

BNC Ref. DA144-23  
AM Ref. RAL/23/0085  
SARA Ref. 2401-38533 SRA

**Date >> 26 March 2024**

ASSESSMENT MANAGER  
TOWNSVILLE CITY COUNCIL  
PO BOX 1268  
TOWNSVILLE QLD 4810

And

STATE ASSESSMENT AND REFERRAL AGENCY  
NORTH AND NORTH WEST REGIONAL OFFICE  
PO BOX 5666  
TOWNSVILLE QLD 4810

**RE: APPLICANT RESPONSE TO ASSESSMENT MANAGER & REFERRAL AGENCY INFORMATION REQUEST  
RECONFIGURING A LOT DEVELOPMENT APPLICATION (ONE (1) INTO TWO (2) LOTS SUBDIVISION)  
41634 BRUCE HIGHWAY, BLUEWATER QLD 4818 (RPD: LOT 73 ON EP1620)**

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*BNC Planning* acting on behalf of the applicant submit this combined response to the *information requests* issued by the Townsville City Council as assessment manager and the State Assessment and Referral Agency (SARA) as a referral agency, in accordance with section 13 of the Development Assessment Rules. The assessment manager information request is dated 16 January 2024 and the SARA information request is dated 14 February 2024. The requests are associated with a reconfiguring a lot development application over the above referenced premises.

The applicant has responded by providing all of the information requested or has provided a suitable alternative outcome. A detailed response to each item from the notice is provided below.

#### **ASSESSMENT MANAGER INFORMATION REQUEST**

##### **Request Item 1 – Strategic Framework**

*The applicant is requested to demonstrate that the proposed development is consistent with the Strategic Framework, which clearly reaffirms the planned settlement pattern through 2031. The application suggests that the proposed lot creation will supply a ‘large rural lifestyle’ offering to the market. This is in direct conflict with section 3.2.5 Shaping Townsville of the Strategic Intent of the Planning Scheme which states:*

*“...no additional land for rural residential development beyond what is allocated in this planning scheme is intended.”*

#### **Applicant’s Response**

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The proposed subdivision is consistent with the Strategic Framework and will further advance the achievement of section 3.2.5 *Shaping Townsville* in the following way:

- The proposed subdivision is a form of consolidation/infill development, that is reflective of the settlement pattern established by the immediate surrounding locality.
- This is not an “outward growth” development, as referred to in paragraph 10.
- The development does not expand the established circa 10-hectare rural allotment footprint created overtime in this pocket of Bluewater.
- This pocket is clearly discernible and has its own endemic character, amenity and value.
- The subdivision avoids further encroachment on natural assets and vulnerable coastal areas.
- The proposal is objectively NOT a form of rural residential/acreage development.

The term “rural lifestyle lot” was created and used to specifically differentiate the proposed new lots from rural residential lots. The proposed new lots provide a unique yet desirable product to the market. At 5.625ha in size, the new lots are over 12 times the size of a typical rural residential lot and as such can facilitate a range of rural activities that a rural residential lot cannot.

The proposed subdivision is consistent with and will further advance the achievement of section 3.2.6 *Sustaining economic growth* of the Strategic Framework. Specifically, the following paragraph:

*Rural, extractive and other natural resources are also recognised as important contributors to Townsville’s economy. Their continued viability is ensured and their orderly development managed.*

The land is not a priority agricultural area under the North Queensland Regional Plan nor is it recognized as an area of specific rural importance or value under any other planning instrument. Furthermore, the applicant has commissioned the attached *Report on Land Suitability for Agricultural Production*, which confirms there is little if any potential for cropping, but that there may be opportunities for small hobby scale enterprises.

From a strategic land use planning perspective, if it is acknowledged that there is demand for and value in land of this size, it is put to council that there is merit and community benefit in the proposed subdivision. More specifically, this is one of the few areas where a subdivision of this nature can advance the Strategic Intent and the purpose of the Rural zone code despite being below the nominated minimum lot size. At its essence, the subdivision is the creation of one additional rural lot, where the new lots are consistent in size, function and character to the established settlement pattern of the locality. There are no environmental impacts occurring and no reduction in agricultural viability/value (given there is no existing agricultural viability/value). Yet by creating additional land holdings there is an inherent economic benefit, an improvement in access to and the provision of infrastructure and services, and increased choice and diversity within this specific section of the market.

#### **Request Item 2 – Rural Zone Code**

*The applicant is requested to demonstrate that the proposed development is consistent with the Rural zone code.*

*The proposed lot creation does not demonstrate compliance with the purpose of the Rural Zone Code and Mixed Farming Precinct as the development results in further segregation of rural land well below the accepted minimum lot size (40ha). Further, the proposed lot creation may impact the future viability of the land for potential agricultural and horticultural uses.*

*The purpose of the Rural Zone Code clearly expresses that lands must be protected to ensure the productive capacity of the land. The code’s Particular Purpose expressly states that rural residential development does not expand into rural zoned land, that the zone primarily accommodates cropping or animal husbandry, and that all rural land is protected from further fragmentation. The proposed lot creation is in direct conflict with the zone code’s purpose in that it:*

- *encourages rural residential development within a rural zone,*
- *potentially fragments the land to a point which would prejudice the future potential of the land to be used for cropping or animal husbandry; and*
- *further fragments rural land.*

*The overall outcomes of the Mixed Farming Precinct set out the purpose of the land in this precinct. The ultimate point of the outcomes (6.6.1.2 Purpose, Mixed Farming Precinct, c) states that subdivision of lots below 40ha generally does not*

*occur. A lack of viability, quality of soil, or potential cost of rural or agriculture activities on the site is not considered a valid reason to further subdivide or use the site for non-agricultural purposes.*

## **Applicant's Response**

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The proposed subdivision is consistent with the Rural zone code for the follow reasons:

- The zone code clearly contemplates non-rural uses. Noting that the proposal is for small rural lots that can accommodate a specific range of rural activities.
- The subdivision occurs on land that is proven to have very little if any agricultural value.
- Because of the established settlement pattern of the immediate locality, none of the adjoining properties can facilitate significant rural or agricultural activities.
- The proposed lot sizes can still facilitate a range of rural uses other than agriculture or cropping but can also facilitate non-rural uses that are compatible with the surrounding rural land uses.
- The subdivision does not compromise the long-term rural use or production capacity of the land as there is no net decrease in agricultural viability (given there is no existing agricultural viability).
- There are no impacts on character or landscape values given there are no such values identified within or surrounding the site.
- The proposed subdivision is NOT a form of rural residential/acreage development. At 5.625ha in size, the new lots are over 12 times the size of a rural residential lot and as such can facilitate a range of rural activities that a rural residential lot cannot.

Reference is made to the following statement within this request item:

*The proposed lot creation does not demonstrate compliance with the purpose of the Rural Zone Code and Mixed Farming Precinct as the development results in further segregation of rural land well below the accepted minimum lot size (40ha). Further, the proposed lot creation may impact the future viability of the land for potential agricultural and horticultural uses.*

In response, the applicant has commissioned the attached *Report on Land Suitability for Agricultural Production*, which confirms there is little if any potential for cropping, but that there may be opportunities for small hobby scale enterprises. It is acknowledged that the proposed lot sizes are below the minimum lot size benchmark, however the development application is impact assessable and council can take into account in their decision making any matter that is relevant. The established settlement pattern of the locality is a compelling matter in considering the suitability of the proposal. As is the fact that the land is proven to be of little if any agricultural value and does not hold any specific landscape or environmental value.

The intent behind limiting fragmentation is to avoid reductions in rural productive capacity, specifically agricultural and primary production capacity and efficiency. By its very nature, all forms of freehold subdivision are forms of land fragmentation. In this specific case, there is no net reduction in agricultural or primary production capacity or efficiency because the land does not currently exhibit any of these values. Yet by creating additional land holdings there is an inherent economic benefit, an improvement in access to and the provision of infrastructure and services, and increased choice and diversity within this specific section of the market. All at no net impact to the City's rural productive capacity or efficiency.

Reference is made to section 6.6.1.2 Purpose, Mixed Farming Precinct c):

*(c) subdivision of lots below 400ha in the Ross River Dam catchment and 40ha elsewhere generally does not occur.*

The deliberate use of the word "generally" speaks to an acknowledgement that there will be circumstances where subdivision below 40ha may be appropriate. While the lack of agricultural viability for the site has been discussed in detail, it is the established settlement pattern of the area that is the primary characteristic which gives rise to the appropriateness of the proposed lot sizes. This proposal is an exercise in determining and delivering highest and best land use outcomes based on site specific characteristics. There is an inherent economic benefit in creating additional land that holds value for a specific part of the community. In particular when there are no consequential economic, social or environmental adverse impacts. As is the case with this proposal.

### **Request Item 3 – Reconfiguring a Lot Code**

*The applicant is requested to demonstrate that the proposed development is consistent with the Reconfiguring a lot code.*

*The proposed development conflicts with the purpose of Reconfiguring a Lot Code which states, ‘lot reconfiguration does not facilitate fragmentation or alienation of land that would prejudice the productive use of rural land resources;’ (9.3.4.2 Purpose, 2 (f)). The proposed lot creation will fragment land which is identified in a specific farming precinct, and that lot creation may prejudice the future productive use of the land.*

*Council acknowledges that an existing pattern of development in this area reflects the existence of historical subdivision under previous planning schemes. Particularly, the land to the north of the development site was subdivided under the ‘Rural 10’ Zoning of the City of Thuringowa Planning Scheme 2003. The development site was not included in this zoning which furthers that the continued purpose of the land is expressly rural.*

### **Applicant’s Response**

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The responses provided above to items 1 and 2 of the information request are taken to adequately respond to paragraph 2 from this request item. With regard to paragraph 3, it is clarified that the proposed subdivision is a form of rural development. The applicant is not seeking to create urban or rural residential land, as has been discussed in detail above. A small rural lot suitable to accommodate hobby farms and other boutique rural pursuits is still a rural property used for rural purposes that can positively contribute to the outcomes intended for the rural zone.

Suitable rural uses that would be specifically suited to rural lots of the size proposed, as opposed to lots at 40ha plus or rural residential land, include Animal keeping, Community use, Cemetery, Crematorium, Wholesale nursery, Outdoor sport and recreation, Aquaculture and Bulk landscaper supplies. This clearly speaks to a role and place for smaller rural lots within the greater rural economic landscape.

### **STATE ASSESSMENT AND REFERRAL AGENCY INFORMATION REQUEST**

A response to the SARA information request has been provided by Northern Consulting Engineers and is included as Appendix 1.

### **SUMMARY**

In summary, there is a community benefit to creating the proposed new lots within this particular locality. The unique characteristics of the site and locality create an opportunity to deliver small rural lots to the market without resulting in any adverse impacts on the rural productive capacity of the City. There are a range of supported rural uses that are better suited to lots of this size compared to land at 40ha plus or rural residential land. There is an inherent economic benefit in creating additional land that holds value for a specific part of the community. In particular when there are no consequential economic, social or environmental adverse impacts. As is the case with this proposal.

Subject to the imposition of reasonable and relevant conditions, the development is able to comply with the applicable Assessment Benchmarks against which the application is required to be assessed. Specifically at the Strategic Framework level and the purpose of the Rural zone code.

For clarity, this correspondence constitutes the applicant response to the information requests issued by the assessment manager and SARA under section 13 of the *Development Assessment Rules*.

I trust the additional common material included in this response provides sufficient information to allow the assessment of the development application to continue. Should there be any issues, or should additional information be required, please contact me.

Kind regard,



**Benjamin Collings, Director**  
BNC Planning Pty Ltd

Att.

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# APPENDIX 1

## *SARA INFORMATION REQUEST RESPONSE*

Our Ref: **MJ2520-A/01:DS**  
SARA Ref: 2401-38533 SRA

Wednesday, March 20, 2024

Bronwyn Bignoux  
Principal Planning Officer  
SARA North and West Regional Office  
PO Box 5666  
**TOWNSVILLE QLD 4810**

**Attention:** Development Assessment and Infrastructure – Northern Team

To whom it may concern,

**RE: 41650 BRUCE HIGHWAY, BLUEWATER – RESPONSE TO INFORMATION REQUEST IN RELATION TO RECONFIGURATION OF AN ALLOTMENT RAL23/0085**

An Information Request has been received in relation to the Reconfiguration of an Allotment application for the above-mentioned project, dated 14 February 2024

In accordance with the Development Assessment Rules under the Planning Act 2016 and on behalf of our client M Pallanza C/- BNC Planning, we provide all information requested to the items noted within the above-mentioned Information Request, as follows:

**Request Item 1 – Access to the State-controlled Road**

**Issue:**

The proposed development does not provide sufficient information to determine compliance with Performance outcomes (PO) PO15 – PO18 of State code 1: Development in a state-controlled road environment (State code 1). Namely, The proposed subdivision seeks to intensify the existing land use and it is therefore crucial to demonstrate that safe access and egress to and from the subject site can be achieved, without impacting upon the safety or operating conditions of the state-controlled road. This is of particular importance given the strategic value of the Bruce Highway and its classification as a Limited Access Road. While there is an existing Road Access Permit pursuant to section 62 (1) of the Transport Infrastructure Act 1994 for the subject site, the proposed development seeks to intensify access to a Limited Access Road.

The proposed development must demonstrate that the proposed road access location and design is appropriate for the intensified access. No information has been provided regarding the proposed access' design, dimensions, or type. Further, no information has been provided regarding potential turn treatments which may be necessary to mitigate risks. A detailed safety and risk assessment has also not been provided in support of the proposed access location.

**Action:**

You are requested to provide a Traffic Assessment demonstrating that the proposed vehicular access will not have safety implications on state-controlled road users and will not adversely affect the

operational performance of the Bruce Highway. The Traffic Assessment must demonstrate compliance with State code 1 (in particular PO15-PO18 of the code).

The Traffic Assessment is required to be prepared by a suitably qualified RPEQ in accordance with the provisions of the Department of Transport and Main Roads' (DTMR's) Guide to Traffic Impact Assessment (GTIA), available at:

<https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Guide-to-Traffic-Impact-Assessment>.

In particular, the following should be addressed:

- a) Identify the extent of impacts generated by the development traffic per impact type and assessment area.
- b) Identify all vehicle types anticipated to be used as part of the development.
- c) Provide a detailed safety and risk assessment, completed in accordance with the GTIA, considering the access, and identifying whether there are any unacceptable safety risks at this location (either pre-existing or post-development) for all users of the road network (including pedestrians and cyclists) if relevant.
- d) Confirm that adequate sight lines are available from the proposed access location to provide for safe access and egress to and from the proposed development.
- e) Recommend any mitigation measures where required to demonstrate that no adverse impacts occur upon the safety and operating conditions of the state-controlled road network in accordance with the GTIA.
- f) Provide concept plans in accordance with TMR's standard drawing for rural property access, identifying the proposed road access works and any required mitigation measures such as turn treatments.

As this application is also taken to be an application for a vehicular access under section 62 of the Transport Infrastructure Act 1994 from DTMR, it is recommended that you also consider DTMR's Vehicular Access to State-controlled Roads Policy – December 2023, available at:

<https://www.tmr.qld.gov.au/Community-and-environment/Planning-and-development/Other-matters-requiring-approval/Vehicle-access-to-State-Controlled-Roads-policy>

### **Applicant's Response**

Please find attached Traffic Impact Assessment (MJ2520-A-TIA) dated 19/03/2024.

We have uploaded the following documentation in support of this response:

- Traffic Impact Assessment (MJ2520-A-TIA) dated 19/03/2024.

I trust the above changes meet with your approval, and I look forward to receiving your assessment.

Yours sincerely,

**DEREK SAW**  
Civil Engineer







## TRAFFIC IMPACT ASSESSMENT (STATE AGENCY)


41650 BRUCE HIGHWAY, BLUEWATER – PROPOSED  
RAL – SARA INFORMATION REQUEST

FOR  
BNC PLANNING

JOB No: MJ2520-A  
Doc Ref: MJ2520-A-TIA

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## DOCUMENT CONTROL

Rev	Author	Reviewed	Approved		Date	Issued To:	Purpose
A	Brendan Blair	Brendan Blair	Derek Saw		19/03/2024	BNC Planning	Response to SARA IR

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# **APPENDICES**

## **APPENDICES A**

SARA Information Request – 41650 Bruce Highway, Bluewater – 2401-38533 SRA

## **APPENDICES B**

Plan of Reconfiguration – Developed by BNC Planning – BNC Ref 144-23 – Drawing No. S01-01 – Prepared November 2023

## **APPENDICES C**

DTMR Decision Notice – Permitted Road Access – Section 62 Approval – TMR23-040326

## **APPENDICES D**

TMR Traffic Data (2023) – Site ID 92222

## **APPENDICES E**

Road Safety Audit Spreadsheet – Developed by NCE

## **APPENDICES F**

Traffic Generation Calculations and Intersection Warrants Spreadsheets – Developed by NCE

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Detailed Design Property Access Plans – Developed by NCE – Dated 08/02/2024

## **APPENDICES H**

Certification Statement and Authorisation

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## 1.0 INTRODUCTION

### 1.1 Background

Northern Consulting Engineers (NCE) have been commissioned by BNC Planning to undertake a Traffic Impact Assessment (TIA) in response to the SARA Information Request relating to the proposed reconfiguring an allotment at 41650 Bruce Highway, Bluewater.

### 1.2 Relevant information

The following traffic impact assessment refers to the supporting information outlined below:

- SARA Information Request – 2401-38533 SRA – RAL23/0085
- Plan of Reconfiguration – BNC Ref: 144-23 – Dwg No: S01-01 – Job No: DA144-23
- Decision notice – permitted road access location (section 62(1)) – TMR23-040326

### 1.3 Scope and study area

The proposed development is located within the Townsville City Council (TCC) on a land parcel described as Lot 73 on EP1620. The south-west boundary of the lot runs parallel to the Bruce Highway whilst the north-east boundary of the lot borders the North Coast Line. The locality plan can be seen in **Figure 1-1**.

The purpose of the report is to respond to the SARA information request (IR), which focuses on the access to the Bruce Highway and any potential impacts this may generate.



**Figure 1-1** Locality plan

## 1.4 SARA Information Request

The following information is to be addressed by the following report as per the SARA IR (2401-38533 SRA):

- Issue 1 – Proposed development must demonstrate that the road access location and design is appropriate for the intensified access.
  - Identify all vehicle types anticipated to be used as part of the development.
  - Swept path movements to prove dimensions and positioning are adequate for expected traffic.
  - Intersection turn warrant assessment to assess required turn treatment.
  - Safety audit of adjacent road network.
  - Sight-line assessment for adjacent traffic and cyclists/pedestrians.
  - Updated concept plans to be in accordance with TMR's standard drawing for rural property access and any mitigation measures required.

## 1.5 Section 62 approval conditions

The following information is to be addressed by the following report as per the TMR Section 62 decision notice:

**Table 1-1** Section 62 approval conditions

No.	Conditions of Approval	Condition Timing
1	The Permitted Road Access Location is to be located 170m from the northern boundary and 170m from the southern boundary, generally in accordance with Permitted Road Access Location Plan, prepared by the Department of Transport and Main Road, dated October 2023, Reference DA-001, Issue A.	At all times.
2	Road Access Works comprising residential access must be provided at the permitted access location, generally in accordance with: <ul style="list-style-type: none"> <li>a) Rural Property Access Type A, prepared by Department of Transport and Main Road, Reference 1807, Dated 11/2021 and revision B.</li> </ul>	Prior to the commencement of the use of the Road Access Works and to be maintained at all times.
3	Direct access is prohibited between Bruce Highway and Lot 73 on EP1620 at any other location other than the Permitted Road Access Location described in Condition 1.	At all times.
4	The landowner will undertake responsibility of maintaining the crossover between the property boundary and the edge of the road pavement as required to continue safe and efficient access between the permitted road access point and the State-controlled road.	At all times.
5	The use of the Permitted Road Access Location is to be restricted to rural residential purposes only.	At all times.

## 2.0 EXISTING CONDITIONS

### 2.1 Surrounding road network details

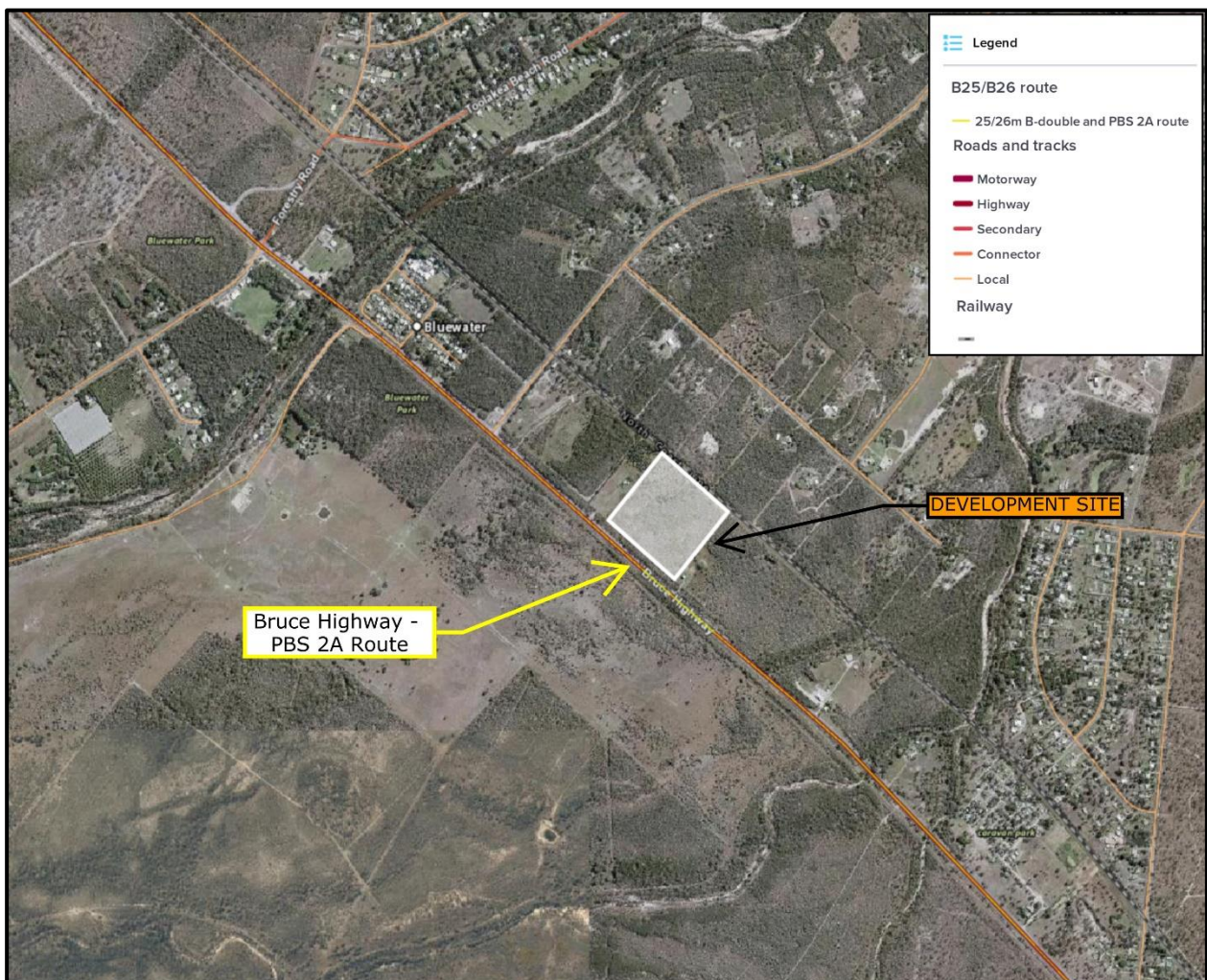
The surrounding road network is made up of both local government roadways and state-controlled roadways.

#### 2.1.1 State-controlled roadways

The proposed development is situated within the Northern District of the Queensland Department of Transport and Main Roads (TMR). The adjacent State Controlled Road Network (SCRN) comprises:

- Bruce Highway – Road Section 10M –major highway connecting Townsville with Ingham. Designated as a PBS 2A route for 26m B-doubles and lower. The development lot itself fronts directly onto the Bruce Highway.

**Figure 2-1** is an excerpt from Queensland Globe showing the heavy vehicles routes and restrictions for the areas expected to be used by the development generated traffic, labels are based on the most up to date routes and restrictions given by the NHVR.



**Figure 2-1** Heavy vehicle routes and restrictions

#### 2.1.2 Local authority roadways

This TIA will focus on the impacts on the state-controlled road network only.



## 2.2 Background traffic volumes

Background traffic volumes utilised within the analysis were derived from one primary source.

1. TMR's traffic analysis and reporting data was used for traffic volumes on SCRNs from the nearest census location. Full TMR traffic data can be found in the **Appendices**.
  - Flinders Highway – Road Section 10M – data collected in 2023 at site ID 92222 – 100m Sth Bluewater Creek Bridge.

### 2.2.1 Assessment of available data

The above available information was assessed to determine the viability of the data for the purpose of the assessment. The Site ID 92222 is located approximately ~1.5km to the north-west of the development site with only intersections with Feldt Street, Bluewater Station Road, and Bluewater Drive between the data point and the site. These intersections are minor road intersections and are expected to not generate significant traffic and therefore will not greatly alter the through traffic. Therefore, NCE consider this TMR traffic data survey location to be acceptable for use for this assessment.

The below table outlines the peak hourly traffic in different scenarios.

**Table 2-1** Background traffic comparison

Peak hr Direction	TMR SITE ID 92222
AM Gazettal	287
AM Against Gazettal	402
PM Gazettal	361
PM Against Gazettal	413

The 5-year growth percent value from the TMR data was the only growth data available and was provided as a negative value. Given the site is on a highway NCE consider that a negative growth rate is not feasible. NCE have instead adopted a growth rate of 3% as a conservative value based on similar highway 10-year growth rates. The 3% growth rate has been utilised to project the baseline through traffic data to the end of the design horizon. The TMR traffic composition data was also utilised for through traffic volumes.

## 2.3 Existing Safety Audit

The scope of the existing safety audit will extend ~1km in the gazettal and against-gazettal directions to ensure the audit covers any likely safety concerns within the expected safe stopping sight distance. The outcomes of the completed safety audit assessment are as follows:

- 6.1 – Road alignment and cross-section:-
  - Sight distances are more than adequate for even the worst-case scenario given the roadway is very straight and flat within the scope area. Refer to the **Figure 2-2** for the completed sight triangle markup.
  - Design speeds are acceptable for a rural highway and overtaking opportunity is provided given the large sight distances.
  - Sealed shoulders and adequate roadway width for the use.
- 6.2 – Auxiliary lanes:-
  - Right turns from the through lane are not avoided as there is the possibility for traffic to turn right into private driveways.
- 6.3 – Intersections:-
  - No intersections in the scope area aside from private driveway accesses.
- 6.4 – Signs and Lighting:-

- All signs are adequate for the roadway and do not pose any issues.
- No lighting is provided given the rural highway setting.
- 6.5 – Markings and Delineation:-
  - RRPM's are installed, currently adequate but ageing.
  - Guideposts installed at culvert headwalls.
- 6.6 – Crash Barriers and Clear Zones:-
  - Where power poles are within the clear zone they are protected by crash barriers.
- 6.7 – Traffic Signals:- not applicable.
- 6.8 – Pedestrians and Cyclists:-
  - No delineated bike lane generally acceptable for rural highway setting.
- 6.9 – Bridges and Culverts:-
  - Culvert safety generally acceptable.
  - Table drains generally well maintained and traversable.
- 6.10- Pavement:-
  - Pavement and line marking in good quality.
- 6.11 – Parking:- not applicable.
- 6.12 – Provision for Heavy Vehicles:-
  - Width and pavement adequate for heavy vehicles as are safety measures.
- 6.13 – Floodways and Causeways:- not applicable.
- 6.14- Miscellaneous Works:-
  - Given rural highway there is always danger of collisions with wild-life, whilst not protected by animal proof fencing (not considered feasible) and there are no signs that animal strikes differ significantly to other areas of the Bruce Highway in this location.



**Figure 2-2** Safe intersection sight distances

*Note: sight triangles have been limited to 500m to maintain features in the figure scale, however, the actual sight distance far exceeds 500m.*

### 3.0 PROPOSED DEVELOPMENT DETAILS

#### 3.1 Development site plan

The proposed development consists of a one (1) into two (2) lot subdivision which includes the construction of a proposed dual access at the location of the new shared boundary.

**Figure 1-1** shows the location of the site in context to the surrounding properties extracted from Queensland Globe. **Figure 3-1** shows the proposed RaL plan along with the proposed access location.



**Figure 3-1** Proposed site layout

The proposed site layout can also be found in the **Appendices** in full size.

### 4.0 DEVELOPMENT TRAFFIC

#### 4.1 Traffic generation

In accordance with the Department of Transport and Main Roads Guide to Traffic Impact Assessment (GTIA) December 2018, the following preferred hierarchy of data sources has been adopted:

1. Traffic generation survey of an existing development similar to the proposed development in terms of its land use, scale and location.
2. Traffic generation data – Queensland Open Data (retrieved 24/05/2022)
3. First principles assessment

NCE considered the traffic generation surveys available and found the RTA Guide to Traffic Generating Developments and the NSW Transport Roads & Maritime Services Updated Traffic Surveys both provided

guidance on the traffic generation of residential developments. A comparison of the generation rates is outlined in **Table 4-1** below.

**Table 4-1** Comparison of traffic generation data

<b>Traffic generation scenario</b>	<b>RTA (trips) Dwelling houses</b>	<b>NSW Transport (trips) Low density residential dwellings</b>
Daily vehicle trips	9.0 per dwelling	7.4 per dwelling (regional areas)
Weekday average evening peak hour	0.85 per dwelling*	0.78 per dwelling (regional areas)
Weekday average morning peak hour		0.71 per dwelling (regional areas)

\*RTA does not separate peak hour generation into AM and PM periods

Given the limited number of lots being generated by the development the calculation of generate traffic is the same regardless of the above rates used. Therefore, NCE have simply adopted the RTA data, the calculation of the development generated traffic is shown in the table below, alongside the existing lot generation for comparison. The full traffic generation calculations are contained within the **Appendices**.

**Table 4-2** Comparison of pre-development and post-development generated traffic

<b>Developed Scenario</b>	<b>Daily Generated Traffic</b>	<b>Peak Hour Generated Traffic</b>
Pre-development	9 trips	1 trip
Post-development	18 trips	2 trips
Difference	+ 9 trips	+ 1 trip

#### 4.1.1 Traffic composition

Traffic composition for vehicles on the Bruce Highway have been taken directly from the TMR TARS traffic data with the percent heavy vehicles (%HV) being approximately 15-20%.

The traffic generated by the developed is expected to be light vehicles only given the rural residential use. However, NCE have allowed for up to a two-axle rigid truck in the swept-path access assessment to ensure access is available for any delivery vehicles etc.

#### 4.1.2 Heavy vehicle payloads

Vehicle payloads have not been assessed as a pavement impact assessment (PIA) has not been included as part of this assessment.

### 4.2 Trip distribution

NCE consider the likely generated traffic splits to be majority right into the development and left out of the development with traffic most likely coming from / going to the south-east in the direction of Townsville.

NCE will utilise a 50 / 50 in out split for all vehicle movements in the peak hour which would in turn generate two (2) in movements and two (out) movements for the accessway in the worst-case scenario.

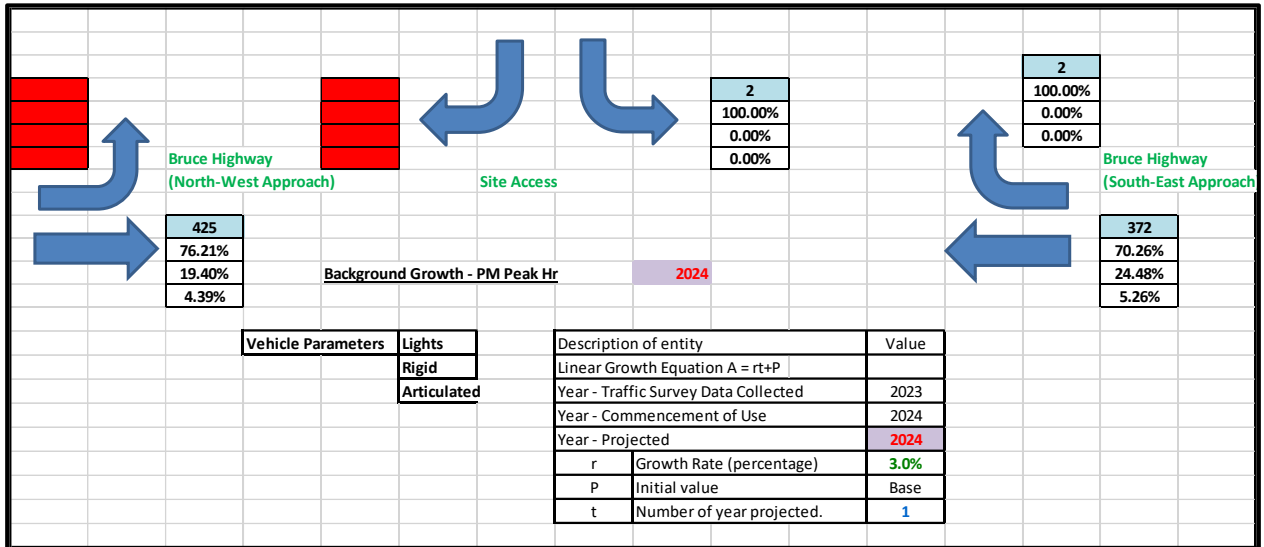
## 5.0 STATE AUTHORITY: TRAFFIC IMPACT ASSESSMENT AND MITIGATION

For comparison to existing conditions refer to **Section 2.0**.

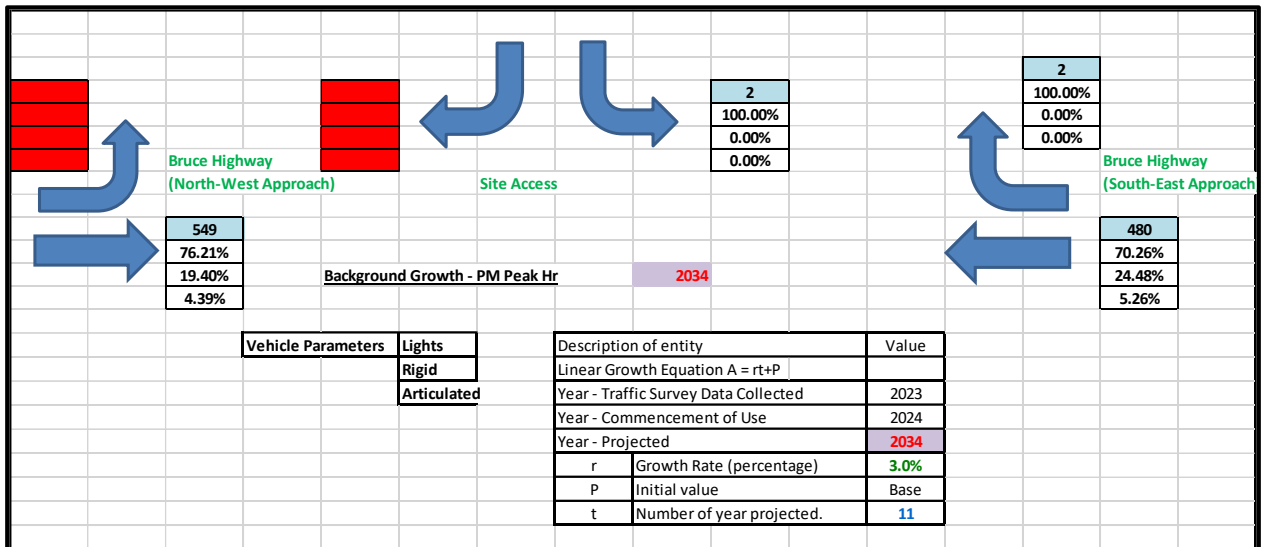
### 5.1 With development traffic volumes

The operation phase traffic is applied to the background traffic from the TARS data assessed as part of **Section 2.2**.

The development generated traffic is depicted graphically in the traffic movement figures shown in **Figure 5-1** and **Figure 5-2** for the 2024 PM and 2034 PM peaks respectively. The PM peak is the most critical for traffic on the highway and therefore has been adopted for the assessment of the development.



**Figure 5-1** Operation phase – Bruce Highway Access – 2024 PM Peak



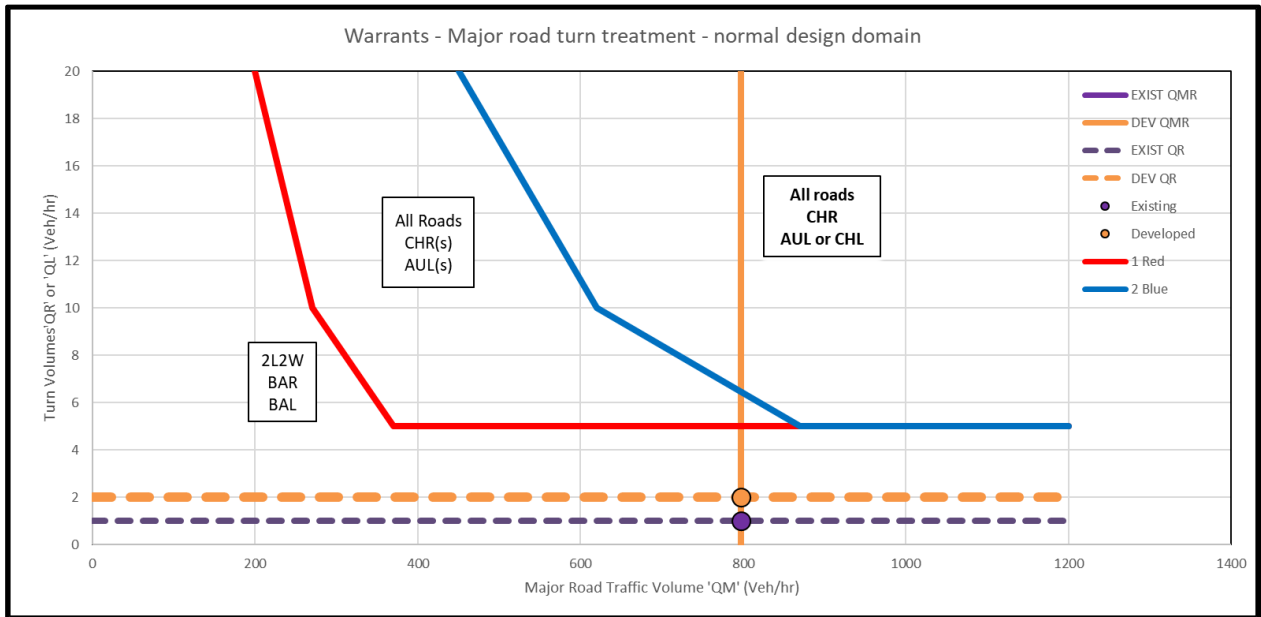
**Figure 5-2** Operation phase – Bruce Highway Access – 2034 PM Peak

## 5.2 Intersection impact assessment and mitigation

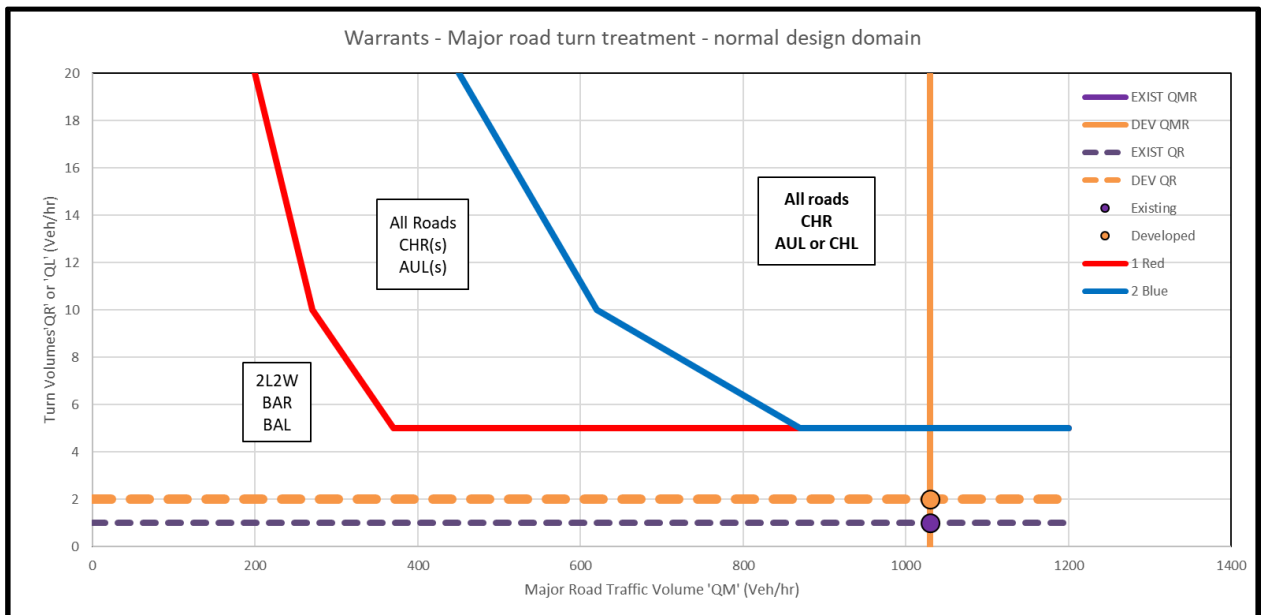
NCE have assessed the proposed intersection utilising the intersection warrant method outlined by the TMR Supplement to Austroads Guide to Road Design Part 4a for Unsignalised and Signalised Intersections.

The full intersection warrant spreadsheet can be found in the **Appendices**.

NCE have conducted the warrant assessment for the current year and expected design horizon year 2034, these are shown below in **Figure 5-3** and **Figure 5-4** respectively. Each warrant shows a comparison of the existing scenario to the proposed development scenario.



**Figure 5-3** Intersection warrant assessment – development 2024



**Figure 5-4** Intersection warrant assessment – development 2034

As is shown in the above figures the development does not result in any significant change to the warrants and the required turn warrant remains in the curve for a BAR/BAL. Given the intersection in question is an access only, NCE proposes that the intersection would be adequate if the access is to be constructed to the TMR's standard drawing for rural property access. The updated proposed access plan is provided in the **Appendices**.

### 5.3 Road safety impact assessment and mitigation

NCE consider that the update will only intensify the safety risk of right turns from the through lane as there is a slight increase in development traffic that will turn right into the access. The current roadway profile allows for sufficient sealed width for a vehicle to manoeuvre around a vehicle turning from the through lane and has more than adequate stopping sight distance in the worst-case scenario.

