

10 September 2019

Our ref: 1331

Senior Planner
Mareeba Shire Council
PO Box 154
MAREEBA QLD 4880

Attention: Brian Millard

Dear Brian,

**APPLICATION FOR DEVELOPMENT PERMIT FOR OPERATIONAL WORKS
LOT 100 ON SP202702, MASON ROAD SUBDIVISION**

On behalf of our client, A & A Salinovic, we submit this application for a Development Permit for Operational Works on Lot 100 on SP202702, Mason Road, Kuranda.

The Operational Works proposed for the civil works and services associated with the planning approval RAL/18/0029.

This application is comprised of the following documents:

1. Fee Payment Receipt;
2. FNQROC Statement of Compliance;
3. Response to DA Conditions;
4. DA Form 1;
5. Stormwater Management Report;
6. Engineering Design Drawings.

We trust the attached application and supporting information is sufficient to allow Council to complete its assessment.

Should you have any queries, do not hesitate to contact this office.

Yours sincerely

TRINITY ENGINEERING AND CONSULTING



Isaac Marshall
Project Manager

Encl Lot 100 on SP202702, Mason Road – Operational Works Application

Item 1

Fee Payment Receipt

Item 2

FNQROC Statement of Compliance

FNQROC DEVELOPMENT MANUAL

Council Mareeba 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 72-76 Masons Road

Location of Development 72-76 Masons Road

Applicant A & A Salinovic

Designer Trinity Engineering and Consulting

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	Not applicable - Driveways only
Structures / Bridges	Not applicable
Subsurface Drainage	
Stormwater Drainage	Refer Stormwater Management Report
Site Re-grading	
Erosion Control and Stormwater Management	See attached
Pest Plant Management	To be provided by Contractor at pre-start
Cycleway / Pathways	Not applicable

Landscaping	Not applicable
Water Source and Disinfection/Treatment Infrastructure (if applicable)	Not applicable
Water Reticulation, Pump Stations and water storages	Pump stations and water storages not applicable to this application
Sewer Reticulation and Pump Stations	On-site disposal, no sewer reticulation
Electrical Reticulation and Street Lighting	To be provided as separate application by SPA Consulting
Public Transport	Not applicable
Associated Documentation/ Specification	FNQROC Specifications to apply
Priced Schedule of Quantities	To be provided by Civil Contractor
Referral Agency Conditions	Not applicable
Supporting Information (AP1.08)	Refer supporting documentation report
Other	

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

Designer Trinity Engineering and Consulting Pty Ltd **RPEQ No** 08462

Name in Full Paul Charles Steele

Signature  **Date** 06/09/19

Item 3

Response to DA Conditions

ASSESSMENT MANAGER CONDITIONS (COUNCIL)

a) Development assessable against the Planning Scheme

1. Development must be carried out substantially in accordance with the approved plans and the facts and circumstances of the use as submitted with the application, and subject to any alterations:
 - found necessary by the Council's delegated officer at the time of examination of the engineering plans or during construction of the development because of particular engineering requirements; and
 - to ensure compliance with the following conditions of approval.

Response: Noted. The applicant considers this operational works application complies with the conditions of development approval.

2. Timing of Effect

- 2.1 The conditions of the development permit for each stage of the development must be complied with to the satisfaction of Council's delegated officer prior to the endorsement of the plan of survey for each stage of the development, except where specified otherwise in these conditions of approval.

Response: Noted.

3. General

- 3.1 The development approval would not have been issued if not for the conditions requiring the construction or infrastructure or the payment of infrastructure charges within the conditions of approval.

Response: Noted.

- 3.2 The applicant/developer is responsible for the cost of necessary alterations to existing public utility mains, services or installations required by Works in relation to the proposed development or any works required by condition(s) of this approval.

Response: Noted.

- 3.3 All payments or bonds required to be made to the Council pursuant to any condition of this approval must be made prior to the endorsement of the plan of survey and at the rate applicable at the time of payment.

Response: Noted.

- 3.4 The developer must relocate (in accordance with FNQROC standards) any services such as water, sewer, drainage, telecommunications and electricity that are not wholly located within the lots that are being created/serviced where required by the relevant authority, unless approved by Council's delegated officer.

Response: Noted. The engineering design drawings enclosed in this application seek to ensure the above is achieved.

- 3.5 Where utilities (such as sewers on non—standard alignments) traverse lots to service another lot, easements must be created in favour of Council for access and maintenance purposes. The developer is to pay all costs (including Council's legal expenses) to prepare and register the easement documents.

Response: Noted. Associated easements for access, drainage and services will be created.

- 3.6 Where approved existing buildings and structures are to be retained, setbacks to any new property boundaries are to be in accordance with Planning Scheme requirements for the relevant structure and/or Queensland Development Code.

Response: Noted. The nominated building envelopes are as per the Brazier Motti planning phase concepts and are understood to provide adequate setbacks.

- 3.7 All works must be designed, constructed and carried out in accordance with FNQRQC Development Manual requirements (as amended) and to the satisfaction of Council's delegated officer.

Response: Noted.

- 3.8 Charges

All outstanding rates, charges, and expenses pertaining to the land are to be paid in full.

Response: Noted.

- 3.9 Bushfire Management (for Lots 2, 3 and 6 - 9 only).

A bushfire hazard management plan for the subject land and proposed allotments must be prepared by suitably qualified person and submitted to Council prior to the endorsement of the plan of survey. All future development on the subject land must comply with the bushfire hazard management plan.

Response: Noted. To be submitted separately by others.

- 3.10 Slope Stability

For any new building work proposed on a slope of 15% or greater, the applicant/developer must provide Council with a site-specific Geotechnical report prepared by a suitably qualified Registered Professional Engineer of Queensland (RPEQ) that certifies:

- The long – term stability of the development site; and
 - That the development site will not be adversely affected by land slide/slip activity originating on sloping land above the development site
4. Infrastructure Services and Standards.

Response: Noted. To be submitted separately by others.

- 3.11 Building Envelopes

- a) The approved building envelopes for proposed lots 1 - 4 and 6 — 9 are the building envelopes shown on Brazier Matti plan no. 34579/001A dated 26 July 2018.

Response: Noted.

- b) Prior to the endorsement of the survey plan the approved building envelope areas must be defined by markers set at each corner to the satisfaction of Council's delegated officer.

Response: Noted.

- c) All future buildings including associated on-site effluent disposal systems must be located within the approved building envelopes.

Response: Noted.

- d) No vegetation shall be cleared outside the approved building envelopes.

Response: Noted.

4. Infrastructure Services and Standards

4.1 Access

- a) Industrial/commercial grade access crossovers must be constructed (from the edge of the Masons Road kerbing to the commencement of each shared driveway required by 4.1 (b) below) in accordance with FNQROC Development Manual standards, to the satisfaction of Council's delegated officer.

Response: Noted. The engineering design drawings enclosed in this application noted 2 x commercial access crossovers (as per FNQROC standard drawing S1015) joining Mason's Road.

An access crossover must be provided/constructed to each allotment from the shared access driveways required by 4.1 (b) below to the boundary of each proposed lot in accordance with the FNQROC Development Manual, to the satisfaction of Council's delegated officer. The provision of layback kerb along the road/access easement frontages of each allotment will satisfy this condition.

Response: Noted. Lot 2, 3, 7 & 8 are a concrete access crossover to facilitate crossing the kerb and channel along the shared driveway. All other lots have a concrete driveway in accordance with FNQROC standard drawing S1110.

- b) An asphalt or concrete sealed driveway, including kerb and channel shall be provided for the full length of the access handles of Lots 1 and 6 (covered by easements A and B), to the satisfaction of Council's delegated officer. Each driveway will:
- have a minimum formation width of 4 metres;
 - be constructed generally in the centre of each access handle;
 - be formed to cater for Stormwater drainage such that and stormwater runoff is discharged to Masons Road or another approved legal point of discharge; and
 - service and utility conduits, including water supply pipes are to be provided for the full length of each driveway to service the benefited allotments.

Response: Noted. A 4.0m wide (minimum) concrete shared driveway with passing bays has been detailed on the engineering drawings for the full length of both access handles. Both driveways have barrier kerb and channel for the full length to convey stormwater flows and include shared service trenches behind the kerb and channel.

- c) A formed concrete wheelie bin set—down area capable of accommodating 4 wheelie bins must be constructed adjacent the Masons Road kerbing next to each access crossover required by 4.1 (a) above.

Response: Noted. A concrete wheelie-bin set down has been shown to accommodate 2 x bins per lot along Mason Road (refer to engineering drawings submitted in this application).

- d) Reciprocal "access and services" easement must be established over the access handles of Lots 1 and 6 which benefit Lots 2 – 5 and Lots 7 — 9. Easement documents must be made available to Council for review prior to endorsement of a plan of survey creating any lots.

Response: Noted.

Prior to works commencing, plans for the abovementioned works must be approved as part of a subsequent application for Operational Works.

4.2 Stormwater Drainage

- a) The applicant/developer must take all necessary steps to ensure a non-worsening effect on surrounding land as a consequence of the development.

Response: Noted. The Stormwater Management Report confirms how this has been addressed.

- b) Prior to operational works commencing, the applicant must submit a Stormwater Management Plan and Report prepared and by a suitable qualified design engineer (RPEQ) that meets or exceeds the standards of design and construction set out in the Queensland Urban Drainage Manual (QUDM) and the FNQROC Development Manual to the satisfaction of Council's delegated officer.

Response: Noted. Please refer to the response within the Stormwater Management Report.

- c) Prior to works commencing the applicant must submit a Stormwater Quality Management Plan and Report prepared and certified by a suitably qualified design engineer (RPEQ) that meets or exceeds the standards of design and construction set out in the Urban Stormwater Quality Planning Guideline and the Queensland Water Quality Guideline to the satisfaction of Council's delegated officer.

Response: Noted. With respect to Council's requirement for maintaining water quality, the opportunities to introduce quality devices are limited within the type and size of this development. However, erosion and sediment control measures will be used during construction as shown on the attached Erosion and Sediment Control Plan. The plan will include hydro mulching of tables drains and/or drill seeding to provide future sediment control measures after construction has been completed.

- d) The Stormwater Quality Management Plan must include an Erosion and Sediment Control Plan that meets or exceeds the Soil Erosion and Sedimentation Control Guidelines (institute of Engineers Australia) to the satisfaction of Council's delegated officer.

Response: Noted. Please refer to the response within the Stormwater Management Report.

- e) The applicant/developer must construct the stormwater drainage infrastructure in accordance with the approved Stormwater Management Plan and/or Stormwater Quality Management Plan and Report.

Response: Noted. Please refer to the Stormwater Management Report.

- f) Temporary drainage is to be provided and maintained during the construction phase of the development, discharged to a lawful point and not onto the construction site.

Response: Noted. To be considered during construction.

- g) All stormwater channels through private property must be registered, with the easement for drainage purposes in favour of Council. All documentation leading to the registration of the easement must be completed at no cost to Council.

Response: Noted. Easements are nominated on the design plans.

- h) All stormwater drainage collected from the site must be discharged to an approved legal point of discharge.

Response: Noted. Please refer to the response within the Stormwater Management Report.

- i) The applicant (at their cost) must video all stormwater lines and submit the video for inspection by Council's delegated officer prior to the development being taken "off maintenance" to ensure that no defects have occurred during the 12-month maintenance period.

Response: Noted. Please refer to the response within the Stormwater Management Report.

4.3 Water Supply

- a) Where the existing reticulated supply does not currently service the site or is not at an adequate capacity, the developer is required to extend or upgrade the reticulated water supply infrastructure to connect the site to Council's existing infrastructure at a point that has sufficient capacity to service the development in accordance with FNQROC Development Manual standards (as amended).

Response: The existing water main infrastructure along Mason Road requires an extension (refer to engineering drawings submitted in this application).

- b) A water service connection must be provided to each proposed lot in accordance with FNQROC Development Manual standards (as amended) to the satisfaction of Council's delegated officer.

Response: Noted. Each new lot has a water service connection (refer to the engineering drawings submitted in this application).

4.4 Wastewater Disposal

At the time of construction of a future dwelling or outbuilding on each lot, any associated on-site effluent disposal system must be constructed in compliance with the latest version On-Site Domestic Wastewater Management Standard (ASNZIS47) to the satisfaction of the Council's delegated officer.

Response: Noted. To be submitted separately by others at time of constructing the dwelling.

4.5 Electricity Provision/Supply

The applicant/developer must ensure that an appropriate level of electricity supply is provided to each allotment in accordance with FNQROC Development Manual standards (as amended) to the satisfaction of Council's delegated officer.

Response: Noted. To be submitted separately.

Written advice from an Electricity Service Provider is to be provided to Council indicating that an agreement has been made for the provision of underground power reticulation.

Response: Noted. To be submitted separately.

4.6 Telecommunications

The applicant/developer must demonstrate that a connection to the national broadband network is available for each allotment, or alternatively, enter into an agreement with a telecommunication carrier to provide telecommunication services to each lot and arrange provision of necessary conduits and enveloping pipes (to be included for the full length of the shared driveways required by 4.1 (b) above).

Response: Noted. To be submitted separately.

5. Additional Payment Condition/s (section 130 of the Planning Act 2016)

- 5.1 The additional payment condition has been imposed as the development will create additional demand on trunk infrastructure which will create additional trunk infrastructure costs for council.
- 5.2 The developer must pay \$16,960.00 per additional lot as a contribution toward trunk infrastructure with the amount of the contribution increased on 1 July each year in accordance with the increase for the PPI index for the period starting on the day the development approval takes effect, adjusted by reference to the 3-yearly PPI index average to the date of payment.

Response: Noted. To be paid at the plan sealing stage.

5.3 The trunk infrastructure for which the payment is required is:

- The trunk transport network servicing the land (\$4,585.00 per additional allotment)
- The trunk open space infrastructure servicing the land (\$4,535.00)
- The trunk water supply infrastructure servicing the land (\$7,790.00 — Mason High Level Zone)

Response: Noted. To be paid at the plan sealing stage.

5.4 The developer may elect to provide part of the trunk infrastructure instead of making the payment.

Response: N/A

5.5 If the developer elects to provide part of the trunk infrastructure the developer must:

- Discuss with Council's delegated officer the part of the works to be undertaken; '
- Obtain the necessary approvals for the part of the works;
- Indemnify the Council in relation to any actions, suits or demands relating to or arising from the works;
- Take out joint insurance in the name of the Council and the developer in the sum of \$20,000,000 in relation to the undertaking of the works;
- Comply with the reasonable direction of Council officers in relation to the completion of the works;
- Complete the Works to the standards required by the Council; and
- Complete the works prior to endorsement of the plan of subdivision.

Response: N/A

ADVISORY NOTES

The following notes are included for guidance and information purposes only and do not form part of the assessment manager conditions:

Assessment Managers Advice

- a) A number of other charges or payments may be payable as conditions of approval. The applicable fee is set out in Council's Fees & Charges Schedule for each respective financial year.

Response: N/A to OPW

- b) Water Meters/Water Services Connection.

Prior to the water service connection works commencing, a Water Quotation and Connection Request must be lodged with Council. The cost of the required water connection will be determined based upon the assessment of the Water Quotation Request. The Water Quotation Request must be lodged, and the required connection fee paid prior to the signing of the survey plan.

Response: N/A to OPW

- c) Easement Documents.

Council has developed standard easement documentation to assist in the drafting of formal easement documents for Council easements. Please contact the Planning Section for more information regarding the drafting of easement documents for Council easements.

Response: Noted. To be completed at Plan Sealing Stage.

- d) Endorsement Fees.

Council charges a fee for the endorsement of a Survey Plan, Community Management Statements, easement documents, and covenants. The fee is set out in Council's Fees & Charges Schedule applicable for each respective financial year.

Response: Noted. Fees to be paid at plan sealing stage.

- e) Compliance with applicable codes/policies.

The development must be carried out to ensure compliance with the provisions of Council's Local Laws, Planning Scheme Policies, Planning Scheme and Planning Scheme Codes to the extent they have not been varied by a condition of this approval.

Response: Noted.

- f) Notation on Rates Record.

A notation will be placed on Council's Rate record with respect to each lot regarding the following conditions:

- a registered covenant (Lot 9 only)
- an approved building envelope plan (Lots 1 - 4 and 6 - 9 only)
- building on sloped land (greater than 15% grade)
- conditions regarding bushfire management (Lots 2, 3 and 6 - 9 only}
- an approved bushfire management plan (Lots 2, 3 and 6 - 9 only)
- a registered easement over the subject site (Lots 1, 2, 3 and 6 only)
- the standard of any future on-site effluent disposal system

Response: Noted.

g) Transportation of Soil.

All soil transported to or from the site must be covered to prevent dust or spillage during transport. If soil, is tracked or spilt onto the road pavements as a result of works on the subject site, it must be removed prior to the end of the working day and within four (4) hours of a request from a Council Officer.

