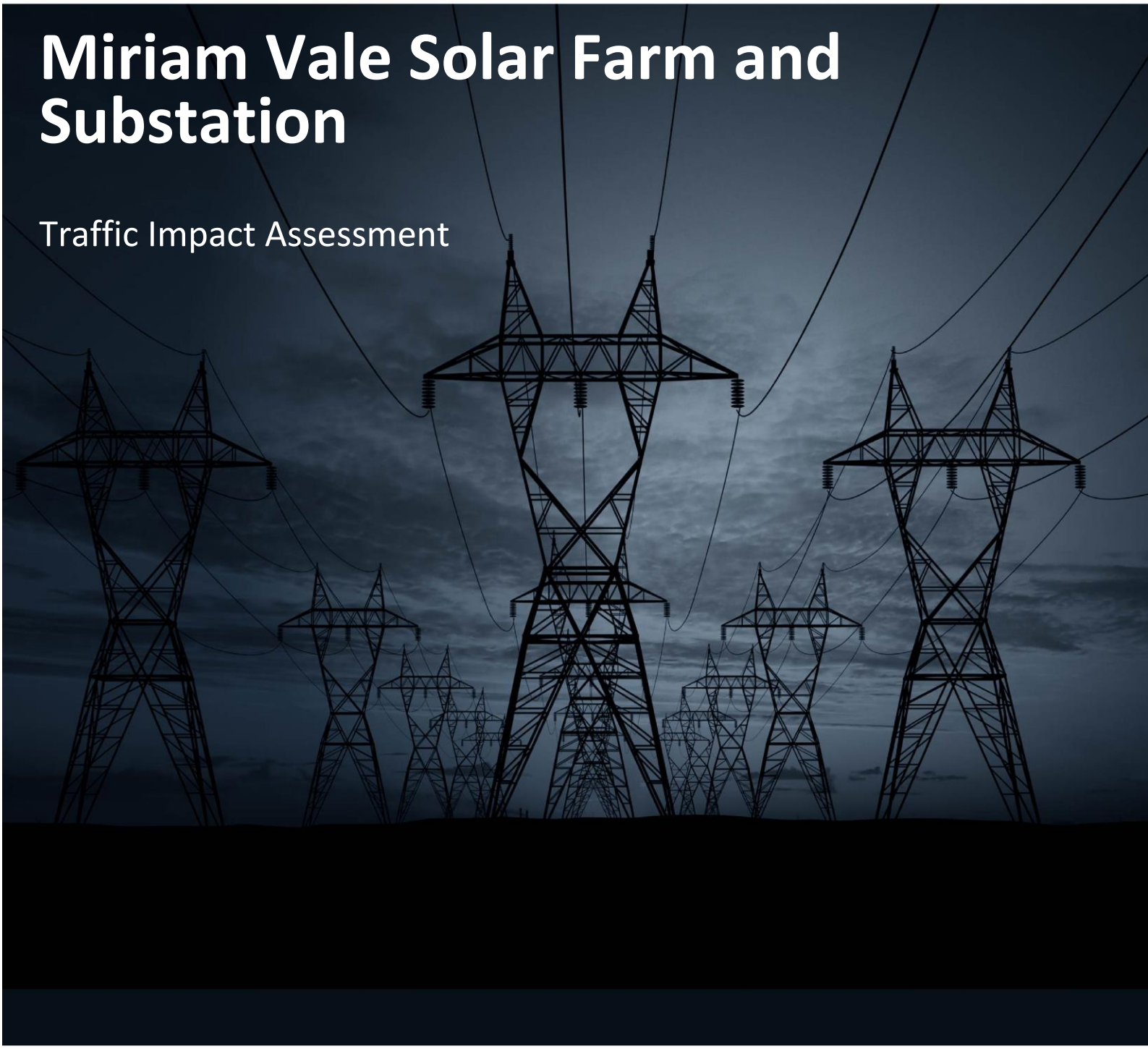
PSA CONSULTING

Miriam Vale Solar Farm and Substation

Traffic Impact Assessment



15 May 2024

Attexo

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Revision History

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V3	15 May 2024	FINAL	Tim Boxall Marinel Montesclaros	 Hannah Richardson RPEQ 17016

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LIST OF ACRONYMS

AADT	Average Annual Daily Traffic
BAL	Basic Right Turn
BAR	Basic Left Turn
GFA	Gross Floor Area
GRC	Gladstone Regional Council
GTIA	Guide to Traffic Impact Assessments
LGA	Local Government Area
PEP	Private Energy Partners
PSA	PSA Consulting
QLD	Queensland
SISD	Safe Intersection Sight Distance
TARS	Traffic Analysis Report System
TIA	Traffic Impact Assessment
TMR	Department of Transport and Main Roads

1 INTRODUCTION

PSA Consulting (PSA) has been commissioned to prepare a Traffic Impact Assessment (TIA) to accompany a Development Application for the proposed Miriam Vale Solar Farm in the Gladstone Regional Council (GRC) Local Government Area (LGA). Private Energy Partners (PEP) are proposing to develop a photovoltaic solar farm up to 1GW across the site which includes the construction of the solar farm and associated buildings, infrastructure, substation, and interconnecting transportation line infrastructure. The project will involve 14 separate land parcels.

The proposed development area is shown in Figure 1.

Figure 1: Site Locality Plan (Source: Attexo, PSA)

This TIA has been prepared for the Solar Farm and Substation component of the development.

1.1 SCOPE OF REPORT

This report addresses the requirements of the QLD Department of Transport and Main Roads' (TMR) Guide to Traffic Impact Assessments (GTIA) and includes the following sections:

- Existing Conditions;
- Development Details;
- Impact Assessments including:
    - Traffic Impact Assessment;
    - Safety Assessment
    - Site Access Assessment

2 EXISTING CONDITIONS

2.1 EXISTING SITE

The proposed development site is located across 14 separate land parcels in the GRC LGA being:

- Lot 88 on FD14
- Lot 130 on FD3
- Lot 132 on FD32
- Lot 137 on FL40301
- Lot 14 on FL40301
- Lot 133 on FL40301
- Lot 134 on FL40301
- Lot 136 on FL40301
- Lot 138 on FL40301
- Lot 251 on FD900
- Lot 139 on FL40301
- Lot 142 on FL40301
- Lot 143 on FL40301
- Lot 5 on FD112

These 14 land parcels are shown in Figure 2.

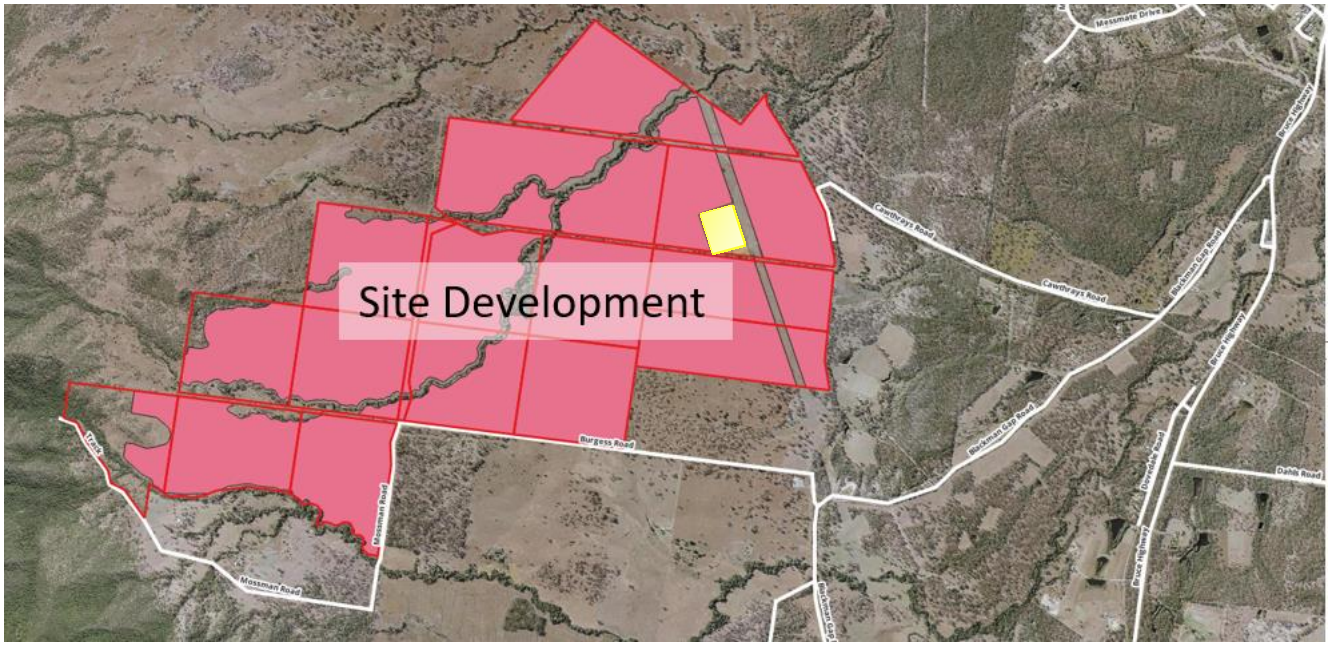


Figure 2: Site Locality Map (Source: Attexo)

The site was previously host to a plantation of nonendemic *Eucalyptus* species; however is currently used for grazing and is assumed to be generating negligible traffic volumes.

2.2 ROAD NETWORK

The primary travel route to the site will be south from Gladstone on the Bruce Highway via either Gladstone Benaraby Road or the Dawson Highway. Further south, vehicles will travel to Blackman Gap Road and onto Burgess Road to access the site. An alternative access location has been considered off Cawthrays Road, however primary access off Burgess Road is being pursued as the preferred outcome.

Figure 3 illustrates the primary routes for vehicles travelling to and from the site.

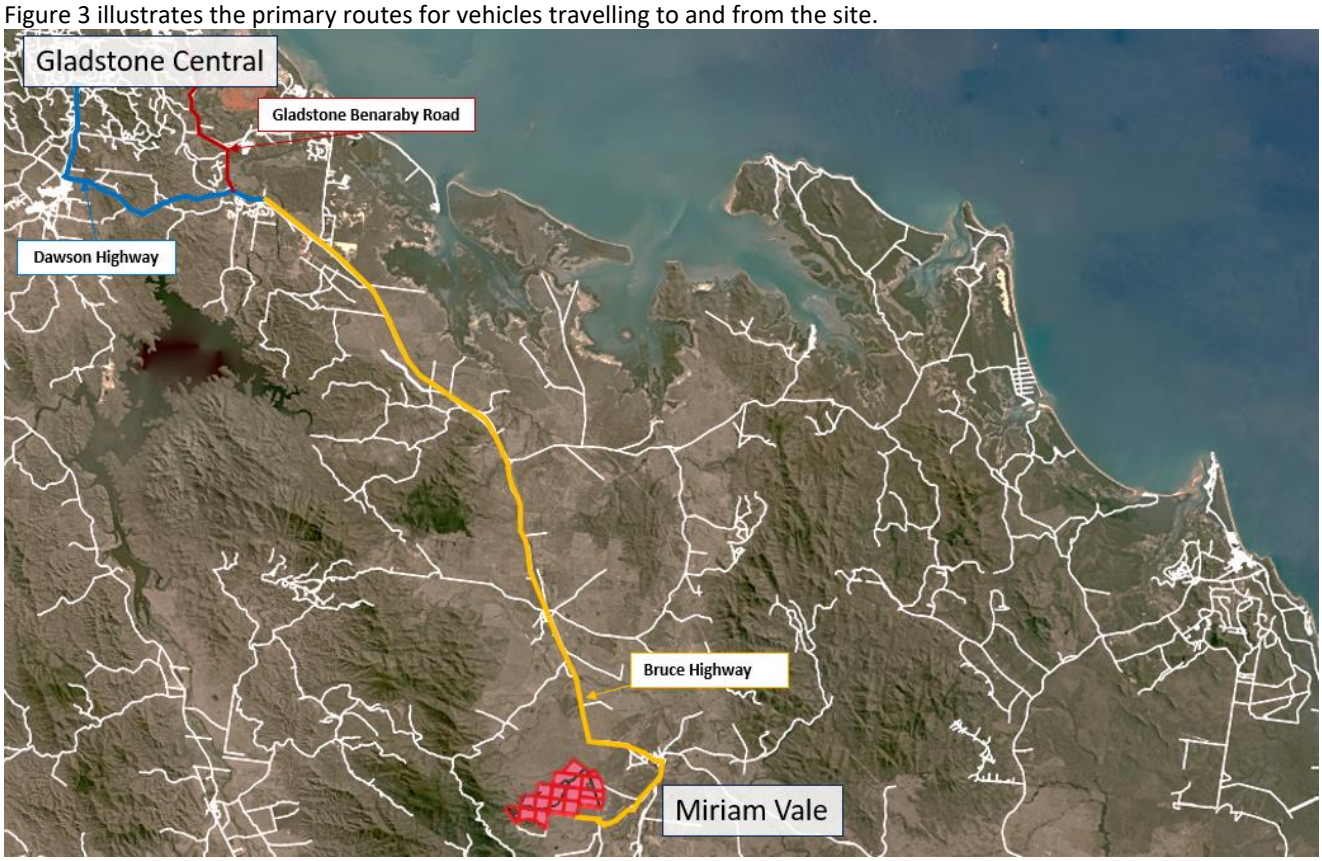


Figure 3: Light Vehicle and Heavy Vehicle Travel Route (Source: PSA, Attexo)

Given that the Bruce Highway is the nearest major state-controlled road to the proposed development site, impacts of the proposed development on the existing operation of this highway form the focus of this assessment.

The proposed development is situated along Burgess Road with access provided via Blackman Gap Road from the Bruce Highway. The immediate surrounding roads are illustrated in Figure 4.