NCE consider no other updates are required for the road safety impact assessment and therefore, the road safety outcomes can be found in the existing roads safety audit in **Section 2.3**.

## 6.0 PAVEMENT IMPACT ASSESSMENT

A pavement impact assessment has not been completed in conjunction with this TIA.

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Response to SARA Information Request

The above TIA has been completed in response to the SARA IR (2401-38533 SRA) and NCE provide the following responses to the issues noted in the information request:

- Issue 1 – Proposed development must demonstrate that the road access location and design is appropriate for the intensified access.
  - Identify all vehicle types anticipated to be used as part of the development.
    - NCE anticipate the likely vehicles generated by the development will be light vehicles only. A worst-case two-axle rigid truck has also been allowed for in the access assessment.
  - Swept path movements to prove dimensions and positioning are adequate for expected traffic.
    - The **Appendices** contain swept-path drawings to show that B99 light vehicles can enter and exit at the same time and a two-axle rigid truck is able to turn into and out of the accessway.
  - Intersection turn warrant assessment to assess required turn treatment.
    - NCE have conducted a turn warrant assessment and found that the proposed development does not require the need for a sheltered turn movement / auxiliary lane.
  - Safety audit of adjacent road network.
    - NCE conducted a safety audit of the adjacent road network and found no significant safety issues in the scope area.
  - Sight-line assessment for adjacent traffic and cyclists/pedestrians.
    - The **Appendices** contain sight triangle drawings that indicate the proposed access has more than adequate sight lines to pose any safety issues.
  - Updated concept plans to be in accordance with TMR's standard drawing for rural property access and any mitigation measures required.
    - The **Appendices** contain updated access plans with dimensions which have been drawn in accordance with TMR's standard drawing for rural property access.

## 7.2 Section 62 approval response

The above TIA has been completed in response to the TMR Section 62 decision notice (refer to **Table 1-1**) and NCE provide the following responses to the conditions noted:

**Table 7-1** Section 62 approval response to conditions

Condition No.	Response to conditions:
1	The Permitted Road Access Location is to be maintained in accordance with the Permitted Road Access Location Plan. The proposed access location is to be located 170m from the northern boundary and 170m from the southern boundary at the common boundary of the proposed lots.
2	The Road Access Works comprising residential access will be provided at the permitted access location generally in accordance with the rural property access type A to allow for access of the largest service vehicle (two-axle rigid truck).
3	Direct access to the proposed lots will not be provided at any other location other than the Permitted Road Access Location.
4	Condition unchanged. To be adopted.
5	Condition unchanged. To be adopted.

## 7.3 Certification statement and authorisation

A signed Traffic Impact Assessment Certification can be found in the **Appendices**.



# APPENDICES A

SARA Information Request – 41650 Bruce  
Highway, Bluewater – 2401-38533 SRA



SARA reference: 2401-38533 SRA  
 Council reference: RAL23/0085  
 Applicant reference: DA144-23

14 February 2024

M Pallanza  
 C/- BNC Planning  
 PO Box 5493 Townsville Q 4810  
 TOWNSVILLE QLD 4810  
[enquire@bncplanning.com.au](mailto:enquire@bncplanning.com.au)

Attention: Mr Benjamin Collings

Dear Mr Collings

## SARA information request—41650 Bruce Highway, Bluewater

(Given under section 12 of the Development Assessment Rules)

This notice has been issued because the State Assessment and Referral Agency (SARA) has identified that information necessary to assess your application against the relevant provisions of the State Development Assessment Provisions has not been provided.

### Access to the State-controlled Road

- |    |   |
|----|---|
| 1. | <p><b>Issue:</b></p> <p>The proposed development does not provide sufficient information to determine compliance with Performance outcomes (PO) PO15 – PO18 of State code 1: Development in a state-controlled road environment (State code 1). Namely, The proposed subdivision seeks to intensify the existing land use and it is therefore crucial to demonstrate that safe access and egress to and from the subject site can be achieved, without impacting upon the safety or operating conditions of the state-controlled road. This is of particular importance given the strategic value of the Bruce Highway and its classification as a Limited Access Road. While there is an existing Road Access Permit pursuant to section 62 (1) of the <i>Transport Infrastructure Act 1994</i> for the subject site, the proposed development seeks to intensify access to a Limited Access Road.</p> <p>The proposed development must demonstrate that the proposed road access location and design is appropriate for the intensified access. No information has been provided regarding the proposed access' design, dimensions, or type. Further, no information has been provided regarding potential turn treatments which may be necessary to mitigate risks. A detailed safety and risk assessment has also not been provided in support of the proposed access location.</p> |
|----|---|

**Action:**

You are requested to provide a Traffic Assessment demonstrating that the proposed vehicular access will not have safety implications on state-controlled road users and will not adversely affect the operational performance of the Bruce Highway. The Traffic Assessment must demonstrate compliance with State code 1 (in particular PO15-PO18 of the code).

The Traffic Assessment is required to be prepared by a suitably qualified RPEQ in accordance with the provisions of the Department of Transport and Main Roads' (DTMR's) Guide to Traffic Impact Assessment (GTIA), available at:

<https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Guide-to-Traffic-Impact-Assessment>.

In particular, the following should be addressed:

- a) Identify the extent of impacts generated by the development traffic per impact type and assessment area.
- b) Identify all vehicle types anticipated to be used as part of the development.
- c) Provide a detailed safety and risk assessment, completed in accordance with the GTIA, considering the access, and identifying whether there are any unacceptable safety risks at this location (either pre-existing or post-development) for all users of the road network (including pedestrians and cyclists) if relevant.
- d) Confirm that adequate sight lines are available from the proposed access location to provide for safe access and egress to and from the proposed development.
- e) Recommend any mitigation measures where required to demonstrate that no adverse impacts occur upon the safety and operating conditions of the state-controlled road network in accordance with the GTIA.
- f) Provide concept plans in accordance with TMR's standard drawing for rural property access, identifying the proposed road access works and any required mitigation measures such as turn treatments.

As this application is also taken to be an application for a vehicular access under section 62 of the *Transport Infrastructure Act 1994* from DTMR, it is recommended that you also consider DTMR's Vehicular Access to State-controlled Roads Policy – December 2023, available at:

<https://www.tmr.qld.gov.au/Community-and-environment/Planning-and-development/Other-matters-requiring-approval/Vehicle-access-to-State-Controlled-Roads-policy>.

**How to respond**

You have three months to respond to this request and the due date to SARA is 14 May 2024.

You may respond by providing either: (a) all of the information requested; (b) part of the information requested; or (c) a notice that none of the information will be provided. Further guidance on responding to an information request is provided in section 13 of the [Development Assessment Rules](#) (DA Rules).

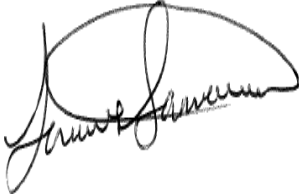
It is recommended that you provide all the information requested above. If you decide not to provide all the information requested, your application will be assessed and decided based on the information provided to date.

You are requested to upload your response and complete the relevant tasks in [MyDAS2](#).

As SARA is a referral agency for this application, a copy of this information request will be provided to the assessment manager in accordance with section 12.4 of the DA Rules.

If you require further information or have any questions about the above, please contact Bronwyn Bignoux, Principal Planning Officer, on 4747 3907 or via email [NQSARA@dasilgp.qld.gov.au](mailto:NQSARA@dasilgp.qld.gov.au) who will be pleased to assist.

Yours sincerely



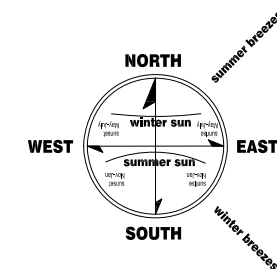
Javier Samanes  
A/Manager (Planning)

cc Townsville City Council, [developmentassessment@townsville.qld.gov.au](mailto:developmentassessment@townsville.qld.gov.au)

Development details	
Description:	Development permit Reconfiguring a lot - One (1) into Two (2) Lots
SARA role:	Referral agency
SARA trigger:	Schedule 10, Part 9, Division 4, Subdivision 2, Table 1, Item 1 (Planning Regulation 2017) - Reconfiguring a lot near a state transport corridor
SARA reference:	2401-38533 SRA
Assessment criteria:	State Development and Assessment Provisions (SDAP): <ul style="list-style-type: none"> <li>• State code 1: Development in a state-controlled road environment</li> <li>• State Code 2: Development in railway environment</li> </ul>

# **APPENDICES B**

Plan of Reconfiguration – Developed by BNC  
Planning – BNC Ref 144-23 – Drawing No. S01-  
01 – Prepared November 2023



**Property Details**  
**Site Address:** 41634 Bruce Highway  
 BLUEWATER QLD 4818  
**Real Property Description:** Lot 73 on EP1620  
**Tenure:** Freehold  
**Site Area:** 11.26 ha  
**Road Frontage:** Bruce Highway  
**Planning Scheme Zoning:** Rural Zone  
**Precincts:** Mixed Farming Precinct  
**DFE (Q100) Flooding:** Site subject to partial 1%AEP inundation

- Notes**
- Plan and detail is not for construction purposes
  - All site dimensions to be confirmed by detailed survey
  - New boundaries to be set by lot size not dimension
  - No new road reserves
  - No existing or proposed public open space
  - No new retaining walls or retaining structures
  - No land to be dedicated for community purposes
  - No building envelopes required
  - Existing and new easements as shown
  - The site is subject to 1%AEP DFE flooding

**Data Source**

- DCDB as taken from unconfirmed survey source
- Queensland Globe
- TownsvilleMAPS

**PLAN OF RECONFIGURATION**  
**One (1) into Two (2) Lots Subdivision**

AMT	DESCRIPTION	BY	DATE	Date	Drawn	
A	DA ISSUE	BNC	November 2023	November 2023	BNC	
				As shown	BNC	
				Job No.: DA/144-23	Approved: BNC	
DRAWING STATUS:				BNC Ref. No.:	Drawing No.:	Rev.:
DA Issue				144-23	S01-01	A
Meridian:					Survey Records:	

# APPENDICES C

DTMR Decision Notice – Permitted Road Access  
– Section 62 Approval – TMR23-040326

Our ref TMR23-040326  
Your ref  
Enquiries Aidan Colahan

Department of  
**Transport and Main Roads**

26 October 2023

Michael and Deanna Pallanza  
98 Martinez Avenue  
West End QLD 4810

Dear Michael and Deanna,

## **Decision Notice - Permitted Road Access Location (section 62(1) *Transport Infrastructure Act 1994*)**

**This is not an authorisation to commence work on a state-controlled road<sup>1</sup>**

I refer to your application for a decision under section 62(1) of the *Transport Infrastructure Act 1994* (TIA) for access between Lot 73 EP1620 and Bruce Highway (a state-controlled road) which was received by the Department of Transport and Main Roads (the department) on 08 September 2023.

### **Decision (given under section 67 of TIA)**

It has been decided to approve the application, subject to the following conditions:

<b>No.</b>	<b>Conditions of Approval</b>	<b>Condition Timing</b>
1	The Permitted Road Access Location is to be located 170m from the northern boundary and 170m from the southern boundary, generally in accordance with Permitted Road Access Location Plan, prepared by the Department of Transport and Main Roads, dated October 2023, Reference DA-001, Issue A.	At all times.
2	Road Access Works comprising residential access must be provided at the permitted access location, generally in accordance with:  (a) Rural Property Access Type A, prepared by Department of Transport and Main Road, Reference 1807, Dated 11/2021 and revision	Prior to the commencement of the use of the Road Access Works and to be maintained at all times.

<sup>1</sup> Please refer to the further approvals required under the heading 'Further approvals'



No.	Conditions of Approval	Condition Timing
	B.	
3	Direct access is prohibited between Bruce Highway and Lot 73 on EP1620 at any other location other than the Permitted Road Access Location described in Condition 1.	At all times.
4	The landowner will undertake responsibility of maintaining the crossover between the property boundary and the edge of the road pavement as required to continue safe and efficient access between the permitted road access point and the State-controlled road.	At all times.
5	The use of the Permitted Road Access Location is to be restricted to rural residential purposes only.	At all times.

### Reasons for the decision

The reasons for this decision are as follows:

- (a) To ensure access to the State-controlled Road from the property does not compromise the safety and efficiency of the State-controlled Road network.
- (b) To provide safe access for all vehicles associated with the residential use.

Please refer to **Attachment A** for the findings on material questions of fact and the evidence or other material on which those findings were based.

### Information about the Decision required to be given under section 67(2) of TIA

1. There is no guarantee of the continuation of road access arrangements, as this depends on future traffic safety and efficiency circumstances.
2. In accordance with section 70 of the TIA, you are bound by this decision. A copy of section 70 is attached as **Attachment B**, as required, for your information.

### Further information about the decision

1. This decision notice replaces any earlier decision made under section 62(1) in relation to the land.
2. In accordance with section 485 of the TIA and section 31 of the *Transport Planning and Coordination Act 1994* (TPCA), a person whose interests are affected by this decision may apply for a review of this decision only within 28 days after notice of the decision

was given under the TIA. A copy of the review provisions under TIA and TPCA is attached in **Attachment C** for your information.

3. In accordance with section 485B of the TIA and section 35 of TPCA you may appeal against a reviewed decision. You must have applied to have the decision reviewed before an appeal about the decision can be lodged in the Planning and Environment Court. A copy of the Appeal Provisions under TIA and TPCA is attached in **Attachment C** for your information.

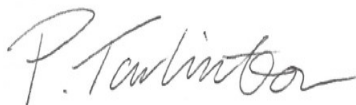
### **Further approvals**

The department also provides the following information in relation to this approval:

1. Road Works approval required – Written approval is required from the department to carry out road works that are road access works (including driveways) on a state-controlled road in accordance with section 33(1) of the TIA. This approval must be obtained prior to commencing any works on the state-controlled road. The approval process may require the approval of engineering designs of the proposed works, certified by a Registered Professional Engineer of Queensland (RPEQ). Please contact the department to make an application for road works approval.

If you would like to discuss this application, please contact Aidan Colahan, Planner (Corridor Management) by email at [aidan.p.colahan@tmr.qld.gov.au](mailto:aidan.p.colahan@tmr.qld.gov.au) or on 4421 8708.

Yours sincerely



Peter Tarlinton  
A/Senior Town Planner

Attachments: Attachment A – Decision evidence and findings  
Attachment B - Section 70 of TIA  
Attachment C - Appeal Provisions

## Attachment A

### Decision Evidence and Findings

Findings on material questions of fact:

- The objective of the *Transport Infrastructure Act 1994* requires the establishment of a road regime that is safe and efficient.
- Section 62 of the *Transport Infrastructure Act 1994* allows the Department of Transport and Main Roads to make decisions about permitted road access locations between particular / adjacent land and a State-controlled Road.
- The subject site relates to a residential property located at Lot 73 on EP1620 with frontage to Bruce Highway (TMR ID: 10M).
- The Bruce Highway is a Limited Access Road. The proposed access location is not considered to conflict with the Limited Access Plan applicable to Lot 73 on EP1620.
- Where proximate to the site, Bruce Highway has a speed limited of 100kmph before dropping down to 80km where north of the site toward Bluewater.
- Where proximate to the site, the Bruce Highway has an AADT of 8196 vehicles, of which approximately 12% are heavy vehicles.
- As the property is residential, daily vehicles movements are to be infrequent.
- The access is located within proximity to several residential access locations along the Bruce Highway. Advice from TMR's traffic engineer did not consider the access location within the centre of the property to result in a worse outcome than the indicative location originally shown on the limited access plan.
- The subject site does not benefit from a frontage to any local roads.
- Due to the type of use, these vehicles are expected to be light vehicles.
- The access is therefore required to be constructed to the standard of a Rural Property Access Type A.
- The location of the access is not foreseen to compromise the safety of users of the state-controlled road.
- The landowner shall be responsible for the maintenance of the crossover between the property boundary and the edge of the kerb as required to continue the safe and efficient access between the permitted road access location and the Bruce Highway.

Evidence or other material on which findings were based:

<b>Title of Evidence / Material</b>	<b>Prepared by</b>	<b>Date</b>	<b>Reference no.</b>	<b>Version/Issue</b>
Proposed Driveway Location	P. McBride	8 September 2023	-	-

## Attachment B

### Section 70 of TIA

*Transport Infrastructure Act 1994*

Chapter 6 Road transport infrastructure

Part 5 Management of State-controlled roads

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#### **70 Offences about road access locations and road access works, relating to decisions under s 62(1)**

- (1) This section applies to a person who has been given notice under section 67 or 68 of a decision under section 62(1) about access between a State-controlled road and adjacent land.
- (2) A person to whom this section applies must not—
  - (a) obtain access between the land and the State-controlled road other than at a location at which access is permitted under the decision; or
  - (b) obtain access using road access works to which the decision applies, if the works do not comply with the decision and the noncompliance was within the person's control; or
  - (c) obtain any other access between the land and the road contrary to the decision; or
  - (d) use a road access location or road access works contrary to the decision; or
  - (e) contravene a condition stated in the decision; or
  - (f) permit another person to do a thing mentioned in paragraphs (a) to (e); or
  - (g) fail to remove road access works in accordance with the decision.

Maximum penalty—200 penalty units.

- (3) However, subsection (2)(g) does not apply to a person who is bound by the decision because of section 68.

**Attachment C**  
**Appeal Provisions**

*Transport Infrastructure Act 1994*  
Chapter 16 General provisions

---

**485 Internal review of decisions**

- (1) A person whose interests are affected by a decision described in schedule 3 (the **original decision**) may ask the chief executive to review the decision.
- (2) The person is entitled to receive a statement of reasons for the original decision whether or not the provision under which the decision is made requires that the person be given a statement of reasons for the decision.
- (3) The *Transport Planning and Coordination Act 1994*, part 5, division 2—
  - (a) applies to the review; and
  - (b) provides—
    - (i) for the procedure for applying for the review and the way it is to be carried out; and
    - (ii) that the person may apply to QCAT to have the original decision stayed.

**485B Appeals against decisions**

- (1) This section applies in relation to an original decision if a court (the appeal court) is stated in schedule 3 for the decision.
- (2) If the reviewed decision is not the decision sought by the applicant for the review, the applicant may appeal against the reviewed decision to the appeal court.
- (3) The *Transport Planning and Coordination Act 1994*, part 5, division 3—
  - (a) applies to the appeal; and
  - (b) provides—
    - (i) for the procedure for the appeal and the way it is to be disposed of; and
    - (ii) that the person may apply to the appeal court to have the original decision stayed.

....

- (7) In this section—

**original decision** means a decision described in schedule 3.

**reviewed decision** means the chief executive's decision on a review under section 485.

### **31 Applying for review**

- (1) A person may apply for a review of an original decision only within 28 days after notice of the original decision was given to the person under the transport Act.
- (2) However, if—
  - (a) the notice did not state the reasons for the original decision; and
  - (b) the person asked for a statement of the reasons within the 28 days mentioned in subsection (1)the person may apply within 28 days after the person is given the statement of the reasons.
- (3) In addition, the chief executive may extend the period for applying.
- (4) An application must be written and state in detail the grounds on which the person wants the original decision to be reviewed.

### **32 Stay of operation of original decision**

- (1) If a person applies for review of an original decision, the person may immediately apply for a stay of the decision to the relevant entity.
- (2) The relevant entity may stay the original decision to secure the effectiveness of the review and any later appeal to or review by the relevant entity.
- (3) In setting the time for hearing the application, the relevant entity must allow at least 3 business days between the day the application is filed with it and the hearing day.
- (4) The chief executive is a party to the application.
- (5) The person must serve a copy of the application showing the time and place of the hearing and any document filed in the relevant entity with it on the chief executive at least 2 business days before the hearing.
- (6) The stay—
  - (a) may be given on conditions the relevant entity considers appropriate; and
  - (b) operates for the period specified by the relevant entity; and
  - (c) may be revoked or amended by the relevant entity.
- (7) The period of a stay under this section must not extend past the time when the chief executive reviews the original decision and any later period the relevant entity allows the applicant to enable the applicant to appeal against the decision or apply for a review of the decision as provided under the QCAT Act.
- (8) The making of an application does not affect the original decision, or the carrying out of the original decision, unless it is stayed.

(9) In this section—

**relevant entity** means—

- (a) if the reviewed decision may be reviewed by QCAT—QCAT; or
- (b) if the reviewed decision may be appealed to the appeal court—the appeal court.

### **35 Time for making appeals**

(1) A person may appeal against a reviewed decision only within—

- (a) if a decision notice is given to the person—28 days after the notice was given to the person; or
- (b) if the chief executive is taken to have confirmed the decision under section 34(5)—56 days after the application was made.

(2) However, if—

- (a) the decision notice did not state the reasons for the decision; and
  - (b) the person asked for a statement of the reasons within the 28 days mentioned in subsection (1)(a);
- the person may apply within 28 days after the person is given a statement of the reasons.

(3) Also, the appeal court may extend the period for appealing.

# APPENDICES D

## TMR Traffic Data (2023) – Site ID 92222





### About this dashboard

The Volume Report dashboard ("the dashboard") is designed to help you visualise and analyse data collected from various permanent and coverage sites located across Queensland. The dashboard allows you to interrogate one traffic site at a time through a number of different lenses including vehicle class code and direction of travel.

The report displays bi-directional volume data (with gazetted, against gazetted and both directions) averaged across a date range. Volume data is displayed in either 15 minute intervals or aggregated to hour of day depending on the specific visualisation.

For additional information regarding volume data or for assistance with this dashboard, please contact the Traffic Data Systems team at [SNO\\_TDSAM@tmr.qld.gov.au](mailto:SNO_TDSAM@tmr.qld.gov.au).

### Disclaimer

The materials presented in this resource are distributed by the Department of Transport and Main Roads for and on behalf of the State of Queensland as an information source only.

The department makes no statements, representations or warranties about the accuracy or completeness of, and you should not rely on, any information contained in this site.

The Department of Transport and Main Roads disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs which you might incur as a result of the information contained in this resource being inaccurate or incomplete in any way.

### Definitions

**District:** For administration purposes, the Department of Transport and Main Roads has divided Queensland into 12 Districts. District is displayed as District Number - Name. For more details, see the "0.Help" sheet.

**Road Section:** is the Gazetted road from which the traffic data is collected. Each Road Section is given a code, allocated sequentially in the 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.

**Direction of Travel:** defines the direction of the traffic flow. It can be easily recognised by referring to the name of the road. E.g. Road Section 10A Brisbane - Gympie denotes the gazetted direction is from Brisbane to Gympie.

**Road Section Name:** The name of a gazetted road section within a major road. Larger roads are broken down into sections for easier data collection and reporting. For example, the Bruce Highway is identified by the number 10, an alpha suffix is added to indicate the Road Section "10A" being Brisbane-Gympie.

**Site:** The physical location of a traffic counting device. Sites are located at a specified Through Distance along a road. Sites are broadly categorised into two types - **Permanent** and **Coverage**.

**Permanent sites** refer to fixed traffic counting devices that operate 24/7. **Coverage sites** refer to traffic counting devices that are only in place for a specified period of time.

**Site Description:** The description of the physical location of the traffic counting device.

**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.

**Average Daily Traffic (ADT):** is determined by summing to total traffic flow, at direction level, for the days within a date range, divided by the number of days collected. Missing days or incomplete days are excluded from the calculation.

**Through Distance (or TDist):** The distance, in kilometres, from the beginning of the Road Section with the gazetted direction.

**Traffic Class:** Is the 12 Austroads vehicle categories or classes into which vehicles are placed or binned. Traffic classes are formed in a hierarchical format. For more details, see the "0.Help" sheet.

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## Volume: Site selection

Select a single traffic site, and associated date range for further analysis.

**Area**  
 Region: **North Queensland**  
 District: **Northern**  
 Road: **10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)**

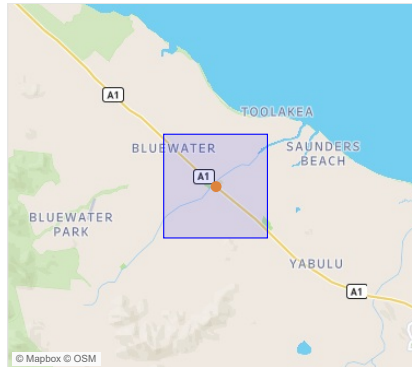
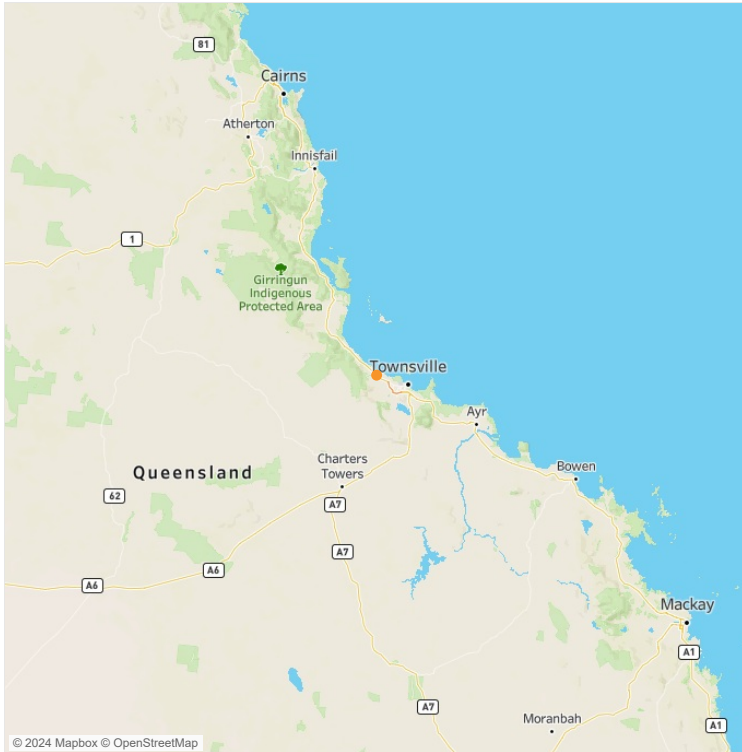
**Site**  
 ID: **92222**  
 Type: **Coverage Site**  
 Description: **100m Sth Bluewater Creek Bridge**

**Spatial**  
 TDist: **40.77 km**  
 Latitude: **-19.177018**  
 Longitude: **146.553789**



Site selection: **92222**

**Zoomed in view: 92222**  
 (once a single site is selected)



**Data availability map: 92222**  
 (modified by available filters)

		All Vehicles			2 bin			4 bin			12 bin		
		With Gazettal	Against Gazettal	Both Directions	With Gazettal	Against Gazettal	Both Directions	With Gazettal	Against Gazettal	Both Directions	With Gazettal	Against Gazettal	Both Directions
2023	June	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

### Location Filters

**Region**  
All

**District**  
All

**LGA**  
All

**Road**  
All

**Site**  
92222

### Temporal Filters

**Select Start Date**  
01/01/2023

**Select End Date**  
31/12/2023

# Total sites shown: 1

# Permanent sites shown: 0

# Coverage sites shown: 1

**Site Type**  
■ Coverage Site

**Calendar Day Category**  
■ Non-Public Holiday

**Data collection dates: 92222**  
 (within selected date range)

		Mon	Tue	Wed	Thu	Fri	Sat	Sun
2023	Jun				1	2	3	4
		5	6	7	8	9	10	11
		12	13	14	15	16	17	18
		19	20					

# Volume: Classification Report

Displays averaged traffic volume by hour of day organised by Traffic Class Code and Class Hierarchy.

**Area**  
 Region: North Queensland  
 District: Northern  
 Road: 10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)

**Site**  
 ID: 92222  
 Type: Coverage Site  
 Description: 100m Sth Bluewater Creek Bridge

**Spatial**  
 TDist: 40.77 km  
 Latitude: -19.177018  
 Longitude: 146.553789



Site local area: 92222



Data collection dates: 92222  
 (within selected date range)

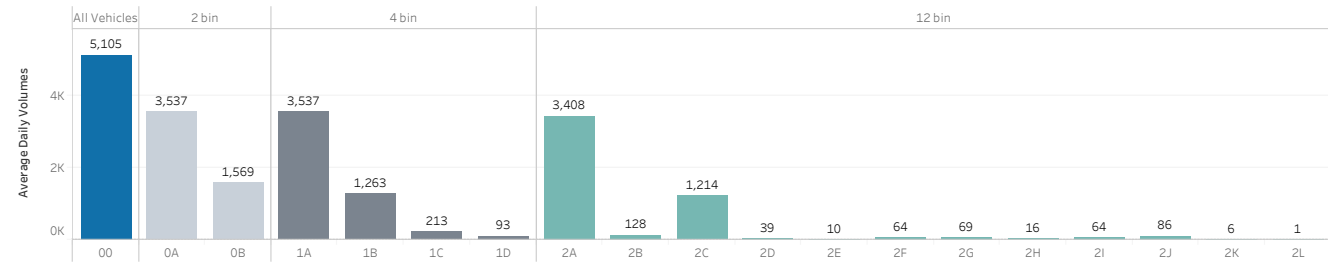
	Mon	Tue	Wed	Thu	Fri	Sat	Sun
2023 Jun				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20					

Days	Mon	Tue	Wed	Thu	Fri	Sat	Sun
In range	52	52	52	52	52	52	53
With data	3	3	2	3	3	3	3
Holidays	0	0	0	0	0	0	0

## Average volume by hour of day and by traffic class code

Traffic Class Code Help

	All Vehic..	2 bin			4 bin				12 bin										
	00	0A	0B	1A	1B	1C	1D	2A	2B	2C	2D	2E	2F	2G	2H	2I	2J	2K	2L
00	19.3	12.7	6.6	12.7	3.3	2.4	1.0	12.4	0.3	2.7	0.6	0.0	0.2	0.4	0.3	1.5	1.0	0.0	0.0
01	14.2	7.7	6.5	7.7	3.4	1.3	1.8	7.5	0.3	3.3	0.1	0.0	0.1	0.0	0.2	1.1	1.8	0.0	0.0
02	16.0	11.0	5.1	11.0	2.4	1.5	1.3	10.8	0.2	2.1	0.3	0.0	0.1	0.0	0.1	1.3	1.3	0.0	0.0
03	22.7	13.5	9.3	13.5	6.4	2.0	1.0	13.3	0.2	6.2	0.2	0.0	0.1	0.2	0.6	1.1	1.0	0.0	0.0
04	50.5	34.3	16.2	34.3	11.6	2.3	2.4	33.7	0.6	11.0	0.5	0.1	0.2	0.4	0.4	1.4	2.1	0.3	0.0
05	151.7	99.0	52.7	99.0	43.5	6.8	2.4	96.7	2.3	42.2	1.0	0.4	2.0	2.0	0.4	2.5	2.4	0.0	0.0
06	276.1	189.2	86.9	189.2	76.7	7.5	2.7	185.0	4.2	74.2	2.0	0.6	2.3	2.3	0.5	2.5	2.6	0.2	0.0
07	392.7	271.0	121.8	271.0	108.0	10.4	3.4	264.9	6.1	104.4	2.7	1.0	3.3	3.9	0.4	2.9	3.2	0.2	0.1
08	402.2	286.9	115.3	286.9	101.0	11.2	3.2	276.5	10.5	98.0	2.1	1.0	3.5	4.5	0.8	2.5	3.2	0.0	0.0
09	386.3	270.8	115.5	270.8	96.1	15.8	3.6	257.4	13.4	92.7	2.6	0.9	5.4	6.6	0.8	3.2	3.3	0.3	0.1
10	371.9	261.0	110.9	261.0	88.9	18.0	4.1	247.1	13.9	85.2	2.7	1.0	6.3	7.3	0.7	3.9	3.7	0.3	0.1
11	383.0	262.6	120.5	262.6	93.8	20.5	6.3	249.9	12.7	90.2	2.7	1.0	6.4	7.4	1.9	4.8	5.6	0.6	0.1
12	365.5	251.6	113.9	251.6	89.4	18.8	5.7	239.8	11.8	84.5	4.3	0.7	7.2	6.4	1.5	3.8	4.9	0.8	0.1
13	372.2	254.4	117.8	254.4	93.4	18.7	5.8	242.8	11.6	89.2	3.1	1.1	5.8	6.6	0.9	5.4	5.2	0.5	0.1
14	413.0	285.8	127.3	285.8	102.0	18.0	7.3	275.2	10.6	98.8	2.9	0.4	5.4	6.5	1.2	4.9	7.0	0.3	0.0
15	380.2	267.2	113.0	267.2	93.0	13.6	6.4	259.5	7.7	89.2	3.1	0.8	4.3	4.4	1.3	3.8	5.6	0.8	0.1
16	365.7	260.0	105.7	260.0	84.6	14.1	7.0	252.3	7.8	81.1	3.0	0.5	4.3	4.3	1.0	4.6	6.3	0.7	0.1
17	269.6	188.9	80.7	188.9	63.5	10.9	6.4	183.5	5.5	61.6	1.7	0.2	3.3	2.9	0.9	3.8	6.0	0.4	0.0
18	175.1	122.3	52.8	122.3	40.3	6.7	5.8	119.0	3.3	38.8	1.5	0.1	1.9	1.5	0.2	3.2	5.3	0.5	0.1
19	100.5	66.4	34.1	66.4	22.6	5.0	6.5	64.0	2.5	21.1	1.4	0.2	1.3	1.0	0.4	2.4	6.2	0.2	0.1
20	72.2	48.0	24.3	48.0	16.5	3.5	4.4	46.8	1.2	16.1	0.3	0.1	0.7	0.4	0.7	1.7	4.2	0.2	0.0
21	50.8	35.4	15.4	35.4	11.6	1.6	2.3	34.4	1.0	11.5	0.1	0.0	0.6	0.3	0.3	0.5	2.3	0.0	0.0
22	33.9	23.4	10.5	23.4	7.2	1.7	1.6	22.9	0.6	6.8	0.4	0.0	0.1	0.2	0.7	0.8	1.6	0.0	0.0
23	20.7	14.1	6.6	14.1	4.2	1.5	1.0	13.7	0.4	3.9	0.3	0.0	0.2	0.2	0.4	0.8	1.0	0.0	0.0



### Global Filters

Start Date  
01/01/2023

End Date  
31/12/2023

Direction of Travel  
Against Gazettal

### Page Filters

### Legends

- Traffic Class Bins (Click to highlight selection)
- All Vehicles
  - 2 bin
  - 4 bin
  - 12 bin
- Calendar Day Category
- Non-Public Holiday

# Volume: Daily Report

Displays averaged traffic volume and associated % contribution of total by 15-minute increment for the range of dates selected.

**Area**  
 Region: **North Queensland**  
 District: **Northern**  
 Road: **100M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)**

**Site**  
 ID: **92222**  
 Type: **Coverage Site**  
 Description: **100m Sth Bluewater Creek Bridge**

**Spatial**  
 TDist: **40.77 km**  
 Latitude: **-19.177018**  
 Longitude: **146.553789**



Site local area: 92222



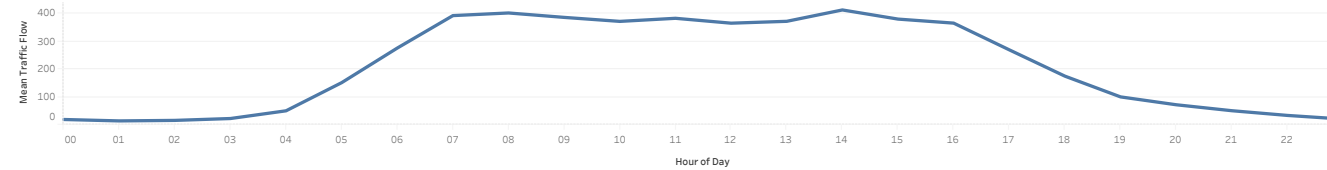
Data collection dates: 92222  
 (within selected date range)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
2023 Jun				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20					

Days	Mon	Tue	Wed	Thu	Fri	Sat	Sun
In range	52	52	52	52	52	52	53
With data	3	3	2	3	3	3	3
Holidays	0	0	0	0	0	0	0

	00 min - 15 min		15 min - 30 min		30 min - 45 min		45 min - 60 min		Grand Totals	
	Avg. Volume per day	% of Total Volume ..	Avg. Volume per day	% of Total Volume ..	Avg. Volume per day	% of Total Volume ..	Avg. Volume per day	% of Total Volume ..	Avg. Volume per day	% of Total Volume ..
00	6	0.11%	6	0.11%	4	0.07%	4	0.08%	19	0.38%
01	3	0.07%	3	0.06%	4	0.08%	4	0.07%	14	0.28%
02	5	0.10%	5	0.09%	4	0.07%	3	0.05%	16	0.31%
03	4	0.08%	7	0.13%	6	0.11%	7	0.13%	23	0.44%
04	9	0.18%	11	0.22%	14	0.27%	16	0.32%	50	0.99%
05	26	0.51%	37	0.72%	39	0.77%	50	0.97%	152	2.97%
06	59	1.16%	70	1.37%	65	1.28%	81	1.59%	276	5.41%
07	96	1.89%	102	2.00%	103	2.02%	91	1.79%	393	7.69%
08	94	1.83%	94	1.84%	105	2.06%	109	2.14%	402	7.88%
09	97	1.90%	98	1.92%	98	1.91%	94	1.84%	386	7.57%
10	96	1.89%	92	1.80%	91	1.78%	93	1.81%	372	7.28%
11	98	1.93%	93	1.81%	97	1.90%	95	1.86%	383	7.50%
12	93	1.83%	98	1.92%	91	1.78%	83	1.63%	365	7.16%
13	90	1.76%	94	1.84%	94	1.84%	94	1.85%	372	7.29%
14	100	1.95%	102	1.99%	105	2.05%	107	2.10%	413	8.09%
15	105	2.06%	94	1.84%	94	1.84%	88	1.72%	380	7.45%
16	90	1.76%	95	1.85%	96	1.87%	85	1.67%	366	7.16%
17	74	1.45%	70	1.37%	65	1.27%	61	1.19%	270	5.28%
18	52	1.01%	48	0.94%	42	0.82%	34	0.66%	175	3.43%
19	31	0.60%	27	0.53%	22	0.43%	21	0.41%	100	1.97%
20	22	0.42%	19	0.38%	17	0.33%	14	0.28%	72	1.41%
21	14	0.27%	15	0.29%	12	0.23%	11	0.21%	51	1.00%
22	10	0.19%	8	0.16%	9	0.18%	7	0.14%	34	0.66%
23	6	0.11%	6	0.12%	5	0.09%	4	0.08%	21	0.41%
<b>Grand Total</b>	<b>1,279</b>	<b>25.05%</b>	<b>1,292</b>	<b>25.30%</b>	<b>1,280</b>	<b>25.06%</b>	<b>1,255</b>	<b>24.58%</b>	<b>5,105</b>	<b>100.00%</b>

Daily Volume Report Graph



**Global Filters**

**Start Date**  
01/01/2023

**End Date**  
31/12/2023

**Direction of Travel**  
Against Gazettal

**Page Filters**

**Traffic Class Code**  
00 - All Vehicles

**Time Window**  
24 Hour

**Legends** (Click to highlight selection)

**Calendar Day Category**  
 Non-Public Holiday

Time Window	Daily Avg. Volume	% Total
12-hour flow	4,277	83.78%
16-hour flow	4,777	93.56%
18-hour flow	4,831	94.63%
24-hour flow	5,105	100.00%

# Volume: Weekly Report

Displays averaged traffic volume and associated % contribution of total by hour of day and day of week for the range of dates selected.

**Area**  
 Region: North Queensland  
 District: Northern  
 Road: 100m - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)

**Site**  
 ID: 92222  
 Type: Coverage Site  
 Description: 100m Sth Bluewater Creek Bridge

**Spatial**  
 TDist: 40.77 km  
 Latitude: -19.177018  
 Longitude: 146.553789



## Site local area: 92222



## Data collection dates (Weekly): 92222

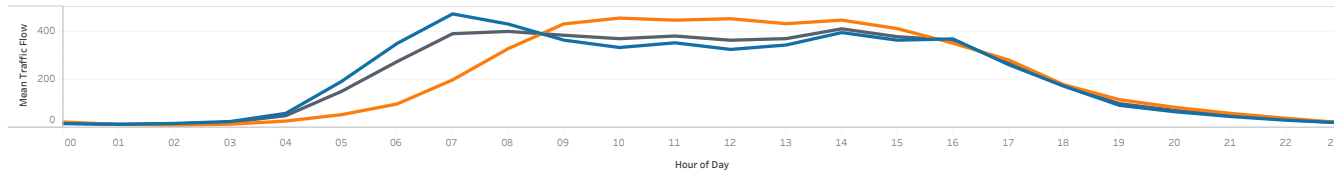
(full week view of data based on selected date ranges)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
2023 June				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20					

Days	Mon	Tue	Wed	Thu	Fri	Sat	Sun
In range	53	53	53	53	53	53	53
With data	3	3	2	3	3	3	3
Holidays	0	0	0	0	0	0	0

	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Weekdays		Weekend		All	
	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day
00	14	0.3%	16	0.4%	15	0.3%	16	0.3%	24	0.4%	26	0.5%	22	0.4%	17	0.3%	24	0.5%	19	0.4%
01	13	0.3%	17	0.4%	15	0.3%	13	0.2%	15	0.2%	17	0.3%	11	0.2%	14	0.3%	14	0.3%	14	0.3%
02	15	0.3%	19	0.4%	18	0.4%	16	0.3%	22	0.4%	14	0.3%	8	0.2%	18	0.4%	11	0.2%	16	0.3%
03	16	0.3%	27	0.6%	31	0.7%	27	0.5%	31	0.5%	17	0.3%	13	0.3%	26	0.5%	15	0.3%	23	0.4%
04	64	1.2%	64	1.4%	62	1.3%	50	0.9%	62	1.0%	39	0.8%	17	0.3%	60	1.2%	28	0.6%	50	1.0%
05	208	4.0%	204	4.5%	187	4.0%	187	3.6%	179	3.0%	71	1.4%	39	0.8%	193	3.8%	55	1.1%	152	3.0%
06	359	7.0%	346	7.6%	358	7.7%	359	6.8%	339	5.7%	121	2.4%	77	1.5%	352	6.8%	99	2.0%	276	5.4%
07	494	9.6%	480	10.6%	444	9.5%	487	9.3%	462	7.8%	239	4.8%	161	3.2%	475	9.2%	200	4.0%	393	7.7%
08	442	8.6%	399	8.8%	408	8.7%	440	8.4%	468	7.9%	395	8.0%	266	5.3%	433	8.4%	330	6.6%	402	7.9%
09	399	7.7%	325	7.2%	345	7.4%	356	6.8%	397	6.7%	481	9.7%	386	7.6%	366	7.1%	434	8.7%	386	7.6%
10	353	6.8%	302	6.7%	323	6.9%	331	6.3%	363	6.1%	449	9.1%	467	9.2%	335	6.5%	458	9.1%	372	7.3%
11	376	7.3%	306	6.7%	309	6.6%	342	6.5%	425	7.1%	430	8.7%	468	9.2%	355	6.9%	449	9.0%	383	7.5%
12	345	6.7%	277	6.1%	291	6.2%	326	6.2%	384	6.5%	419	8.5%	491	9.7%	327	6.4%	455	9.1%	365	7.2%
13	368	7.1%	299	6.6%	319	6.8%	294	5.6%	438	7.4%	380	7.7%	489	9.7%	345	6.7%	435	8.7%	372	7.3%
14	429	8.3%	339	7.5%	351	7.5%	365	6.9%	489	8.2%	387	7.8%	512	10.1%	397	7.7%	449	9.0%	413	8.1%
15	358	6.9%	314	6.9%	337	7.2%	355	6.7%	454	7.6%	373	7.5%	455	9.0%	366	7.1%	414	8.3%	380	7.4%
16	311	6.0%	258	5.7%	298	6.4%	539	10.2%	424	7.1%	324	6.5%	382	7.5%	371	7.2%	353	7.1%	366	7.2%
17	235	4.5%	206	4.5%	210	4.5%	286	5.4%	364	6.1%	275	5.6%	291	5.8%	264	5.1%	283	5.7%	270	5.3%
18	154	3.0%	137	3.0%	145	3.1%	185	3.5%	236	4.0%	170	3.4%	189	3.7%	173	3.4%	179	3.6%	175	3.4%
19	79	1.5%	71	1.6%	85	1.8%	110	2.1%	119	2.0%	103	2.1%	131	2.6%	93	1.8%	117	2.3%	100	2.0%
20	60	1.2%	53	1.2%	57	1.2%	63	1.2%	98	1.6%	85	1.7%	85	1.7%	67	1.3%	85	1.7%	72	1.4%
21	33	0.6%	37	0.8%	38	0.8%	53	1.0%	71	1.2%	65	1.3%	55	1.1%	47	0.9%	60	1.2%	51	1.0%
22	23	0.4%	21	0.5%	22	0.5%	40	0.8%	47	0.8%	49	1.0%	31	0.6%	31	0.6%	40	0.8%	34	0.7%
23	12	0.2%	14	0.3%	16	0.3%	23	0.4%	37	0.6%	27	0.6%	15	0.3%	21	0.4%	21	0.4%	21	0.4%
Grand Total	5,162	100.0%	4,530	100.0%	4,679	100.0%	5,261	100.0%	5,949	100.0%	4,955	100.0%	5,060	100.0%	5,147	100.0%	5,008	100.0%	5,105	100.0%

## Weekly Volume Report Graph



**Global Filters**

**Start Date**  
01/01/2023

**End Date**  
31/12/2023

**Direction of Travel**  
Against Gazetteal

**Page Filters**

**Traffic Class Code**  
00 - All Vehicles

**Legends (Click to highlight selection)**

**Public Holiday**  
 Non-Public Holiday

**Day Grouping**  
 Weekdays  
 Weekend  
 All

**Important Note:**  
 For the purpose of Weekly Volume reporting only, Start and End dates specified are converted to include a full calendar week's worth of data. That is, Date Start will always result in the data selection starting at the Monday before Date Start and End Date will always result in the data selection ending at the Sunday after End Date.