Response: Noted. The earthworks are proposed to be balanced on site.

h) Environmental Protection and Biodiversity Conservation Act 1999

The applicant is advised that referral may be required under the Environmental Protection and Biodiversity Conservation Act 1999 if the proposed activities are likely to have a significant impact on a matter of national environmental significance. Further information on these matters can be obtained from www.environment.gov.au

i) Cultural Heritage

In carrying out the activity the applicant must take all reasonable and practicable measures to ensure that no harm is done to Aboriginal cultural heritage (the "cultural heritage duty of care"). The applicant will comply with the cultural heritage duty of care if the applicant acts in accordance with gazetted cultural heritage duty of care guidelines. An assessment of the proposed activity against the duty of care guidelines will determine whether or to what extent Aboriginal cultural heritage may be harmed by the activity. Further information on cultural heritage, together with a copy of the duty of care guidelines and cultural heritage search forms, may be obtained from www.datsip.qld.gov.au

Item 4
DA Form 1

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>	A & A Salinovic
Contact name <i>(only applicable for companies)</i>	Isaac Marshall
Postal address <i>(P.O. Box or street address)</i>	C/- Trinity Engineering and Consulting Pty Ltd PO Box 7963
Suburb	Cairns
State	Queensland
Postcode	4870
Country	Australia
Contact number	4040 7111
Email address <i>(non-mandatory)</i>	admin@trinityengineering.com.au
Mobile number <i>(non-mandatory)</i>	
Fax number <i>(non-mandatory)</i>	
Applicant's reference number(s) <i>(if applicable)</i>	RAL/18/0029

2) Owner's consent
2.1) Is written consent of the owner required for this development application?
☐ Yes – the written consent of the owner(s) is attached to this development application
☒ No – proceed to 3)

PART 2 – LOCATION DETAILS

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

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

3.1) Street address and lot on plan

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

a)	Unit No.	Street No.	Street Name and Type	Suburb
		72-76	Mason Road	Kuranda
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
	4881	100	SP202702	Mareeba Shire Council
b)	Unit No.	Street No.	Street Name and Type	Suburb
		65-71	Mason Road	Kuranda
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
	4881	102	SP202702	Mareeba Shire Council

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

Note: Place each set of coordinates in a separate row. 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)	
145.62421	-16.85199	☒ WGS84 ☐ GDA94 ☐ Other:	Mareeba Shire	

☐ Coordinates of premises by easting and northing				
Easting(s)	Northing(s)	Zone Ref.	Datum	Local Government Area(s) (if applicable)
		☐ 54 ☐ 55 ☐ 56	☐ WGS84 ☐ GDA94 ☐ Other:	

3.3) Additional premises

- ☐ Additional premises are relevant to this development application and 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 <i>Transport Infrastructure Act 1994</i>	
Lot on plan description of strategic port land:	
Name of port authority for the lot:	
☐ In a tidal area	
Name of local government for the tidal area (if applicable):	
Name of port authority for tidal area (if applicable):	
☐ On airport land under the <i>Airport Assets (Restructuring and Disposal) Act 2008</i>	
Name of airport:	
☐ Listed on the Environmental Management Register (EMR) under the <i>Environmental Protection Act 1994</i>	

EMR site identification:	
☐ Listed on the Contaminated Land Register (CLR) under the <i>Environmental Protection Act 1994</i>	
CLR site identification:	

5) Are there any existing easements over the premises?

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

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

PART 3 – DEVELOPMENT DETAILS

Section 1 – Aspects of development

6.1) Provide details about the first development aspect

a) What is the type of development? *(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):*

Operational Works to construct 9 lot 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	☐ Yes – complete division 1 if assessable against a local planning instrument
Reconfiguring a lot	☐ Yes – complete division 2
Operational work	☒ Yes – complete division 3
Building work	☐ Yes – complete 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?

☐ Yes		
☐ 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)

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

☒ Road work	☒ Stormwater	☒ Water infrastructure	
☒ Drainage work	☒ Earthworks	☐ Sewage infrastructure	
☐ Landscaping	☐ Signage	☐ Clearing vegetation	
☐ Other – please specify: <table border="1" style="width: 100%;"><tr><td></td></tr></table>			

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

☒ Yes – specify number of new lots:	9
☐ No	

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

To be advised

PART 4 – ASSESSMENT MANAGER DETAILS

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

Mareeba 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 : ☐ Electricity infrastructure
Matters requiring referral to: • The Chief executive of the holder of the licence, if not an individual • The holder of the licence, if the holder of the licence is an individual ☐ Oil and gas infrastructure
Matters requiring referral to the Brisbane City Council : ☐ Brisbane core port land
Matters requiring referral to the Minister under the Transport Infrastructure Act 1994 : ☐ Brisbane core port land (inconsistent with Brisbane port LUP for transport reasons) ☐ Strategic port land
Matters requiring referral to the relevant port operator : ☐ Land within Port of Brisbane's port limits (below high-water mark)
Matters requiring referral to the Chief Executive of the relevant port authority : ☐ Land within limits of another port (below high-water mark)
Matters requiring referral to the Gold Coast Waterways Authority : ☐ Tidal works, or work in a coastal management district in Gold Coast waters
Matters requiring referral to the Queensland Fire and Emergency Service : ☐ Tidal works marina (<i>more than six vessel berths</i>)

18) Has any referral agency provided a referral response for this development application?		
☐ Yes – referral response(s) received and listed below are attached to this development application ☒ No		
Referral requirement	Referral agency	Date of referral response
Identify and describe any changes made to the proposed development application that was the subject of the referral response and the development application the subject of this form, or include details in a schedule to this development application (<i>if applicable</i>).		

PART 6 – INFORMATION REQUEST

19) Information request under Part 3 of the DA Rules
☒ I agree to receive an information request if determined necessary for this development application ☐ I do not agree to accept an information request for this development application
Note: By not agreeing to accept an information request I, the applicant, acknowledge:
• that this development application will be assessed and decided based on the information provided when making this development application and the assessment manager and any referral agencies relevant to the development application are not obligated under the DA Rules to accept any additional information provided by the applicant for the development application unless agreed to by the relevant parties • Part 3 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 DA Forms Guide .

PART 7 – FURTHER DETAILS

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

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

List of approval/development application references	Reference number	Date	Assessment manager
☒ Approval ☐ Development application	RAL/18/0029	19 December 2018	Mareeba Shire Council
☐ Approval ☐ Development application			

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

- ☐ Yes – a copy of the receipted QLeave form is attached to this development application
☒ No – I, the applicant will provide evidence that the portable long service leave levy has been paid before the assessment manager decides the development application. I acknowledge that the assessment manager may give a development approval only if I provide evidence that the portable long service leave levy has been paid
☐ Not applicable (e.g. building and construction work is less than \$150,000 excluding GST)

Amount paid	Date paid (dd/mm/yy)	QLeave levy number
\$		

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:	
-----------------------------	--	-----------	--

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>	☒ 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	☐ Yes ☒ 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>	☒ 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>	☒ 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>)	☒ Yes ☐ Not applicable

25) Applicant declaration
☒ By making this development application, I declare that all information in this development application is true and correct ☐ Where an email address is provided in Part 1 of this form, I consent to receive future electronic communications from the assessment manager and any referral agency for the development application where written information is required or permitted pursuant to sections 11 and 12 of the <i>Electronic Transactions Act 2001</i> <i>Note: It is unlawful to intentionally provide false or misleading information.</i>
Privacy – Personal information collected in this form will be used by the assessment manager and/or chosen assessment manager, any relevant referral agency and/or building certifier (including any professional advisers which may be engaged by those entities) while processing, assessing and deciding the development application. All information relating to this development application may be available for inspection and purchase, and/or published on the assessment manager's and/or referral agency's website. Personal information will not be disclosed for a purpose unrelated to the <i>Planning Act 2016</i>, <i>Planning Regulation 2017</i> and the <i>DA Rules</i> except where: - 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. This information may be stored in relevant databases. The information collected will be retained as required by the <i>Public Records Act 2002</i>.

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	

Item 5
Stormwater Management Report

Date	10 September 2019
Project No.	1331
Subject	Lot 100 SP202702, Masons Road, Kuranda: Stormwater Management Report
Author	Isaac Marshall

1. Stormwater Drainage

This advice has been prepared by Trinity Engineering and Consulting Pty Ltd on behalf of A & A Salinovic, in relation to the proposed development at 72-76 Masons Road, Kuranda (Lot 100 SP202702). This report will focus on the hydrology and hydraulics associated with the development.

This advice provides the stormwater calculations for the two (2) shared driveways and the future drainage channels within the proposed development. The advice will assist Council to determine that the changes will have a non-worsening effect on drainage within surrounding properties, and the changes will, in fact, divert most of the existing flows away from properties to a lawful point of discharge.

The advice addresses the relevant items of the negotiated Decision Notice Conditions, outlined in application number RAL/18/0029. These items are reproduced below for clarity:

4.2 Stormwater Drainage

- a) *The applicant/developer must take all necessary steps to ensure a non-worsening effect on surrounding land as a consequence of the development.*
- b) *Prior to operational works commencing, the applicant must submit a Stormwater Management Plan and Report prepared and certified by a suitably qualified design engineer (RPEQ) that meets or exceeds the standards of design and construction set out in the Queensland Urban Drainage Manual (QUDM) and the FNQROC Development Manual to the satisfaction of Council's delegated officer.*
- d) *The Stormwater Quality Management Plan must include an Erosion and Sediment Control Plan that meets or exceeds the Soil Erosion and Sedimentation Control Guidelines (Institute of Engineers Australia) to the satisfaction of Council's delegated officer.*
- g) *All stormwater channels through private property must be registered, with the easement for drainage purposes in favour of Council. All documentation leading to the registration of the easement must be completed at no cost to Council.*
- h) *All stormwater drainage collected from the site must be discharged to an approved legal point of discharge.*

Existing overland flows on the southern side of the allotment currently discharge into an existing defined drainage path adjacent to the southern property boundary (refer Catchment D on Figure 2 below and image 1). This drainage path flows to the north and eventually joins Jumrum Creek.

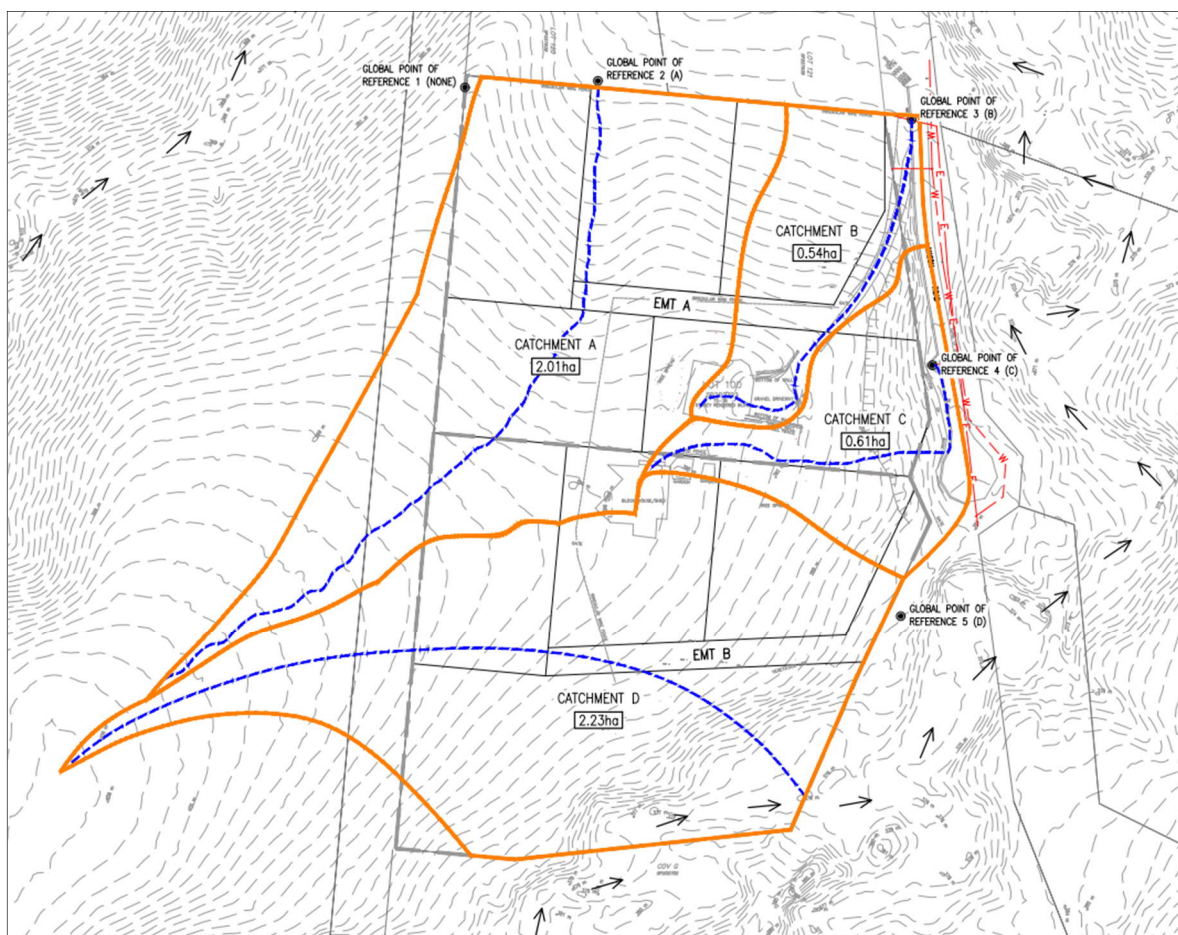


Figure 2 – Pre-development local catchment study (refer Appendix A)

Existing overland flows on the northern side (Catchment A) currently flow through a large grassed swale onto the adjoining lots before discharging into the existing creek/gully (refer image 2).

Stormwater flows from the eastern side of the property are collected on Masons Road kerb & channel and flow to the inlet pit (refer image 3) situated at a sag on Masons Road which also outlets into the adjacent eastern Branch of the drainage gully (refer images 5 & 6).



Image 1 – Existing slope on the southern side of the allotment



Image 2 – Existing slope on the northern side of the allotment



**Image 3 – Existing kerb inlet pit on Masons Road
(grate currently blocked)**



**Image 4 – Existing slope on the eastern side of the
allotment**



**Image 5 – Existing headwall outlet from kerb inlet
pit on Masons Road**



**Image 6 – Existing rock batter protection at outlet
(headwall circled in red)**



Image 7 – Existing lot pointing towards Lot 120



Image 8 – Existing driveway access

3. Hydrology

The existing pre-development catchments and discharge locations were identified using a combination of LIDAR, detailed survey, and drone survey. The pre-development catchments are outlined in Figure 2 on previous page.

Four (4) catchments were identified for the existing lot layout. The catchment sizes, Point of Reference (POR), and peak flow rates have been summarised in Table 1 below.

Table 1 – Pre-Development peak flow rates for typical rainfall events (refer Appendix A)

Catchment	Area (ha)	POR	Peak Flow Rates Based on Rational Method (m ³ /s)						
			Average Recurrence Interval (ARI)						
			1	2	5	10	20	50	100
A	2.008	2	0.251	0.342	0.481	0.568	0.684	0.876	1.016
B	0.544	3	0.094	0.128	0.182	0.215	0.260	0.334	0.389
C	0.607	4	0.088	0.120	0.170	0.201	0.243	0.311	0.362
D	2.232	5	0.279	0.380	0.535	0.632	0.761	0.974	1.130

The post-development catchments and discharge locations were identified using a combination of lidar, detailed survey, and drone survey. The post-development catchments are outlined in Figure 3 below.

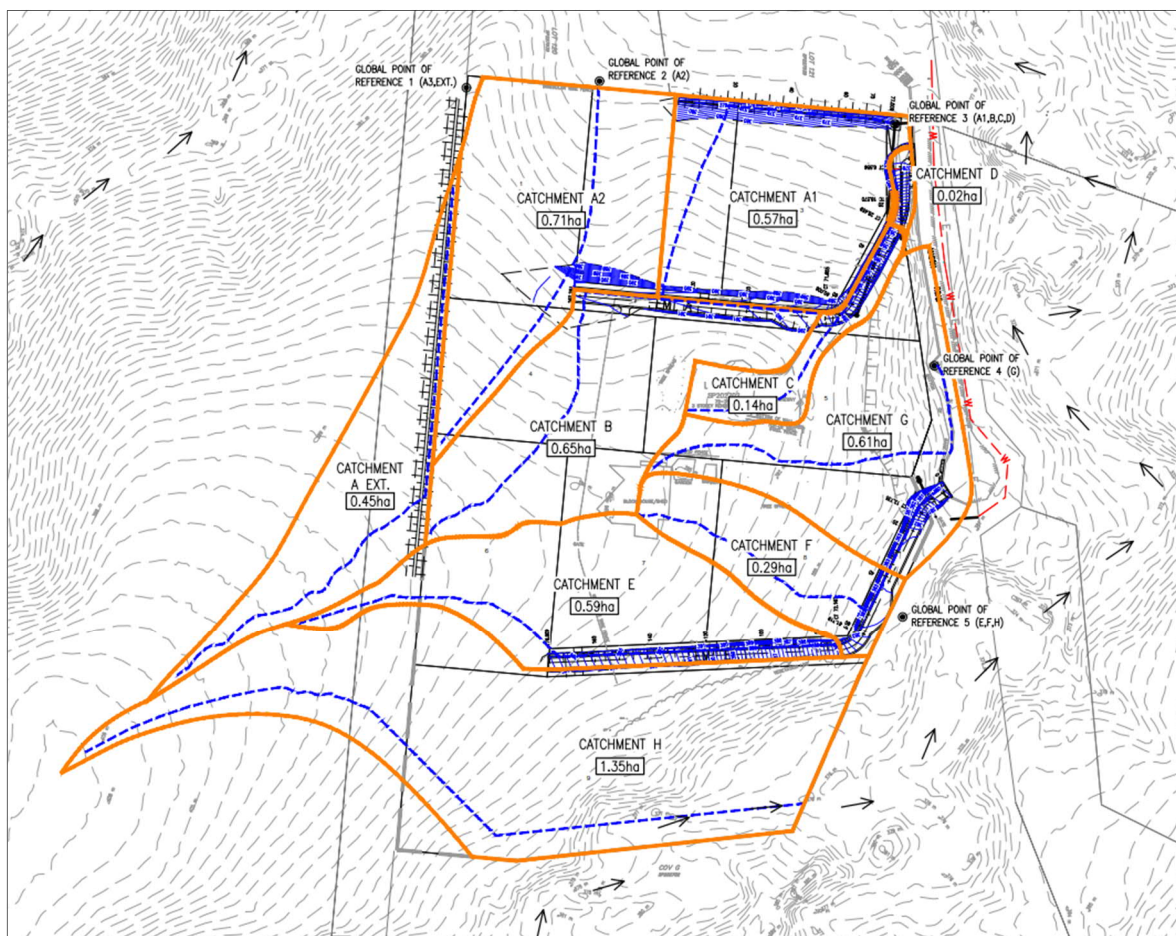


Figure 3 – Post-development local catchment study (refer Appendix A)

Ten (10) sub-catchments were identified for the proposed developed scenario. The catchment sizes, Point of Reference (POR), and peak flow rates have been summarised in Table 2 below.

