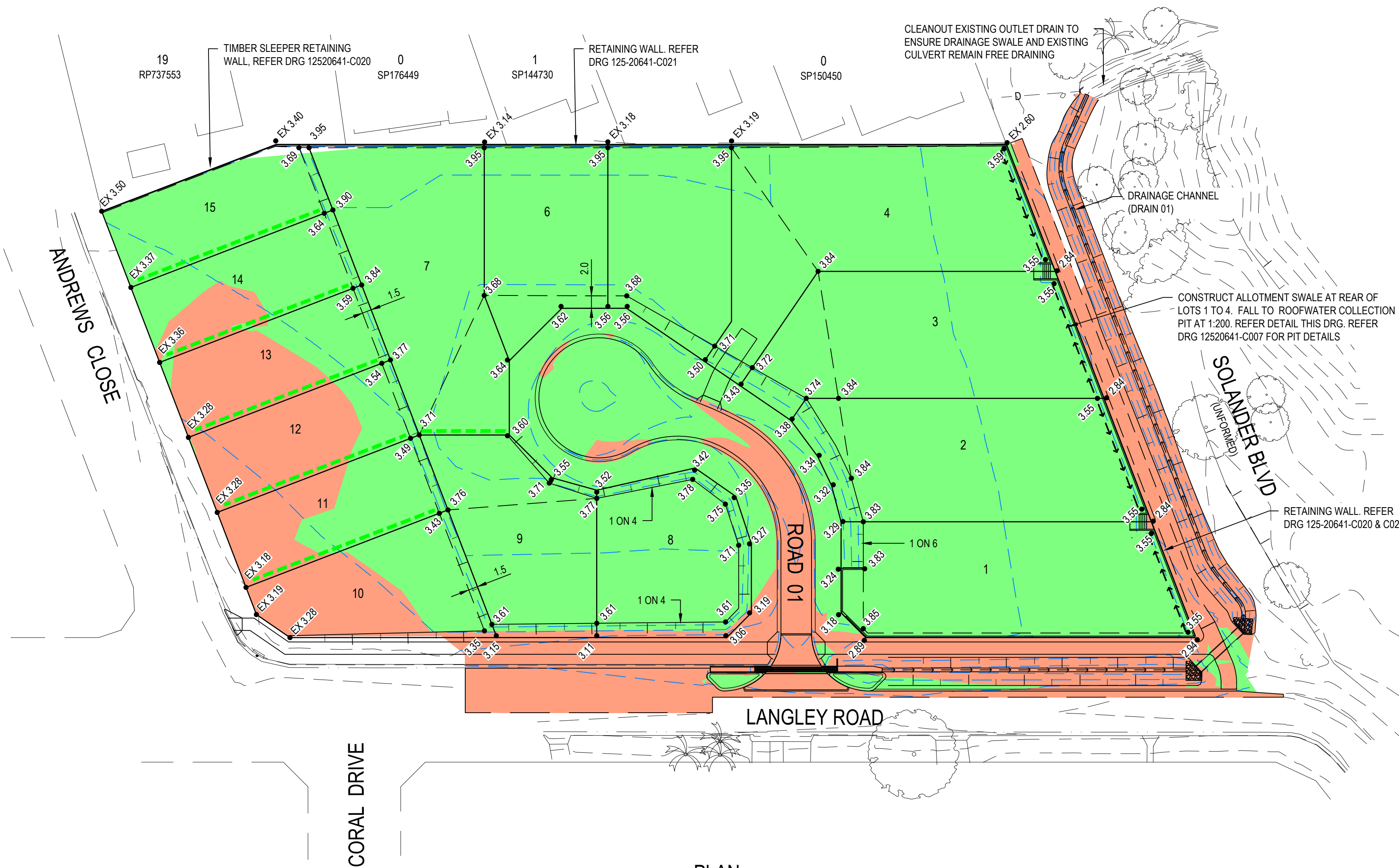
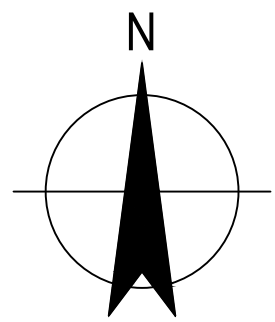
Scale AS SHOWN

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Client **KS5 PTY LTD**
Project **LANGLEY ROAD SUBDIVISION**
Title **SOLANDER BOULEVARD ACCESS PLAN & DETAILS**

Original Size **A1** Drawing No: **42-12520641-C018**

Rev: 0



PLAN
SCALE 1:500

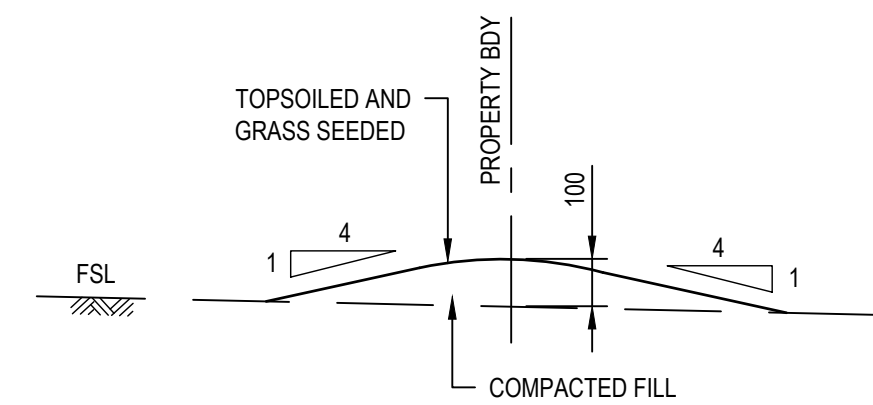
EARTHWORKS VOLUMES

CUT 673m³
FILL 5163m³

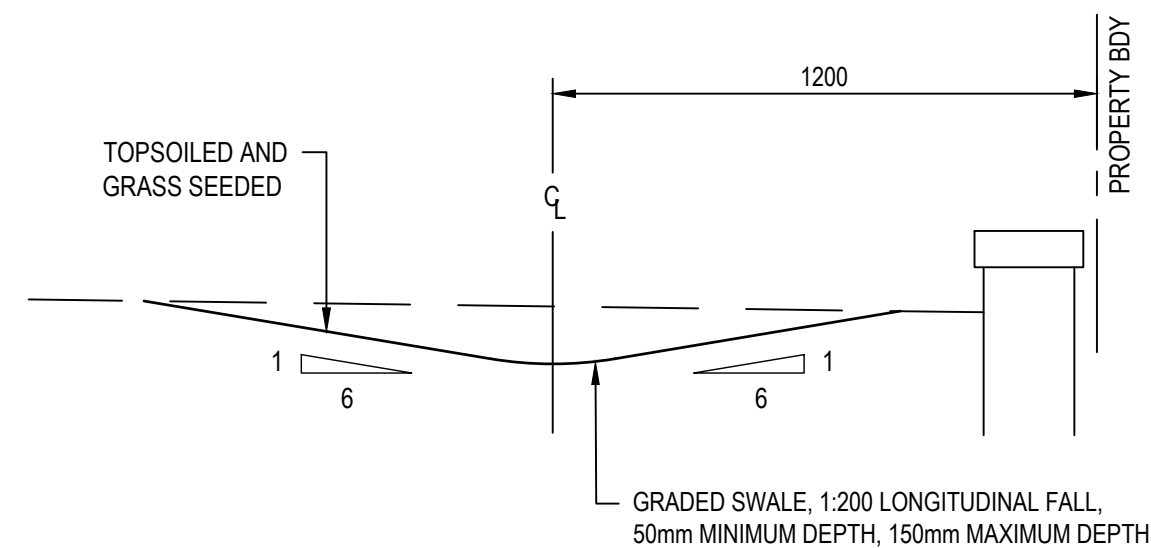
- VOLUMES SHOWN ARE MEASURED IN-PLACE VOLUMES AND INCLUDE NO ALLOWANCE FOR BULKING/COMPACTION.
- STRIPPING OF TOPSOIL TO A DEPTH OF 100mm AND RESPREADING TOPSOIL ON COMPLETING OF EARTHWORKS TO A DEPTH OF 100mm HAS BEEN ACCOUNTED FOR.
- EARTHWORKS VOLUMES INCLUDE BOXING OUT FOR ROAD PAVEMENTS, KERBS AND FOOTPATHS.