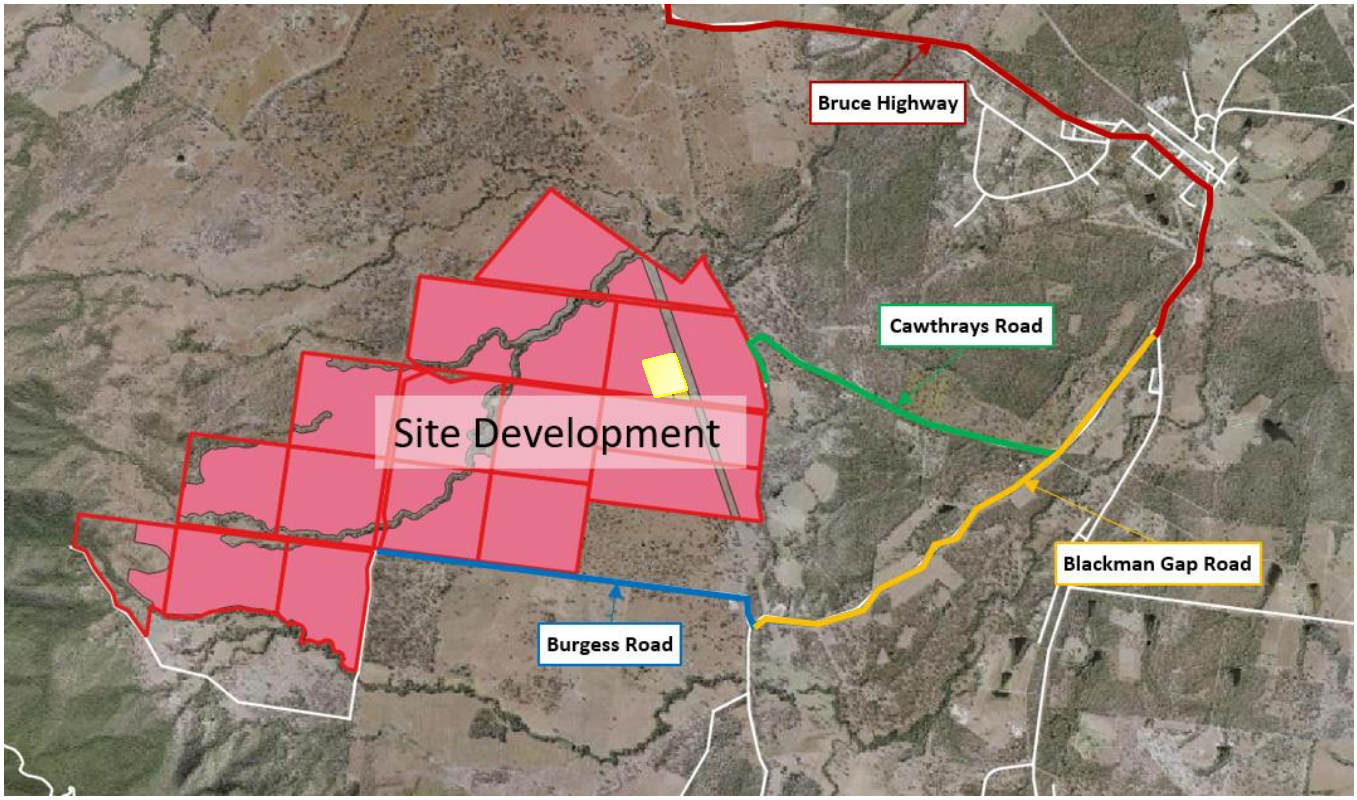


Figure 4: Surrounding Road Network (Source: Attexo, PSA)

Table 1 highlights the surrounding road networks and characteristics.

Table 1: Surrounding Road Network Characteristics (Source: Gladstone Regional Council)

ROAD NAME	JURISDICTION	CLASSIFICATION / HIERARCHY	CROSS SECTION / GEOMETRY	POSTED SPEED LIMIT
Bruce Highway	State-Controlled	State Road	Sealed two-lane / two-way undivided carriageway	80km/h[1] to 100km/h
Blackman Gap Road	Council-Controlled	Rural Collector	Sealed two-lane / two-way undivided carriageway	100km/hr
Burgess Road	Council-Controlled	Rural Access	Unsealed two-way carriageway	Unposted 100km/hr
Cawthrays Road	Council-Controlled	Rural Access	Unsealed two-way carriageway	Unposted 100km/hr

Note:
1. The Bruce highway varies in posted speed limits depending on its location. 80km/h is the posted speed limit before exiting the Bruce Highway to enter onto Blackman Gap Road.

2.3 EXISTING ACTIVE AND PUBLIC TRANSPORT NETWORKS

There is no existing active or public transport network in the site vicinity, as can be expected due to the site's location and surrounding development in a rural area.

3 DEVELOPMENT PROFILE

3.1 DEVELOPMENT DETAILS

This development involves the construction and operation of a photovoltaic solar farm of up to 1GW across the site. This includes associated infrastructure including substation, and interconnecting transportation line infrastructure.

3.2 DEVELOPMENT TRAFFIC GENERATION AND DISTRIBUTION

Traffic generated by the development has been determined through consultation with Attexo. It is expected from previous similar solar farm traffic impact assessments prepared by PSA, that the workforce will consist of approximately 50 vehicles travelling to and from the site each day. A summary of the light and heavy vehicles entering and exiting the site during construction and operation can be seen in Table 2 and Table 3 respectively.

Table 2: Trip Generation During Construction (Source: Attexo)

VEHICLE CLASS	MAXIMUM VEHICLE MOVEMENTS (VPD)
Dozer (TBC) – D8 x 2	4
Grader	2
Earth moving truck	2
Semi-Trailers delivering 20ft and 40 ft containers	2
Trucks delivering up to 172t for transformers	2
Powerlink trucks with cherry pickers	4
Other Powerlink Trucks with electrical equipment	2
Concrete Trucks	2
Light Vehicles (Workforce)	100

Table 3: Trip Generation During Operation (Source: Attexo)

VEHICLE CLASS	MAXIMUM VEHICLE MOVEMENTS (VPD)
Electrical Operations (Utes)	2
Civil Operations – earth, vegetation management	2

Given the nature of the development, it is expected that the worse-case scenario traffic volumes will be generated during the construction period. Beyond the construction period, traffic generated by the operational needs of the site will be lower than during construction.

The following assumptions have been made with regards to the split between vehicles entering and exiting the site:

- It is assumed that 50% of heavy vehicles will enter and 50% will exit during each AM and PM peak hour
- It is assumed that 90% of light vehicles will enter and 10% will exit the site in the AM peak hour while 10% of light vehicles will enter and 90% will exit the site in the PM peak hour

A conservative estimate of the traffic entering and exiting the development during the AM and PM peak hours for the construction of the development is shown in Table 4.

Table 4: Construction Phase Peak Hour Traffic Generation (Source: Attexo, PSA)

VEHICLE TYPE	AM PEAK HOUR		PM PEAK HOUR		TOTAL DAILY VEHICLE TRIPS
	Vehicle Trips Entering Development	Vehicle Trips Exiting Development	Vehicle Trips Entering Development	Vehicle Trips Exiting Development	
Light Vehicles	45	5	5	45	100
Heavy Vehicles	9	1	1	9	20
TOTAL	**54**	**6**	**6**	**54**	**120**

As can be seen in Table 4, a total of 100 light vehicles trips and 20 heavy vehicle trips will occur daily during the construction phase.

3.3 DEVELOPMENT TRAFFIC TURNING MOVEMENTS

Peak hourly development traffic turning movements have been calculated based on the assumptions previously outlined and are shown in Figure 5 and Figure 6 for the AM and PM peak hours respectively.

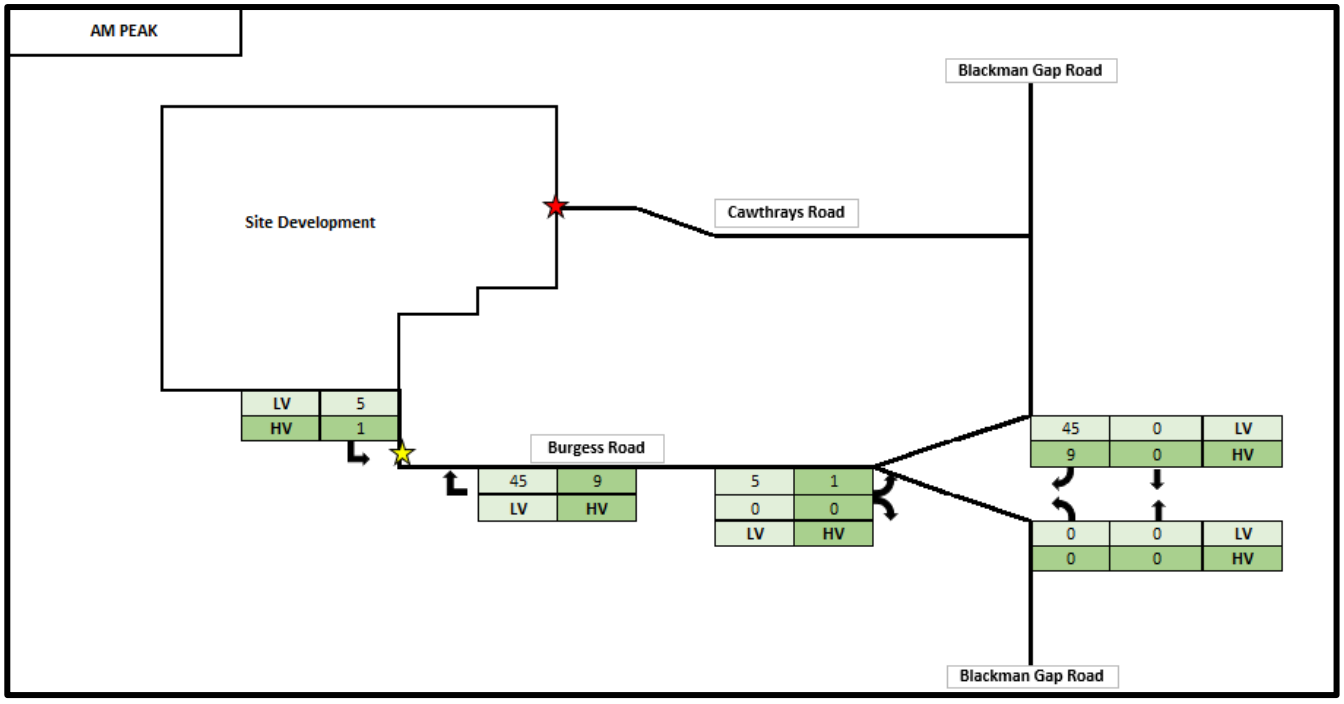


Figure 5: Development Traffic Volumes - AM Peak Hour (Source: PSA)

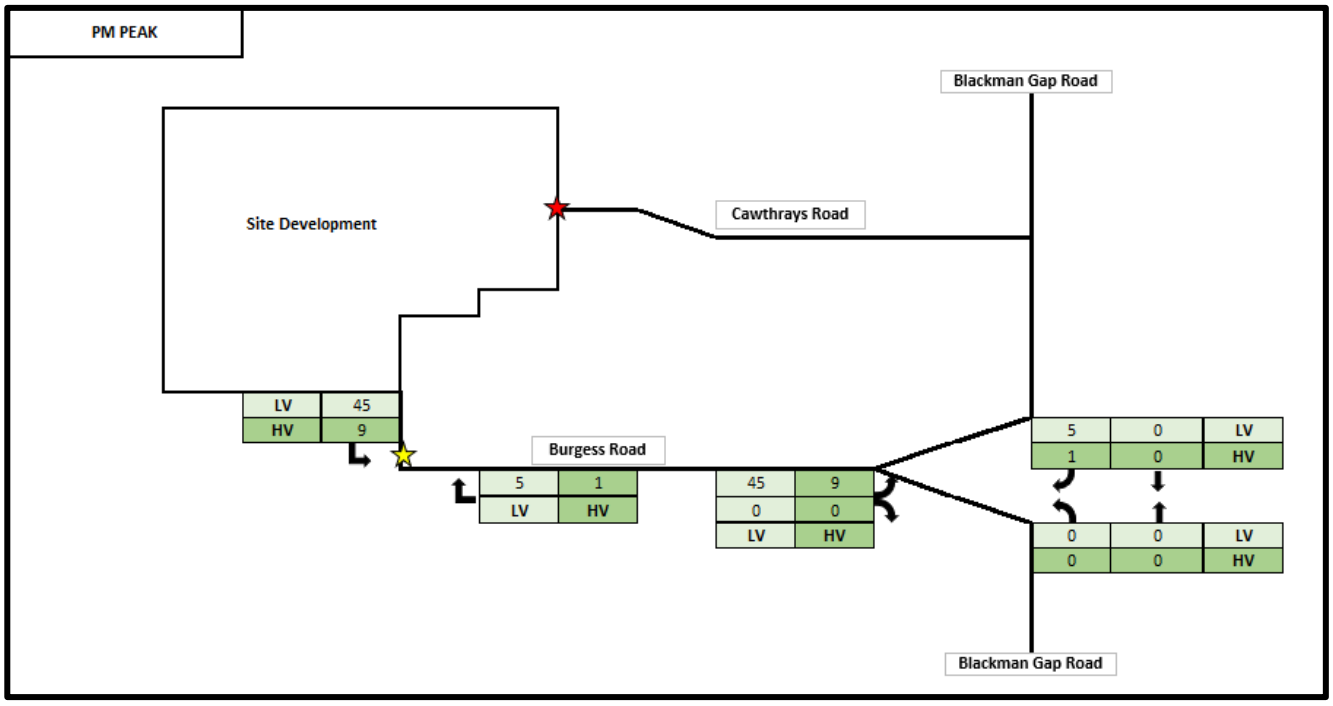


Figure 6: Development Traffic Volumes - PM Peak Hour (Source: PSA)

4 IMPACT ASSESSMENT

4.1 ASSESSMENT PARAMETERS

The following development parameters have been adopted for the purposes of this assessment:

- Year of recent background traffic data: 2019
- Commencement of construction: 2025
- Year of operation: 2027

4.2 EXISTING AND FUTURE YEAR BACKGROUND TRAFFIC VOLUMES

4.2.1 Surrounding Historic Traffic Counts

Historic Traffic counts on state-controlled roads near the vicinity of Burgess Road has been sourced from TMR's annual census data for the state-declared road network, Traffic Analysis Report System (TARS) to find the Average Annual Daily Traffic (AADT). Full reporting is included in Appendix 2 and summarised in Table 5.

Table 5: Surrounding Historic Counts (Source: TMR, PSA)

ROAD SECTION	SEGMENT SITE	AADT		LIGHT VEHICLE		HEAVY VEHICLE	
		Gazettal	Against	Gazettal	Against	Gazettal	Against
10D – Bruce Highway (Gin Gin – Benaraby)	60019	1732	1732	1085	1085	647	647
10D – Bruce Highway (Gin Gin – Benaraby)	60022	3393	3513	2753	2837	640	676

Figure 7 shows the location of the traffic counter site in relation to the development site.