Table 2 – Post-Development peak flow rates for typical rainfall events (refer Appendix A)

Catchment	Area (ha)	POR	Peak Flow Rates Based on Rational Method (m ³ /s)						
			Average Recurrence Interval (ARI)						
			1	2	5	10	20	50	100
A Ext.	0.452	1	0.060	0.081	0.114	0.135	0.163	0.208	0.242
A1	0.565	3	0.087	0.119	0.168	0.198	0.239	0.307	0.356
A2	0.705	2	0.101	0.138	0.195	0.230	0.278	0.356	0.413
B	0.647	3	0.103	0.141	0.199	0.236	0.284	0.365	0.424
C	0.139	3	0.027	0.037	0.052	0.062	0.075	0.096	0.111
D	0.021	3	0.004	0.006	0.008	0.009	0.011	0.015	0.017
E	0.591	5	0.098	0.134	0.190	0.225	0.271	0.348	0.404
F	0.293	5	0.045	0.061	0.087	0.103	0.124	0.159	0.185
G	0.607	4	0.093	0.127	0.180	0.213	0.257	0.329	0.382
H	1.348	5	0.178	0.243	0.342	0.403	0.486	0.622	0.721

The runoff coefficients adopted are supported by site investigations (refer photos 1-8) as well as high-quality drone imagery to determine the ground cover characteristics. The coefficient of runoff has been determined based on procedures outlined in the Queensland Urban Drainage Manual (QUDM).

In its current form, the site is classed as pervious and the surface generally comprises 'good grass cover' (refer photos). The slope of the catchments is generally considered high with an average equal area slope of approximately 10%. The lawful points of discharge were identified from site observations and existing drainage corridors.

The development proposes to modify the drainage regime for the site to achieve the driveways and drains for the lot layout. In doing so the works will direct some flow away from adjacent properties and the stormwater system has been designed to convey the flows to lawful points of discharge.

To ensure a non-worsening effect on adjacent properties, improve current stormwater conveyance, and to protect batters from scouring; a combination of grassed channels, bunding, kerb and channel, kerb inlet pits, field inlet pits, and culverts have been included in the subdivision design. The locations of the proposed stormwater infrastructure are detailed in the engineering drawings attached in Appendix D.

Table 3 identifies the difference in area and peak stormwater flows (in the 100-year ARI event) between the pre-development and post-development for the five (5) points of reference (POR). The table identifies that the increase resulting from the development of the site is addressed by capturing and conveying flows to a lawful point of discharge where there is negligible impact.

Table 3 – Pre-development and post-development Q100 flow comparison

POR	Pre-Area (ha)	Post Area (ha)	Area Increase (ha)	Pre Q100 (m3/s)	Post Q100 (m3/s)	Flow Increase / Decrease (m3/s)	Q100 % Increase / Decrease	Comment
1	0.000	0.452	0.452	0.000	0.242	0.242	N/A	Overland flow direct to creek – No impact
2	2.008	0.705	-1.303	1.016	0.413	-0.603	-59	Reduced
3	0.544	1.373	0.829	0.389	0.909	0.520	134	Piped flow direct to creek – No impact
4	0.607	0.607	0.000	0.362	0.382	0.021	6	Direct to creek – No impact
5	2.232	2.232	0.000	1.130	1.310	0.181	16	Direct to creek – No Impact

Point of Reference 1 will be a new point of discharge into the existing drainage gully on the western side of the property and will receive flows from the external Catchments A and A3. Discharge to this point will be achieved by constructing diversion bunds along the unformed road reserve on the western property boundary for external Catchment A.

Point of Reference 2 is the grass swale where flows from the pre-development Catchment A currently flow onto the adjacent lots 120, 121 and 123 on SP227939. The majority of the existing overland flows onto the adjacent lots are captured along Driveway 1. The V-drain with a type 3 invert contains and conveys sub-catchment A1 to Point of Reference 3. The remaining flows from Catchment A2 will continue to flow through the natural channel on the adjacent lots. Note this represents a 59% reduction from the pre-development scenario and is considered to meet the "non-worsening" principles.

Point of Reference 3 currently collects the flows from pre-development Catchment B and diverts flows into the drainage gully along the existing kerb and channel along Masons Road.

It is proposed that a new field inlet pit is positioned at the end of the V-drain to capture the flows and divert them underneath Masons Road to the large existing drainage path (creek) on the other side. It is proposed to provide a new outlet at the northern boundary of the site consistent with the existing culvert crossroad further along Masons Road (from Point of Reference 4).

An existing kerb inlet pit is located at Point of Reference 4 to capture the flows from pre-development Catchment C.

Point of Reference 5 captures the sheet flow from the post-development Catchments E, F and H which flow directly into the existing drainage gully.

Impacts

- Positive impacts on allotments 120, 121 and 123 on SP227939 (Point of Reference 2) due to reduced contributing catchment areas and V-drain/bund with type 3 invert along the northern property boundary (refer Table 3).
- Additional flows at Point of Reference 3 due to the proposed drainage system along Driveway 1 and V-drain/bund with type 3 invert along the northern property boundary (refer Table 3). Additional flows addressed by new crossroad culvert direct to (high capacity) creek where impacts are negligible.
- Stormwater impacts on Point of Reference 4 are slightly increased due to the assumed impervious area changes.
- Stormwater impacts on Point of Reference 5 are slightly increased due to the assumed impervious area changes allowing for future dwellings on the lots (refer Table 3).

Note: The design seeks Councils approval to discharge directly to the defined drain on the eastern side of Masons Road.

4. Stormwater Management

Shared Driveways

Driveway 1 will service lots 1-5 and will have one-way cross fall of 2.5% in the direction of the existing profile. The driveway is proposed to be of concrete construction with barrier kerb and channel along its length. It is proposed that three (3) on-grade kerb inlet pits are positioned along the driveway (refer Appendix D – 1331-002) to capture runoff from the upstream catchments, commencing prior to the steeper sections.

The kerb inlet pits will be connected with an internal pipe system (Diameter 300mm) and external road pipe system diameter 375mm and 600mm RCPs. The driveway pipes connect to a Type B Field Inlet Pit (refer Figure 5) situated at the end of proposed Drain 1.

Flows will outlet underneath Masons Road via a 600mm RCP to a standard headwall.

Proposed lots 2 and 3 are below the driveway and additional verge, bunding is proposed along the frontage of these lots to provide a 100mm verge rise in accordance with QUDM (refer Figure 4 below). The bunding has also been considered in the grading for individual access driveways.

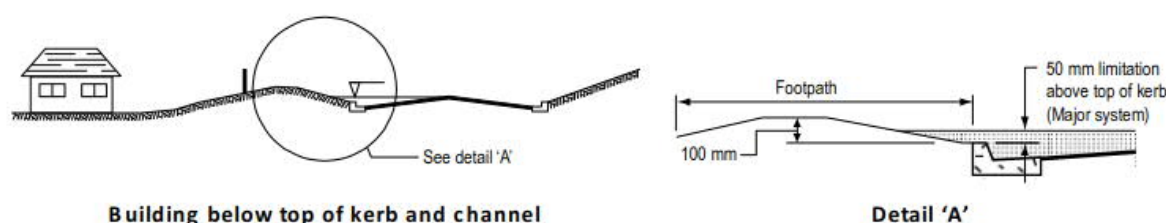


Figure 4 – Building below kerb and channel criteria (QUDM 2016 – Pg. 117)

Driveway 2 services lots 6-9 and has a varied crossfall to allow for excess stormwater to flow into the adjacent drainage gully. From chainage 26.0 to 32.0 the driveway will transition to 1.0% crossfall towards the drainage path to allow stormwater flows to tip out from the driveway. From chainage 32.0 to 42.0 the crossfall will remain at 1.0% in the direction of the existing profile. From chainage 42.0 to 48.0 the crossfall will transition to 2.5% fall into the hillside.

The remaining length of the driveway will have 2.5% crossfall into the hillside. This will allow for the upstream catchment flows to be contained within the steeper sections of the driveway and the flows will tip out into the existing drainage gully at the more gradual sections of driveway where the driveway crossfall is shaped to facilitate this.

Driveway 2 will also be of concrete construction with kerb and channel along the entire length.

Drainage Easements

The proposed drain along the northern property boundary will comprise two (2) drainage easements across the proposed lots 2 and 3. The drain will capture sheet flow from Catchment A1 (refer figure 3). The drain will be lined with an FNQROC Type 3 concrete invert with 1 in 4 grassed batters and an earth bund along the property boundary to provide the recommended 300mm freeboard level. Stormwater flows will be conveyed to an FNQROC type B field inlet pit (refer figure 5) located at the end of the drainage line.

From the pit in the verge, the flows are conveyed underneath Masons Road via a 600mm RCP to a headwall, and into the drainage gully. This is essentially the same as the existing stormwater solution approximately 100m further along Masons Road.

Council approval is requested for the discharge at this location.

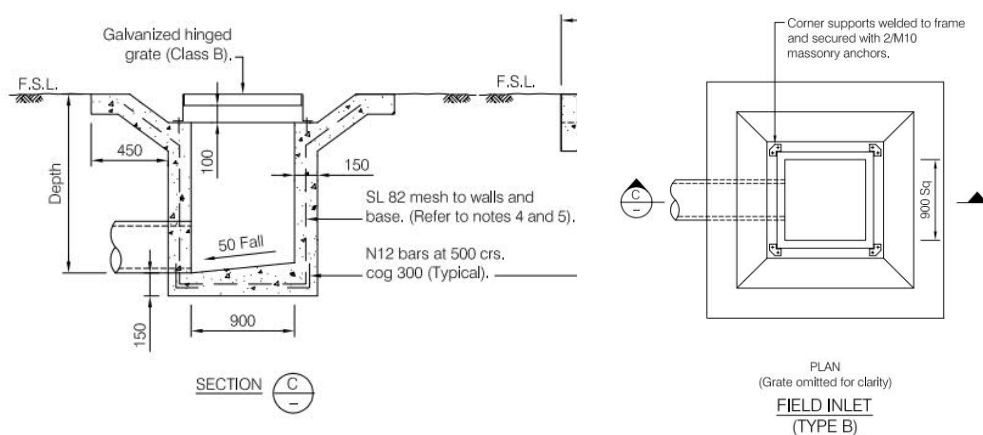


Figure 5 – Field inlet pit Schematic (FNQROC S1070B)

6. Summary

The proposed stormwater infrastructure will achieve a non-worsening effect on the surrounding land and will have a positive impact by containing and conveying some existing overland flows to a lawful point of discharge. More increases in overall runoff (due to development increase in impervious area) are conveyed to the high capacity creeks and have negligible impact on the system.

Individual responses to relevant development conditions have been summarised below.

4.2 Stormwater Drainage

- a) *The applicant/developer must take all necessary steps to ensure a non-worsening effect on surrounding land as a consequence of the development.*

Response: A key objective for the proposed development was to seek to minimise the existing flows onto the adjacent properties on the northern side of the allotment. Upstream flows from lots 4, 5 and 6 are now captured on the shared access driveway and discharged to Masons Road.

Similarly, flows from lots 2 and 3 are captured within the proposed concrete-lined drain along the northern property boundary (refer Appendix D - DWG 1331-002) and conveyed to Masons Road then into the existing drainage gully. Stormwater flows from lots 5, 6, 7 and 8 are initially captured on the second shared access driveway but are then tipped out into the drainage path. Sheet flow from lot 9 will flow directly into the adjacent drainage gully.

- b) *Prior to operational works commencing, the applicant must submit a Stormwater Management Plan and Report prepared and certified by a suitably qualified design engineer (RPEQ) that meets or exceeds the standards of design and construction set out in the Queensland Urban Drainage Manual (QUDM) and the FNQROC Development Manual to the satisfaction of Council's delegated officer.*

Response: The attached report addresses the requirements of a Stormwater Management Report. Calculations and design drawings have been produced in accordance with the Queensland Urban Drainage Manual (QUDM) and the FNQROC Development Manual (refer Appendix A-D)

- d) *The Stormwater Quality Management Plan must include an Erosion and Sediment Control Plan that meets or exceeds the Soil Erosion and Sedimentation Control Guidelines (Institute of Engineers Australia) to the satisfaction of Council's delegated officer.*

Response: The proposed Erosion and Sediment Control Plan (ESC) is attached in Appendix D – 1331-008.

- g) *All stormwater channels through private property must be registered, with the easement for drainage purposes in favour of Council. All documentation leading to the registration of the easement must be completed at no cost to Council.*

Response: Easements have been included on the design plans and will be registered in favour of Council upon completion (refer Appendix D).

- h) *All stormwater drainage collected from the site must be discharged to an approved legal point of discharge.*

Response: The points of discharge are shown on the plans and discussed in the Stormwater Management Report. Points of discharge include: Road reserve west from the development, Masons Road, and the drainage line east from Masons Road. A small portion of the existing catchment continues to discharge onto lot 120 as nominated in TRC's advice to Council dated 30/07/19.

Yours sincerely

TRINITY ENGINEERING AND CONSULTING



Isaac Marshall
Project Manager

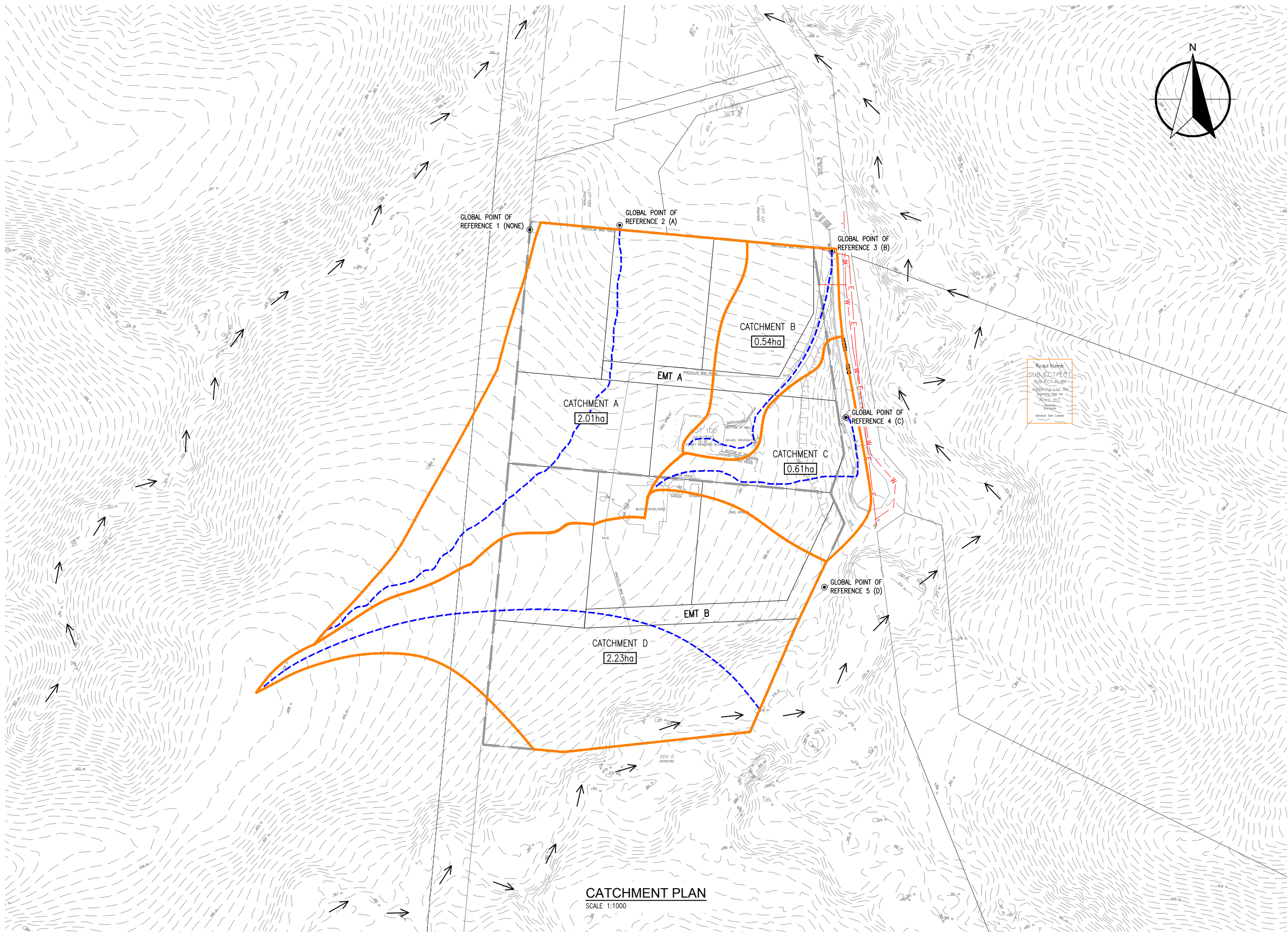


Paul Steele
RPEQ 8462

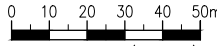
APPENDIX A
Catchment Plans

FIGURE 001 – Pre-development Catchment Plan
FIGURE 002 – Post-development Catchment Plan

File: T:\1331 72-76 Masons Road ROL\Drawings\ 1331-FIGURE-001(B).dwg
Printed: 10 September 2019, 1:11 PM

