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25 May 2023

Our Ref: ARO0188

SARA FNQ Regional Office
PO BOX 2358
CAIRNS QLD 4870

To: CairnsSARA@dsdilgp.qld.gov.au (By Email)

Dear Belinda,

Response to SARA Information Request Reconfiguring a Lot (One lot into nine lots and road) at 368-380 Port Douglas Road, Port Douglas (RP Lot 3RP729037) (ROL 2022_4962/1) – SARA REF 2210-31740 SRA

The following information is provided in response to SARA's Information Request dated 3 January 2023.

This response to Council's Information Request provides **all of the information requested** by SARA in accordance with Part 3 (Information Request) of the Development Assessment Rules.

In support of our response please find attached the following documents:

Attachment 1 - Amended Layout Plan ARO0188-SK05(1)

Attachment 2 – Completed assessment against State code 9

Attachment 3 - Alternative Intersection Location ARO0188-SK06(1)

Attachment 4 – Traffic Impact Assessment

Attachment 5- Stormwater Assessment

Response to SARA Matters

Wetland protection area

1. Please provide appropriately scaled drawings and/or plans that include the following details:

- a. earthworks that will be required to facilitate the proposed development
- b. measures employed to minimise impacts to the local receiving environment
- c. any adjacent riverbanks, walls, sandbanks, structures, the limit of vegetation and/or other



- d. principal features of the immediate area
- e. relevant tidal planes (e.g. highest astronomical tide, mean high water springs)
- f. any other information required to accurately define the area and to allow the site to be readily identified from the plan.

Response: It is important to note that the extent of the wetland protection area over covers a small area of the proposed development site.

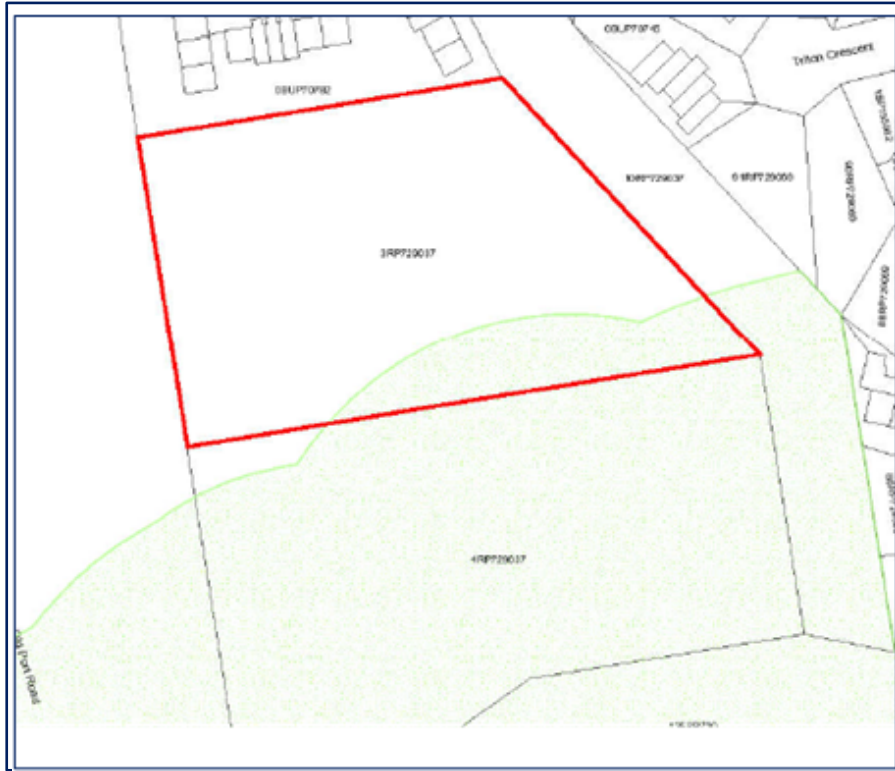


Image 1: Extract from Matters of Interest by Lot Plan (DAMS Mapping)

The area mapped as wetland protection area is almost entirely covered by an existing access and dwelling on site.



Image 2: QLD Globe image demonstrating extent of mapped area overlaid with existing dwelling.

*The existing dwelling house is proposed to be retained on site. There is limited earthworks proposed within the lots that will be constructed in the location of the existing driveway as it demonstrated on Amended Layout Plan ARO0188-SK05(1) provided as **Attachment 1**.*

The extent of earthworks in the mapped area will have no greater impact on the nearby High Ecological Significant (HES) wetland than the existing form of development.

2. Please provide additional information to enable the proposed development to be assessed against State code 9 including PO3 – PO10. In particular, a surface and groundwater hydrological assessment prepared by an appropriately qualified person is required. The hydrological assessment should address the information requirements contained in Guideline: State Development Assessment Provisions, State Code 9: Great Barrier Reef wetland protection areas.

*Response: A completed assessment against State code 9 is provided as **Attachment 2**.*

*As the proposed development is contained within the existing development footprint within the mapped area and the lawful point of discharge (see **Attachment 5**) is not mapped as a wetland protection area a surface and groundwater hydrological assessment is not considered to be required.*

3. The applicant is required to provide a RPEQ traffic assessment that includes the following
 - a. Sufficient information to address and demonstrate compliance with PO15 – PO19 and PO25 – PO26 of State code 1 for a changed shared vehicular access and location.
 - b. Illustrate on a plan, a vehicular access that is designed to provide safe access to Lot 3 on RP729037 (the subject site) and Lot 4 on RP729037 via a single shared vehicular access

without compromising the safety and function of Port Douglas Road. DTMR does not support two individual access locations to Lot 3 and Lot 4 on RP729037 via Port Douglas Road near the major and well utilised Port Douglas Road / Old Port Road T-intersection.

*Response: An updated intersection plan is provided as **Attachment 3** and a Traffic Impact Assessment is provided as **Attachment 4**.*

Should you require any further information, please do not hesitate to contact Kelly Reaston on 0400 974 688 or at kelly@kellyreaston.com.au.

Kind regards

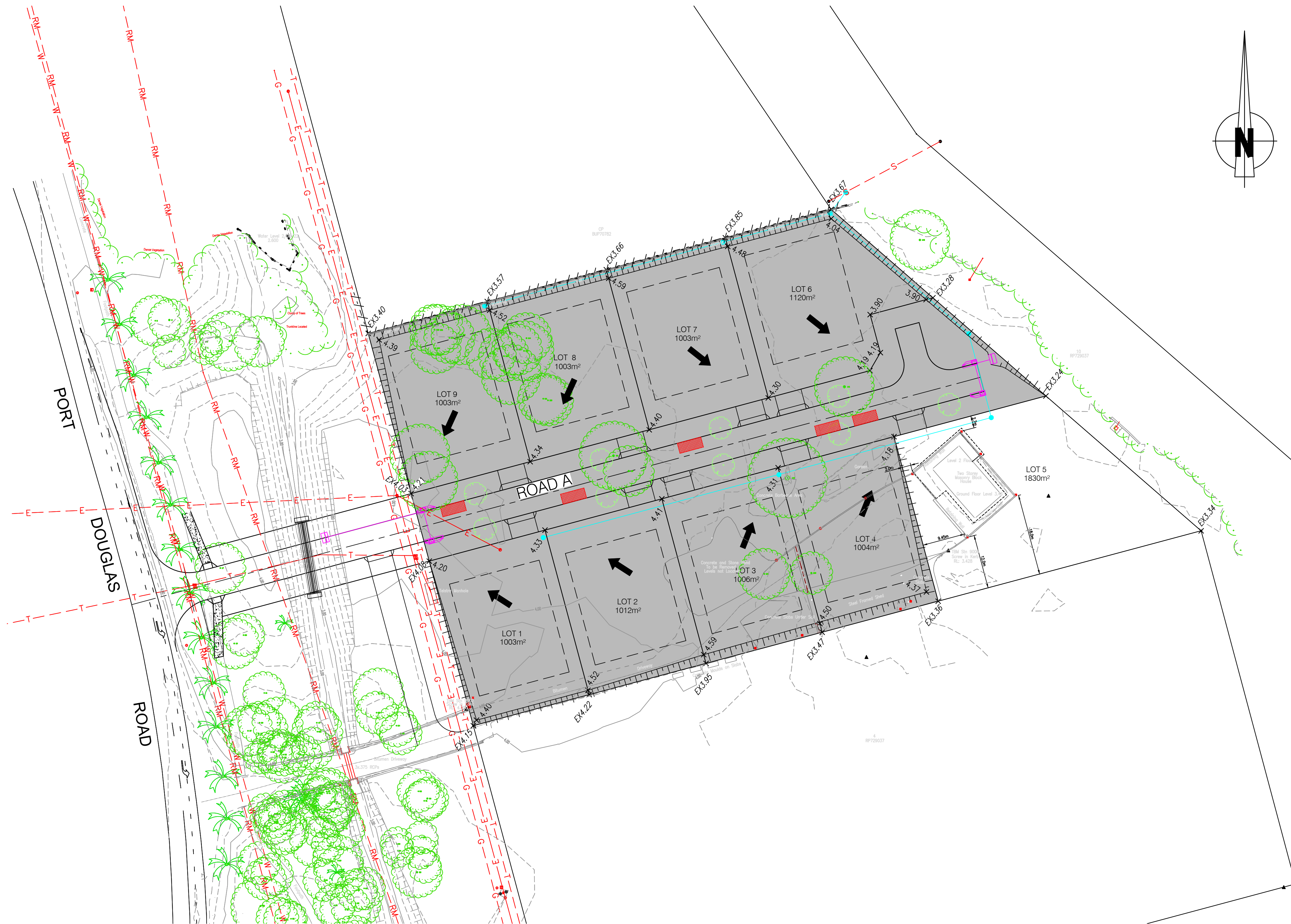
A handwritten signature in black ink, appearing to be 'KR' with a stylized flourish.

Kelly Reaston | Director



Attachment 1 - Amended Layout Plan ARO0188-SK05(1)





LEGEND



DIRECTION OF FALL ON LOTS

4.68

FINISHED SURFACE LEVEL ON ALLOTMENT
(REFER NOTE 1)

EX5

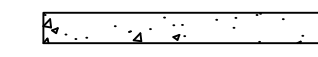
EXISTING SURFACE LEVEL

— 4.0—

— EXISTING SURFACE CONTOUR (0.5m INTERVAL)



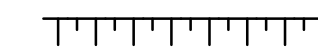
FILL AREAS



2.0m WIDE CONCRETE PATHWAY (REFER NOTE 12)



KERB RAMP



— TOP OF BATTER



ACCESS CROSSOVER

— III — III —

— EDGE OF EXISTING SEALED ROAD

— SW — — —

— EXISTING STORMWATER

_____W_____

— EXISTING WATER

_____T_____

EXISTING TELECOMMUNICATIONS

— RM — — —

— EXISTING SEWER RISING MAIN

$$\text{---} \text{E} \text{---} \text{E} \text{---}$$

— EXISTING OVERHEAD ELECTRICITY

EDGE OF EXISTING VEGETATION



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RESIDENTIAL LAND
DEVELOPMENT
LOT 3 ON RP729037

LAYOUT PLAN

ARO0188-SK05

1:250

1 Full Size

Acad No. ARO0188-SK05(1)

28th March 2023

Attachment 2 – Completed assessment against State code 9



State code 9: Great Barrier Reef wetland protection areas

State Development Assessment Provisions Guideline: State code 9: Wetland protection areas which provides direction on how to address this code.

Table 9.1: Development with an acceptable outcome

Performance outcomes	Acceptable outcomes	Response
General		
PO1 Development maintains or improves wetland environmental values and native vegetation within the wetland and the buffer .	AO1.1 The buffer surrounding a wetland has a minimum width of: <ol style="list-style-type: none"> 200 metres, where the wetland is located outside a prescribed urban area; or 50 metres, where the wetland is located within a prescribed urban area. 	Complies with PO# / AO# Use this column to indicate whether compliance is achieved with the relevant PO or AO (or if they do not apply), and explain why

Table 9.2: Development with no acceptable outcome

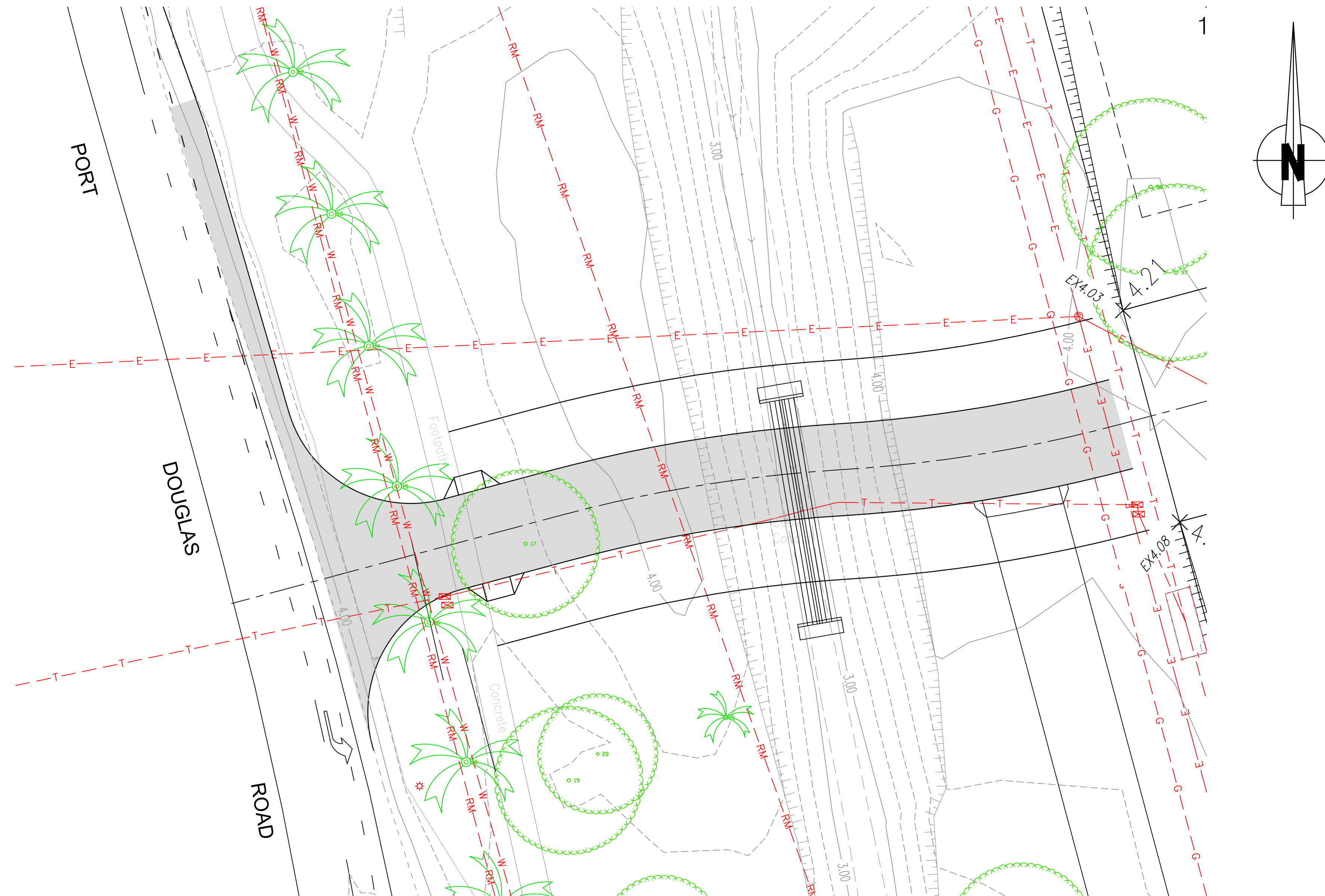
Performance outcomes	Response
General	
PO2 Development is not carried out in a wetland in a wetland protection area .	Complies with PO2 The site is a cleared site adjacent another mapped and cleared site intended for medium density residential development in the Douglas Shire Planning Scheme. The mapping on this site covers an existing established dwelling and access. The proposed development is within the previously developed footprint and the existing dwelling house will be retained.
Hydrology	
PO3 Development maintains or improves the existing surface and groundwater hydrology in a wetland protection area .	Complies with PO3 The development maintains existing surface and groundwater hydrology as the mapped area is already imperviously sealed for residential purposes and no additional development is proposed.
Water quality	

