NORTHERN CONSULTING engineers

TRAFFIC ASSESSMENT REPORT

SMOKY CREEK SOLAR FARM

FOR
Edify Energy

JOB No. RPS0017
REVISION B
COUNCIL REF Not Applicable

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1.0 EXECUTIVE SUMMARY

The objective of this report is to assess at a high level the access requirements for a proposed farm located at Smoky Creek, QLD.

The site more specifically referred to as part of Lot 39 on RN395, Lot 28 on RN211, Lot 18 on RN271 and part of Lot 37 on RN1147 will host a large-scale solar photovoltaic (PV) generation facility and associated infrastructure. The project will occupy an area of approximately 2113 ha over the site and generate circa 450MW.

Utilising recent traffic count data obtained from The Department of Transport and Main Roads (TMR), and utilising standard traffic generation data provided by the proponent for this type of facility a traffic impact assessment concluded that current State Controlled Road Networks (SCRN) are suitable sized to accommodate increased traffic demands.

Adoption of an 8-month construction period is considered to be optimistic. Development generated traffic (Construction) has been determined on the basis of the power generation of the facility and therefore is relatively static. Should the construction period be extended (which is considered likely in comparison with other developments of a similar nature under construction at present), the intensity of traffic entering and exiting the site will simply reduce proportionally. Therefore the 8-month period is considered to be worse case, and reflects the maximum traffic volumes entering and exiting the site during the build.

Given the remote location of the site, it is considered probable that the labour force will be ferried to and from the site via mini buses (15 seat) capacity. Labour force trip generation has been analysed using this assumption.

An assessment of the potential traffic movements and composition of design vehicles shows that site access can be safely obtained through the existing State Controlled Road Network (SCRN) Channelised Right Turn and Basic Left Turn (CHR / BAL) intersection along the Burnett Highway (Biloela – Mt Morgan) at approximately Chainage 38.890 km, into the Local government road network.

Tomlins Road currently offers a 5.5m wide sealed road profile with 0.5-1.0m shoulders (6.5 to 7.5m carriageway), which is considered satisfactory in relation to accommodating the predicted construction and operational traffic volumes and composition.

From 'Google Earth' imagery, Dodsons Road appears to offer an unsealed pioneered/gravel formation 5.0 - 5.5m wide two way / one - one and a half lanes. Further investigation will be required to confirm the exact roadway formation width; however, it is recommended that Dodsons Road be upgraded to the minimum standard listed below should the current formation not meet the standard suggested:

Description	Two Lane / Two Way
Traffic Lane	2 x 3.0m
Shoulder	2 x 0.5m
Carriageway	7.0m
Pavement (Unsealed)	150mm - Type 2.3

A desktop safety assessment concluded that the proposed intersection:

- The current access intersection location (SCRN) is appropriate from a safety perspective,
- Tomlins Road, whilst providing a 5.5m wide sealed surface and 0.5-1.0m wide shoulders is expected to be adequate to service the construction and operational phases of the project.
- If further investigation reveals Dodson's Road formation is less than the minimum standard for a (2 way / 2 lane) unsealed gravel roadway, it is recommended that an upgrade be considered to adequately addresses the movement of the design vehicle (Class 9)
- The Access route proposed is orientated so as not to incur adverse impacts from dawn and dust sun light impacts
- Advanced warning signs alerting the general public to frequent turning vehicles during the construction period are recommended to be installed for the construction period alone.

2.0 DEVELOPMENT CONTEXT

2.1 Background

Edify Energy proposes to develop a large-scale solar photovoltaic (PV) generation facility, and associated infrastructure on the above-mentioned lots.

Northern Consulting Engineers have been engaged to prepare a brief high-level traffic impact assessment report for the increase in traffic volumes during the construction phase of the development.

2.2 Site details

The site more specifically referred to as part of Lot 39 on RN395, Lot 28 on RN211, Lot 18 on RN271 and part of Lot 37 on RN1147 will host a large-scale solar photovoltaic (PV) generation facility and associated infrastructure. The project will occupy an area of approximately 2113 ha over the site and produce in the order of 500MW.