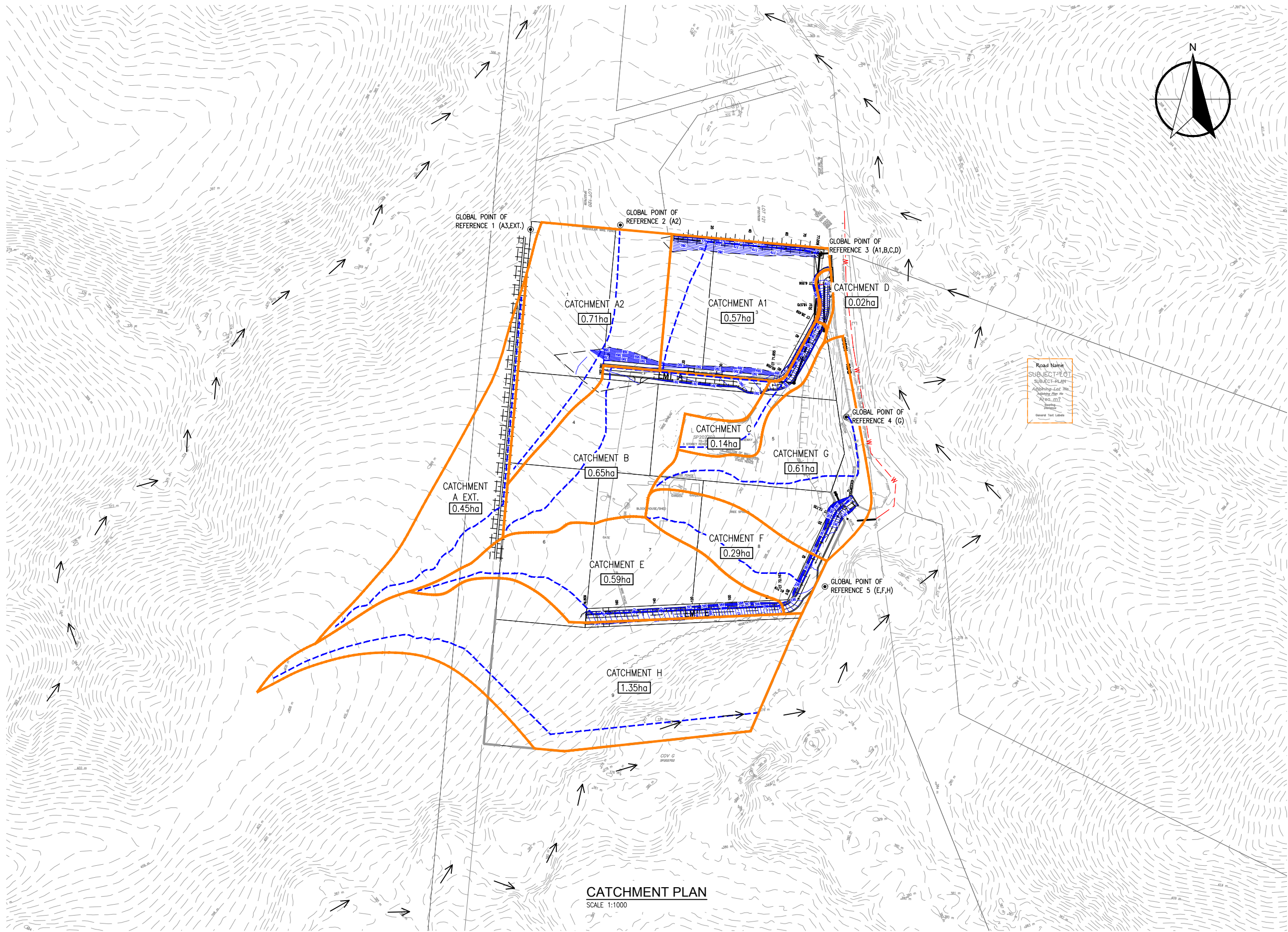


PRELIMINARY ONLY

 SCALE 1:1000 (A1 SIZE)		© Trinity Engineering and Consulting Pty Ltd ABN 78 610 181 130 This document is and shall remain the property of Trinity Engineering and Consulting Pty Ltd. Unauthorised use of this document in any form whatsoever is prohibited.		 Trinity Engineering and Consulting Trinity Engineering and Consulting Pty Ltd 21-23 Sheridan Street PO Box 7963 Ph: (07) 4040 7111 www.trinityengineering.com.au 21-23 Sheridan Street PO Box 7963 Cairns QLD 4870 Email: admin@trinityengineering.com.au		Client A & A SALINOVIC				
						Project 72-76 MASONS ROAD ROL				
						Title PRE-DEVELOPMENT CATCHMENT PLAN				
						JOB No. 1331	Scale (A1 size) 1:1000	Date 10 SEPTEMBER 2019	Drawing No. FIGURE 1331-001	Revision B

External References: 1331-X-SURVEY.dwg ; TEC-TITLE-SKETCH-A1_b.dwg ; 1331-X-CONT-LIDAR.dwg

Printed: 10 September 2019, 1:12 PM File: T:\1331 72-76 Masons Road ROL\Drawings\1331-FIGURE-002[B].dwg



PRELIMINARY ONLY

		© Trinity Engineering and Consulting Pty Ltd ABN 78 610 181 130 This document is and shall remain the property of Trinity Engineering and Consulting Pty Ltd. Unauthorised use of this document in any form whatsoever is prohibited.				Client A & A SALINOVIC	
				Project 72-76 MASONS ROAD ROL			
				Title POST-DEVELOPMENT CATCHMENT PLAN			
JOB No.	1331	Scale (A1 size)	1:1000	Date	10 SEPTEMBER 2019	Drawing No.	FIGURE 1331-002
						Revision	B

External References: TEC-TITLE-SKETCH-A1_b.dwg ; 1331-X-CONT-LIDAR.dwg ; 1331-X-CONT-DESIGN.dwg ; 1331-X-DESIGN.dwg ; 1331-X-SURVEY.dwg

APPENDIX B
Hydrology Calculations
Pre-development Calculations
Post-development Calculations

Client:	Nevenka Salinovic
Project Name:	72-76 Masons Road ROL
Project Number:	1331
Calculations By:	IM
Calculation Date:	9-Sep-19

Notes:

1. Items in red must be entered manually.

Pre-development Catchment Calculations (Catchments A-D) - Revision 2.0

	Catchment Properties						Time of Concentration (min)								Catchment Properties				
Catchment ID	Area (ha)	Min Elevation (m)	Max Elevation (m)	Length (m)	Equal Area Slope (%)	Mannings (s/m ^{1/3})	Condition	Overland Sheet Flow (Friend)	Concentrated Overland Flow (Bransby-Williams)	Creek Flow	Standard Inlet	Kerb Flow	Pipe Flow	Stream Flow	TOTAL	BOM Weather Station ID	¹ I ₁₀ (mm/hr)	Land Description	Fraction Impervious
Catchment A	2.008	379.5	406.2	295.4	10.4	0.035		15.61	10.00						15.00	FNQROC Chart 13	76.43	Grassed	0.20
Catchment B	0.544	377.7	394.1	154.3	11.7	0.035		12.28	5.82						6.00	FNQROC Chart 13	76.43	Grassed	0.20
Catchment C	0.607	378.8	395.3	154.6	11.8	0.035		12.27	N/A						10.00	FNQROC Chart 13	76.43	Grassed	0.20
Catchment D	2.232	380.1	408.2	293.8	12.0	0.035		15.14	N/A						15.00	FNQROC Chart 13	76.43	Grassed	0.20

Catchment ID	Runoff Coefficient							Rainfall Intensity (mm/hr)							Peak Flow Rate (m ³ /s)						
	63% AEP	39% AEP	18% AEP	10% AEP	5% AEP	2% AEP	1% AEP	63% AEP	39% AEP	18% AEP	10% AEP	5% AEP	2% AEP	1% AEP	63% AEP	39% AEP	18% AEP	10% AEP	5% AEP	2% AEP	1% AEP
Catchment A	0.56	0.60	0.67	0.70	0.74	0.81	0.84	80	103	130	146	167	195	217	0.251	0.342	0.481	0.568	0.684	0.876	1.016
Catchment B	0.56	0.60	0.67	0.70	0.74	0.81	0.84	111	143	181	204	234	275	306	0.094	0.128	0.182	0.215	0.260	0.334	0.389
Catchment C	0.56	0.60	0.67	0.70	0.74	0.81	0.84	94	120	152	171	196	229	255	0.088	0.120	0.170	0.201	0.243	0.311	0.362
Catchment D	0.56	0.60	0.67	0.70	0.74	0.81	0.84	80	103	130	146	167	195	217	0.279	0.380	0.535	0.632	0.761	0.974	1.130

Client:	Nevenka Salinovic
Project Name:	72-76 Masons Road ROL
Project Number:	1331
Calculations By:	IM
Calculation Date:	9-Sep-19

Notes:

1. Items in red must be entered manually.

Post-development Catchment Calculations (Catchments A-H) - Revision 7.0

	Catchment Properties						Time of Concentration (min)								Catchment Properties				
Catchment ID	Area (ha)	Min Elevation (m)	Max Elevation (m)	Length (m)	Equal Area Slope (%)	Mannings (s/m ^{1/3})	Condition	Overland Sheet Flow (Friend)	Concentrated Overland Flow (Bransby-Williams)	Creek Flow	Standard Inlet	Kerb Flow	Pipe Flow	Stream Flow	TOTAL	BOM Weather Station ID	¹ I ₁₀ (mm/hr)	Land Description	Fraction Impervious
Catchment A Ext.	0.452	389.6	405.4	225.4	7.7	0.035		15.14	9.40						15.00	FNQROC Chart 13	76.43	Grassed	0.20
Catchment A1	0.565	378.4	390.1	129.3	6.2	0.035		13.16	5.51						10.00	FNQROC Chart 13	76.43	Grassed	0.20
Catchment A2	0.705	379.6	397.2	144.3	12.5	0.035		11.85	N/A						12.00	FNQROC Chart 13	76.43	Grassed	0.20
Catchment B	0.647	388.6	399.1	172.3	5.2	0.025		10.72	7.52						9.00	FNQROC Chart 13	76.43	Grassed	0.20
Catchment C	0.139	382.6	394.2	108.9	12.9	0.025		N/A	4.61						5.00	FNQROC Chart 13	76.43	Grassed	0.20
Catchment D	0.021	377.8	382.3	43.8	8.3	0.016		3.95	2.44						5.00	FNQROC Chart 13	76.43	Concrete	0.20
Catchment E	0.591	384.6	402.5	201.8	10.2	0.025		9.86	7.76						8.00	FNQROC Chart 13	76.43	Concrete	0.20
Catchment F	0.293	380.6	395.6	146.1	10.1	0.035		12.42	N/A						10.00	FNQROC Chart 13	76.43	Grassed	0.20
Catchment G	0.607	378.7	395.4	154.8	12.0	0.035		12.24	5.75						10.00	FNQROC Chart 13	76.43	Grassed	0.20
Catchment H	1.348	376.2	408.0	286.8	11.4	0.035		15.17	N/A						15.00	FNQROC Chart 13	76.43	Grassed	0.20

Catchment ID	Runoff Coefficient							Rainfall Intensity (mm/hr)							Peak Flow Rate (m ³ /s)						
	63% AEP	39% AEP	18% AEP	10% AEP	5% AEP	2% AEP	1% AEP	63% AEP	39% AEP	18% AEP	10% AEP	5% AEP	2% AEP	1% AEP	63% AEP	39% AEP	18% AEP	10% AEP	5% AEP	2% AEP	1% AEP
Catchment A Ext.	0.59	0.63	0.70	0.74	0.78	0.85	0.89	80	103	130	146	167	195	217	0.060	0.081	0.114	0.135	0.163	0.208	0.242
Catchment A1	0.59	0.63	0.70	0.74	0.78	0.85	0.89	94	120	152	171	196	229	255	0.087	0.119	0.168	0.198	0.239	0.307	0.356
Catchment A2	0.59	0.63	0.70	0.74	0.78	0.85	0.89	88	112	142	159	183	214	238	0.101	0.138	0.195	0.230	0.278	0.356	0.413
Catchment B	0.59	0.63	0.70	0.74	0.78	0.85	0.89	97	125	158	177	204	239	266	0.103	0.141	0.199	0.236	0.284	0.365	0.424
Catchment C	0.59	0.63	0.70	0.74	0.78	0.85	0.89	117	151	191	216	248	291	325	0.027	0.037	0.052	0.062	0.075	0.096	0.111
Catchment D	0.59	0.63	0.70	0.74	0.78	0.85	0.89	117	151	191	216	248	291	325	0.004	0.006	0.008	0.009	0.011	0.015	0.017
Catchment E	0.59	0.63	0.70	0.74	0.78	0.85	0.89	101	130	164	185	212	249	277	0.098	0.134	0.190	0.225	0.271	0.348	0.404
Catchment F	0.59	0.63	0.70	0.74	0.78	0.85	0.89	94	120	152	171	196	229	255	0.045	0.061	0.087	0.103	0.124	0.159	0.185
Catchment G	0.59	0.63	0.70	0.74	0.78	0.85	0.89	94	120	152	171	196	229	255	0.093	0.127	0.180	0.213	0.257	0.329	0.382
Catchment H	0.59	0.63	0.70	0.74	0.78	0.85	0.89	80	103	130	146	167	195	217	0.178	0.243	0.342	0.403	0.486	0.622	0.721

APPENDIX C
Hydraulic Calculations: PC Drain

CALCULATIONS TABLE

LOCATION				TIME			SUB-CATCHMENT RUNOFF								INLET DESIGN										DRAIN DESIGN												HEADLOSSES												PART FULL		DESIGN LEVELS							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38 - 39		40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	
DESIGN A.R.	STRUCTURE NO.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	SURFACE CONDITION (LAND USE)	SLOPE OF CATCHMENT	SUB-CATCHMENT TIME OF CONCENTRATION	RAINFALL INTENSITY	COEFFICIENT OF RUNOFF	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUM OF CONTRIBUTING EQUIVALENT AREAS	SUB-CATCHMENT DISCHARGE	FLOW PAST PREVIOUS GULLIES	FLOW IN K&C INCLUDING BYPASS	ROAD GRADE AT INLET	K - K WIDTH	FLOW WIDTH	FLOW DEPTH AT INVERT	GUTTER FLOW VELOCITY	d _B x V _g	INLET NUMBER	INLET TYPE	FLOW INTO INLET	BYPASS FLOW	CRITICAL TIME OF CONCENTRATION	RAINFALL INTENSITY	TOTAL CONTRIBUTING EQUIVALENT AREA	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	FLOW IN PIPE	REACH LENGTH	PIPE GRADE	PIPE / BOX DIMENSIONS	FLOW VELOCITY FULL (PIPE GRADE VELOCITY)	TIME OF FLOW IN REACH	STRUCTURE RATIOS FOR "K"	VALUE CALCULATIONS	VELOCITY HEAD	U/S HEADLOSS COEFFICIENT	U/S PIPE STRUCTURE HEADLOSS	LATERAL HEADLOSS COEFFICIENT	LATERAL PIPE STRUCTURE HEADLOSS	M.S.E. COEFFICIENT	CHANGE IN W.S.E.	FRICTION SLOPE	PIPE FRICTION HEADLOSS	DEPTH	VELOCITY	OVERT LEVELS	DRAIN SECTION HGL	U/S HGL	LATERAL HGL	W.S.E.	SURFACE OR K&C INVERT LEVEL	FREEBOARD	STRUCTURE No.	
years				%	min	mm/h	From Intensity Chart		ha	9 x 10	sum 11	cumec (8x12)/360	sum 25	13 x 14			m	m	m	m/sec	m ² /s		From Std. Drg	From Charts	15 - 24	From Intensity Chart	sum of U/S 12		cumec	cumec	m	%	mm	m/min	37/Area of Sect	33/ (360x60)	FROM Q.U.D.M. CHARTS VOLUME 2	36x36/2g	From Q.U.D.M. Volume 2	40 x 41	From Q.U.D.M. Volume 2	From Q.U.D.M. Volume 2	From Sect. 1L-5T & R.R. Vol. I 1987	47 x 33/ 100	m	m/sec	m	m	m	m	m	m	m	m	m	m	m	m
5 5	5/1	5/1 to 4/1	B		9.00 9.00	158 158	0.70 0.70	0.650 0.650	0.455 0.455	0.455 0.455	0.200 0.200	0.000 0.000	0.000 0.000	2.43			m	m	m	m/sec	m ² /s		7	0.111	0.089 3/1	9.00 158	0.455 0.455	0.200	cumec	cumec	m	%	mm	m/min	37/Area of Sect	33/ (360x60)	Qo 0.111 Qo 0.111 Do 300 CHRT 32: Vo2/ZgDo 0.42 H/Do 0.00 Kg side flow 4.17 and flow 3.62	0.126	4.17	0.524		4.17	0.524	1.32	0.192 (0.102ly)	0.122 (3.76ly)	388.892 387.291	388.892 387.191	389.416	389.416	389.575	0.159	5/1					
5 5	4/1	4/1 to 3/1	B														4/1					24			9.15 9.15	191 191	0.455 0.455	0.241				0.111 (Pipe flow = Grate flow)	33.168 15.15	300(2) (5.32)	0.00 (5.32)	0.55	Qo 0.111 Do 300 Flow 5/1 made eqv grate flow K vals above for stepped pipes as grate flow	0.000	99.00	0.000		99.00	0.000	0.00	0.000 (0.094ly)	4.63 (4.22ly)	387.191 382.167	387.191 382.480	387.191	387.191	388.691	1.500	4/1					
5 5	3/1	3/1 to 2A/1	B,C		5.00 5.00	191 191	0.70 0.70	0.140 0.140	0.098 0.098	0.098 0.098	0.052 0.052	0.089 0.089	0.000 0.000	18.25			3/1					7	0.075	0.065 2A/1	5.00 5.00	191 191	0.098 0.098	0.052				0.075 (Pipe flow = Grate flow)	18.906 19.27	300(2) (6.00)	1.070 (6.00)	0.29	Qo 0.075 Qo 0.075 Do 300 Flow 4/1 made eqv grate flow CHRT 32: Vo2/ZgDo 0.19 H/Do 0.00 Kg side flow 6.09 end flow 4.94 K vals above for stepped pipes as grate flow	0.058	6.09	0.355		6.09	0.355	0.61	0.115 (0.066ly)	4.53 (3.91ly)	382.125 378.482	382.125 378.658	382.480	382.480	382.798	0.318	3/1					
5 5	2A/1	2A/1 to 2/1	B,C,BA		5.00 5.00	191 191	0.70 0.70	0.015 0.015	0.011 0.011	0.011 0.011	0.006 0.006	0.065 0.065	0.000 0.000	2.77			2A/1					7	0.054	0.017 2/1	5.29 5.29	191 191	0.109 0.109	0.058				0.075 (Pipe flow = Grate flow)	18.536 7.68	375(2) (4.39)	0.490 (4.39)	0.31	Qo 0.075 Qo 0.075 Do 375 Flow 3/1 made eqv grate flow CHRT 32: Vo2/ZgDo 0.03 H/Do 0.00 Kg side flow 9.87 end flow 7.05 K vals above for stepped pipes as grate flow	0.012	9.87	0.121		9.87	0.121	0.10	0.018 (0.078ly)	3.19 (2.76ly)	378.537 377.114	378.537 377.120	378.658	378.658	379.113	0.455	2A/1					
5 5	2/1	2/1 to 1/1	B,C,BA,A1		6.00 6.00	181 181	0.70 0.70	0.560 0.560	0.392 0.392	0.392 0.392	0.197 0.197	0.017 0.017	0.000 0.000	0.00			0.160Dp					2/1	0.000	0.000	6.00 6.00	181 181	0.403 0.403	0.203				0.214 (Pipe flow = Grate flow)	214.55	2.01	600(2) 0.730(4.31)	0.336 0.36	Qo 0.214 Qo 0.214 Do 600 Flow 2A/1 made eqv grate flow CHRT 32: Vo2/ZgDo 0.04 H/Do 0.00 Kg side flow 9.50 end flow 6.85 K vals above for stepped pipes as grate flow	0.027	1.00	0.330	Part full downstream pipe Upstream HGL 377.120 below outlet pipe obv 377.199 Set Kp to 1	1.00	0.330	0.11	0.024 (0.151ly)	2.54 (2.16ly)	377.199 376.768	376.790 376.369	377.120	377.120	377.950	0.830	2/1					