Performance outcomes	Response
PO4 Development does not unacceptably impact the water quality of the wetland in the wetland protection area and in the wetland buffer .	<p>Complies with PO4</p> <p>The development does not unacceptably impact the water quality of the wetland in the wetland protection area and in the wetland buffer as the mapped area is already imperviously sealed for residential purposes and no additional development is proposed.</p>
PO5 Development does not use the wetland in the wetland protection area for stormwater treatment.	<p>Complies with PO5</p> <p>The point of discharge for the proposed development is not a mapped wetland protection area.</p>
Land degradation	
PO6 Development is located and designed to protect the wetland protection area from land degradation .	<p>Complies with PO6</p> <p>Development is contained within the existing development footprint within the mapped area.</p>
Fauna management	
PO7 Development protects wetland fauna from any impacts associated with noise, light or visual disturbance .	<p>Complies with PO7</p> <p>Development is contained within the existing development footprint within the mapped area.</p>
PO8 Development protects the movement of wetland fauna within and through a wetland protection area .	<p>Complies with PO8</p> <p>Development is contained within the existing development footprint within the mapped area.</p>
PO9 Development does not introduce pest plants, pest animals or exotic species into a wetland and its buffer .	<p>Complies with PO9</p> <p>Development is contained within the existing development footprint within the mapped area.</p>
Matters of state environmental significance	
<p>PO10 Development outside the wetland is designed and sited to:</p> <ol style="list-style-type: none"> 1. avoid impacts on matters of state environmental significance; or 2. minimise and mitigate impacts on matters of state environmental significance after demonstrating avoidance is not reasonably possible; and 3. provide an offset if, after demonstrating all reasonable avoidance, minimisation and mitigation measures are undertaken, the development 	<p>Complies with PO10</p> <p>Development is contained within the existing development footprint within the mapped area in an identified urban footprint zone for higher density residential development.</p>

Performance outcomes	Response
<p>results in an acceptable significant residual impact on a matter of state environmental significance.</p> <p>Statutory note: For Brisbane core port land, an offset may only be applied to development on land identified as E1 Conservation/Buffer, E2 Open Space or Buffer/Investigation in the Brisbane Port LUP precinct plan.</p>	

Attachment 3 - Alternative Intersection Location ARO0188-SK06(1)





LEGEND

+	4.68	FINISHED SURFACE LEVEL ON ALLOTMENT (REFER NOTE 1)
+	EX4.09	EXISTING SURFACE LEVEL
---	4.0	EXISTING SURFACE CONTOUR (0.5m INTERVAL)
		KERB RAMP
		TOP OF BATTER
		ACCESS CROSSOVER
---	---	EDGE OF EXISTING SEALED ROAD
---	---	EXISTING STORMWATER
---	---	EXISTING WATER
---	---	EXISTING TELECOMMUNICATIONS
---	---	EXISTING SEWER RISING MAIN
---	---	EXISTING OVERHEAD ELECTRICITY
---	---	EDGE OF EXISTING VEGETATION



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RESIDENTIAL LAND
DEVELOPMENT
LOT 3 ON RP729037

ALTERNATE INTERSECTION
LOCATION

ARO0188-SK06

1:250
A1 Full Size

Acad No. ARO0188-SK06(1) 28th March 2023

Attachment 4 – Traffic Impact Assessment



ARO INDUSTRIES

368-380 PORT DOUGLAS
ROAD, PORT DOUGLAS
TRAFFIC IMPACT
ASSESSMENT



TABLE OF CONTENTS

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1. INTRODUCTION

This engineering report has been prepared by ARO Industries to assess any potential traffic impacts of a proposed subdivision of Lot 3 on RP729037. This traffic assessment will investigate vehicular access to and from the site and the impact of the development traffic on the surrounding road network, including state and local roads. The proposed development is located at 368-380 Port Douglas Road, Port Douglas. A locality plan of the site is provided in Figure 1 below and the Site Layout Plan is provided in Appendix A.



Figure 1 – Locality Plan (Courtesy of Queensland Globe)

2. EXISTING CONDITION

2.1 Land Use

The site of the proposed change of use is currently a large (approximately 1.2ha) residential lot with a single dwelling that has direct access to Port Douglas Road, which is shared with the adjacent property at 2-14 Old Port Douglas Road.

2.2 Adjacent Road Network

The development site has frontage to the Port Douglas Road, between the Barrier Street Intersection (Roundabout) to the north and Old Port Road Intersection to the south. Port Douglas Road is a State Controlled Road consisting of a two-way single carriageway with sealed shoulder approximately 11m wide.

2.3 Traffic Volumes

Traffic volume data on Port Douglas Road has been sourced from Queensland Open Data Portal. The latest traffic data for Port Douglas Road was collected in September 2020. Although the traffic data shows there has been a decrease in traffic volumes from 2016, a conservative linear growth rate of 1% has been applied to the background traffic (year 2020) to the year 2023. This growth rate is commensurate with the growth experience between 2004 and 2016. This growth rate has also been applied from the current base year (2023) for a period of 10 years into the future (2033). Average hourly directional traffic volumes have been assessed to determine the peak periods and traffic volumes. The diurnal patterns shows that there is a single peak at 11:00AM, which can be attributed to the high tourist traffic volumes. It is assumed that the peak development traffic would generally follow traditional diurnal patterns with an AM peak of 8:00-9:00 and a PM peak of 16:00-17:00. The results are summarised in table 1, below.

Table 1 – Weekday Background traffic volumes on Port Douglas Road

Year	AADT	AM Peak (8:00 – 9:00)		PM Peak (16:00 – 17:00)		Network Peak (11:00 – 12:00)	
		Northbound	Southbound	Northbound	Southbound	Northbound	Southbound
2020	8296	372	206	272	356	349	357
2023	8545	383	212	280	367	359	368
2033	9400	421	233	308	403	395	404

The composition of the traffic on Port Douglas Road consists of 3.6% heavy vehicles.

3. DEVELOPMENT SITE

3.1 Traffic generation

3.1.1 Existing use

The existing use of the site is a residential dwelling. Notwithstanding the trips generated by the approved use, the impact assessment of the proposed development assumes that there are no trips generated by the existing approved use. The property shares an access to Port Douglas Road via a sealed driveway shared with the adjacent vacant property to the south.

3.1.2 Proposed Development

Details of the proposed subdivision of the site have been prepare and are attached in Appendix A. The residential development consists of 10 large lots serviced by access street connection to Port Douglas Road.

According to the Douglas Shire Council Planning Scheme, Duplexes are an accepted development on these lots. The development traffic generation is assumed to be this higher intensity use. The RTA (RMS) Guide to Traffic Generating Developments provides traffic generation rates for low density residential developments. The traffic generated by the development is presented in Table 2, below.

Table 2 – Development trip generation

Development	Unit
Residential Lots	10
Dwellings per Lot	2
Total Dwelling	20
Daily Vehicle Trips Rate (RMS)	7.4 / dwelling
AM Peak Trips Rate (RMS)	0.71 / dwelling
PM Peak Trips Rate (RMS)	0.78 / dwelling
Total Daily Trips	148
Total AM Peak Trips	14
Total PM Peak Trips	16

3.2 Impact on Network Performance

The intersection of the new Access Street and Port Douglas Road will provide for Left-in and Left-out manoeuvres only. Accordingly, the proposed intersection will only directly affect the southbound lane on Port Douglas Road.

Although unlikely, it is conservatively assumed that the Pm peak development traffic will coincide with the Port Douglas Road Peak. The impact of the fully developed residential subdivision on Port Douglas Road is tabulated in Table 3, below.

Table 3 – Traffic Impact

Condition	Background Traffic Volume	Combined Traffic Volume	% Increase
2023 Daily Traffic (Southbound)	4343	4491	3.4%
2023 Peak Traffic (Southbound)	368	384	4.3%
2033 Daily Traffic (Southbound)	4777	4925	3.1%
2033 Peak Traffic (Southbound)	404	420	4.0%

The increase in traffic as a result of the development is considered to be a negligible impact on the capacity of the State Controlled Road, Port Douglas Road. A SIDRA analysis was conducted on the intersection and the results are provided in Appendix B. the analysis showed that the average delay for vehicles existing the development during the peak is 7 seconds, with a queue length of 0.4m.

3.2.1 Impact on Travel Time

It is acknowledged that the left-in and left-out only movement will increase travel time for drivers wanting to travel in the opposite direction. Image 2, below shows the route required for vehicles travel in the opposite direction i.e. entering the development from the South and existing the development to the North.



Figure 2 – Additional Travel Distance

The Purple line represents the additional travel of 1100m that a vehicle heading north will incur. The Orange line represents the additional travel of 440m that vehicle entering the site from the south will incur. Based on an average vehicle speed of 40km/hr, the additional travel time incurred associated with the left-in and left-out is 80 seconds and 40 seconds, respectively.

3.3 Sight distances

The intersection of the access street and Port Douglas Road is located approximately 150m from the exit of the Barrier Street Roundabout and 100m from the Old Port Road Intersection. There is unobstructed sight distance between the proposed access street and the adjacent intersections. The minimum sight distances as defined in the Austroads Guide to Road Design is summarised in Table 4. There is ample sight distance for development traffic to exit onto Port Douglas Road safely and efficiently.

Table 4 – Sight distance requirements

Criteria	Distance	Comments
Approach Sight Distance	N/A	Applies to traffic on Minor Road (Carpark)
Safe Intersection Sight Distance	123m	Access Street to Roundabout (North) – 60km/hr
Safe Intersection Sight Distance	97m	Old Port Road to Access Street (South) – 50km/hr
Minimum Gap Sight Distance	69m	5 secs in 60km/hr zone.

It is noted that the Approach Sight Distance (ASD) applies to the minor road approach to an intersection. In the context of the site, the ASD is not applicable because the 'intersection' with Port Douglas Road would reasonably be anticipated by vehicles exiting the site.

3.4 Safety

It is proposed to limit access and egress at the development to left-in and left-out only to ensure that the intersection functions safely. Restricting movements to the left turn only removes the risk of collision with oncoming traffic.

The access street will be moved approximately 50m further north of the Old Port Road intersection than the existing access to Lot 3 and 4. This will provide greater reaction time for the vehicles negotiating the Old Port Road Intersection.

In accordance with the warrants within the Austroads Guide to Road Design Port Douglas Road will be widened to provide a basic left turn treatment.

4. CONCLUSION

The proposed development of 368-380 Port Douglas Road, consisting of 10 Residential Lots has been assessed as having an insignificant impact on the surrounding transport network.