LEGEND

- 8.0 EXISTING SURFACE CONTOUR (0.2m INTERVAL)
- 8.6 FINISHED SURFACE CONTOUR (0.2m INTERVAL)
- 10.85 FINISHED SURFACE LEVEL
- EX 10.655 EXISTING SURFACE LEVEL
- PERIMETER BUND
- ALLOTMENT SWALE
- EARTHWORKS IN FILL
- EARTHWORKS IN CUT




PERIMETER BUND
NOT TO SCALE

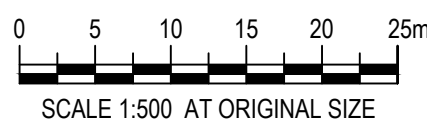


ALLOTMENT SWALE
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NOTES

- REFER TO DRG 12520641-C002 FOR STANDARD NOTES.
- ALL BATTERS WITHIN ALLOTMENTS SHALL AS FOLLOWS (UNLESS NOTED OTHERWISE)
 - ROAD FRONTAGE 1 ON 4
 - SIDE BOUNDARY 1 ON 2
 - REAR BOUNDARY 1 ON 2

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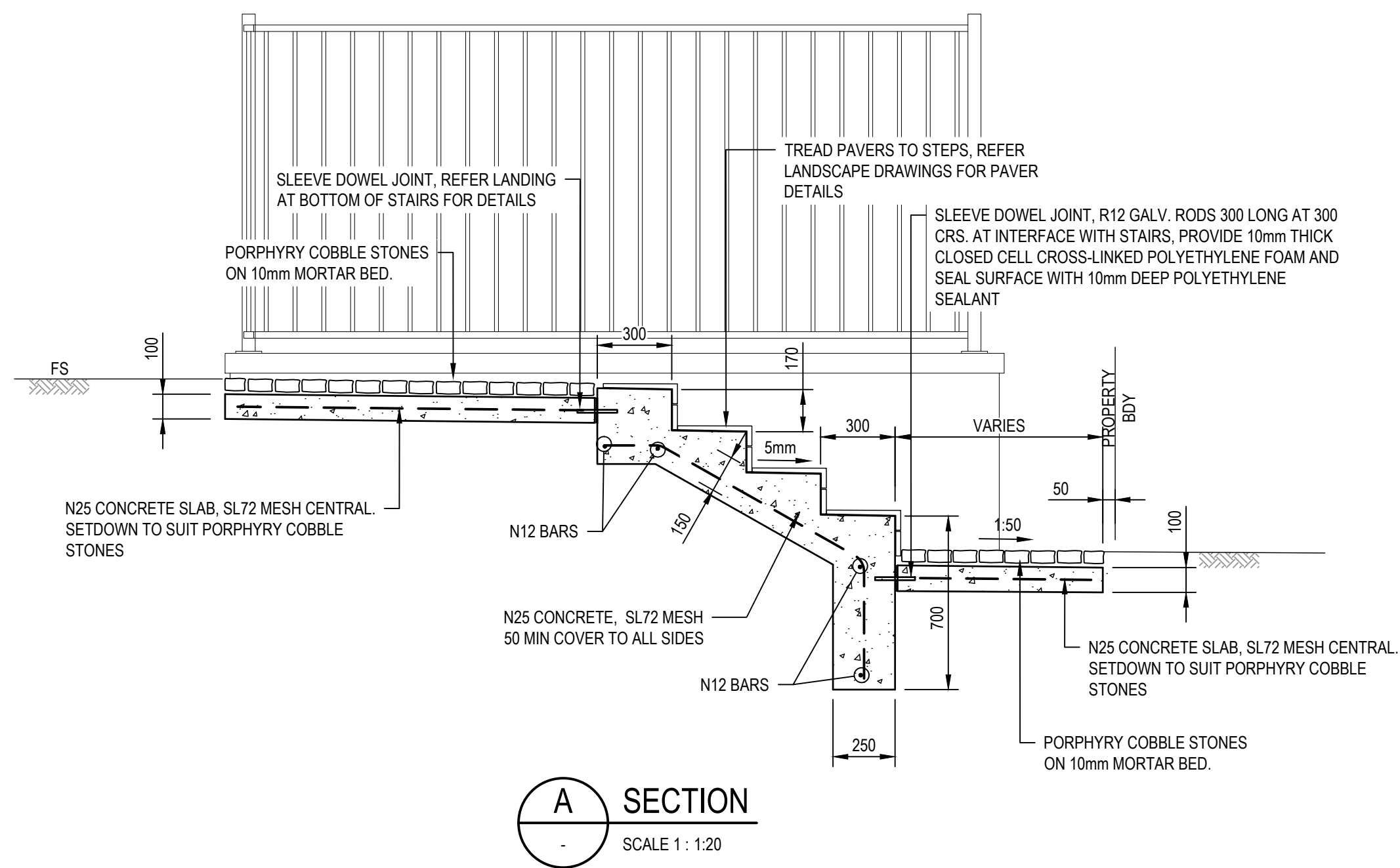
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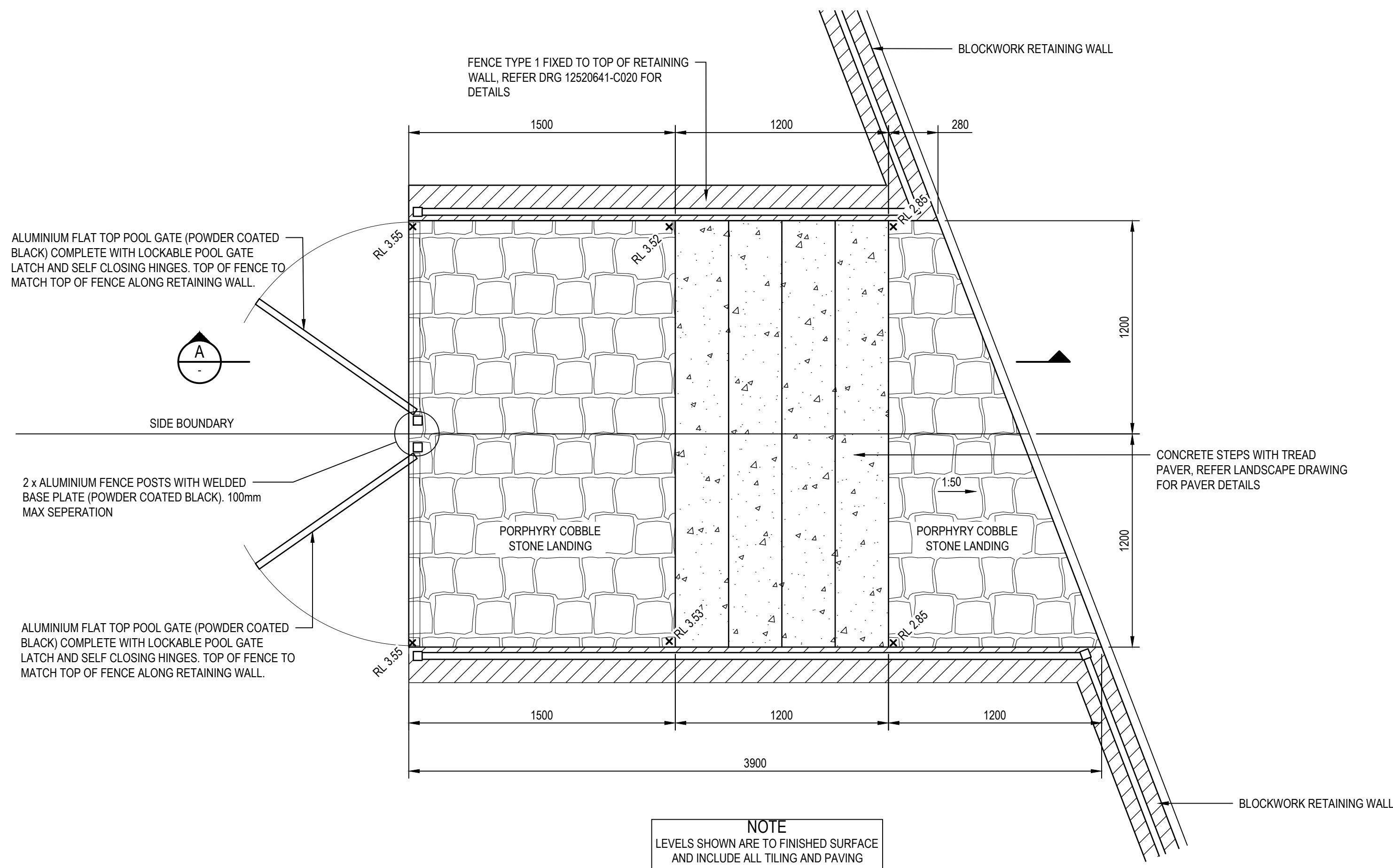
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Scale	AS SHOWN		

Client	KS5 PTY LTD		
Project	LANGLEY ROAD SUBDIVISION		
Title	EARTHWORKS PLAN		
Original Size	A1	Drawing No:	42-12520641-C019
Rev:	0		

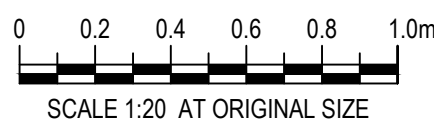




A SECTION
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BEACH ACCESS
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Designer G. BROWNING

Drafting G. APPLIN

Design G. APPLIN

Approved (Project Director)

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Date

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Client

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LANGLEY ROAD SUBDIVISION
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Project