### About this dashboard

The Volume Report dashboard ("the dashboard") is designed to help you visualise and analyse data collected from various permanent and coverage sites located across Queensland. The dashboard allows you to interrogate one traffic site at a time through a number of different lenses including vehicle class code and direction of travel.

The report displays bi-directional volume data (with gazetted, against gazetted and both directions) averaged across a date range. Volume data is displayed in either 15 minute intervals or aggregated to hour of day depending on the specific visualisation.

For additional information regarding volume data or for assistance with this dashboard, please contact the Traffic Data Systems team at [SNO\\_TDSAM@tmr.qld.gov.au](mailto:SNO_TDSAM@tmr.qld.gov.au).

### Disclaimer

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### Definitions

**District:** For administration purposes, the Department of Transport and Main Roads has divided Queensland into 12 Districts. District is displayed as District Number - Name. For more details, see the "0.Help" sheet.

**Road Section:** is the Gazetted road from which the traffic data is collected. Each Road Section is given a code, allocated sequentially in the 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.

**Direction of Travel:** defines the direction of the traffic flow. It can be easily recognised by referring to the name of the road. E.g. Road Section 10A Brisbane - Gympie denotes the gazetted direction is from Brisbane to Gympie.

**Road Section Name:** The name of a gazetted road section within a major road. Larger roads are broken down into sections for easier data collection and reporting. For example, the Bruce Highway is identified by the number 10, an alpha suffix is added to indicate the Road Section "10A" being Brisbane-Gympie.

**Site:** The physical location of a traffic counting device. Sites are located at a specified Through Distance along a road. Sites are broadly categorised into two types - **Permanent** and **Coverage**.

**Permanent sites** refer to fixed traffic counting devices that operate 24/7. **Coverage sites** refer to traffic counting devices that are only in place for a specified period of time.

**Site Description:** The description of the physical location of the traffic counting device.

**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.

**Average Daily Traffic (ADT):** is determined by summing to total traffic flow, at direction level, for the days within a date range, divided by the number of days collected. Missing days or incomplete days are excluded from the calculation.

**Through Distance (or TDist):** The distance, in kilometres, from the beginning of the Road Section with the gazetted direction.

**Traffic Class:** Is the 12 Austroads vehicle categories or classes into which vehicles are placed or binned. Traffic classes are formed in a hierarchical format. For more details, see the "0.Help" sheet.

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## Volume: Site selection

Select a single traffic site, and associated date range for further analysis.

**Area**  
 Region: **North Queensland**  
 District: **Northern**  
 Road: **10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)**

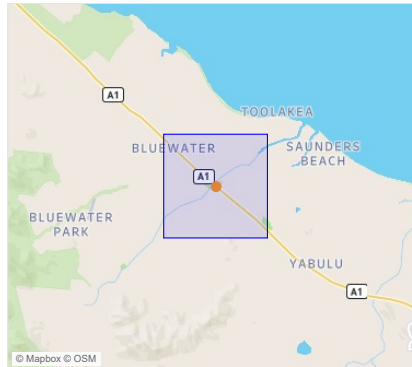
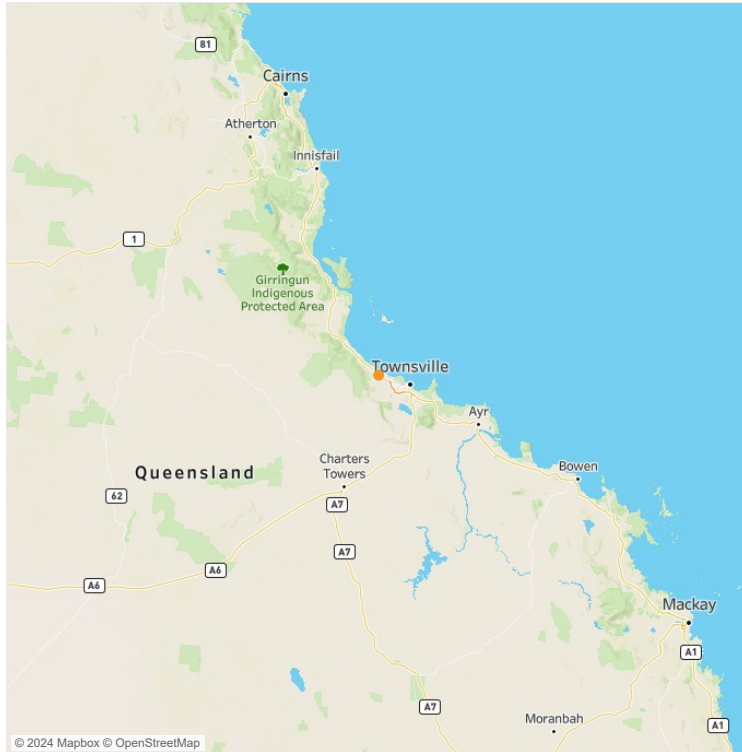
**Site**  
 ID: **92222**  
 Type: **Coverage Site**  
 Description: **100m Sth Bluewater Creek Bridge**

**Spatial**  
 TDist: **40.77 km**  
 Latitude: **-19.177018**  
 Longitude: **146.553789**



Site selection: **92222**

**Zoomed in view: 92222**  
 (once a single site is selected)



**Data availability map: 92222**  
 (modified by available filters)

		All Vehicles			2 bin			4 bin			12 bin		
		With Gazettal	Against Gazettal	Both Directions	With Gazettal	Against Gazettal	Both Directions	With Gazettal	Against Gazettal	Both Directions	With Gazettal	Against Gazettal	Both Directions
2023	June	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

### Location Filters

**Region**  
All

**District**  
All

**LGA**  
All

**Road**  
All

**Site**  
92222

### Temporal Filters

**Select Start Date**  
01/01/2023

**Select End Date**  
31/12/2023

# Total sites shown: 1

# Permanent sites shown: 0

# Coverage sites shown: 1

**Site Type**  
■ Coverage Site

**Calendar Day Category**  
■ Non-Public Holiday

**Data collection dates: 92222**  
 (within selected date range)

		Mon	Tue	Wed	Thu	Fri	Sat	Sun
2023	Jun				1	2	3	4
		5	6	7	8	9	10	11
		12	13	14	15	16	17	18
		19	20					

# Volume: Classification Report

Displays averaged traffic volume by hour of day organised by Traffic Class Code and Class Hierarchy.

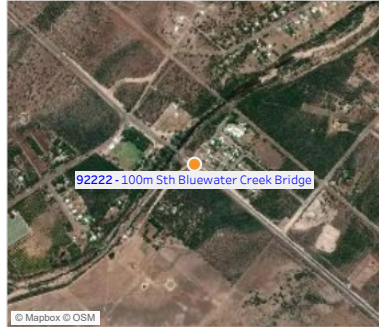
**Area**  
 Region: **North Queensland**  
 District: **Northern**  
 Road: **10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)**

**Site**  
 ID: **92222**  
 Type: **Coverage Site**  
 Description: **100m Sth Bluewater Creek Bridge**

**Spatial**  
 TDist: **40.77 km**  
 Latitude: **-19.177018**  
 Longitude: **146.553789**



Site local area: **92222**



Data collection dates: **92222**  
 (within selected date range)

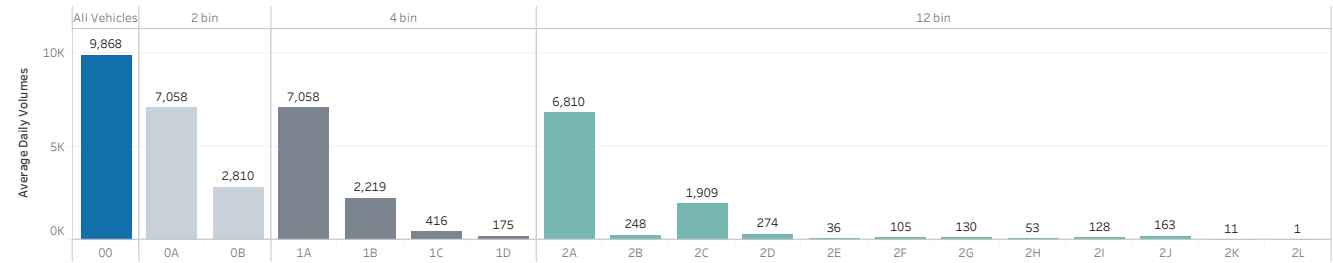
	Mon	Tue	Wed	Thu	Fri	Sat	Sun
2023 Jun				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20					

Days	Mon	Tue	Wed	Thu	Fri	Sat	Sun
In range	52	52	52	52	52	52	53
With data	3	3	2	3	3	3	3
Holidays	0	0	0	0	0	0	0

## Average volume by hour of day and by traffic class code

Traffic Class Code Help

	All Vehic..	2 bin		4 bin				12 bin											
	00	0A	0B	1A	1B	1C	1D	2A	2B	2C	2D	2E	2F	2G	2H	2I	2J	2K	2L
00	42.8	27.9	15.0	27.9	6.9	4.0	4.1	27.5	0.4	5.5	1.2	0.2	0.2	0.5	0.7	2.6	4.1	0.0	0.0
01	27.4	16.1	11.3	16.1	5.2	2.5	3.7	15.7	0.4	4.6	0.6	0.0	0.1	0.0	0.3	2.1	3.7	0.0	0.0
02	32.3	19.9	12.4	19.9	6.5	3.2	2.7	19.6	0.4	3.8	1.9	0.9	0.1	0.2	0.4	2.6	2.6	0.2	0.0
03	40.5	24.4	16.1	24.4	9.8	4.0	2.4	23.9	0.5	8.0	1.3	0.6	0.2	0.5	1.3	2.2	2.3	0.1	0.0
04	85.1	56.2	28.9	56.2	19.5	5.4	4.0	54.9	1.3	15.5	3.1	0.9	0.9	0.9	0.9	2.7	3.7	0.3	0.0
05	215.6	141.6	74.0	141.6	58.7	11.1	4.3	137.8	3.8	51.3	6.2	1.3	2.6	3.1	1.4	4.2	4.3	0.0	0.0
06	423.5	289.5	134.1	289.5	113.2	15.4	5.5	282.3	7.2	96.9	13.7	2.6	3.6	4.4	2.0	5.6	5.2	0.4	0.0
07	595.1	412.6	182.6	412.6	155.7	19.8	7.2	402.0	10.6	136.4	16.8	2.6	5.0	6.5	2.3	6.1	6.3	0.7	0.2
08	689.1	496.9	192.2	496.9	161.0	24.1	7.1	478.7	18.3	139.8	18.0	3.3	6.2	8.5	3.2	6.3	6.5	0.6	0.1
09	738.4	531.2	207.2	531.2	165.0	34.2	8.0	505.8	25.5	142.6	20.0	2.4	9.1	13.4	4.9	6.9	7.1	0.8	0.2
10	751.0	541.4	209.6	541.4	162.1	38.2	9.4	511.9	29.5	136.9	22.0	3.3	11.1	14.3	4.5	8.4	8.4	0.8	0.2
11	761.2	541.0	220.2	541.0	169.7	39.5	11.1	515.1	25.9	146.4	20.2	3.2	10.3	13.6	5.9	9.7	10.1	1.0	0.1
12	732.2	525.0	207.3	525.0	160.4	35.6	11.4	501.9	23.1	137.4	21.1	2.0	11.1	12.3	4.7	7.5	10.0	1.3	0.1
13	734.1	525.0	209.2	525.0	165.6	33.1	10.5	501.6	23.4	143.6	18.7	3.3	9.3	12.0	3.2	8.7	9.6	0.8	0.2
14	774.1	559.5	214.6	559.5	169.1	33.3	12.3	538.6	20.9	148.4	18.8	2.0	9.6	11.2	3.5	9.1	11.7	0.6	0.0
15	812.6	597.0	215.6	597.0	176.6	28.3	10.8	580.3	16.7	153.5	21.1	2.0	7.7	8.8	3.7	8.2	9.6	1.0	0.2
16	771.9	565.9	206.0	565.9	167.4	27.2	11.5	550.4	15.5	145.2	20.6	1.7	6.7	7.6	2.8	10.2	10.3	1.1	0.1
17	621.9	456.4	165.5	456.4	135.5	19.8	10.2	446.1	10.4	116.4	18.2	1.0	4.7	5.8	2.1	7.3	9.7	0.5	0.0
18	384.7	279.7	105.0	279.7	82.6	13.2	9.2	274.4	5.3	70.1	11.8	0.7	3.1	2.6	1.2	6.4	8.5	0.6	0.2
19	217.4	153.6	63.8	153.6	45.1	8.9	9.9	149.7	3.9	37.8	6.7	0.6	1.9	1.8	1.0	4.3	9.5	0.4	0.1
20	164.9	116.3	48.6	116.3	35.1	6.1	7.5	114.1	2.2	29.4	5.1	0.7	1.0	0.6	1.3	3.2	7.3	0.2	0.0
21	117.5	85.0	32.5	85.0	23.2	3.8	5.5	83.8	1.2	19.2	3.8	0.2	0.7	0.5	0.6	2.1	5.5	0.1	0.0
22	78.2	56.1	22.1	56.1	15.3	2.9	4.0	55.2	0.9	12.0	2.4	1.0	0.3	0.4	0.8	1.5	3.9	0.1	0.0
23	56.7	40.1	16.6	40.1	10.3	2.6	3.7	39.4	0.7	8.8	1.5	0.1	0.5	0.6	0.6	1.1	3.7	0.1	0.0



### Global Filters

Start Date  
01/01/2023

End Date  
31/12/2023

Direction of Travel  
Both Directions

### Page Filters

### Legends

- Traffic Class Bins (Click to highlight selection)
- All Vehicles
  - 2 bin
  - 4 bin
  - 12 bin
- Calendar Day Category
- Non-Public Holiday



# Volume: Daily Report

Displays averaged traffic volume and associated % contribution of total by 15-minute increment for the range of dates selected.

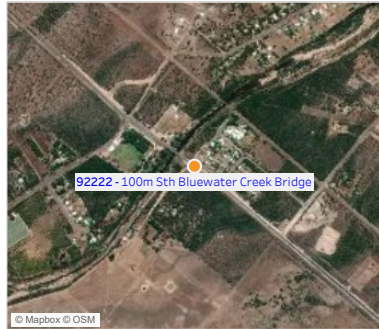
**Area**  
 Region: **North Queensland**  
 District: **Northern**  
 Road: **100M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)**

**Site**  
 ID: **92222**  
 Type: **Coverage Site**  
 Description: **100m Sth Bluewater Creek Bridge**

**Spatial**  
 TDist: **40.77 km**  
 Latitude: **-19.177018**  
 Longitude: **146.553789**



Site local area: **92222**



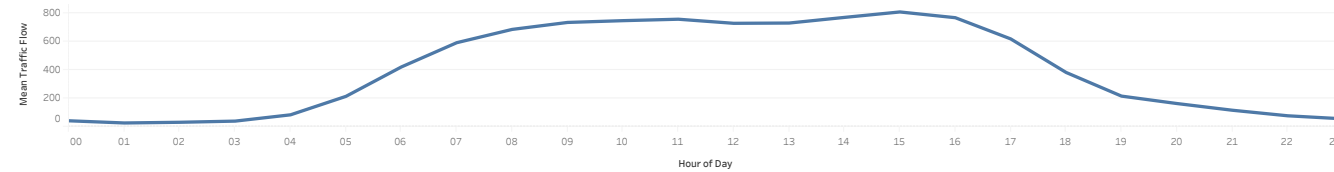
Data collection dates: **92222**  
 (within selected date range)

		Mon	Tue	Wed	Thu	Fri	Sat	Sun
2023 Jun					1	2	3	4
	5	6	7	8	9	10	11	
	12	13	14	15	16	17	18	
	19	20						

Days	Mon	Tue	Wed	Thu	Fri	Sat	Sun
In range	52	52	52	52	52	52	53
With data	3	3	2	3	3	3	3
Holidays	0	0	0	0	0	0	0

	00 min - 15 min		15 min - 30 min		30 min - 45 min		45 min - 60 min		Grand Totals	
	Avg. Volume per day	% of Total Volume..	Avg. Volume per day	% of Total Volume..	Avg. Volume per day	% of Total Volume..	Avg. Volume per day	% of Total Volume..	Avg. Volume per day	% of Total Volume..
00	11	0.11%	13	0.13%	9	0.09%	10	0.10%	43	0.43%
01	8	0.08%	6	0.06%	7	0.07%	6	0.06%	27	0.28%
02	9	0.09%	8	0.09%	9	0.09%	6	0.06%	32	0.33%
03	8	0.08%	12	0.12%	9	0.09%	11	0.12%	41	0.41%
04	15	0.16%	19	0.19%	24	0.24%	27	0.27%	85	0.86%
05	39	0.40%	53	0.54%	55	0.55%	69	0.70%	216	2.18%
06	84	0.85%	104	1.06%	109	1.10%	127	1.29%	424	4.29%
07	142	1.44%	149	1.51%	157	1.59%	147	1.49%	595	6.03%
08	154	1.56%	160	1.63%	180	1.83%	195	1.97%	689	6.98%
09	182	1.85%	181	1.83%	188	1.91%	187	1.89%	738	7.48%
10	189	1.91%	188	1.91%	188	1.90%	186	1.89%	751	7.61%
11	196	1.99%	184	1.87%	192	1.94%	189	1.91%	761	7.71%
12	184	1.87%	195	1.98%	181	1.84%	172	1.74%	732	7.42%
13	181	1.83%	188	1.91%	183	1.86%	182	1.84%	734	7.44%
14	189	1.91%	195	1.97%	192	1.95%	198	2.01%	774	7.84%
15	228	2.31%	201	2.03%	196	1.99%	188	1.91%	813	8.23%
16	194	1.97%	197	2.00%	195	1.98%	185	1.88%	772	7.82%
17	171	1.73%	161	1.63%	151	1.53%	139	1.41%	622	6.30%
18	116	1.17%	102	1.03%	92	0.94%	75	0.76%	385	3.90%
19	65	0.66%	57	0.57%	49	0.49%	47	0.48%	217	2.20%
20	47	0.48%	43	0.44%	37	0.38%	37	0.37%	165	1.67%
21	32	0.33%	33	0.34%	28	0.28%	24	0.24%	117	1.19%
22	21	0.21%	19	0.20%	20	0.20%	18	0.18%	78	0.79%
23	16	0.16%	18	0.18%	14	0.14%	9	0.10%	57	0.57%
<b>Grand Total</b>	<b>2,482</b>	<b>25.15%</b>	<b>2,488</b>	<b>25.22%</b>	<b>2,465</b>	<b>24.98%</b>	<b>2,433</b>	<b>24.65%</b>	<b>9,868</b>	<b>100.00%</b>

Daily Volume Report Graph



**Global Filters**

**Start Date**  
01/01/2023

**End Date**  
31/12/2023

**Direction of Travel**  
Both Directions

---

**Page Filters**

**Traffic Class Code**  
00 - All Vehicles

**Time Window**  
24 Hour

---

**Legends (Click to highlight selection)**

**Calendar Day Category**  
 Non-Public Holiday

---

Time Window	Daily Avg. Volume	% Total
12-hour flow	8,366	84.78%
16-hour flow	9,289	94.14%
18-hour flow	9,424	95.50%
24-hour flow	9,868	100.00%

# Volume: Weekly Report

Displays averaged traffic volume and associated % contribution of total by hour of day and day of week for the range of dates selected.

**Area**  
 Region: **North Queensland**  
 District: **Northern**  
 Road: **10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)**

**Site**  
 ID: **92222**  
 Type: **Coverage Site**  
 Description: **100m Sth Bluewater Creek Bridge**

**Spatial**  
 TDist: **40.77 km**  
 Latitude: **-19.177018**  
 Longitude: **146.553789**



## Site local area: 92222



	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Weekdays		Weekend		All	
	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day
00	29	0.3%	38	0.4%	43	0.5%	36	0.4%	55	0.5%	57	0.6%	43	0.5%	40	0.4%	50	0.5%	43	0.4%
01	24	0.2%	30	0.3%	31	0.3%	26	0.3%	31	0.3%	29	0.3%	22	0.2%	28	0.3%	26	0.3%	27	0.3%
02	32	0.3%	35	0.4%	38	0.4%	36	0.4%	43	0.4%	29	0.3%	16	0.2%	37	0.4%	22	0.2%	32	0.3%
03	33	0.3%	47	0.5%	49	0.5%	49	0.5%	51	0.4%	32	0.3%	26	0.3%	46	0.5%	29	0.3%	41	0.4%
04	111	1.1%	106	1.2%	104	1.1%	76	0.8%	106	0.9%	66	0.7%	33	0.4%	100	1.0%	50	0.5%	85	0.9%
05	290	2.9%	270	3.0%	250	2.7%	255	2.5%	242	2.1%	136	1.4%	76	0.8%	262	2.6%	106	1.1%	216	2.2%
06	533	5.4%	522	5.7%	505	5.4%	531	5.2%	510	4.4%	242	2.5%	149	1.6%	521	5.2%	195	2.1%	424	4.3%
07	715	7.3%	710	7.8%	672	7.2%	722	7.1%	685	5.9%	413	4.3%	275	3.0%	703	7.0%	344	3.6%	595	6.0%
08	737	7.5%	700	7.7%	720	7.8%	742	7.3%	785	6.8%	669	6.9%	481	5.2%	738	7.4%	575	6.1%	689	7.0%
09	785	8.0%	640	7.0%	661	7.1%	677	6.7%	781	6.8%	871	9.0%	727	7.8%	712	7.1%	799	8.4%	738	7.5%
10	723	7.3%	622	6.8%	635	6.8%	645	6.4%	763	6.6%	935	9.6%	896	9.6%	680	6.8%	916	9.6%	751	7.6%
11	731	7.4%	605	6.7%	626	6.7%	688	6.8%	822	7.1%	908	9.4%	904	9.7%	699	7.0%	906	9.5%	761	7.7%
12	672	6.8%	589	6.5%	563	6.1%	660	6.5%	778	6.7%	880	9.1%	927	10.0%	659	6.6%	904	9.5%	732	7.4%
13	693	7.0%	604	6.6%	631	6.8%	612	6.0%	846	7.3%	793	8.2%	926	9.9%	681	6.8%	859	9.0%	734	7.4%
14	752	7.6%	657	7.2%	653	7.0%	710	7.0%	939	8.1%	774	8.0%	893	9.6%	749	7.5%	834	8.8%	774	7.8%
15	785	8.0%	750	8.3%	792	8.5%	814	8.0%	1,009	8.7%	716	7.4%	815	8.8%	833	8.3%	766	8.1%	813	8.2%
16	735	7.5%	675	7.4%	721	7.8%	1,000	9.9%	981	8.5%	622	6.4%	651	7.0%	830	8.3%	637	6.7%	772	7.8%
17	624	6.3%	579	6.4%	632	6.8%	712	7.0%	804	7.0%	501	5.2%	504	5.4%	673	6.7%	503	5.3%	622	6.3%
18	356	3.6%	363	4.0%	380	4.1%	446	4.4%	508	4.4%	317	3.3%	321	3.4%	413	4.1%	319	3.4%	385	3.9%
19	175	1.8%	189	2.1%	209	2.2%	240	2.4%	239	2.1%	199	2.1%	268	2.9%	211	2.1%	233	2.5%	217	2.2%
20	133	1.4%	155	1.7%	144	1.6%	165	1.6%	195	1.7%	191	2.0%	164	1.8%	160	1.6%	177	1.9%	165	1.7%
21	90	0.9%	91	1.0%	114	1.2%	126	1.2%	154	1.3%	148	1.5%	98	1.0%	115	1.1%	123	1.3%	117	1.2%
22	52	0.5%	63	0.7%	61	0.7%	91	0.9%	111	1.0%	108	1.1%	56	0.6%	77	0.8%	82	0.9%	78	0.8%
23	31	0.3%	49	0.5%	48	0.5%	63	0.6%	106	0.9%	61	0.6%	35	0.4%	60	0.6%	48	0.5%	57	0.6%
Grand Total	9,842	100.0%	9,090	100.0%	9,277	100.0%	10,122	100.0%	11,543	100.0%	9,697	100.0%	9,305	100.0%	10,025	100.0%	9,501	100.0%	9,868	100.0%

## Global Filters

**Start Date**  
01/01/2023

**End Date**  
31/12/2023

**Direction of Travel**  
Both Directions

## Page Filters

**Traffic Class Code**  
00 - All Vehicles

## Legends (Click to highlight selection)

**Public Holiday**  
 Non-Public Holiday

## Day Grouping

Weekdays  
 Weekend

All

## Important Note:

For the purpose of Weekly Volume reporting only, Start and End dates specified are converted to include a full calendar week's worth of data. That is, Date Start will always result in the data selection starting at the Monday before Date Start and End Date will always result in the data selection ending at the Sunday after End Date.

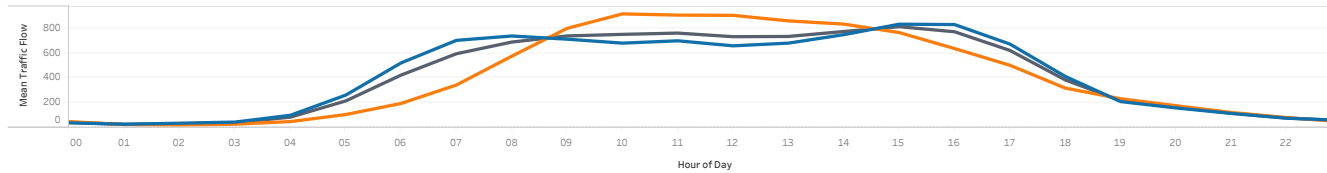
## Data collection dates (Weekly): 92222

(full week view of data based on selected date ranges)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
2023 June				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20					

Days	Mon	Tue	Wed	Thu	Fri	Sat	Sun
In range	53	53	53	53	53	53	53
With data	3	3	2	3	3	3	3
Holidays	0	0	0	0	0	0	0

## Weekly Volume Report Graph





### About this dashboard

The Volume Report dashboard ("the dashboard") is designed to help you visualise and analyse data collected from various permanent and coverage sites located across Queensland. The dashboard allows you to interrogate one traffic site at a time through a number of different lenses including vehicle class code and direction of travel.

The report displays bi-directional volume data (with gazetted, against gazetted and both directions) averaged across a date range. Volume data is displayed in either 15 minute intervals or aggregated to hour of day depending on the specific visualisation.

For additional information regarding volume data or for assistance with this dashboard, please contact the Traffic Data Systems team at [SNO\\_TDSAM@tmr.qld.gov.au](mailto:SNO_TDSAM@tmr.qld.gov.au).

### Disclaimer

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### Definitions

**District:** For administration purposes, the Department of Transport and Main Roads has divided Queensland into 12 Districts. District is displayed as District Number - Name. For more details, see the "0.Help" sheet.

**Road Section:** is the Gazetted road from which the traffic data is collected. Each Road Section is given a code, allocated sequentially in the 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.

**Direction of Travel:** defines the direction of the traffic flow. It can be easily recognised by referring to the name of the road. E.g. Road Section 10A Brisbane - Gympie denotes the gazetted direction is from Brisbane to Gympie.

**Road Section Name:** The name of a gazetted road section within a major road. Larger roads are broken down into sections for easier data collection and reporting. For example, the Bruce Highway is identified by the number 10, an alpha suffix is added to indicate the Road Section "10A" being Brisbane-Gympie.

**Site:** The physical location of a traffic counting device. Sites are located at a specified Through Distance along a road. Sites are broadly categorised into two types - **Permanent** and **Coverage**.

**Permanent sites** refer to fixed traffic counting devices that operate 24/7. **Coverage sites** refer to traffic counting devices that are only in place for a specified period of time.

**Site Description:** The description of the physical location of the traffic counting device.

**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.

**Average Daily Traffic (ADT):** is determined by summing to total traffic flow, at direction level, for the days within a date range, divided by the number of days collected. Missing days or incomplete days are excluded from the calculation.

**Through Distance (or TDist):** The distance, in kilometres, from the beginning of the Road Section with the gazetted direction.

**Traffic Class:** Is the 12 Austroads vehicle categories or classes into which vehicles are placed or binned. Traffic classes are formed in a hierarchical format. For more details, see the "0.Help" sheet.

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## Volume: Site selection

Select a single traffic site, and associated date range for further analysis.

**Area**  
 Region: **North Queensland**  
 District: **Northern**  
 Road: **10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)**

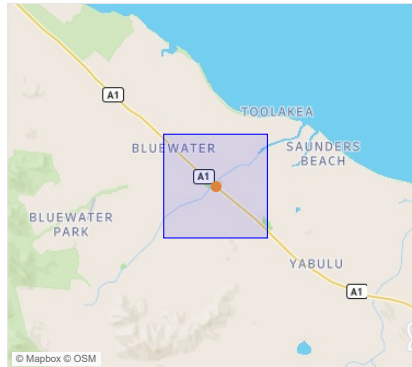
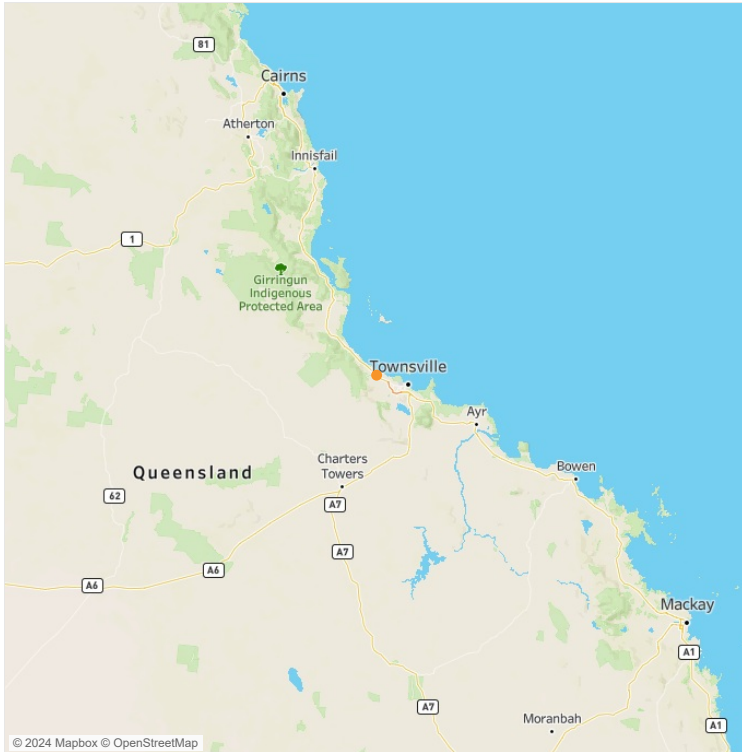
**Site**  
 ID: **92222**  
 Type: **Coverage Site**  
 Description: **100m Sth Bluewater Creek Bridge**

**Spatial**  
 TDist: **40.77 km**  
 Latitude: **-19.177018**  
 Longitude: **146.553789**



Site selection: **92222**

**Zoomed in view: 92222**  
 (once a single site is selected)



**Data availability map: 92222**  
 (modified by available filters)

		All Vehicles			2 bin			4 bin			12 bin		
		With Gazettal	Against Gazettal	Both Directions	With Gazettal	Against Gazettal	Both Directions	With Gazettal	Against Gazettal	Both Directions	With Gazettal	Against Gazettal	Both Directions
2023	June	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

### Location Filters

**Region**  
All

**District**  
All

**LGA**  
All

**Road**  
All

**Site**  
92222

### Temporal Filters

**Select Start Date**  
01/01/2023

**Select End Date**  
31/12/2023

# Total sites shown: 1

# Permanent sites shown: 0

# Coverage sites shown: 1

**Site Type**  
■ Coverage Site

**Calendar Day Category**  
■ Non-Public Holiday

**Data collection dates: 92222**  
 (within selected date range)

		Mon	Tue	Wed	Thu	Fri	Sat	Sun
2023	Jun				1	2	3	4
		5	6	7	8	9	10	11
		12	13	14	15	16	17	18
		19	20					

# Volume: Classification Report

Displays averaged traffic volume by hour of day organised by Traffic Class Code and Class Hierarchy.

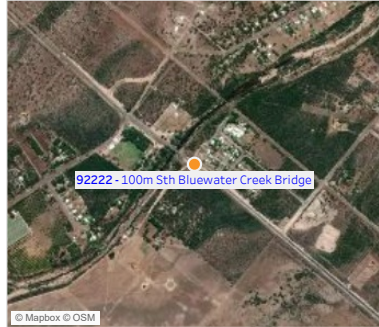
**Area**  
 Region: North Queensland  
 District: Northern  
 Road: 10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)

**Site**  
 ID: 92222  
 Type: Coverage Site  
 Description: 100m Sth Bluewater Creek Bridge

**Spatial**  
 TDist: 40.77 km  
 Latitude: -19.177018  
 Longitude: 146.553789



Site local area: 92222



Data collection dates: 92222  
 (within selected date range)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
2023 Jun				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20					

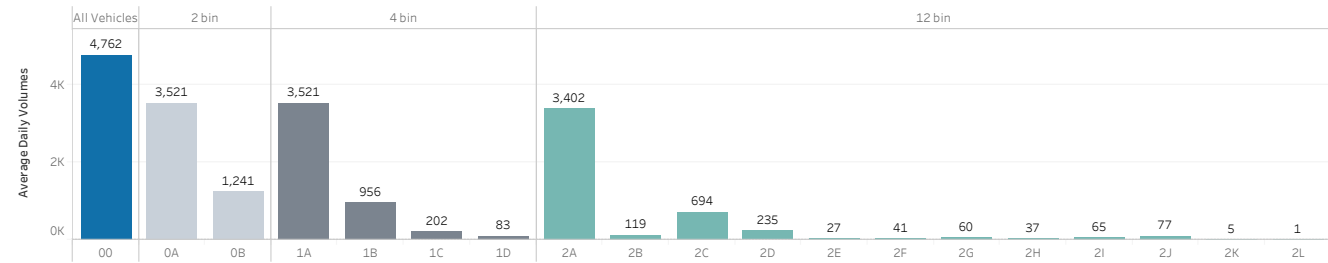
**Days**

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
In range	52	52	52	52	52	52	53
With data	3	3	2	3	3	3	3
Holidays	0	0	0	0	0	0	0

## Average volume by hour of day and by traffic class code

Traffic Class Code Help

	All Vehic..	2 bin		4 bin				12 bin											
	00	0A	0B	1A	1B	1C	1D	2A	2B	2C	2D	2E	2F	2G	2H	2I	2J	2K	2L
00	23.6	15.2	8.4	15.2	3.6	1.7	3.2	15.1	0.2	2.8	0.6	0.2	0.0	0.2	0.4	1.1	3.2	0.0	0.0
01	13.3	8.4	4.9	8.4	1.9	1.2	1.9	8.3	0.2	1.4	0.5	0.0	0.1	0.0	0.1	1.0	1.9	0.0	0.0
02	16.3	9.0	7.4	9.0	4.2	1.8	1.5	8.8	0.2	1.7	1.6	0.9	0.0	0.2	0.3	1.3	1.3	0.2	0.0
03	17.8	11.0	6.9	11.0	3.4	2.1	1.4	10.7	0.3	1.8	1.1	0.6	0.1	0.3	0.7	1.1	1.4	0.1	0.0
04	34.6	21.9	12.7	21.9	8.0	3.1	1.7	21.3	0.7	4.5	2.7	0.8	0.7	0.6	0.5	1.4	1.7	0.0	0.0
05	63.9	42.6	21.3	42.6	15.2	4.3	1.9	41.2	1.5	9.1	5.2	0.9	0.6	1.1	1.0	1.7	1.9	0.0	0.0
06	147.5	100.3	47.2	100.3	36.5	7.9	2.8	97.4	3.0	22.7	11.8	2.1	1.3	2.1	1.5	3.1	2.6	0.2	0.0
07	202.4	141.6	60.8	141.6	47.7	9.4	3.8	137.1	4.6	32.0	14.1	1.6	1.7	2.6	1.9	3.2	3.1	0.6	0.1
08	286.9	210.0	76.9	210.0	60.0	13.0	4.0	202.2	7.8	41.8	15.9	2.3	2.8	4.0	2.5	3.8	3.3	0.6	0.1
09	352.1	260.5	91.7	260.5	68.9	18.4	4.4	248.4	12.1	49.9	17.5	1.6	3.7	6.8	4.2	3.8	3.8	0.5	0.1
10	379.1	280.4	98.7	280.4	73.2	20.2	5.3	264.8	15.6	51.7	19.3	2.3	4.8	7.1	3.8	4.5	4.7	0.5	0.1
11	378.2	278.4	99.8	278.4	75.9	19.0	4.9	265.2	13.2	56.2	17.5	2.2	3.9	6.3	4.0	4.9	4.5	0.4	0.0
12	366.8	273.4	93.4	273.4	71.0	16.8	5.7	262.1	11.3	52.9	16.8	1.3	3.9	6.0	3.3	3.7	5.2	0.6	0.0
13	362.0	270.6	91.4	270.6	72.2	14.5	4.8	258.8	11.9	54.4	15.6	2.2	3.5	5.4	2.3	3.3	4.4	0.3	0.1
14	361.1	273.7	87.4	273.7	67.1	15.3	5.0	263.5	10.3	49.6	15.9	1.6	4.2	4.7	2.3	4.2	4.7	0.3	0.0
15	432.4	329.8	102.6	329.8	83.6	14.7	4.4	320.8	9.0	64.3	18.0	1.3	3.4	4.4	2.5	4.5	4.0	0.3	0.1
16	406.3	305.9	100.4	305.9	82.9	13.1	4.5	298.2	7.8	64.1	17.6	1.3	2.4	3.3	1.8	5.6	4.0	0.5	0.0
17	352.3	267.5	84.8	267.5	72.1	9.0	3.8	262.6	4.9	54.8	16.5	0.8	1.4	2.9	1.3	3.5	3.7	0.1	0.0
18	209.6	157.5	52.2	157.5	42.3	6.5	3.4	155.5	2.0	31.4	10.4	0.6	1.2	1.1	1.0	3.2	3.2	0.2	0.1
19	116.9	87.2	29.8	87.2	22.5	3.9	3.4	85.7	1.5	16.7	5.3	0.5	0.6	0.8	0.6	2.0	3.3	0.2	0.0
20	92.7	68.3	24.4	68.3	18.7	2.6	3.1	67.3	1.0	13.3	4.8	0.6	0.3	0.2	0.6	1.5	3.1	0.0	0.0
21	66.7	49.6	17.1	49.6	11.7	2.2	3.3	49.4	0.2	7.8	3.7	0.2	0.1	0.3	0.4	1.6	3.2	0.1	0.0
22	44.4	32.7	11.7	32.7	8.2	1.2	2.4	32.4	0.4	5.2	2.0	1.0	0.2	0.2	0.1	0.7	2.3	0.1	0.0
23	36.0	26.0	10.0	26.0	6.2	1.2	2.7	25.7	0.3	4.9	1.2	0.1	0.3	0.4	0.2	0.3	2.7	0.1	0.0



### Global Filters

Start Date  
01/01/2023

End Date  
31/12/2023

Direction of Travel  
With Gazzettal

### Page Filters

### Legends

- Traffic Class Bins (Click to highlight selection)
- All Vehicles
  - 2 bin
  - 4 bin
  - 12 bin
- Calendar Day Category
- Non-Public Holiday

# Volume: Daily Report

Displays averaged traffic volume and associated % contribution of total by 15-minute increment for the range of dates selected.