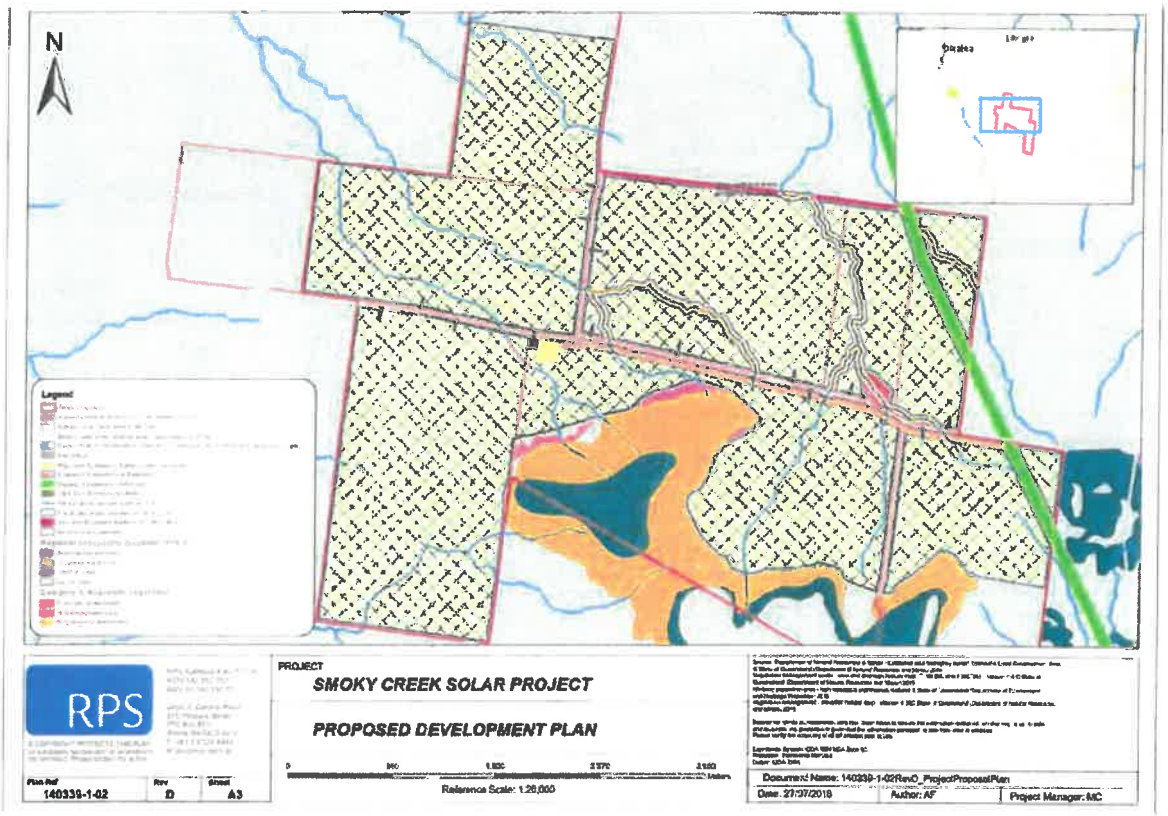

Figure 2-1 – Proposed Solar Farm Location

2.3 Current Site Access

The site is currently accessed via the Burnett Highway / Tomlins Road and Dodsons Road.

2.4 Road Network Description

Dawson Highway (TMR designation 46A)

Burnett Highway (TMR designation 41E)

Tomlins Road (Banana Shire Council)

Dodson's Road (Banana Shire Council)

Figure 2-2 – Part copy –Transport and Main Roads – Central Queensland Region Road Map

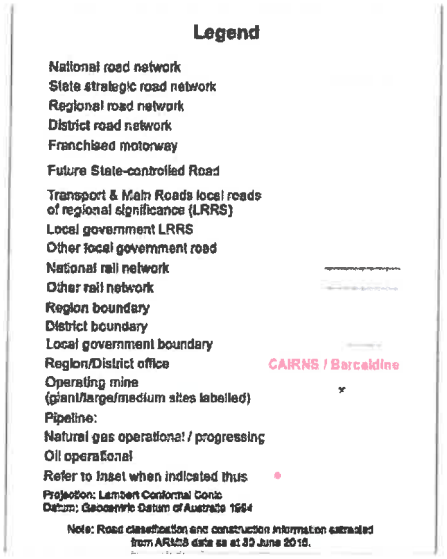

Figure 2-3 – Transport and Main Roads – Central Queensland Region Road Map (Legend)

2.5 Existing Traffic Volumes

Current traffic volume data for the Burnett Highway (41E) were obtained through the Rockhampton office of the Department of Transport and Main Roads (TMR).