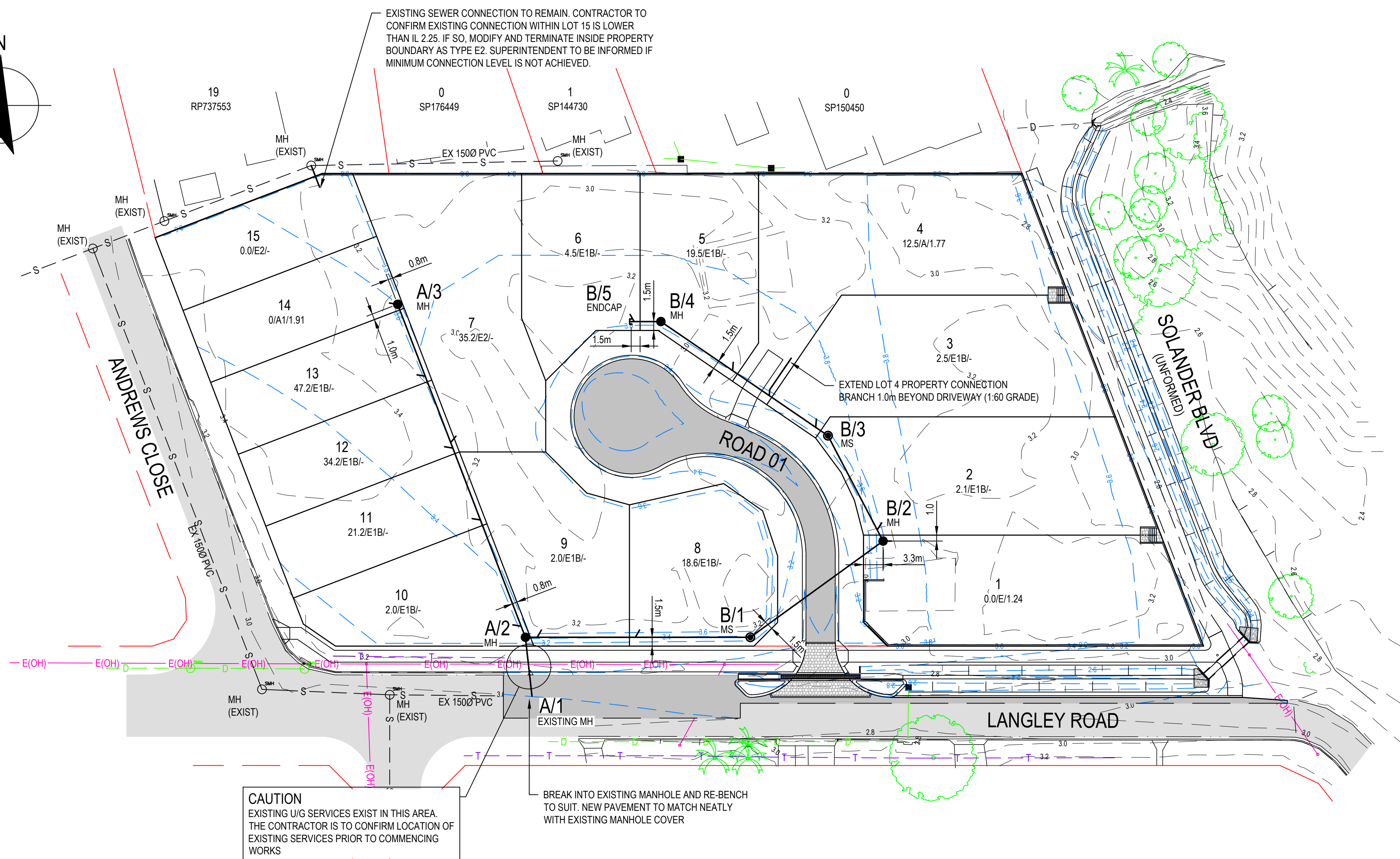
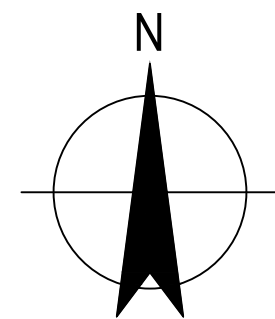
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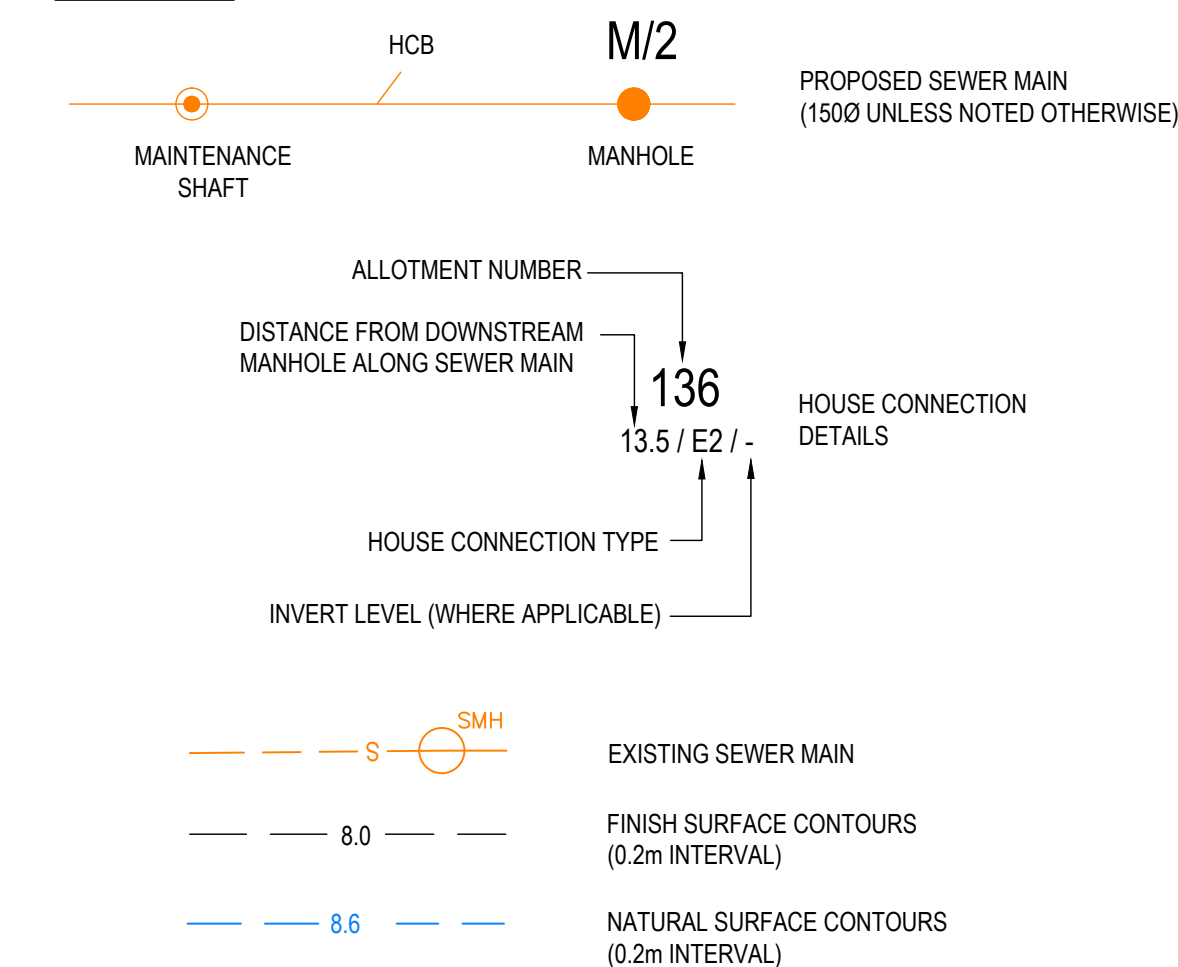
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Drawing No: **42-12520641-C022**

Rev: **0**



LEGEND



CAUTION
EXISTING SERVICES EXIST WITHIN THE PROJECT SITE AND NOT ALL SERVICES MAYBE SHOWN ON PLAN. THE CONTRACTOR MUST CONTACT RELEVANT AUTHORITIES FOR POSSIBLE LOCATION OF FURTHER SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

NOTES

- REFER TO DRG 12520641-C002 FOR STANDARD NOTES.