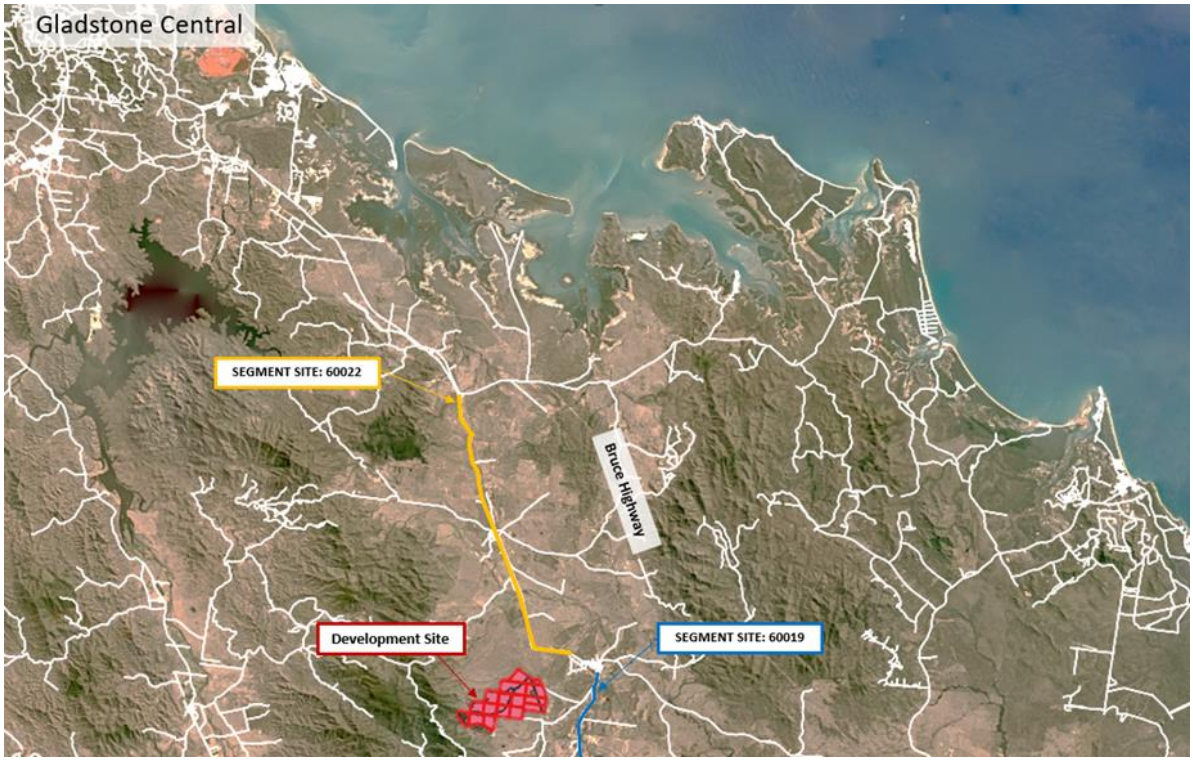


Figure 7: Proximity of Surrounding Historic Traffic Counts from Site (Source: TMR, PSA)

For this assessment, the traffic volumes at Site 60022 have been adopted for a conservative approach.

Existing peak hour traffic volumes were calculated from the AADT data. There was found to be 8% of the AADT traffic volumes occurring during peak hour. Therefore, it is assumed that approximately 176 light vehicles are currently travelling north and 181 vehicles travelling south during both the AM peak hour (7:00-8:00am) and PM peak hour (4:00-5:00pm).

4.2.2 Future Year Background Traffic Volumes

To determine the potential future growth of background traffic volumes, the AADT segment report has been interrogated to determine traffic growth in previous years. Figure 8 shows how the AADT has changed over previous years.

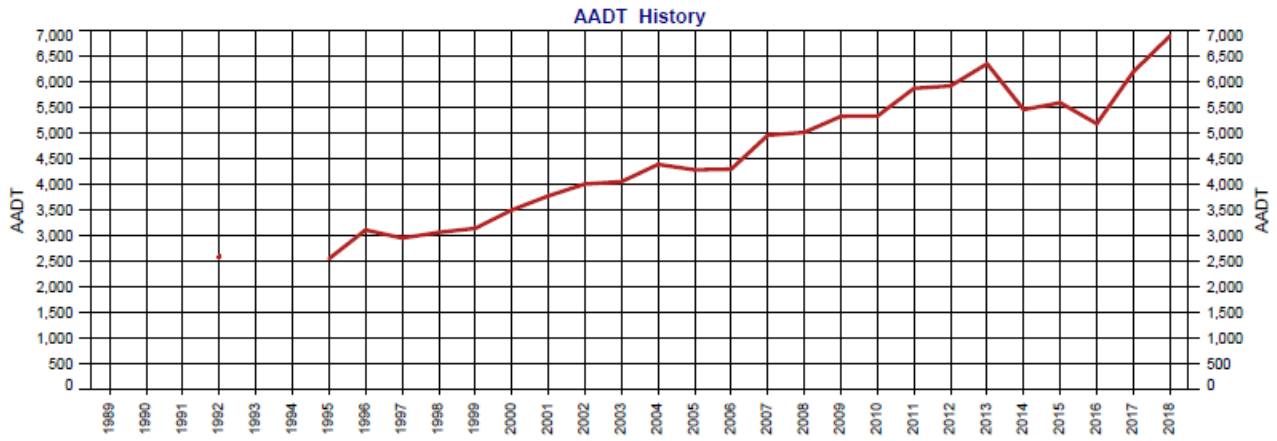


Figure 8: Segment 60022 - AADT History (Source: TMR)

There is a substantial variability in the AADT each year. For conservativeness, a growth rate of 3% per annum has been adopted for the purposes of this assessment This is consistent with previous growth experienced historically.

Future year background traffic volumes for 2025 and 2027 are shown in Figure 9 and Figure 10 respectively. For a conservative approach, it is assumed that the Bruce Highway volumes are the same as Blackman Gap Road, although it is acknowledged that in reality vehicle volumes on Blackman Gap Road will be substantially lower.

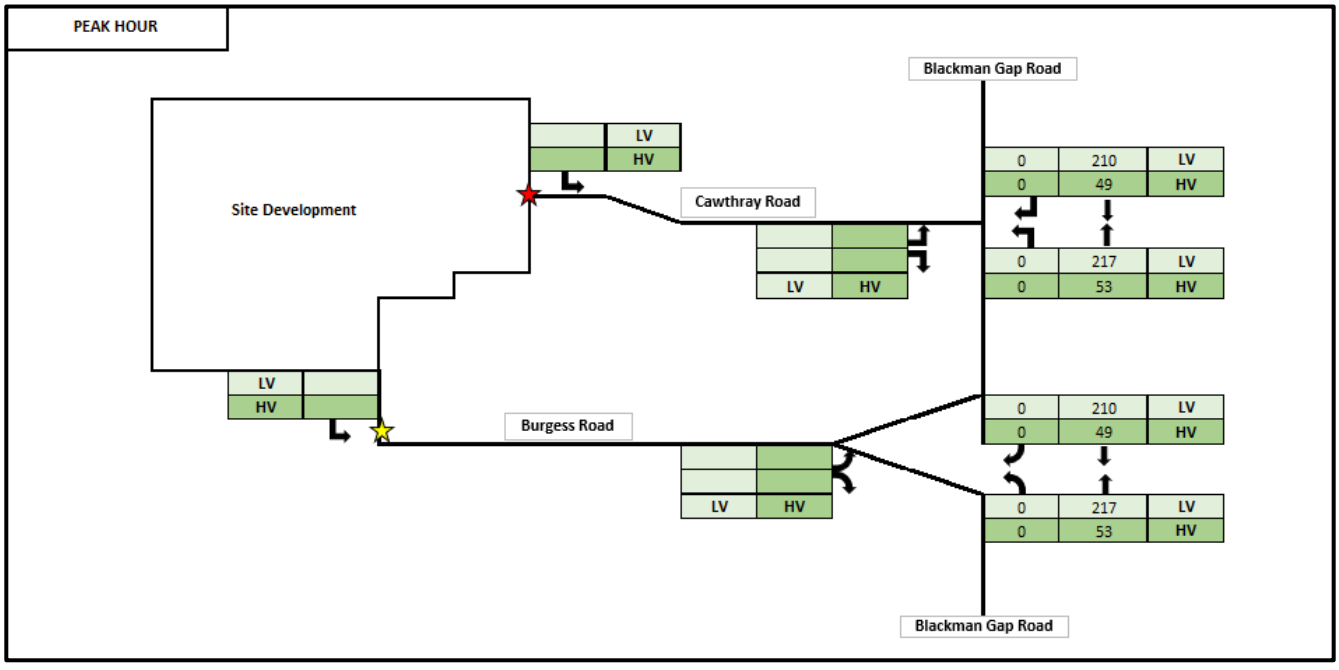


Figure 9: 2025 Background Traffic Volumes - Peak Hour (Source: PSA)

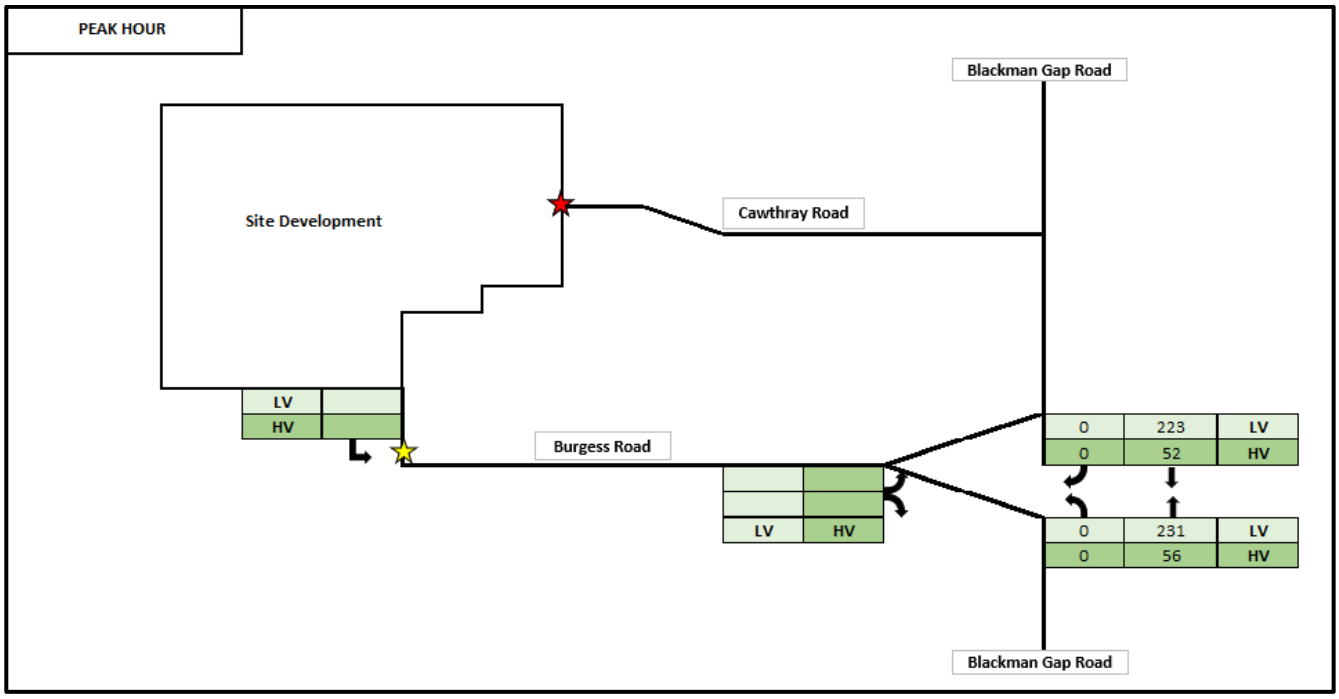


Figure 10: 2027 Background Traffic Volumes - Peak Hour (Source: PSA)

4.3 TRAFFIC IMPACT ASSESSMENT

Design traffic volumes are calculated by adding the background traffic volumes with the development traffic volumes. Figure 11 and Figure 12 illustrates the design traffic volumes during the construction phase in the AM and PM peak respectively.

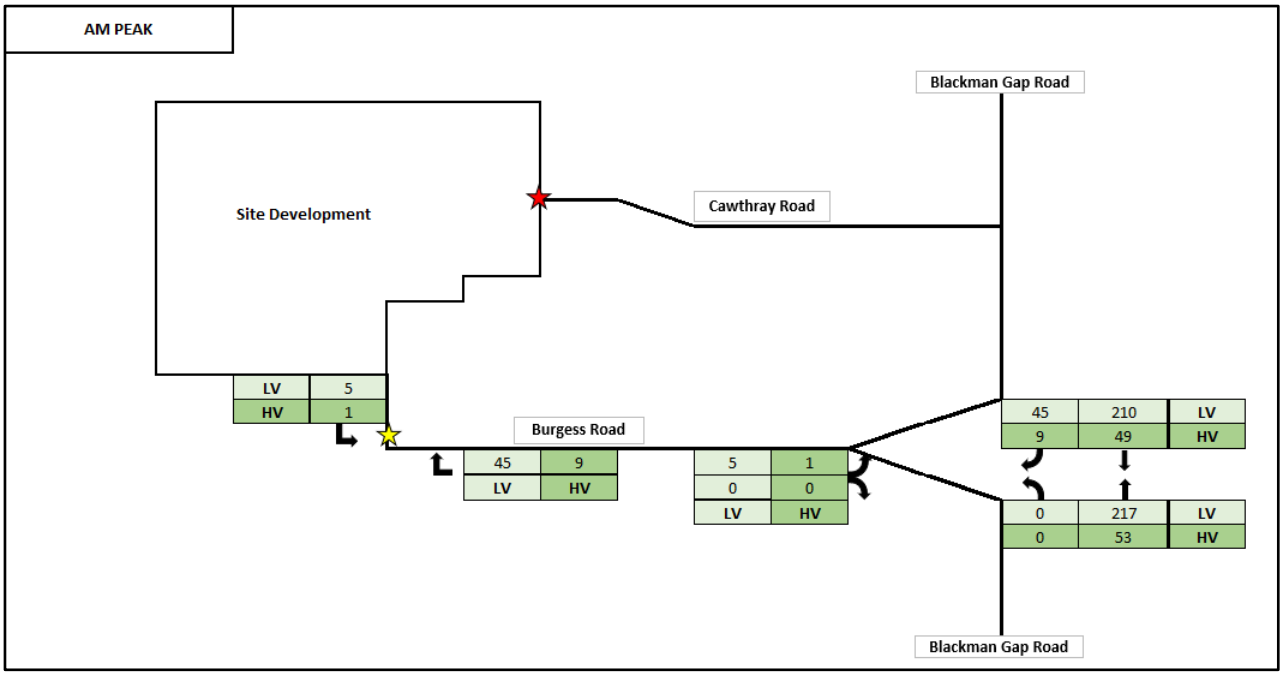


Figure 11: 2025 Design Traffic Volumes - AM Peak (Source: PSA)

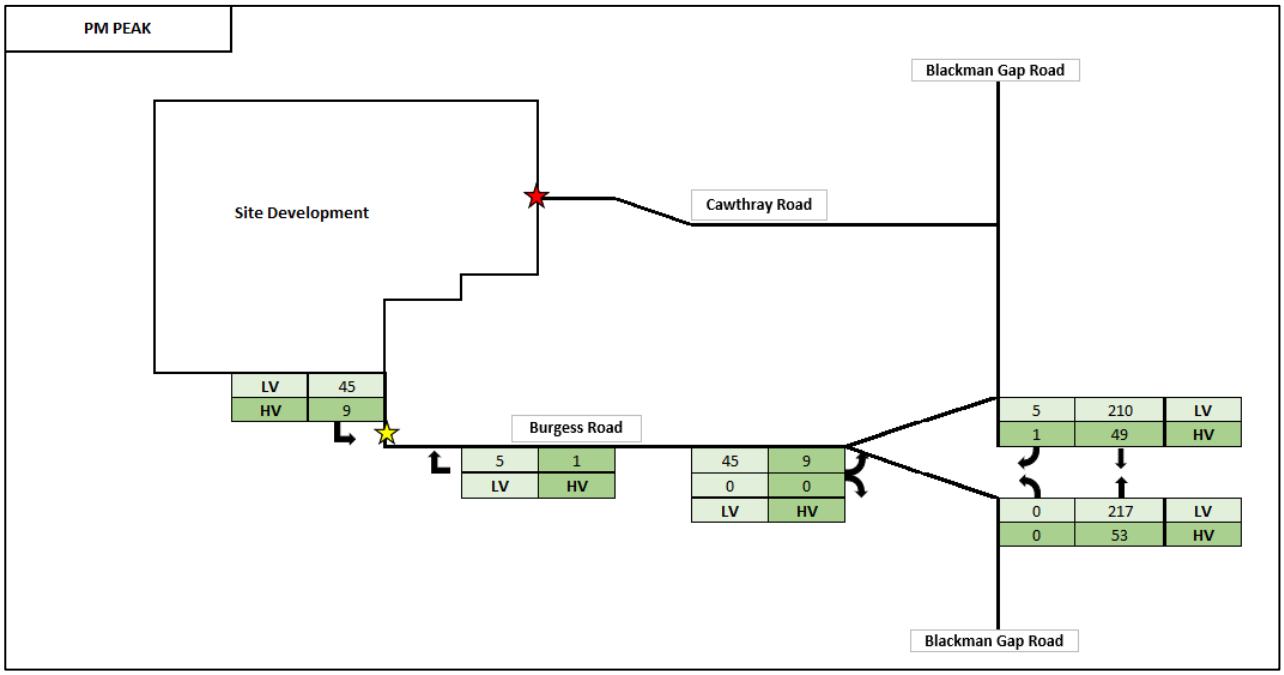


Figure 12: 2025 Design Traffic Volumes - PM Peak (Source: PSA)

Since construction will occur over a relatively short period of time, a detailed intersection analysis has not been undertaken.