APPENDIX D
Engineering Design Drawings
Drawings 1331-000 to 1331-009



Trinity Engineering
and Consulting

72-76 MASON ROAD

STAGE 1 & 2

for

MS. NEVENKA SALINOVIC



LOCALITY PLAN
NOT TO SCALE

SCHEDULE OF PROJECT DRAWINGS

1331-000	LOCALITY PLAN AND DRAWING INDEX
1331-001	STAGING PLAN
1331-002	SITEWORKS AND DRAINAGE PLAN
1331-003	TYPICAL DRIVEWAY SECTIONS AND SETOUT DETAILS
1331-004	SHARED DRIVEWAY CROSS SECTIONS
1331-005	STORMWATER CATCHMENT PLAN
1331-006	SERVICES PLAN
1331-007	MISCELLANEOUS DETAILS
1331-008	EROSION AND SEDIMENT CONTROL STRATEGY
1331-009	STORMWATER DETAILS

FOR APPROVAL



LEGEND

- STAGE BOUNDARY
- STAGE 1 & 2 WORKS
- EXISTING SURFACE CONTOUR (0.5m INTERVAL)

NOTES

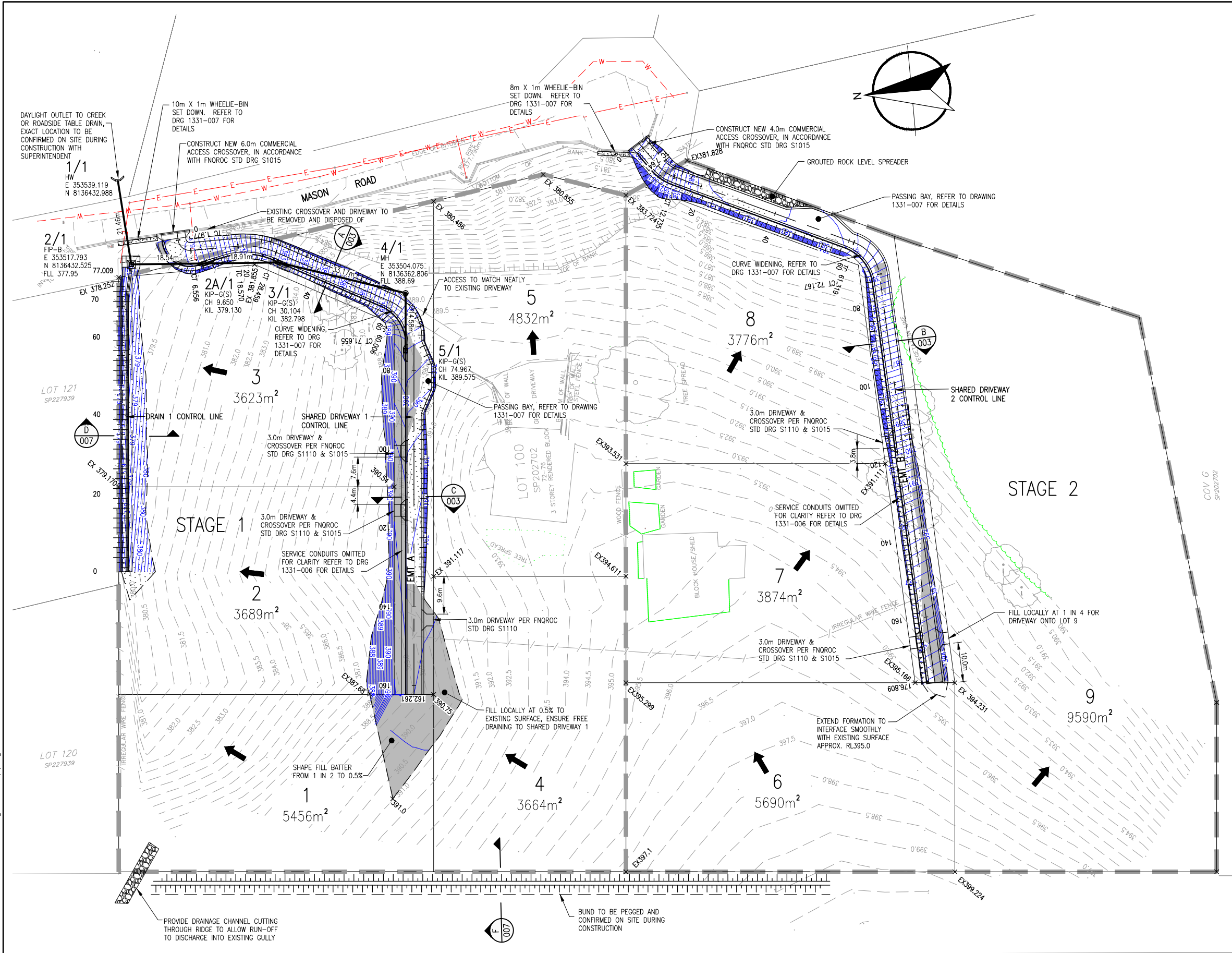
- REAL PROPERTY DESCRIPTIONS:
LOT 100 ON SP202702 MASON ROAD, KURANDA.
- ORIGIN OF LEVELS:
PSM107233 RL 381.977m
- ORIGIN OF COORDINATES:
MGA94
E 353471.322 N 8137005.185
- CONTOUR INTERVAL: 0.5m
- LEVEL DATUM: AHD
- PLAN OF SUBDIVISION FROM BRAZIER MOTTL. REFER TO PLAN NO. 34579-002.

STAGING PLAN

SCALE 1:500

FOR APPROVAL

Revisions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
-----------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



LEGEND

- DIRECTION OF FALL ON LOTS
 FINISHED SURFACE LEVEL ON ALLOTMENT (REFER NOTE 2)
 EXISTING SURFACE LEVEL
 4.0 DESIGN SURFACE CONTOUR (0.2m INTERVAL)
 4.0 EXISTING SURFACE CONTOUR (0.5m INTERVAL)
 CUT AREAS
 FILL AREAS
 STAGE BOUNDARY
 TOP OF BATTER
 TOE OF BATTER
 ACCESS CROSSOVER
 EDGE OF EXISTING SEALED ROAD
 EXISTING STORMWATER
 EXISTING WATER
 EXISTING TELECOMMUNICATIONS
 EXISTING OVERHEAD ELECTRICITY
 EDGE OF EXISTING VEGETATION
 STORMWATER LINE AND KERB INLET PIT & HEADWALL
 PIPE LENGTH
 1/1 STRUCTURE No./LINE No.
 KIP-G(S) KERB INLET PIT ON GRADE (WITH SMALL EXTENSION ON ONE SIDE)
 FIP-B FIELD INLET PIT - TYPE B (REFER FNQROC STANDARD DRG S1070)
 MH MANHOLE

SITWORKS NOTES

- ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH FNQROC DEVELOPMENT MANUAL GUIDELINES AND SPECIFICATIONS.
- DESIGN SURFACE LEVELS SHOWN ARE AFTER ALL EARTHWORKS ARE COMPLETED, INCLUDING 75mm TOPSOILING.
- BATTERS SHALL BE (UNLESS NOTED OTHERWISE):
 - (CUT): 1 ON 1
 - (FILL): 1 ON 2
- ALL DESIGN SURFACE LEVELS ARE TO BE GRADED EVENLY BETWEEN SHOWN LEVELS UNLESS OTHERWISE SHOWN.
- REFER TO FNQROC STANDARD DRAWINGS:
 - S1000 : CONCRETE KERB & CHANNEL
 - S1010 : PUBLIC UTILITIES ON ROADS AND VERGES
 - S1015 : ACCESS CROSSOVERS
 - S1110 : CONCRETE DRIVEWAY FOR ALLOTMENT ACCESS
- LOCATION OF ALL EXISTING SERVICES TO BE CONFIRMED PRIOR TO CONSTRUCTION BY CONTRACTOR THROUGH LIAISON WITH RELEVANT AUTHORITIES.
- NEW ROADWORKS AND KERBING TO JOIN SMOOTHLY TO EXISTING WORKS. PROVIDE CUT BACK TO EXISTING SEALED ROADS WHERE NECESSARY.
- ALL SECTIONS OF DRIVEWAY WITH A LONGITUDINAL GRADE GREATER THAN 10% ARE TO HAVE AN ANTI-SLIP GROOVE PROFILE APPLIED.
- TRIM AND DRILL SEED ALL FOOTPATHS/ROAD VERGES. BATTERS >0.5m TO BE HYDROMULCHED AFTER FINAL EARTHWORKS AND TOPSOILING IS COMPLETED.
- TOPSOIL STOCKPILE TO BE LOCATED AT LOCATION CONFIRMED BY SUPERINTENDENT.

DRAINAGE NOTES

- ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH FNQROC DEVELOPMENT MANUAL GUIDELINES AND SPECIFICATIONS.
- REFER TO FNQROC STANDARD DRAWINGS:
 - S1002 - KERB AND CHANNEL DRAINAGE CONNECTOR
 - S1050 - GRATED KERB INLET PIT - PIPE DIAMETER < 600mm
 - S1060 - KERB INLET GRATE AND FRAME S1070 - FIELD INLET PIT
 - S1075 - RC PIPE HEADWALL - DIA. 375 TO 675mm
- REFER TO EROSION & SEDIMENT CONTROL STRATEGY DRG 1331-008 FOR EROSION AND SEDIMENT CONTROL MEASURES.
- STORMWATER TO DISCHARGE TO TEMPORARY ROCK FILTER DAMS PRIOR TO CONSTRUCTION OF ULTIMATE DRAINAGE NETWORK WITH FUTURE STAGES.
- CONTRACTOR TO CONFIRM ALL OUTLET LEVELS PRIOR TO COMMENCEMENT OF WORKS.

FOR APPROVAL

SITWORKS AND DRAINAGE PLAN

SCALE 1:500

Revisions			
E	APPROVAL ISSUE	-	10/09/19
D	APPROVAL ISSUE	-	05/09/19
C	PRELIMINARY ISSUE	-	15/07/19
B	PRELIMINARY ISSUE	-	02/07/19
A	PRELIMINARY ISSUE	-	22/05/19
No.	Description	Reviewed	Approved

0 5 10 15 20 25m
SCALE 1:500 (A1 SIZE)

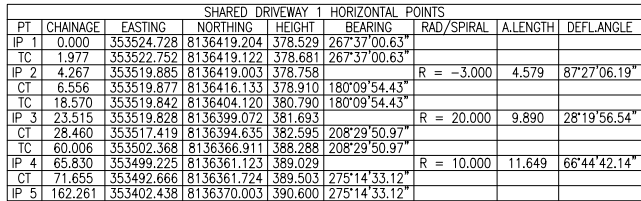
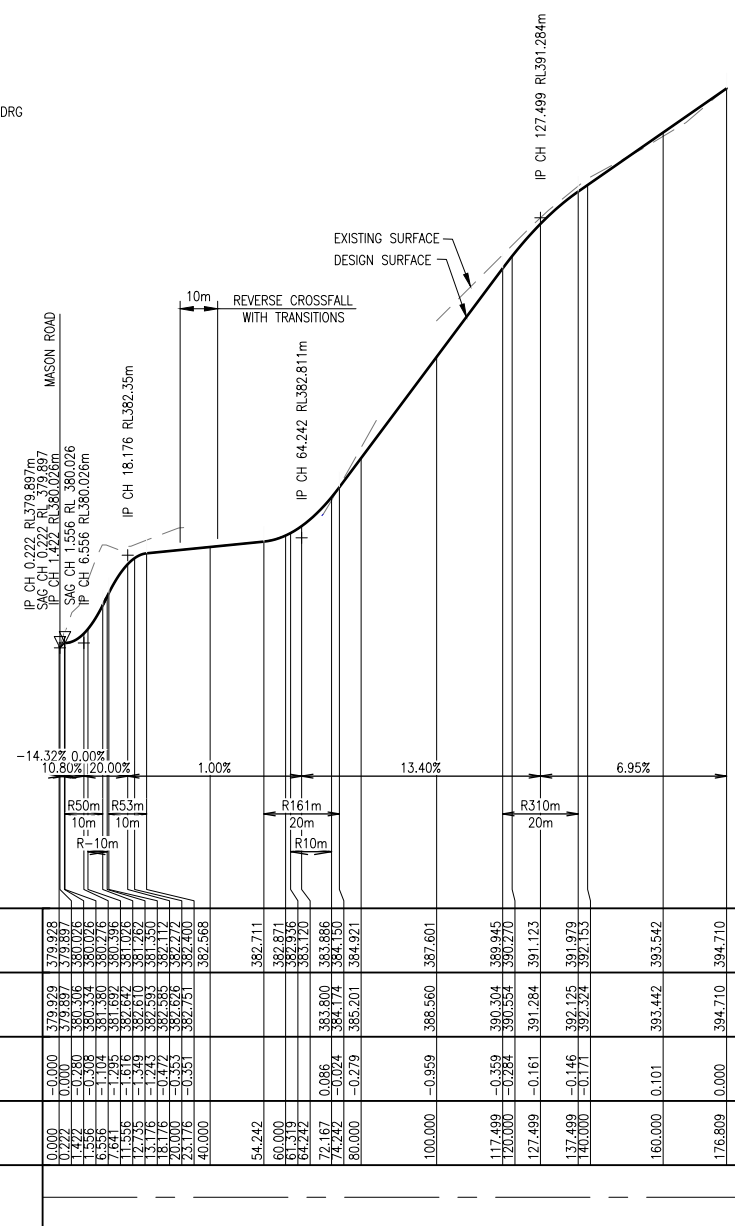
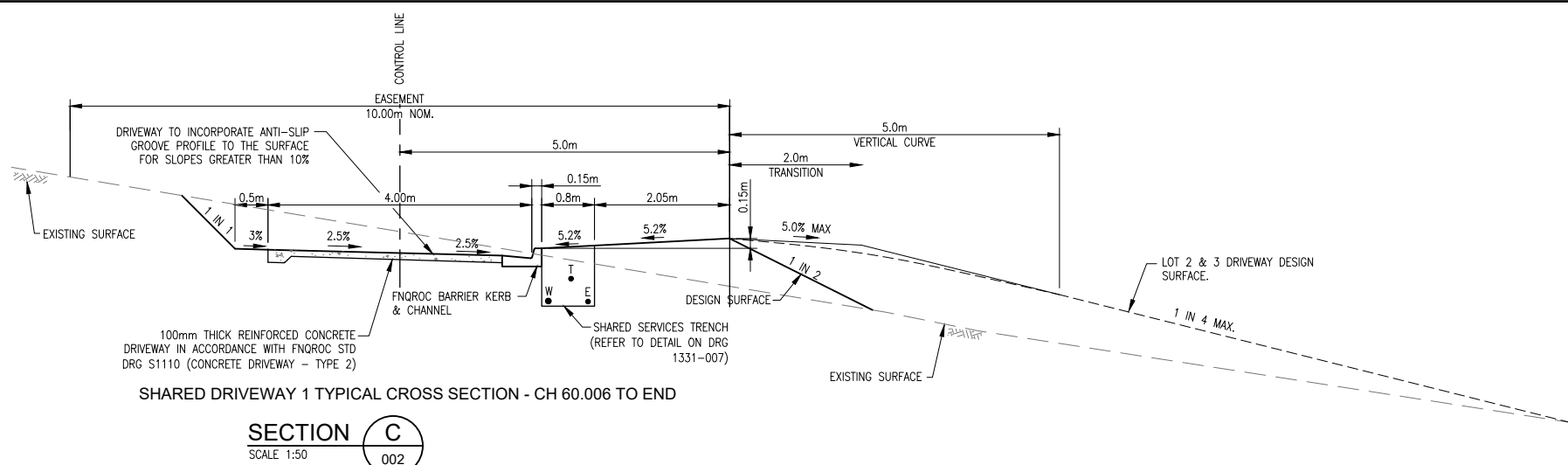
© Trinity Engineering and Consulting Pty Ltd
ABN 78 610 181 130

This document is and shall remain the property of Trinity Engineering and Consulting Pty Ltd. Unauthorised use of this document in any form whatsoever is prohibited.