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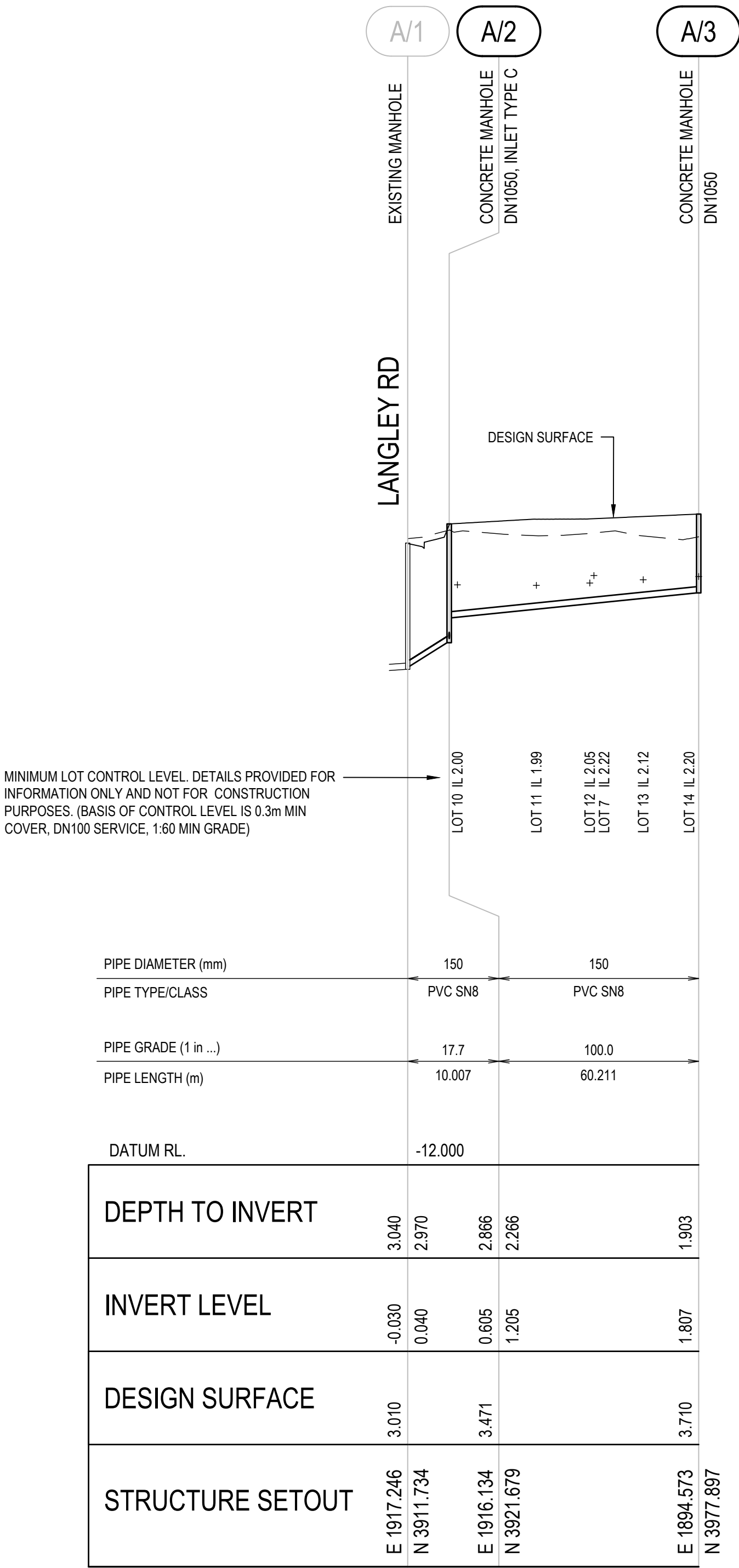
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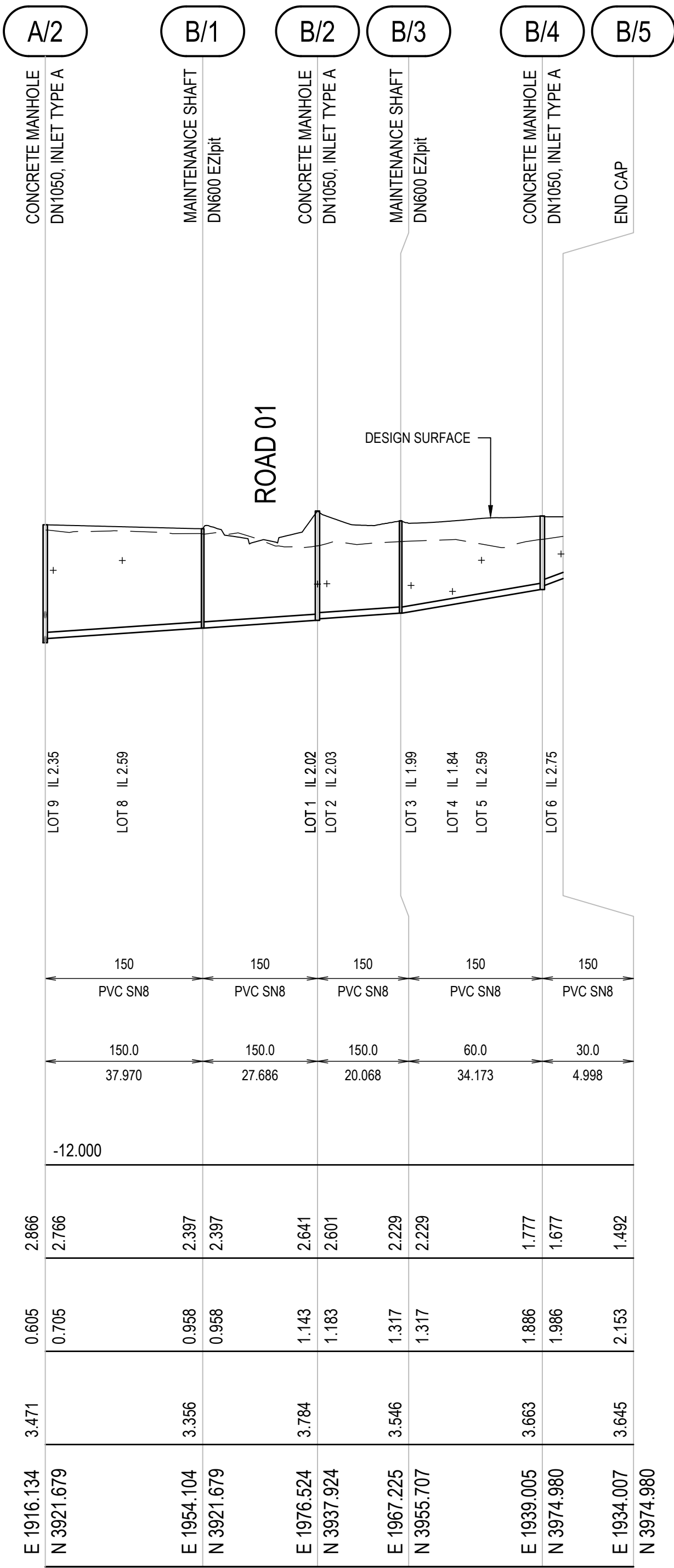
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Client	KS5 PTY LTD		
Project	LANGLEY ROAD SUBDIVISION		
Title	SEWER RETICULATION PLAN		
Original Size	A1	Drawing No:	42-12520641-C023
Rev:	0		



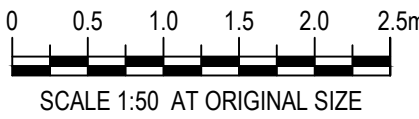
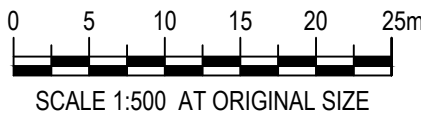
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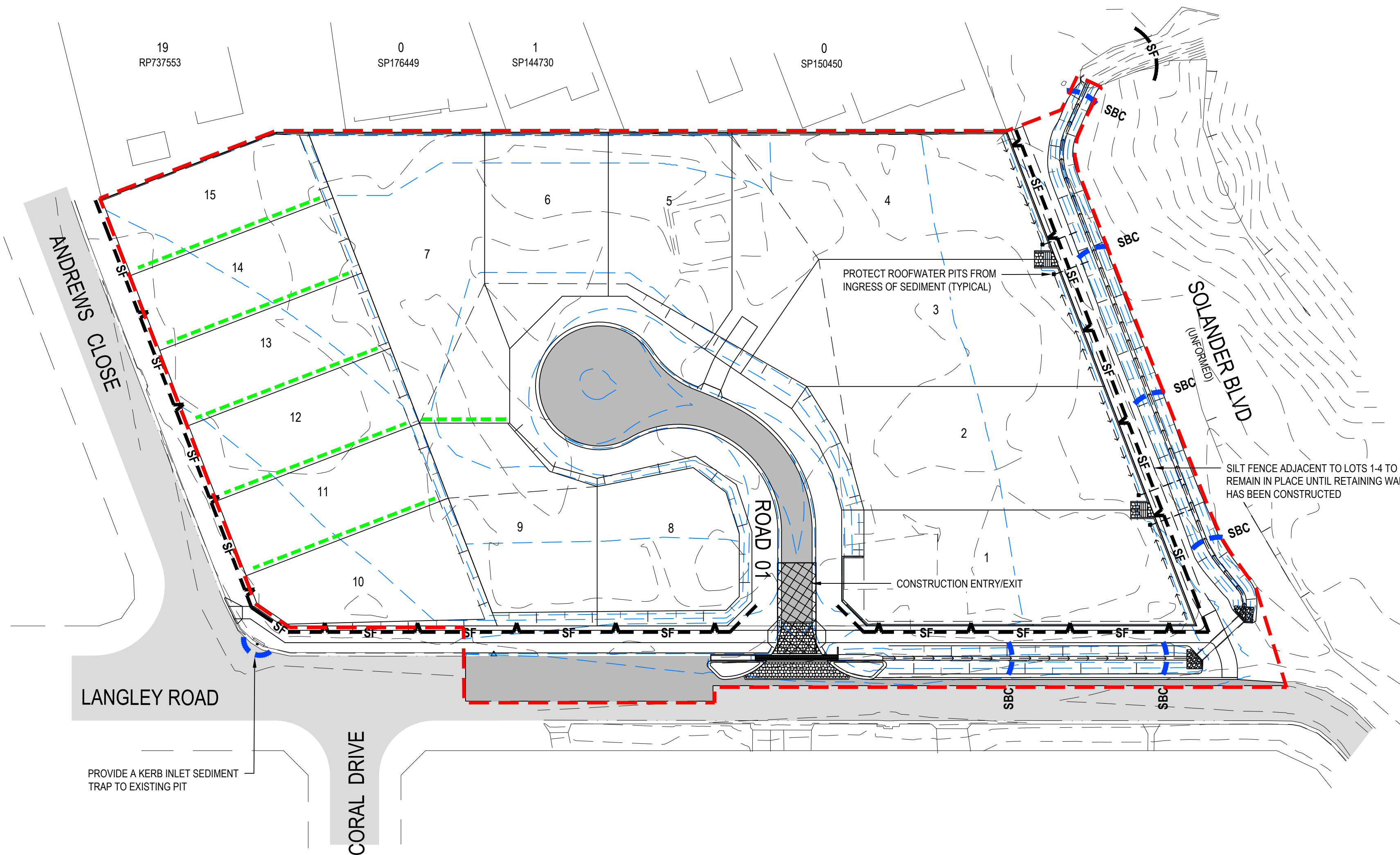
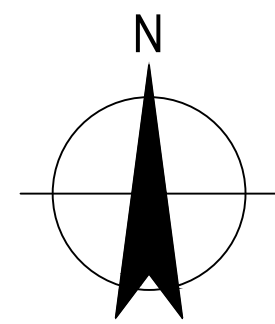
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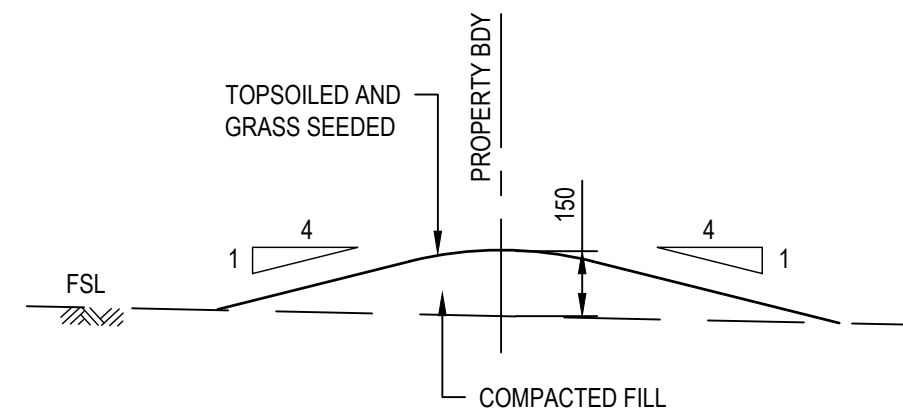
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	Approved (Project Director) P. FLANAGAN		Title	SEWER LONG SECTIONS
	Date 03.03.20		Original Size	
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PLAN
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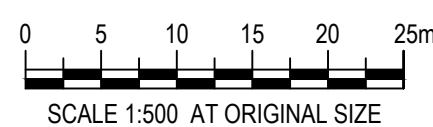
PERIMETER BUND
NOT TO SCALE

LEGEND

- 8.0 FINISH SURFACE CONTOURS (0.2m INTERVAL)
- 8.6 NATURAL SURFACE CONTOURS (0.2m INTERVAL)
- TEMPORARY CONSTRUCTION ENTRY/EXIT
- PERIMETER BUND
- SILT FENCING
- EXTENT OF DISTURBANCE
- SAND BAG CHECK DAM (200mm HIGH)

NOTES

- REFER TO DRG 12520641-C002 FOR STANDARD NOTES.
- REFER TO DRG 12520641-C027 AND C028 FOR EROSION AND SEDIMENTATION CONTROL DETAILS.