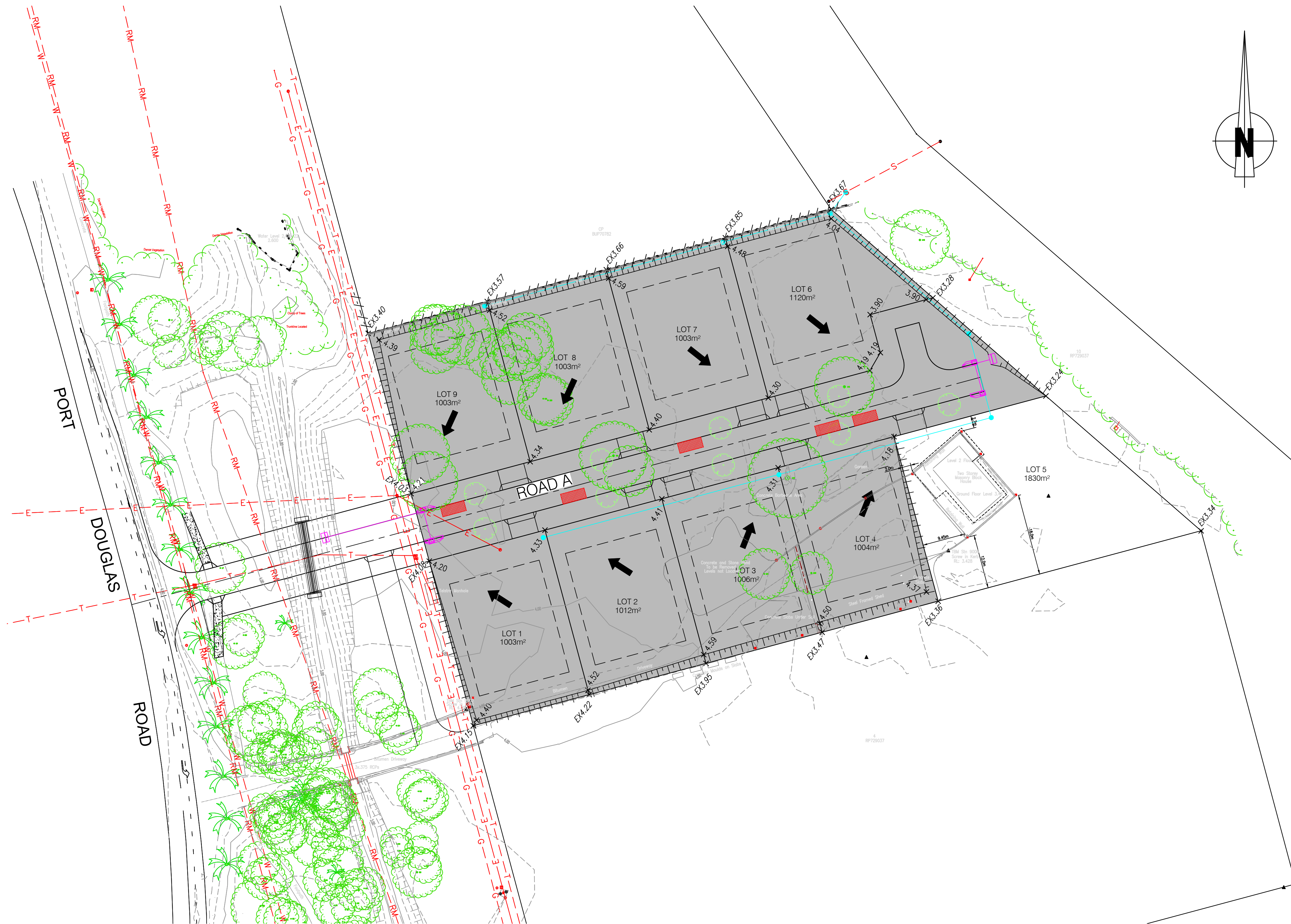
Andrew Armstrong



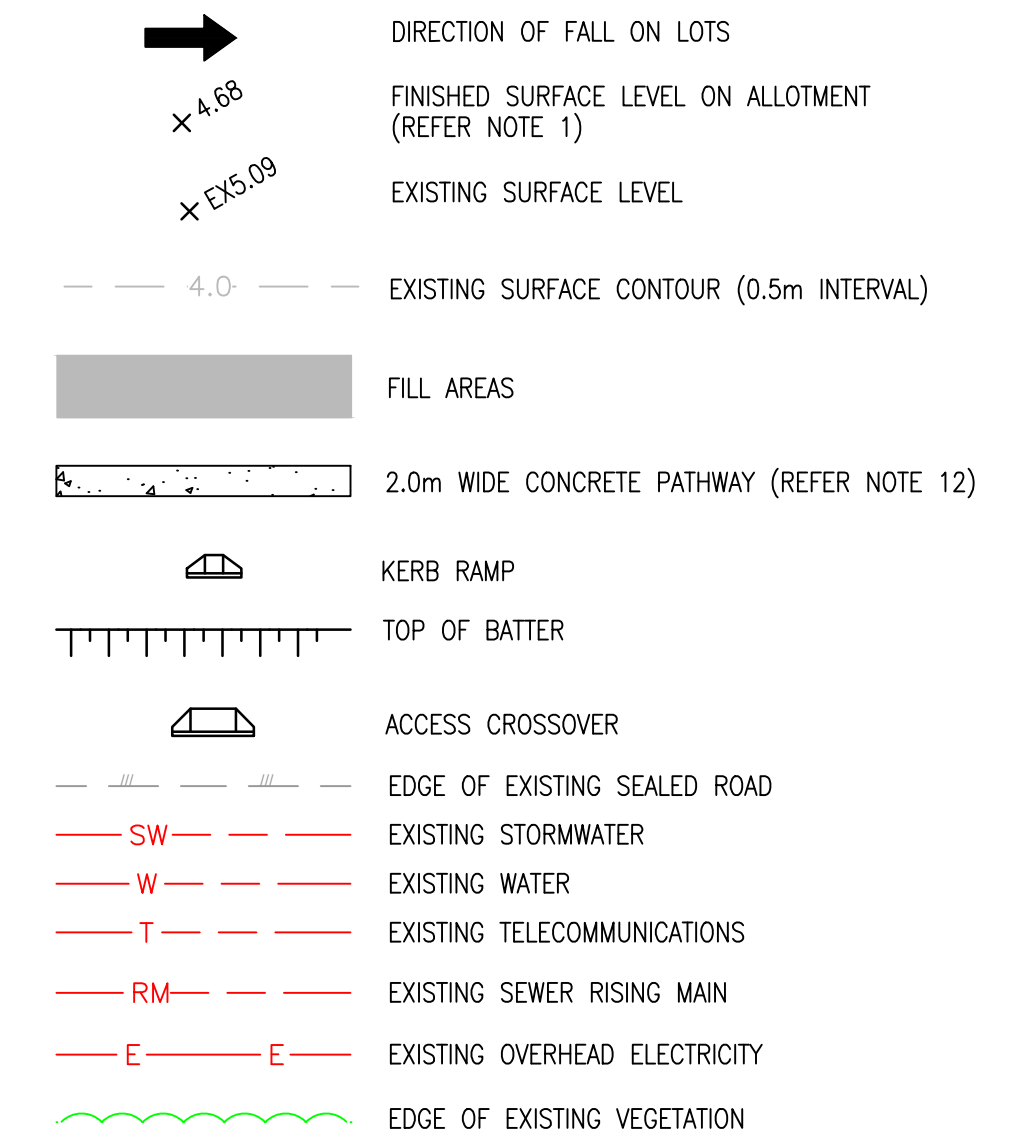
Senior Civil Engineer (RPEQ)

APPENDIX A

Site Layout Plan



LEGEND



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LOT 3 ON RP729037

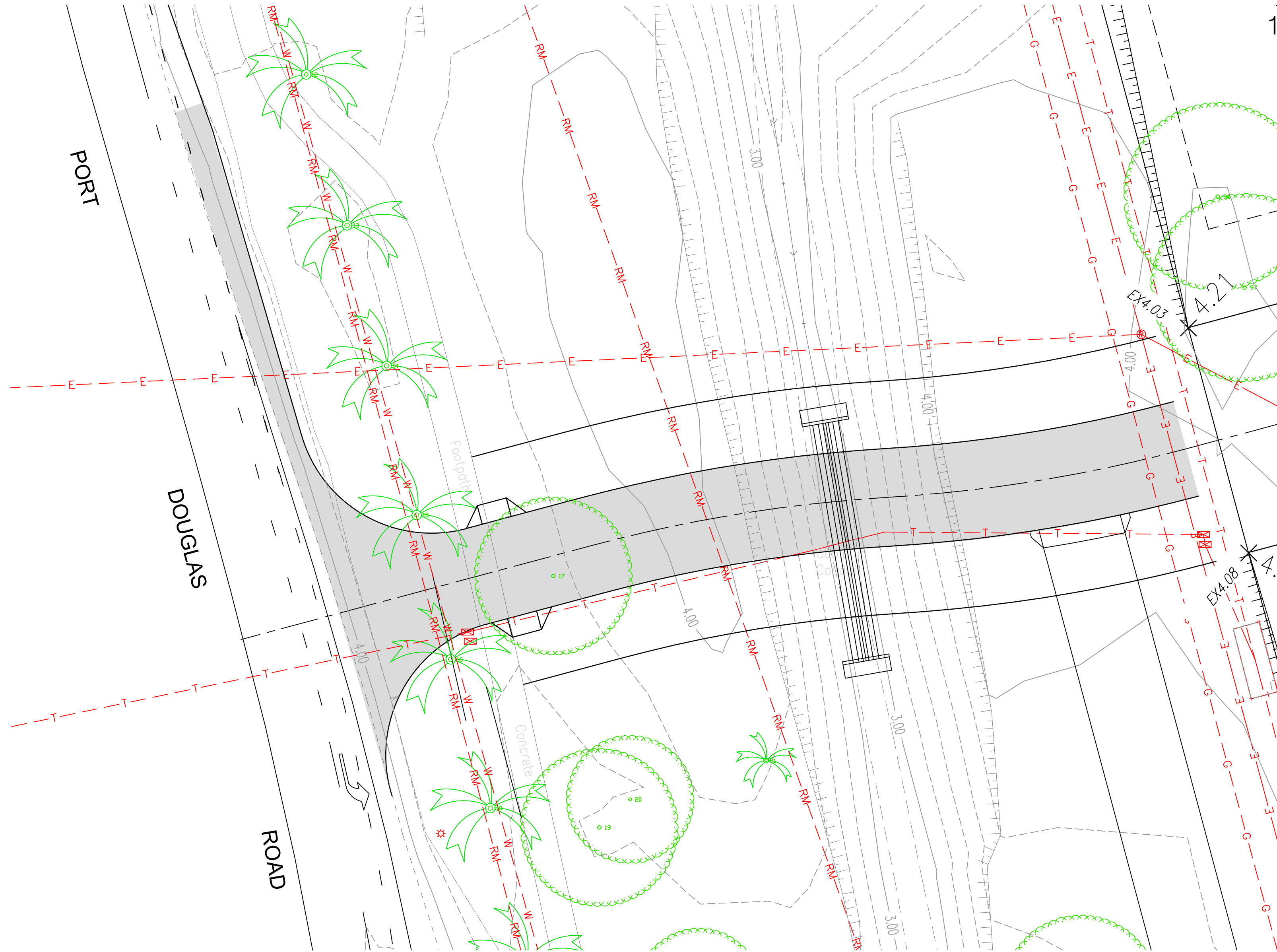
LAYOUT PLAN

ARO0188-SK05

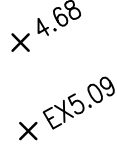












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Acad No. ARO0188-SK05(1)

18th March 2023



LEGEND

- | | |
|---|---|
|  | FINISHED SURFACE LEVEL ON ALLOTMENT
(REFER NOTE 1) |
|  | EXISTING SURFACE LEVEL |
|  | EXISTING SURFACE CONTOUR (0.5m INTERVAL) |
|  | KERB RAMP |
|  | TOP OF BATTER |
|  | ACCESS Crossover |
|  | EDGE OF EXISTING SEALED ROAD |
|  | EXISTING STORMWATER |
|  | EXISTING WATER |
|  | EXISTING TELECOMMUNICATIONS |
|  | EXISTING SEWER RISING MAIN |
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|  | EDGE OF EXISTING VEGETATION |



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ALTERNATE INTERSECTION
LOCATION

ARO0188-SK06

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1 Full Size

Acad No. ARO0188-SK06(1)

28th March 2023

APPENDIX B

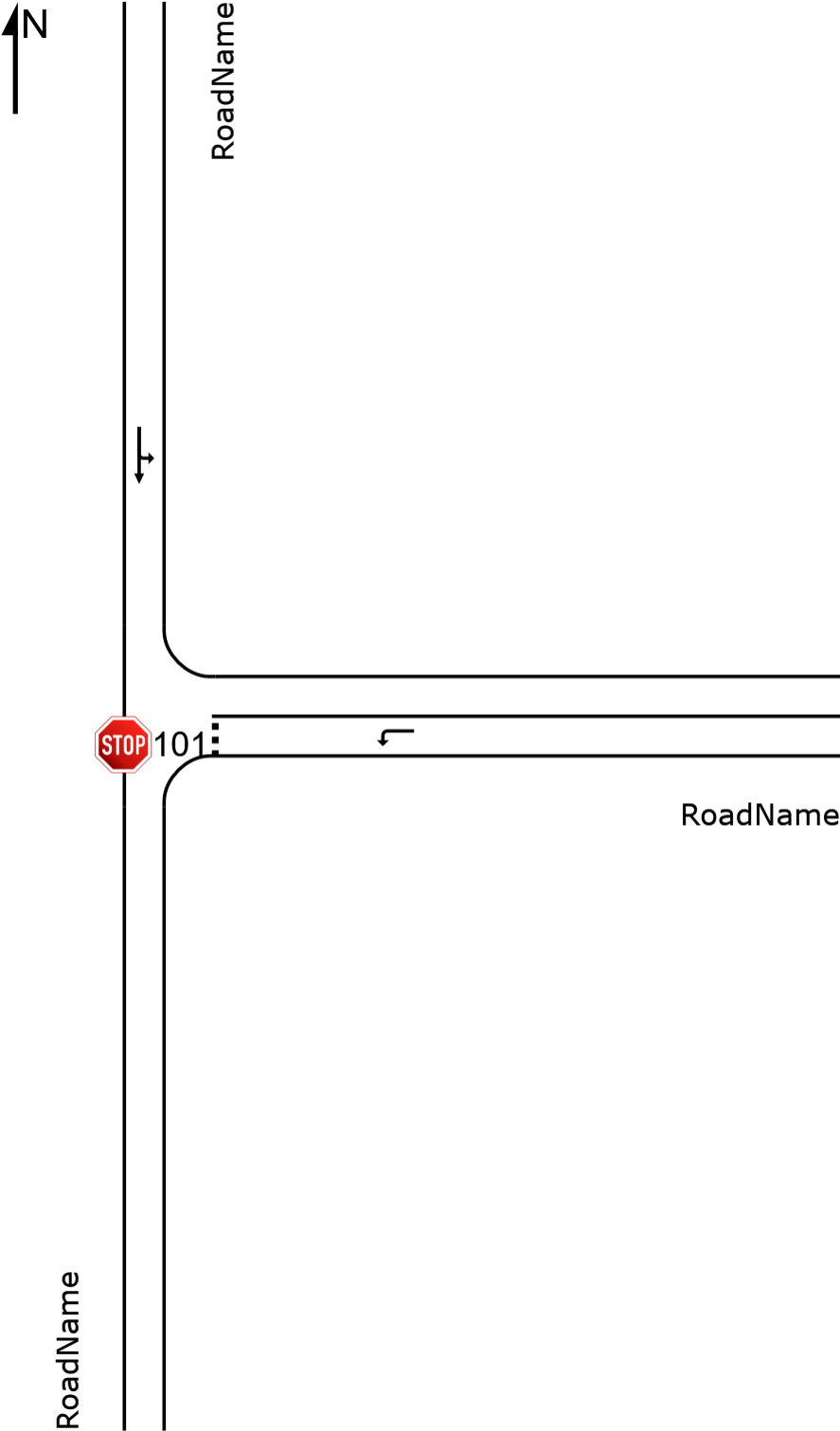
SIDRA Analysis

SITE LAYOUT

 **Site: 101 [Site1 (Site Folder: General)]**

New Site
Site Category: (None)
Stop (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