The QLD Road Planning Design Manual *Chapter 13 – Intersections* contains a table which summarises the maximum traffic volumes combinations for uninterrupted flow conditions. It is advised that it is unnecessary to carry out intersection analysis when combinations of major road and minor road volumes are less than those in Table 6.

Table 6: Intersection Capacity - Uninterrupted Flow Conditions (Source: TMR)

Major Road Types[1]	Major Road Flow (vph)[2]	Minor Road Flow (vph)[3]
Two-Lane	400 500 650	250 200 100
Four-Lane	1000 1500 2000	100 50 25

Note:
1. Major road is through road i.e. has priority
2. Major road design volumes include through and turning movements
3. Minor road design volumes include through and turning movements

In summary, the traffic generated by the proposed development is not anticipated to result in adverse or significant impacts on the existing road network. Any minor impacts will only occur within the duration of the construction phase of the development which is anticipated to be complete within a 12–18 month period.

4.4 ROAD SAFETY ASSESSMENT

A desktop road safety assessment has been undertaken the intersection between Burgess Road and Blackman Gap Road. Risks have been identified and scored in accordance with *Figure 9.2.2(a) – Safety Risk score matrix* which has been reproduced in this report as Figure 13.

		Potential consequence				
		Property only (1)	Minor injury (2)	Medical treatment (3)	Hospitalisation (4)	Fatality (5)
Potential likelihood	Almost certain (5)	M	M	H	H	H
	Likely (4)	M	M	M	H	H
	Moderate (3)	L	M	M	M	H
	Unlikely (2)	L	L	M	M	M
	Rare (1)	L	L	L	M	M

L: Low risk
M: Medium risk
H: High risk

Figure 13: Safety Risk Score Matrix (Source: TMR)

Table 7 shows the risk assessment for the 'without development' and 'with development' scenarios to determine whether the proposed development worsens the existing safety risk for the site access location on Table 7.

Table 7: Risk Assessment (Source: TMR)

RISK ITEM	WITHOUT DEVELOPMENT			WITH DEVELOPMENT		
	Likelihood	Consequence	Risk Score	Likelihood	Consequence	Risk Score
Increased risk of rear-end collision between vehicles travelling southbound on Blackman Gap Road and vehicles turning left into Burgess Road	1	4	L	2	4	L
Increased risk of vehicles from adjacent approach through-left collision between vehicles travelling on Blackman Gap Road and vehicles turning right out of Burgess Road.	1	4	L	2	4	L

As demonstrated by the risk assessment, development of the site will result in a minimal increase in the likelihood of a collision occurring due to an increase in vehicle movements. All identified risks score "Low" for both without and with associated trip generation and will only occur over a short timeframe and will not be ongoing.

4.4.1 Crash History

Based on data available through the QLD Open Data portal no crashes have occurred within the vicinity of the site within the past 5 years.

5 SITE ACCESS AND PARKING

5.1 PROPOSED DEVELOPMENT SITE ACCESS

The proposed development will be accessed from Burgess Road or via Cawthray Road which are both accessible via Blackman Gap Road that connects to the Bruce Highway. These access locations are shown in Figure 14.

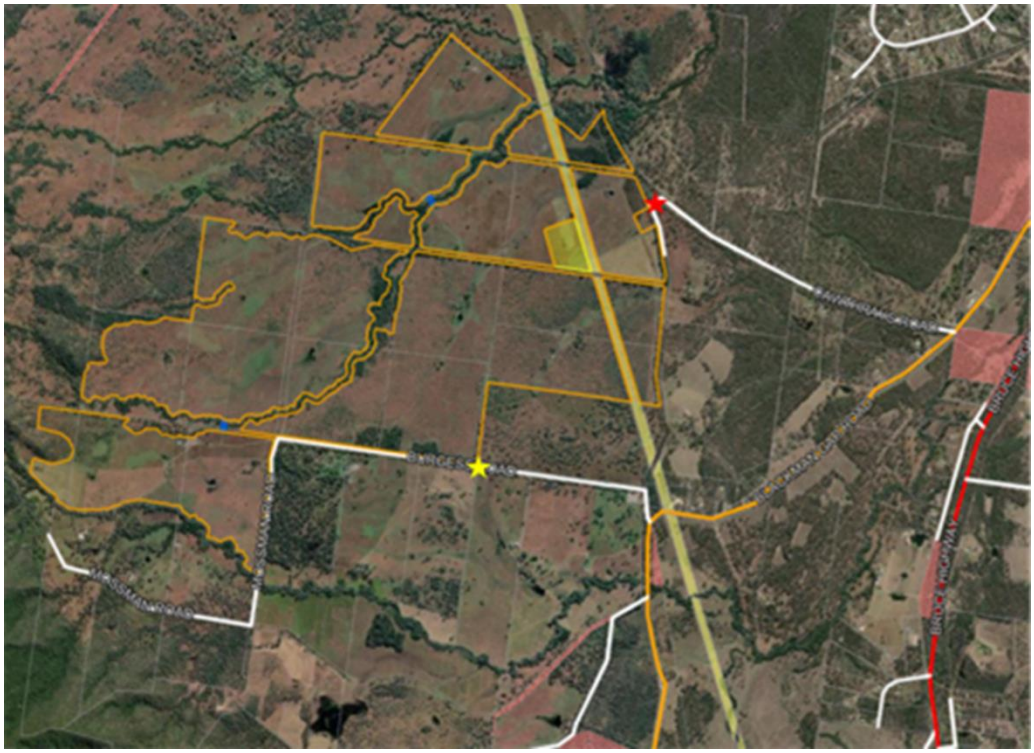


Figure 14: Proposed Site Access (Source: Attexo)

5.1.1 Sight Distance Assessment

Safe Intersection Sight Distance (SISD) is to be provided at the site access location of the development. Based on the indicated access point, a desktop assessment of the required sight distance has been undertaken for a design speed of 110km/hr. The relevant sight triangles (showing the required 193m of sight distance) are shown in Figure 15.

Figure 15: Burgess Road / Site Access Sight Distance Triangles (Source: Nearmap, PSA)

In the vicinity of the site access driveway, Burgess Road is a mild windy road with minimal changes in elevation and therefore will not impact the sight distance as seen in Figure 16 and Figure 17.

Figure 16: Sight Distance Proposed Site Access / Burgess Road Eastbound (Source: Attexo)

Figure 17: Sight Distance Proposed Site Access / Burgess Road Westbound (Source: Attexo)

5.1.2 Turn Warrant Assessment

A detailed turn warrant assessment has been conducted according to the procedure set out in Austroads' Guide to Road Design Part 4: Intersections and Crossing- General. The assessment was conducted for the construction phase of the development which is based on the assumptions stated earlier in the report. The outputs of the turn warrant assessments are shown in Figure 18 and Figure 19 for the AM and PM peak hour respectively.

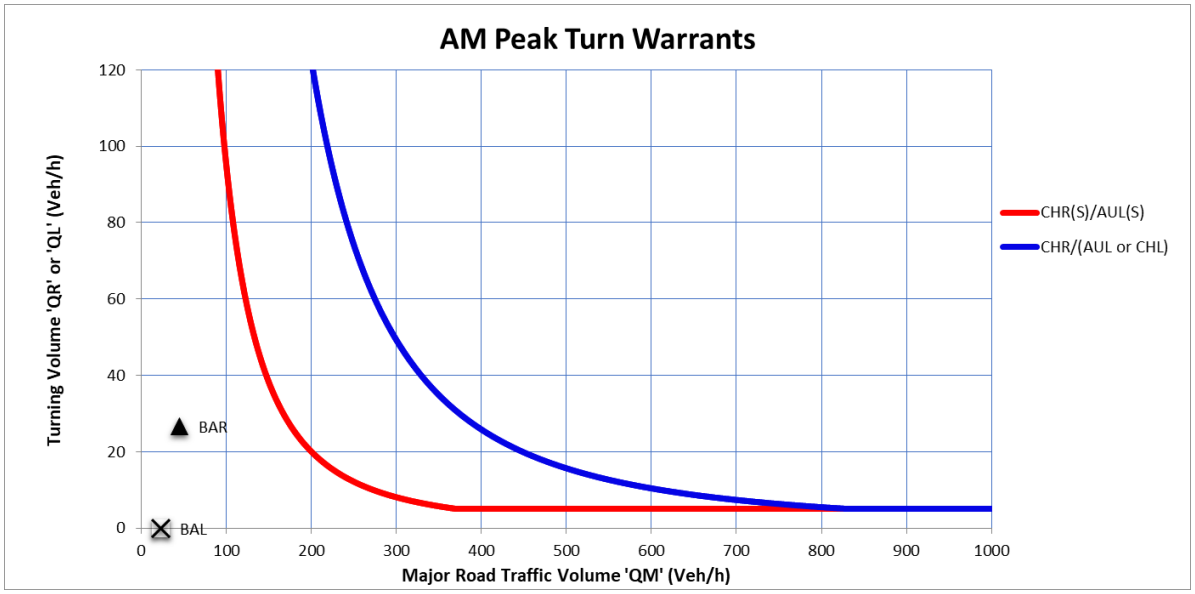


Figure 18: AM Peak Hour Turn Warrant Assessment - Blackman Gap Road / Burgess Road Construction Phase (Source: Austroads, PSA)

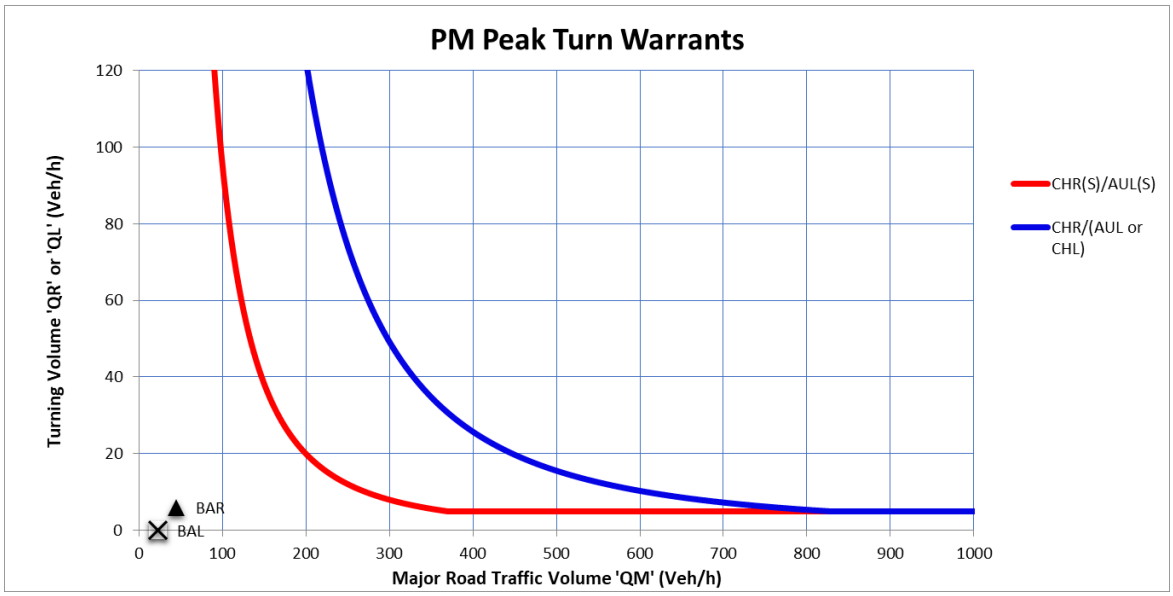


Figure 19: PM Peak Hour Turn Warrant Assessment - Blackman Gap Road / Burgess Road Construction Phase (Source: Austroads, PSA)

As demonstrated by the Turn Warrants Assessment, both AM and PM peak hours of the construction phases of the development will require a Basic Left Turn (BAL) and Basic Right Turn (BAR) treatment. Due to the negligible volumes of traffic that will be generated only during the construction phases of the development it is not considered necessary to include any road upgrades as part of the development as this is would be the maximum amount of vehicles entering the site within the 12-18 months.

5.1.3 Swept Path Assessment

To determine if development vehicles can access the site without causing disruptions to the current operation of the road network, a swept path analysis has been conducted. The analysis involves the largest vehicle anticipated to travel to and from the site which is a 19m Semi-trailer. Based on the swept path analysis, it can be seen that vehicles travelling from Burgess Road can access the site without causing disruptions. The full swept path analysis for the access to and from the site is contained in Appendix 3.

5.2 ON-SITE PARKING REQUIREMENTS

The Gladstone Regional Council Planning scheme establishes guidelines for on-site parking in connection with various development projects. Specifically, Table SC6.10.2.1- Minimum on-site parking rates which outlines the car parking requirements based on their land-uses. The proposed development is defined as a Renewable Energy Facility (solar farm) and a substation. As there are no parking rates associated with these uses, parking rates for Major Electricity Infrastructure / Utility Installation have been used for the purposes of this assessment as they represent similar construction / operation workforce numbers and associated parking requirements. Table 8 highlights the minimum on-site parking rates as required by the planning scheme.

Table 8: Minimum On-site Parking Rates (Source: GRC)

Development Land Use	Vehicles	Bicycle
Major Electricity Infrastructure / Utility Installation	1 space per employee plus 1 space for maintenance vehicle (excluding transmission lines, pipelines, etc.)	1 space per 400m2 GFA (minimum 4 spaces)

As shown, the site should accommodate 50 car parking spaces. Given that the development traffic corresponds to the construction of the facility, it is likely that workers will park in any available area rather than a formalised parking space. Additionally, the likelihood that the development will require servicing post construction is low. As such no formal parking is required or has been provided for the development.