SCALE 1:500 AT ORIGINAL SIZE



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Client	KS5 PTY LTD		
Project	LANGLEY ROAD SUBDIVISION		
Title	EROSION AND SEDIMENT CONTROL STRATEGY PLAN		
Original Size	A1	Drawing No:	42-12520641-C026
Rev:	0		

SEDIMENT FENCE

MATERIAL

FABRIC:
POLYPROPYLENE, POLYAMIDE, NYLON, POLYESTER, OR POLYETHYLENE WOVEN OR NON-WOVEN FABRIC, AT LEAST 700mm IN WIDTH AND A MINIMUM UNIT WEIGHT OF 140GSM. ALL FABRICS TO CONTAIN ULTRAVIOLET INHIBITORS AND STABILISERS TO PROVIDE A MINIMUM OF 6 MONTHS OF USEABLE CONSTRUCTION LIFE (ULTRAVIOLET STABILITY EXCEEDING 70%).

FABRIC REINFORCEMENT:
WIRE OR STEEL MESH MINIMUM 14-GAUGE WITH A MAXIMUM MESH SPACING OF 200mm.

SUPPORT POSTS/STAKES:
1500mm² (MIN) HARDWOOD, 2500mm² (MIN) SOFTWOOD, OR 1.5kg/m (MIN) STEEL STAR PICKETS SUITABLE FOR ATTACHING FABRIC.

INSTALLATION

- REFER TO APPROVED PLANS FOR LOCATION, EXTENT AND REQUIRED TYPE OF FABRIC (IF SPECIFIED). IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, FABRIC TYPE, OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
- TO THE MAXIMUM DEGREE PRACTICAL, AND WHERE THE PLANS ALLOW, ENSURE THE FENCE IS LOCATED:
 - TOTALLY WITHIN THE PROPERTY BOUNDARIES;
 - ALONG A LINE OF CONSTANT ELEVATION WHEREVER PRACTICAL;
 - AT LEAST 2m FROM THE TOE OF ANY FILLING OPERATIONS THAT MAY RESULT IN SHIFTING SOIL/FILL DAMAGING THE FENCE.
- INSTALL RETURNS WITHIN THE FENCE AT MAXIMUM 20m INTERVALS IF THE FENCE IS INSTALLED ALONG THE CONTOUR, OR 5 TO 10m MAXIMUM SPACING (DEPENDING ON SLOPE) IF THE FENCE IS INSTALLED AT AN ANGLE TO THE CONTOUR. THE 'RETURNS' SHALL CONSIST OF EITHER:
 - V-SHAPED SECTION EXTENDING AT LEAST 1.5m UP THE SLOPE; OR
 - SANDBAG OR ROCK/AGGREGATE CHECK DAM A MINIMUM 1/3 AND MAXIMUM 1/2 FENCE HEIGHT, AND EXTENDING AT LEAST 1.5m UP THE SLOPE.
- ENSURE THE EXTREME ENDS OF THE FENCE ARE TURNED UP THE SLOPE AT LEAST 1.5m, OR AS NECESSARY, TO MINIMISE WATER BYPASSING AROUND THE FENCE.
- ENSURE THE SEDIMENT FENCE IS INSTALLED IN A MANNER THAT AVOIDS THE CONCENTRATION OF FLOW ALONG THE FENCE, AND THE UNDESIRABLE DISCHARGE OF WATER AROUND THE ENDS OF THE FENCE.
- IF THE SEDIMENT FENCE IS TO BE INSTALLED ALONG THE EDGE OF EXISTING TREES, ENSURE CARE IS TAKEN TO PROTECT THE TREES AND THEIR ROOT SYSTEMS DURING INSTALLATION OF THE FENCE. DO NOT ATTACH THE FABRIC TO THE TREES.
- UNLESS DIRECTED BY THE SITE SUPERVISOR OR THE APPROVED PLANS, EXCAVATE A 200mm WIDE BY 200mm DEEP TRENCH ALONG THE PROPOSED FENCE LINE, PLACING THE EXCAVATED MATERIAL ON THE UP-SLOPE SIDE OF THE TRENCH.
- ALONG THE LOWER SIDE OF THE TRENCH, APPROPRIATELY SECURE THE STAKES INTO THE GROUND SPACED NO GREATER THAN 3m IF SUPPORTED BY A TOP SUPPORT WIRE OR WEIR MESH BACKING, OTHERWISE NO GREATER THAN 2m.
- IF SPECIFIED, SECURELY ATTACH THE SUPPORT WIRE OR MESH TO THE UP-SLOPE SIDE OF THE STAKES WITH THE MESH EXTENDING AT LEAST 200mm INTO THE EXCAVATED TRENCH, ENSURE THE MESH AND FABRIC IS ATTACHED TO THE UP-SLOPE SIDE OF THE STAKES EVEN WHEN DIRECTING A FENCE AROUND A CORNER OR SHARP CHANGE OF DIRECTION.
- WHEREVER POSSIBLE, CONSTRUCT THE SEDIMENT FENCE FROM A CONTINUOUS ROLL OF FABRIC. TO JOIN FABRIC EITHER:
 - ATTACH EACH END TO TWO OVERLAPPING STAKES WITH THE FABRIC FOLDING AROUND THE ASSOCIATED STAKE ONE TURN, AND WITH THE TWO STAKES TIED TOGETHER WITH WIRE; OR
 - OVERLAP THE FABRIC TO THE NEXT ADJACENT SUPPORT POST.
- SECURELY ATTACH THE FABRIC TO THE SUPPORT POSTS USING 25 X 12.5mm STAPLES, OR TIE WIRE AT MAXIMUM 150mm SPACING.
- SECURELY ATTACH THE FABRIC TO THE SUPPORT WIRE/MESH (IF ANY) AT A MAXIMUM SPACING OF 1m.
- ENSURE THE COMPLETED SEDIMENT FENCE IS AT 450mm, BUT NOT MORE THAN 700mm HIGH. IF A SPILL-THOUGH WEIR IS INSTALLED, ENSURE THE CREST OF THE WEIR IS AT LEAST 300mm ABOVE GROUND LEVEL.
- BACKFILL THE TRENCH AND TAMP THE FILL TO FIRMLY ANCHOR THE BOTTOM OF THE FABRIC AND MESH TO PREVENT WATER FROM FLOWING UNDER THE FENCE.