**Area**  
 Region: **North Queensland**  
 District: **Northern**  
 Road: **10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)**

**Site**  
 ID: **92222**  
 Type: **Coverage Site**  
 Description: **100m Sth Bluewater Creek Bridge**

**Spatial**  
 TDist: **40.77 km**  
 Latitude: **-19.177018**  
 Longitude: **146.553789**



Site local area: 92222



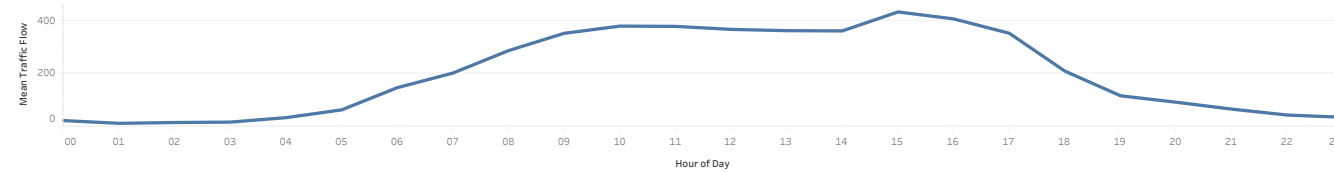
Data collection dates: 92222  
 (within selected date range)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
2023 Jun				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20					

Days	Mon	Tue	Wed	Thu	Fri	Sat	Sun
In range	52	52	52	52	52	52	53
With data	3	3	2	3	3	3	3
Holidays	0	0	0	0	0	0	0

	00 min - 15 min		15 min - 30 min		30 min - 45 min		45 min - 60 min		Grand Totals	
	Avg. Volume per day	% of Total Volume ..	Avg. Volume per day	% of Total Volume ..	Avg. Volume per day	% of Total Volume ..	Avg. Volume per day	% of Total Volume ..	Avg. Volume per day	% of Total Volume ..
00	5	0.11%	7	0.16%	5	0.11%	6	0.12%	24	0.49%
01	4	0.09%	3	0.07%	3	0.07%	3	0.05%	13	0.28%
02	4	0.09%	4	0.08%	5	0.10%	3	0.07%	16	0.34%
03	4	0.09%	5	0.11%	4	0.08%	5	0.10%	18	0.37%
04	6	0.13%	8	0.17%	10	0.21%	11	0.22%	35	0.73%
05	13	0.27%	16	0.34%	15	0.32%	19	0.40%	64	1.34%
06	25	0.52%	34	0.71%	43	0.91%	46	0.96%	147	3.10%
07	46	0.97%	47	0.99%	53	1.12%	56	1.17%	202	4.25%
08	60	1.27%	66	1.39%	75	1.57%	85	1.79%	287	6.02%
09	86	1.80%	83	1.74%	91	1.91%	93	1.95%	352	7.39%
10	92	1.94%	96	2.02%	97	2.03%	94	1.97%	379	7.96%
11	98	2.06%	92	1.93%	95	1.99%	94	1.96%	378	7.94%
12	91	1.91%	97	2.04%	90	1.89%	89	1.86%	367	7.70%
13	91	1.92%	94	1.98%	89	1.88%	87	1.83%	362	7.60%
14	89	1.87%	93	1.95%	88	1.84%	91	1.91%	361	7.58%
15	123	2.57%	107	2.24%	103	2.15%	101	2.11%	432	9.08%
16	104	2.19%	102	2.15%	100	2.09%	100	2.10%	406	8.53%
17	97	2.03%	91	1.92%	86	1.81%	78	1.64%	352	7.40%
18	64	1.34%	54	1.14%	51	1.06%	41	0.86%	210	4.40%
19	35	0.73%	30	0.62%	27	0.56%	26	0.54%	117	2.45%
20	26	0.54%	24	0.50%	20	0.43%	23	0.48%	93	1.95%
21	19	0.39%	19	0.39%	16	0.34%	13	0.28%	67	1.40%
22	11	0.23%	11	0.24%	11	0.23%	11	0.23%	44	0.93%
23	10	0.22%	12	0.24%	9	0.18%	5	0.11%	36	0.75%
Grand Total	1,203	25.26%	1,197	25.13%	1,185	24.88%	1,178	24.73%	4,762	100.00%

Daily Volume Report Graph



**Global Filters**

Start Date  
01/01/2023

End Date  
31/12/2023

Direction of Travel  
With Gazettal

**Page Filters**

Traffic Class Code  
00 - All Vehicles

Time Window  
24 Hour

**Legends (Click to highlight selection)**

Calendar Day Category  
 Non-Public Holiday

Time Window	Daily Avg. Volume	% Total
12-hour flow	4,089	85.86%
16-hour flow	4,513	94.76%
18-hour flow	4,593	96.44%
24-hour flow	4,762	100.00%

# Volume: Weekly Report

Displays averaged traffic volume and associated % contribution of total by hour of day and day of week for the range of dates selected.

**Area**  
 Region: **North Queensland**  
 District: **Northern**  
 Road: **10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)**

**Site**  
 ID: **92222**  
 Type: **Coverage Site**  
 Description: **100m Sth Bluewater Creek Bridge**

**Spatial**  
 TDist: **40.77 km**  
 Latitude: **-19.177018**  
 Longitude: **146.553789**



## Site local area: 92222



## Data collection dates (Weekly): 92222

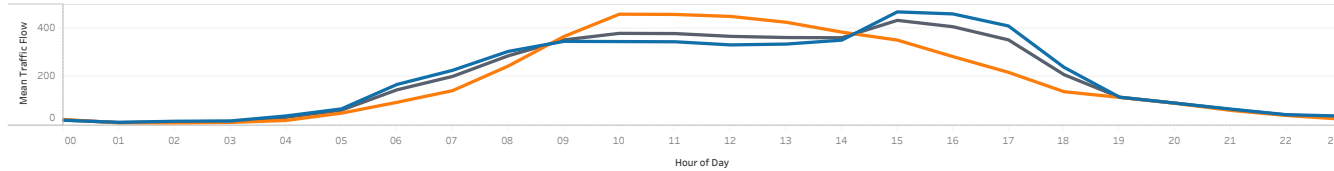
(full week view of data based on selected date ranges)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
2023 June				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20					

Days	Mon	Tue	Wed	Thu	Fri	Sat	Sun
In range	53	53	53	53	53	53	53
With data	3	3	2	3	3	3	3
Holidays	0	0	0	0	0	0	0

	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Weekdays		Weekend		All	
	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day	Avg. Volume per day	% Volume per day
00	15	0.3%	22	0.5%	28	0.6%	20	0.4%	30	0.5%	31	0.6%	21	0.5%	23	0.5%	26	0.6%	24	0.5%
01	11	0.2%	14	0.3%	16	0.3%	13	0.3%	16	0.3%	12	0.3%	11	0.3%	14	0.3%	12	0.3%	13	0.3%
02	17	0.4%	16	0.3%	20	0.4%	19	0.4%	21	0.4%	15	0.3%	8	0.2%	18	0.4%	11	0.3%	16	0.3%
03	17	0.4%	21	0.5%	18	0.4%	22	0.5%	20	0.4%	15	0.3%	13	0.3%	20	0.4%	14	0.3%	18	0.4%
04	46	1.0%	42	0.9%	42	0.9%	27	0.5%	44	0.8%	28	0.6%	16	0.4%	40	0.8%	22	0.5%	35	0.7%
05	82	1.8%	67	1.5%	63	1.4%	68	1.4%	63	1.1%	66	1.4%	38	0.9%	69	1.4%	52	1.1%	64	1.3%
06	174	3.7%	176	3.9%	147	3.2%	172	3.5%	171	3.1%	121	2.6%	71	1.7%	169	3.5%	96	2.1%	147	3.1%
07	221	4.7%	229	5.0%	229	5.0%	236	4.8%	223	4.0%	174	3.7%	114	2.7%	227	4.7%	144	3.2%	202	4.3%
08	296	6.3%	301	6.6%	312	6.8%	301	6.2%	317	5.7%	274	5.8%	215	5.1%	305	6.3%	245	5.4%	287	6.0%
09	386	8.2%	315	6.9%	316	6.9%	321	6.6%	384	6.9%	390	8.2%	341	8.0%	346	7.1%	366	8.1%	352	7.4%
10	370	7.9%	320	7.0%	312	6.8%	314	6.5%	400	7.1%	486	10.2%	429	10.1%	345	7.1%	458	10.2%	379	8.0%
11	354	7.6%	299	6.6%	317	6.9%	346	7.1%	397	7.1%	478	10.1%	436	10.3%	345	7.1%	457	10.2%	378	7.9%
12	327	7.0%	312	6.8%	273	5.9%	334	6.9%	394	7.0%	461	9.7%	436	10.3%	332	6.8%	449	10.0%	367	7.7%
13	325	6.9%	305	6.7%	312	6.8%	318	6.5%	407	7.3%	413	8.7%	437	10.3%	335	6.9%	425	9.5%	362	7.6%
14	323	6.9%	318	7.0%	303	6.6%	345	7.1%	450	8.0%	387	8.2%	381	9.0%	351	7.2%	384	8.5%	361	7.6%
15	427	9.1%	436	9.6%	455	9.9%	459	9.4%	555	9.9%	343	7.2%	360	8.5%	467	9.6%	352	7.8%	432	9.1%
16	424	9.1%	417	9.1%	423	9.2%	461	9.5%	557	9.9%	298	6.3%	269	6.3%	459	9.4%	284	6.3%	406	8.5%
17	390	8.3%	373	8.2%	422	9.2%	426	8.8%	440	7.9%	225	4.8%	213	5.0%	409	8.4%	219	4.9%	352	7.4%
18	202	4.3%	226	5.0%	236	5.1%	262	5.4%	271	4.8%	147	3.1%	132	3.1%	240	4.9%	140	3.1%	210	4.4%
19	96	2.1%	118	2.6%	124	2.7%	130	2.7%	120	2.1%	96	2.0%	137	3.2%	117	2.4%	116	2.6%	117	2.5%
20	73	1.6%	103	2.3%	87	1.9%	102	2.1%	97	1.7%	106	2.2%	79	1.9%	93	1.9%	92	2.1%	93	1.9%
21	57	1.2%	54	1.2%	77	1.7%	74	1.5%	83	1.5%	83	1.8%	43	1.0%	68	1.4%	63	1.4%	67	1.4%
22	29	0.6%	42	0.9%	39	0.8%	51	1.0%	63	1.1%	59	1.3%	25	0.6%	45	0.9%	42	0.9%	44	0.9%
23	20	0.4%	35	0.8%	32	0.7%	40	0.8%	69	1.2%	34	0.7%	20	0.5%	40	0.8%	27	0.6%	36	0.8%
Grand Total	4,680	100.0%	4,561	100.0%	4,598	100.0%	4,861	100.0%	5,595	100.0%	4,742	100.0%	4,245	100.0%	4,877	100.0%	4,493	100.0%	4,762	100.0%

## Weekly Volume Report Graph



### Global Filters

**Start Date**  
01/01/2023

**End Date**  
31/12/2023

**Direction of Travel**  
With Gazzettal

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### Page Filters

**Traffic Class Code**  
00 - All Vehicles

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### Legends (Click to highlight selection)

Public Holiday  
 Non-Public Holiday

**Day Grouping**  
 Weekdays  
 Weekend  
 All

**Important Note:**  
 For the purpose of Weekly Volume reporting only, Start and End dates specified are converted to include a full calendar week's worth of data. That is, Date Start will always result in the data selection starting at the Monday before Date Start and End Date will always result in the data selection ending at the Sunday after End Date.

<b>Road Section Id</b>	<b>Road Section Name</b>	<b>Site Description</b>	<b>District Id</b>	<b>District Name</b>
10M	BRUCE HIGHWAY (TOWNSVILLE - INGHAM)	100m Sth Bluewater Creek Bridge	408	Northern
10M	BRUCE HIGHWAY (TOWNSVILLE - INGHAM)	100m Sth Bluewater Creek Bridge	408	Northern
10M	BRUCE HIGHWAY (TOWNSVILLE - INGHAM)	100m Sth Bluewater Creek Bridge	408	Northern



Site Through Distance	Site Latitude	Site Longitude	Segment Start Latitude	Segment Start Longitude
40.769	-19.1770178	146.5537886	-19.19452201	146.5755108
40.769	-19.1770178	146.5537886	-19.19452201	146.5755108
40.769	-19.1770178	146.5537886	-19.19452201	146.5755108

Segment End Latitude	Segment End Longitude	Site Id	Traffic Year	Segment Start Through Distance
-19.17127177	146.54648	92222	2022	37.813
-19.17127177	146.54648	92222	2022	37.813
-19.17127177	146.54648	92222	2022	37.813

Segment End Through Distance	Segment Start Description	Segment End Description
41.813	Bruce Hway Althuas Creek Bridge	Bruce Hway 500m N Toolakea Beach Rd Int
41.813	Bruce Hway Althuas Creek Bridge	Bruce Hway 500m N Toolakea Beach Rd Int
41.813	Bruce Hway Althuas Creek Bridge	Bruce Hway 500m N Toolakea Beach Rd Int

gazettal Direction	AADT	PC Class 0a	PC Class 0b	PC Class 1a	PC Class 1b	PC Class 1c	PC Class 1d
TB	8196	88.02	11.98	88.02	6.9	2.94	2.14
TA	4070	88.07	11.93	88.07	6.68	2.98	2.27
TG	4126	87.99	12.01	87.99	7.1	2.91	2

PC Class 2a	PC Class 2b	PC Class 2c	PC Class 2d	PC Class 2e	PC Class 2f	PC Class 2g	PC Class 2h
82.66	5.36	5.93	0.74	0.23	0.33	0.54	0.41
83	5.07	5.74	0.7	0.24	0.31	0.49	0.44
82.34	5.65	6.11	0.77	0.22	0.35	0.59	0.39

PC Class 2i	PC Class 2j	PC Class 2k	PC Class 2l	Growth PC 1yr	Growth PC 5yr	Growth PC 10yr
1.66	2.1	0.04	0		-1.97	
1.74	2.23	0.04	0		-2.31	
1.58	1.96	0.04	0		-1.61	

# APPENDICES E

Road Safety Audit Spreadsheet – Developed by  
NCE

## CHECKLIST 6: EXISTING ROADS: ROAD SAFETY AUDIT

Issue	Yes	No	Comment
<b>6.1 Road alignment and cross-section</b>			
<b>6.1.1 Visibility; sight distance</b>			
Is sight distance adequate for the speed of traffic using the route?	X		Very straight, flat area of highway even with worst decel and reaction time there is significantly more than minimum sight distance
Is adequate sight distance provided for intersections and crossings? (for example, pedestrian, cyclist, cattle, railway)	X		Existing road provides adequate site distances for intersections within the assessed area
Is adequate sight distance provided at all private driveways and property entrances?	X		Existing road provides adequate site distances for intersections within the assessed area
<b>6.1.2 Design speed</b>			
Is the horizontal and vertical alignment suitable for the (85th percentile) traffic speed?	X		
If not:			
are warning signs installed?			N.A.
are advisory speed signs installed?			N.A.
Are the posted advisory speeds for curves appropriate?			N.A.
<b>6.1.3 Speed limit/speed zoning</b>			
Is the speed limit compatible with the function, road geometry, land use and sight distance?	X		Rural highway
<b>6.1.4 Overtaking</b>			
Are safe overtaking opportunities provided?	X		Adequate sight-lines for safe overtaking within scope area and passed the scope area also
<b>6.1.5 Readability by drivers</b>			
Is the road free of elements that may cause confusion? For example:			
is alignment of the roadway clearly defined?			
has disused pavement (if any) been removed or treated?			
have old pavement markings been removed properly?			
do tree lines follow the road alignment?			
does the line of street lights or the poles follow the road alignment?			
	X		Well maintained roadway as it is a state controlled roadway. Line marking is clear, RRPM's and ATLM
Is the road free of misleading curves or combinations of curves?	X		
<b>6.1.6 Widths</b>			
<b>Issue</b>	<b>Yes</b>	<b>No</b>	<b>Comment</b>
Are medians and islands of adequate width for the likely users?			N.A.
Are traffic lane and carriageway widths adequate for the traffic volume and mix?	X		
Are bridge widths adequate?	X		
<b>6.1.7 Shoulders</b>			
Are shoulders wide enough to allow drivers to regain control of errant vehicles?	X		



Are shoulders wide enough for broken-down or emergency vehicles to stop safely?	X		
Are shoulders sealed?	X		
Are shoulders traffickable for all vehicles and road users? (i.e. are shoulders in good condition)	X		
Is the transition from road to shoulder safe? (no drop-offs)	X		
<b>6.1.8 Crossfalls</b>			
Is appropriate superelevation provided on curves?			N.A.
Is any adverse crossfall safely managed (for cars, trucks, etc.)?			N.A.
Do crossfalls (carriageway and shoulder) provide adequate drainage?	X		
<b>6.1.9 Batter slopes</b>			
Are batter slopes traversable by cars and trucks that run off the road?	X		
<b>6.1.10 Drains</b>			
Are roadside drains and culvert end walls traversable?	X		
<b>6.2 Auxiliary lanes</b>			
<b>6.2.1 Tapers</b>			
Are starting and finishing tapers located and aligned correctly?			N.A. - no turning lanes in scope area
Is there sufficient sight distance to the end of the auxiliary lane?			N.A.
<b>6.2.2 Shoulders</b>			
Are appropriate shoulder widths provided at merges?			N.A.
Have shoulder widths been maintained beside the auxiliary lane?			N.A.

Issue	Yes	No	Comment
<b>6.2.3 Signs and markings</b>			
Have all signs been installed in accordance with the appropriate guidelines?	X		
Are all signs conspicuous and clear?	X		
Does all linemarking conform with these guidelines?	X		
Is there advance warning of approaching auxiliary lanes?			N.A.
<b>6.2.4 Turning traffic</b>			
Have right turns from the through lane been avoided?		X	In some instances right turns from through lanes may occur for existing driveways
Is there advance warning of turn lanes?			N.A.
<b>6.3 Intersections</b>			
<b>6.3.1 Location</b>			
Are all intersections located safely with respect to the horizontal and vertical alignment?			N.A.
Where intersections occur at the end of high-speed environments (for example, at approaches to towns), are there traffic control devices to alert drivers?			N.A.
<b>6.3.2 Visibility; sight distance</b>			

Is the presence of each intersection obvious to all road users?			N.A.
Is the sight distance appropriate for all movements and all road users?	X		
Is there stopping sight distance to the rear of any queue or slow-moving turning vehicles?	X		
Has the appropriate sight distance been provided for entering and leaving vehicles?	X		
<b>6.3.3 Controls and delineation</b>			
Are pavement markings and intersection control signs satisfactory?			N.A.
Are vehicle paths through intersections delineated satisfactorily?			N.A.
Are all lanes properly marked (including any arrows)?	X		
<b>6.3.4 Layout</b>			
Are all conflict points between vehicles safely managed?	X		
Is the intersection layout obvious to all road users?			N.A.

Issue	Yes	No	Comment
Is the alignment of kerbs obvious and appropriate?			N.A. - no kerbs rural setting
Is the alignment of traffic islands obvious and appropriate?			N.A.
Is the alignment of medians obvious and appropriate?			N.A.
Can all likely vehicle types be accommodated?	X		
Are merge tapers long enough?			N.A.
Is the intersection free of capacity problems that may produce safety problems?			N.A.
<b>6.3.5 Miscellaneous</b>			
Particularly at rural sites, are all intersections free of loose gravel?			N.A.
<b>6.4 Signs and lighting</b>			
<b>6.4.1 Lighting</b>			
Has lighting been adequately provided where required?			N.A. - no lighting for rural highway
Is the road free of features that interrupt illumination? (for example, trees or overbridges)			N.A.
Is the road free of lighting poles that are a fixed roadside hazard?			N.A.
Are frangible or slip-base poles provided?			N.A.
Ambient lighting: if it creates special lighting needs, have these been satisfied?			N.A.
Is the lighting scheme free of confusing or misleading effects on signals or signs?			N.A.
Is the scheme free of any lighting black patches?			N.A.
<b>6.4.2 General signs issues</b>			
Are all necessary regulatory, warning and direction signs in place? Are they conspicuous and clear?	X		
Are the correct signs used for each situation, and is each sign necessary?	X		
Are all signs effective for all likely conditions? (for example, day, night, rain, fog, rising or setting sun,	X		

oncoming headlights, poor lighting)			
If restrictions apply for any class of vehicle, are drivers adequately advised?			N.A.
If restrictions apply for any class of vehicle, are drivers advised of alternative routes?			N.A.

Issue	Yes	No	Comment
<b>6.4.3 Sign legibility</b>			
In daylight and darkness, are signs satisfactory regarding visibility and: clarity of message? readability/legibility at the required distance?	X		
Is sign retroreflectivity or illumination satisfactory?	X		
Are signs able to be seen without being hidden by their background or adjacent distractions?	X		
Is driver confusion due to too many signs avoided?	X		
<b>6.4.4 Sign supports</b>			
Are sign supports out of the clear zone?	X		
If not, are they: frangible? shielded by barriers (for example, guard fence, crash cushions)?			N.A.
<b>6.5 Markings and delineation</b>			
<b>6.5.1 General issues</b>			
Is the line marking and delineation: appropriate for the function of the road? consistent along the route? likely to be effective under all expected conditions? (day, night, wet, dry, fog, rising and setting sun position, oncoming headlights, etc.)	X		
Is the pavement free of excessive markings? (for example, unnecessary turn arrows, unnecessary barrier lines, etc.)	X		
<b>6.5.2 Centrelines, edgelines, lane lines</b>			
Are centrelines, edgelines, lane lines provided? If not, do drivers have adequate guidance?	X		All line marking as required
Have RRPMS been installed where required?	X		RRPMS installed along centrelines and edgelines
If RRPMS are installed, are they correctly placed, correct colours, in good condition?	X		RRPMS are ageing but currently adequate
Are profiled (audible) edgelines provided where required?	X		
Is the linemarking in good condition?	X		
Is there sufficient contrast between linemarking and pavement colour?	X		

Issue	Yes	No	Comment
<b>6.5.3 Guideposts and reflectors</b>			
Are guideposts appropriately installed?	X		Installed at all culvert headwalls etc.
Are delineators clearly visible?	X		

Are the correct colours used for the delineators?	X		
Are the delineators on guard fences, crash barriers and bridge railings consistent with those on guideposts?	X		
<b>6.5.4 Curve warning and delineation</b>			
Are curve warning signs and advisory speed signs installed where required?			N.A. - no curves in scope area
Are advisory speed signs consistent along the route?			N.A.
Are the signs correctly located in relation to the curve? (i.e. not too far in advance)			N.A.
Are the signs large enough?			N.A.
Are chevron alignment markers (CAMs) installed where required?			N.A.
Is the positioning of CAMs satisfactory to provide guidance around the curve?			N.A.
Are the CAMs the correct size?			N.A.
Are CAMs confined to curves? (not used to delineate islands, etc)			N.A.
<b>6.6 Crash barriers and clear zones</b>			
<b>6.6.1 Clear zones</b>			
Is the clear zone width traversable? (i.e. drivable)	X		
Is the clear zone width free of rigid fixtures? (if not, can all of these rigid fixtures be removed or shielded?)	X		
Are all power poles, trees, etc., at a safe distance from the traffic paths?	X		Where not they are shielded by crash barriers
Is the appropriate treatment or protection provided for any objects within the clear zone?	X		
<b>6.6.2 Crash barriers</b>			
Are crash barriers installed where necessary?	X		
Are crash barriers installed at all necessary locations in accordance with the relevant guidelines?	X		
Are the barrier systems suitable for the purpose?	X		
Are the crash barriers correctly installed?	X		
Is the length of crash barrier at each installation adequate?	X		

Issue	Yes	No	Comment
Is the guard fence attached correctly to bridge railings?			N.A.
Is there sufficient width between the barrier and the edge line to contain a broken-down vehicle?	X		
<b>6.6.3 End treatments</b>			
Are end treatments constructed correctly?			N.A.
Is there a safe run-off area behind breakaway terminals?			N.A.
<b>6.6.4 Fences</b>			
Are pedestrian fences frangible?			N.A.
Are vehicles safe from being speared by horizontal fence railings located within the clear zone?	X		
<b>6.6.5 Visibility of barriers and fences</b>			
Is there adequate delineation and visibility of crash barriers and fences at night?	X		

## 6.7 Traffic signals

### 6.7.1 Operations

Are traffic signals operating correctly?			N.A.
Are the number, location and type of signal displays appropriate for the traffic mix and traffic environment?			N.A.
Where necessary, are there provisions for visually impaired pedestrians? (for example, audio-tactile push buttons, tactile markings)			N.A.
Where necessary, are there provisions for elderly or disabled pedestrians? (for example, extended green or clearance phase)			N.A.
Is the controller located in a safe position? (i.e. where it is unlikely to be hit, but maintenance access is safe)			N.A.
Is the condition (especially skid resistance) of the road surface on the approaches satisfactory?			N.A.
<b>6.7.2 Visibility</b>			
Are traffic signals clearly visible to approaching motorists?			N.A.
Is there adequate stopping sight distance to the ends of possible vehicle queues?			N.A.
Have any visibility problems that could be caused by the rising or setting sun been addressed?			N.A.
Are signal displays shielded so that they can be seen only by the motorists for whom they are intended?			N.A.

Issue	Yes	No	Comment
Where signal displays are not visible from an adequate distance, are signal warning signs and/or flashing lights installed?			N.A.
Where signals are mounted high for visibility over crests, is there adequate stopping sight distance to the ends of traffic queues?			N.A.
Is the primary signal free from obstructions on the nearside footway to approaching drivers? (trees, light poles, signs, bus stops, etc.)			N.A.
<b>6.8 Pedestrians and cyclists</b>			
<b>6.8.1 General issues</b>			
Are there appropriate travel paths and crossing points for pedestrians and cyclists?		X	Rural highway application
Is a safety fence installed where necessary to guide pedestrians and cyclists to crossings or overpasses?			N.A.
Is a safety barrier installed where necessary to separate vehicle, pedestrian and cyclist flows?			N.A.
Are pedestrian and bicycle facilities suitable for night use?		X	Rural highway application
<b>6.8.2 Pedestrians</b>			
Is there adequate separation distance between vehicular traffic and pedestrians on footways?			N.A. - Rural highway
Is there an adequate number of pedestrian crossings along the route?			N.A.
At crossing points is fencing oriented so pedestrians face oncoming traffic?			N.A.

Is there adequate provision for the elderly, the disabled, children, wheelchairs and baby carriages? (for example, holding rails, kerb and median crossings, ramps)			N.A.
Are adequate hand rails provided where necessary? (for example, on bridges, ramps)			N.A.
Is signing about pedestrians near schools adequate and effective?			N.A.
Is signing about pedestrians near any hospital adequate and effective?			N.A.
Is the distance from the stop line to a cross walk sufficient for truck drivers to see pedestrians?			N.A.

Issue	Yes	No	Comment
<b>6.8.3 Cyclists</b>			
Is the pavement width adequate for the number of cyclists using the route?	X		
Is the bicycle route continuous? (i.e. free of squeeze points or gaps)	X		
Are drainage pit grates bicycle safe?			N.A.
<b>6.8.4 Public transport</b>			
Are bus stops safely located with adequate visibility and clearance to the traffic lane?			N.A.
Are bus stops in rural areas signposted in advance?			N.A.
Are shelters and seats located safely to ensure that sight lines are not impeded? Is clearance to the road adequate?			N.A.
Is the height and shape of the kerb at bus stops suitable for pedestrians and bus drivers?			N.A.
<b>6.9 Bridges and culverts</b>			
<b>6.9.1 Design features</b>			
Are bridges and culverts the full formation width?	X		
Are bridge and culvert carriageway widths consistent with approach conditions?	X		
Is the approach alignment compatible with the 85th percentile travel speed?	X		
Have warning signs been erected if either of the above two conditions (i.e. width and speed) are not met?			N.A.
<b>6.9.2 Crash barriers</b>			
Are there suitable traffic barriers on bridges and culverts and their approaches to protect errant vehicles?			N.A.
Is the connection between barrier and bridge safe?			N.A.
Is the bridge free of kerbing that would reduce the effectiveness of barriers or rails?			N.A.
<b>6.9.3 Miscellaneous</b>			
Are pedestrian facilities on the bridge appropriate and safe?			N.A.
Is fishing from the bridge prohibited? If not, has provision been made for safe fishing?			N.A.
Does delineation continue over the bridge?			N.A.

Issue	Yes	No	Comment
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<b>6.10 Pavement</b>			
<b>6.10.1 Pavement defects</b>			
Is the condition of the pavement edges satisfactory?	X		
Is the transition from pavement to shoulder free of dangerous edge drop offs?	X		
Is the pavement free of defects (for example, excessive roughness or rutting, potholes, loose material, etc.) that could result in safety problems (for example, loss of steering control)?	X		
<b>6.10.2 Skid resistance</b>			
Does the pavement appear to have adequate skid resistance, particularly on curves, steep grades and approaches to intersections?	X		
Has skid resistance testing been carried out where necessary?	X		
<b>6.10.3 Ponding</b>			
Is the pavement free of areas where ponding or sheet flow of water could contribute to safety problems?	X		
<b>6.10.4 Loose stones/material</b>			
Is the pavement free of loose stones and other material?	X		
<b>6.11 Parking</b>			
<b>6.11.1 General issues</b>			
Are the provisions for, or restrictions on, parking satisfactory in relation to traffic safety?			N.A.
Is the frequency of parking turnover compatible with the safety of the route?			N.A.
Is there sufficient parking for delivery vehicles so that safety problems due to double parking do not occur?			N.A.
Are parking manoeuvres along the route possible without causing safety problems? (for example, angle parking)			N.A.
Is the sight distance at intersections and along the route, unaffected by parked vehicles?			N.A.
<b>6.12 Provision for heavy vehicles</b>			
<b>6.12.1 Design issues</b>			
Are overtaking opportunities available for heavy vehicles where volumes are high?	X		

Issue	Yes	No	Comment
Does the route generally cater for the size of vehicle likely to use it?	X		
Is there adequate manoeuvring room for large vehicles along the route, at intersections, roundabouts, etc.?			N.A.
Is access to rest areas and truck parking areas adequate for the size of vehicle expected? (consider acceleration, deceleration, shoulder widths, etc.)			N.A.
<b>6.12.2 Pavement/shoulder quality</b>			
Are shoulders sealed at bends to provide additional pavement for long vehicles?			N.A.
Is the pavement width adequate for heavy vehicles?	X		
In general, is the pavement quality sufficient for the safe travel of heavy and oversized vehicles?	X		

On truck routes, are reflective devices appropriate for truck drivers' eye heights?	X		
<b>6.13 Floodways and causeways</b>			N.A.
<b>6.13.1 Ponding, flooding</b>			
Are all sections of the route free from ponding or flow across the road during wet weather?			N.A.
If there is ponding or flow across the road during wet weather, is there appropriate signposting?			N.A.
Are floodways and causeways correctly signposted?			N.A.
<b>6.13.2 Safety of devices</b>			
Are all culverts or drainage structures located outside the clear roadside recovery area?			N.A.
If not, are they shielded from the possibility of vehicle collision?			N.A.
<b>6.14 Miscellaneous</b>			
<b>6.14.1 Landscaping</b>			
Is landscaping in accordance with guidelines? (for example, clearances, sight distance)			N.A.
Will existing clearances and sight distances be maintained following future plant growth?	X		Clear zones are routinely cleared by DTMR
Does the landscaping at roundabouts avoid visibility problems?			N.A.

Issue	Yes	No	Comment
<b>6.14.2 Temporary works</b>			
Are all locations free of construction or maintenance equipment that is no longer required?	X		
Are all locations free of signs or temporary traffic control devices that are no longer required?	X		
<b>6.14.3 Headlight glare</b>			
Have any problems that could be caused by headlight glare been addressed? (for example, a two-way service road close to main traffic lanes, the use of glare fencing or screening)			N.A.
<b>6.14.4 Roadside activities</b>			
Are the road boundaries free of any activities that are likely to distract drivers?	X		
Are all advertising signs installed so that they do not constitute a hazard?			N.A.
<b>6.14.5 Errant vehicles</b>			
Is the roadside furniture on the verges and footways free of damage from errant vehicles that could indicate a possible problem, hazard or conflict at the site?	X		
<b>6.14.6 Other safety issues</b>			
Is the embankment stability safe?	X		
Is the route free of unsafe overhanging branches?	X		
Is the route free of visibility obstructions caused by long grass?	X		
Are any high-wind areas safely dealt with?			N.A.
If back-to-back median kerbing is used is it: adequately delineated?			



obvious where it starts?			N.A.
obvious at intersections?			
unlikely to be a hazard to pedestrians?			
<b>6.14.7 Rest areas</b>			
Is the location of rest areas and truck parking areas along the route appropriate?			N.A.
Is there adequate sight distance to the exit and entry points from rest areas and truck parking areas at all times of the day?			N.A.

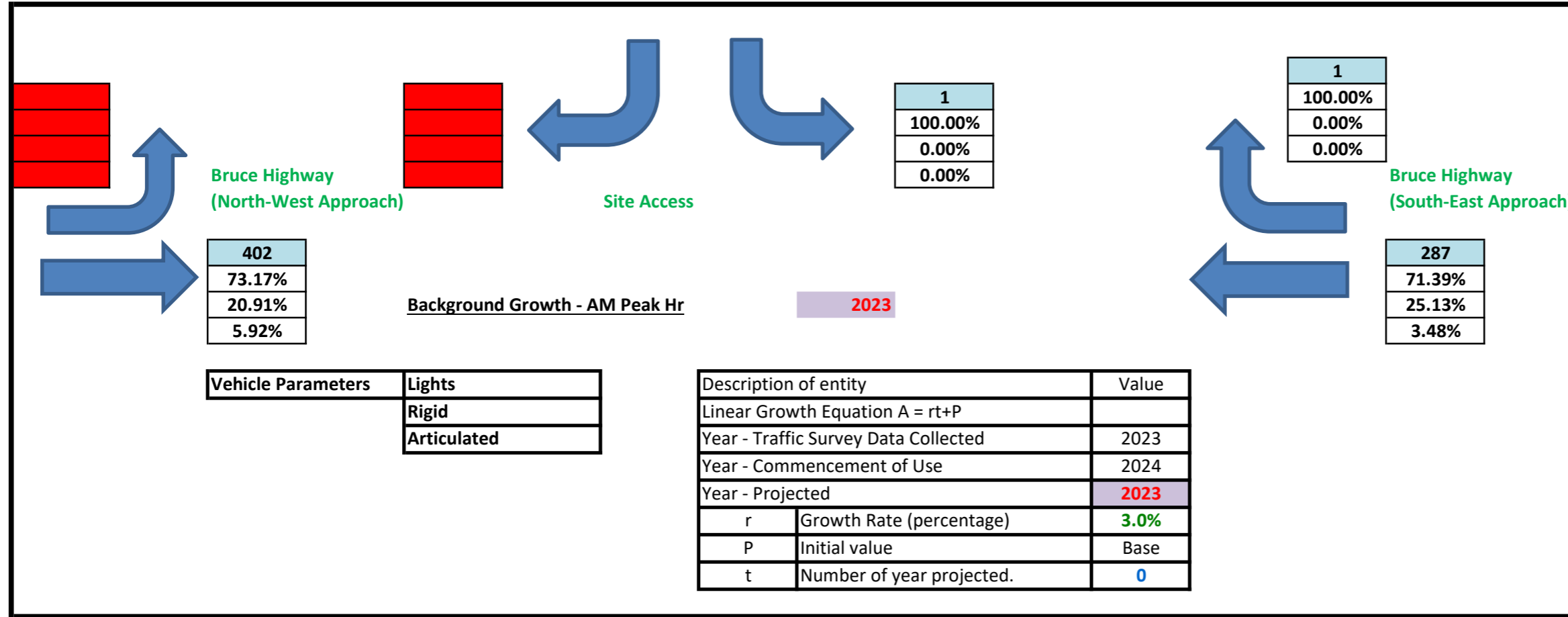
Issue	Yes	No	Comment
<b>6.14.8 Animals</b>			
Is the route free from large numbers of animals? (for example, cattle, sheep, kangaroos, koalas, wombats, etc.)		X	Rural highway always has opportunity for large number of wild animals such as kangaroos and roadkill is visible.
If not, is it protected by animal-proof fencing?		X	Generally, acceptable given animal proof fencing over an entire highway is not feasible.
<b>6.14.9 Safety aspects for heavy vehicles not already covered</b>			
Have all other matters which may have a bearing on safety for heavy vehicles been addressed?	X		

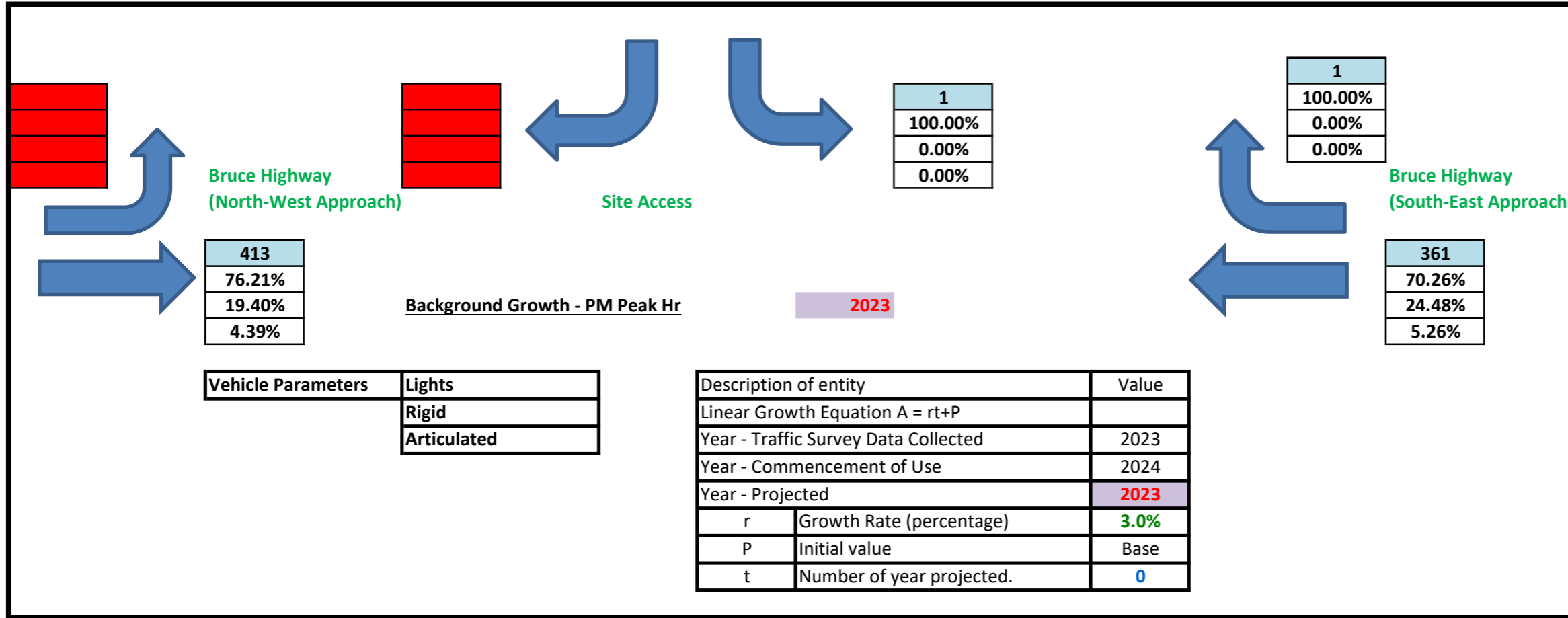
# APPENDICES F

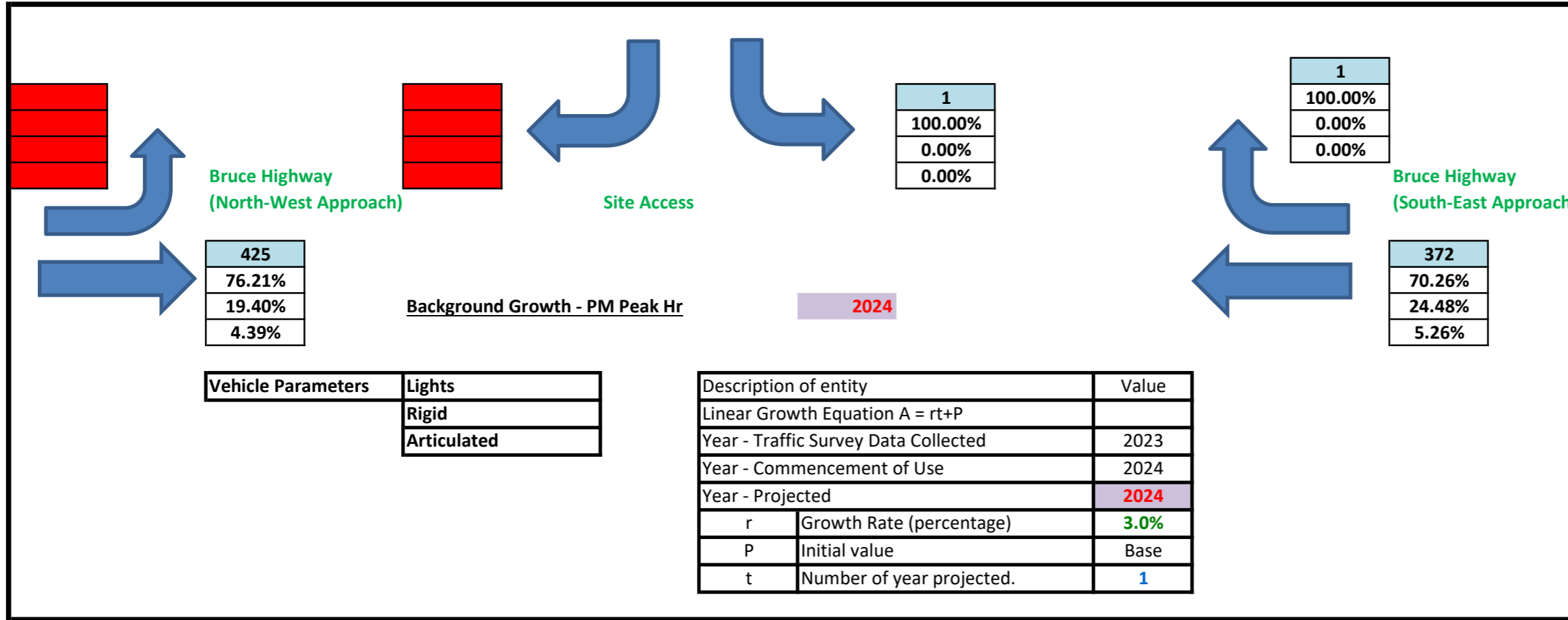
Traffic Generation Calculations and Intersection  
Warrants Spreadsheets – Developed by NCE