6 SUMMARY

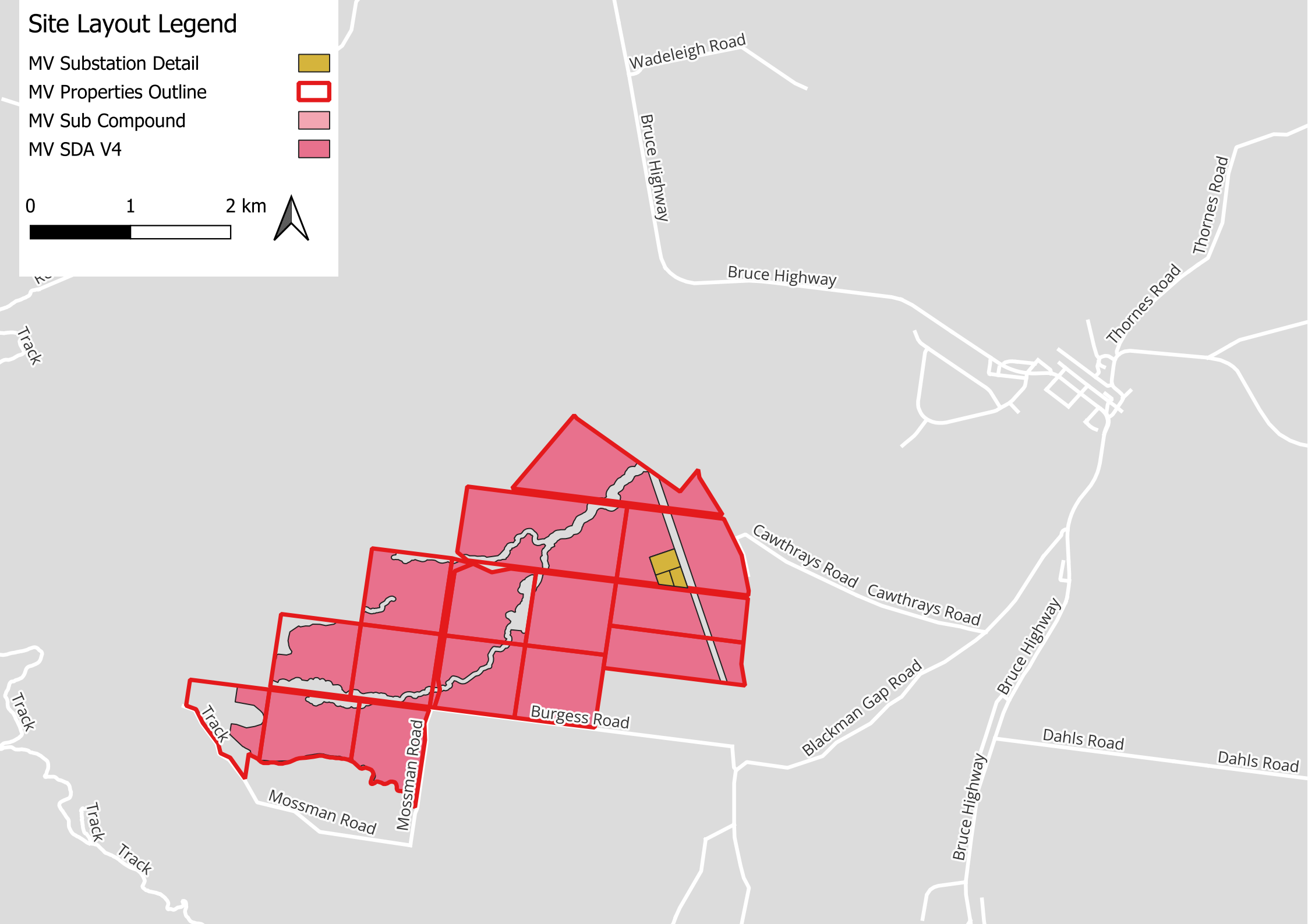
PSA Consulting has been engaged by Attexo on behalf of Private Energy Partners to prepare a TIA to accompany the development application for the proposed Miriam Vale Solar Farm, specifically the construction of the solar farm and substation component.

A summary of the findings of the TIA area as follows:

- The primary route which vehicles will travel to and from the site is from either Gladstone Benaraby Road or Dawson Highway to the Bruce highway and then onto Blackman Gap Road and Burgess Road
- The project will involve 14 land parcels for the construction of a photovoltaic solar farm of up to 1GW
- The proposed development involves 100 light vehicles and 20 heavy vehicles travelling to and from the site each day
- Assumptions for the split between vehicles entering and exiting have been made:
    - It is assumed that 50% of heavy vehicles will enter and exit the site during each AM and PM peak hour
    - 90% of light vehicles will enter and 10% will exit the site during the AM peak hour and while 10% of light vehicles will enter and 90% will exit in the PM peak hour
- No discernible impact to the existing operation of the road network is anticipated as a result of the proposed development
- Access to the development will be via Burgess Road / Site Access priority-controlled T-intersection which will be via the Burgess Road / Blackman Gap Road priority-controlled T-intersection.
- A safety assessment demonstrated that there is no worsening to the safety of the intersection at the Blackman Gap Road and Burgess Road intersection
- Sight distance along Burgess Road is slightly windy with minimal changes in elevation which will not impact the sight distance
- Due to low volumes of traffic generated during the construction period and the duration of the construction period, it is not necessary to include any road upgrades as part of the development.
- It is likely workers will park in any available area rather than a formalised parking space and therefore, no formal parking is required for the development.

APPENDIX 1: SITE DEVELOPMENT PLANS

AP01

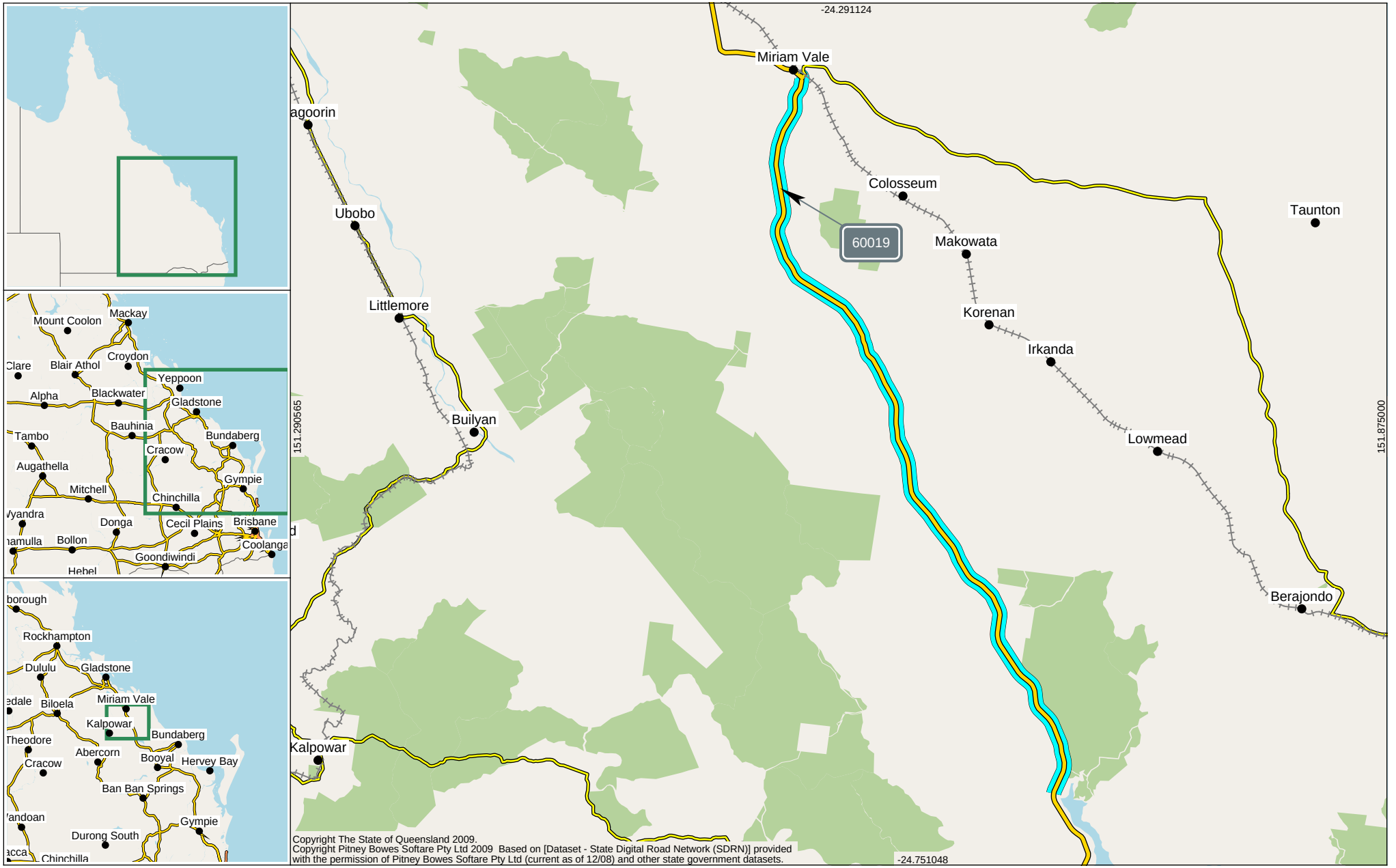

Site Layout Legend
MV Substation Detail
MV Properties Outline
MV Sub Compound
MV SDA V4
0
1
2 km
Wadeleigh Road
Bruce Highway
Bruce Highway
Thornes Road
Thornes Road
Track
Cawthrays Road
Cawthrays Road
Bruce Highway
Blackman Gap Road
Burgess Road
Track
Mossman Road
Mossman Road
Dahls Road
Dahls Road
Track
Track
Track
Bruce Highway

APPENDIX 2: AADT SEGMENT REPORTS

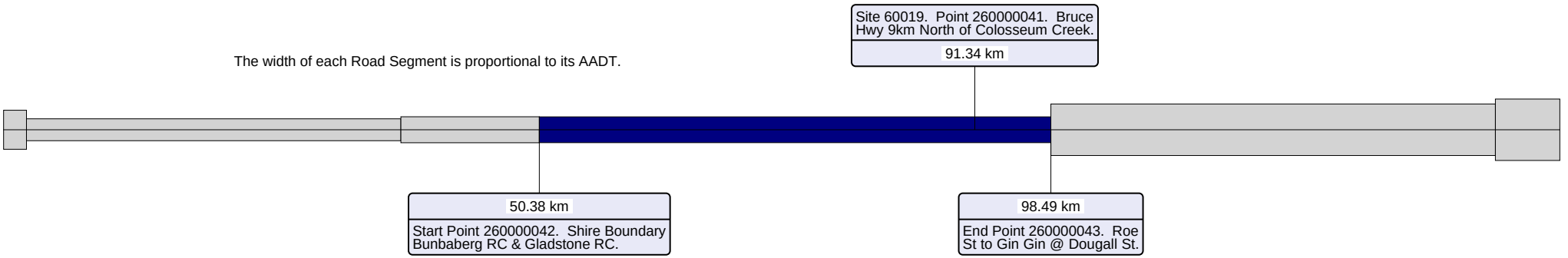
AP02

Area 404 - Fitzroy District
Road Segment from 50.383km to 98.494km

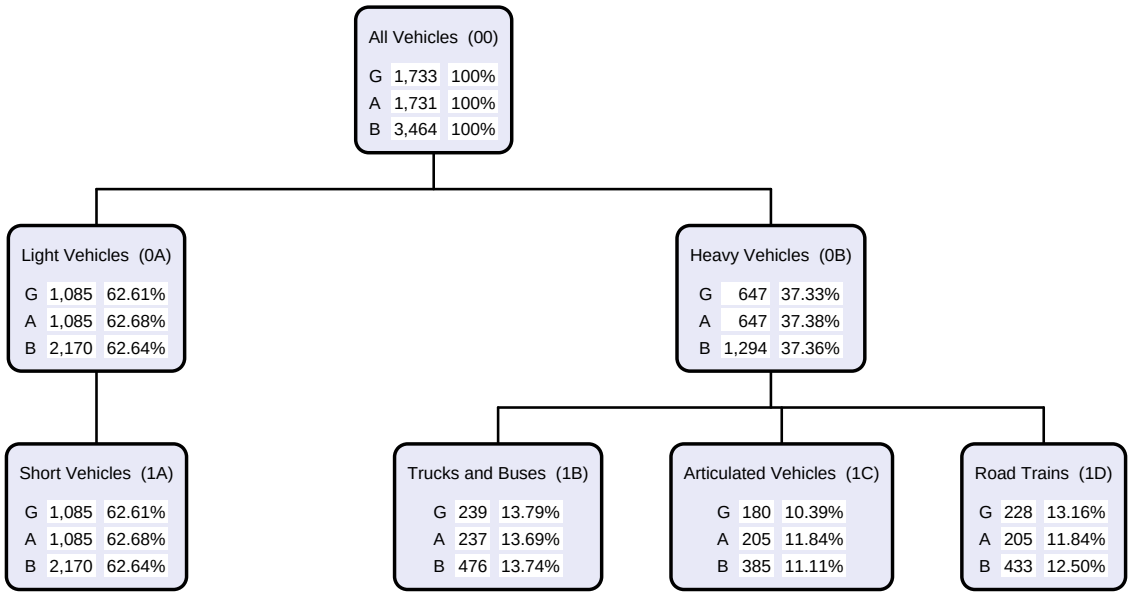
Road Section 10D - BRUCE HIGHWAY (GIN GIN - BENARABY)
Segment Site 60019 Traffic Year 2019 Data Collection Year 2019



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



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



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

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

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

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South Coast District	410
South West District	411
Wide Bay/Burnett District	412

AADT Values
AADT values are displayed by direction of travel as:

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

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

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

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

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

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

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

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

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

Start and End Point
The unique identifier for the Through Distance along a Road Section.