ADDITIONAL REQUIREMENTS FOR THE INSTALLATION OF SPILL-THROUGH WEIR

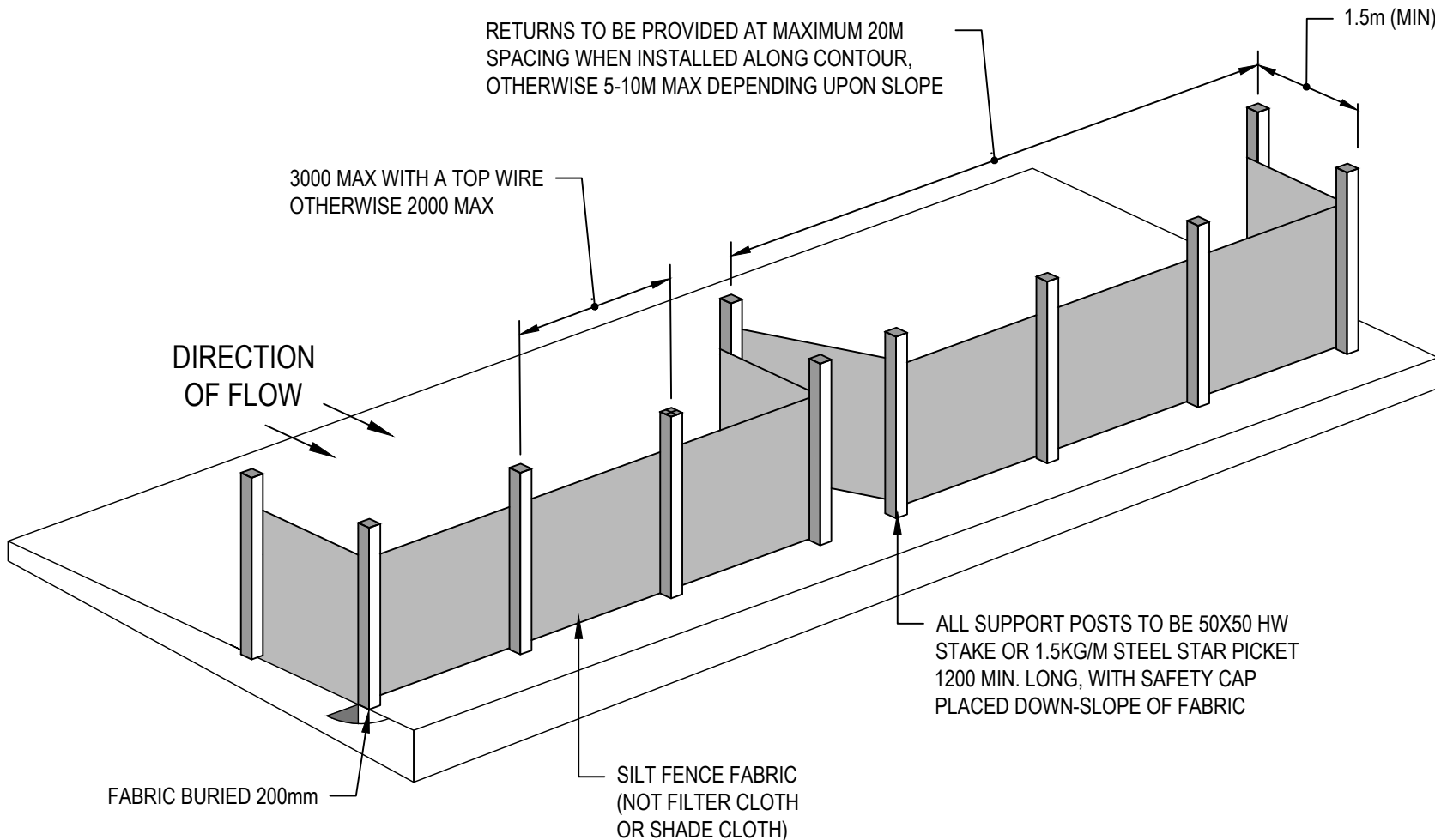
- LOCATE THE SPILL -THROUGH WEIR SUCH THAT THE WEIR CREST WILL BE LOWER THAN THE GROUND LEVEL AT EACH END OF THE FENCE.
- ENSURE THE CREST OF THE SPILL-THROUGH WEIR IS AT LEAST 300mm THE GROUND ELEVATION.
- SECURELY TIE A HORIZONTAL CROSS MEMBER (WEIR) TO THE SUPPORT POSTS/STAKES EACH SIDE OF THE WEIR. CUT THE FABRIC DOWN THE SIDE OF EACH POST AND FOLD THE FABRIC OVER THE CROSS MEMBER AND APPROPRIATELY SECURE THE FABRIC.
- INSTALL A SUITABLE SPLASH PAD AND/OR CHUTE IMMEDIATELY DOWN-SLOPE OF THE SPILL-THROUGH WEIR TO CONTROL SOIL EROSION AND APPROPRIATELY DISCHARGE THE CONCENTRATED FLOW PASSING OVER THE WEIR.

MAINTENANCE

- INSPECT THE SEDIMENT FENCE AT LEAST WEEKLY AND AFTER ANY SIGNIFICANT RAIN. MAKE NECESSARY REPAIRS IMMEDIATELY.
- REPAIR ANY TORN SECTIONS WITH A CONTINUOUS PIECE OF FABRIC FROM POST TO POST.
- WHEN MAKING REPAIRS, ALWAYS RESTORE THE SYSTEM TO ITS ORIGINAL CONFIGURATION UNLESS AN AMENDED LAYOUT IS REQUIRED OR SPECIFIED.
- IF THE FENCE IS SAGGING BETWEEN STAKES, INSTALL ADDITIONAL SUPPORT POSTS.
- REMOVE ACCUMULATED SEDIMENT IF THE SEDIMENT DEPOSIT EXCEEDS A DEPTH OF 1/3 THE HEIGHT OF THE FENCE.
- DISPOSE OF SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
- REPLACE THE FABRIC IS THE SERVICE LIFE OF THE EXISTING FABRIC EXCEEDS 6 MONTHS.

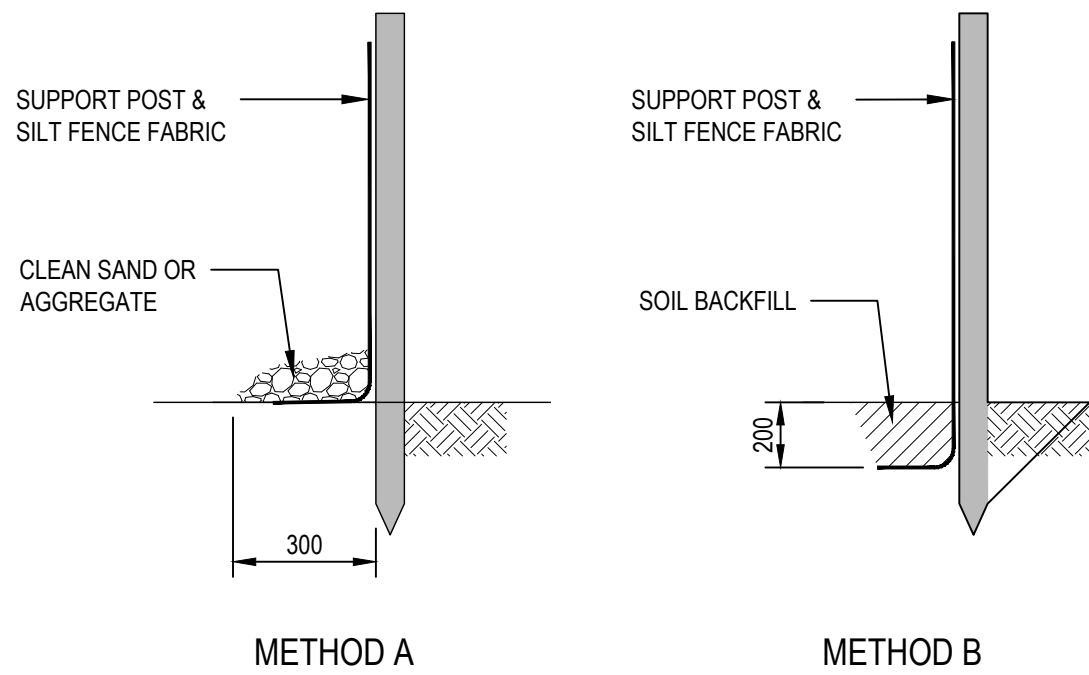
REMOVAL

- WHEN DISTURBED AREAS UP-SLOPE OF THE SEDIMENT FENCE ARE SUFFICIENTLY STABILISED TO RESTRAIN EROSION, THE FENCE MUST BE REMOVED.
- REMOVE MATERIALS AND COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
- REHABILITATE/REVEGETATE THE DISTURBED GROUND AS NECESSARY TO MINIMISE THE EROSION HAZARD.