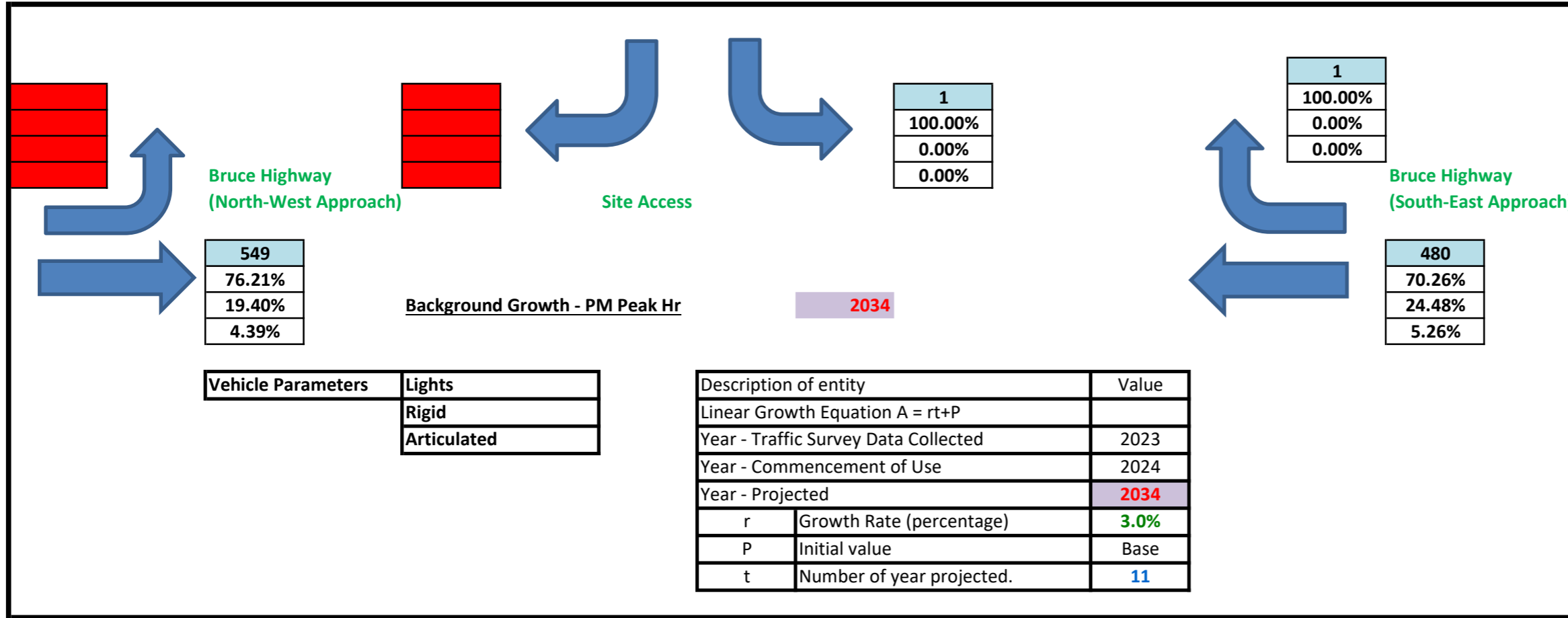
Project Data

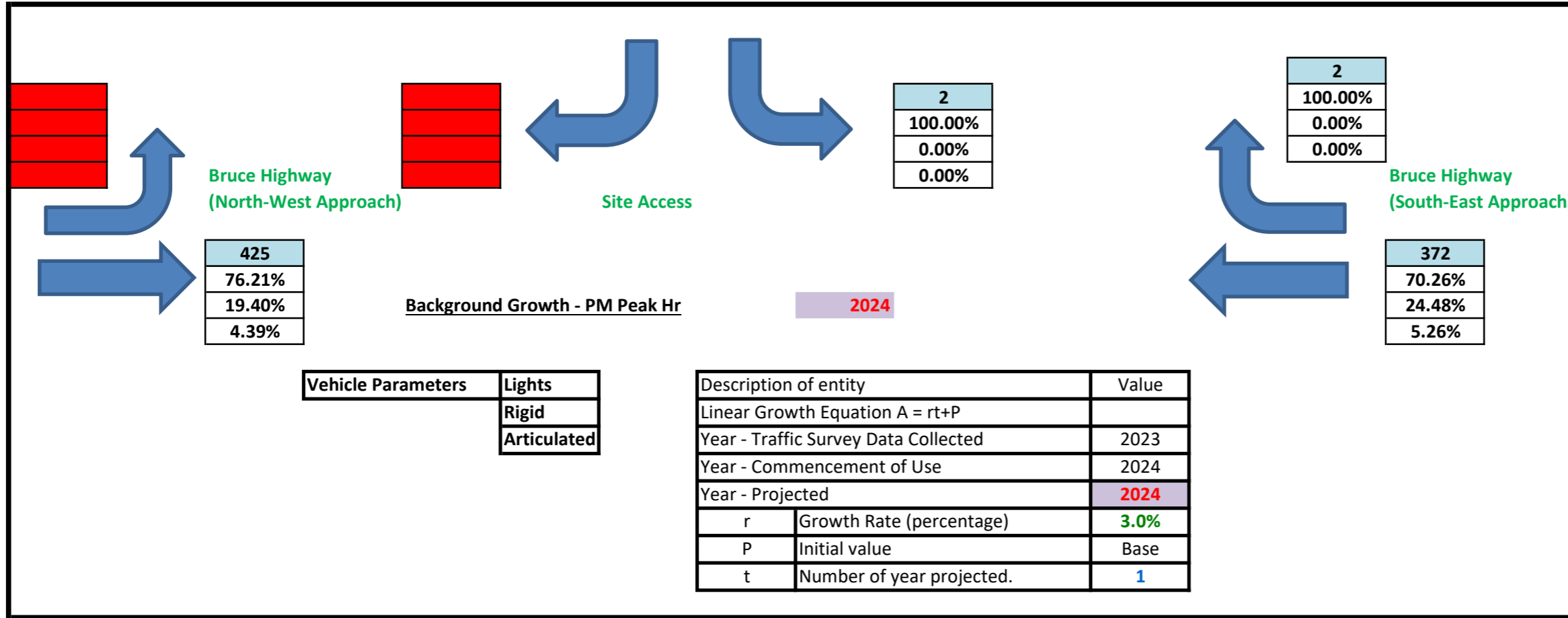
Northern Consulting Engineers Project Number	MJ2520-A
Project Description	41650 Bruce Highway
Construction Commencement Year	-
Commencement of Use Year	2024
Projected design horizon	2034
Figure 2.27 (Left Approach)	To Bluewater
Figure 2.27 (Right Approach)	To Townsville
Figure 2.27 (Bottom Approach)	Development Site Access
Peak Hour Factor (12% Urban / 16% Rural)	-
Existing Peak Hour Traffic on Development Access Rd (veh/hr)	-



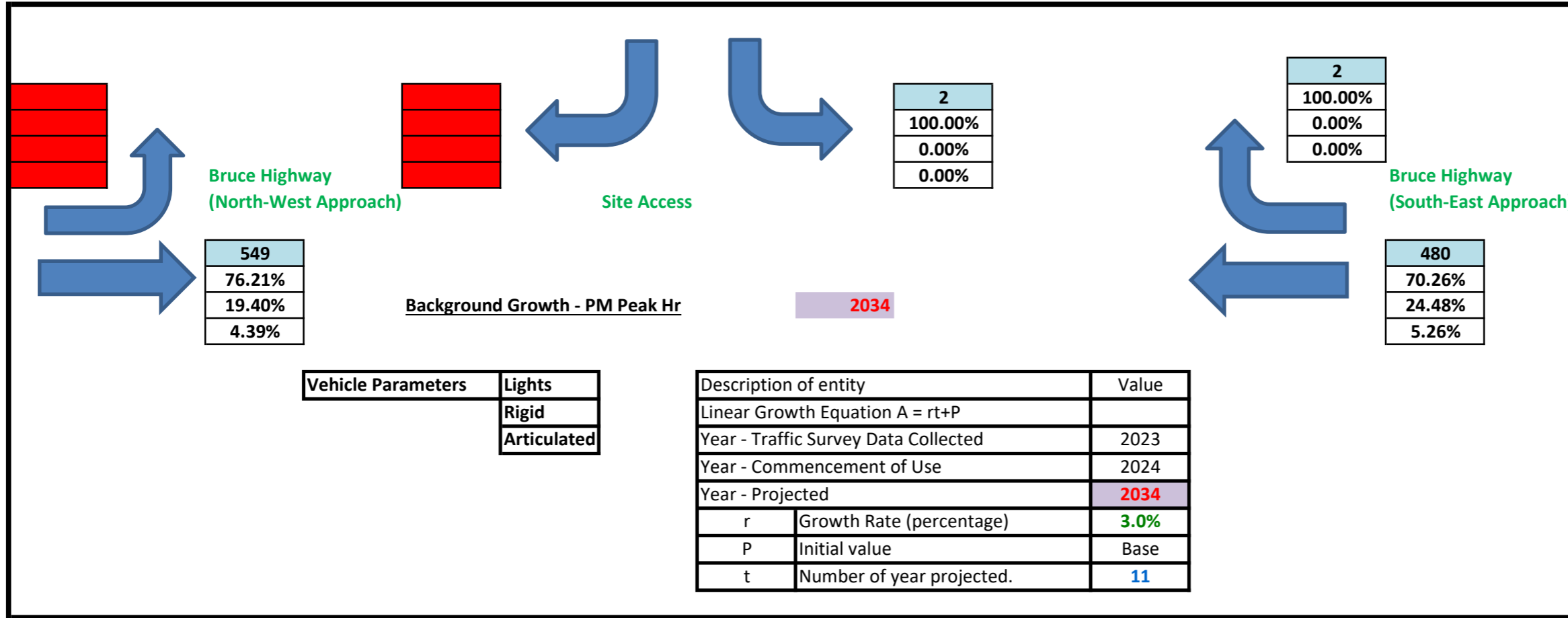




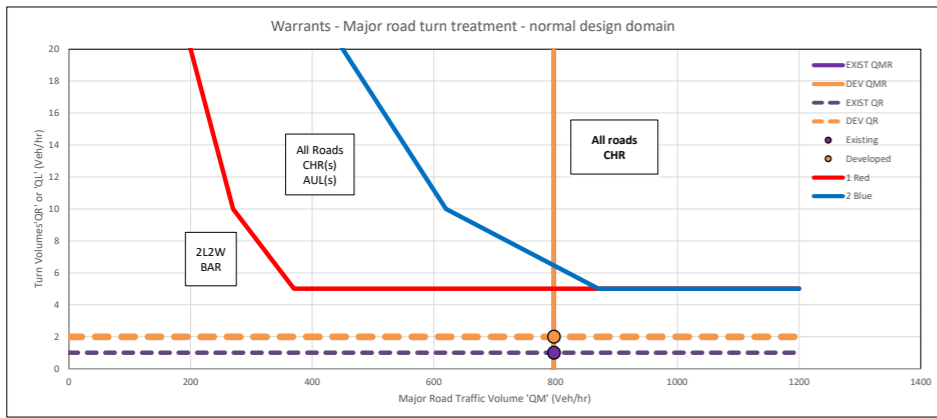
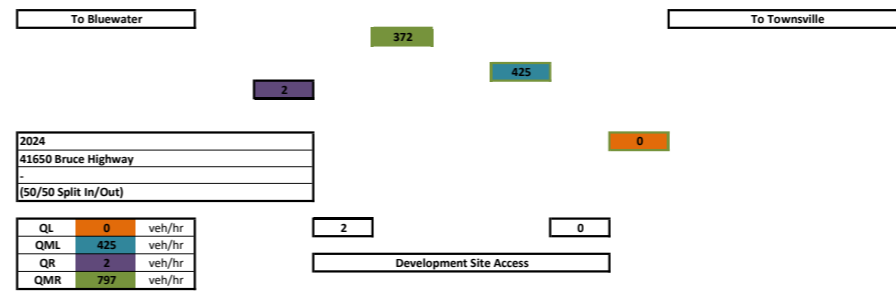
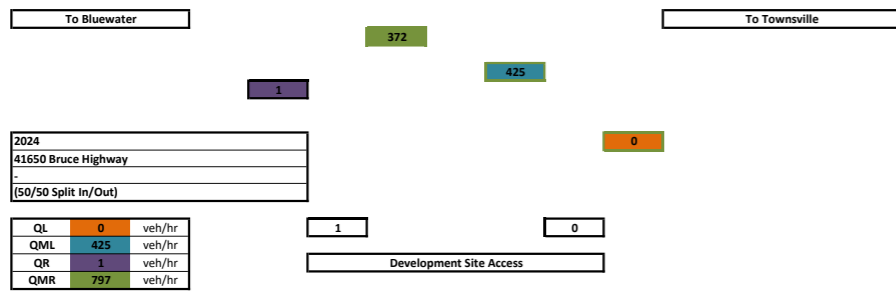






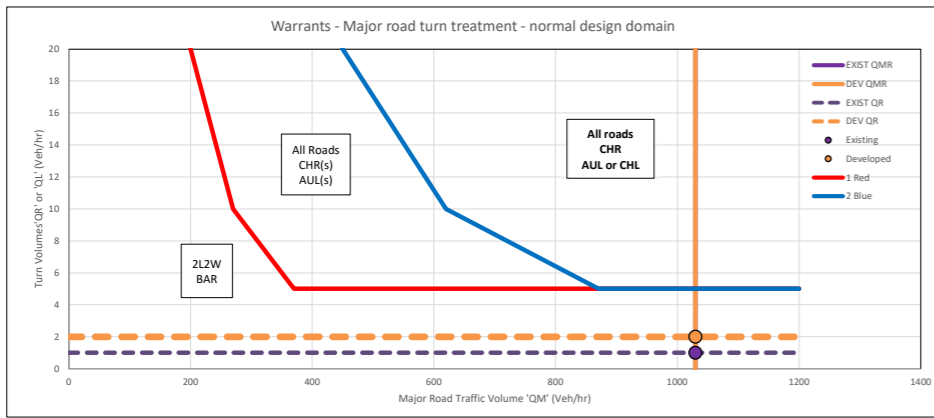
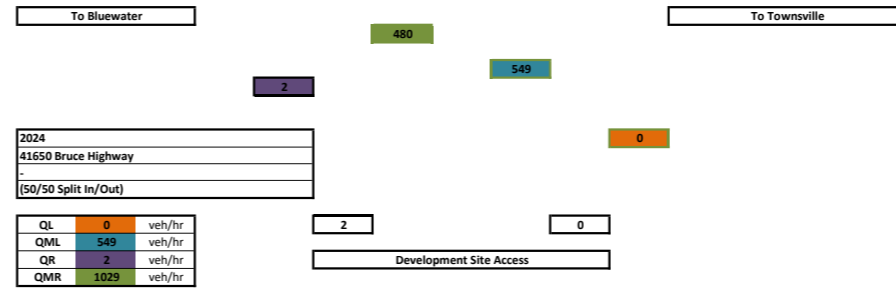
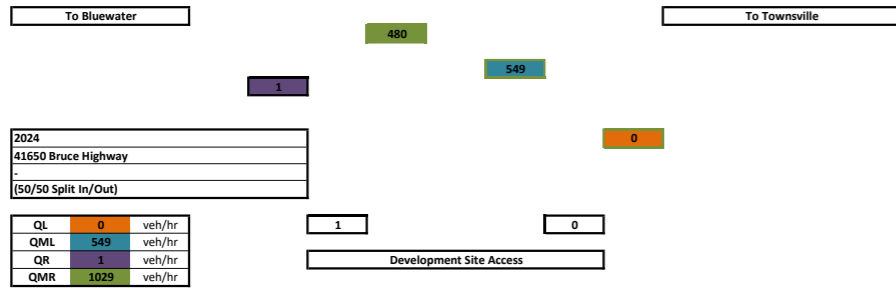


**PM PEAK**



1 Red	2 Blue	EXIST QMR	EXIST QR	DEV QMR	DEV QR	Turn Vol	Major Rd Vol
105	240	797	1	797	2	80	0
112	255	797	1	797	2	70	100
122	275	797	1	797	2	60	200
131	300	797	1	797	2	50	300
145	330	797	1	797	2	40	400
163	380	797	1	797	2	30	500
200	450	797	1	797	2	20	600
270	620	797	1	797	2	10	700
370	870	797	1	797	2	5	800
1200	1200	797	1	797	2	5	1200
		797		797		0	

**PM PEAK**



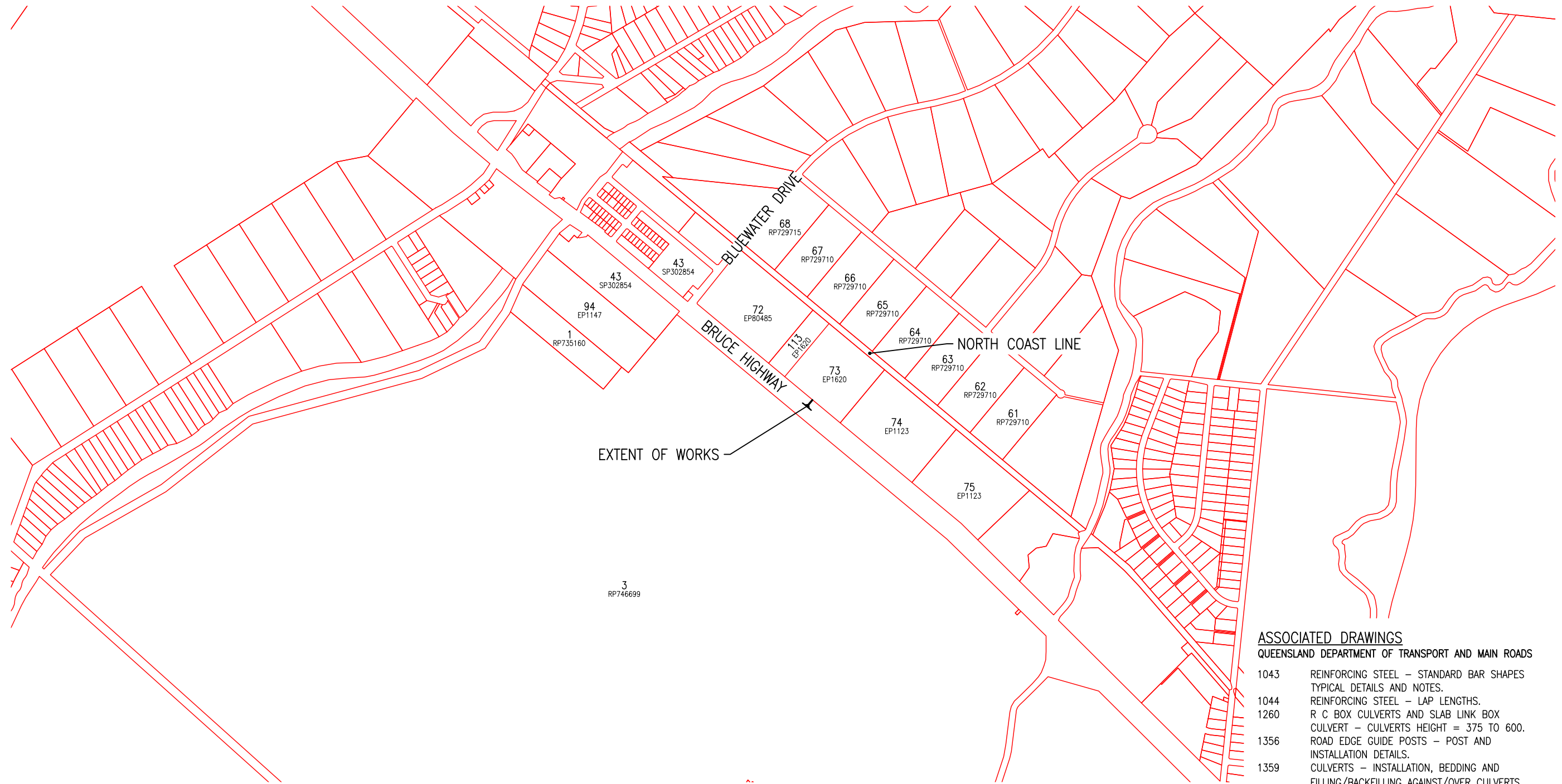
1 Red	2 Blue	EXIST QMR	EXIST QR	DEV QMR	DEV QR	Turn Vol	Major Rd Vol
105	240	1029	1	1029	2	80	0
112	255	1029	1	1029	2	70	100
122	275	1029	1	1029	2	60	200
131	300	1029	1	1029	2	50	300
145	330	1029	1	1029	2	40	400
163	380	1029	1	1029	2	30	500
200	450	1029	1	1029	2	20	600
270	620	1029	1	1029	2	10	700
370	870	1029	1	1029	2	5	800
1200	1200	1029	1	1029	2	5	1200
		1029		1029		0	

# APPENDICES G

Detailed Design Property Access Plans –  
Developed by NCE – Dated 08/02/2024

# BRUCE HIGHWAY

## PROPERTY ACCESS DETAILED DESIGN



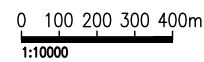
**ASSOCIATED DRAWINGS**  
QUEENSLAND DEPARTMENT OF TRANSPORT AND MAIN ROADS

1043	REINFORCING STEEL – STANDARD BAR SHAPES TYPICAL DETAILS AND NOTES.
1044	REINFORCING STEEL – LAP LENGTHS.
1260	R C BOX CULVERTS AND SLAB LINK BOX CULVERT – CULVERTS HEIGHT = 375 TO 600.
1356	ROAD EDGE GUIDE POSTS – POST AND INSTALLATION DETAILS.
1359	CULVERTS – INSTALLATION, BEDDING AND FILLING/BACKFILLING AGAINST/OVER CULVERTS.
1807	PROPERTY ACCESS– RURAL PROPERTY ACCESS.

DRAWING INDEX	
DRAWING NUMBER	DESCRIPTION
MJ2520-MR01	LOCALITY, LAYOUT PLAN AND DRAWING INDEX
MJ2520-MR02	ACCESS LAYOUT PLAN, SECTION & SETOUT DETAILS
MJ2520-MR03	ACCESS LAYOUT SETOUT PLAN
MJ2520-MR04	ACCESS EROSION & SEDIMENT CONTROL LAYOUT PLAN & DETAILS
MJ2520-MRV01	ACCESS VEHICLE MOVEMENT – SERVICE VEHICLE (8.8m)
MJ2520-MRV02	ACCESS VEHICLE MOVEMENT – SERVICE VEHICLE (8.8m)
MJ2520-MRV03	ACCESS VEHICLE MOVEMENT – B99 VEHICLE
MJ2520-MRV04	ACCESS VEHICLE MOVEMENT – B99 VEHICLE

### LOCALITY & LAYOUT PLAN

SCALE 1:10000 @ A1



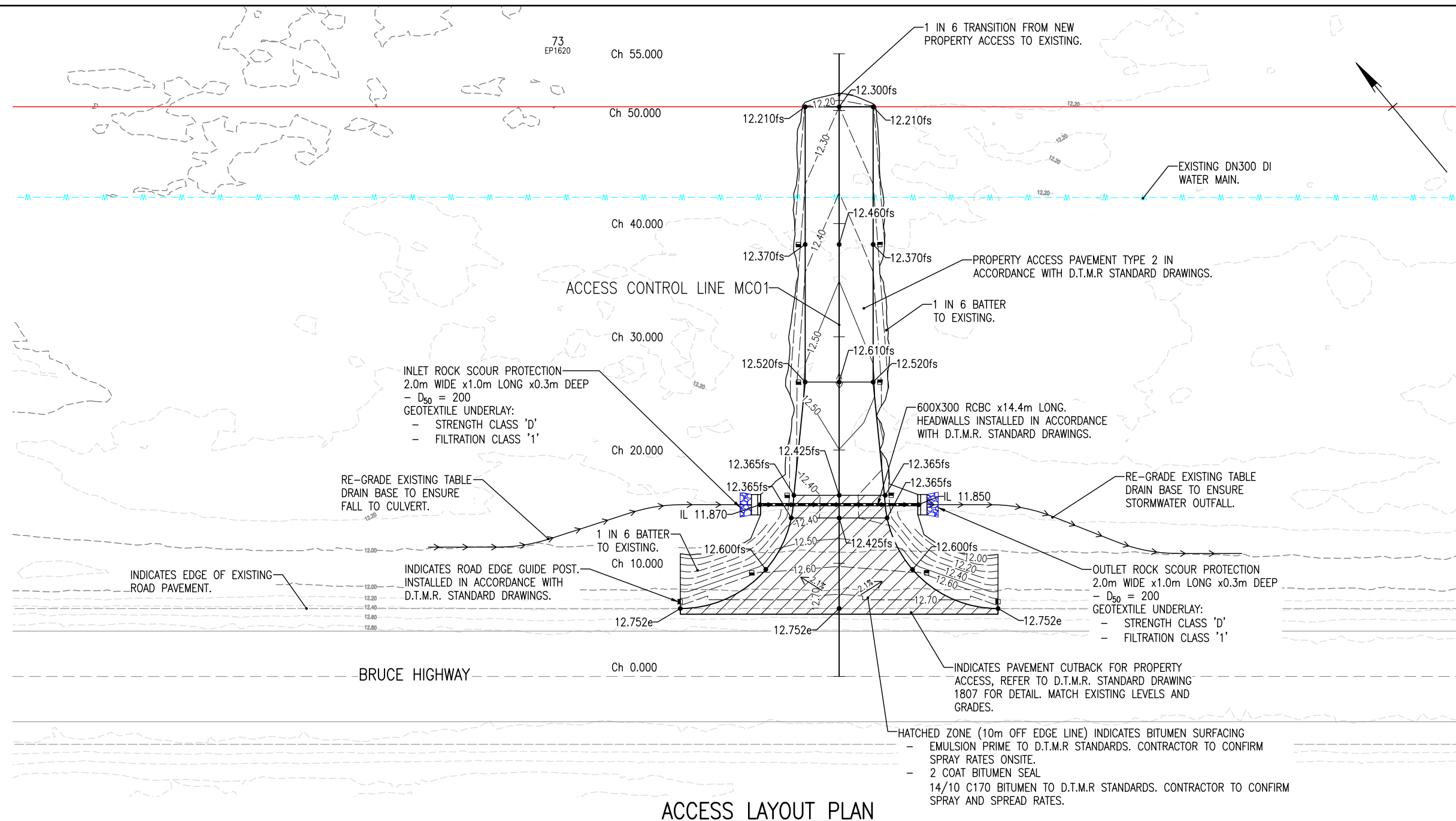
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DEREK ROBERT CONLEY SAW – RPEQ No. 7363  
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P2 P1	PRELIMINARY – NOT FOR CONSTRUCTION – TMR RFI RESPONSE. PRELIMINARY – NOT FOR CONSTRUCTION – ISSUED FOR CLIENT APPROVAL.	20/03/2024 08/02/2024
Issue	Description	Date
Drawn ML	In Association With <b>ROGGERO ENTERPRISES</b>	LOCALITY, LAYOUT PLAN AND DRAWING INDEX
Date 08/02/2024	Checked DC	Drawing Number <b>MJ2520/MR01</b>
Approved DS	Copyright © RURAL PROPERTY ACCESS 41634 BRUCE HIGHWAY BLUEWATER (Lot 73 on EP1620)	Issue P2

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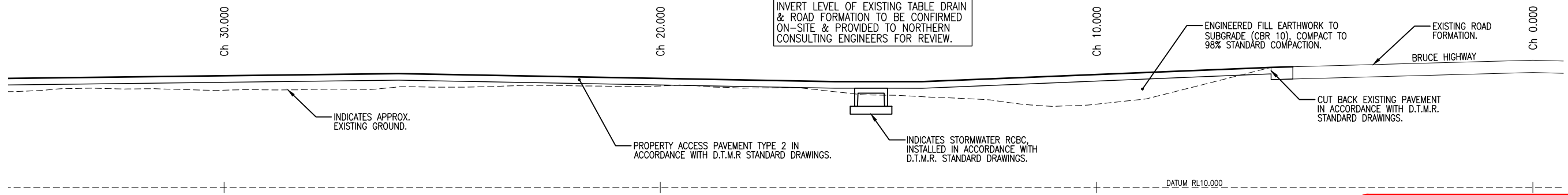
**LEGEND**

FINISHED SURFACE LEVELS	6.600fs
EXISTING SURFACE LEVELS	6.500e
DESIGN MAJOR CONTOUR	6.00
DESIGN MINOR CONTOUR	6.25
STORMWATER CULVERT	
EXISTING CADASTRAL BOUNDARY	
EXISTING WATER MAIN	
EXISTING MAJOR CONTOUR	6.00
EXISTING MINOR CONTOUR	6.25
EXISTING TOP OF BATTER	
EXISTING BOTTOM OF BATTER	

- NOTES:-**
- NEW PROPERTY ACCESS IS TO BE A D.T.M.R. RURAL PROPERTY ACCESS, TYPE A SPECIAL. (SERVICE VEHICLE)
  - FOR PROPERTY ACCESS (TYPE A) CONSTRUCTION DETAILS REFER TO D.T.M.R. STANDARD DRAWING 1807
  - FOR PROPERTY ACCESS PAVEMENT DETAILS REFER TO D.T.M.R. STANDARD DRAWING 1807. PROPERTY ACCESS IS TO BE FULLY BITUMEN SEALED.
  - ALL ROAD SIGNAGE IS TO COMPLY WITH D.T.M.R. SPECIFICATION AND AS1742 - MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)
  - GUIDE POSTS TO BE INSTALLED IN ACCORDANCE WITH D.T.M.R. STANDARD DRAWINGS, SPECIFICATION AND AS1742 - MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)
  - REINSTATE ANY REMOVED OR DAMAGED ROAD PAVEMENT LINEMARKING IN ACCORDANCE WITH D.T.M.R. STANDARD DRAWINGS, SPECIFICATION AND AS1742 - MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)
  - THE LOCATION OF UTILITY SERVICES AS SHOWN ON THESE PLANS HAS BEEN DETERMINED FROM INFORMATION SUPPLIED BY THE SERVICES AUTHORITIES. THE SERVICES SHOWN ARE PROVIDED FOR INFORMATION ONLY AND NO RESPONSIBILITY IS TAKEN FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SUPPLIED.
  - THE CONTRACTOR SHALL CHECK ALL UTILITY SERVICES VIA POTHOLING, ON SITE AND THE UTILITY SERVICES THAT CONFLICT WITH THE ROADWORKS ARE TO BE RELOCATED AND/OR PROTECTED BY THE SERVICE AUTHORITIES PRIOR TO THE COMMENCEMENT OF ROADWORKS. THE CONTRACTOR IS TO CONFIRM ON SITE WITH THE SERVICE AUTHORITIES WHETHER THEIR LOCATION AND/OR PROTECTION WORKS HAVE BEEN COMPLETED.
  - NO WORKS ARE TO BE CARRIED OUT OVER UTILITY SERVICES AND WITHIN 5.0m OF TELSTRA CABLES WITHOUT PRIOR NOTIFICATION TO THE SERVICE AUTHORITY.
  - TOPSOIL TO BE RE-SPREAD 100mm OVER ALL DISTURBED AREAS.

**ACCESS LAYOUT PLAN**  
SCALE 1:200 @ A1

**NOTE:-**  
INVERT LEVEL OF EXISTING TABLE DRAIN & ROAD FORMATION TO BE CONFIRMED ON-SITE & PROVIDED TO NORTHERN CONSULTING ENGINEERS FOR REVIEW.



**ACCESS SECTION**  
CONTROL LINE MC01  
SCALE 1:50 @ A1

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CONFIRM SIZE, LOCATION & ELEVATION OF ALL EXISTING SERVICES ON SITE BEFORE CONSTRUCTION COMMENCES. ADVISE NORTHERN CONSULTING ENGINEERS OF ANY DISCREPANCIES BETWEEN DRAWINGS & SITE

Full Size (A1)  
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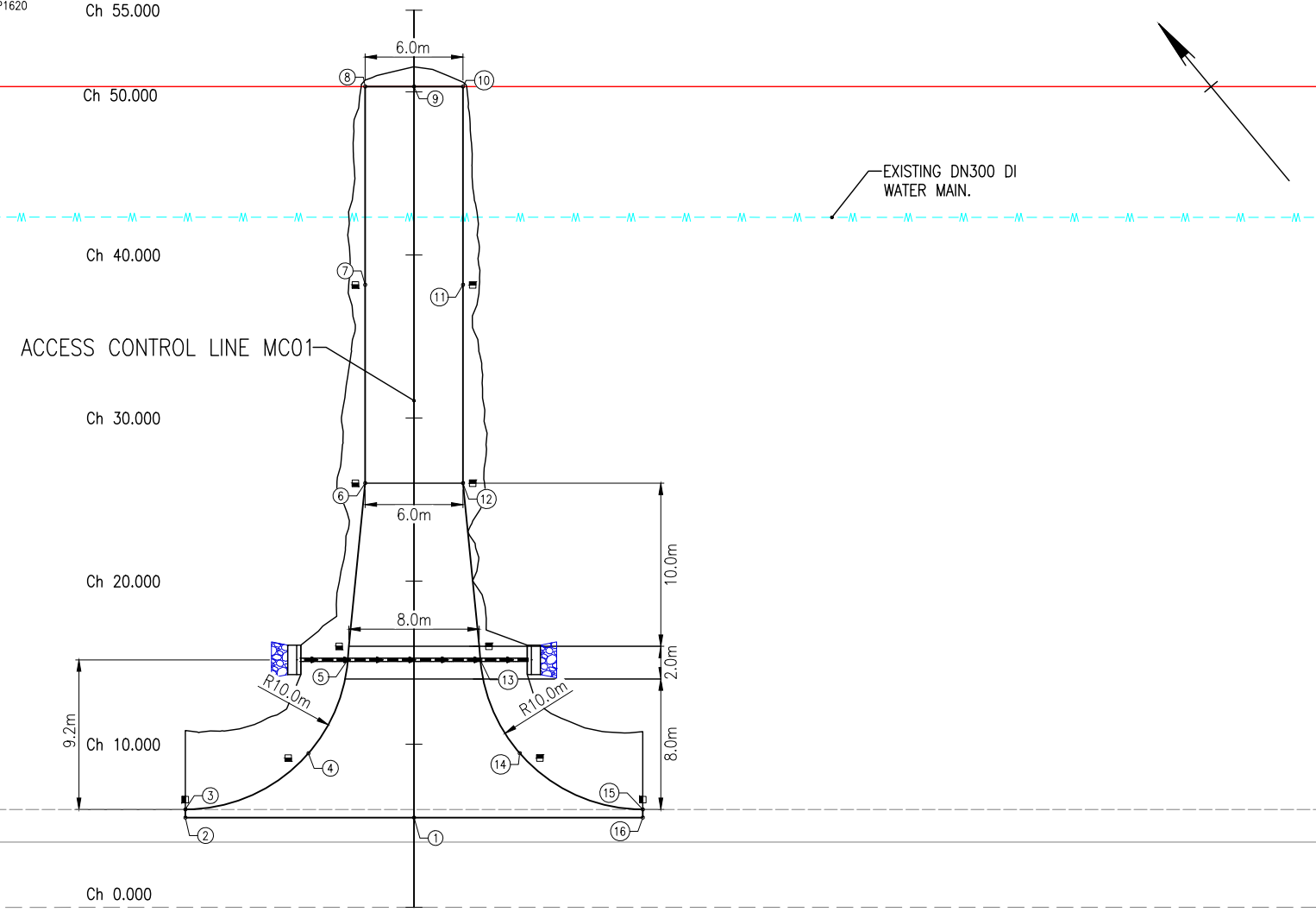
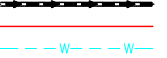
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Issue	Description	Date
Drawn	In Association With	
ML	<b>ROGGERO ENTERPRISES</b>	
Date		
08/02/2024		
Checked		
DC	<b>RURAL PROPERTY ACCESS</b>	
Approved	<b>41634 BRUCE HIGHWAY</b>	
DS	<b>BLUEWATER</b>	
COPYRIGHT	<b>(Lot 73 on EP1620)</b>	
	Drawing Number	Issue
	<b>MJ2520/MR02</b>	<b>P2</b>

Point #	Easting	Northing
1	454176.252	7878640.972
2	454165.461	7878649.946
3	454165.780	7878650.330
4	454173.790	7878648.151
5	454179.306	7878651.009
6	454187.053	7878658.653
7	454194.826	7878668.000
8	454202.599	7878677.347
9	454204.905	7878675.429
10	454207.212	7878673.511
11	454199.439	7878664.164
12	454191.666	7878654.816
13	454185.563	7878645.805
14	454183.758	7878639.861
15	454187.363	7878632.383
16	454187.043	7878631.999

73  
EP1620 Ch 55.000

**LEGEND**  
 STORMWATER CULVERT  
 EXISTING CADASTRAL BOUNDARY  
 EXISTING WATER MAIN



INDICATES EDGE OF EXISTING ROAD PAVEMENT.

**CONTROL LINE SETOUT - MC01**

PT	CHAINAGE	EASTING	NORTHING	BEARING	DEP.SEG	DEP.RAD	DEP.LEN
START	0.000	454172.736	7878636.743	39°44'46"	LINE		55.000
END	55.000	454207.902	7878679.032	39°44'46"			

**ACCESS LAYOUT PLAN**  
SCALE 1:200 @ A1

**PRELIMINARY  
NOT FOR CONSTRUCTION**

Full Size (A1)  
1:200

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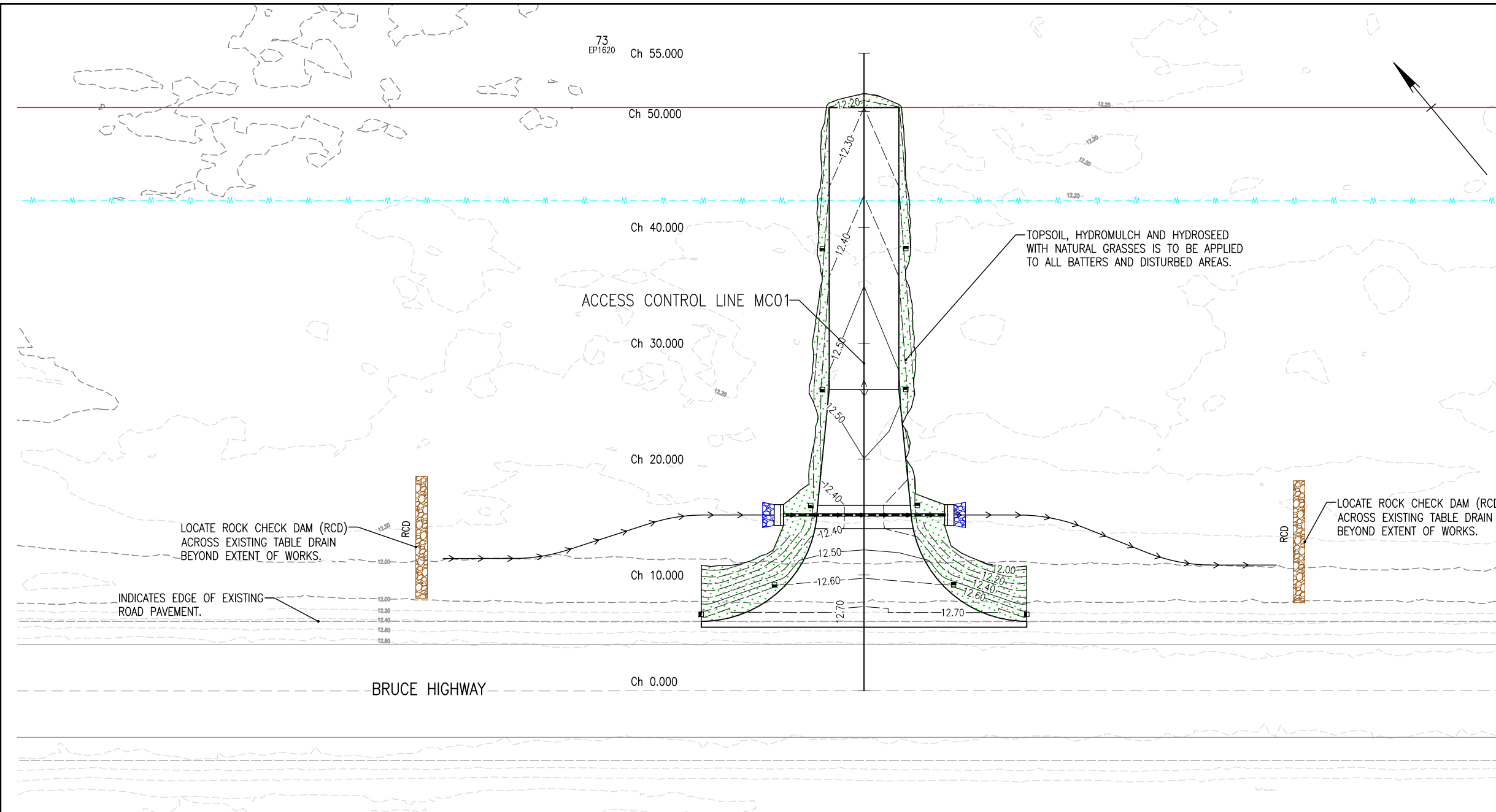
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Date 08/02/2024		
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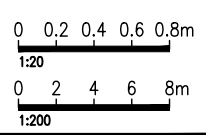
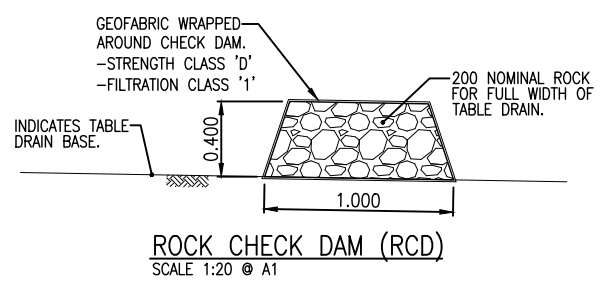
DESIGN MAJOR CONTOUR	6.00
DESIGN MINOR CONTOUR	6.25
STORMWATER CULVERT	
EXISTING CADASTRAL BOUNDARY	
EXISTING WATER MAIN	W-W
EXISTING MAJOR CONTOUR	6.00
EXISTING MINOR CONTOUR	6.25
EXISTING TOP OF BATTER	
EXISTING BOTTOM OF BATTER	

- SEDIMENT CONTROL:-**
- HYDROSEED & HYDROMULCH TO TMR'S SPECIFICATIONS. IRRIGATE, FERTILISE & TREAT TOPSOIL UNTIL ESTABLISHED.
  - RCD - ROCK CHECK DAM.