Trinity Engineering and Consulting

Trinity Engineering and Consulting Pty Ltd
Ph: (07) 4040 7111
www.trinityengineering.com.au
21-23 Sheridan Street | PO Box 7963
Cairns QLD 4870
Email: admin@trinityengineering.com.au

Scale (A1 size)		Client	
1:500		NEVENKA SALINOVIC	
Drawing is not to be used for construction unless approved.		Project	
		72-76 MASON ROAD	
		Title	
		SITWORKS AND DRAINAGE PLAN	
Drawn	Designed	Drawing Check	Design Check
RML	RML	Approved	RPEQ
		Date	Drawing No.
			1331-002
		Revision	E

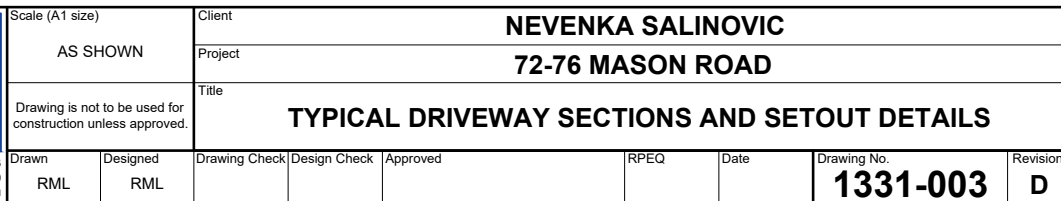


PT	CHAINAGE	SHARED DRIVEWAY		2 HORIZONTAL POINTS		RAD/SPiral	A.LENGTH	DEFL.ANGLE
		EASTING	NORTHING	HEIGHT	BEARING			
IP 1	0.000	353536.74	8136300.435	379.928	234°30'51.96"			
IP 2	7.841	353530.492	8136295.999	380.396	234°30'51.96"			
IP 3	15.682	353528.781	8136292.498	380.960	234°30'51.96"			
CT	12.735	353527.258	8136292.135	381.262	205°19'48.12"	R = -10.000	5.094	29°11'03.85"
CT	61.319	353506.472	8136248.222	382.936	205°19'48.12"	R = 10.000	10.848	62°09'25.57"
IP 3	66.743	353503.894	8136247.734	383.320	205°19'48.12"			
IP 4	72.167	353497.872	8136242.811	383.702	267°29'13.69"			
IP 5	77.591	353493.332	8136231.922	394.710	267°29'13.69"			

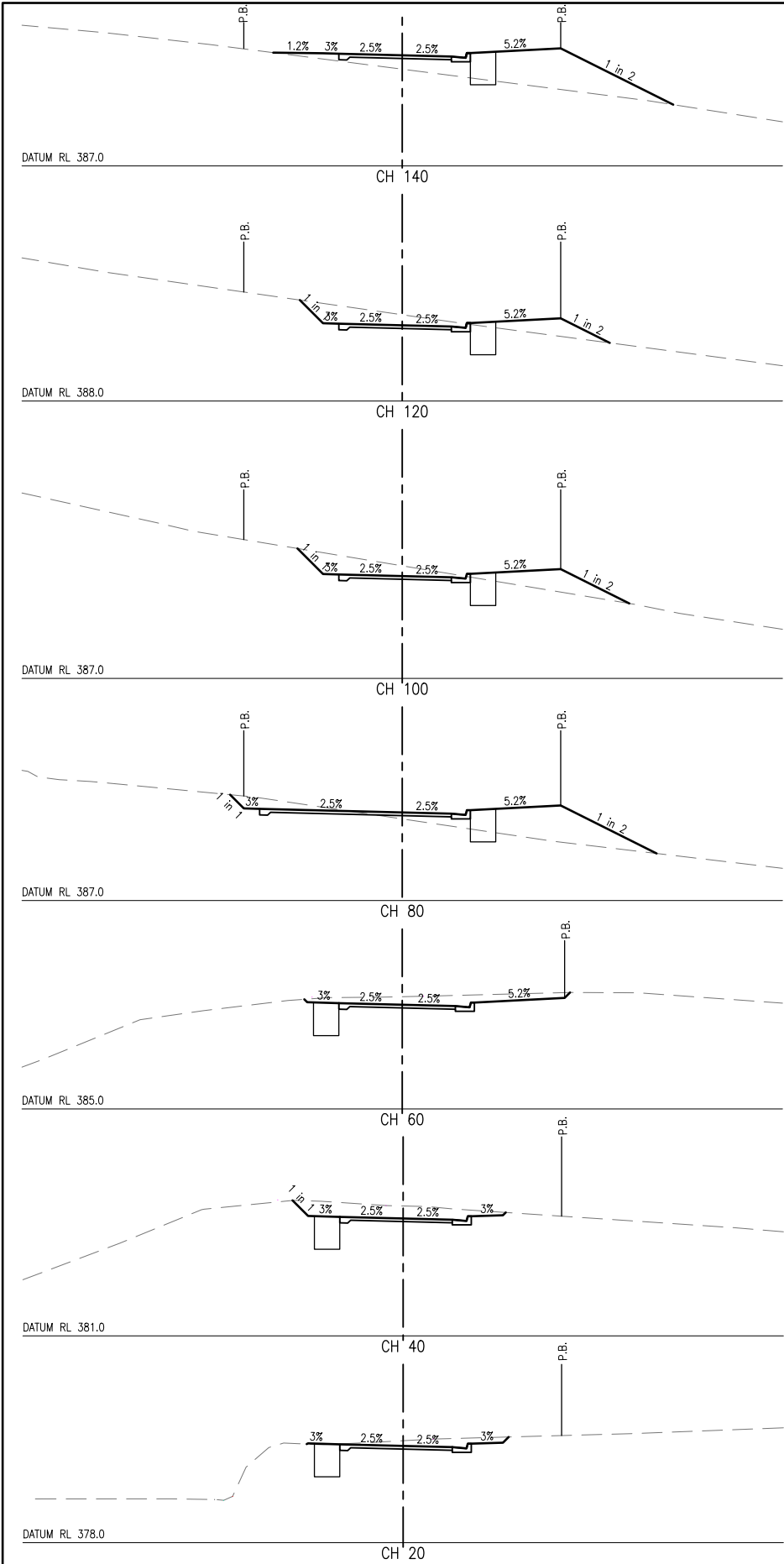
DRAIN 1 HORIZONTAL POINTS					
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 1	0.000	353440.126	8136439.651	379.320	95°14'33.12"
IP 2	70.000	353509.833	8136433.255	378.069	
IP 3	77.009	353516.680	8136431.754		102°21'43.22"

1. ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH FNQROC DEVELOPMENT MANUAL GUIDELINES AND SPECIFICATIONS.
2. BATTER SLOPES WITHIN PROPERTIES VARY. REFER TO SITEWORKS AND DRAINAGE PLAN.
3. KERBS TO BE CONSTRUCTED AS PER FNQROC STANDARD DRG S1000.
4. REFER TO INDIVIDUAL SERVICES PLANS FOR DETAILED LOCATIONS OF ALL SERVICES.
5. CONCRETE DRAIN CONTRACTION JOINTS TO BE INSTALLED AT 4m CENTRES AND EXPANSION JOINTS TO BE INSTALLED AT 30m CENTRES AS PER FNQROC STANDARD DRAWING S1110.

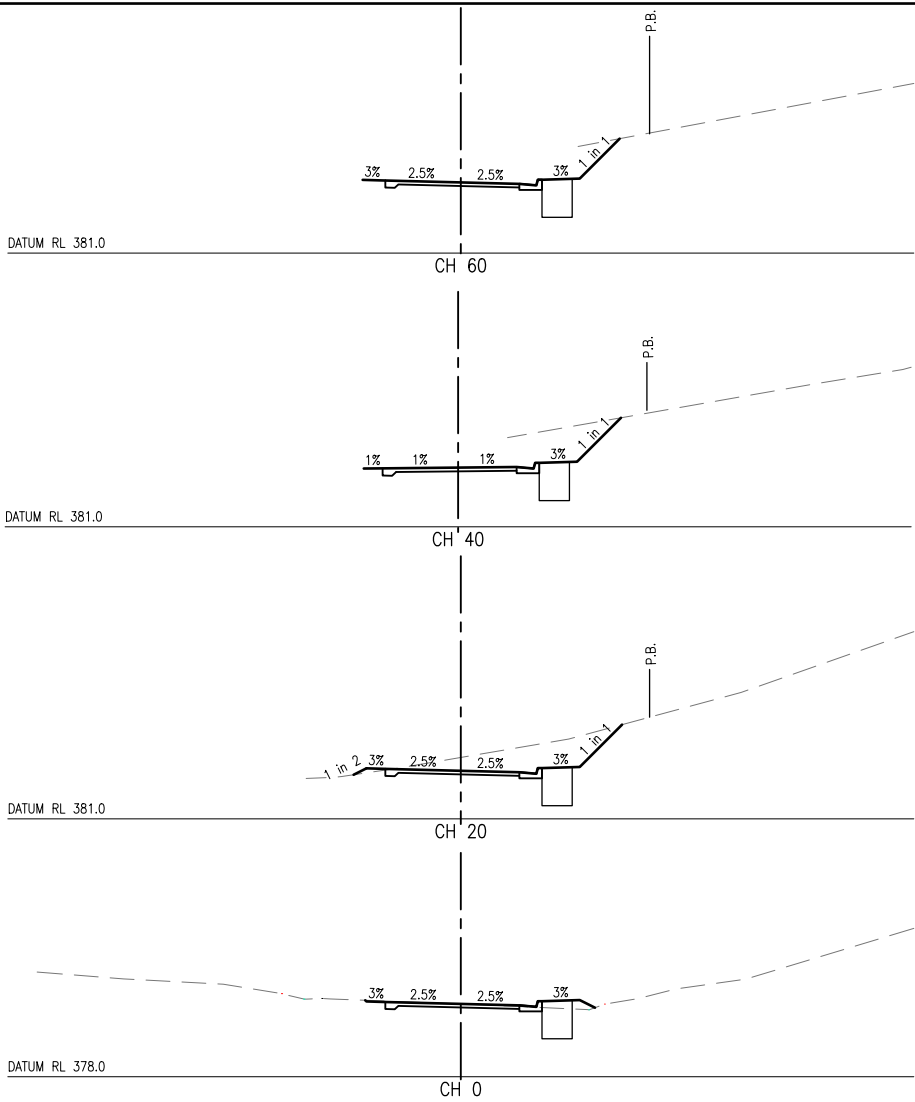
DRAIN 1 LONGITUDINAL SECTION



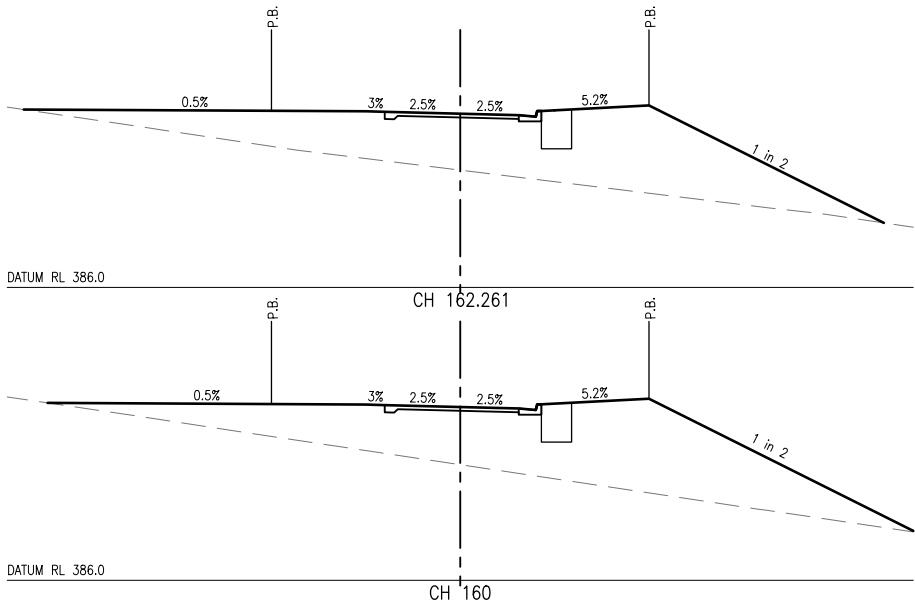
Printed: 05 September, 2019, 9:46 AM File: T:\1331 72-76 Masons Road ROL\Drawings\1331-004(D).dwg



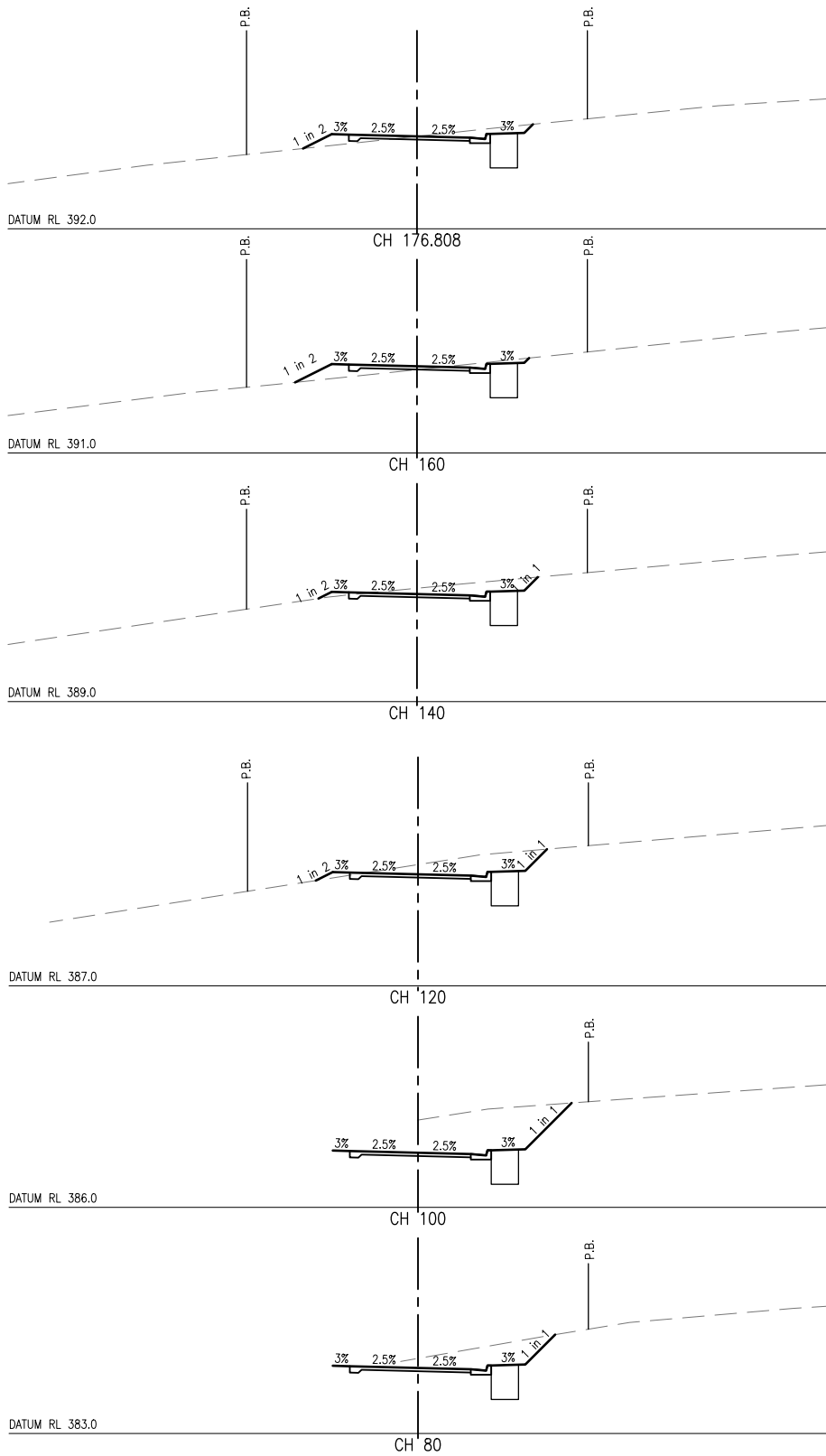
SHARED DRIVEWAY 1 CROSS SECTIONS



SHARED DRIVEWAY 2 CROSS SECTIONS



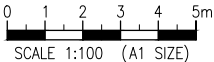
SHARED DRIVEWAY 1 CROSS SECTIONS



SHARED DRIVEWAY 2 CROSS SECTIONS

FOR APPROVAL

Revisions			
No.	Description	Reviewed	Approved
D	APPROVAL ISSUE	-	-
C	PRELIMINARY ISSUE	-	-
B	PRELIMINARY ISSUE	-	-
A	PRELIMINARY ISSUE	-	-



© Trinity Engineering and Consulting Pty Ltd
ABN 78 610 181 130

This document is and shall remain the property of Trinity Engineering and Consulting Pty Ltd. Unauthorised use of this document in any form whatsoever is prohibited.