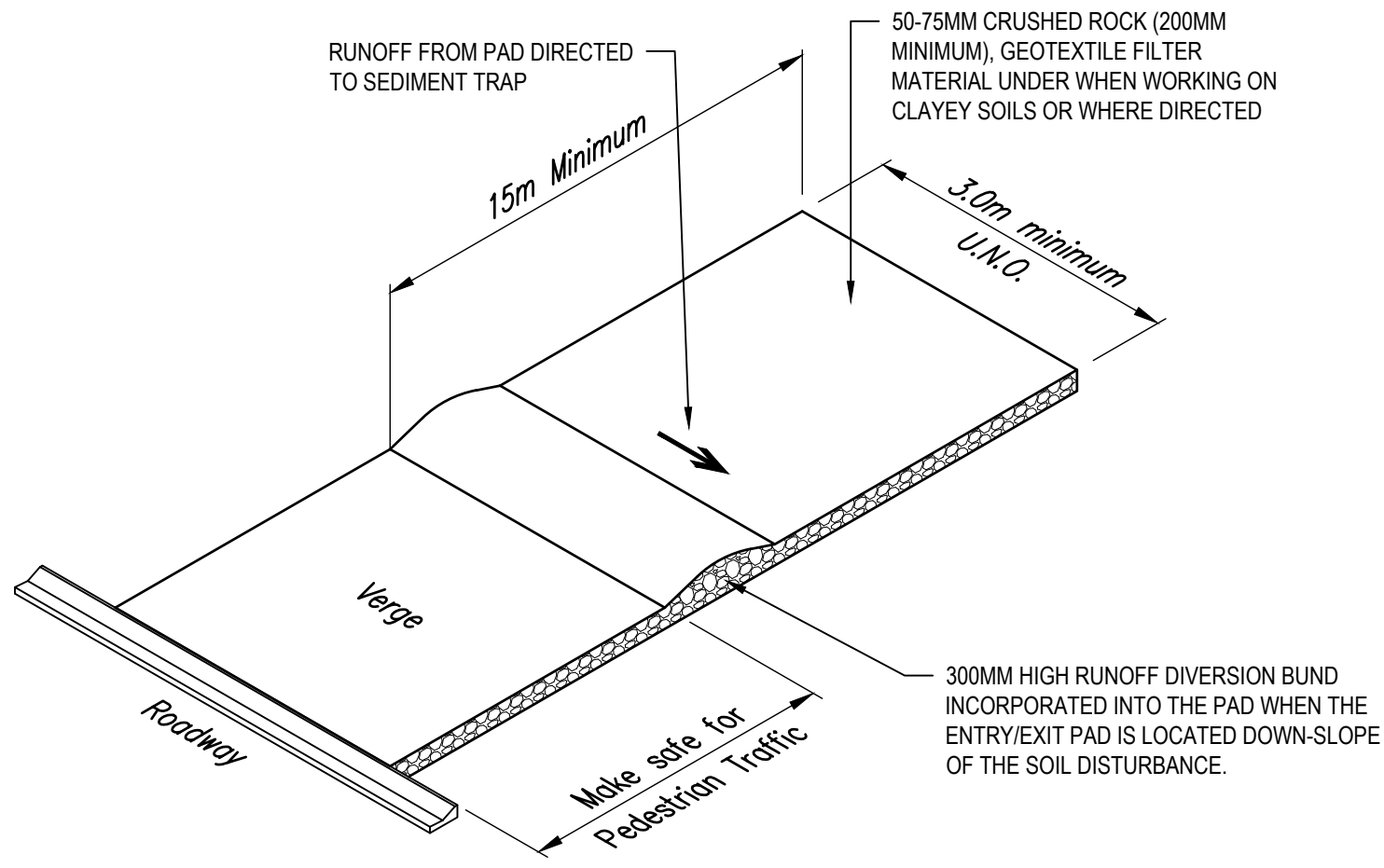
SEDIMENT FENCE

NOT TO SCALE



ANCHORING BASE OF FABRIC

NOT TO SCALE



TEMPORARY CONSTRUCTION ENTRY / EXIT

NOT TO SCALE

TEMPORARY CONSTRUCTION ENTRY / EXIT

MATERIAL

ROCK:
WELL GRADED, HARD, ANGULAR, EROSION RESISTANT ROCK, NOMINAL DIAMETER OF 50 TO 75mm (SMALL DISTURBANCES) OR 100 TO 150mm (LARGE DISTURBANCES). ALL REASONABLE MEASURES MUST BE TAKEN TO OBTAIN ROCK OF NEAR UNIFORM SIZE.

FOOTPATH STABILISING AGGREGATE:
25 TO 50mm GRAVEL OR AGGREGATE.

GEOTEXTILE FABRIC:
HEAVY-DUTY, NEEDLE-PUNCHES, NON-WOVEN FILTER CLOTH ('BIDIM' A24 OR EQUIVALENT).

INSTALLATION

- REFER TO APPROVED PLANS FOR LOCATION AND DIMENSIONAL DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
- CLEAR THE LOCATION OF THE ROCK PAD, REMOVING STUMPS, ROOTS AND OTHER VEGETATION TO PROVIDE A FIRM FOUNDATION SO THAT THE ROCK IS NOT PRESSED INTO SOFT GROUND. CLEAR SUFFICIENT WIDTH TO ALLOW PASSAGE OF LARGE VEHICLES, BUT CLEAR ONLY THAT NECESSARY FOR THE EXIT. DO NOT CLEAR ADJACENT AREAS UNTIL THE REQUIRED EROSION AND SEDIMENT CONTROL DEVICES ARE IN PLACE.
- IF THE EXPOSED SOIL IS SOFT, PLASTIC OR CLAYEY, PLACE A SUB-BASE OF CRUSHED ROCK OR A LAYER OF HEAVY-DUTY FILTER CLOTH TO PROVIDE A FIRM FOUNDATION.
- PLACE THE ROCK PAD FORMING A MINIMUM 200mm THICK LAYER OF CLEAN, OPEN-VOID ROCK.
- IF THE ASSOCIATED CONSTRUCTION SITE IS UP-SLOPE OF THE ROCK PAD, THIS CAUSING STORMWATER RUNOFF TO FLOW TOWARDS THE ROCK PAD, THEN FORM A MINIMUM 300mm HIGH FLOW CONTROL BERM ACROSS THE ROCK PAD TO DIVERT SUCH RUNOFF TO A SUITABLE SEDIMENT TRAP.
- THE LENGTH OF THE ROCK PAD SHOULD BE AT LEAST 15m WHERE PRACTICABLE, AND AS WISE AS THE FULL WIDTH OF THE ENTRY OR EXIT AND AT LEAST 3m. THE ROCK PAD SHOULD COMMENCE AT THE EDGE OF THE OFF-SITE SEALED ROAD OR PAVEMENT.
- FLARE THE END OF THE ROCK PAD WHERE IT MEETS THE PAVEMENT SO THAT THE WHEELS OF TURNING VEHICLES DO NOT TRAVEL OVER UNPROTECTED SOIL.
- IF THE FOOTPATH IS OPEN TO PEDESTRIAN MOVEMENT, THE COVER THE COARSE ROCK WITH FINE AGGREGATE OR GRAVEL, OR OTHERWISE TAKE WHATEVER MEASURES ARE NEEDED TO MAKE THE AREA SAFE.

MAINTENANCE

- INSPECT ALL SITE ENTRY AND EXIT POINTS PRIOR TO FORECAST RAIN, DAILY DURING EXTENDED PERIODS OF RAINFALL, AFTER RUNOFF-PRODUCING RAINFALL, OR OTHERWISE AT FORTNIGHTLY INTERVALS.
- IF SAND, SOIL, SEDIMENT OR MUD IS TRACKED OR WASHED ONTO THE ADJACENT SEALED ROADWAY, THEN SUCH MATERIAL MUST BE PHYSICALLY REMOVED, FIRST USING A SQUARE-EDGED SHOVEL, AND THEN A STIFF-BRISTLED BROOM, AND THEN BY A MECHANICAL VACUUM UNIT, IF AVAILABLE.
- IF NECESSARY FOR SAFETY REASONS, THE ROADWAY SHALL ONLY BE WASHED CLEAN AFTER ALL REASONABLE EFFORTS HAVE BEEN TAKEN TO SHOVEL AND SWEEP THE MATERIAL FROM THE ROADWAY.
- WHEN THE VOIDS BETWEEN THE ROCK BECOMES FILLED WITH MATERIAL AND THE EFFECTIVENESS OF THE ROCK PAD IS REDUCED TO A POINT WHERE SEDIMENT IS BEING TRACKED OFF THE SITE. A NEW 100MM LAYER OF ROCK MUST BE ADDED AND/OR THE ROCK PAD MUST BE EXTENDED.
- ENSURE ANY ASSOCIATED DRAINAGE CONTROL MEASURES (e.g. FLOW CONTROL BERM) ARE MAINTAINED IN ACCORDANCE WITH THEIR DESIRED OPERATIONAL CONDITIONS.
- DISPOSE OF SEDIMENT AND DEBRIS IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.

REMOVAL

- THE ROCK PAD SHOULD BE REMOVED ONLY AFTER IT IS NO LONGER NEEDED AS A SEDIMENT TRAP.
- REMOVE MATERIALS AND COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
- RE-GRADE AND STABILISE THE DISTURBED GROUND AS NECESSARY TO MINIMISE THE EROSION HAZARD.

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					Date

Plot Date: 3 March 2020 - 4:12 PM

Plotted by: Gary Browning

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Designer G. BROWNING

Drafting Check G. APPLIN

Design Check G. APPLIN

Approved (Project Director)

P. FLANAGAN

Date 03.03.20

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Client KS5 PTY LTD

Project LANGLEY ROAD SUBDIVISION

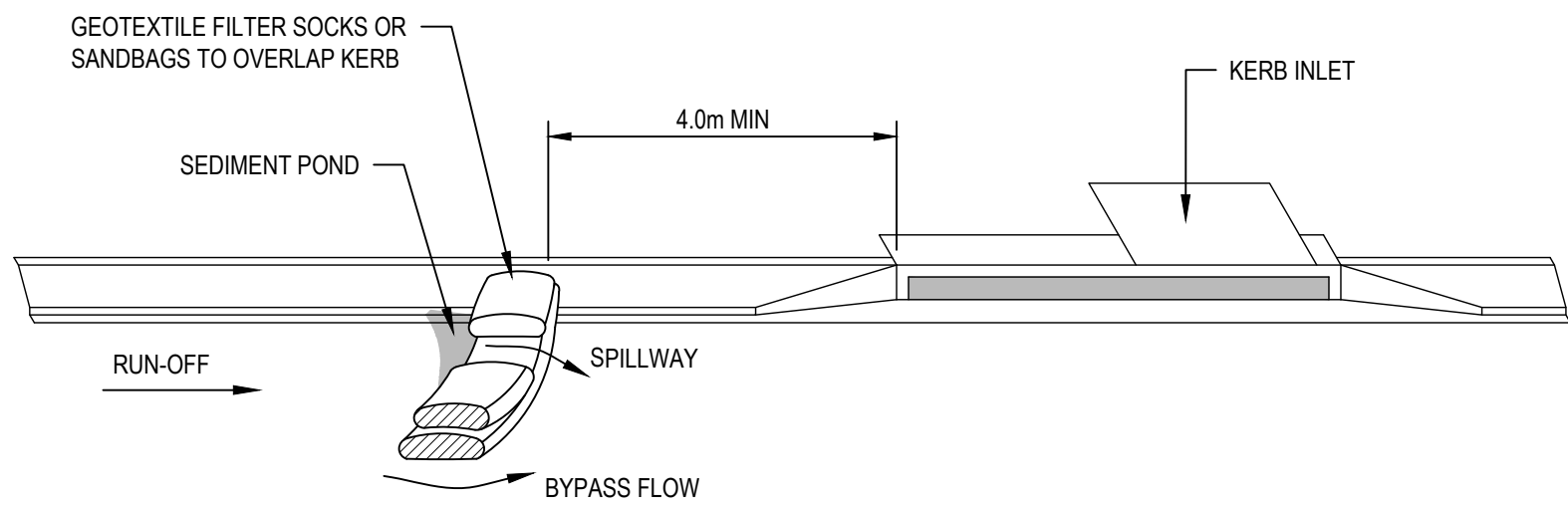
Title EROSION AND SEDIMENT CONTROL STRATEGY
DETAILS SHEET 1 OF 2