- EROSION & SEDIMENT CONTROL:**
- FOR DETAILS OF ALL EROSION & SEDIMENT CONTROL MEASURES REFER TO IECA STANDARD DRAWINGS AT WWW.AUSTIECA.COM.AU.
  - AT THE COMPLETION OF WORKS ALL DISTURBED AREAS ARE TO BE REINSTATED TO EXISTING CONDITION OR BETTER.
  - ROCK CHECK DAMS (RCD) TO BE INSTALLED AT COMMENCEMENT OF TABLE DRAIN FORMATION AND REMOVED FOLLOWING THE ESTABLISHMENT OF VEGETATION COVER TO DISTURBED AREAS.

- BATTER PROTECTION**
- ROUGHENING OF ALL BATTERS SHALL BE CARRIED OUT IN ACCORDANCE WITH CLAUSE 8.4.1.4 "ROUGHENING" OF D.T.M.R. TECHNICAL SPECIFICATION "MRTS16 LANDSCAPING AND RE-VEGETATION WORKS"
  - STRIPPED & STOCKPILED TOPSOIL TO BE RE-SPREAD OVER ALL BATTERS AT 100MM THICK & FULLY HYDROMULCHED WITH SEED. TOPSOIL TO BE TREATED WITH GYPSUM AT 2.0KG/M<sup>2</sup> PRIOR TO THE PLACEMENT OF HYDROMULCH.
  - HYDROMULCH SHALL BE SEEDING WITH THE GRASS MIX AND APPLICATION RATE DETAILED IN TABLE 7.4.9.1 OF MRTS16. ENSURE SUFFICIENT GRASS SEED IS INCLUDED TO ACHIEVE A MINIMUM 60% TOTAL COVERAGE OF THE TREATED SITE WITHIN 13 WEEKS OF PLACEMENT AND 80% COVERAGE WITHIN 12 MONTHS. SEED MIX (RATIOS) TO BE NOMINATED BY LANDSCAPING/HYDROMULCH CONTRACTOR IN ORDER TO ACHIEVE MINIMUM COVERAGE REQUIREMENTS.

**ACCESS LAYOUT PLAN**  
SCALE 1:200 @ A1



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Full Size (A1)

**ENGINEERING CERTIFICATION**

Signed: *[Signature]*

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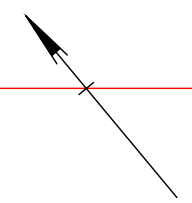
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Date 08/02/2024		
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	Drawing Number <b>MJ2520/MR04</b>	Issue P2





ACCESS CONTROL LINE MC01

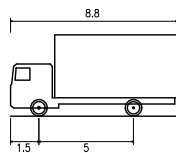
BRUCE HIGHWAY

Service Vehicle (8.8 m)

Service Vehicle (8.8 m)

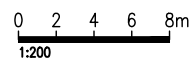
### ACCESS LAYOUT PLAN

SCALE 1:200 @ A1



Service Vehicle (8.8 m)  
 Overall Length 8.800m  
 Overall Width 2.500m  
 Overall Body Height 4.300m  
 Min Body Ground Clearance 0.427m  
 Track Width 2.500m  
 Lock-to-lock time 4.00s  
 Curb to Curb Turning Radius 12.500m

**PRELIMINARY  
NOT FOR CONSTRUCTION**



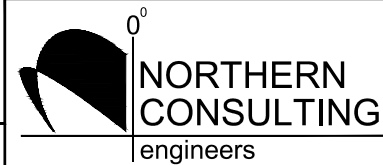
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**ENGINEERING CERTIFICATION**

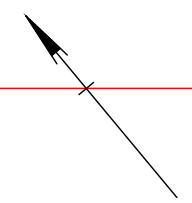
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Issue	Description	Date
Drawn ML	In Association With <b>ROGGERO ENTERPRISES</b>	ACCESS VEHICLE MOVEMENT - SERVICE VEHICLE (8.8m)
Date 08/02/2024		
Checked DC	RURAL PROPERTY ACCESS	Drawing Number <b>MJ2520/MRV01</b>
Approved DS	41634 BRUCE HIGHWAY	
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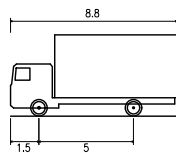
ACCESS CONTROL LINE MC01

Service Vehicle (8.8 m)

BRUCE HIGHWAY

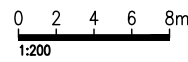
**ACCESS LAYOUT PLAN**

SCALE 1:200 @ A1



Service Vehicle (8.8 m)  
 Overall Length 8.800m  
 Overall Width 2.500m  
 Overall Body Height 4.300m  
 Min Body Ground Clearance 0.427m  
 Track Width 2.500m  
 Lock-to-lock time 4.00s  
 Curb to Curb Turning Radius 12.500m

**PRELIMINARY  
NOT FOR CONSTRUCTION**



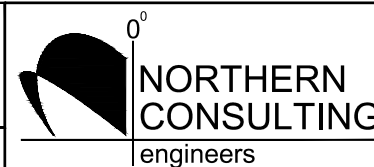
All work is to be carried out in accordance with DEPARTMENT OF MAIN ROADS standard details.

CONFIRM SIZE, LOCATION & ELEVATION OF ALL EXISTING SERVICES ON SITE BEFORE CONSTRUCTION COMMENCES. ADVISE NORTHERN CONSULTING ENGINEERS OF ANY DISCREPANCIES BETWEEN DRAWINGS & SITE

**ENGINEERING CERTIFICATION**

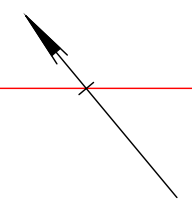
Signed:   
 DEREK ROBERT CONLEY SAW - RPEQ No. 7363

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P2	PRELIMINARY - NOT FOR CONSTRUCTION - TMR RFI RESPONSE.	20/03/2024
P1	PRELIMINARY - NOT FOR CONSTRUCTION - ISSUED FOR CLIENT APPROVAL.	08/02/2024
Issue	Description	Date
Drawn ML	In Association With <b>ROGGERO ENTERPRISES</b>	ACCESS VEHICLE MOVEMENT - SERVICE VEHICLE (8.8m)
Date 08/02/2024		
Checked DC	RURAL PROPERTY ACCESS	Drawing Number <b>MJ2520/MRV02</b>
Approved DS	41634 BRUCE HIGHWAY	
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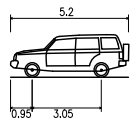


ACCESS CONTROL LINE MC01

BRUCE HIGHWAY

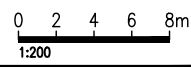
**ACCESS LAYOUT PLAN**

SCALE 1:200 @ A1



B99 Vehicle (Realistic min radius) (2004)  
 Overall Length 5.200m  
 Overall Width 1.940m  
 Overall Body Height 1.878m  
 Min Body Ground Clearance 0.272m  
 Track Width 1.840m  
 Lock-to-lock time 4.00s  
 Curb to Curb Turning Radius 6.250m

**PRELIMINARY  
NOT FOR CONSTRUCTION**



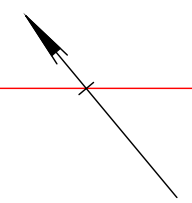
All work is to be carried out in accordance with DEPARTMENT OF MAIN ROADS standard details.

CONFIRM SIZE, LOCATION & ELEVATION OF ALL EXISTING SERVICES ON SITE BEFORE CONSTRUCTION COMMENCES. ADVISE NORTHERN CONSULTING ENGINEERS OF ANY DISCREPANCIES BETWEEN DRAWINGS & SITE

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P1	PRELIMINARY - NOT FOR CONSTRUCTION - TMR RFI RESPONSE.	20/03/2024
Issue	Description	Date
Drawn ML	In Association With <b>ROGGERO ENTERPRISES</b>	ACCESS VEHICLE MOVEMENT - B99 VEHICLE
Date 20/03/2024	Checked DC	Approved DS
Checked DC	Approved DS	Drawing Number <b>MJ2520/MRV03</b>
COPYRIGHT ©	RURAL PROPERTY ACCESS 41634 BRUCE HIGHWAY BLUEWATER (Lot 73 on EP1620)	Issue P1

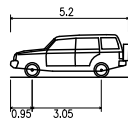


ACCESS CONTROL LINE MC01

BRUCE HIGHWAY

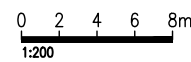
**ACCESS LAYOUT PLAN**

SCALE 1:200 @ A1



B99 Vehicle (Realistic min radius) (2004)  
 Overall Length 5.200m  
 Overall Width 1.940m  
 Overall Body Height 1.878m  
 Min Body Ground Clearance 0.272m  
 Track Width 1.840m  
 Lock-to-lock time 4.00s  
 Curb to Curb Turning Radius 6.250m

**PRELIMINARY  
NOT FOR CONSTRUCTION**



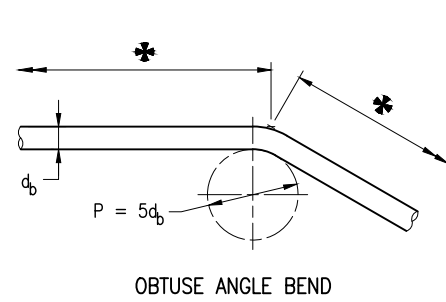
All work is to be carried out in accordance with DEPARTMENT OF MAIN ROADS standard details.

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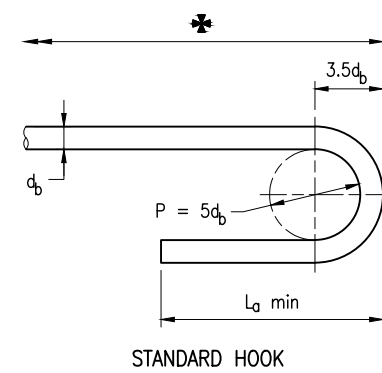
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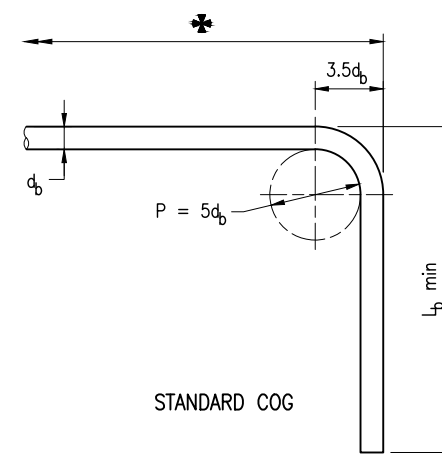
P1	PRELIMINARY - NOT FOR CONSTRUCTION - TMR RFI RESPONSE.	20/03/2024
Issue	Description	Date
Drawn ML	In Association With <b>ROGGERO ENTERPRISES</b>	ACCESS VEHICLE MOVEMENT - B99 VEHICLE
Date 20/03/2024	Checked DC	Approved DS
Checked DC	Approved DS	COPYRIGHT ©
RURAL PROPERTY ACCESS 41634 BRUCE HIGHWAY BLUEWATER (Lot 73 on EP1620)		Drawing Number <b>MJ2520/MRV04</b>
		Issue <b>P1</b>



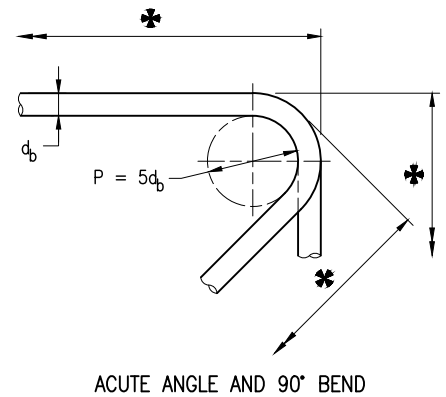
OBTUSE ANGLE BEND



STANDARD HOOK



STANDARD COG

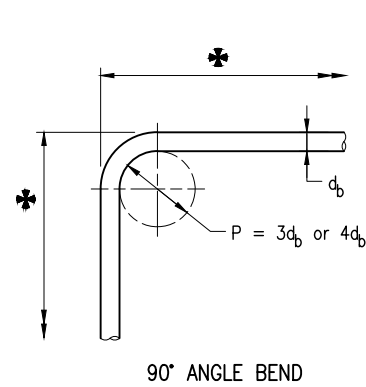


ACUTE ANGLE AND 90° BEND

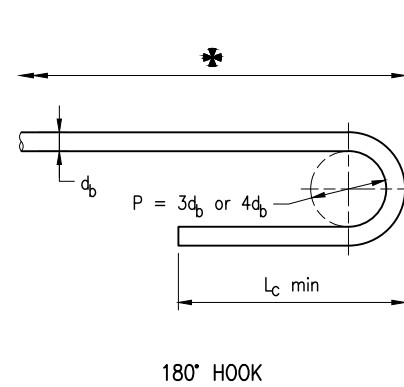
Standard Hook and Cog Dimensions for Reinforcing Bars

$d_b$	10	12	16	20	24	28	32	36	40
P	50	60	80	100	120	140	160	180	200
$L_a$	105	115	130	150	180	210	240	270	300
$L_b$	155	170	205	245	295	345	395	440	490

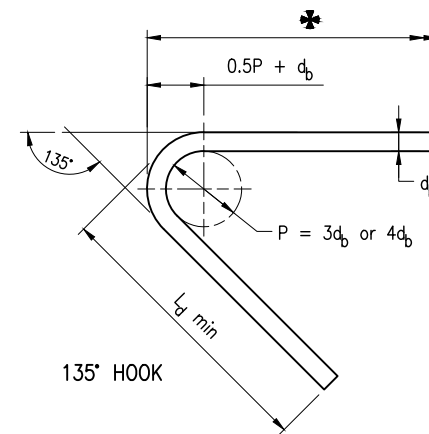
HOOK, COG AND BEND DETAILS FOR REINFORCING BARS  
(Except Stirrups and Ligatures)



90° ANGLE BEND



180° HOOK

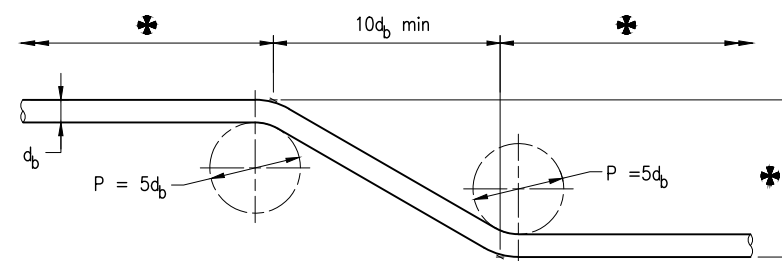


135° HOOK

Hook and Bend Dimensions for Stirrups, Ligatures or Ties (fitments)

$d_b$	10	12	16	20	24
$P = 3d_b$	30	36	48	60	72
$P = 4d_b$	40	48	64	80	96
$L_c$	100	110	120	140	170
$L_d$	120	130	150	180	215

HOOK AND BEND DETAILS FOR STIRRUPS, LIGATURES OR TIES (FITMENTS)  
Refer Note 4



BEND DETAILS FOR CRANKED BARS  
Refer Note 4

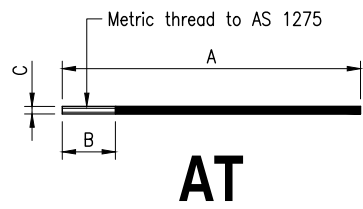
NOTES:

- SCOPE: The purpose of this standard drawing is to provide typical standard details that shall be used within the limitations specified in the drawing. This drawing is to detail standard bar shapes used by TMR and also the hooks, cogs and bends to be used and was developed in accordance with AS 5100.5. Hook, cog and bend details shown in this drawing do not apply to the following:
  - Structural elements built with slip form construction
  - Epoxy coated or galvanised bars, either before or after bending
  - Bends that are subsequently straightened or rebent
  - Bundled bars
  - Stainless steel reinforcement
  - Reinforcing bar with a strength grade greater than 500MPa.
 Hooks, cogs and bends for any of the above shall be project specific design in accordance with AS 5100.5. Refer Standard Drawing 1044 for lapped splice lengths and general steel reinforcement information.
- REINFORCING STEEL shall be in accordance with MRTS71 and AS/NZS 4671. Deformed bars Grade D500N. Round bars Grade R250N. Round wire Grade R500L for helical reinforcement only. All reinforcing steel shall be ACRS certified.
- BAR SHAPE DIMENSIONS denoted by \* in the details on this drawing are those labelled A, B, C, E, F, G, H, L shown on Drawings 2 to 4 of this Standard Drawing.
- PIN DIAMETER  $P = 5d_b$  shall be used for cranking of bars unless shown otherwise in the Steel Schedule. Pin diameter  $P = 3d_b$  shall be used for hooks and 90° angle bends of fitments grade R250N, and  $P = 4d_b$  for fitments grade D500N. Fitments with angle bends other than 90° shall use minimum  $P = 4d_b$ . Measurements at bends are taken from the intersection of the lines along the outer faces of the bar.
- WELDING of reinforcement shall only be used where prior approval of the Project Administrator has been obtained and shall be carried out in accordance with MRTS71. Welding symbols to AS 1101.3. Welding of bar splices to AS/NZS 1554.3. All welds, except location tack welds, shall be SP category. Tack welding for location purposes to AS/NZS 1554.3. Welding shall not be carried out within  $L_e$  from any bent portion of the bar. Welding consumables shall be controlled hydrogen type: G49X to AS/NZS 14341-B or T49X to AS/NZS ISO 17632-B.
- DIMENSIONS are in millimetres.

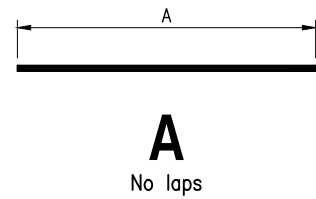
ASSOCIATED DEPARTMENTAL DOCUMENT:  
Design Criteria for Bridges and Other Structures

REFERENCED DOCUMENTS:  
Departmental Standard Drawings:  
1044 Reinforcing Steel – Lap Lengths  
Departmental Specifications:  
MRTS71 Reinforcing Steel

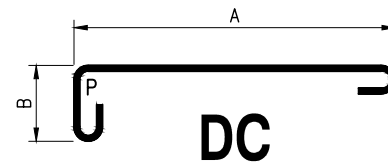
Department of Transport and Main Roads				© The State of Queensland (Department of Transport and Main Roads) 2023 <a href="http://creativecommons.org/licenses/by/4.0/">http://creativecommons.org/licenses/by/4.0/</a>	
REINFORCING STEEL				A3	Standard Drawing No
STANDARD BAR SHAPES TYPICAL DETAILS AND NOTES		Not to Scale	1043		Date 3/2023
DRAWING 1 OF 4					



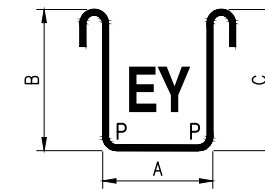
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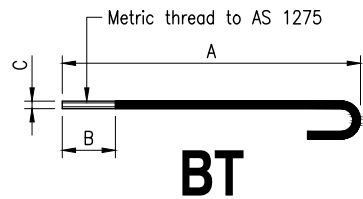
**A**  
No laps



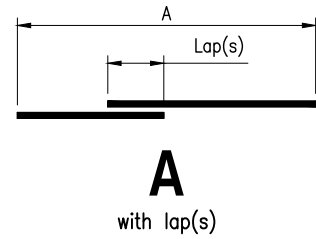
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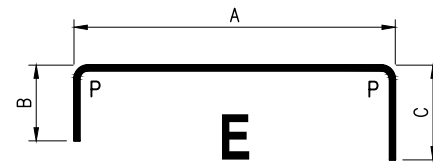
**EY**



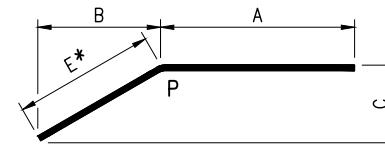
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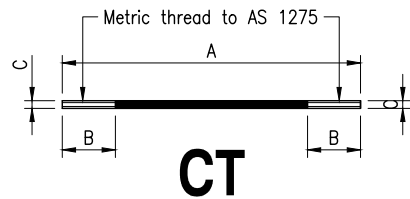
**A**  
with lap(s)



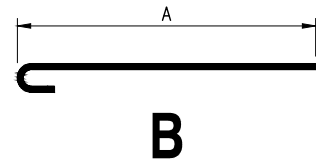
**E**



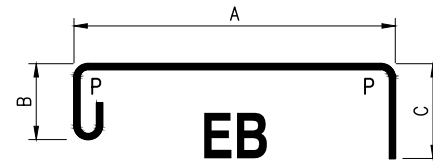
**F**



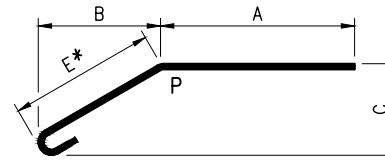
**CT**



**B**

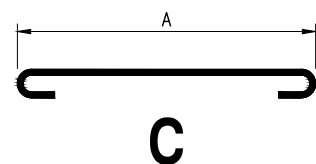


**EB**

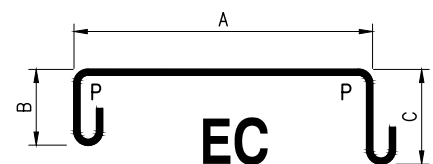


**FB**

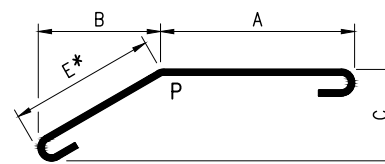
Bar Diameter	16	20	24	28	36	40
C (Thread Size)	M12	M16	M20	M24	M33	M36



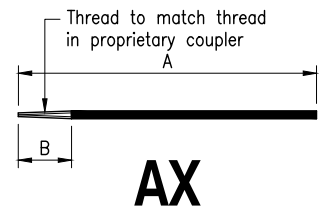
**C**



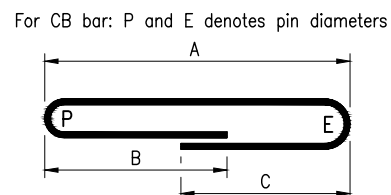
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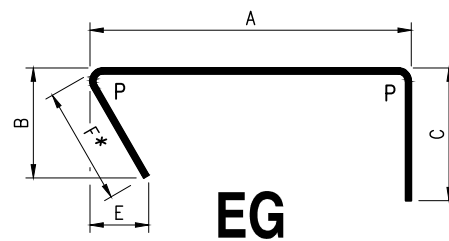
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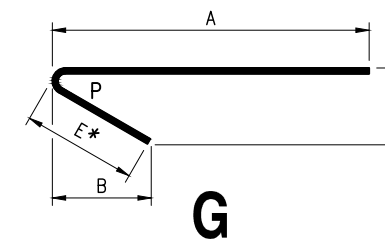
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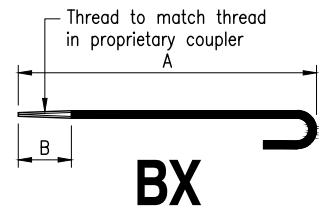
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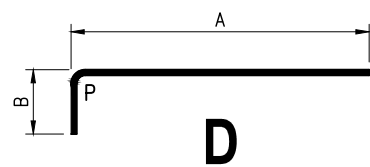
**EG**



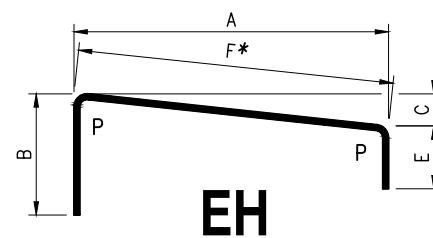
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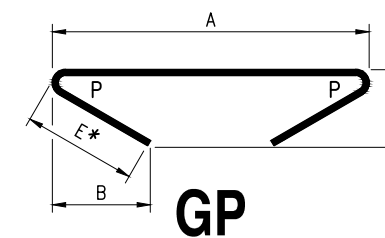
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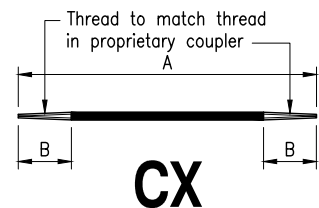
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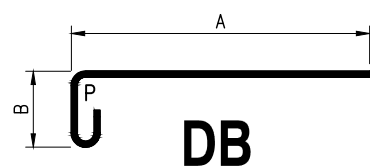
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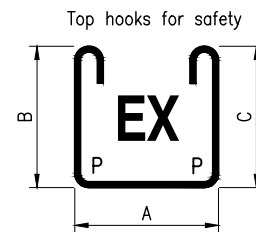
**GP**



**CX**



**DB**



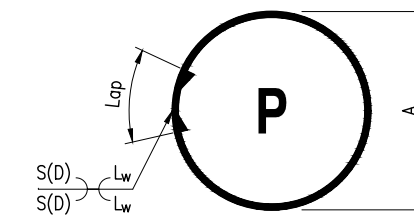
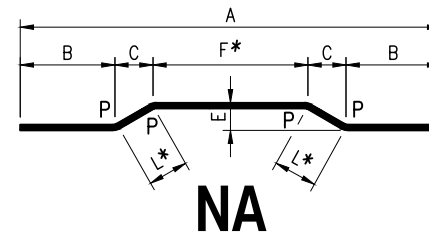
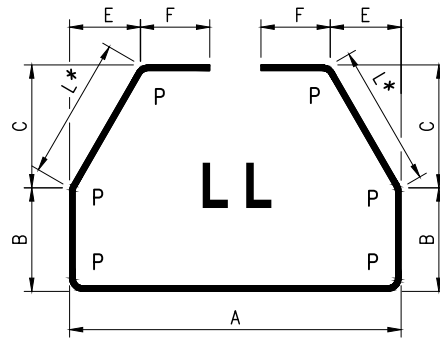
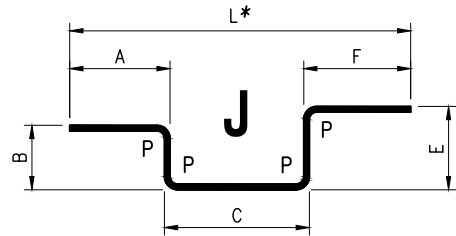
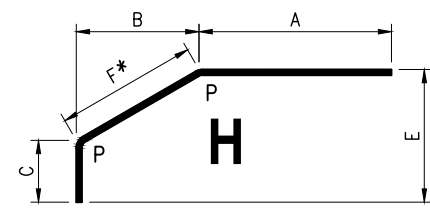
**EX**

P denotes pin diameter.  
Dimensions marked thus \* are calculated automatically by the Steel Schedule Program and are NOT to be entered on the data sheet.

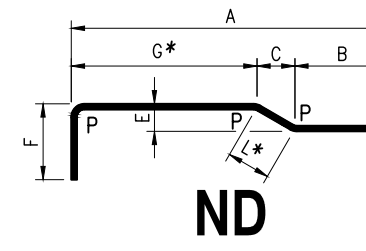
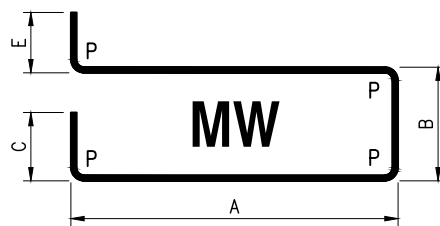
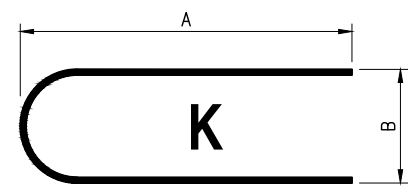
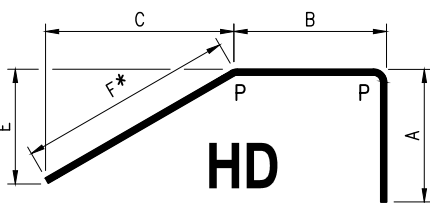
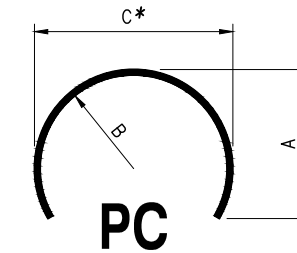
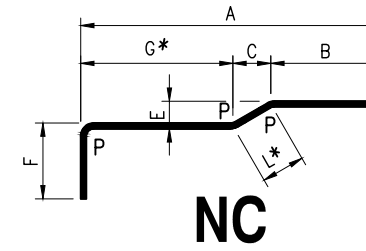
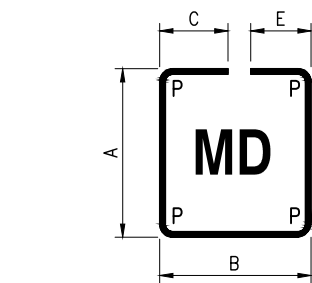
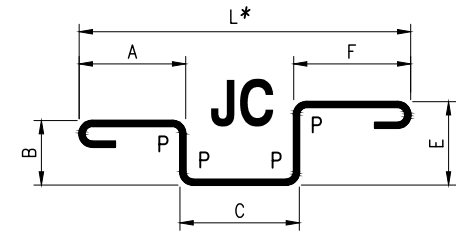
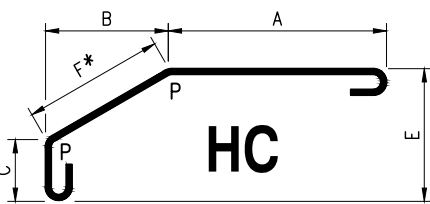
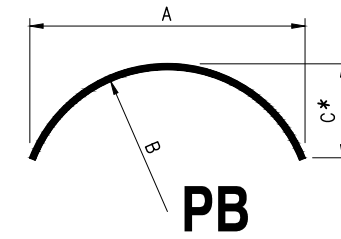
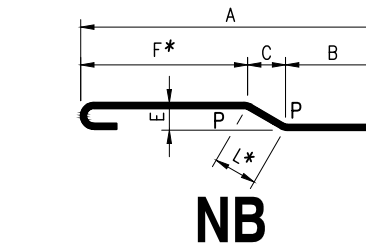
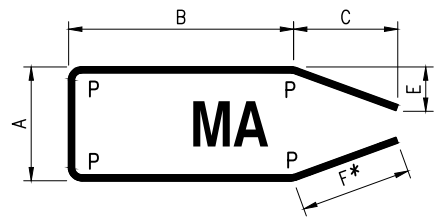
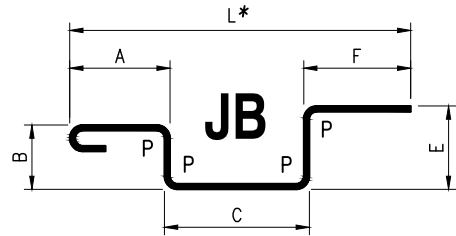
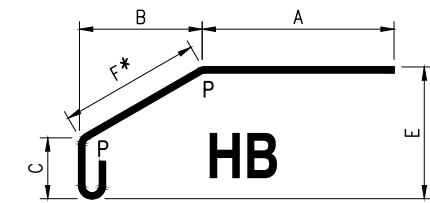
**NOTES:**

1. Refer Drawing 1 for all notes and typical details.

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REINFORCING STEEL				
STANDARD BAR SHAPES		Not to Scale	1043	Date 3/2023
DRAWING 2 OF 4				

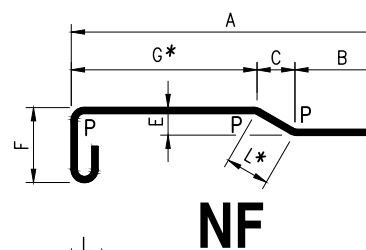
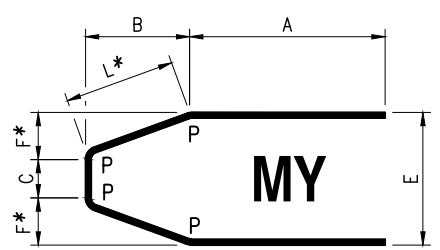
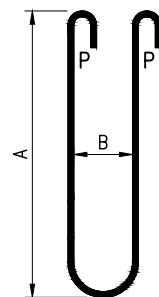
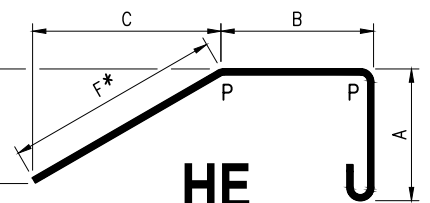
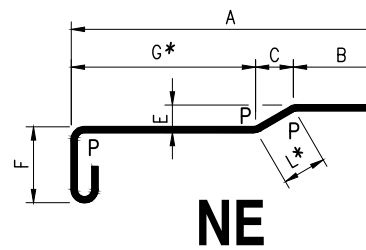
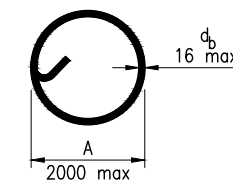
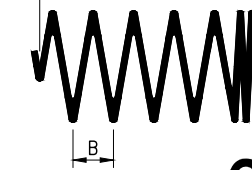


Refer to Weld Table on Standard Drawing 1044 for S, D and L<sub>w</sub> values for each d<sub>b</sub> and Grade

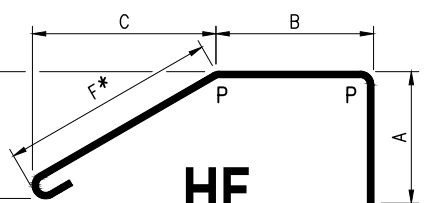
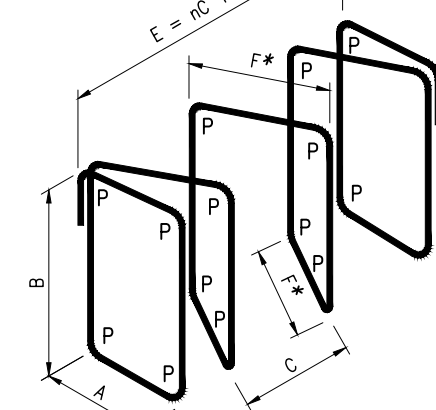


C = required length + extra for lapping or ends.  
Hook indicative only. Refer Note

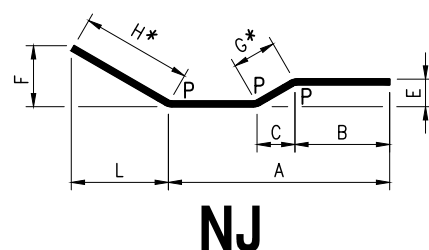
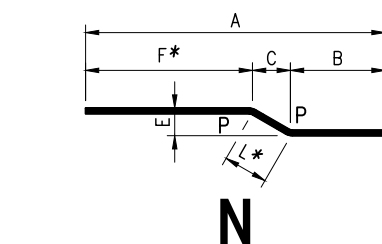
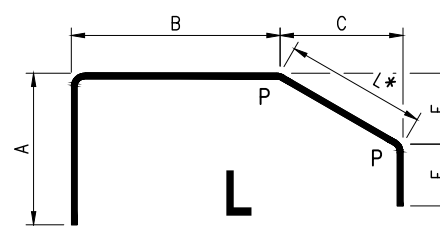
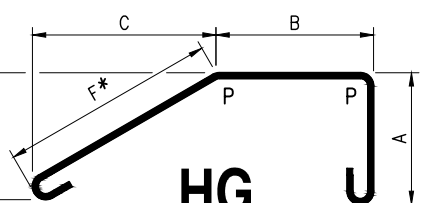
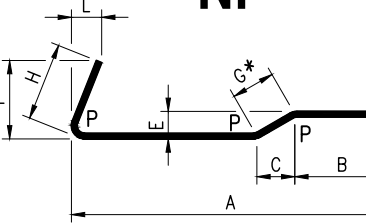
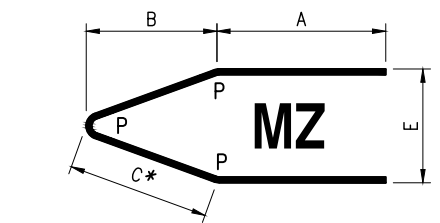
Helix shall be anchored at its end by 1.5 extra flat turns of the helix. Where required, helix shall be spliced within its length by lapping the helix by 1.5 turns and anchoring each end with a 135° hook around a main longitudinal bar, or with a welded splice as shown on the P shaped bar



$E = nC + \frac{1}{2}C$  (n = number of pitches)



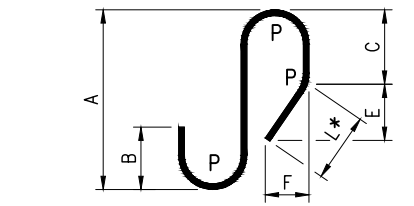
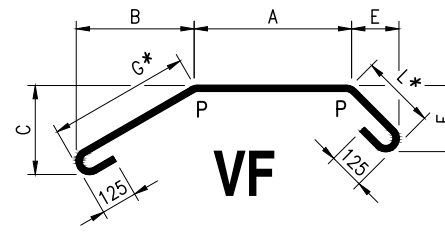
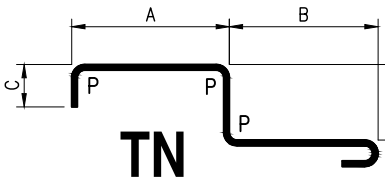
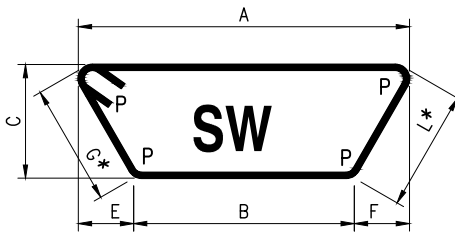
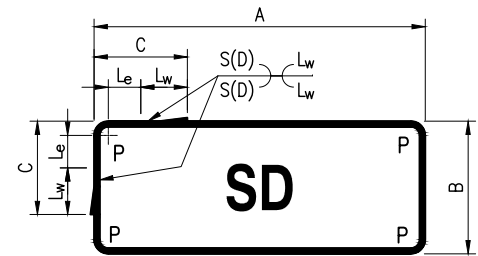
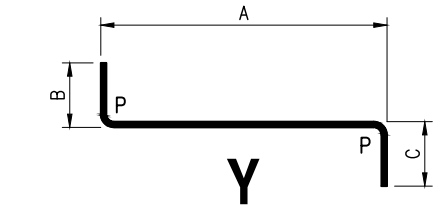
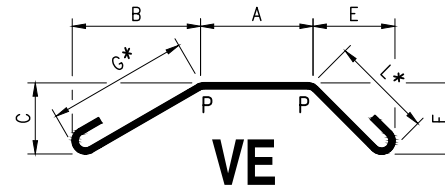
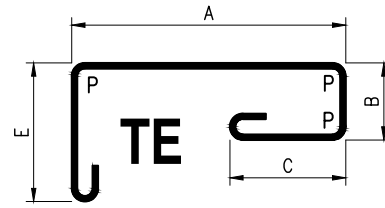
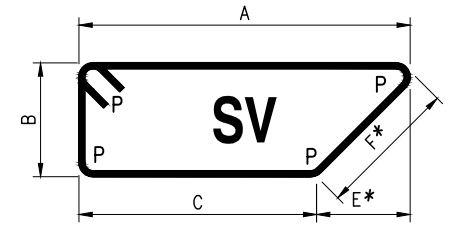
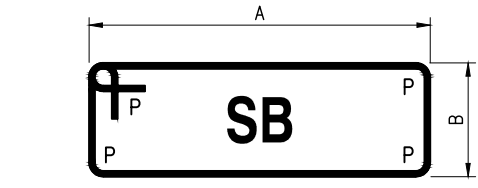
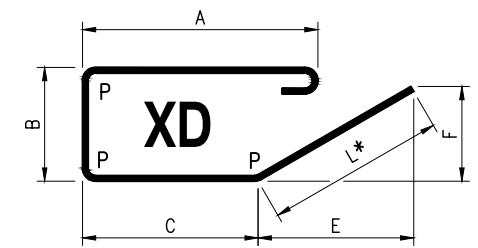
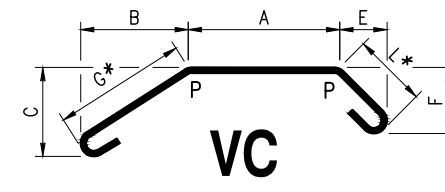
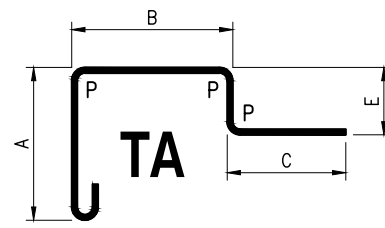
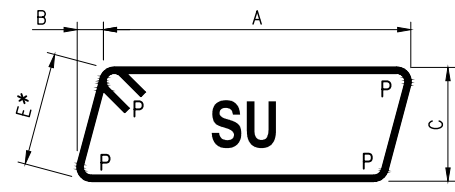
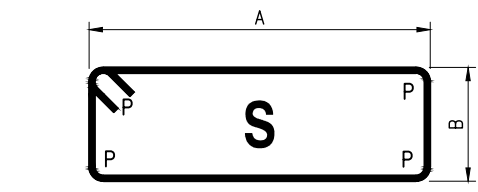
KC



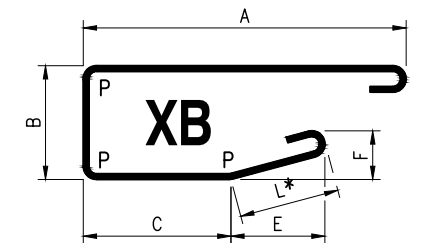
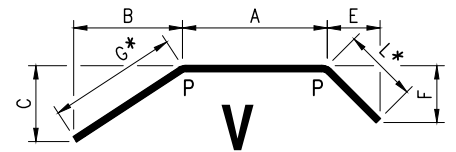
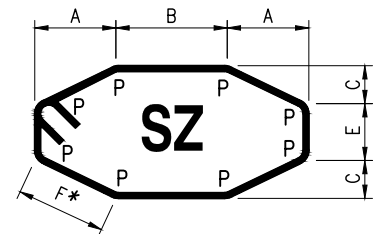
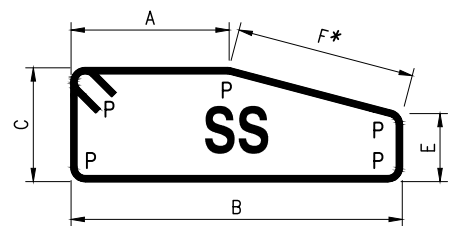
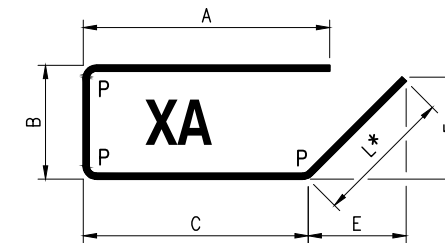
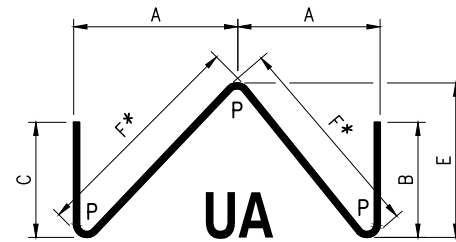
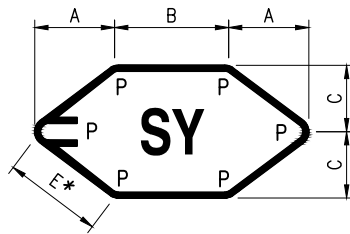
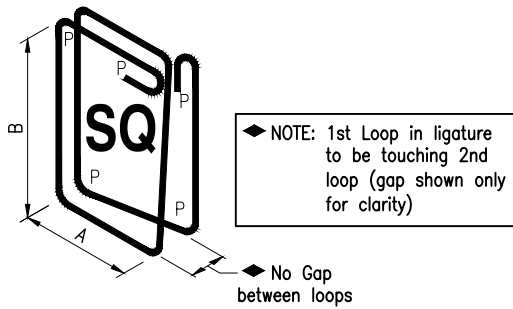
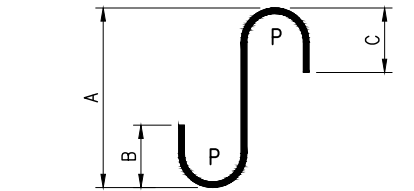
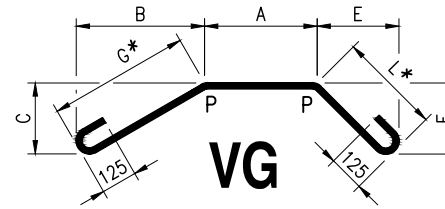
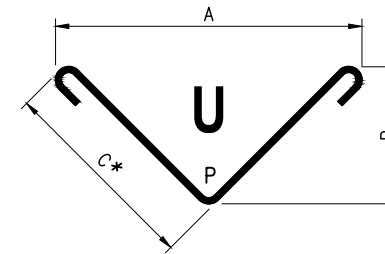
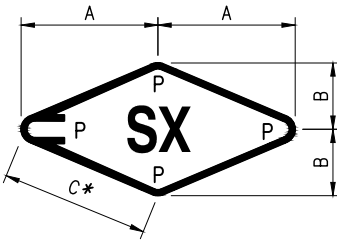
NOTES:  
1. Refer Drawing 1 for all notes and typical details.