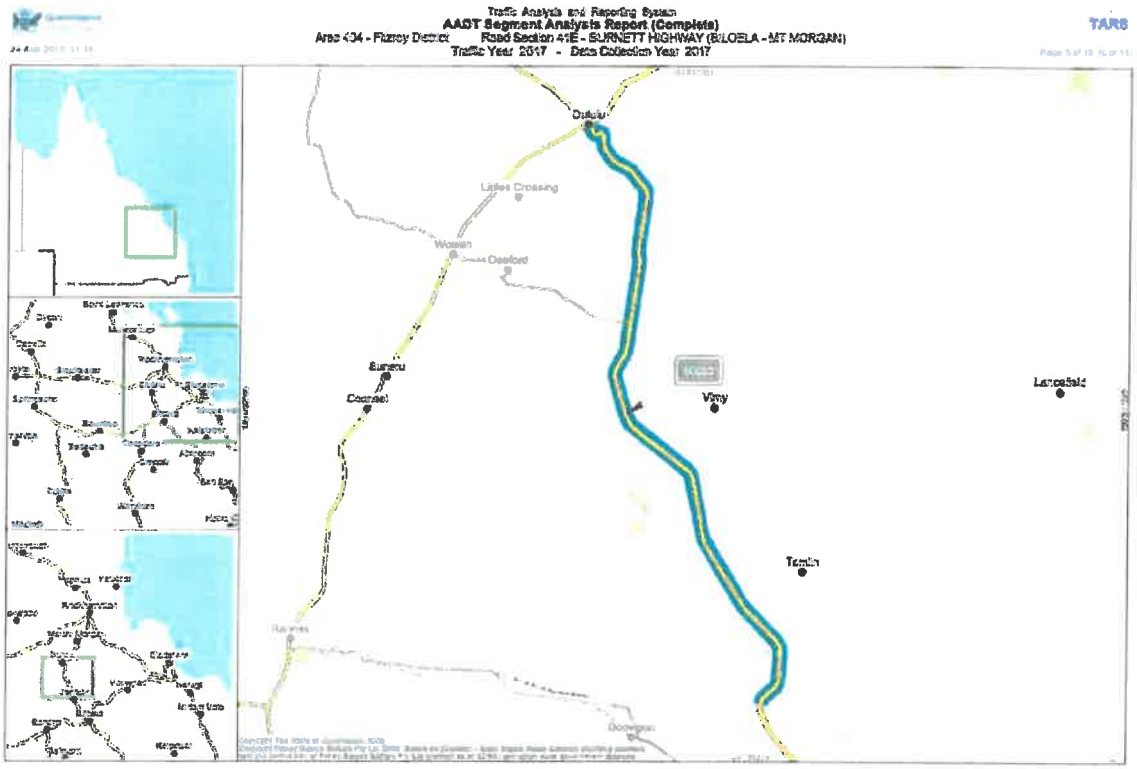

Figure 2-4 – TARS Data – Road Section 41E (Burnett Highway)