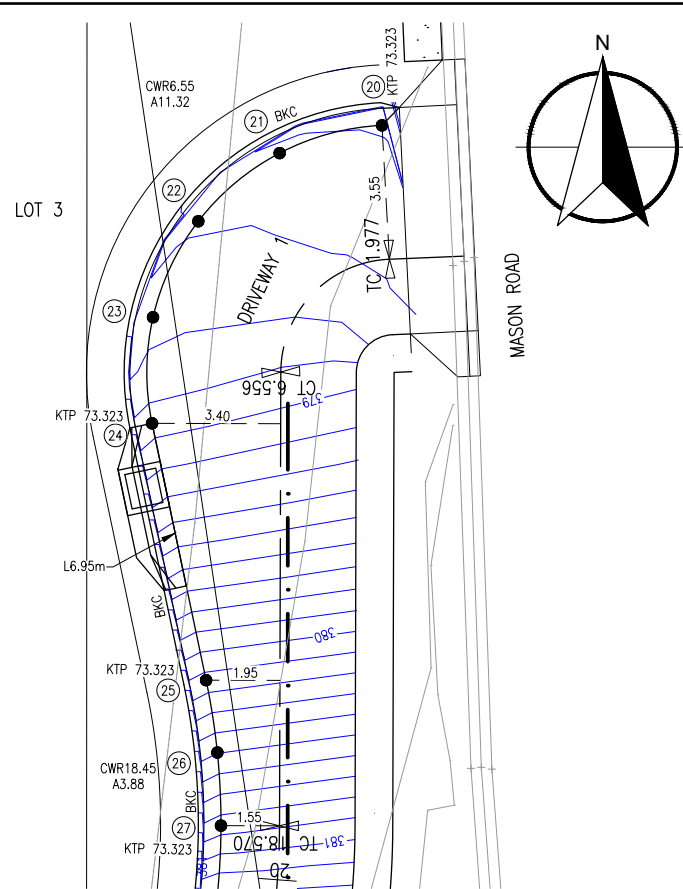


Trinity Engineering and Consulting Pty Ltd
Ph: (07) 4040 7111
www.trinityengineering.com.au

21-23 Sheridan Street | PO Box 7963
Cairns QLD 4870
Email: admin@trinityengineering.com.au

Scale (A1 size)		Client	
1:100		NEVENKA SALINOVIC	
Drawing is not to be used for construction unless approved.		Project	
		72-76 MASON ROAD	
		Title	
		SHARED DRIVEWAY CROSS SECTIONS	
Drawn	Designed	Drawing Check	Design Check
RML	RML	Approved	
		RPEQ	Date
		Drawing No.	Revision
		1331-004	D

External References: tec-title-a1_c.dwg

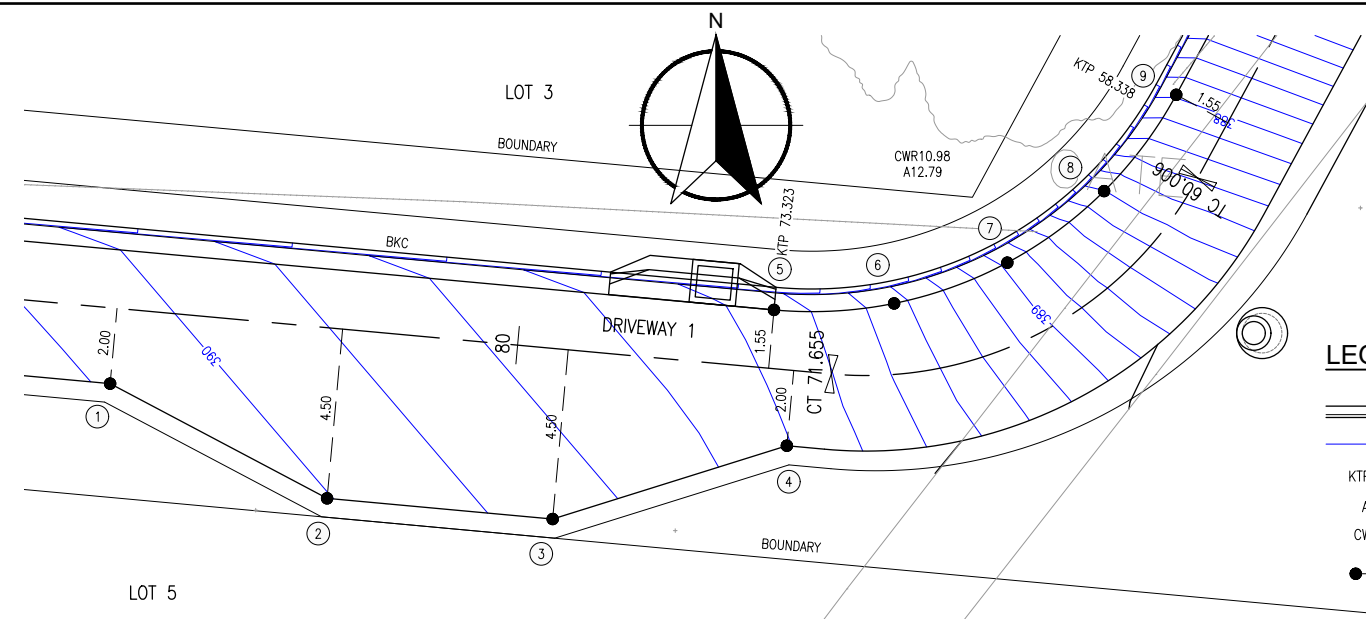


SHARED DRIVEWAY 1 CURVE WIDENING

SCALE 1:100

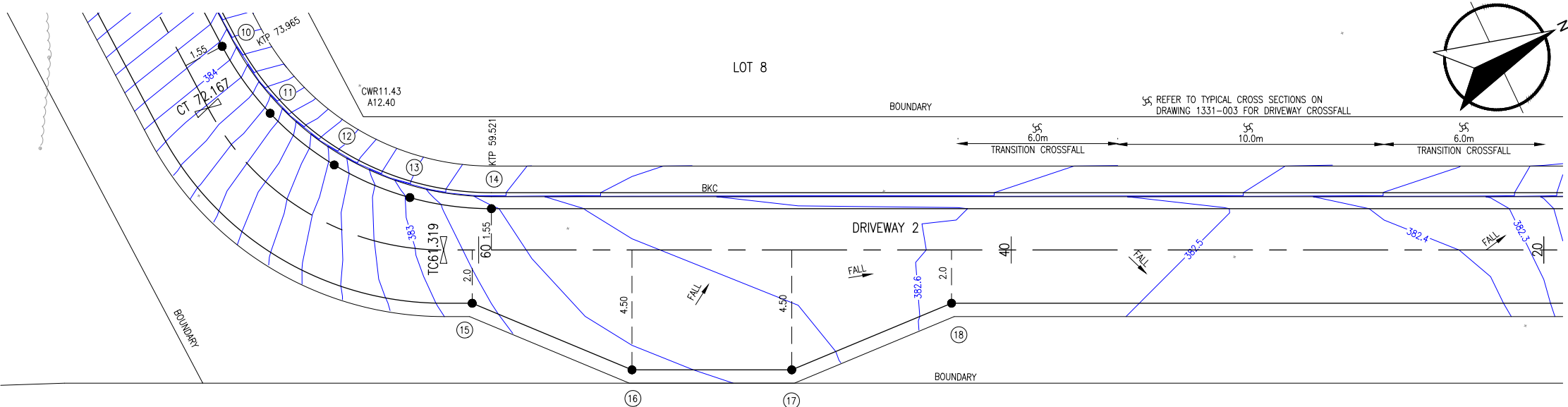
KERB SETOUT TABLE

POINT	EASTING	NORTHING	LEVEL
20	353522.557	8136422.667	378.592
21	353519.846	8136421.931	378.630
22	353517.692	8136420.127	378.688
23	353516.492	8136417.586	378.770
24	353516.467	8136414.777	378.959
25	353517.898	8136407.976	380.044
26	353518.196	8136406.061	380.392
27	353518.292	8136404.125	380.755



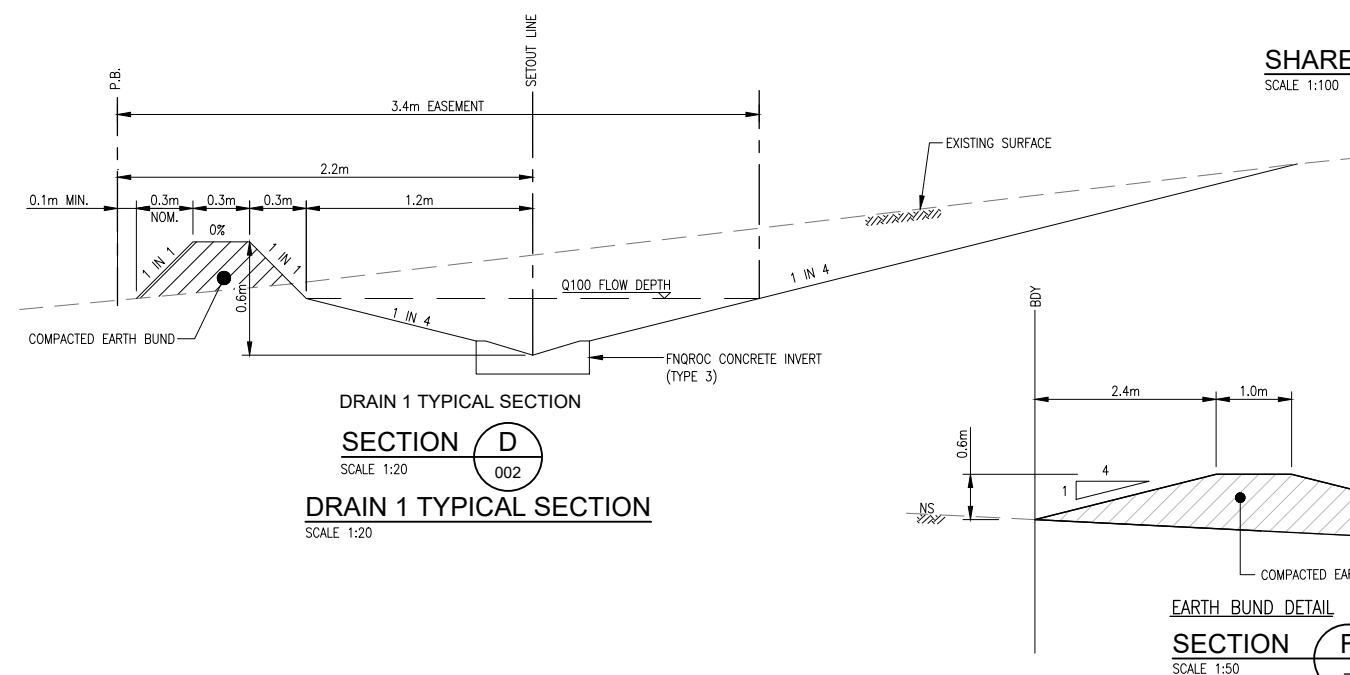
SHARED DRIVEWAY 1 PASSING BAY & CURVE WIDENING

SCALE 1:100



SHARED DRIVEWAY 2 PASSING BAY, CURVE WIDENING AND CROSSFALL TRANSITION

SCALE 1:100

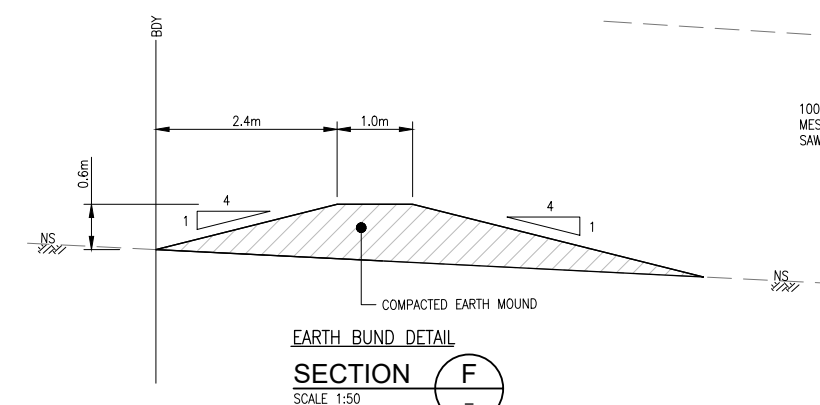


DRAIN 1 TYPICAL SECTION

SECTION D
SCALE 1:20

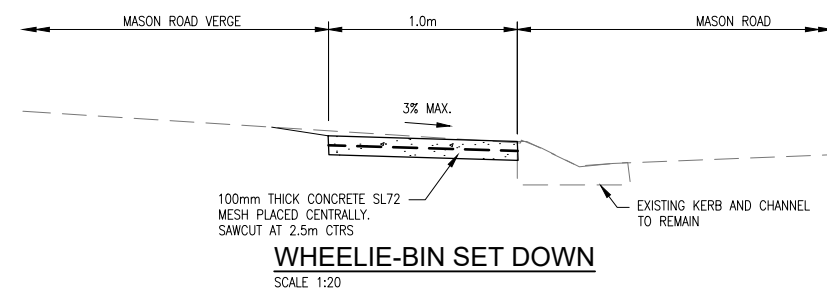
DRAIN 1 TYPICAL SECTION

SCALE 1:20



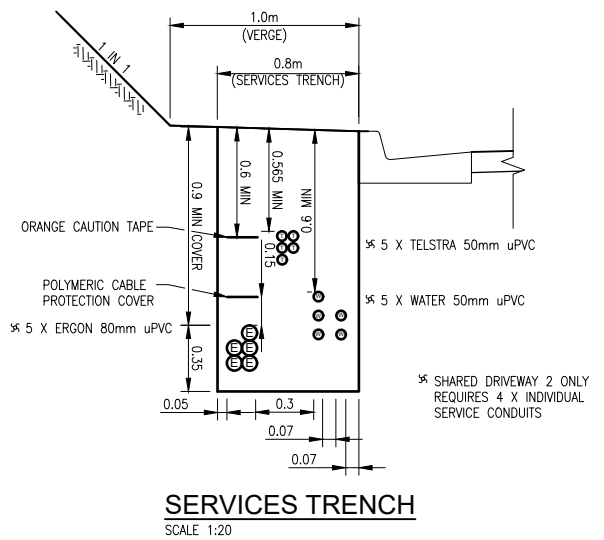
EARTH BUND DETAIL

SECTION F
SCALE 1:50



WHEELIE-BIN SET DOWN

SCALE 1:20



SERVICES TRENCH

SCALE 1:20

KERB SETOUT TABLES			
POINT	EASTING	NORTHING	LEVEL
1	353473.563	8136361.469	390.088
2	353479.309	8136358.431	390.004
3	353485.284	8136357.883	389.859
4	353491.487	8136359.824	389.607
5	353491.146	8136363.42	389.55
6	353494.329	8136363.593	389.335
7	353497.328	8136364.672	388.978
8	353499.891	8136366.566	388.504
9	353501.802	8136369.117	387.987

POINT	EASTING	NORTHING	LEVEL
10	353496.008	8136243.98	384.075
11	353499.05	8136244.531	383.66
12	353501.832	8136245.878	383.273
13	353504.152	8136247.921	382.986
14	353505.841	8136250.51	382.811
15	353508.741	8136248.340	382.931
16	353513.567	8136252.693	382.823
17	353516.134	8136258.116	382.759
18	353516.442	8136264.609	382.573

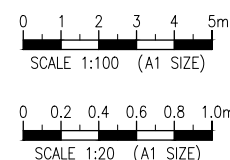
LEGEND

- BKC BARRIER KERB AND CHANNEL
- 4.6 DESIGN SURFACE CONTOUR (0.1m INTERVAL)
- KTP 14.821 KERB TANGENT POINT CHAINAGE
- A15.75 ARC LENGTH
- CWR15.20 CURVE WIDENING RADIUS
- 3.00 OFFSET FROM ROAD CENTRELINE
- 140 ROAD CHAINAGE
- 25 KERB SETOUT POINT

NOTES

- ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH FNQROC DEVELOPMENT MANUAL GUIDELINES AND SPECIFICATIONS.
- KERB LEVELS SHOWN ARE TO LIP OF KERB AND CHANNEL OR PAVEMENT AT FACE OF KERB.
- DIMENSIONS AND KERB RADIi SHOWN ARE TO LIP OF KERB AND CHANNEL OR TO FACE OF KERB ONLY.
- KERB LEVELS ARE SHOWN EQUALLY DIVIDED BETWEEN KERB TANGENT POINTS.
- REFER ALSO TO ROAD SETOUT DETAILS FOR COORDINATES OF ROAD CHAINAGES AND TANGENT POINTS.
- REFER TO THE FOLLOWING FNQROC STANDARD DRAWINGS:
S1000 - CONCRETE KERB AND CHANNEL
S1015 - ACCESS CROSSEOVERS

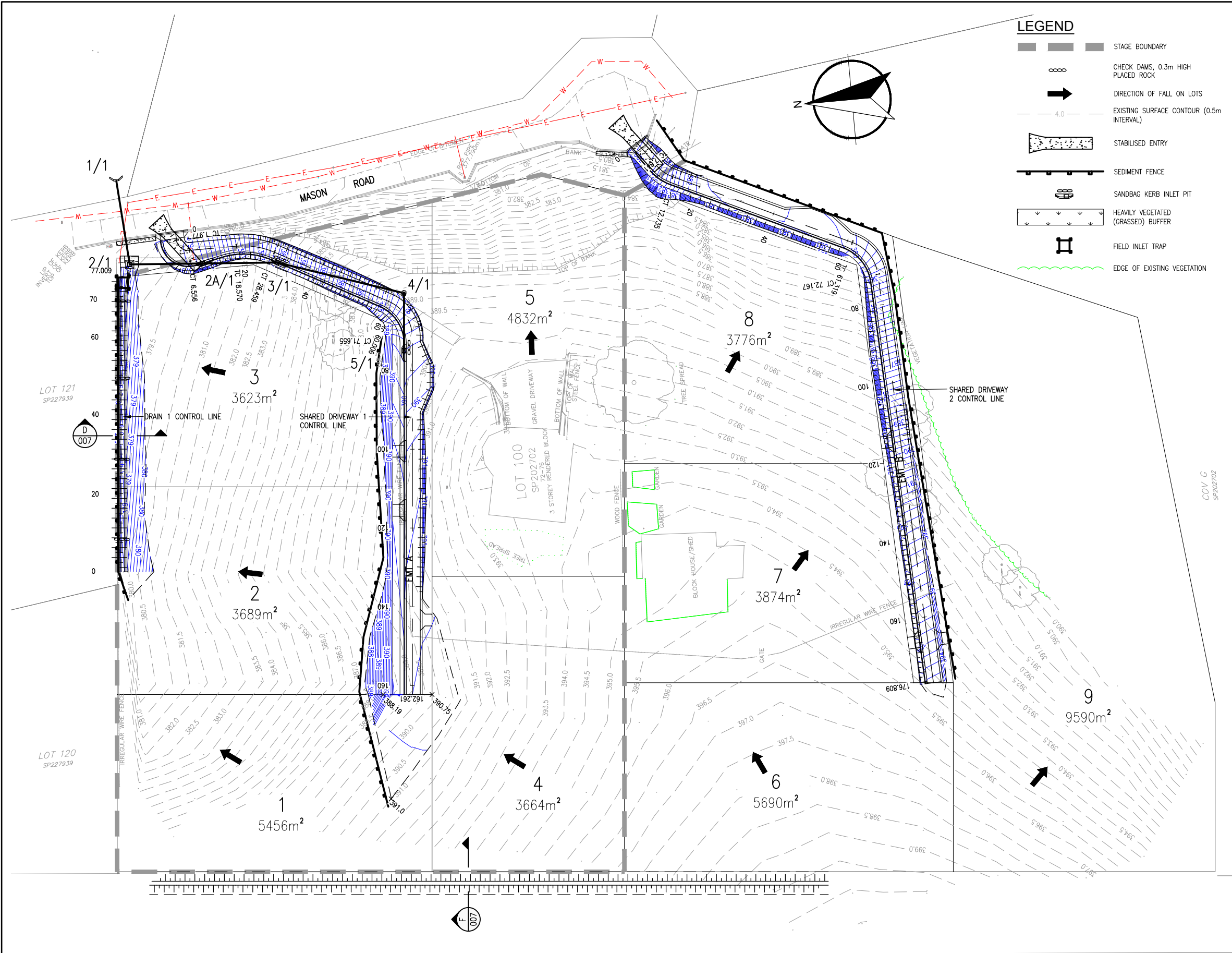
No.	Description	Reviewed	Approved	Date
C	APPROVAL ISSUE	-	-	05/09/19
B	PRELIMINARY ISSUE	-	-	15/07/19
A	PRELIMINARY ISSUE	-	-	02/07/19



© Trinity Engineering and Consulting Pty Ltd
ABN 78 610 181 130
This document is and shall remain the property of Trinity Engineering and Consulting Pty Ltd. Unauthorised use of this document in any form whatsoever is prohibited.