 **Site: 101 [Site1 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				
East: RoadName															
4	L2	All MCs	17	0.0	17	0.0	0.016	7.0	LOS A	0.1	0.4	0.43	0.61	0.43	35.2
Approach			17	0.0	17	0.0	0.016	7.0	LOS A	0.1	0.4	0.43	0.61	0.43	35.2
North: RoadName															
7	L2	All MCs	1	0.0	1	0.0	0.221	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	37.3
8	T1	All MCs	425	3.6	425	3.6	0.221	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			426	3.6	426	3.6	0.221	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles			443	3.5	443	3.5	0.221	0.3	NA	0.1	0.4	0.02	0.02	0.02	58.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

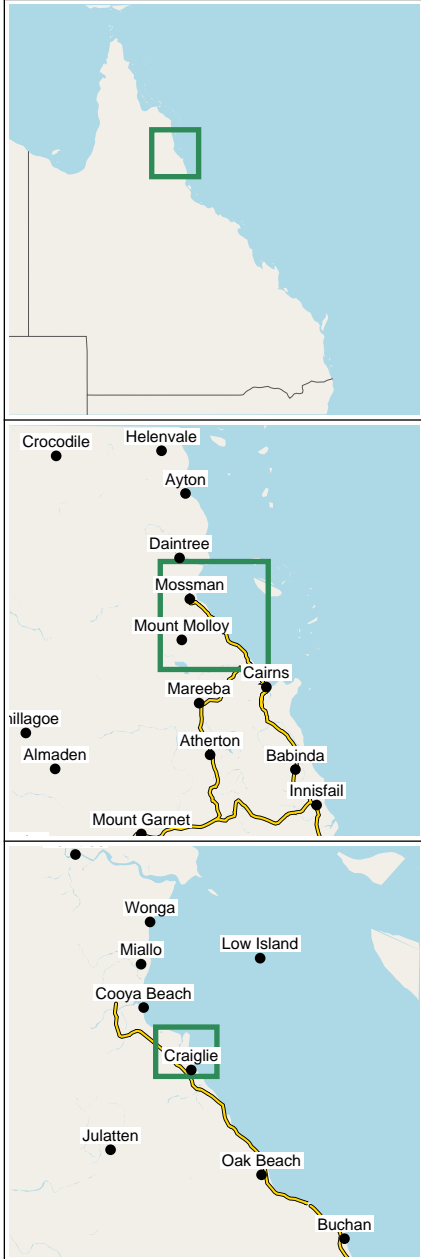
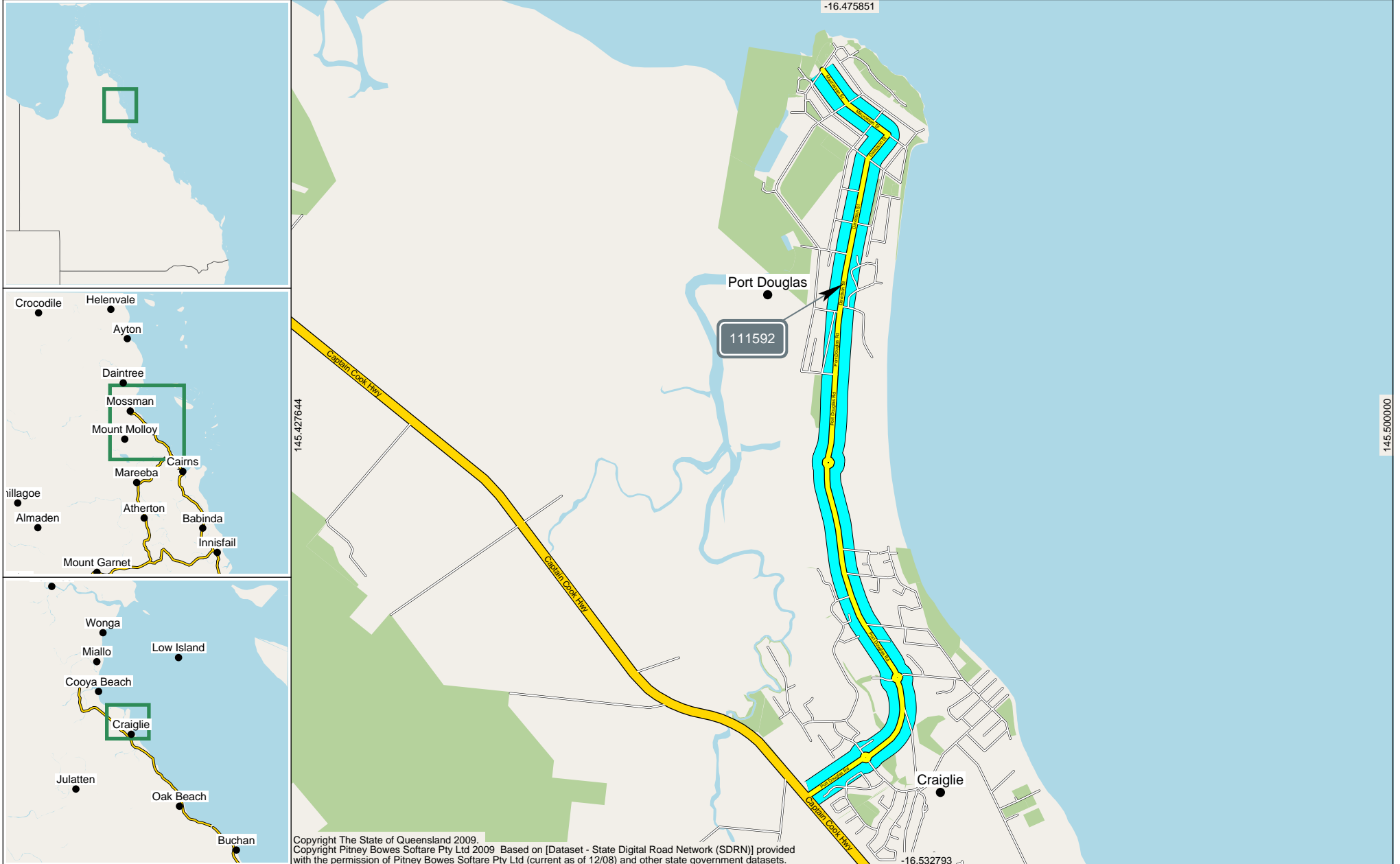
SIDRA INTERSECTION 9.1 | Copyright © 2000-2022 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ARO INDUSTRIES PTY LTD | Licence: PLUS / 1PC | Processed: Friday, 26 May 2023 1:05:17 PM

Project: Not Saved

AADT Segment Report

Area 403 - Far North District Road Section 6504 - PORT DOUGLAS ROAD
 Road Segment from 0.000km to 5.960km Segment Site 111592 Traffic Year 2020 Data Collection Year 2020



Site 111592. Point 310017954.
500m north of Mohogany St.

4.20 km

The width of each Road Segment is proportional to its AADT.

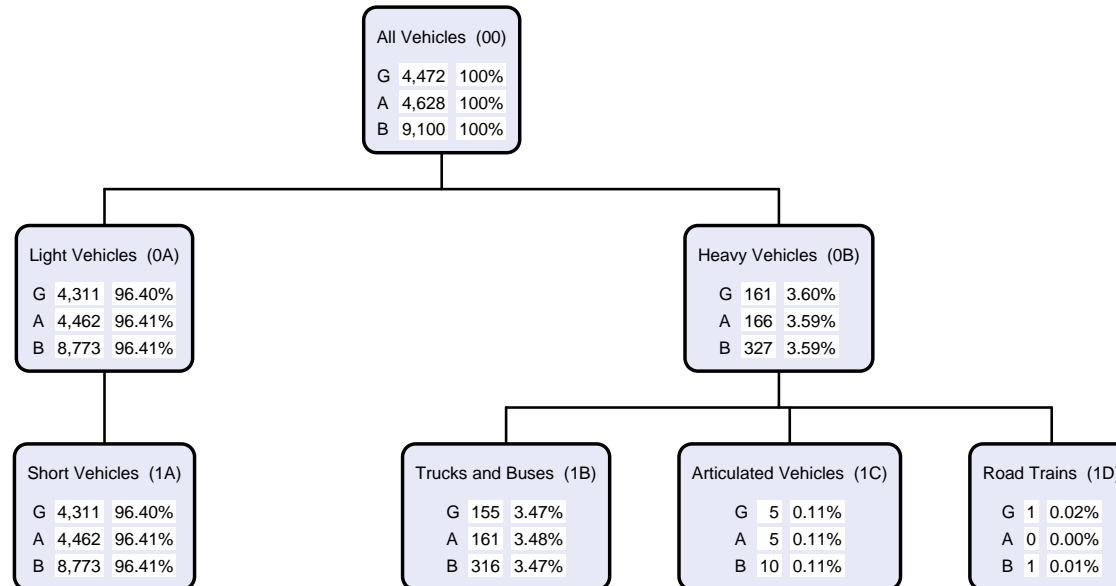
0.00 km

Start Point 310017947. Port
Douglas Rd @ Cook Hwy.

5.96 km

End Point 31000581. Macrossan
St to Esplanade @ Wharf St.

This report shows Annual Average Daily Traffic values (AADTs). Because the AADT values are converted to whole numbers, there will be occasional inaccuracies due to rounding. These inaccuracies are statistically insignificant.



AADT Segment Annual Volume Report

Provides summary data for the selected AADT Segment of a Road Section. Summary data is presented as both directional information and a combined bi-directional figure. The data is then broken down by Traffic Class, when available. The report also includes maps displaying the location of both the AADT Segment and the traffic count site.

Annual Average Daily Traffic (AADT)

Annual Average Daily Traffic (AADT) is the number of vehicles passing a point on a road in a 24 hour period, averaged over a calendar year.

AADT Segments

The State declared road network is broken into Road Sections and then further broken down into AADT Segments. An AADT Segment is a sub-section of the declared road network where traffic volume is similar along the entire AADT Segment.

Area

For administration purposes the Department of Transport and Main Roads has divided Queensland into 12 Districts. The Area field in TSDM reports displays the District Name and Number.

District Name	District
Central West District	401
Darling Downs District	402
Far North District	403
Fitzroy District	404
Mackay/Whitsunday District	405
Metropolitan District	406
North Coast District	407
North West District	409
Northern District	408
South Coast District	410
South West District	411
Wide Bay/Burnett District	412

AADT Values

AADT values are displayed by direction of travel as:

- G Traffic flow in gazetted direction
- A Traffic flow against gazetted direction
- B Traffic flow in both directions

Data Collection Year

Is the most recent year that data was collected at the data collection site.

Please Note:

Due to location and/or departmental policy, some sites are not counted every year.

Gazetted Direction

Is the direction of the traffic flow. It can be easily recognised by referring to the name of the road eg. Road Section: 10A Brisbane - Gympie denotes that the gazetted direction is from Brisbane to Gympie.

Maps

Display the selected location from a range of viewing levels, the start and end position details for the AADT Segment and the location of the traffic count site.

Road Section

Is the Gazetted road from which the traffic data is collected. Each Road Section is given a code, allocated sequentially in Gazetted Direction. Larger roads are broken down into sections and identified by an ID code with a suffix for easier data collection and reporting (eg. 10A, 10B, 10C). Road Sections are then broken into AADT Segments which are determined by traffic volume.

Segment Site

Is the unique identifier for the traffic count site representing the traffic flow within the AADT Segment.

Site

The physical location of a traffic counting device. Sites are located at a specified Through Distance along a Road Section.

Site Description

The description of the physical location of the traffic counting device.

Start and End Point

The unique identifier for the Through Distance along a Road Section.

Vehicle Class

Traffic is categorised as per the Austroads Vehicle Classification scheme. Traffic classes are in the following hierarchical format:

Volume or All Vehicles

00 = 0A + 0B

Light Vehicles

0A = 1A

1A = 2A + 2B

Heavy Vehicles

0B = 1B + 1C + 1D

1B = 2C + 2D + 2E

1C = 2F + 2G + 2H + 2I

1D = 2J + 2K + 2L

The following classes are the categories for which data can be captured:

Volume

00 All vehicles

2-Bin

0A Light vehicles

0B Heavy vehicles

4-Bin

1A Short vehicles

1B Truck or bus

1C Articulated vehicles

1D Road train

12-Bin

2A Short 2 axle vehicles

2B Short vehicles towing

2C 2 axle truck or bus

2D 3 axle truck or bus

2E 4 axle truck

2F 3 axle articulated vehicle

2G 4 axle articulated vehicle

2H 5 axle articulated vehicle

2I 6 axle articulated vehicle

2J B double

2K Double road train

2L Triple road train

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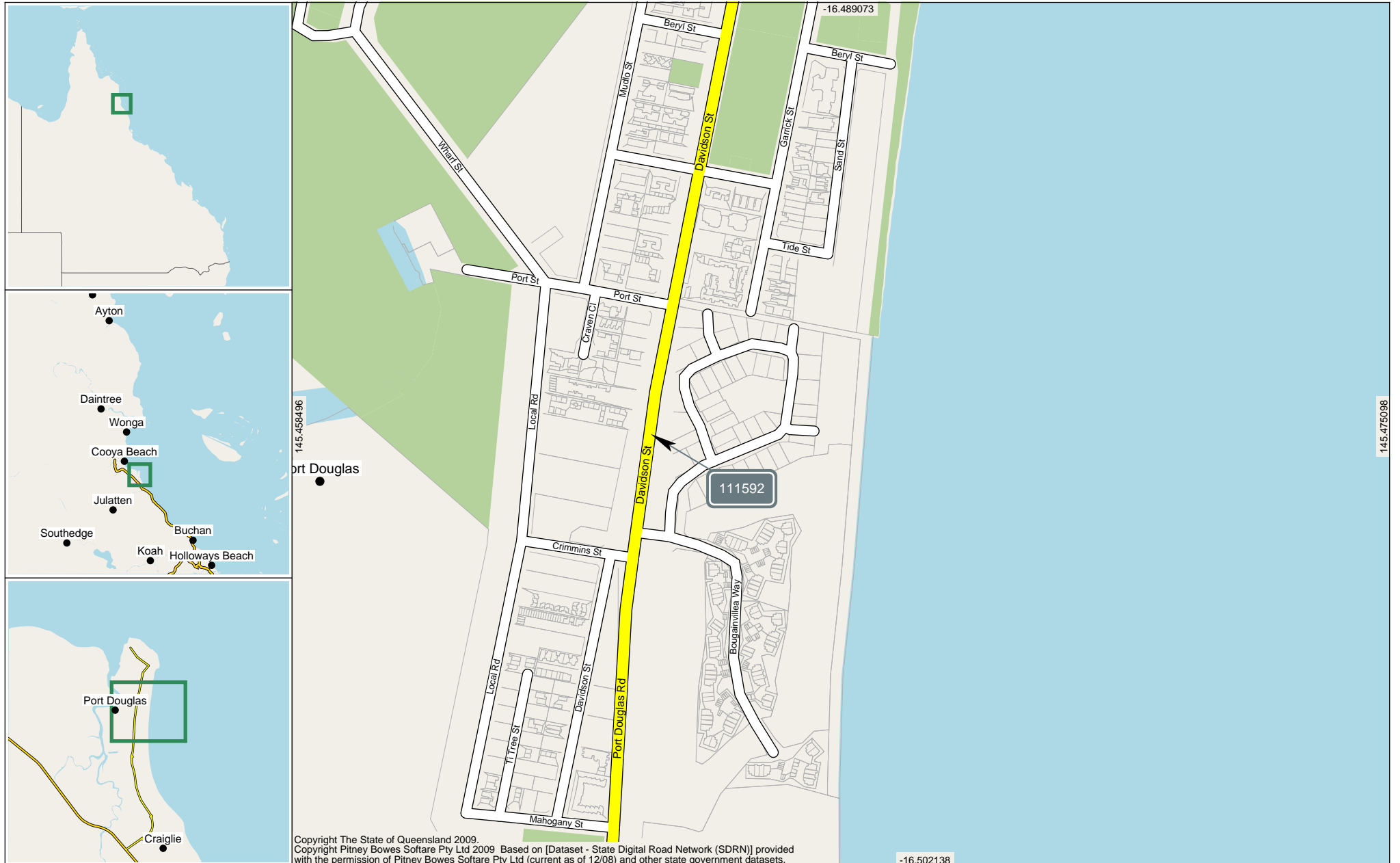
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Annual Volume Report