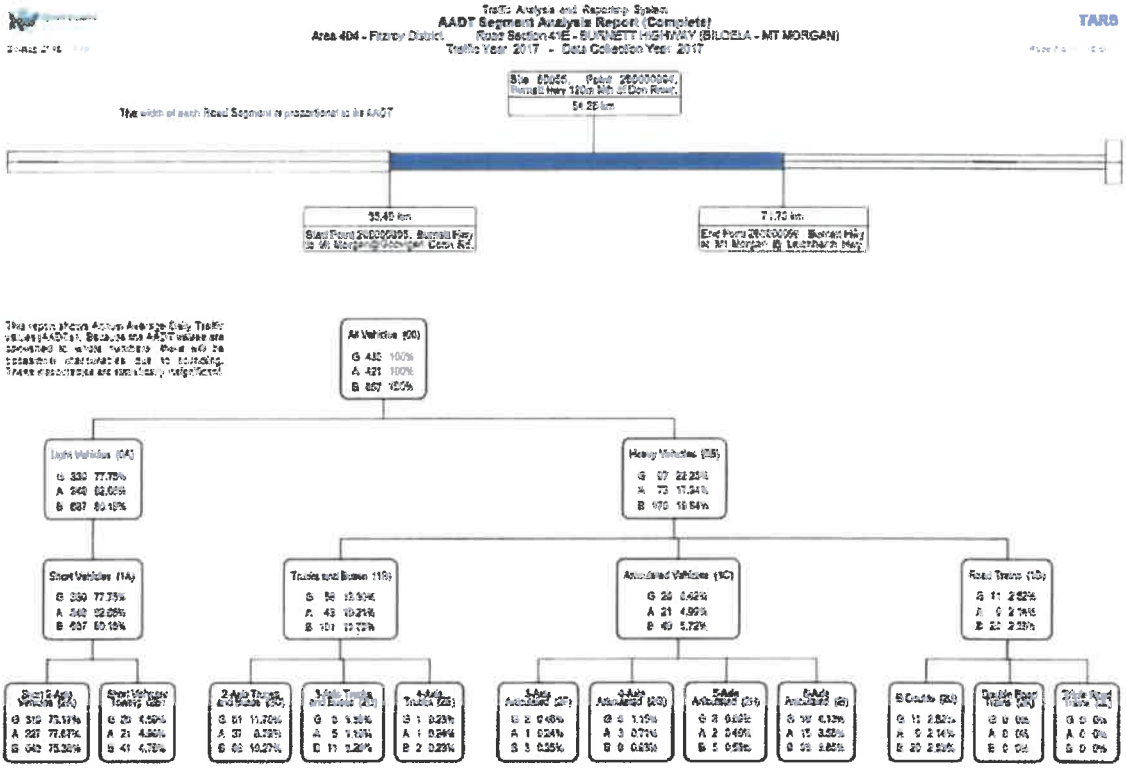

Figure 2-5 – TARS Data – Road Section 41E (Burnett Highway)

All Traffic Analysis and Reporting System (TARS) data relied upon have been included within Appendix A.

2.6 Traffic Growth Trends and Anticipated Traffic Breakdown

Based on the advice provided by Edify Energy, the construction phase of the project is anticipated to last 8 months commencing late 2019 / early 2020. Information regarding the anticipated vehicle movements during the 8 months construction phase have also been provided by Edify Energy and relied upon by NCE.

Adoption of the 8-month construction period is considered to be optimistic. Development generated traffic (Construction) has been determined on the basis of the power generation of the facility and therefore is relatively static. Should the construction period be extended (which is considered likely in comparison with other developments of a similar nature under construction at present), the intensity of traffic entering and exiting the site will simply reduce proportionally. Therefore the 8-month period is considered to be worse case, and reflects the maximum traffic volumes entering and exiting the site during the build.

Given the remote location of the site, it is considered probable that the labour force will be ferried to and from the site via mini buses (15 seat) capacity. Labour force trip generation has been analysed using this assumption.

Northern Consulting Engineers (NCE) have run the traffic warrants for the proposed development, at the time of construction and at the 10-year horizon being the operational phase.

Edify Energy expect fill material required to create sub-station platforms, building pads for operation and maintenance facilities, hard stands and carparking will be sourced on site.

Whilst the TARS data indicates that the current peak traffic volumes are approximately 8% to 12% of the Average Annual Daily Traffic (AADT) during the daily peak, NCE have assessed the peak volumes at 16%.