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

Volume or All Vehicles
00 = 0A + 0B

Light Vehicles
0A = 1A
1A = 2A + 2B

Heavy Vehicles
0B = 1B + 1C + 1D
1B = 2C + 2D + 2E
1C = 2F + 2G + 2H + 2I
1D = 2J + 2K + 2L

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

Volume
00 All vehicles

2-Bin
0A Light vehicles
0B Heavy vehicles

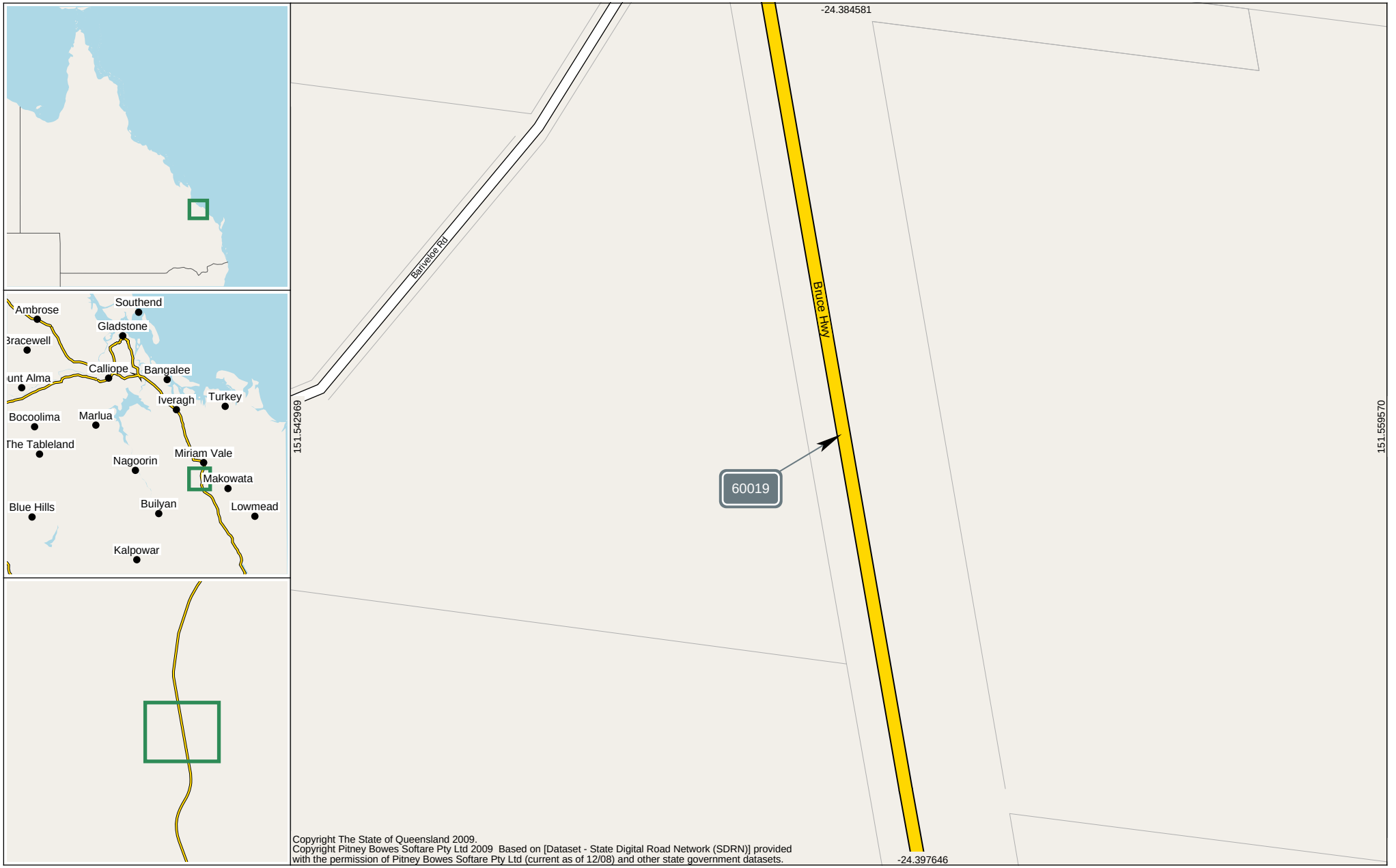
4-Bin
1A Short vehicles
1B Truck or bus
1C Articulated vehicles
1D Road train

12-Bin
2A Short 2 axle vehicles
2B Short vehicles towing
2C 2 axle truck or bus
2D 3 axle truck or bus
2E 4 axle truck
2F 3 axle articulated vehicle
2G 4 axle articulated vehicle
2H 5 axle articulated vehicle
2I 6 axle articulated vehicle
2J B double
2K Double road train
2L Triple road train

Annual Volume Report

Area 404 - Fitzroy District Road Section 10D - BRUCE HIGHWAY (GIN GIN - BENARABY)

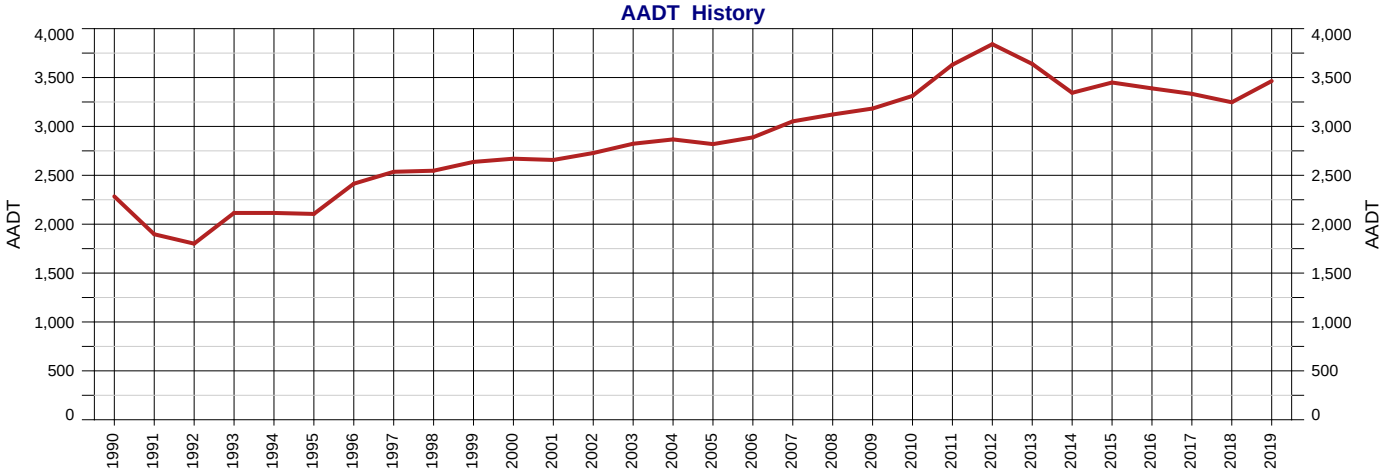
Site 60019 - Bruce Hwy,S of Bariveloe Rd,Colosseum Ck TDist 91.340km Speed Limit 100



Area	404 - Fitzroy District
Road Section	10D - BRUCE HIGHWAY (GIN GIN - BENARABY)
Site	60019 - Bruce Hwy,S of Bariveloe Rd,Colosseum Ck
Thru Dist	91.34
Type	P - Permanent
Stream	TB - Bi-directional traffic flow

Year	2019	Growth last Year	6.68%
AADT	3,464	Growth last 5 Yrs	0.73%
Avg Week Day	0	Growth last 10 Yrs	0.07%
Avg Weekend Day	0		

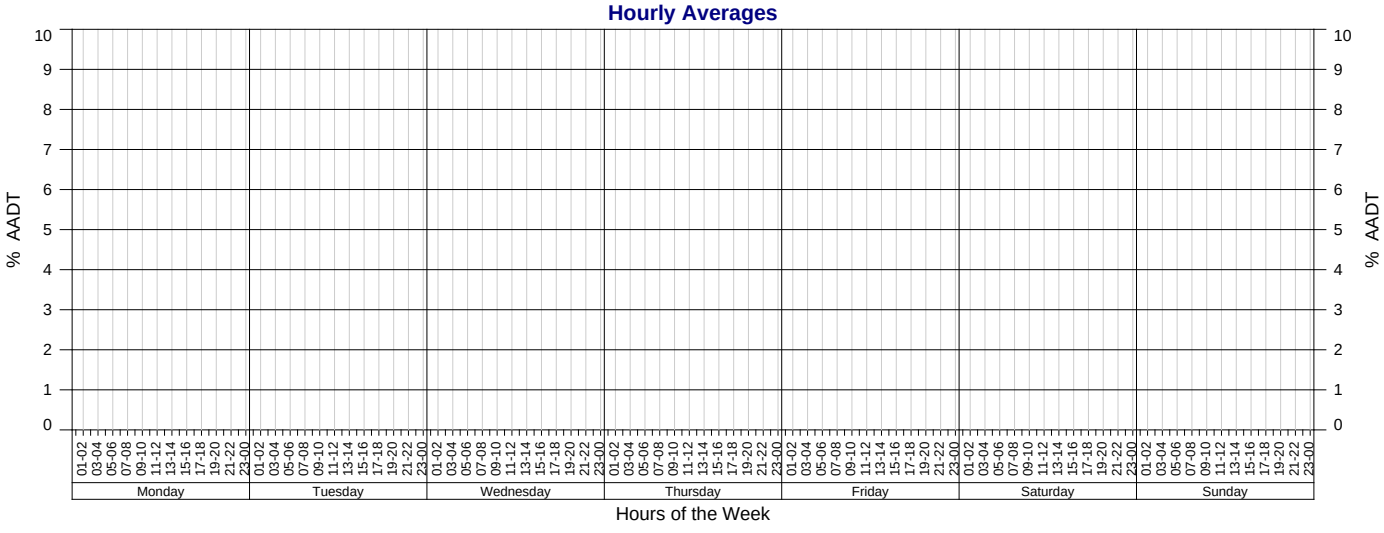
AADT History



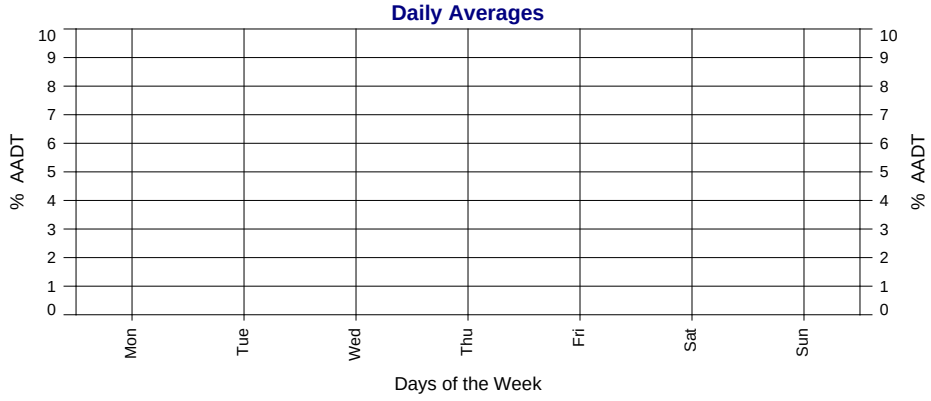
Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2019	3,464	6.68%	0.73%	0.07%
2018	3,247	-2.58%	-1.77%	-0.61%
2017	3,333	-1.65%	-2.08%	0.06%
2016	3,389	-1.74%	-1.89%	0.71%
2015	3,449	3.14%	-0.73%	1.40%
2014	3,344	-8.11%	-0.59%	1.30%
2013	3,639	-5.26%	2.83%	2.88%
2012	3,841	5.78%	5.40%	4.06%
2011	3,631	9.63%	4.93%	3.58%
2010	3,312	4.05%	3.25%	2.48%
2009	3,183	1.95%	2.59%	2.13%
2008	3,122	2.29%	2.45%	2.12%
2007	3,052	5.68%	2.34%	2.02%
2006	2,888	2.45%	1.38%	1.53%
2005	2,819	-1.67%	1.07%	1.80%

Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2004	2,867	1.56%	1.92%	2.58%
2003	2,823	3.48%	2.04%	2.81%
2002	2,728	2.67%	1.48%	3.12%
2001	2,657	-0.49%	1.47%	3.30%
2000	2,670	1.25%	3.43%	3.35%
1999	2,637	3.53%	4.43%	3.25%
1998	2,547	0.43%	4.38%	2.98%
1997	2,536	5.05%	6.38%	
1996	2,414	14.68%	5.94%	2.48%
1995	2,105	-0.47%	0.84%	0.87%
1994	2,115	0.00%	0.44%	1.51%
1993	2,115	17.43%	0.67%	1.89%
1992	1,801	-5.06%		-0.24%
1991	1,897	-16.94%	-2.51%	0.73%
1990	2,284	5.84%	4.64%	3.80%

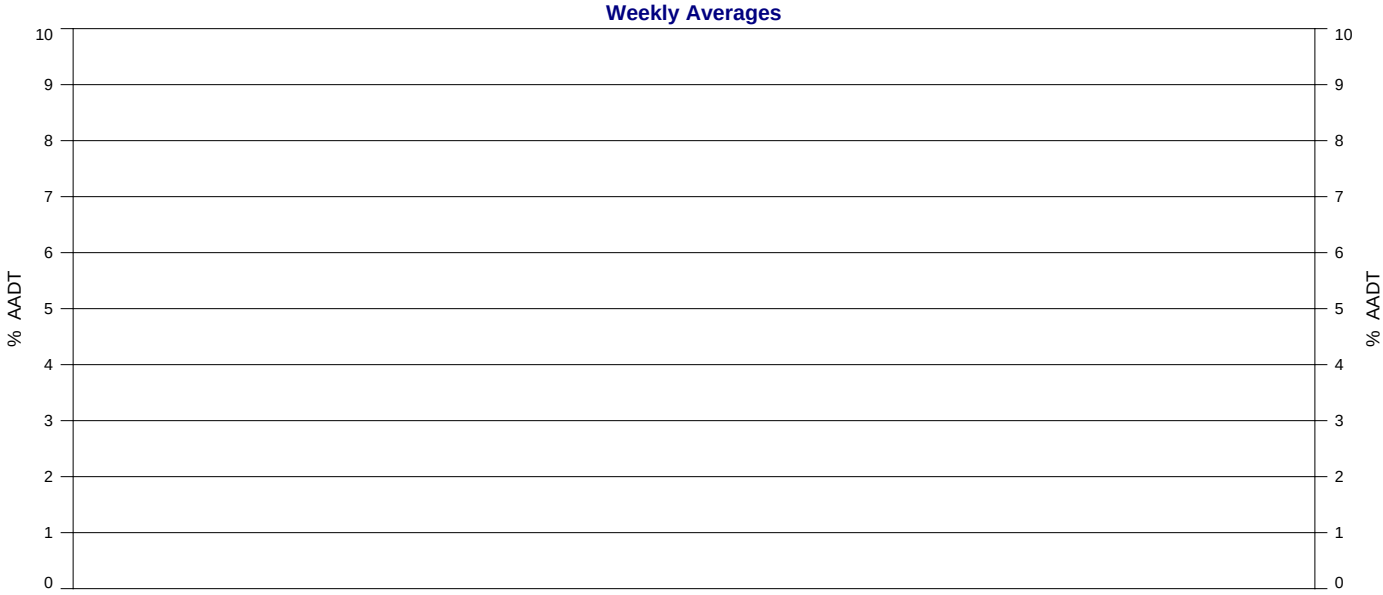
Hourly Averages



Daily Averages



Weekly Averages



2019 Calendar

January

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

March

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

April

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

May

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

June

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

July

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

August

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

September

M	T	W	T	F	S	S
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

October

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

November

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

December

M	T	W	T	F	S	S
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

Days on which traffic data was collected.