Area 403 - Far North District Road Section 6504 - PORT DOUGLAS ROAD
Site 111592 - 500m north of Mahogany St TDist 4.200km Speed Limit 60

24-Jun-2021 15:17

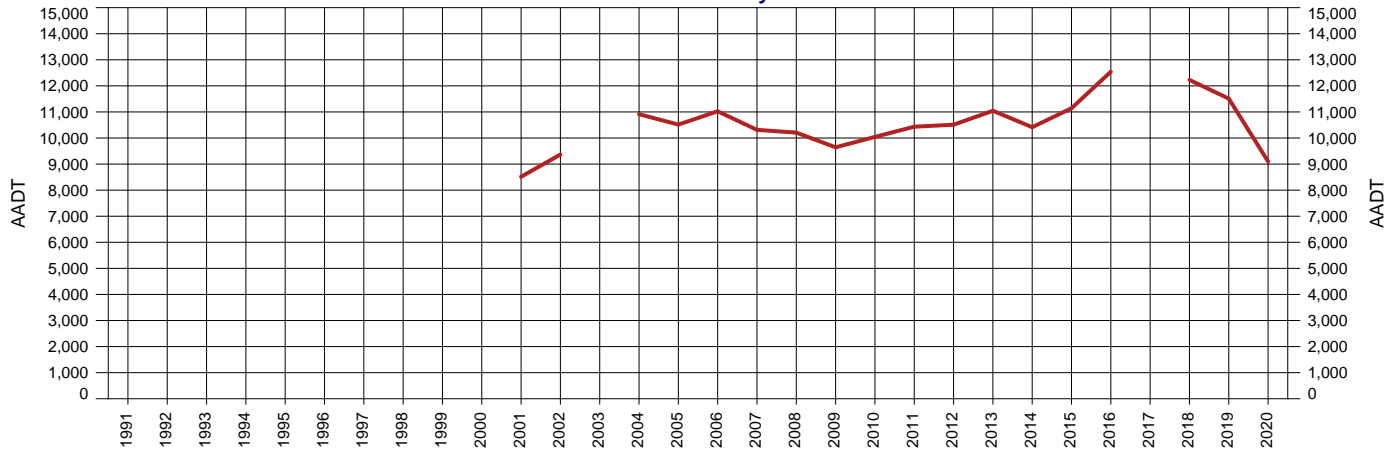
Page 1 of 3 (4 of 7)



Area 403 - Far North District
Road Section 6504 - PORT DOUGLAS ROAD
Site 111592 - 500m north of Mahogany St
Thru Dist 4.2
Type C - Coverage
Stream TB - Bi-directional traffic flow

Year 2020
AADT 9,100
Avg Week Day 8,190
Avg Weekend Day 7,462
Growth last Year -20.95%
Growth last 5 Yrs -6.56%
Growth last 10 Yrs -2.28%

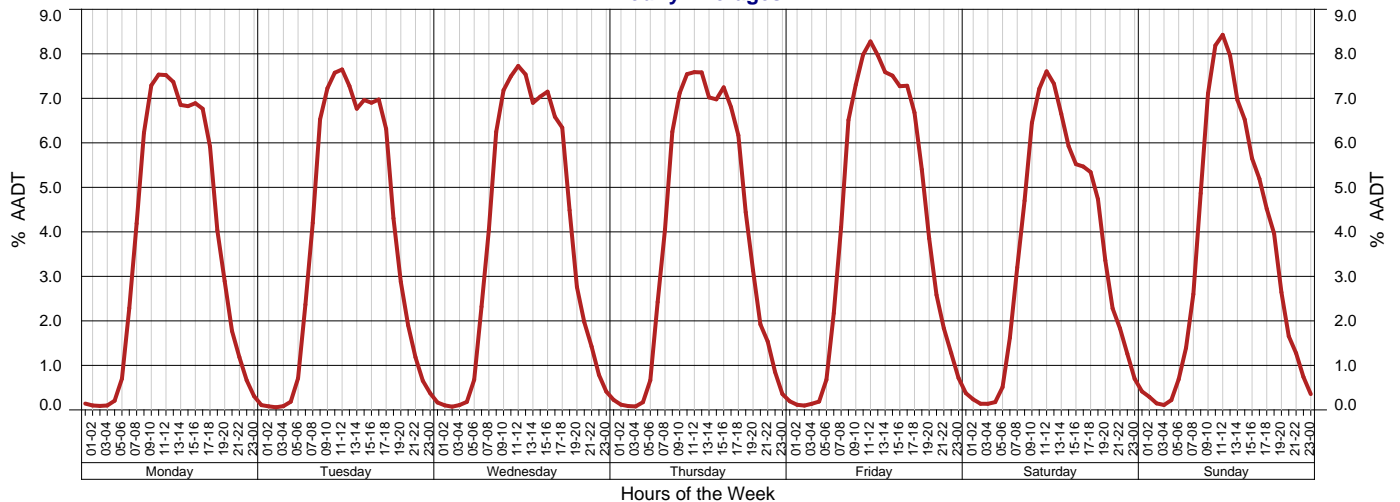
AADT History

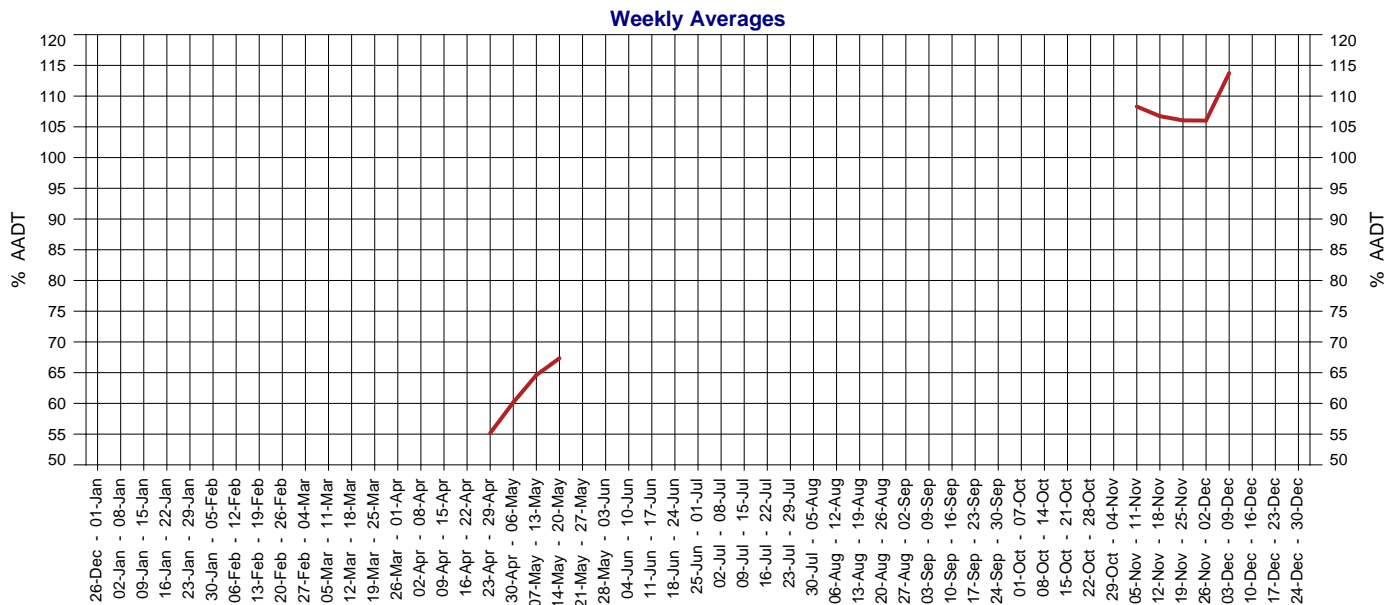
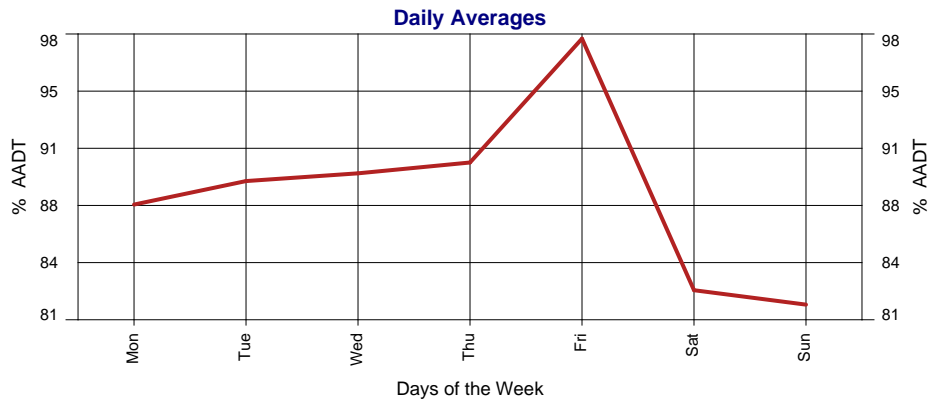


Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2020	9,100	-20.95%	-6.56%	-2.28%
2019	11,511	-5.87%	0.62%	1.32%
2018	12,229		2.59%	2.35%
2017				
2016	12,542	12.58%	4.65%	2.73%
2015	11,141	6.97%	1.91%	0.99%
2014	10,415	-5.70%	0.82%	-0.10%
2013	11,044	5.08%	2.55%	
2012	10,510	0.73%	1.04%	0.37%
2011	10,434	3.90%	0.06%	0.84%
2010	10,042	4.14%	-1.22%	
2009	9,643	-5.53%	-2.79%	
2008	10,207	-1.03%		
2007	10,313	-6.45%	0.53%	
2006	11,024	4.84%	4.47%	

Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2005	10,515	-3.65%		
2004	10,913			
2003				
2002	9,366	10.01%		
2001	8,514			
2000				
1999				
1998				
1997				
1996				
1995				
1994				
1993				
1992				
1991				

Hourly Averages





2020 Calendar

January

M	T	W	T	F	S	S
		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		

February

M	T	W	T	F	S	S
					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	

March

M	T	W	T	F	S	S
30	31					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

April

M	T	W	T	F	S	S
		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			

May

M	T	W	T	F	S	S
				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

June

M	T	W	T	F	S	S
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					

July

M	T	W	T	F	S	S
		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		

August

M	T	W	T	F	S	S
31					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

September

M	T	W	T	F	S	S
	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				

October

M	T	W	T	F	S	S
			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	

November

M	T	W	T	F	S	S
30						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

December

M	T	W	T	F	S	S
	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			

Days on which traffic data was collected.

Annual Volume Report

Displays AADT history with hourly, daily and weekly patterns by Stream in addition to annual data for AADT figures with 1 year, 5 year and 10 year growth rates.

Annual Average Daily Traffic (AADT)

Annual Average Daily Traffic (AADT) is the number of vehicles passing a point on a road in a 24 hour period, averaged over a calendar year.

AADT History

Displays the years when traffic data was collected at this count site.

Area

For administration purposes the Department of Transport and Main Roads has divided Queensland into 12 Districts. The Area field in TSDM reports displays the District Name and Number.

District Name	District
Central West District	401
Darling Downs District	402
Far North District	403
Fitzroy District	404
Mackay/Whitsunday District	405
Metropolitan District	406
North Coast District	407
North West District	409
Northern District	408
South Coast District	410
South West District	411
Wide Bay/Burnett District	412

Avg Week Day

Average daily traffic volume during the week days, Monday to Friday.

Avg Weekend Day

Average daily traffic volume during the weekend, Saturday and Sunday.

Calendar

Days on which traffic data was collected are highlighted in green.

Gazettal Direction

The Gazettal Direction is the direction of the traffic flow. It can be easily recognised by referring to the name of the road eg. Road Section: 10A Brisbane - Gympie denotes that the gazettal direction is from Brisbane to Gympie.

- G Traffic flowing in Gazettal Direction
- A Traffic flowing against Gazettal Direction
- B The combined traffic flow in both Directions

Growth Percentage

Represents the increase or decrease in AADT, using a exponential fit over the previous 1, 5 or 10 year period.

Hour, Day & Week Averages

The amount of traffic on the road network will vary depending on the time of day, the day of the week and the week of the year. The ebb and flow of traffic travelling through a site over a period of time forms a pattern. The Hour, Day and Week Averages are then used in the calculation of AADT.

Road Section

Is the Gazetted road from which the traffic data is collected. Each Road Section is given a code, allocated sequentially in Gazettal Direction. Larger roads are broken down into sections and identified by an ID code with a suffix for easier data collection and reporting (eg. 10A, 10B, 10C). Road Sections are then broken into AADT Segments which are determined by traffic volume.