P denotes pin diameter.  
Dimensions marked thus \* are calculated automatically by the Steel Schedule Program and are NOT to be entered on the data sheet.

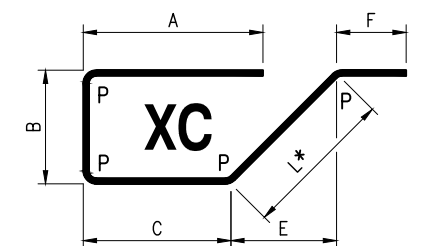
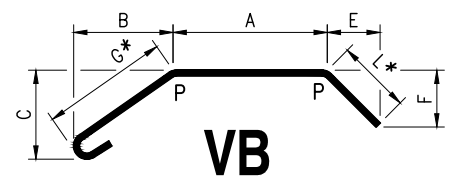
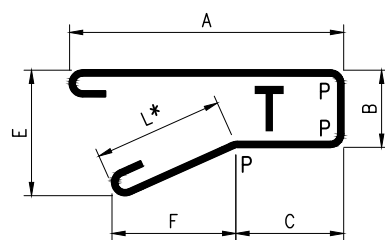
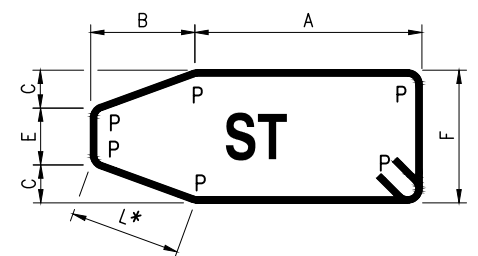
Department of Transport and Main Roads				© The State of Queensland (Department of Transport and Main Roads) 2023 <a href="http://creativecommons.org/licenses/by/4.0/">http://creativecommons.org/licenses/by/4.0/</a>	
REINFORCING STEEL				A3	Standard Drawing No
STANDARD BAR SHAPES		Not to Scale	1043		
DRAWING 3 OF 4			Date 3/2023		



For stirrups and ligatures with  $P = 4d$ , refer to Weld Table on Standard Drawing 1044 for C, S, D,  $L_e$  and  $L_w$  values for each  $d_b$  and Grade



P denotes pin diameter.  
Dimensions marked thus \* are calculated automatically by the Steel Schedule Program and are NOT to be entered on the data sheet.



NOTES:  
1. Refer Drawing 1 for all notes and typical details.

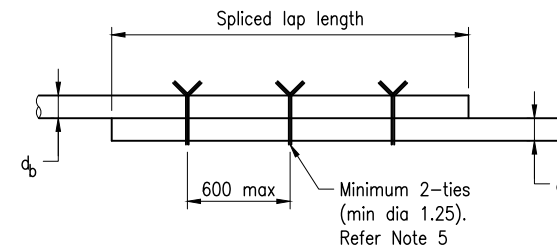
Department of Transport and Main Roads			
REINFORCING STEEL			
STANDARD BAR SHAPES		A3	Standard Drawing No
DRAWING 4 OF 4		Not to Scale	1043
			Date 3/2023



Minimum Lapped Splice Lengths for Reinforcing Bars ★

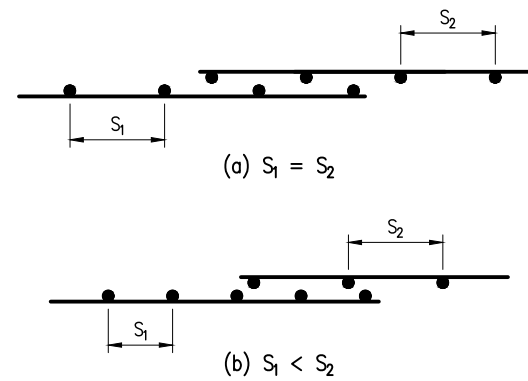
Exposure Classification	f'c	Deformed Bar Diameter d <sub>b</sub>								
		10	12	16	20	24	28	32	36	40
B1	32 MPa	450	550	800	1000	1250	1500	1800	2100	2400
B2	40 MPa	400	500	700	900	1100	1350	1600	1850	2150
	50 MPa	400	500	650	800	1000	1200	1450	1700	1950
C, C1 and C2	50 MPa	400	500	650	800	1000	1200	1450	1700	1950

★ For top/horizontal bars with more than 300 of concrete below the above bars, the lap lengths in this table shall be multiplied by 1.3.  
Where laps are required but not shown on the drawings, they should be staggered and positioned away from points of maximum stress.  
Where more than 50% of reinforcement is spliced at points of maximum stress, lap lengths shown in the table above are to be multiplied by 1.3.



TYPICAL DETAIL OF LAPPED SPLICE

LAPPED SPLICE FOR REINFORCING BARS



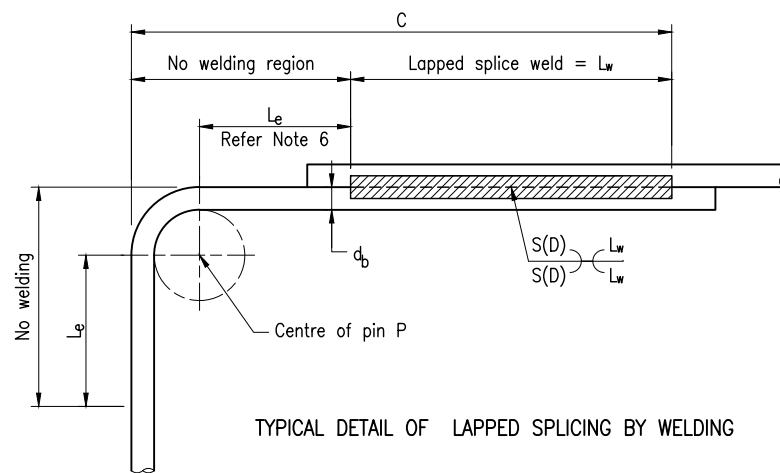
LAPPED SPLICES FOR WELDED MESH

NOTES:

- SCOPE: The purpose of this standard drawing is to provide typical standard details that shall be used within the limitations specified in the drawing. This drawing is to detail lapped splices for reinforcing bars and welded mesh, and general reinforcing steel information and was developed in accordance with AS 5100.5. Lapped splice details shown do not apply to the following:
  - Structural elements built with slip form construction
  - Epoxy coated or galvanised bars, either before or after bending
  - Bends that are subsequently straightened or rebent
  - Bundled bars
  - Stainless steel reinforcement
  - Reinforcing bar with a strength grade greater than 500MPa.
 Lapped splices for any of the above shall be project specific design in accordance with AS 5100.5. Refer Standard Drawing 1043 for standard bar shapes and bending details.
- REINFORCING STEEL shall be in accordance with MRTS71 and AS/NZS 4671. Deformed bars Grade D500N. Round bars Grade R250N. Deformed wire Grade D500L for welded mesh only. Round wire Grade R500L for helical reinforcement only. All reinforcing steel shall be ACRS certified.
- Where lapped splices are required but not shown on the drawings, they shall be positioned away from points of maximum stress.
- Helix shall be spliced within its length by lapping the helix by 1.5 turns and anchoring each end with a 135° hook around a main longitudinal bar, or with a welded splice as shown on the P shaped bar detail on Standard Drawing 1043.
- If bars of different diameters are lapped, the lap length shall be determined using the smaller diameter.
- All lapped bars shall be tied with 1.25 minimum diameter annealed wire at 600 maximum centres.
- WELDING of reinforcement shall only be used where prior approval of the Project Administrator has been obtained and shall be carried out in accordance with MRTS71. Welding symbols to AS 1101.3. Welding of bar splices to AS/NZS 1554.3. All welds, except location tack welds, shall be SP category. Tack welding for location purposes to AS/NZS 1554.3. Welding shall not be carried out within L<sub>e</sub> from any bent portion of the bar. Welding consumables shall be controlled hydrogen type: G49X to AS/NZS 14341-B or T49X to AS/NZS ISO 17632-B.
- DIMENSIONS are in millimetres.

ASSOCIATED DEPARTMENTAL DOCUMENT:  
Design Criteria for Bridges and Other Structures

REFERENCED DOCUMENTS:  
Departmental Standard Drawings:  
1043 Reinforcing Steel – Standard Bar Shapes  
Departmental Specifications:  
MRTS71 Reinforcing Steel



TYPICAL DETAIL OF LAPPED SPLICING BY WELDING

DETAILS OF NO WELDING REGION AND WELD LENGTHS FOR WELDED LAPPED SPLICE

WELD TABLE

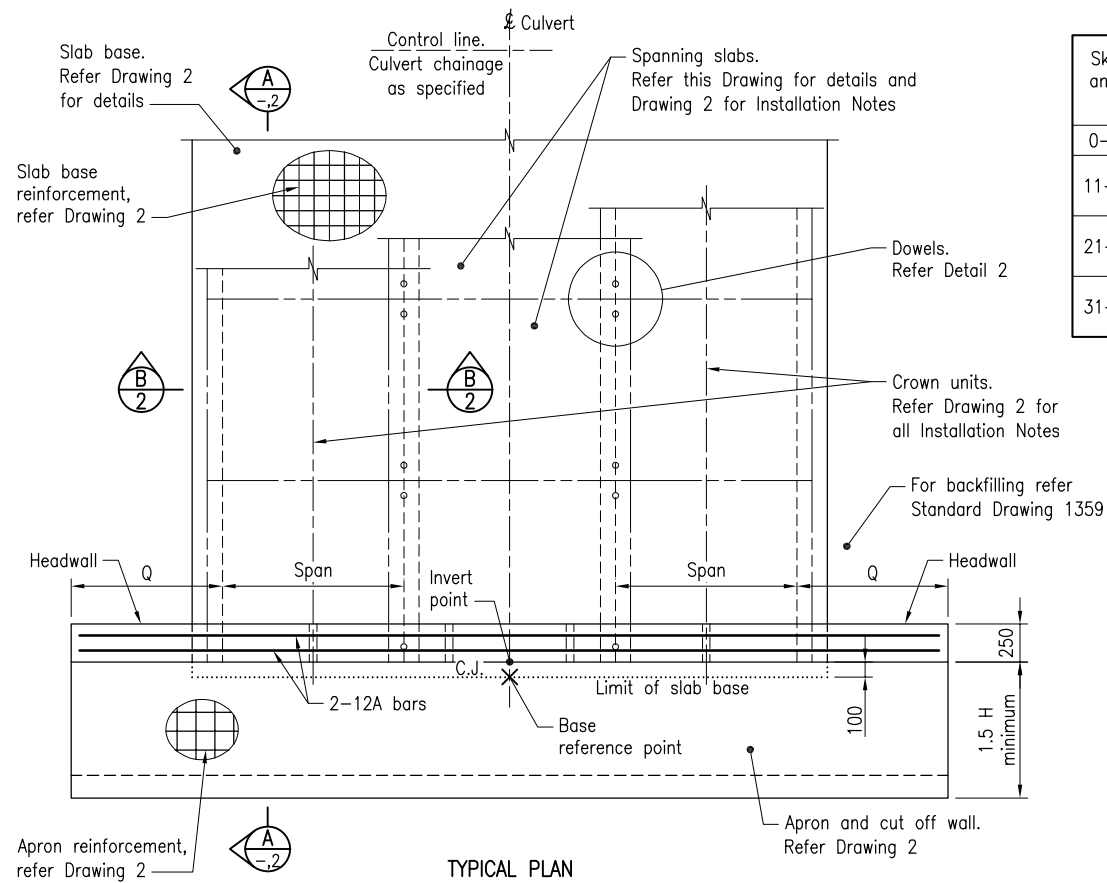
d <sub>b</sub>	8	8	10	10	12	16	20	24	28	32	36	40
Grade	250	500	250	500	500	500	500	500	500	500	500	500
P	For fitments, P is 3d or 4d, and for main bars P is 5d						§ For main bars only, P is 5d					
C	100	110	100	120	165	210	255	315	375	435	515	600
L <sub>e</sub>	30	30	30	30	40	50	60	75	85	100	110	120
S	5	5	5	5	6	8	10	12	14	16	18	20
D	3	3	3	3	3	4	5	6	7	8	8	8
L <sub>w</sub>	40	50	40	60	85	110	135	165	190	220	275	340

§ Minimum P = 4d required for bar shape SD stirrups and ligatures on Standard Drawing 1043.  
C = d<sub>b</sub> + 0.5P + L<sub>e</sub> + L<sub>w</sub>

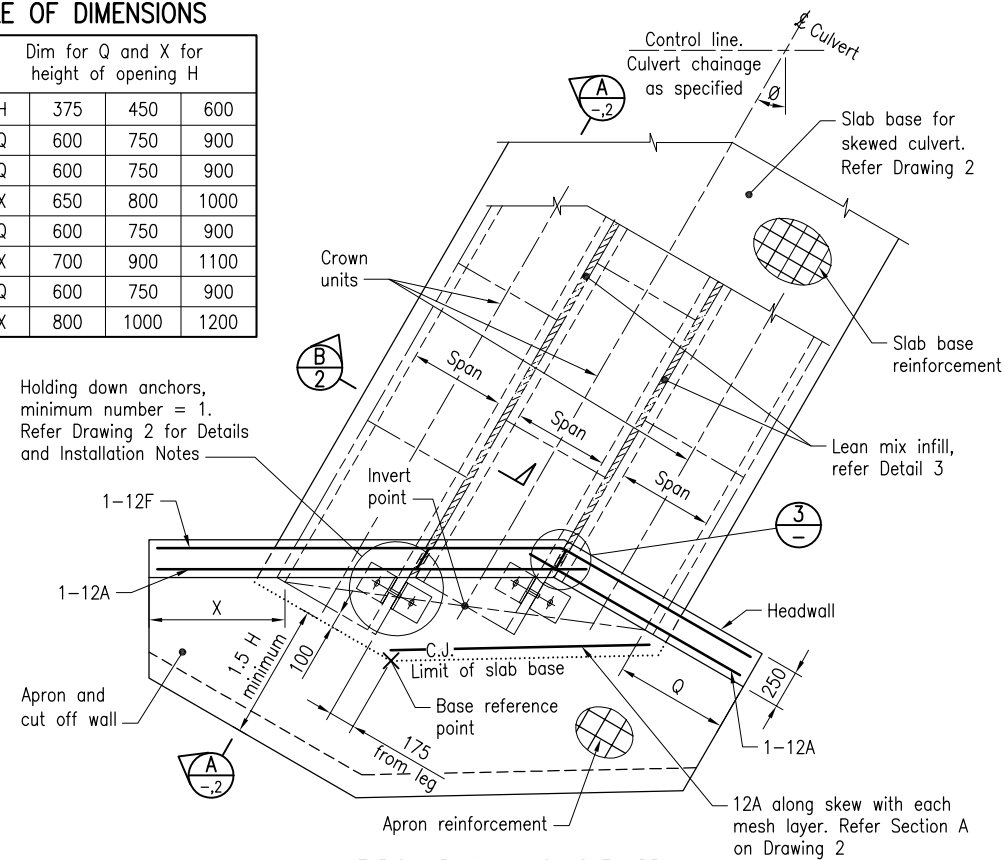
Department of Transport and Main Roads			
REINFORCING STEEL			
LAP LENGTHS		A3 Not to Scale	Standard Drawing No <b>1044</b> Date 3/2023

**TABLE OF DIMENSIONS**

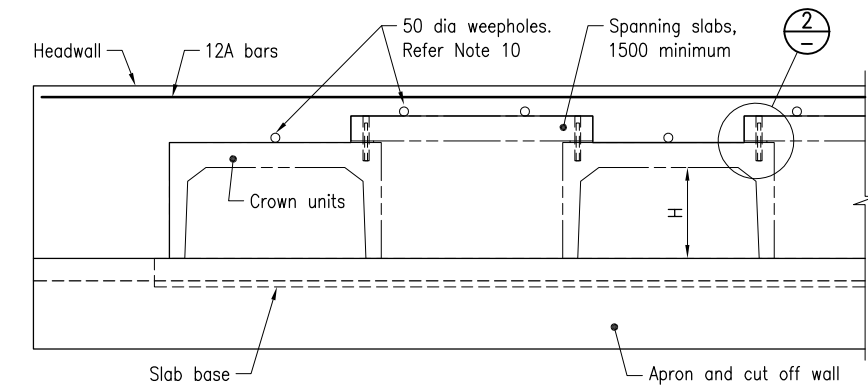
Skew angle $\theta$	Dim for Q and X for height of opening H			
	H	375	450	600
0-10	Q	600	750	900
11-20	Q	600	750	900
	X	650	800	1000
21-30	Q	600	750	900
	X	700	900	1100
31-45	Q	600	750	900
	X	800	1000	1200



**TYPICAL PLAN SQUARE SLAB LINK CULVERT SHOWN SQUARE SINGLE AND MULTICELL BOX CULVERTS SIMILAR**

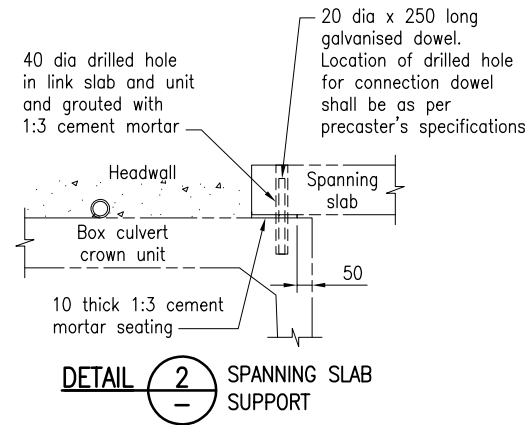


**TYPICAL PLAN - HIGH SKEW DRAWN MULTICELL BOX CULVERT SHOWN SKEWED SINGLE AND SLAB LINK BOX CULVERTS SIMILAR**

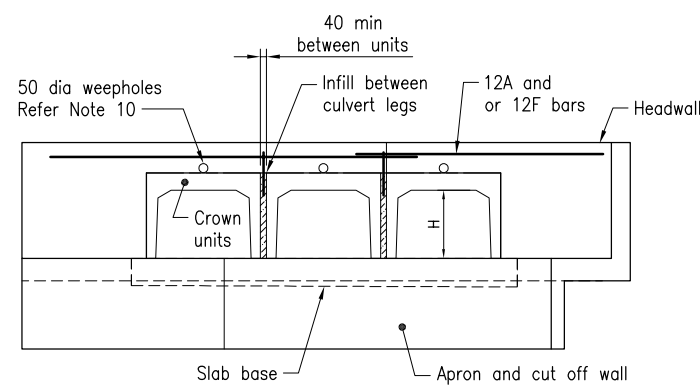


**TYPICAL ELEVATION - SPANNING SLAB DETAILS**

**GENERAL ARRANGEMENT - SLAB LINK BOX CULVERT**

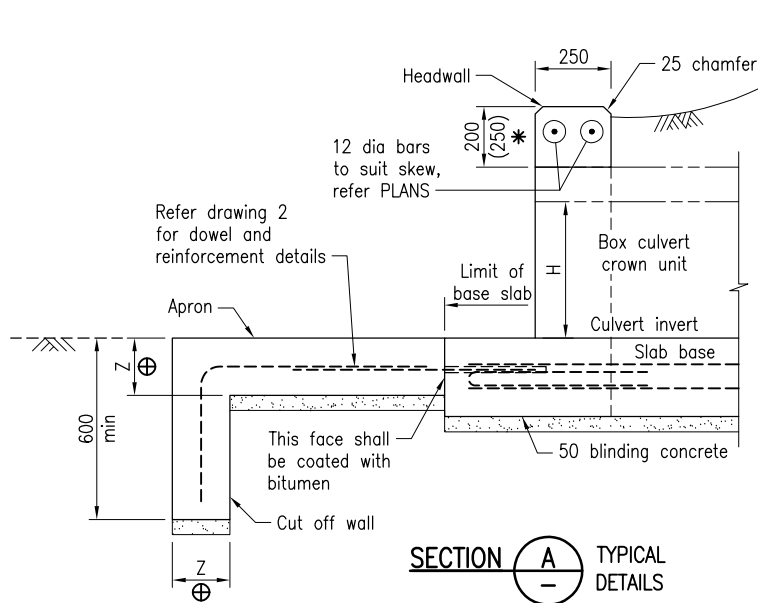


**DETAIL 2 SPANNING SLAB SUPPORT**

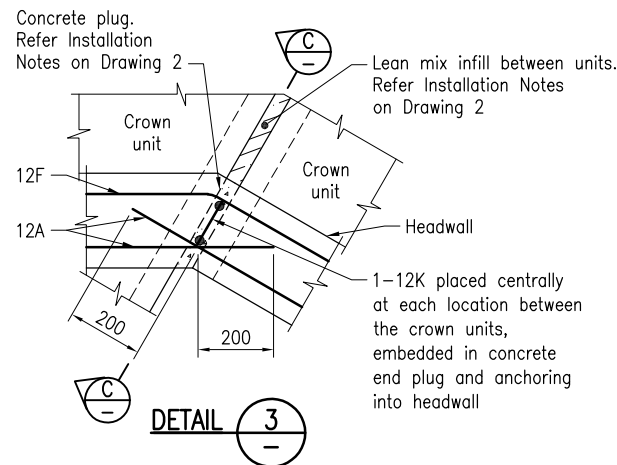


**TYPICAL ELEVATION - MULTICELL DETAILS**

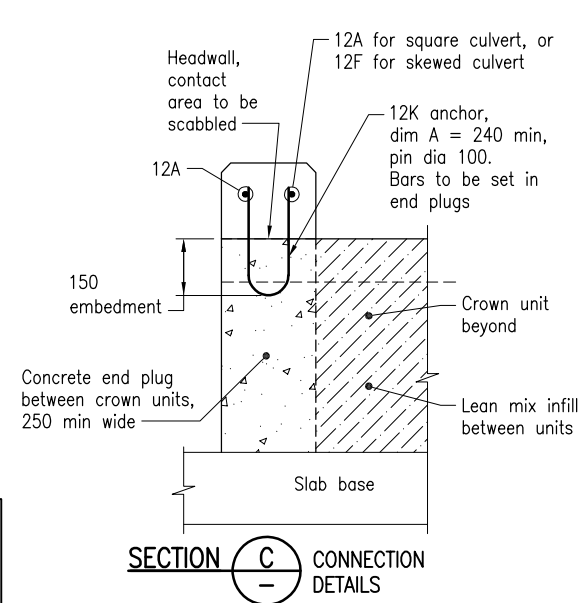
**GENERAL ARRANGEMENT - MULTIPLE CELL RC BOX CULVERT**



**SECTION A TYPICAL DETAILS**



**DETAIL 3 CONNECTION DETAILS**



**SECTION C CONNECTION DETAILS**

**NOTES:**

- SCOPE: This drawing is to detail cast insitu slab base, aprons and headwalls for precast R C Box Culverts and Slab Link Box Culverts where H (height of opening) = 375 to 600. This drawing supersedes Standard Drawings 1174 and 1317. This drawing does not provide details of fish passage requirements. Where project specific environmental assessment determines that waterway barrier works are required, additional details shall be developed and included in the project drawings.
- BOX CULVERTS shall be constructed in accordance with MRTS03.
- DESIGN LOADING: HLP400, M1600, A160 and W80 are in accordance with AS 5100.2. Maximum height of fill over the culvert shall be 2000. Maximum design bearing pressure under the base slab shall be 150 kPa.
- DOWELLED CONTRACTION JOINTS shall be provided where (a) the length and/or (b) the width of the base slab exceed 20m. When contraction joints are required across the width, they shall be located at 1/4 span points of crown units and are to be continued across the aprons. 24 hours minimum shall be allowed between pours.
- APRON AND BASE SLAB MINIMUM REINFORCEMENT for shrinkage and temperature effects are designed considering the full restraint condition to AS 5100. For the slab on ground condition, only the top half of the slab thickness is considered for calculation of this reinforcement.
- CONCRETE shall be in accordance with MRTS70. Design life 100 years. Exposure classification and cover to reinforcement shall be in accordance with AS 5100. Minimum concrete strength and cover to reinforcement shall be as shown in table below.

Exposure classification	minimum B2	C1 *	C2 *
Minimum concrete strength	S40/20	S50/20	S55/20
Minimum Cover UNO	60	70	80

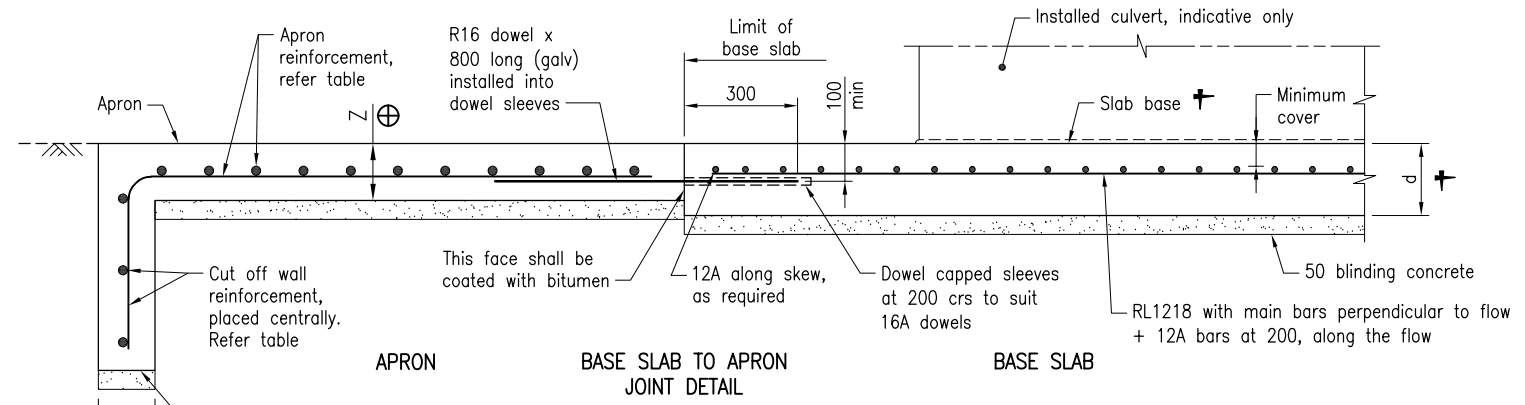
\* Dimensions within brackets ( ) are for classification C1 and C2.

- Triple-bleed concrete in accordance with MRTS70 is required for Exposure classifications C1 and C2. Blinding concrete N20/20. All exposed edges shall have 19 x 19 chamfers, unless nominated otherwise.
- PRECAST CONCRETE CULVERTS shall be designed and manufactured in accordance with MRTS24.
  - STEELWORK shall be fabricated to the requirements of MRTS78. Angle Grade 300 to AS/NZS 3679.1. Bolts and screws Class 4.6 to AS 1111.1. Nuts Class 5 to AS 1112.1. Washers Class 5 to AS 1237.1. After fabrication all bolts and nuts shall be hot dip galvanised to AS 1214, and all other steelwork to AS/NZS 4680.
  - INFILL between legs of multiple cell culverts shall be achieved by placing concrete plugs of 250 minimum length at both ends of the culvert, using same grade of concrete as headwall, and infill the remaining gap with 1:10 lean mix having maximum aggregate size of 10mm packed dry. Do not use fluid grout as hydrostatic head will damage culvert legs.
  - REINFORCING STEEL shall be read in conjunction with Standard Drawings 1043 and 1044, and in accordance with MRTS71 and AS/NZS 4671, and ACRS certified. Deformed bars Grade D500N. Round bars Grade R250N. Mesh Grade D500L. Reinforcement shall be hot dip galvanised to AS/NZS 4680 where shown. Reinforcing Steel welding shall be in accordance with Standard Drawing 1044.
  - WEEPHOLES shall be provided in the headwalls horizontally as follows:
    - Minimum of 1 weep hole for each culvert crown unit, placed centrally where spans  $\geq$  1200,
    - Location of weepholes shall be determined such that reinforcement cover requirements are met,
    - Approved drainage filter shall be provided at each weep hole.
  - Refer Standard Drawing 1359 for details of earthworks to culverts.
  - PROJECT-SPECIFIC INFORMATION to be shown on the drawings: Exposure classification; Culvert chainage; Skew angle; Base and apron setout, extents and details; Skew spanning slab details (if required); Headwall extents and details; Requirements for fish passage.
  - DIMENSIONS are in millimetres.

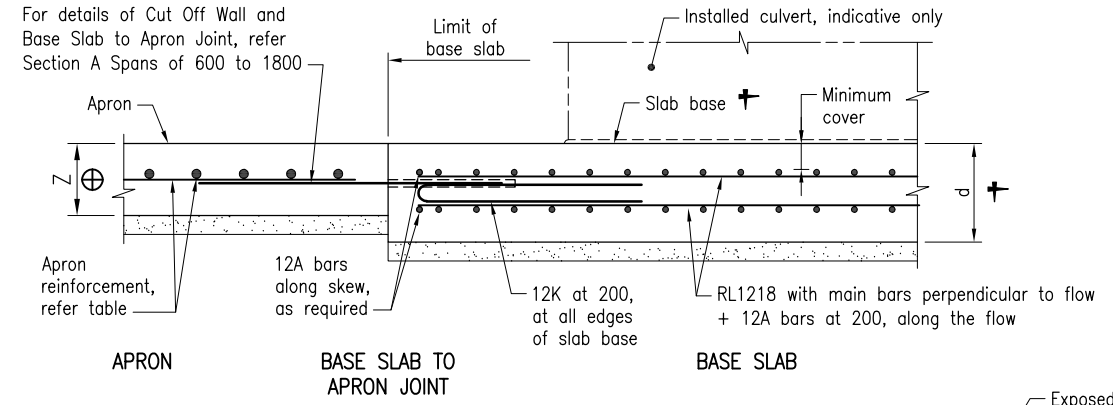
ASSOCIATED AND REFERENCED DEPARTMENTAL DOCUMENTS:  
 Design Criteria for Bridges and Other Structures  
 NDRRA Guidelines; Road Drainage Manual (RDM)  
 Standard Drawing 1359 Culverts - Installation, Bedding and Filling/Backfilling  
 MRTS03 Drainage, Retaining Structures and Protective Treatments  
 MRTS24 Manufacture of Precast Concrete Culverts  
 MRTS70 Concrete; MRTS71 Reinforcing Steel; MRTS78 Structural Steelwork

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R C BOX CULVERTS AND SLAB LINK BOX CULVERTS		
CULVERTS HEIGHT = 375 TO 600		Standard Drawing No
DRAWING 1 OF 2		1260
GENERAL ARRANGEMENT AND NOTES		Date 11/19
A3	Not to Scale	
A	B	

The purpose of This Standard Drawing is to provide typical standard details. The fitness for purpose of these details for a specific project shall be designed and certified by an RPEQ. The details specific to the project location shall be shown on the project specific drawings.



SECTION A REINFORCEMENT SPANS OF 600 TO 1800



SECTION A REINFORCEMENT FOR SPANS OF 2100

CUT OFF WALL TYPICAL FOR ALL SPANS

APRON AND CUT OFF WALL DIMENSIONS AND MINIMUM REINFORCEMENT REQUIREMENTS

Exposure classification	Apron and Cut off wall #	
	Thickness Z ⊕	Reinforcement
B2	150	N12 at 150 both ways
C1	175	N12 at 150 both ways
C2	190	N12 at 125 both ways

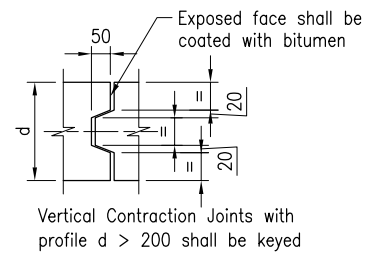
⊕ where Z is a constant thickness for aprons and cut off walls.

# Refer Note 5 of Drawing 1

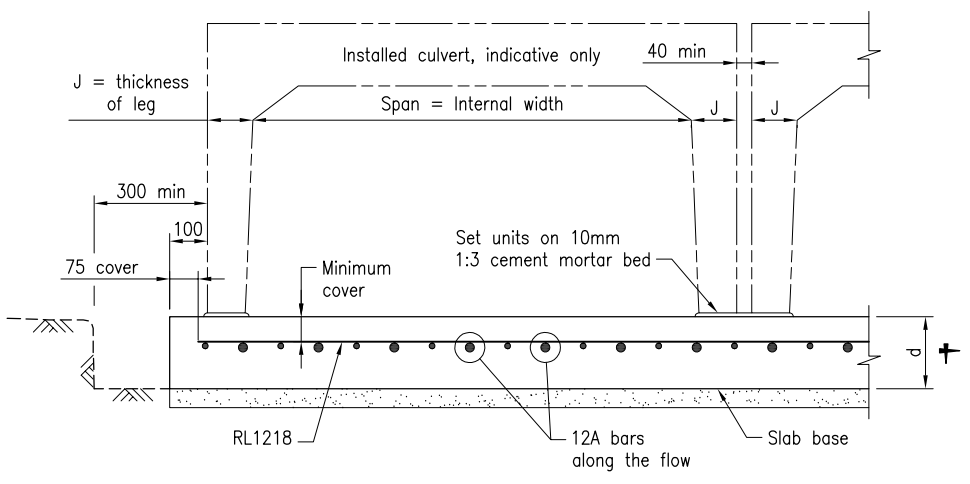
SLAB DETAILS

Up to Span	Base slab thickness d † for Exposure classification		
	B2	C1	C2
600	180	190	200
750	180	190	200
900	180	190	200
1200	180	190	200
1500	190	200	210
1800	190	200	210
2100	210	220	230

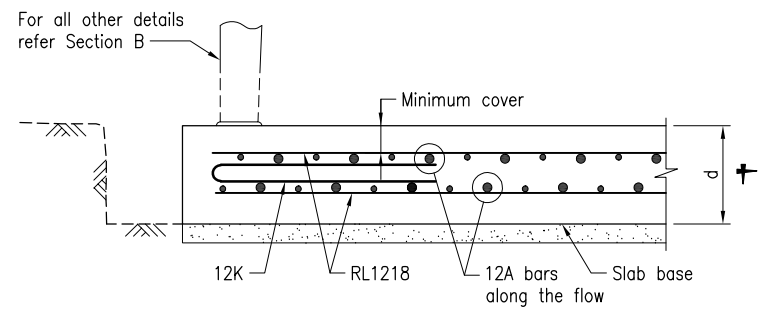
† where d is a constant thickness for slab base



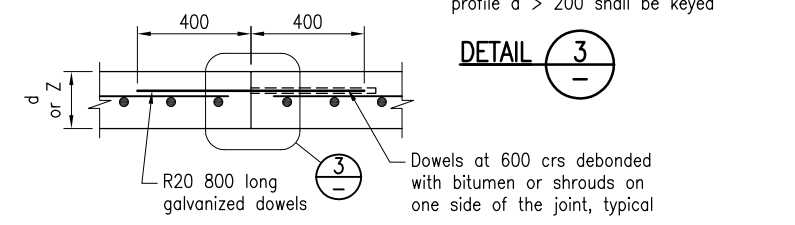
DETAIL 3 Vertical Contraction Joints with profile d > 200 shall be keyed



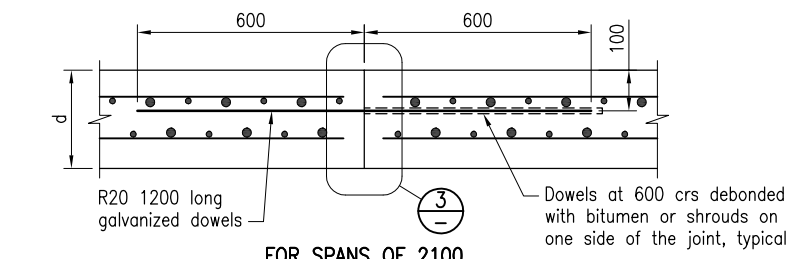
SECTION B SPANS OF 600 TO 1800



SECTION B SPANS OF 2100



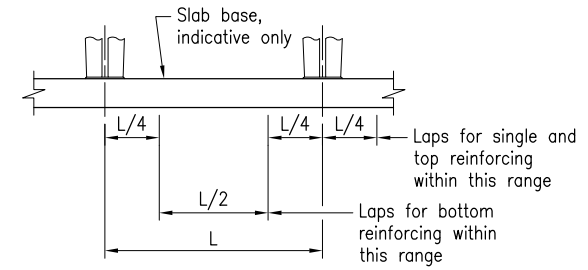
FOR SPANS OF 600 TO 1800 AND FOR ALL APRONS



FOR SPANS OF 2100

TYPICAL DOWELLED CONTRACTION JOINT - ALL SLAB BASES AND APRONS

Installed with direction of flow. Refer Note 4 on Drawing 1



REINFORCING BAR LAP LOCATIONS - ALL SLAB BASES

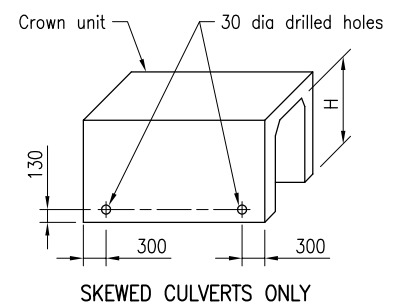
TYPICAL BASE SLAB FOR SMALL BOX CULVERTS

**DESIGN EXCLUSIONS :**  
 For culverts with a base > 10 metres along road centreline, this design should not be used in:  
 a) Highly reactive or expansive clay soils (linear shrinkage > 8%).  
 b) Where large differential settlements are expected to occur.  
 Specialist geotechnical design advice shall be sought in these circumstances, and structural capacity checked by structural engineer.  
**DESIGN FOUNDATION BEARING CAPACITY** is 150 kPa.  
 Foundation bearing capacity shall be certified by an RPEQ Geotechnical engineer prior to casting of base slab

- NOTES:**
1. Refer Drawing 1 for all notes.
  2. Refer Drawing 1 for typical General Arrangements for small box culverts.
  3. Refer Drawing 1 for typical Headwall details for small box culverts.

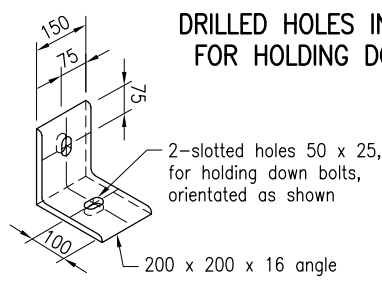
NOTES FOR INSTALLATION OF PRECAST UNITS:

1. PRECAST CONCRETE CULVERTS shall be supplied and installed in accordance with MRTS03 and MRTS24. Doweled connections shall be in accordance with this drawing.
2. INFILL between legs of multiple cell culverts shall be achieved by placing concrete plugs of 250 minimum length at both ends of the structure and infill the remaining gap with 1:10 lean mix having maximum aggregate size of 10mm packed dry.
3. Do not use fluid grout as hydrostatic head will damage culvert legs.
4. HOLDING DOWN ANCHORS shall be installed where the leg(s) of the crown unit extend more than 300 beyond the outside face of the headwall. Refer details on this drawing for holding down anchor placement and installation.
5. LEAN MIX CONCRETE shall be placed between spanning slabs on crown unit cells. Lean mix concrete infill is not required on the outermost crown units.