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

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

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

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

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

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

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

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

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

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

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

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

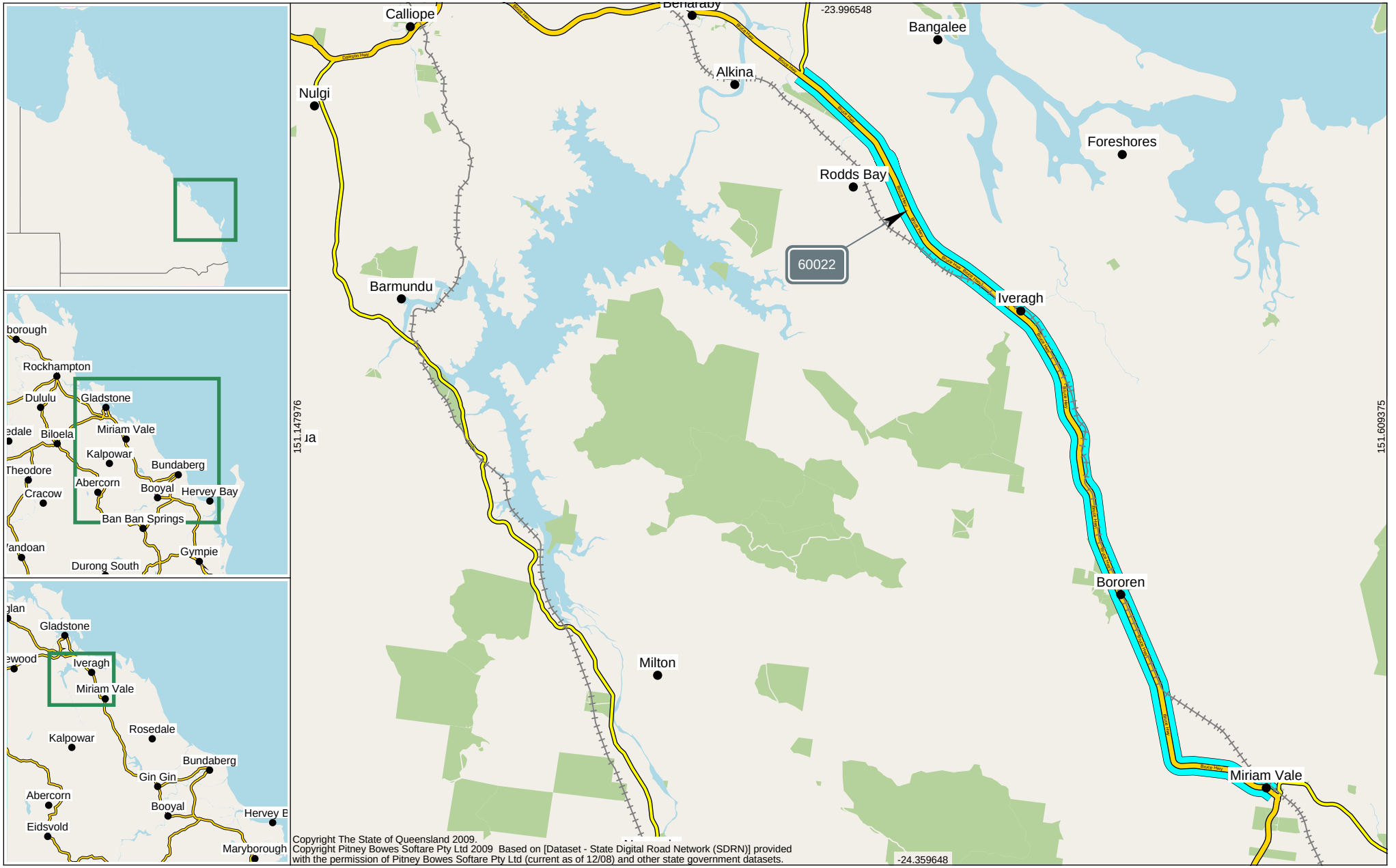
Site
The unique identifier and description of the physical location of a traffic counting device. Sites are located at a Through Distance along a Road Section.

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

Thru Dist or TDist
The distance from the beginning of the Road Section, in kilometres.

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

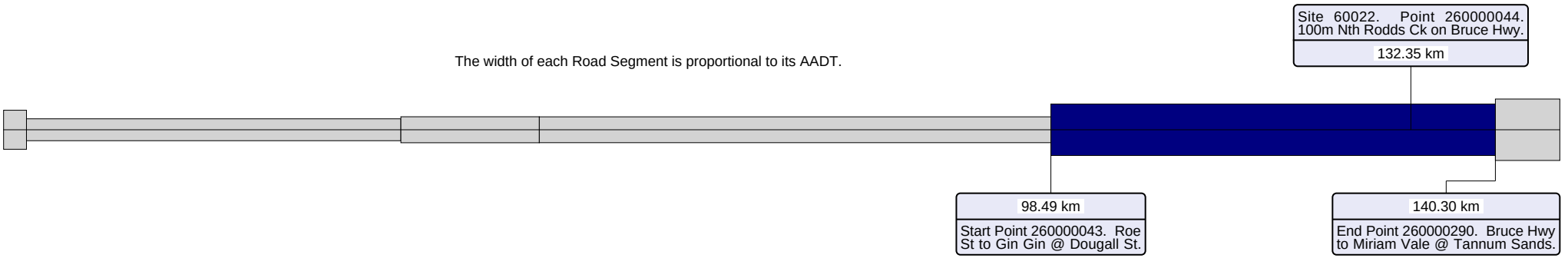
Year
Is the current year for the report. Where an AADT Year record is missing a traffic count has not been conducted, for that year.



Area 404 - Fitzroy District Road Section 10D - BRUCE HIGHWAY (GIN GIN - BENARABY)

Road Segment from 98.494km to 140.298km Segment Site 60022 Traffic Year 2019 Data Collection Year 2018

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



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

All Vehicles (00)		
G	3,392	100%
A	3,512	100%
B	6,904	100%

Light Vehicles (0A)		
G	2,753	81.16%
A	2,837	80.78%
B	5,590	80.97%

Heavy Vehicles (0B)		
G	640	18.87%
A	676	19.25%
B	1,316	19.06%

Short Vehicles (1A)		
G	2,753	81.16%
A	2,837	80.78%
B	5,590	80.97%

Trucks and Buses (1B)		
G	175	5.16%
A	204	5.81%
B	379	5.49%

Articulated Vehicles (1C)		
G	213	6.28%
A	240	6.83%
B	453	6.56%

Road Trains (1D)		
G	252	7.43%
A	232	6.61%
B	484	7.01%

Short 2-Axle Vehicles (2A)		
G	2,495	73.56%
A	2,574	73.29%
B	5,069	73.42%

Short Vehicles Towing (2B)		
G	258	7.61%
A	263	7.49%
B	521	7.55%

2-Axle Trucks and Buses (2C)		
G	139	4.10%
A	163	4.64%
B	302	4.37%

3-Axle Trucks and Buses (2D)		
G	29	0.85%
A	35	1.00%
B	64	0.93%

4-Axle Trucks (2E)		
G	7	0.21%
A	6	0.17%
B	13	0.19%

3-Axle Articulated (2F)		
G	14	0.41%
A	15	0.43%
B	29	0.42%

4-Axle Articulated (2G)		
G	19	0.56%
A	27	0.77%
B	46	0.67%

5-Axle Articulated (2H)		
G	32	0.94%
A	37	1.05%
B	69	1.00%

6-Axle Articulated (2I)		
G	148	4.36%
A	161	4.58%
B	309	4.48%

B Double (2J)		
G	247	7.28%
A	228	6.49%
B	475	6.88%

Double Road Trains (2K)		
G	5	0.15%
A	4	0.11%
B	9	0.13%

Triple Road Trains (2L)		
G	0	0%
A	0	0%
B	0	0%

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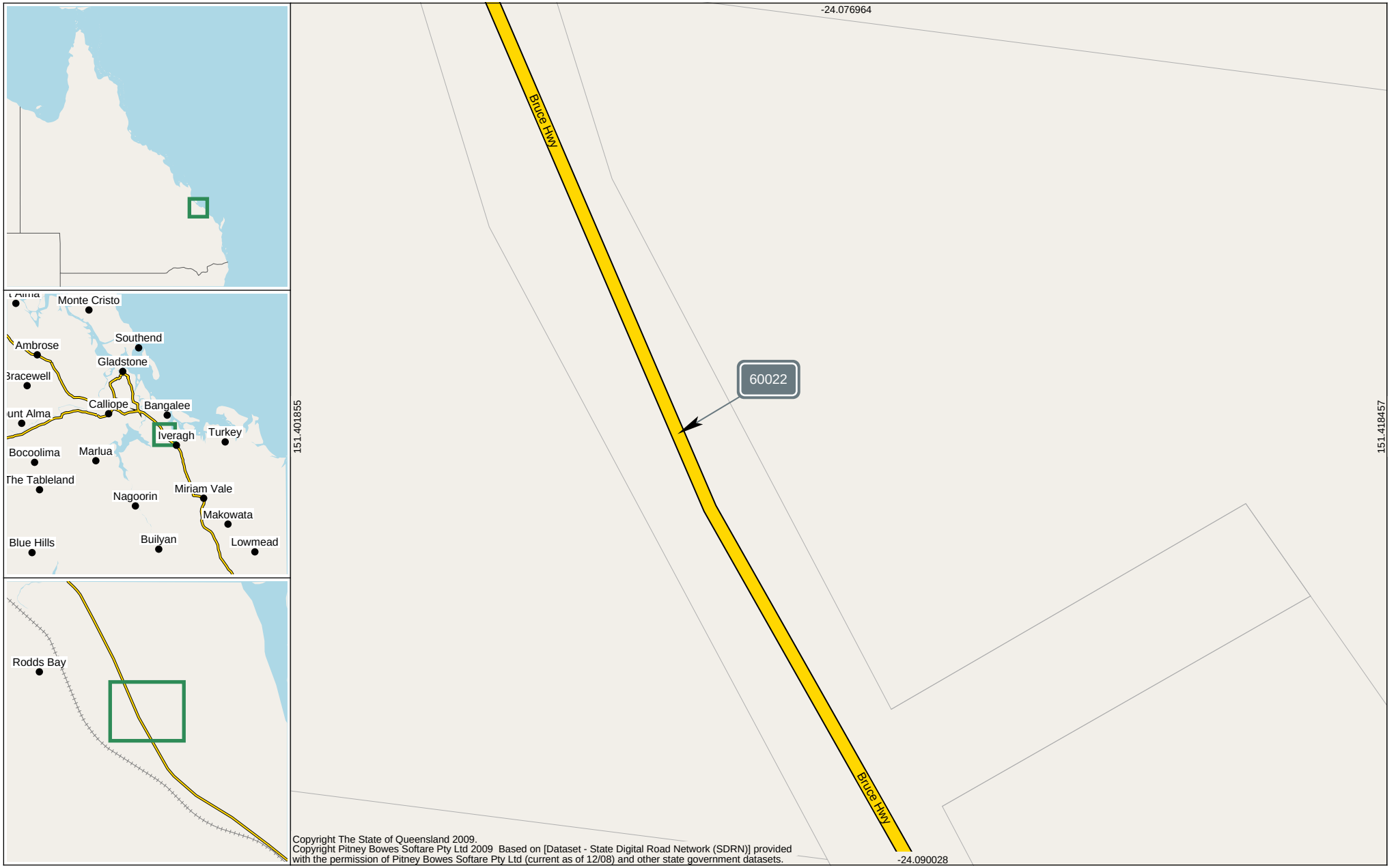
2-Bin
0A Light vehicles
0B Heavy vehicles

4-Bin
1A Short vehicles
1B Truck or bus
1C Articulated vehicles
1D Road train

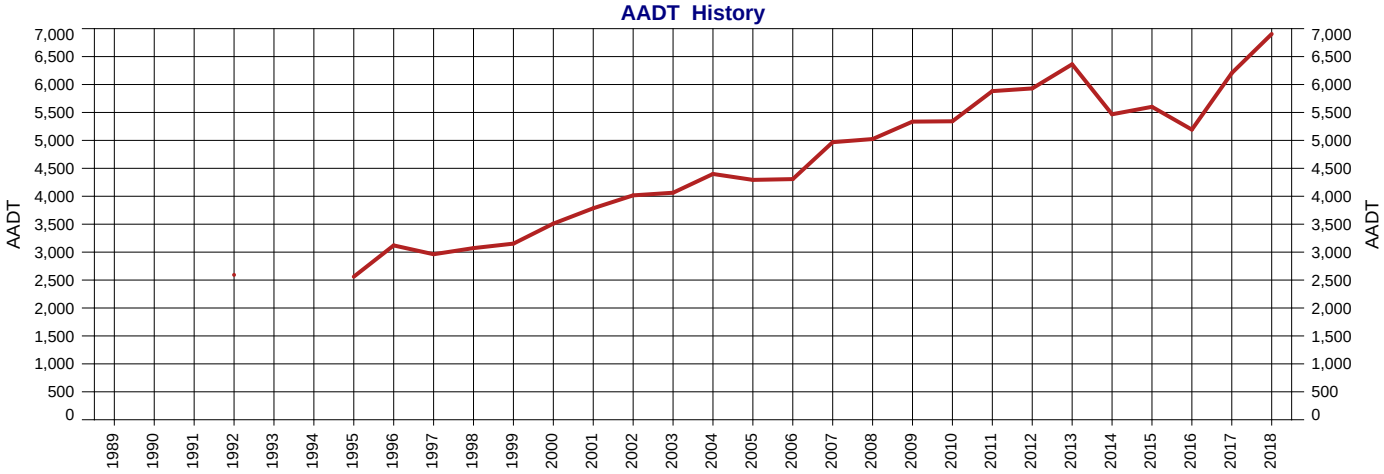
12-Bin
2A Short 2 axle vehicles
2B Short vehicles towing
2C 2 axle truck or bus
2D 3 axle truck or bus
2E 4 axle truck
2F 3 axle articulated vehicle
2G 4 axle articulated vehicle
2H 5 axle articulated vehicle
2I 6 axle articulated vehicle
2J B double
2K Double road train
2L Triple road train



Area	404 - Fitzroy District
Road Section	10D - BRUCE HIGHWAY (GIN GIN - BENARABY)
Site	60022 - Bruce Hwy 100m Nth Rodds Ck
Thru Dist	132.35
Type	C - Coverage
Stream	TB - Bi-directional traffic flow

Year	2018	Growth last Year	11.27%
AADT	6,904	Growth last 5 Yrs	4.93%
Avg Week Day	5,868	Growth last 10 Yrs	3.23%
Avg Weekend Day	4,625		