Site

The unique identifier and description of the physical location of a traffic counting device. Sites are located at a Through Distance along a Road Section.

Stream

The lane in which the traffic is travelling in. This report provides data for the combined flow of traffic in both directions.

Thru Dist or TDist

The distance from the beginning of the Road Section, in kilometres.

Type

There are two types of traffic counting sites, Permanent and Coverage. Permanent means the traffic counting device is in place 24/7. Coverage means the traffic counting device is in place for a specified period of time.

Year

Is the current year for the report. Where an AADT Year record is missing a traffic count has not been conducted, for that year.

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Attachment 5- Stormwater Assessment



25 May 2023

**LOT 3RP729037, 368-380 PORT DOUGLAS ROAD, PORT DOUGLAS
LOCAL DRAINAGE STUDY**

Introduction

This file note focuses on the residential development proposed to be created from the subdivision of Lot 3 on RP729037 (368-280 Port Douglas Road).

The existing topography of the proposed lot is relatively flat with slight fall (~0.3-1.0%) to the rear of the allotment discharging into the natural gully balance lot. The runoff makes its way through Council owned freehold land (Lot 10 on RP729037). It is understood that this allotment is zoned Recreation and Open Space and that Douglas Shire Council has provided landowner consent for the discharge of stormwater into this allotment, hence this is considered a lawful point of discharge.

A formed unlined drain is also located in the road reserve along the frontage of Lot 3 on RP729037. This drain conveys water to Council owned freehold land (Lot 10 on RP729037) Through lot 125 on SR730. It is understood that this allotment is Reserve and is identified on The DSC LGIP as "Land for Drainage Purposes". As such it is considered that the road frontage is also a lawful point of discharge for the proposed development.

It is proposed that the drainage regime of the proposed subdivision meet the requirements of FNQROC and QDUM.

The aim of this local drainage study is to address the following items;

- a) All contributing catchment areas;
- b) The impact of the proposed development on the proposed stormwater discharge drains.
- c) Pre and post development flow characteristics of the discharge drains;
- d) Identify the sites lawful points of discharge.

Catchment Boundaries

The predevelopment catchments are identified in Figure 1.

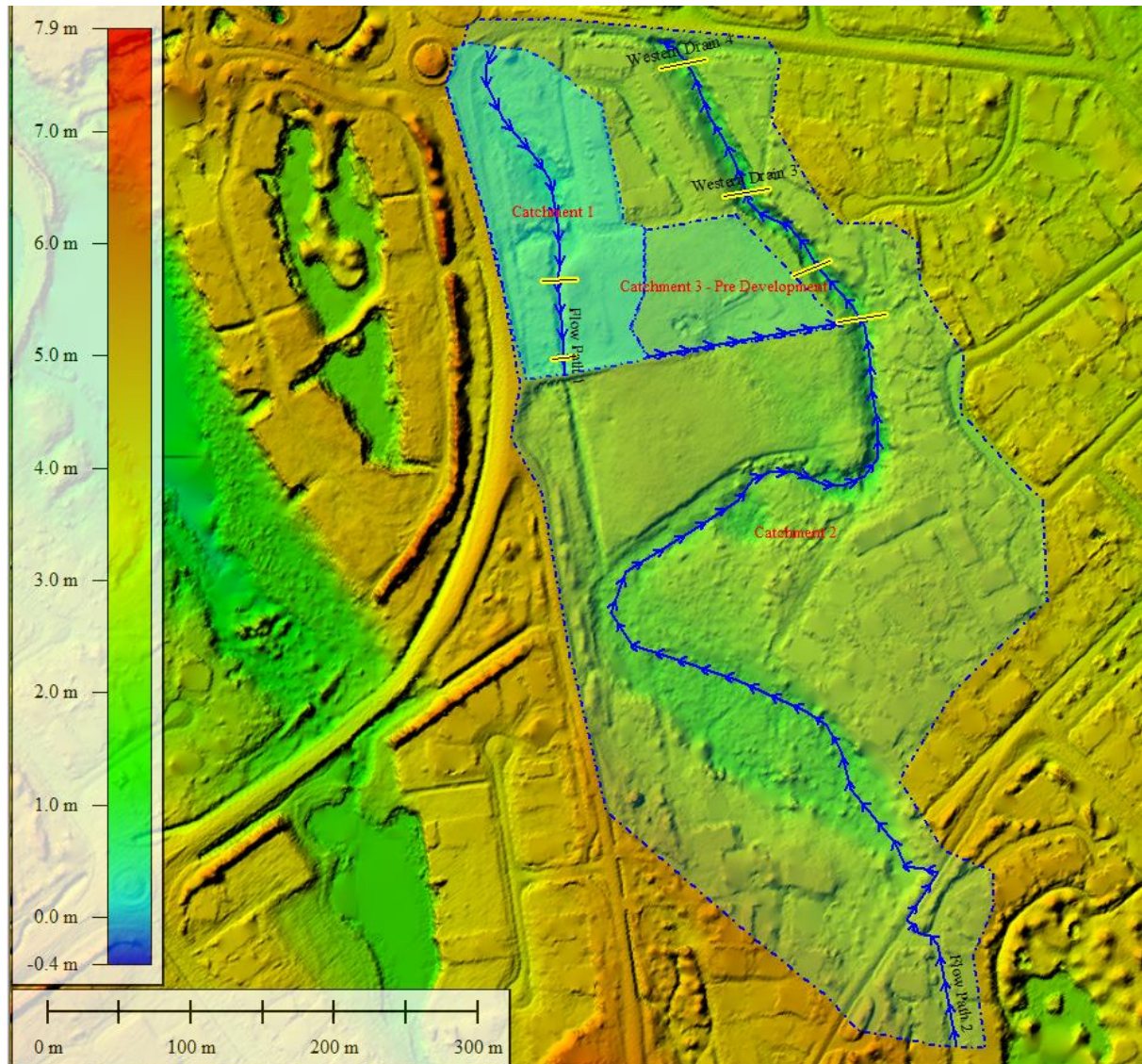


Figure 1: Pre Development Catchment

The post development catchments have been broken into five (3) individual catchments. The drainage regime has generally been maintained.

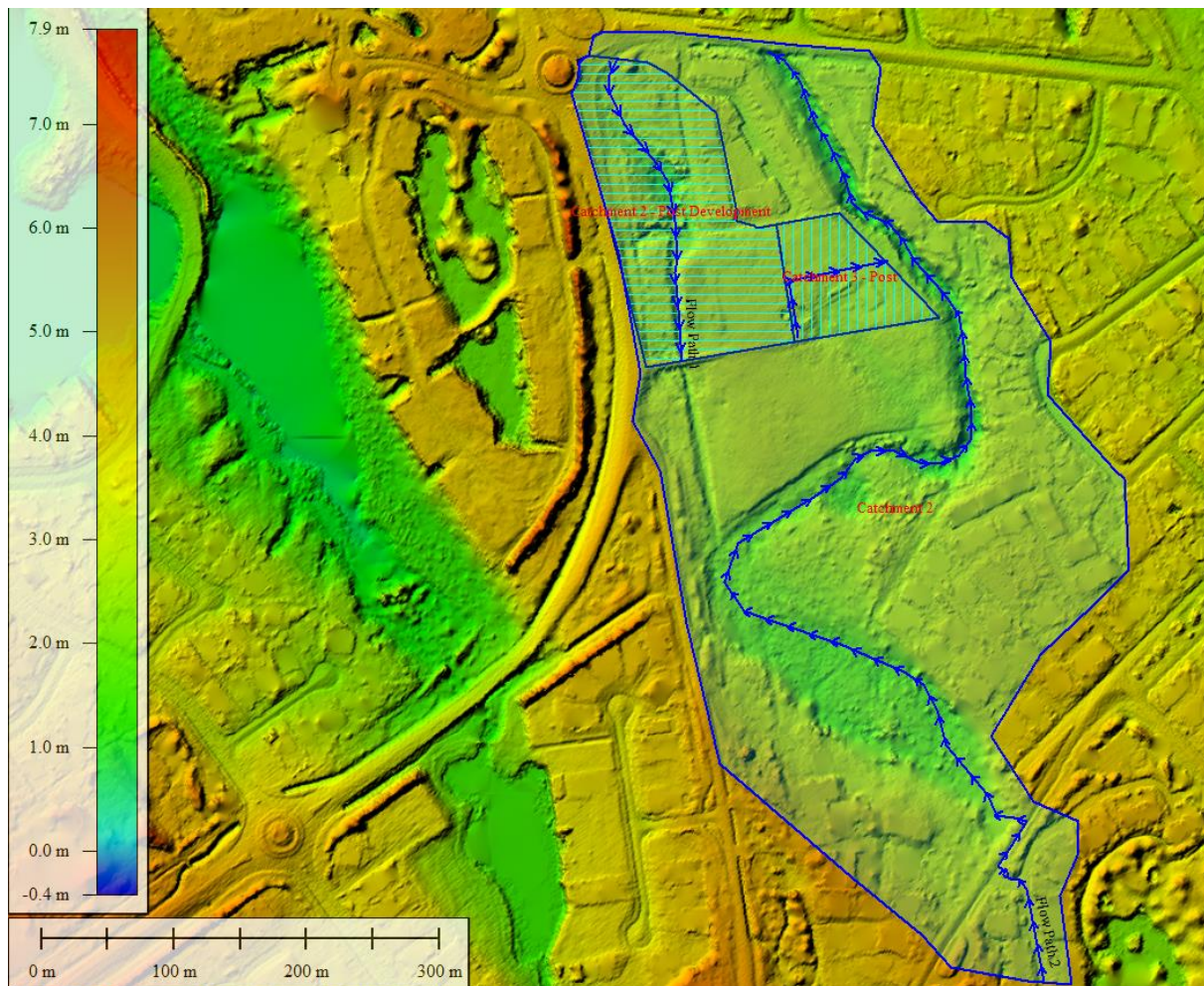


Figure 2: Post Development Catchment

Flows

Stormwater flows from the catchments have been calculated for pre-development and post-development conditions as summarised in the table below.

As the flow regimes of the site are proposed to generally remain. The impact of the development will generally be associated with the change in fraction impervious of the developed site over the existing lesser developed site.

The pre and post development fraction impervious for each catchment is presented in the table in Appendix B.

Table 1: Pre and Post Development Flows

Point of Reference	Design storm (AEP %)	Pre-Development Peak Flow (m^3/s)	Post-Development Peak Flow (m^3/s)	Difference (m^3/s)
Frontage Drain (existing culvert crossing)	18%	0.515	0.597	+0.082
	1%	1.027	1.194	+0.167
Rear drainage path in Lot 10 on RP729037	18%	2.924	2.962	+0.038
	1%	5.729	5.804	+0.075

From the table above it can be seen that there would be an increase in runoff from the site associated with the increased impervious area.

Drainage Philosophy

The proposed lot is to be filled to provide flood immunity. Each residential lot will discharge stormwater runoff to the internal road which will be captured and conveyed underground to the drains at the Port Douglas Road frontage and to the drain at the rear of the lot.

The development site is contained within the wider catchment area for the drainage path at the rear of the lot. The peak discharge from the development site will not coincide with the larger catchments peak. Notwithstanding, the modelling has assumed that the peaks coincide.

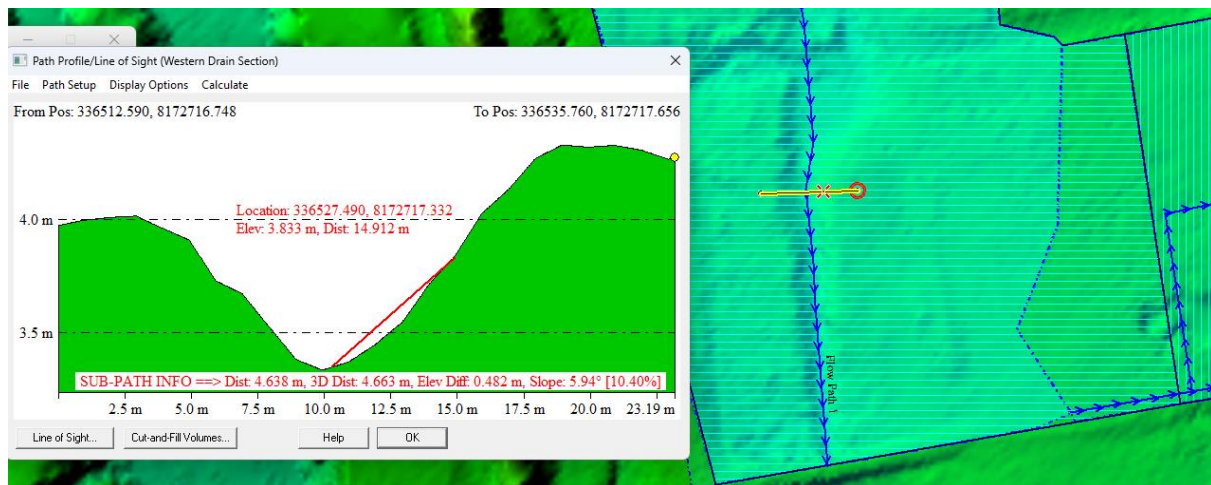
The pre and post development stormwater runoff depth within the adjacent drains are presented in Appendix A. The analysis of the capacity of the drains shows that the increased runoff equates to an increase in depth of 50mm and 6mm in the front (Western) and rear (Eastern) drains, respectively. Minimum freeboard of 300mm is maintained to all adjacent properties.