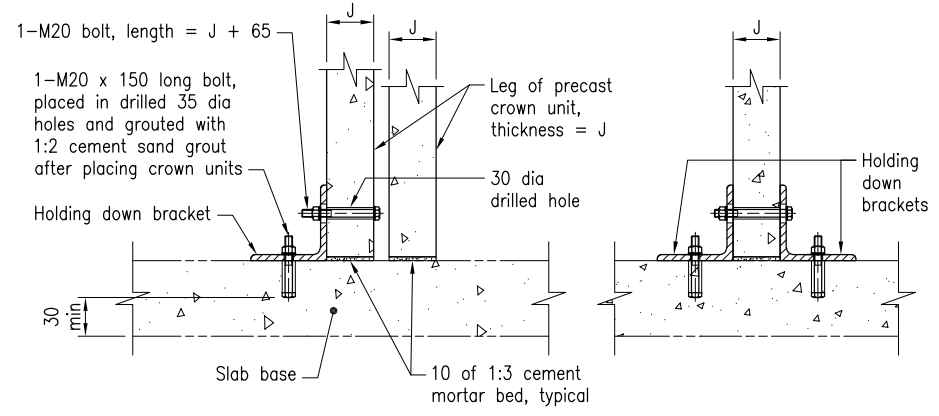


SKewed Culverts Only

DRILLED HOLES IN CROWN UNITS FOR HOLDING DOWN ANCHORS



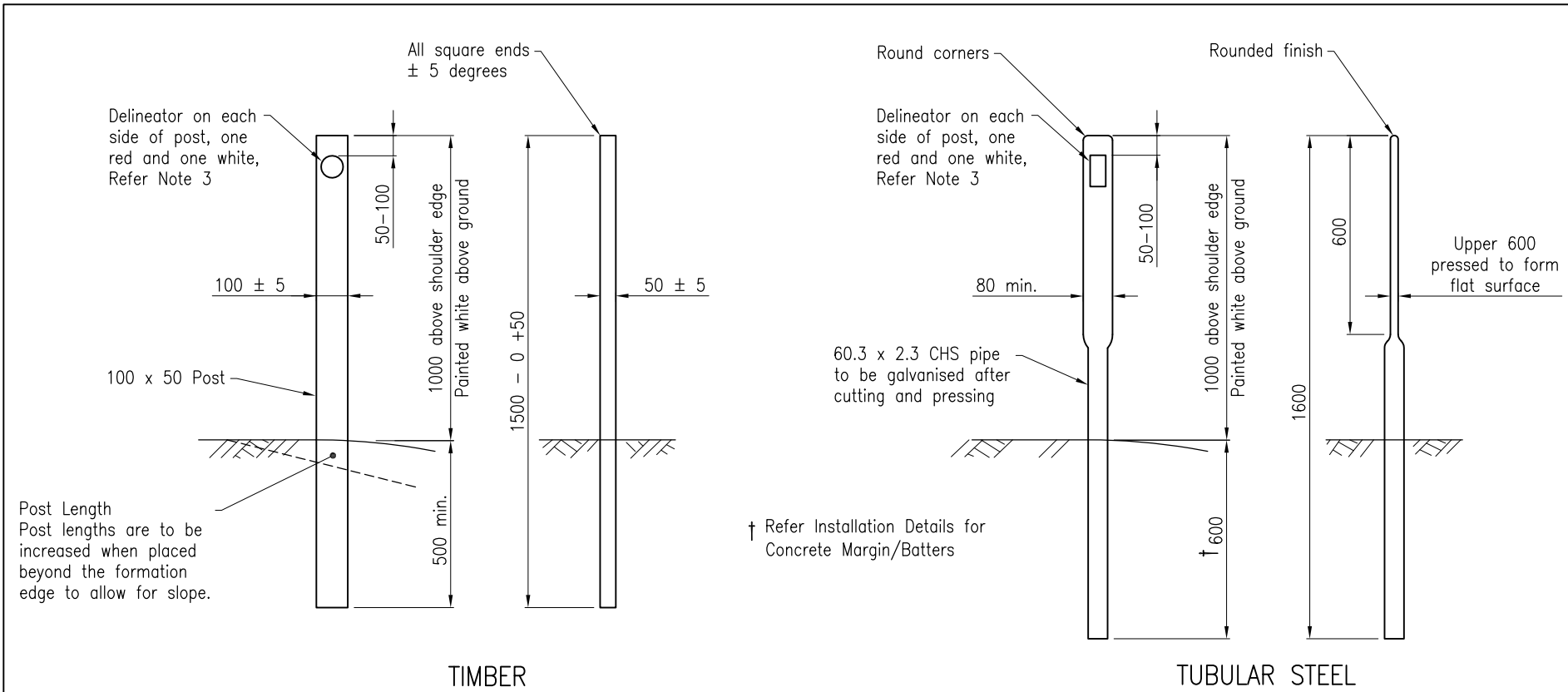
HOLDING DOWN BRACKET Isometric view



TYPICAL ASSEMBLY DETAILS HOLDING DOWN ANCHORS

TYPICAL INSTALLATION OF PRECAST UNITS

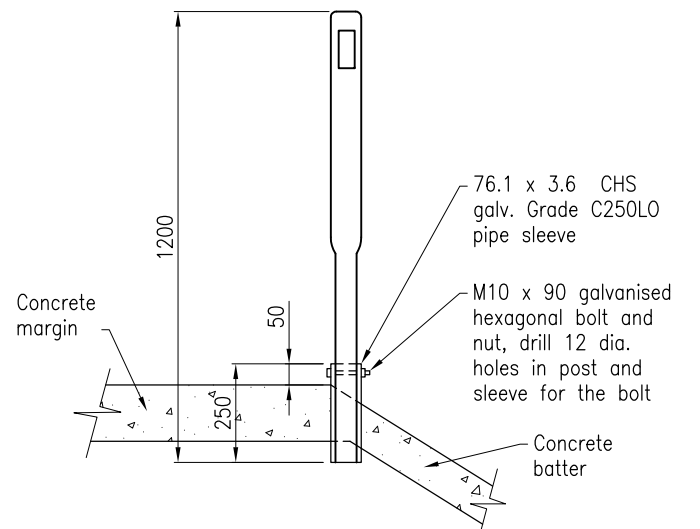
Department of Transport and Main Roads			
R C BOX CULVERTS AND SLAB LINK BOX CULVERTS			
CULVERTS HEIGHT = 375 TO 600		Standard Drawing No <b>1260</b> Date 11/19	
DRAWING 2 OF 2 SLAB BASE AND APRON DETAILS AND INSTALLATION OF PRECAST UNITS			
A3	Not to Scale	A	B



**ROAD EDGE GUIDE POSTS**  
Floodways – refer note 6

Post Length  
Post lengths are to be increased when placed beyond the formation edge to allow for slope.

† Refer Installation Details for Concrete Margin/Batters



**INSTALLATION DETAILS FOR CONCRETE MARGINS/BATTERS**

**NOTES:**

- Road Edge Guide Posts to be timber, CHS steel on any departmental compliant product installed in accordance with the manufacturer's specification.
- Road Edge Guide Posts, in addition to the requirements as shown in this drawing, are to comply with the requirements specified in MRTS14.
- Delineators to comply with the requirements specified in MRTS14.
- Siting, Alignment and spacing to be as detailed in the Manual of Uniform Traffic Control Devices (Part 2 – Section 4.2.4) unless specified otherwise in the Contract.
- CHS posts and sleeves to be hot dipped galvanized, subsequent to fabrication, to AS/NZS 4680.
- Floodways – Spacing to be 25m, with the posts in pairs. Guide posts installed on floodways to be Tubular Steel.
- Dimensions are in millimetres unless shown otherwise.

**ASSOCIATED DEPARTMENTAL DOCUMENTS:**

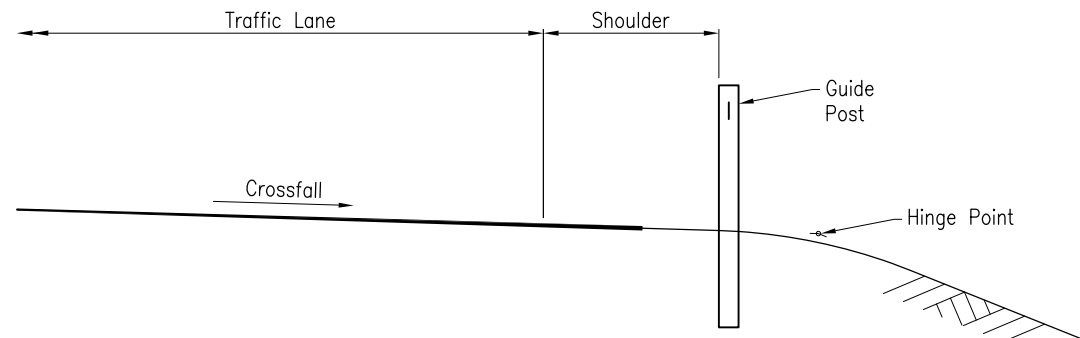
- Standard Drawings Specifications
- Manual of Uniform Traffic Control Devices (MUTCD)

**REFERENCED DOCUMENTS:**

- Departmental Specifications: MRTS14 Road Furniture

**Australian Standards:**

- AS/NZS 1163 Cold-Formed Structural Steel Hollow Sections
- AS/NZS 1552 Hot-dip galvanized steel bolts with associated nuts and washers for structural engineering
- AS/NZS 1906.2 Retroreflective materials and devices for road traffic control purposes – Retroreflective devices (non – pavement application)
- AS/NZS 4680 Hot-dip Galvanized (Zinc) Coatings on Fabricated Ferrous Articles



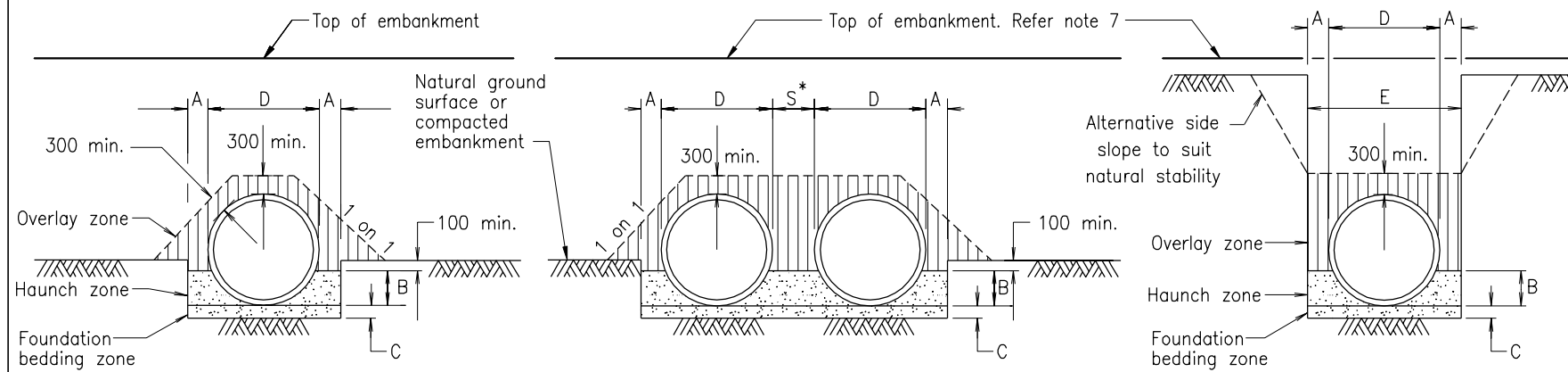
**INSTALLATION DETAILS FOR STANDARD ROADWAY**

Inside face of post to be set beyond the shoulder edge, but within the verge width.

**Installation variations:-**

- Low lengths of embankment
  - Inside face of post to be generally beyond the shoulder edge
  - Culvert/Bridges
- Where culvert headwall is at or inside the hinge point, provide REGP's. Inside face of post to be generally beyond the shoulder edge but always be in line with the adjacent culvert headwall.
- Where the culvert headwall is outside the hinge point, REGP's are not required.
- Post Length
- Post lengths are to be increased when placed beyond the formation edge to allow for slope.

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<b>ROAD EDGE GUIDE POSTS</b>				
POST AND INSTALLATION DETAILS	A3	Standard Drawing No		
	Not to Scale	1356		
		Date 7/19		
		A	B	C



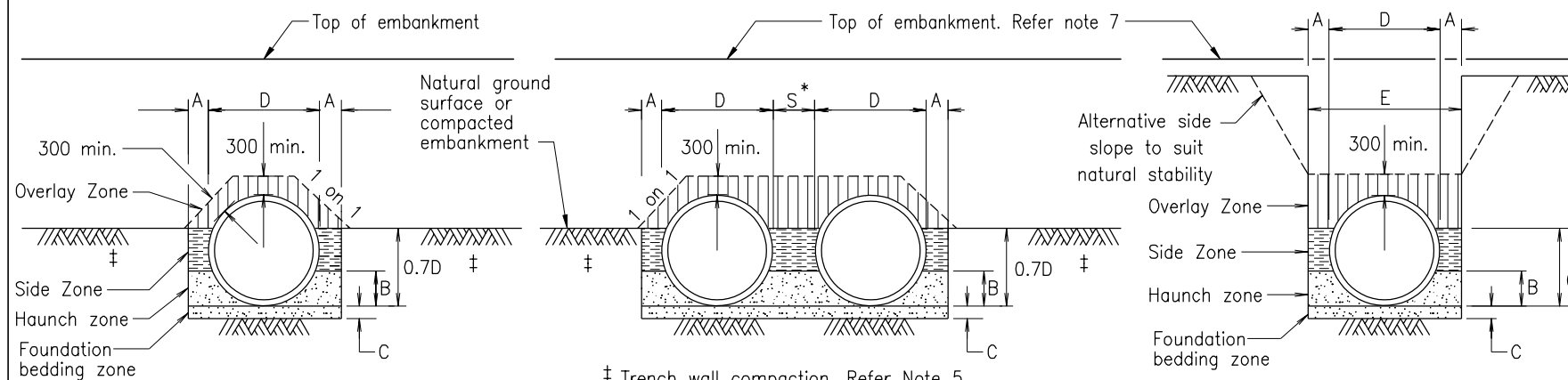
NOMINAL INTERNAL DIAMETER, ID(mm)	MINIMUM WIDTH, A (mm)	HAUNCH DEPTH, B (0.3 x D mm)	MAXIMUM ALLOWABLE WIDTH, E(m) TRENCH INSTALLATION
300	300	110	1.1
375	300	135	1.2
450	300	160	1.3
525	300	180	1.5
600	300	205	1.6
750	450	255	1.8
900	450	310	1.9
1050	450	360	2.1
1200	450	405	2.2
1350	450	450	2.4
1500	500	505	2.7
1650	500	550	2.9
1800	500	600	3.1
1950	500	665	3.3
2100	500	715	3.5
2400	600	810	4.2
2700	600	910	4.6
3000	700	1005	5.0

NOTES :

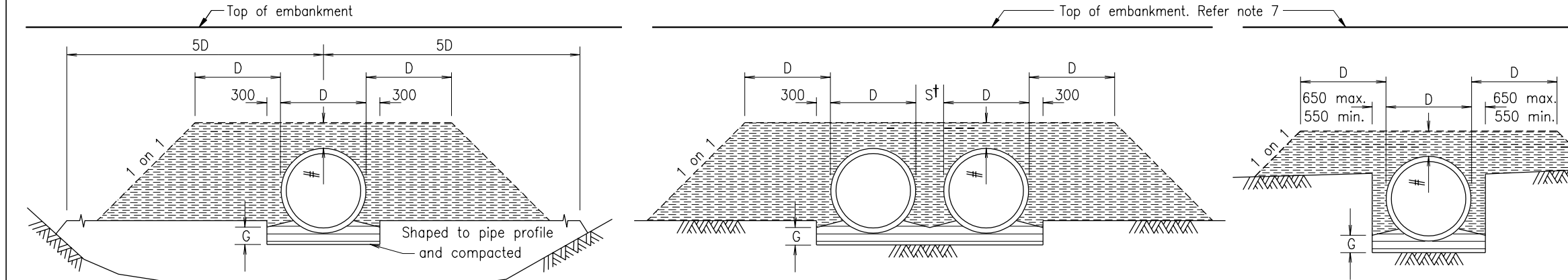
- "D" denotes external diameter of culvert.
- FOUNDATION BEDDING
  - C R.C. Pipes
    - 100 if ID < 1350
    - 150 if ID ≥ 1350
  - G Corrugated Steel Culverts
    - 100 in firm material other than rock
    - $\frac{D}{4}$  or 250 whichever ever the lesser in rock
  - H Precast Box Culverts
    - 75 min. in firm material other than rock
    - 150 min. in rock
- SPACING BETWEEN MULTIPLE CULVERTS
  - S<sup>†</sup> R.C. Pipes
    - 300 when nominal ID ≤ 600
    - 600 when nominal ID > 600 and ≤ 1800
    - 900 when nominal ID > 1800
  - S<sup>††</sup> Corrugated Steel Culverts
    - Nestable Culverts :
      - $\frac{Dia}{2}$  or 300 min.
    - Helical Lock-seam Culvert :
      - 300 (when nominal ID ≤ 600)
      - $\frac{Dia}{2}$  (when nominal ID > 600 and ≤ 1800)
      - 1200 (when nominal ID > 1800)

LEGEND:

- Overlay material
- Fill/Backfill material
- Foundation Bedding/Haunch material
- R.C. Pipes and R.C. Box Culverts
- Foundation Bedding material
- Corrugated Steel Pipes



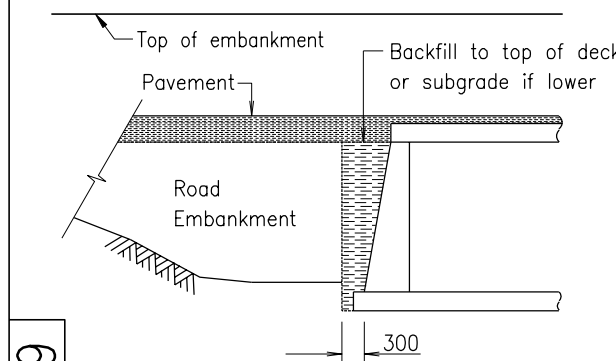
TYPE HS3 SUPPORT FOR CONCRETE PIPES



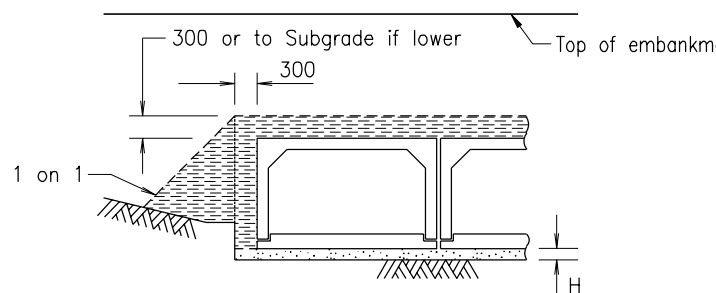
HELICAL LOCK-SEAM CORRUGATED PIPE CULVERTS/NESTABLE CORRUGATED STEEL PIPE CULVERTS

- WINGWALLS fill/backfill material shall be placed 300mm thick behind wingwalls for the length and height of the wings.
- TRENCH WALL COMPACTION of natural ground or embankment Minimum 90% Standard RDD for minimum 2.5D each side of trench wall and to a minimum depth of 0.7D.
- DETAILS TO BE SHOWN ELSEWHERE IN THE DOCUMENTS concrete pipe support type.
- WORKING LOADS are those due to fill material and standard highway vehicles as per AS 3725. Allowance for construction loads shall comply with standard specification MRS11.03.
- MINIMUM DEPTH OF OVERLAY ZONE above pipes/culverts as shown may include pavement. Pavement within this area to be compacted by hand or alternatively a lean mix concrete pavement layer may be used.
- HELICAL LOCK-SEAM CORRUGATED PIPE CULVERTS MINIMUM COVER:
 

Diameter	Minimum Cover
≤1200mm	600mm
>1200mm	$\frac{Diameter}{2}$
- NESTABLE AND MULTIPLE PLATE CORRUGATED STEEL CULVERTS: Minimum cover shall be 600mm or Diameter or Span whichever is the greater.

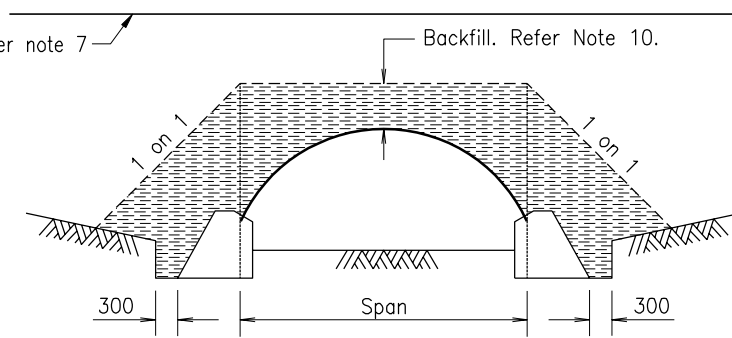


R.C. SLAB DECK CULVERT



PRECAST R.C. BOX CULVERT

The same backfill details apply for R.C.B.C. Crown Units on a cast in situ base slab. However, bedding materials may not be required, refer relevant culvert details shown elsewhere in documents.



MULTIPLE PLATE CORRUGATED STEEL ARCH CULVERT

CULVERTS		Queensland Government Department of Main Roads	
INSTALLATION, BEDDING AND FILLING/BACKFILLING AGAINST/OVER CULVERTS	Size A3	Drawing No	
	Scales	1359	
	as shown	Date	10/03
		A	B C D E

1359

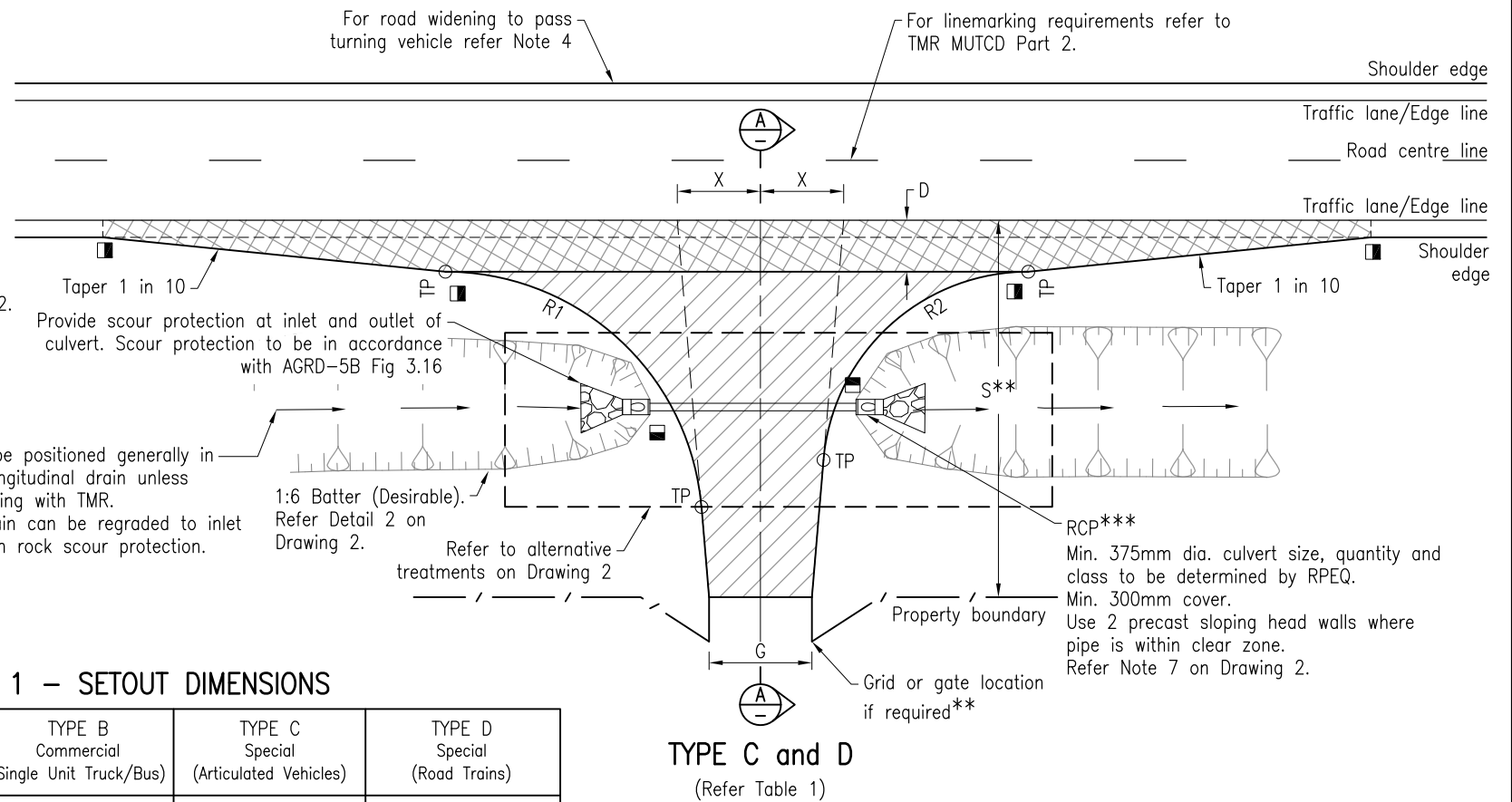
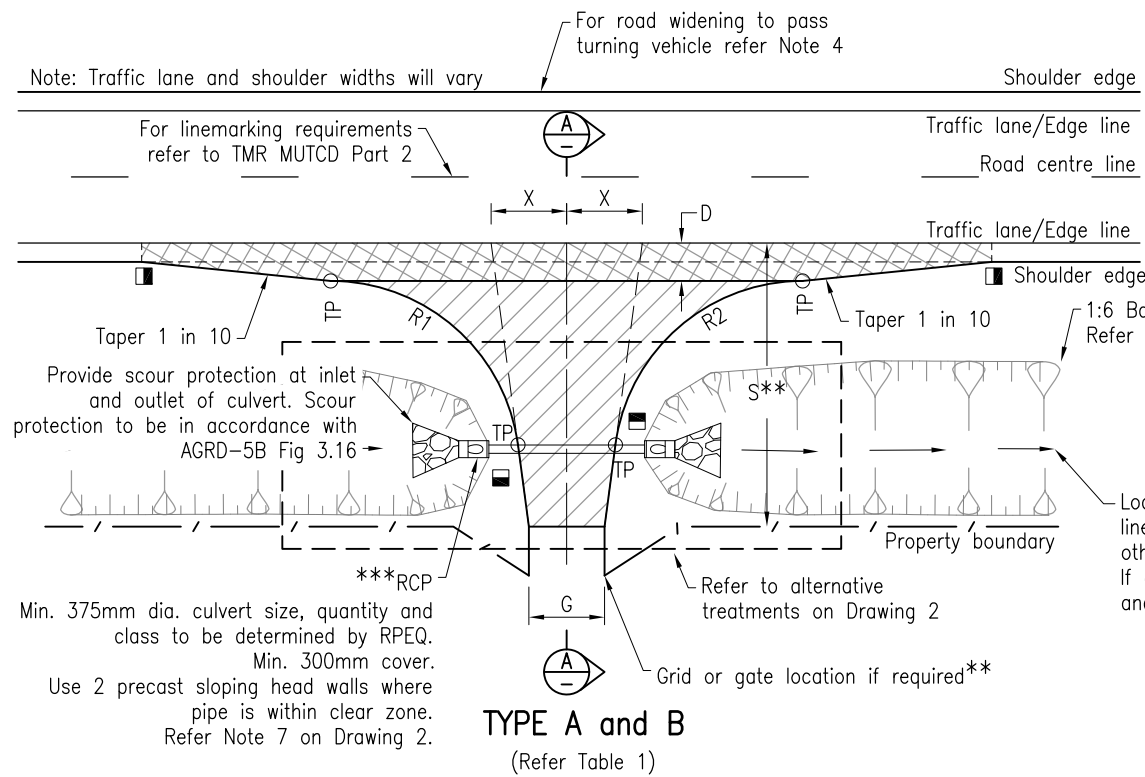


TABLE 1 – SETOUT DIMENSIONS

	TYPE A Residential (Car/Service Vehicle)	TYPE B Commercial (Single Unit Truck/Bus)	TYPE C Special (Articulated Vehicles)	TYPE D Special (Road Trains)
R1	10m	10m	15m	20m
R2	10m	10m	12m	12m
D	2m	2m	3m	3m
X	3m	5m	4m	5m
S	12m	15m	22m	30m**
G	4-6m $\phi$	4-6m $\phi$	6m	6m
$\phi$	6m Minimum width for two-way two-lane access.			

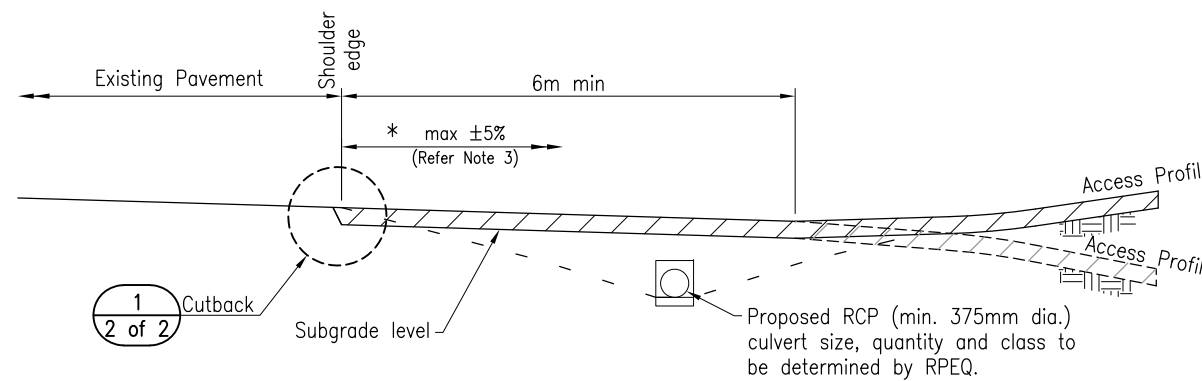
LEGEND

- Pavement Type 1 – Bitumen surfacing, 2 coat bitumen seal. Pavement depth and type to match existing or proposed through road pavement. Refer to Table 2 for minimum depths.
- Pavement Type 2 – Gravel, unbound pavement. Refer to Table 2 for depths. Access may be required to be sealed for up to 10m width from edge line (to minimise gravel on through road) to be determined by the RPEQ.
- \* Maintain existing shoulder crossfall and superelevation.
- \*\* Length 'S' to property boundary by TMR. Where length 'S' is greater than the road reserve boundary, then fencing and grid/gate shall be recessed at the cost of owner from property boundary to ensure vehicle does not impede through lane.
- \*\*\* RCBC (min. size 600x300) can be used instead of RCP, or invert option where table drain is of insufficient depth for a culvert.
- Denotes Road Edge Guide Post
- The Filled in portion denotes a red reflector and the open portion a white reflector.

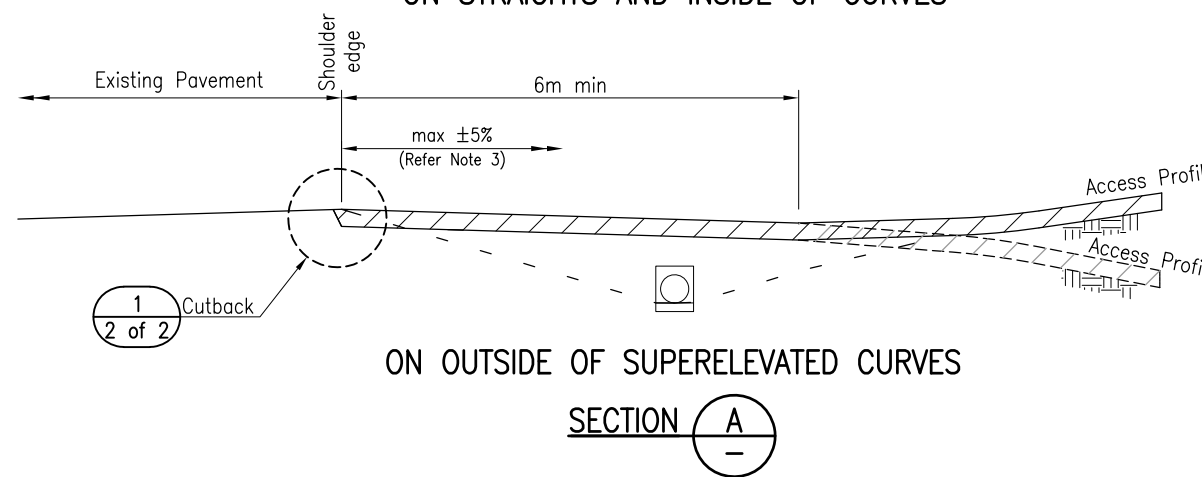
TABLE 2 – MINIMUM PAVEMENT DETAILS AND DEPTH

	TYPE A Residential (Car/Service Vehicle)	TYPE B Commercial (Single Unit Truck/Bus)	TYPE C & D Special (Articulated Vehicles)
Sealed Pavement Base Course	150mm(Min.) Type 2.2  or match existing	200mm(Min.) Type 2.2  or match existing	280mm(Min.) Type 2.2  or match existing
Unsealed Pavement Base Course	150mm(Min.) Type 2.4  or match existing	200mm(Min.) Type 2.4  or match existing	#

- NOTE:
- Pavement to be sealed if through road is sealed to minimum of width 'D' of Table 1.
  - Where access is located on curves, intersections or is Type C, or excessive screwing motion will occur, pavement seal to extend to property boundary at the owner's cost to the engineer's/designer's discretion.
- # Bitumen sealed pavement only.
- Type 3.1 or 4.3 or match existing is permissible if Type 2.2/2.4 is unable to be used.



ON STRAIGHTS AND INSIDE OF CURVES



ON OUTSIDE OF SUPERELEVATED CURVES

SECTION A

NOTES:

- Details shown on this drawing are the minimum layout requirements for a private rural property access. For additional requirements and other design considerations refer to Sections 7.2.1 and 7.2.3 of the AGRD-4 (2009).
- For sight distance requirements refer to Section 3.4 of the RPDM (2nd Edition) Volume 3 Supplement to AGRD-4A, and Section 3 of the AGRD-4A (2010).
- Vertical clearance checks to be carried out for proposed vehicle in accordance with AS 2890.2 – Parking Facilities Off-Street Commercial Vehicle Facilities.
- RPEQ or designer to conduct traffic impact assessment to determine if turning treatments are required. Urban right-turn treatments maybe appropriate, refer to Section 7.5 of the AGRD-4A (2010) for pavement widening requirements. Pavement type to match existing or minimums specified in Table 2 of this drawing.
- This drawing is to be read in conjunction with Drawing 2 of 2.
- All dimensions in metres and are minimum unless specified.

REFERENCED DOCUMENTS:

- Departmental Standard Drawings:
- 1243 Precast Culvert Headwalls – Headwall Connections for Culverts
  - 1305 Pipe Culverts - Headwall and Apron for Pipe Diameter 375 to 675
  - 1359 Culverts - Installation, Bedding and Filling/Backfilling Against/Over Culverts
- Departmental Documents:
- RPDM Road Planning and Design Manual (2nd Edition)
  - MRTS03 Drainage, Retaining Structures and Protective Treatment
- Austrroads Guide to Road Design:
- AGRD-4 (2009) Part 4: Intersections and Crossings – General (2009)
  - AGRD-4A (2010) Part 4A: Unsignalised and Signalised Intersections (2010)
  - AGRD-5B (2013) Part 5B: Drainage – Open Channels, Culverts and Floodways (2013)

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PROPERTY ACCESS			© The State of Queensland (Department of Transport and Main Roads) 2020 <a href="http://creativecommons.org/licenses/by/3.0/au">http://creativecommons.org/licenses/by/3.0/au</a>
RURAL PROPERTY ACCESS DRAWING 1 OF 2		A3 Not to Scale A	Standard Drawing No <b>1807</b> Date 07/2020

# APPENDICES H

## Certification Statement and Authorisation

## Appendix B: Traffic impact assessment certification

### Certification of Traffic Impact Assessment Report

#### Registered Professional Engineer Queensland

for


Project title:	41650 Bruce Highway, Bluewater. QLD Lot 73 on EP1620 Traffic Impact Assessment (MJ2520-A)
----------------	---

As a professional engineer registered by the Board of Professional Engineers of Queensland pursuant to the *Professional Engineers Act 2002* as competent in my areas of nominated expertise, I understand and recognise:

- the significant role of engineering as a profession, and that
- the community has a legitimate expectation that my certification affixed to this engineering work can be trusted, and that
- I am responsible for ensuring its preparation has satisfied all necessary standards, conduct and contemporary practice.

As the responsible RPEQ, I certify:

- (i) I am satisfied that all submitted components comprising this traffic impact assessment, listed in the following table, have been completed in accordance with the *Guide to Traffic Impact Assessment* published by the Queensland Department of Transport and Main Roads and using sound engineering principles, and
- (ii) where specialised areas of work have not been under my direct supervision, I have reviewed the outcomes of the work and consider the work and its outcomes as suitable for the purposes of this traffic impact assessment, and that
- (iii) the outcomes of this traffic impact assessment are a true reflection of results of assessment, and that
- (iv) I believe the strategies recommended for mitigating impacts by this traffic impact assessment, embrace contemporary practice initiatives and will deliver the desired outcomes.

Name:	Derek Saw	RPEQ No:	7363
RPEQ competencies:	Civil		
Signature:		Date:	20th March 2024
Postal address:	50 Punari Street, Currajong, 4812		
Email:	derek.saw@nceng.com.au		



<b>Traffic impact assessment components to which this certification applies</b>	<b>✓</b>
<i>1. Introduction</i>	
Background	✓
Scope and study area	✓
Pre-lodgement meeting notes	
<i>2. Existing Conditions</i>	
Land use and zoning	✓
Adjacent land uses / approvals	✓
Surrounding road network details	✓
Traffic volumes	✓
Intersection and network performance	✓
Road safety issues	✓
Site access	✓
Public transport (if applicable)	
Active transport (if applicable)	
Parking (if applicable)	
Pavement (if applicable)	✓
Transport infrastructure (if applicable)	✓
<i>3. Proposed Development Details</i>	
Development site plan	✓
Operational details (including year of opening of each stage and any relevant catchment / market analysis)	✓
Proposed access and parking	✓
<i>4. Development Traffic</i>	
Traffic generation (by development stage if relevant and considering light and heavy vehicle trips)	✓
Trip distribution	✓
Development traffic volumes on the network	✓
<i>5. Impact Assessment and Mitigation</i>	
With and without development traffic volumes	✓
Construction traffic impact assessment and mitigation (if applicable)	
Road safety impact assessment and mitigation	✓
Access and frontage impact assessment and mitigation	✓
Intersection delay impact assessment and mitigation	
Road link capacity assessment and mitigation	✓
Pavement impact assessment and mitigation	
Transport infrastructure impact assessment and mitigation	
Other impacts assessment relevant to the specific development type / location (if applicable)	

<b>Traffic impact assessment components to which this certification applies</b>	✓
<i>6. Conclusions and Recommendations</i>	
Summary of impacts and mitigation measures proposed	✓
Certification statement and authorisation	✓
<i>[change above and / or insert other component as needed]</i>	

---

# APPENDIX 2

## *REPORT ON LAND SUITABILITY FOR AGRICULTURAL PRODUCTION*



# AGRICULTURAL PRODUCTION REPORT

## REPORT ON LAND SUITABILITY FOR AGRICULTURAL PRODUCTION

41634 BRUCE HIGHWAY, BLUEWATER QLD 4818

LOT 173 ON EP620

Report prepared by Rob Milla, BEng(Agricultural)

## 1.0 Introduction

**Client:** Michael and Deanna Pallanza  
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**Disclaimer:** This report has been prepared to the best of my experience and all opinions expressed are based on Qld Government soils and mapping data. I am a qualified Agricultural Engineer (USQ 2003) and have been working as an Agronomic Advisor in the North Qld region over the last 20 years. This report has been prepared independently and all matters are based on my professional experience and available data.

## 2.0 Purpose and scope of report

The client has requested a report on the suitability or otherwise of Lot 73 on EP1620 for agricultural production, and if a proposed subdivision into 2 lots would impact this suitability.

## 3.0 Proposed Subdivision

The current proposal is to subdivide Lot 73 (11.25 Ha) into two equal lots of 5.625 Ha each. The proposed subdivision is shown below in Figure 1.



Figure 1: Proposed subdivision of Lot 73

**Current land use:** Lot 73 in its current state comprises some tree cover as per many blocks in the surrounding area. There is no agricultural cropping in the near vicinity apart from a small mango orchard run as a hobby. The next closest agricultural cropping enterprises are approximately 20km north and comprise pineapples and sugarcane pursuits.

**Soil types:** Soils across existing Lot 73 are predominantly light in texture over a sodic clay (brown area in Figure 2) and a lesser amount of approximately 30% grey brown sand over mottled sands and coarse sand and gravel at depth (yellow section of Figure 2). Descriptions of the soils from the Australian Soils Classification are as follows:

Brown section of Figure 2: Sand or loam over sodic clay – Sodosol. Strongly bleached loamy sand or sandy loam A horizons 25-60cm thick overlying mottled light brownish grey and yellowish brown heavy clay B horizons.

Yellow section of Figure 2: Red, yellow or grey loam or earth soils – Kandosol. Thin light grey-brown loamy sand to sandy loam A1 over variably bleached A2 to 40-50cm; gradual change to massive, porous mottled sandy loam to sandy clay loam with soft ferruginous segregations, grading to coarse sands and waterworn gravels at 1.5-2m.



Figure 2: Soil types over existing Lot 73

#### 4.0 Suitability of these soils for agricultural production

Light textured soils typically have high irrigation demand for any irrigated agricultural cropping. Given this block is still situated in the lower rainfall dry tropics zone, irrigation would be required. While there are some household bores in this general region, having access to volumes required for irrigation is unlikely. It is also very likely that any underground

irrigation water may be of poor quality due to its proximity to the coast – likely high in electrical conductivity (salinity), and given there is sodicity present in the overlying soils, high sodium water is also likely and would lead to soil structural issues if used for irrigation.

The sodic soils will have poor structure, and are dispersive by nature, meaning amelioration would be required for the soils to support agricultural cropping. The nutritional status will also be quite low, meaning that potentially higher than normal rates of synthetic fertiliser would be required for most crops. Given the Australian Soil Classification describes these soils as mottled and bleached, this also indicates that the soils have poor internal drainage, probably high water table and they have undergone anaerobic conditions at some point, further depleting the nutritional and structural status of the soil.

When considering the above issues, it is not recommended that these soils be used for any agricultural cropping in a commercial situation.

## 5.0 Environmental Considerations

Any cropping would likely have a negative impact on the environment, as it would require cultivation of already poor structured soils which could lead to increased sediment loss. If fertilisers were applied, it is likely there would be some leaching losses due to the light textured soils. The best environmental outcome for the existing Lot 73 would be to leave it as pasture/woodland as it currently stands, or groundcover such as maintained lawns as may be the case if the subdivision proceeded and houses constructed.

## 6.0 Other considerations

The size of existing Lot 73 at 11.25 Ha is not large enough to warrant any commercially viable agricultural cropping enterprise. It may be possible to grow either pineapples or sugarcane on these soils if they were ameliorated, had significant nutrition applied and had reliable irrigation water, however as mentioned above, the scale would be inadequate to be profitable. There is no nearby infrastructure for processing or specialised machinery nearby, further eroding the potential for a small hobby enterprise of these crops. Realistically, the only viable possibility would be a small market garden grown as hydroponic or protected cropping on benchtops. Both of these options would be run on quite a small scale, typically as a hobby for a landowner. Neither of these require any more than 1 Ha of land for most hobbyists, so the proposed subdivision of two 5 Ha blocks would not impact if a new landholder wished to undertake this option.

## 7.0 Conclusion and Recommendation

From an agricultural productivity perspective, it is my opinion based on the matters discussed in this report that Lot 73 as it exists has little potential for any agricultural cropping production. The proposed subdivision will not have any adverse impacts on agricultural productivity of the land or general region, and may even provide an opportunity for a small hobby enterprise – however it is unlikely this enterprise would generate significant income.

If any further information or clarification is required, please contact me.

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