Trinity Engineering and Consulting
21-23 Sheridan Street | PO Box 7963
Ph: (07) 4040 7111
www.trinityengineering.com.au
Email: admin@trinityengineering.com.au

Scale (A1 size)		Client	
AS SHOWN		NEVENKA SALINOVIC	
Drawing is not to be used for construction unless approved.		Project	
		72-76 MASON ROAD	
		Title	
		MISCELLANEOUS DETAILS	
Drawn	Designed	Drawing Check	Design Check
RML	RML	Approved	RPEQ
		Date	Drawing No.
			1331-007
		Revision	c



LEGEND

- STAGE BOUNDARY
- CHECK DAMS, 0.3m HIGH PLACED ROCK
- DIRECTION OF FALL ON LOTS
- EXISTING SURFACE CONTOUR (0.5m INTERVAL)
- STABILISED ENTRY
- SEDIMENT FENCE
- SANDBAG KERB INLET PIT
- HEAVILY VEGETATED (GRASSED) BUFFER
- FIELD INLET TRAP
- EDGE OF EXISTING VEGETATION

NOTES

- NO WORKS TO COMMENCE ON SITE UNTIL CONTRACTORS EROSION AND SEDIMENT CONTROL PLAN IS APPROVED BY MAREEBA SHIRE COUNCIL.
- ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH FNQROC DEVELOPMENT MANUAL GUIDELINES AND SPECIFICATIONS.
- CONTRACTOR TO NOTE REQUIREMENTS AND RESPONSIBILITIES FOR SEDIMENT AND EROSION CONTROL AS PER FNQROC & CONTRACT SPECIFICATION.
- TOPSOIL STOCKPILES TO BE LOCATED AS ADVISED BY SUPERINTENDENT AND SEDIMENT AND EROSION CONTROL MEASURES ARE TO BE APPROVED ACCORDINGLY.
- MOVEMENT OF CONSTRUCTION EQUIPMENT SHALL BE LIMITED TO THE AREA OF WORK AND EXISTING ROADS.
- ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE INSPECTED AND MAINTAINED AFTER EACH STORM EVENT AND AT REGULAR INTERVALS.
- EACH LOT TO HAVE SINGLE ACCESS POINT ONLY UNLESS DIRECTED OTHERWISE BY SUPERINTENDENT.
- CONTOURS SHOWN ARE NATURAL SURFACE CONTOURS PRIOR TO ANY BULK EARTHWORKS TAKING PLACE.
- PROVIDE MULCH TO TOP OF BATTERS.
- CATCH DRAINS AND SEDIMENT TRAPS TO BE CONSTRUCTED PRIOR TO COMMENCEMENT OF WORKS.
- ALL VEHICLES LEAVING THE SITE MUST EXIT VIA WASHDOWN FACILITY.
- DEPTHS FOR CLEARING, GRUBBING AND STRIPPING TO BE CONFIRMED DURING THE EARLY STAGES OF SITE CLEARING. ANY VARIATIONS TO THE DEPTHS NOMINATED ON THE ENGINEERING DRAWINGS TO BE APPROVED BY THE SUPERINTENDENT.

SCHEDULE OF MEASURES

(REFER ALSO TO EROSION AND SEDIMENT CONTROL STRATEGY).

DRAINAGE CONTROL

- CATCH DIRTY WATER RUNOFF AND DIVERT TO SEDIMENT CONTROL DEVICES: - CONSTRUCT CATCH DRAIN AS SHOWN.
- PROVIDE MULCH BANKS UP SLOPE FROM BATTERS TO PREVENT STORMWATER RUNOFF DOWN BATTER FACE.

EROSION CONTROL

- BATTERS >0.5m HIGH ARE TO BE REVEGETATED AT COMPLETION OF EARTHWORKS (BONDED FIBRE MATRIX HYDROMULCH TO BE USED).
- PROVIDE MULCH BANKS UPSTREAM FROM BATTERS.
- SAND BAGS TO BE PLACED ALONG COMPLETED ROAD AND VERGES WHILE AWAITING RE-VEGETATION OF SITE.
- SANDBAGS TO BE PLACED ALONG COMPLETED CATCH DRAINS WHILE AWAITING RE-VEGETATION OF SITE.
- CONSTRUCT CHECK DAMS AT 40m CENTRES ALONG FUTURE ROAD CORRIDORS AS SHOWN.

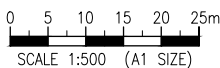
SEDIMENT CONTROL

- CONSTRUCT STABILISED ENTRY POINTS.
- CONSTRUCT SEDIMENT FENCE DOWNSTREAM OF STOCKPILES.
- CONSTRUCT SANDBAG CHECK DAMS AT 40m CENTRES ALONG KERB AND AT KERB INVERTS.

PLAN

SCALE 1:500

Revisions			
D	APPROVAL ISSUE	-	10/09/19
C	APPROVAL ISSUE	-	05/09/19
B	PRELIMINARY ISSUE	-	15/07/19
A	PRELIMINARY ISSUE	-	02/07/19
No.	Description	Reviewed	Approved



© Trinity Engineering and Consulting Pty Ltd
ABN 78 610 181 130

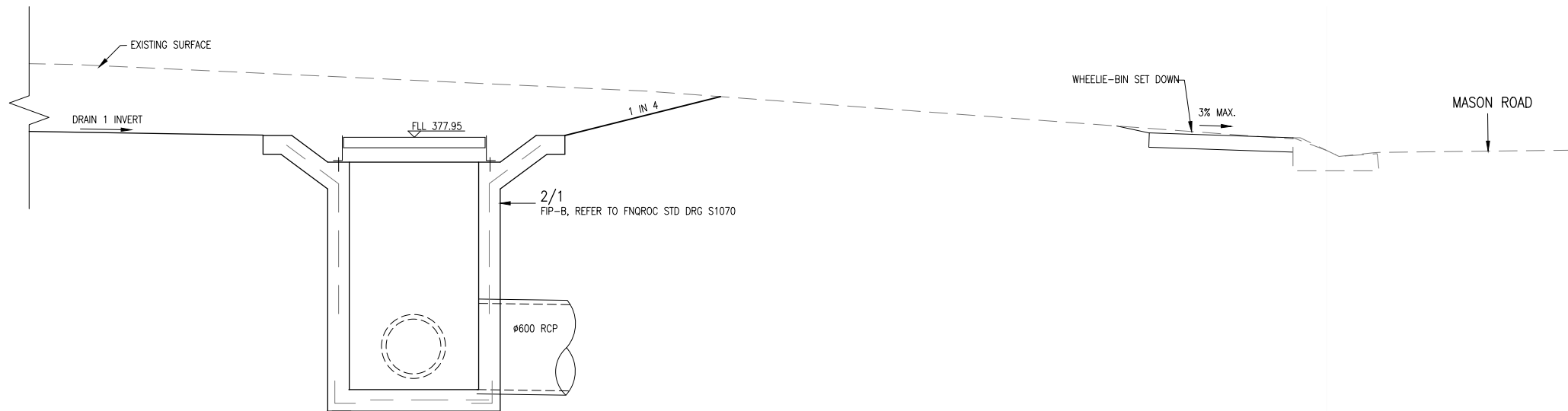
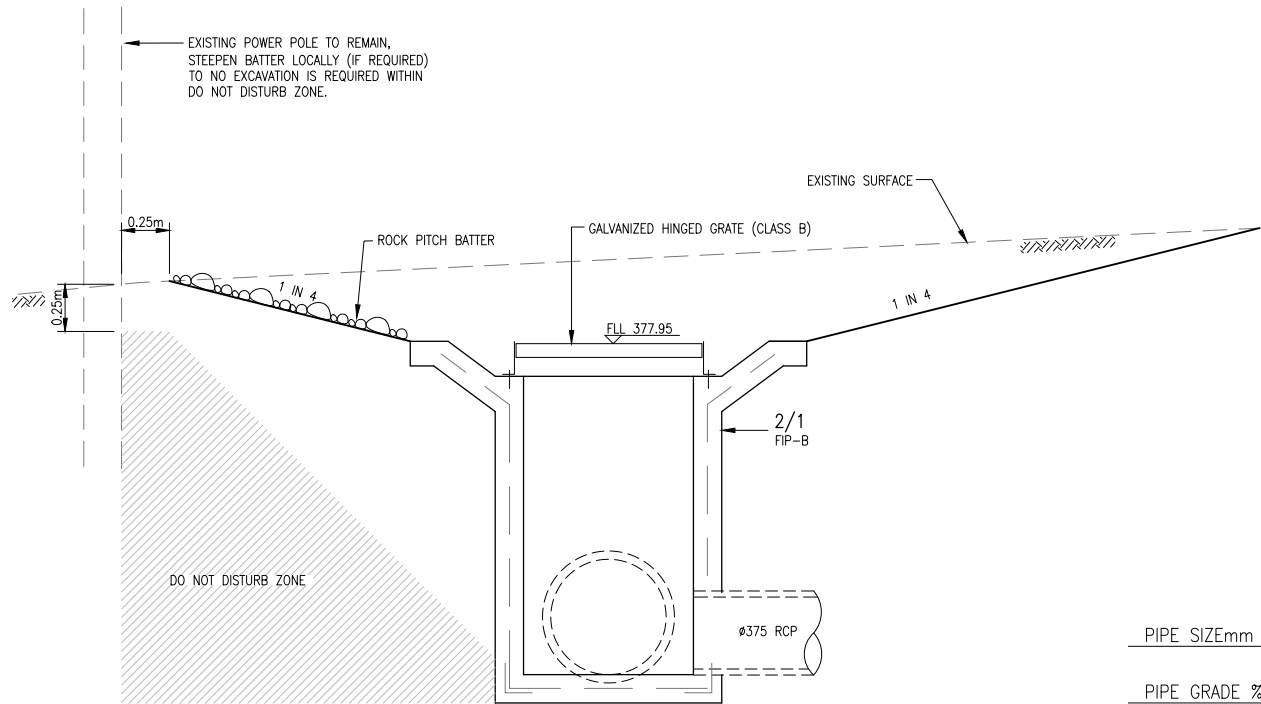
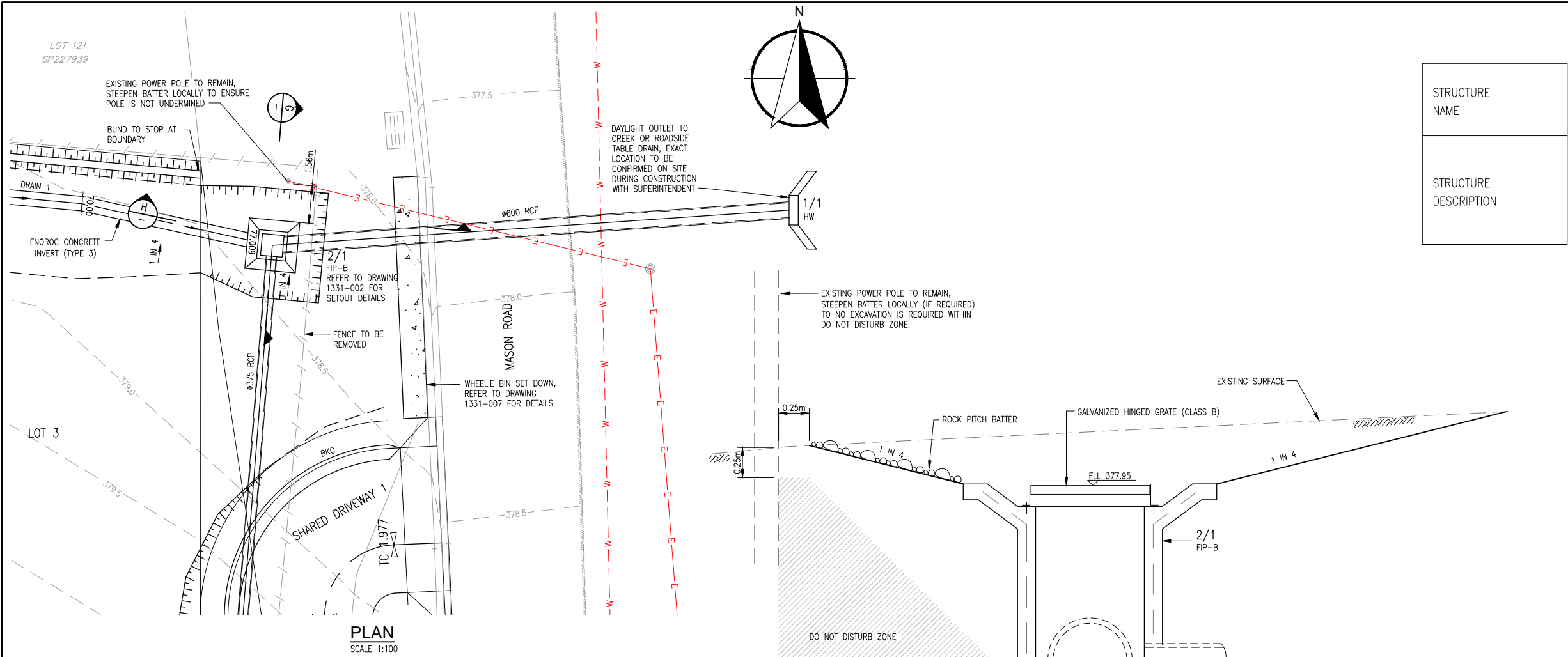
This document is and shall remain the property of Trinity Engineering and Consulting Pty Ltd. Unauthorised use of this document in any form whatsoever is prohibited.

Trinity Engineering and Consulting Pty Ltd
21-23 Sheridan Street | PO Box 7963
Ph: (07) 4040 7111
www.trinityengineering.com.au

Calms QLD 4870
Email: admin@trinityengineering.com.au

Scale (A1 size)		Client	
1:500		NEVENKA SALINOVIC	
Drawing is not to be used for construction unless approved.		Project	
		72-76 MASON ROAD	
		Title	
		EROSION AND SEDIMENT CONTROL STRATEGY	
Drawn	Designed	Drawing Check	Design Check
RML	RML	Approved	RPEQ
		Date	Drawing No.
			1331-008
		Revision	D

Printed: 05 September, 2019, 9:51 AM File: T:\1331 72-76 Masons Road ROL\Drawings\1331-009(A).dwg



STRUCTURE NAME
STRUCTURE DESCRIPTION

PIPE SIZEmm (Class)	BLACK MAX 300(2)	BLACK MAX 300(2)	BLACK MAX 300(2)	375(2)	600(2)
PIPE GRADE %	10.98%	15.15%	19.27%	7.68%	2.01%
PIPE SLOPE 1 in X	9.10	6.60	5.19	13.03	49.78
FULL PIPE FLOW VELOCITY (m/s)	1.57(1.131y)	1.57(1.131y)	2.42(1.641y)	1.93(1.271y)	
PART FULL FLOW VELOCITY (m/s)	4.12 (3.761y)	4.63 (4.221y)	5.68 (5.111y)	4.25 (3.801y)	3.00 (2.631y)
DATUM RL	370.0	370.0	360.0	360.0	
WATER LEVEL IN STRUCTURE	389.416	389.416	382.534	378.640	376.438
HYDRAULIC GRADE LEVEL	388.892	387.412	382.534	378.537	376.438
PIPE FLOW (Cumecs)	0.111	0.111	0.171	0.213	0.393
PIPE CAPACITY AT GRADE (Cumecs)	0.320	0.376	0.424	0.485	0.909
DEPTH TO INVERT	0.983	1.700	0.931	0.951	1.092
INVERT LEVEL OF DRAIN	388.592	386.991	381.867	378.162	376.158
DESIGN SURFACE LEVEL	389.575	386.691	382.798	379.113	377.950
RUNNING CHAINAGE	0.000	14.575	33.168	47.743	66.649

LINE

FOR APPROVAL

Revisions				Scale (A1 size)				Client			
A APPROVAL ISSUE				AS SHOWN				NEVENKA SALINOVIC			
No.				Drawing is not to be used for construction unless approved.				72-76 MASON ROAD			
Description				RML				STORMWATER DETAILS			
Reviewed				Designed				Drawing Check			
Approved				RML				Design Check			
Date				Approved				RPEQ			
05/09/19				Date				Drawing No.			
								1331-009			
								Revision			
								A			

External References: tec-title-a1_c.dwg ; 1331-X-DESIGN.dwg ; 1331-X-SURVEY.dwg

Item 6
Engineering Design Drawings