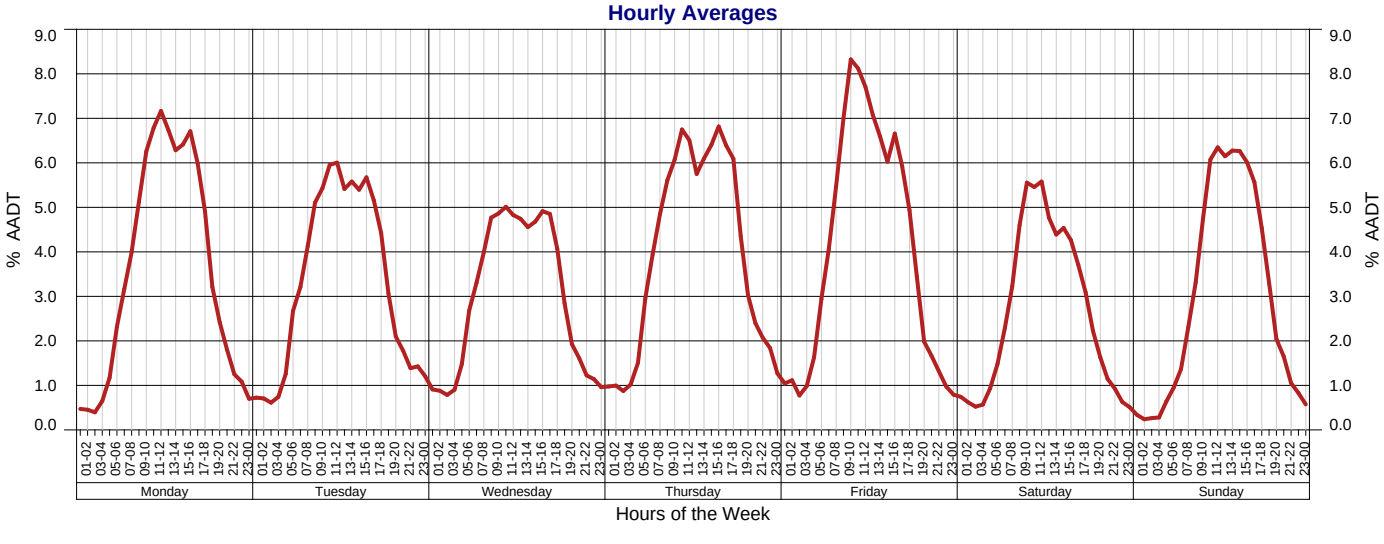
AADT History



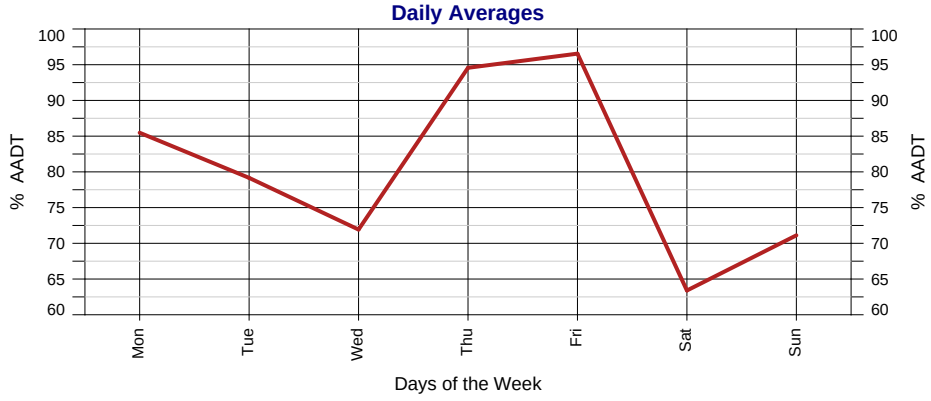
Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2018	6,904	11.27%	4.93%	3.23%
2017	6,205	19.49%	1.63%	1.99%
2016	5,193	-7.28%	-3.47%	0.06%
2015	5,601	2.45%	-0.65%	1.75%
2014	5,467	-14.07%	-0.58%	1.87%
2013	6,362	7.28%	4.91%	4.73%
2012	5,930	0.82%	3.86%	4.23%
2011	5,882	10.11%	5.60%	4.71%
2010	5,342	0.11%	4.26%	3.96%
2009	5,336	6.21%	5.00%	4.81%
2008	5,024	1.13%	4.43%	4.70%
2007	4,968	15.35%	4.97%	5.30%
2006	4,307	0.33%	1.95%	3.64%
2005	4,293	-2.41%	3.32%	4.52%
2004	4,399	8.27%	6.15%	

Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2003	4,063	1.17%	5.62%	
2002	4,016	6.10%	6.86%	5.43%
2001	3,785	7.83%	5.63%	
2000	3,510	11.36%	5.48%	
1999	3,152	2.60%		
1998	3,072	3.71%		
1997	2,962	-5.06%	3.06%	
1996	3,120	21.87%		
1995	2,560			
1994				
1993				
1992	2,593			
1991				
1990				
1989				

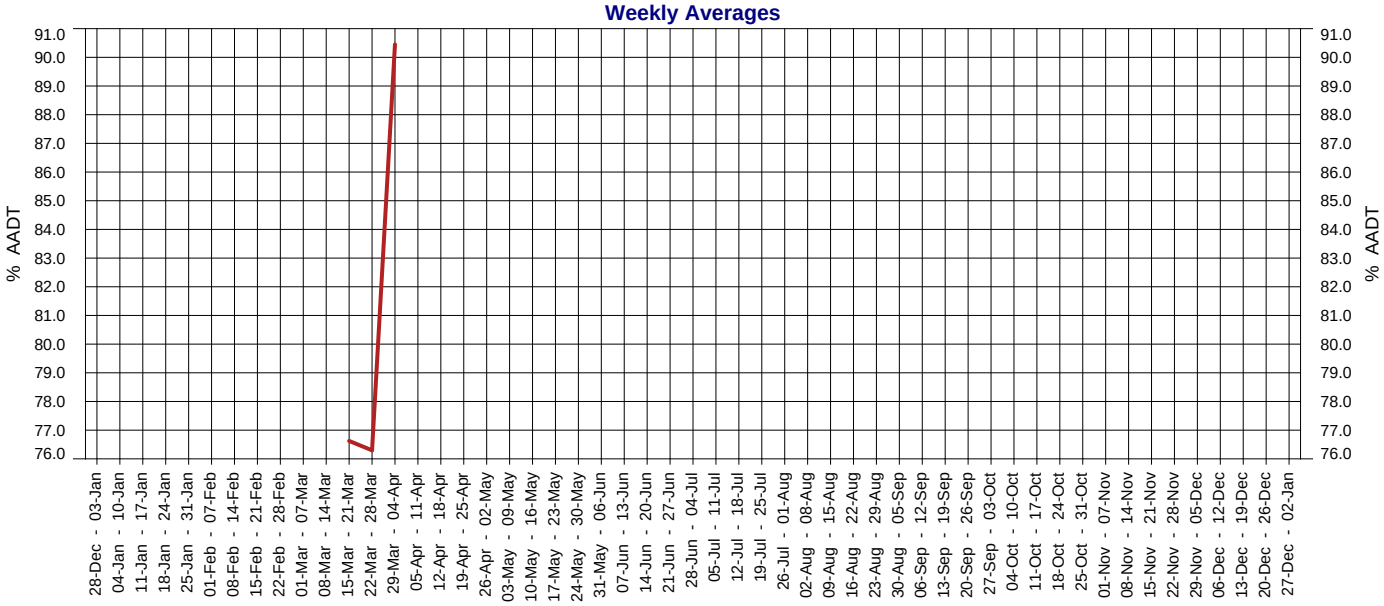
Hourly Averages



Daily Averages



Weekly Averages



2018 Calendar

January

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

February

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

March

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

April

M	T	W	T	F	S	S
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

May

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

June

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

July

M	T	W	T	F	S	S
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

August

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

September

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

October

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

November

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

December

M	T	W	T	F	S	S
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Days on which traffic data was collected.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

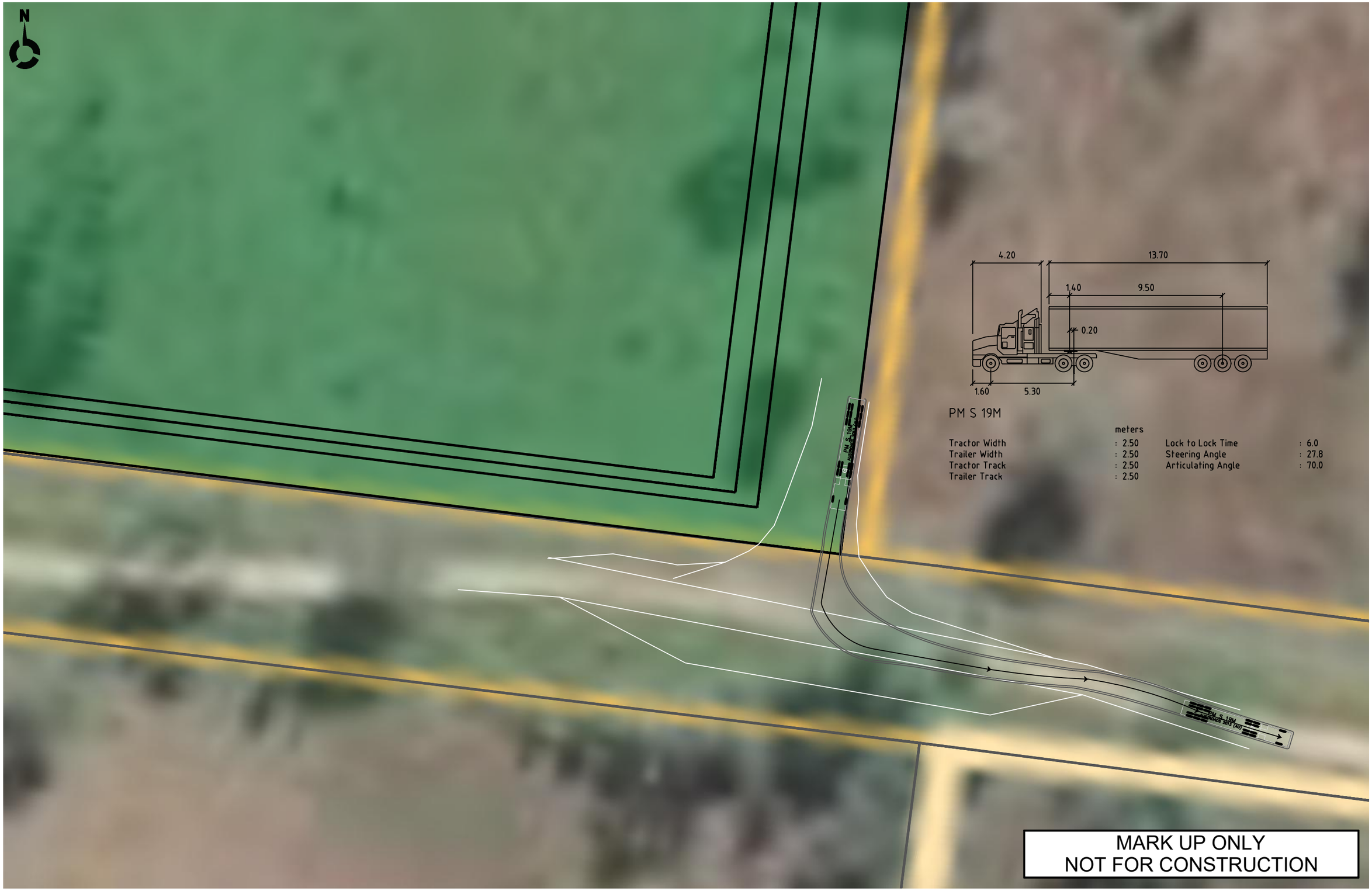
Thru Dist or TDist
The distance from the beginning of the Road Section, in kilometres.

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

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

APPENDIX 3: SWEPT PATH ANALYSIS

AP03



PM S 19M

	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.8
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

REVISION	DESCRIPTION	BY	DATE
1	ORIGINAL ISSUE	M.M	15.02.2024

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TOWN PLANNING | TRAFFIC ENGINEERING | TRANSPORT PLANNING | PROGRAM MANAGEMENT | INFRASTRUCTURE

DRAWING TITLE: SWEPT PATH ANALYSIS - SEMI-TRAILER EXITING SITE ACCESS

CLIENT: ATTEXO

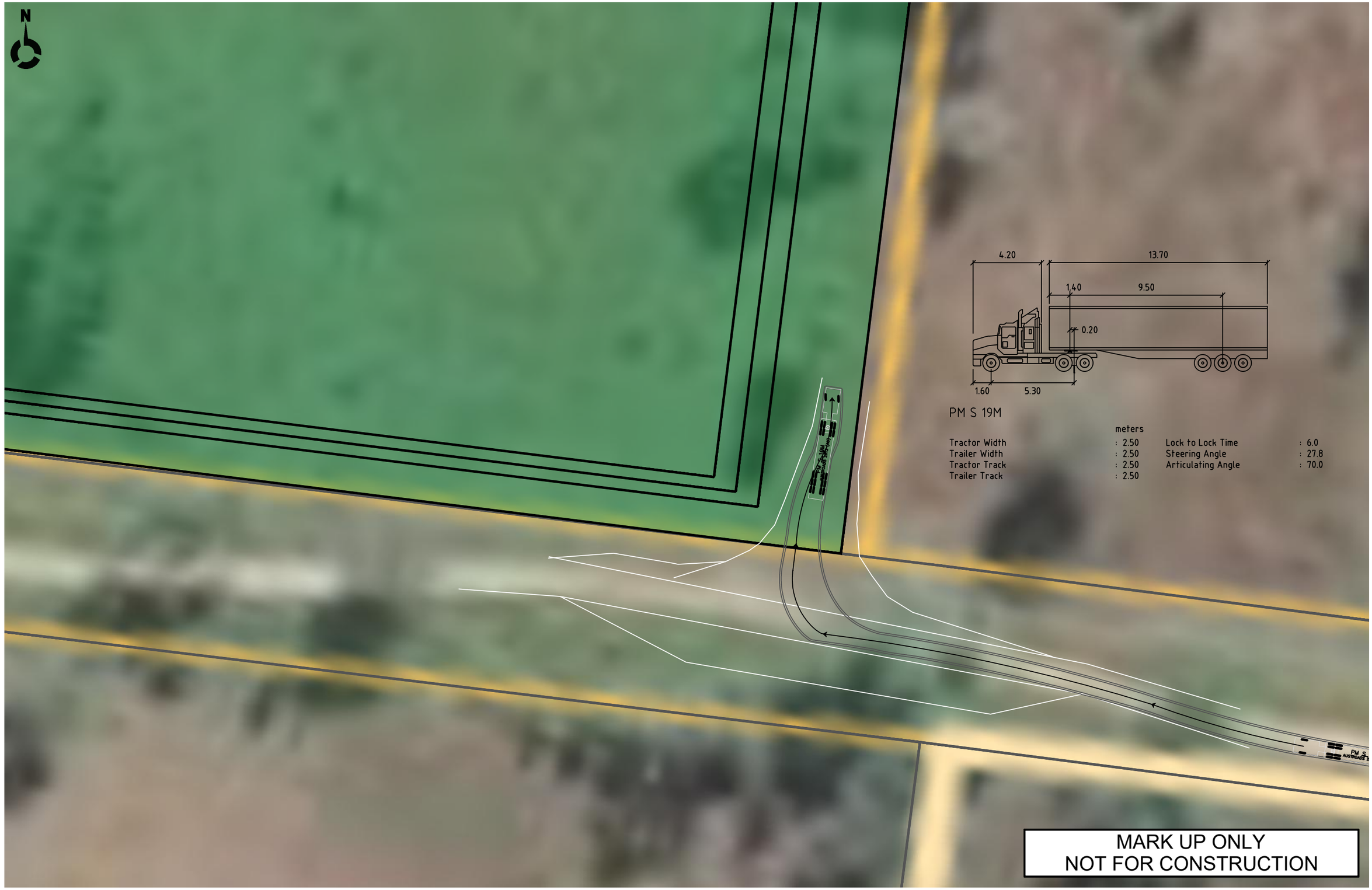
PROJECT: MIRIAM VALE SOLAR TIA

LOCATION: BURGESS ROAD, COLOSSEUM QLD 4677

DRAWING DATE: FEBRUARY 2024
ORIGINAL SIZE: A1 SCALE A3: 1:1000
SCALE: 0 10 20 30m
SCALE 1:500 (A1)

DRAWN BY: M.M
CHECKED BY: T.B
APPROVED BY: T.B

PROJECT NO.: 1681
DRAWING NO.: SK01
REVISION: 1



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1681	SK02	1

This report has been prepared by:

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