Table 2-1 Background traffic Growth (Construction year)

Description of entity		Road 41E
Linear Growth Equation **A = rt+P**		
Year - Traffic Survey Data Collected		2017
Year - Commencement of Use		2019
Year - Projected Design Horizon		2019
Projected Growth Rate (percentage)		0.00%
AADT (G) [Traffic Flow in Gazettal Direction]		436
AADT (A) [Traffic Flow Against Gazettal Direction]		421
AADT (B) [Traffic Flow Both Directions]		857
(G)	Future value including growth rate	**436.0**
(A)	Future value including growth rate	**421.0**
(B)	Future value including growth rate	**857.0**
P	Initial value	(G), (A) or (B) above
r	Annual growth rate (decimal)	0.00%

Description of entity		Road 41E
Continuos Compound Growth Equation **A = P .e^{rt}**		
Year - Traffic Survey Data Collected		2017
Year - Commencement of Use		2019
Year - Projected Design Horizon		2019
Projected Growth Rate (percentage)		0.00%
AADT (G) [Traffic Flow in Gazettal Direction]		436
AADT (A) [Traffic Flow Against Gazettal Direction]		421
AADT (B) [Traffic Flow Both Directions]		857
(G)	Future value including growth rate	**436.0**
(A)	Future value including growth rate	**421.0**
(B)	Future value including growth rate	**857.0**
P	Initial value	(G), (A) or (B) above
r	Annual growth rate (decimal)	0.0000
e	Continous Growth	exp
t	Number of year projected.	2.0

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Table 2-2 Background traffic Growth (Design Horizon)

Description of entity		Road 41E
Linear Growth Equation **A = rt+P**		
Year - Traffic Survey Data Collected		2017
Year - Commencement of Use		*2019*
Year - Projected Design Horizon		*2029*
Projected Growth Rate (percentage)		*0.00%*
AADT (G) [Traffic Flow in Gazettal Direction]		*436*
AADT (A) [Traffic Flow Against Gazettal Direction]		*421*
AADT (B) [Traffic Flow Both Directions]		*857*
(G)	Future value including growth rate	**436.0**
(A)	Future value including growth rate	**421.0**
(B)	Future value including growth rate	**857.0**
P	Initial value	(G), (A) or (B) above
r	Annual growth rate (decimal)	0.00%

Description of entity		Road 41E
Continuos Compound Growth Equation $A = P.e^{\wedge rt}$		
Year - Traffic Survey Data Collected		2017
Year - Commencement of Use		*2019*
Year - Projected Design Horizon		*2029*
Projected Growth Rate (percentage)		*0.00%*
AADT (G) [Traffic Flow in Gazettal Direction]		*436*
AADT (A) [Traffic Flow Against Gazettal Direction]		*421*
AADT (B) [Traffic Flow Both Directions]		*857*
(G)	Future value including growth rate	**436.0**
(A)	Future value including growth rate	**421.0**
(B)	Future value including growth rate	**857.0**
P	Initial value	(G), (A) or (B) above
r	Annual growth rate (decimal)	0.0000
e	Continous Growth	exp
t	Number of year projected.	12.0

Table 2-3 Construction Traffic Movements

Transport Component	CONSTRUCTION MONTH									TOTAL
	1	2	3	4	5	6	7	8		
PV Panels		463	463	463	463	463	463			2778
Power Conversion Units			63	63	63	63				250
Supports and fixings		834	834	834	834					3334
Switchgear				2						2
Power Transformer				2						2
Balance of system	83	83	83	83	83	83	83	83		667
Construction Labour Traffic (Light)	750	750	750	750	750	750	750	750		6000
Gravel roads (Internal)	372	372	372	372	372	372				2231
TOTAL	1205	2502	2564	2568	2564	1731	1296	833		15264
Assumed working days per month	26									
Daily Movements	46	96	99	99	99	67	50	32	Max	99
Assumed working hours per day	8									
Peak Movements per hour	17	23	23	23	23	19	17	15	Max	23

Table 2-4 Operational Traffic Movements

Operations and Maintenance Traffic Movements	Trip / MWp / Wk	Trips per week	Trips per year		
			Year 1	Year 2	Year N
Electricians	0.075	38	1950	1463	975
Water Trucks	0.3	3	150	150	150
Labour for Module Cleaning	0.9	9	450	450	450
Labour for General Maintenance	0.52	5	260	325	390
Total Annual Movements			2810	2388	1965
Average Weekly Movements			54	46	38
Average Daily movement			8	7	5

2.7 Current Speed Environment / Speed Surveys

The regulated speed environment for the Burnett Highway is 100km/h. Based on the information obtained from TMR.