Summary

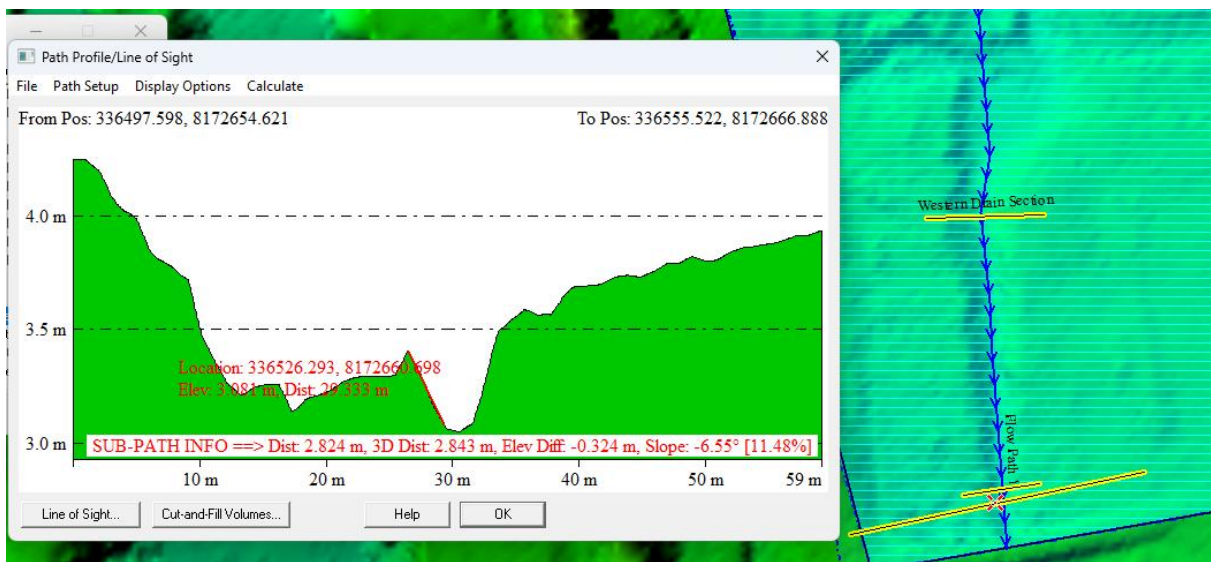
The development produces a negligible increase in runoff into the existing drainage system and does not adversely affect private and public assets. This file note demonstrates that there is no actionable nuisance to upstream or downstream properties as a result of the proposed development.

Appendix A1: Capacity of Western Drain (Road Frontage)

Representative Section 1

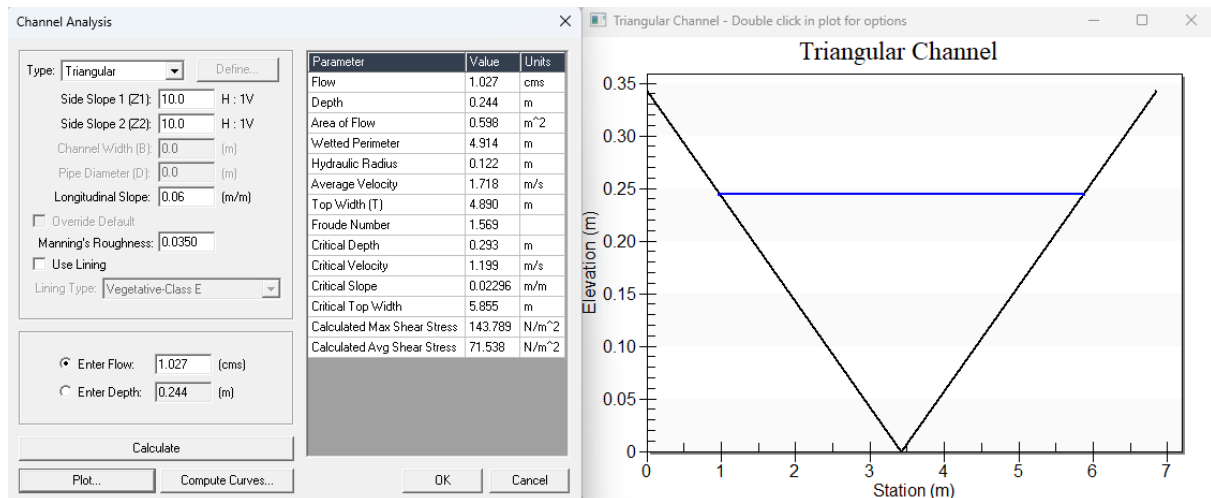


Representative Section 2

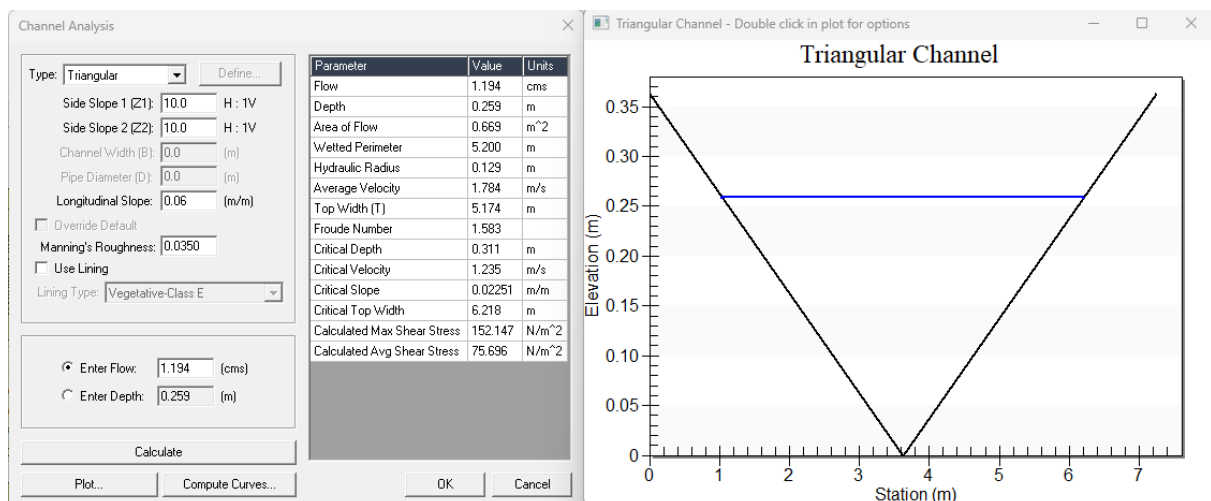


Adopt 10% slopes triangular channel with 600mm allowable depth

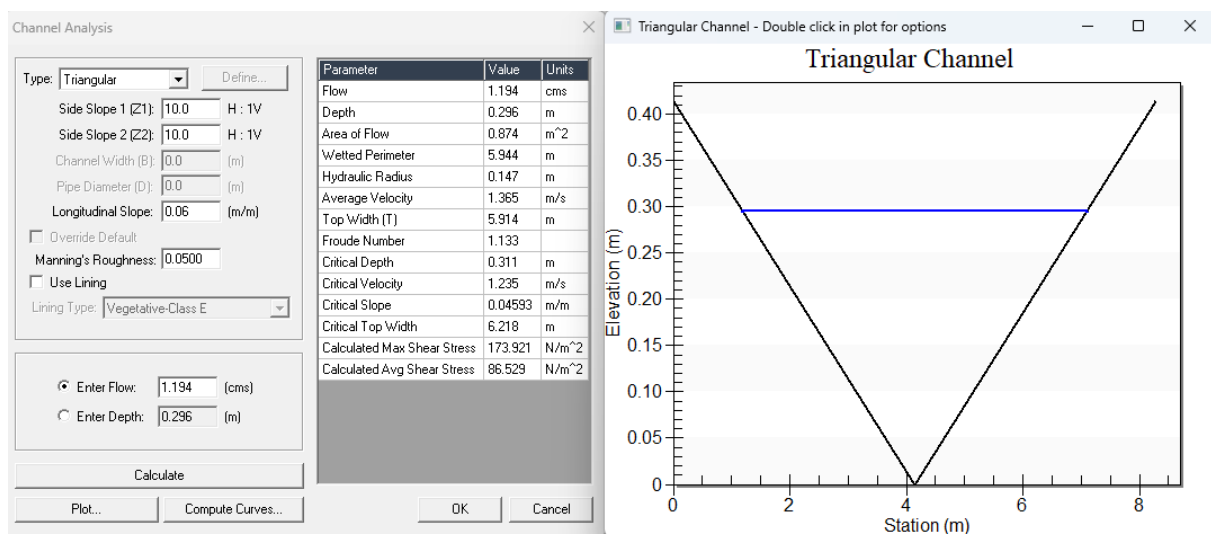
Predevelopment flow (1% AEP) (depth = 244mm)



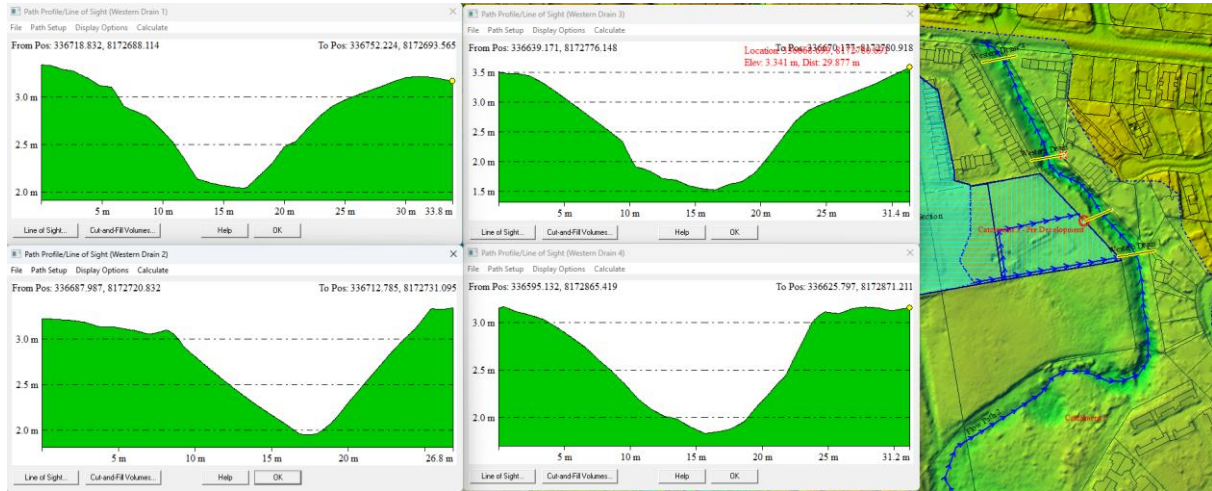
Post development flow (1% AEP) (lower limit Manning's) (depth = 259mm)



Post development flow (1% AEP) (upper limit Manning's) (depth = 296mm)

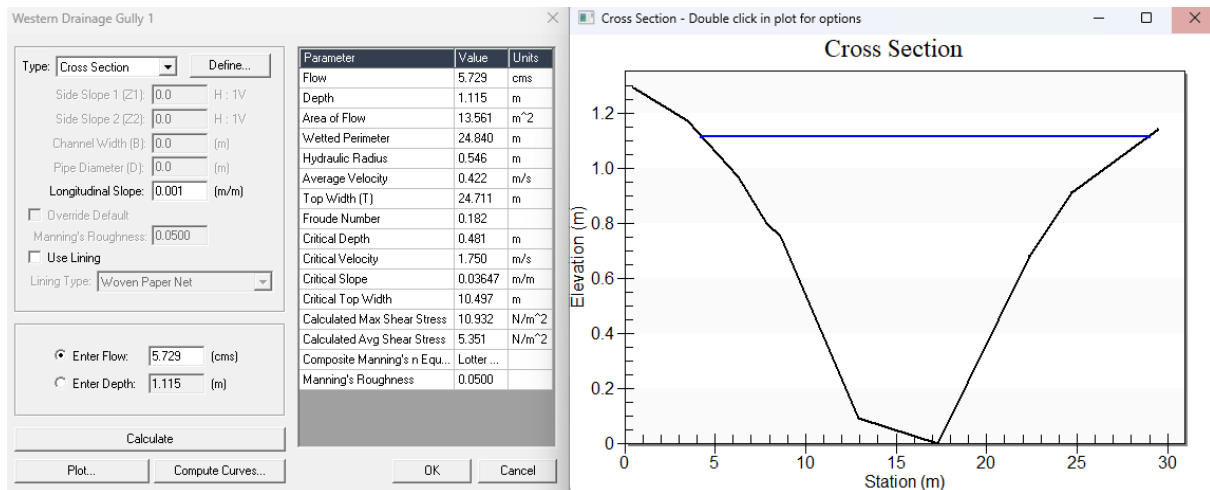


Appendix A2: Capacity of Eastern Drain (Rear Drainage Path)

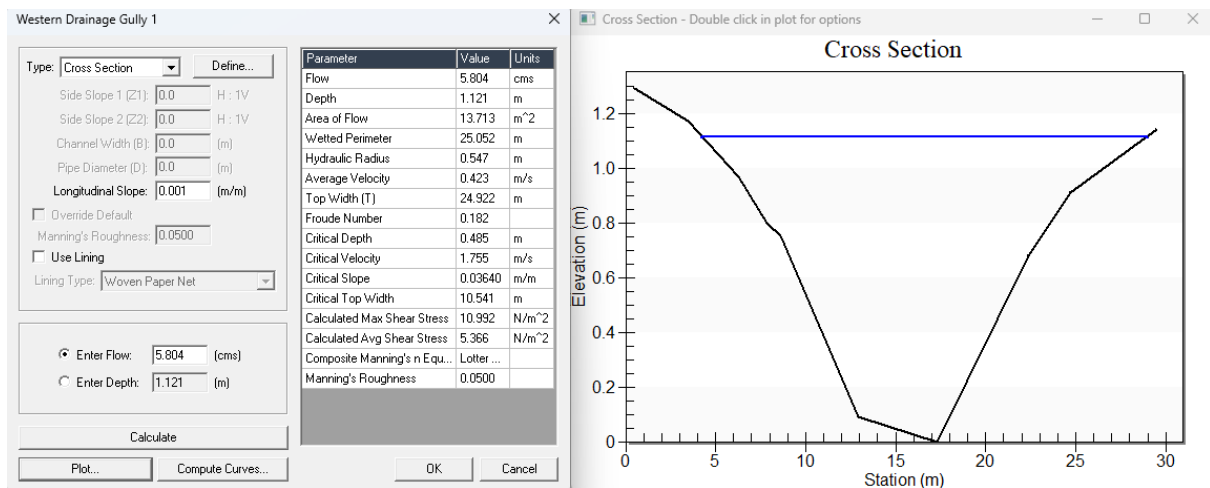


Eastern Drainage Gully Section 1 (1% AEP) Minimum Manning's Roughness $n = 0.05$ vegetated channel

Predevelopment flow (depth = 1.115m velocity = 0.422m/s)