Original Size

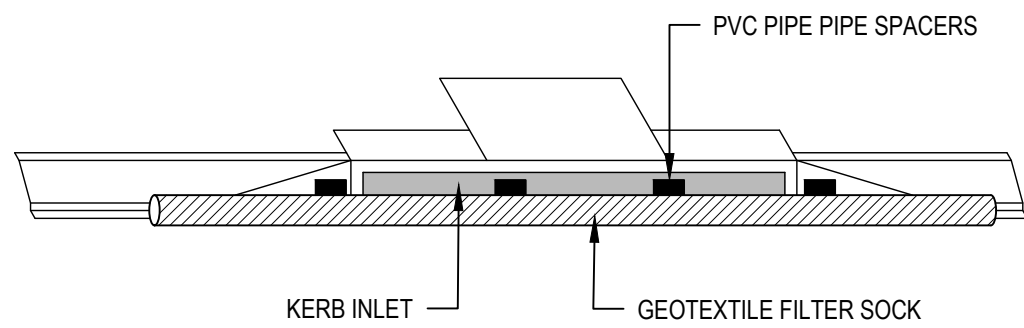
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Drawing No: 42-12520641-C027

Rev: 0



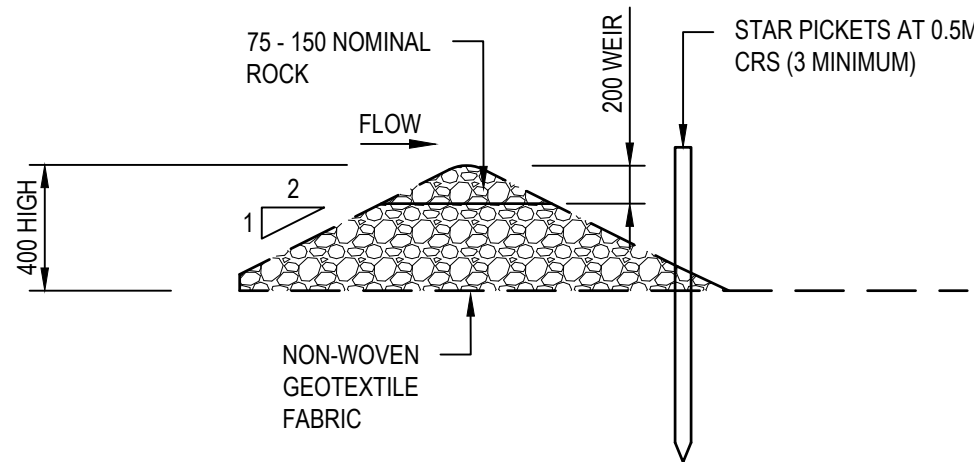
ON-GRADE INLET



SAG INLET

KERB INLET SEDIMENT TRAP

NOT TO SCALE



ROCK FILTER DAM

NOT TO SCALE

KERB INLET SEDIMENT TRAP

MATERIAL

SOCKS:

MINIMUM 200mm DIAMETER SYNTHETIC OR BIODEGRADABLE TUBES MANUFACTURED FROM NON-WOVEN OR COMPOSITE FABRIC SUITABLE FOR THE 'FILTRATION' OF COARSE SEDIMENT.

FILL MATERIAL:

STRAW CANE MULCH, COMPOSITE MATERIAL (AS4454), COURSE SAND OR CLEAN AGGREGATE.

INSTALLATION

- REFER TO APPROVED PLANS FOR THE LOCATION AND INSTALLATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
- ENSURE THE SOCKS ARE PLACED INDIVIDUALLY OR COLLECTIVELY (AS A SINGLE SEDIMENT TRAP) SUCH THAT:
 - LEAKAGE AROUND OR UNDER THE SOCKS IS MINIMISED;
 - ADJOINING SOCKS ARE TIGHTLY BUTTED OR OVERLAPPED AT LEAST 450mm;
 - THE SURFACE AREA OF POTENTIAL WATER PONDING UP-SLOPE OF EACH SEDIMENT TRAP IS MAXIMISED;
 - TO THE MAXIMUM DEGREE PRACTICAL, ALL SEDIMENT-LADEN WATER WILL PASS THROUGH THE FORMED POND BEFORE FLOWING OVER THE DOWN-SLOPE END OF THE SEDIMENT TRAP.
- WHEN PLACED ACROSS THE INVERT OF MINOR DRAINS, ENSURE THE SOCKS ARE PLACED SUCH THAT:
 - THE CREST OF THE DOWNSTREAM SOCK IS LEVEL WITH THE CHANNEL INVERT AT THE IMMEDIATE UPSTREAM SOCK (IF ANY);
 - EACH SOCK EXTENDS UP THE CHANNEL BANKS SUCH THAT THE CREST OF THE SOCK AT ITS LOWEST POINT IS LOWER THAN GROUND LEVEL AT EITHER END OF THE SOCK.
- IF STAKES ARE REQUIRED TO ANCHOR THE SOCKS, THEIR SPACING DOES NOT EXCEED 1.2m OR SIX TIMES THE SOCK DIAMETER (WHICHEVER IS THE LESSER). A MAXIMUM STAKE SPACING OF 0.3m APPLIES WHEN USED TO FORM CHECK DAMS.

MAINTENANCE

- INSPECT ALL FILTER SOCKS PRIOR TO FORECAST RAIN DAILY DURING EXTENDED PERIODS OF RAINFALL, AFTER SIGNIFICANT RUNOFF PRODUCING STORMS OR OTHERWISE AT WEEKLY INTERVALS.
- REPAIR OR REPLACE DAMAGED SOCKS.
- THE BULK OF THE SEDIMENT COLLECTED BEHIND THE FILTER SOCKS SHOULD BE REMOVED BY SHOVEL AFTER EACH STORM EVENT.
- REMOVE COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

REMOVAL

- ALL SAND, SOIL, SEDIMENT OR MUD MUST BE PHYSICALLY REMOVED FROM SEALED SURFACES, FIRST USING A SQUARE-EDGED SHOVEL, AND THEN A STIFF-BRISTLED BROOM, AND THEN BY A MECHANICAL VACUUM UNIT, IF AVAILABLE.
- IF NECESSARY FOR SAFETY REASONS, THE SEALED SURFACE SHALL ONLY BE WASHED CLEAN AFTER ALL REASONABLE EFFORTS HAVE BEEN TAKEN TO SHOVEL AND SWEEP THE MATERIALS FROM THE SURFACE.
- DISPOSE OF COLLECTED SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
- ALL SYNTHETIC (PLASTIC) MESH OR OTHER NON READILY BIODEGRADABLE MATERIALS MUST BE REMOVED FROM THE SITE ONCE THE SLOPE OR DRAIN IS STABILISED, OR THE SOCKS HAVE DETERIORATED TO A POINT WHERE THEY ARE NO LONGER PROVIDING THEIR INTENDED DRAINAGE OR SEDIMENT CONTROL FUNCTION.

ROCK FILTER DAM

MATERIALS

ROCK:

75 TO 100mm NOMINAL DIAMETER, HARD, EROSION RESISTANT ROCK.

GEOTEXTILE FABRIC:

HEAVY-DUTY, NEEDLE-PUNCHES, NON-WOVEN FILTER CLOTH ('BIDIM' A24 OR EQUIVALENT).

INSTALLATION

- REFER TO APPROVED PLANS FOR LOCATION AND INSTALLATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
- PRIOR TO PLACEMENT OF THE FILTER DAM, ENSURE THE TYPE AND SIZE OF EACH CHECK DAMS WILL NOT CAUSE A SAFETY HAZARD OR CAUSE WATER TO SPILL OUT OF THE DRAIN.
- CONSTRUCT THE FILTER DAM TO THE DIMENSIONS AND PROFILE SHOWN WITHIN THE APPROVED PLAN.
- WHERE SPECIFIED, THE FILTER DAM SHALL BE CONSTRUCTED ON A SHEET OF GEOTEXTILE FABRIC USED AS A DOWNSTREAM SPLASH PAD.

MAINTENANCE

- INSPECT EACH FILTER DAM AND THE DRAINAGE CHANNEL AT LEAST WEEKLY AND AFTER RUNOFF-PRODUCING RAINFALL.
- CHECK FOR DISPLACEMENT OF THE FILTER DAM
- CHECK FOR SOIL SCOUR AROUND THE ENDS OF THE FILTER DAM. IF SUCH EROSION IS OCCURRING, CONSIDER EXTENDING THE WIDTH OF THE FILTER DAM TO AVOID SUCH PROBLEMS.
- IF SEVERE SOIL EROSION OCCURS EITHER UNDER OR AROUND THE FILTER DAM, THEN SEEK EXPERT ADVICE ON AN ALTERNATIVE TREATMENT MEASURE.
- REMOVE AND SEDIMENT ACCUMULATED BY THE FILTER DAM, UNLESS IT IS INTENDED THAT THIS SEDIMENT WILL REMAIN WITHIN THE CHANNEL.
- DISPOSE OF COLLECTED SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

REMOVAL

- WHEN CONSTRUCTION WORK WITHIN THE DRAINAGE AREA ABOVE THE FILTER DAM HAS BEEN COMPLETED, AND THE DISTURBED AREAS AND THE DRAINAGE CHANNEL ARE SUFFICIENTLY STABILISED TO RESTRAIN EROSION, ALL TEMPORARY CHECK DAMS MUST BE REMOVED.
- REMOVE THE FILTER DAM AND ASSOCIATED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

0	FOR APPROVAL	GB		PF	03.03.20
No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director

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Plotted by: Gary Browning

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Drafting Check G. APPLIN

Design Check G. APPLIN

Approved (Project Director) P. FLANAGAN

Date 03.03.20

Scale AS SHOWN

This Drawing must not be used for Construction unless signed as Approved

Client	KS5 PTY LTD
Project	LANGLEY ROAD SUBDIVISION
Title	EROSION AND SEDIMENT CONTROL STRATEGY DETAILS SHEET 2 OF 2
Original Size	A1
Drawing No:	42-12520641-C028
Rev:	0