2.8 Existing / Proposed Parking Provision

On-site parking provision will be provided for all workers and visitors during the construction and operational phases of the solar farm.

3.0 DEVELOPMENT PROPOSAL

3.1 Proposed Uses and Scale

The proposed solar farm development area is approximately 2113 ha.

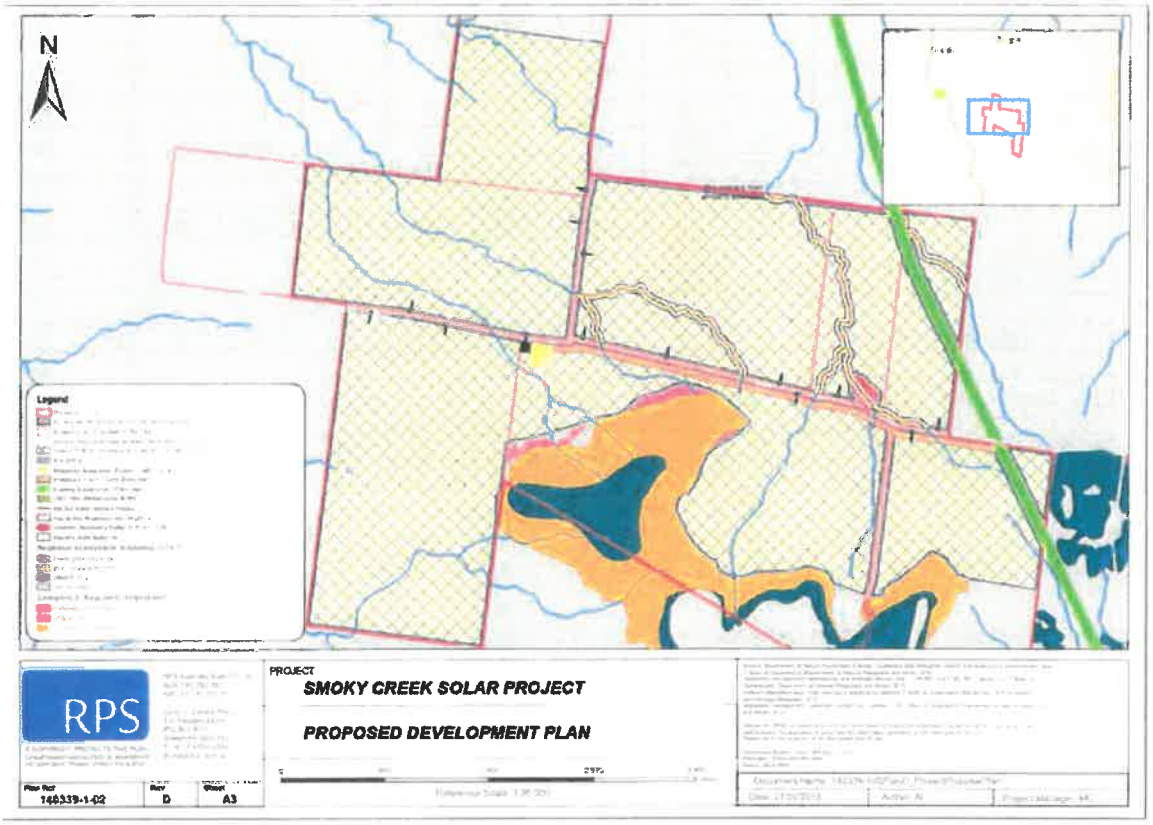


Figure 3-1 – Proposed Development Envelope

3.2 Operating hours and peaks

The facility is expected to operate 24 hours per day, including public holidays. Power generation will occur during daylight hours, with maintenance works being undertaken as and when required. During the construction phase of the development, workers are anticipated to be accommodated on site Monday – Saturday. Construction activities are expected to be undertaken between the hours of 6am and 4pm, however some construction activities may occur outside these hours where the works cannot be interrupted (eg. Large concrete pours).