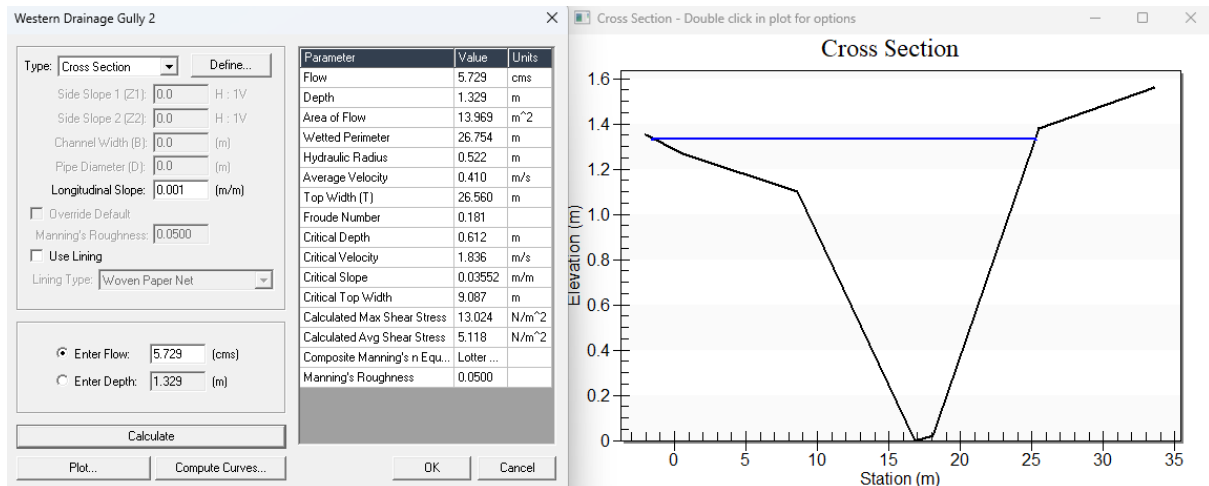


Post development flow (depth = 1.121m velocity = 0.423m/s)

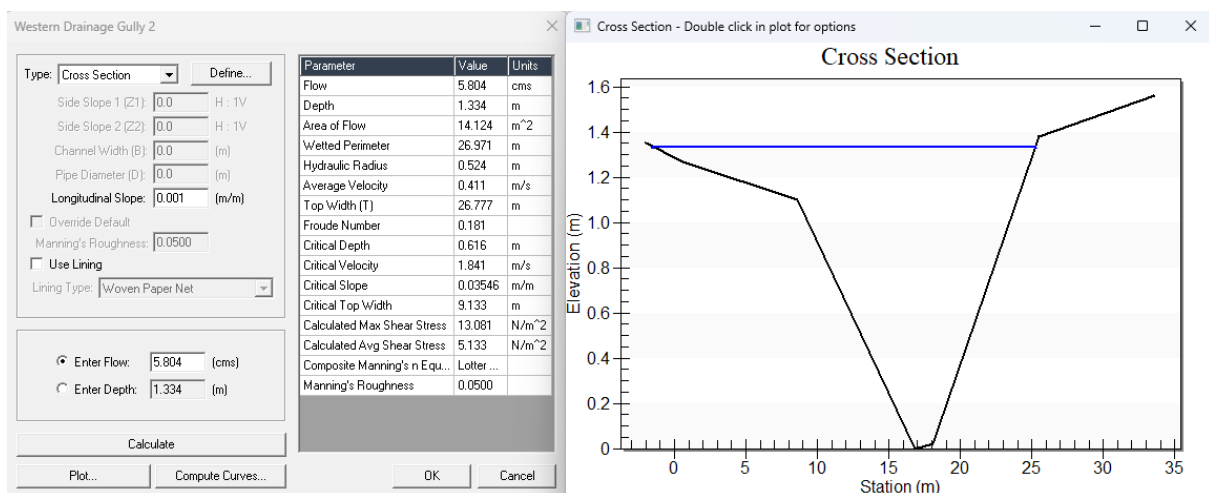


Eastern Drainage Gully Section 2 (1% AEP) Minimum Manning's Roughness $n = 0.05$ vegetated channel

Predevelopment flow (depth = 1.329m velocity = 0.410m/s)

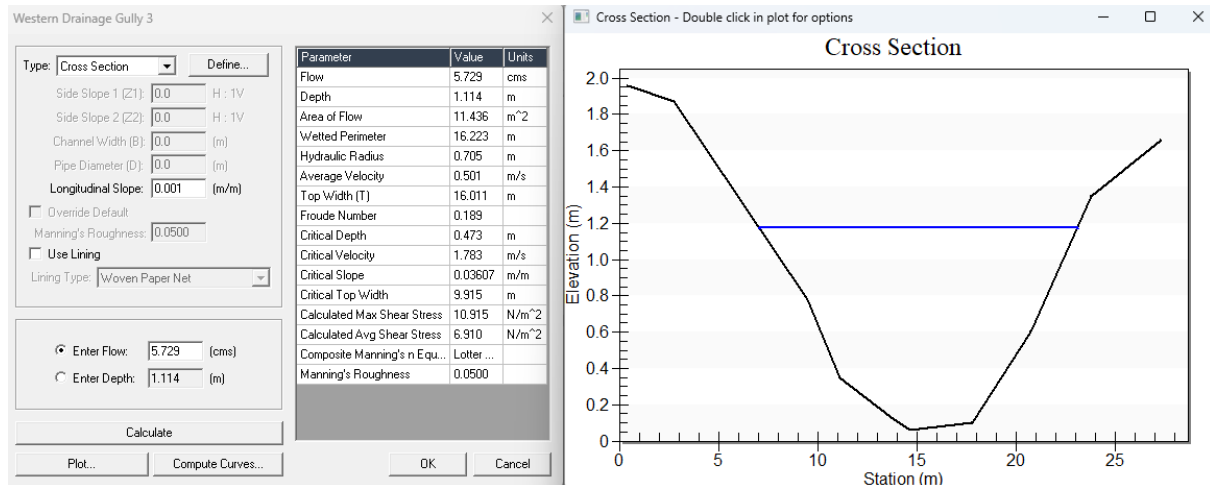


Post development flow (depth = 1.334m velocity = 0.411m/s)

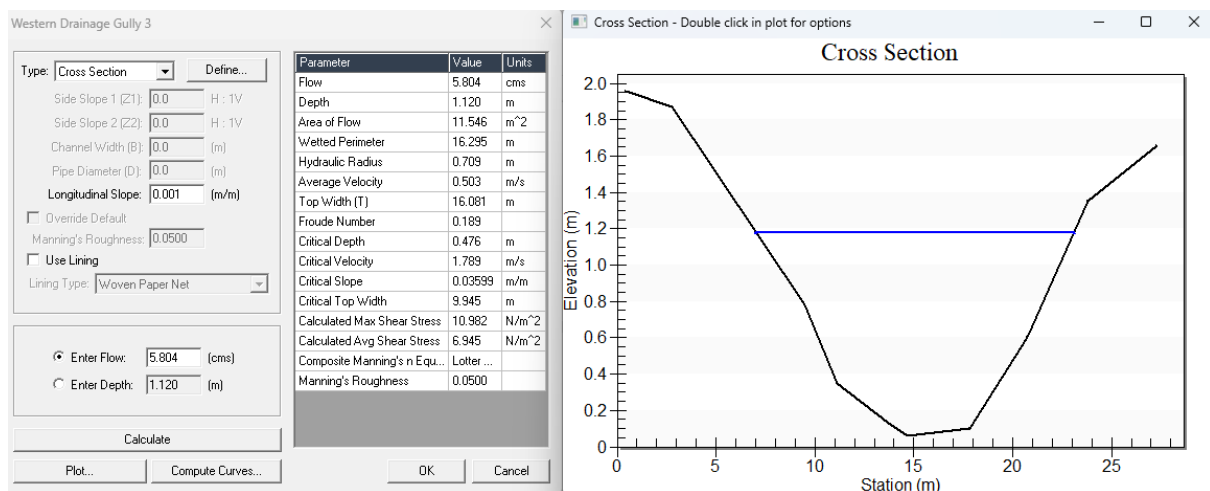


Eastern Drainage Gully Section 3 (1% AEP) Minimum Manning's Roughness $n = 0.05$ vegetated channel

Predevelopment flow (depth = 1.114m velocity = 0.501m/s)

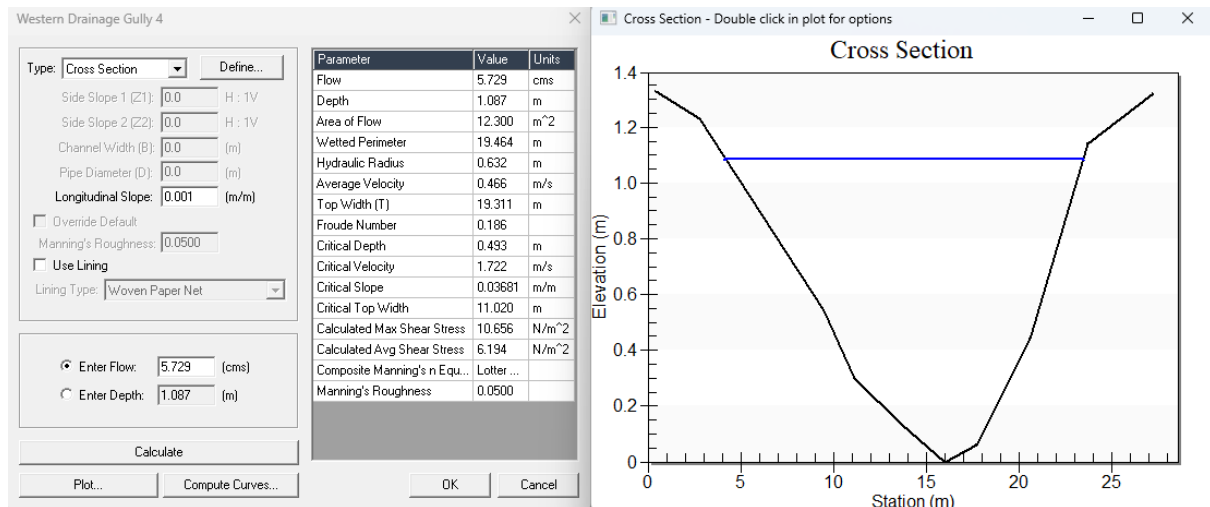


Post development flow (depth = 1.120m velocity = 0.503m/s)

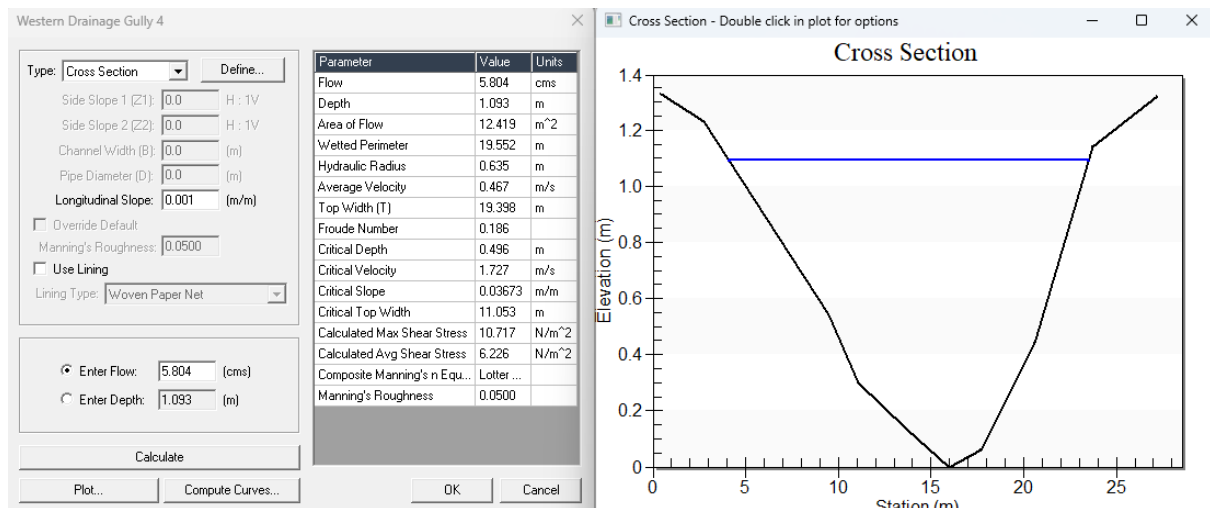


Eastern Drainage Gully Section 4 (1% AEP) Minimum Manning's Roughness $n = 0.05$ vegetated channel

Predevelopment flow (depth = 1.087m velocity = 0.632m/s)



Post development flow (depth = 1.093m velocity = 0.635m/s)



Appendix B: Catchment Calculations

Catchment ID	Catchment Properties						Time of Concentration (min)									Catchment Properties		
	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)	Fraction Impervious
Catchment 1 - Pre Development	2.136	3.0	3.8	245.0	0.3	0.035		29.81	16.76						20.00		81.16	0.20
Catchment 1 - Post Development	2.357	3.0	3.8	245.0	0.3	0.035		29.81	16.59						20.00		81.16	0.40
Catchment 2 - Pre development	17.99	2.0	4.0	1040.0	0.1	0.030		51.54	71.61						50.00		81.16	0.31
Catchment 2 - Post development	17.99	2.0	4.0	1040.0	0.1	0.030		51.54	71.61						50.00		81.16	0.34
Catchment 3 - Pre development	0.900	3.3	4.1	135.0	0.6	0.030		18.28	8.79						15.00		81.16	0.25
Catchment 3 - Post Development	0.714	3.2	4.6	120.0	1.1	0.015		7.73	7.03						7.00		81.16	0.60

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	1% AEP
Catchment 1 - Pre Development	0.59	0.63	0.70	0.74	0.78	0.85	0.89	80	101	123	136	154	177	195	0.281	0.378	0.515	0.597	1.027
Catchment 1 - Post Development	0.62	0.66	0.74	0.78	0.82	0.90	0.94	80	101	123	136	154	177	195	0.327	0.440	0.598	0.694	1.194
Catchment 2 - Pre development	0.61	0.65	0.72	0.76	0.80	0.87	0.91	53	67	81	89	100	115	126	1.619	2.168	2.924	3.374	5.729
Catchment 2 - Post development	0.62	0.65	0.73	0.77	0.81	0.89	0.92	53	67	81	89	100	115	126	1.640	2.197	2.962	3.419	5.804
Catchment 3 - Pre development	0.60	0.64	0.71	0.75	0.79	0.86	0.90	90	114	139	153	174	200	221	0.135	0.181	0.247	0.288	0.496
Catchment 3 - Post Development	0.66	0.70	0.78	0.82	0.86	0.94	0.98	118	149	184	203	231	267	295	0.153	0.206	0.284	0.331	0.575