3.3 Number of Employees / Visitors

The proposed facility is anticipated to operate with 5 employees permanently based on site.

3.4 Site Layout

Preliminary layout plans of the facility are provided below.

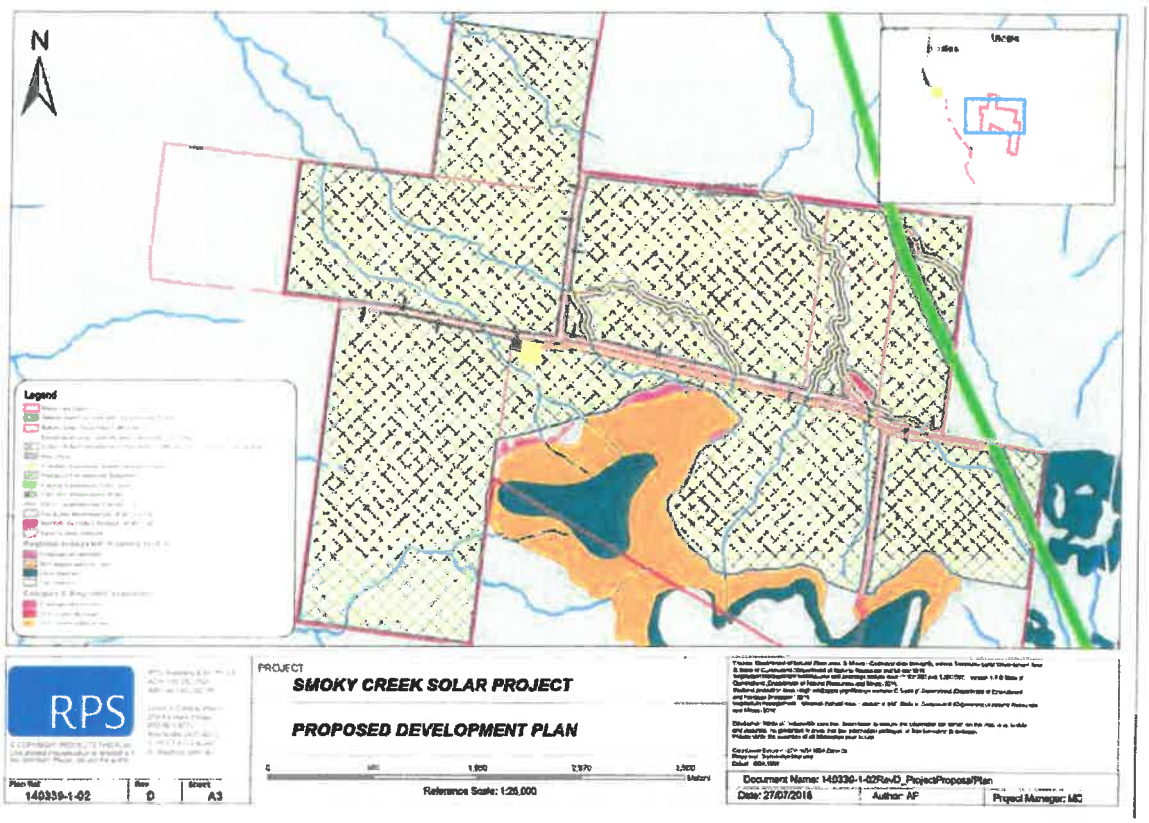


Figure 3-2 – Proposed Development Envelope

3.5 Access Form and Location

The following basic assumptions have been utilised during this preliminary access assessment.

- Current speed limit for Burnett Highway is 100km/h
- TMR traffic count data for 2017 has been adopted as the back-ground traffic and growth factors.
- Peak hourly traffic has been determined as follows:
  - Background traffic growth adopted calculated from Burnett Highway TARS data and 10 year predicted growth factor of 0.0%,
  - Development generated traffic 100/0, 0/100 [In/Out] Split applied in both directions.
  - Daily development labour traffic assessed as arriving within the peak hour (shift change)
  - Daily development delivery (HV) traffic averaged over the work day.
- Trip distribution: Given the volatility in the condition of the regional road network, a worst-case scenario has been developed for development generated traffic originating in both direction north and south.
- Construction traffic analysed for 2019,
- Operational Traffic analysed for 2029.

3.6 Austroads Intersection Configuration Warrants (Construction Traffic 2019)

Northern Consulting Engineers have prepared traffic volumes associated with the construction phase turn manoeuvres at the existing (SCRN) intersection. The results of these investigations are presented within the attached appendices with an example figure below:

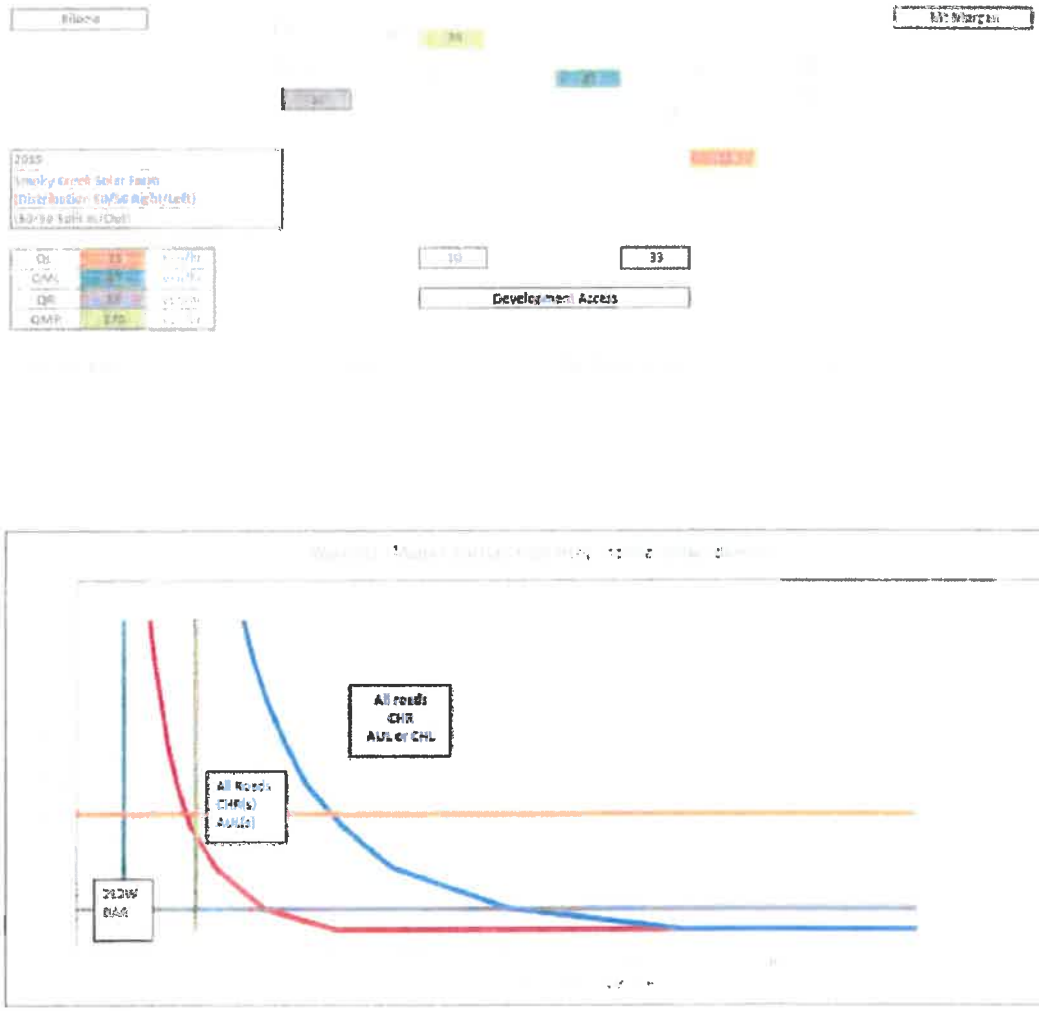


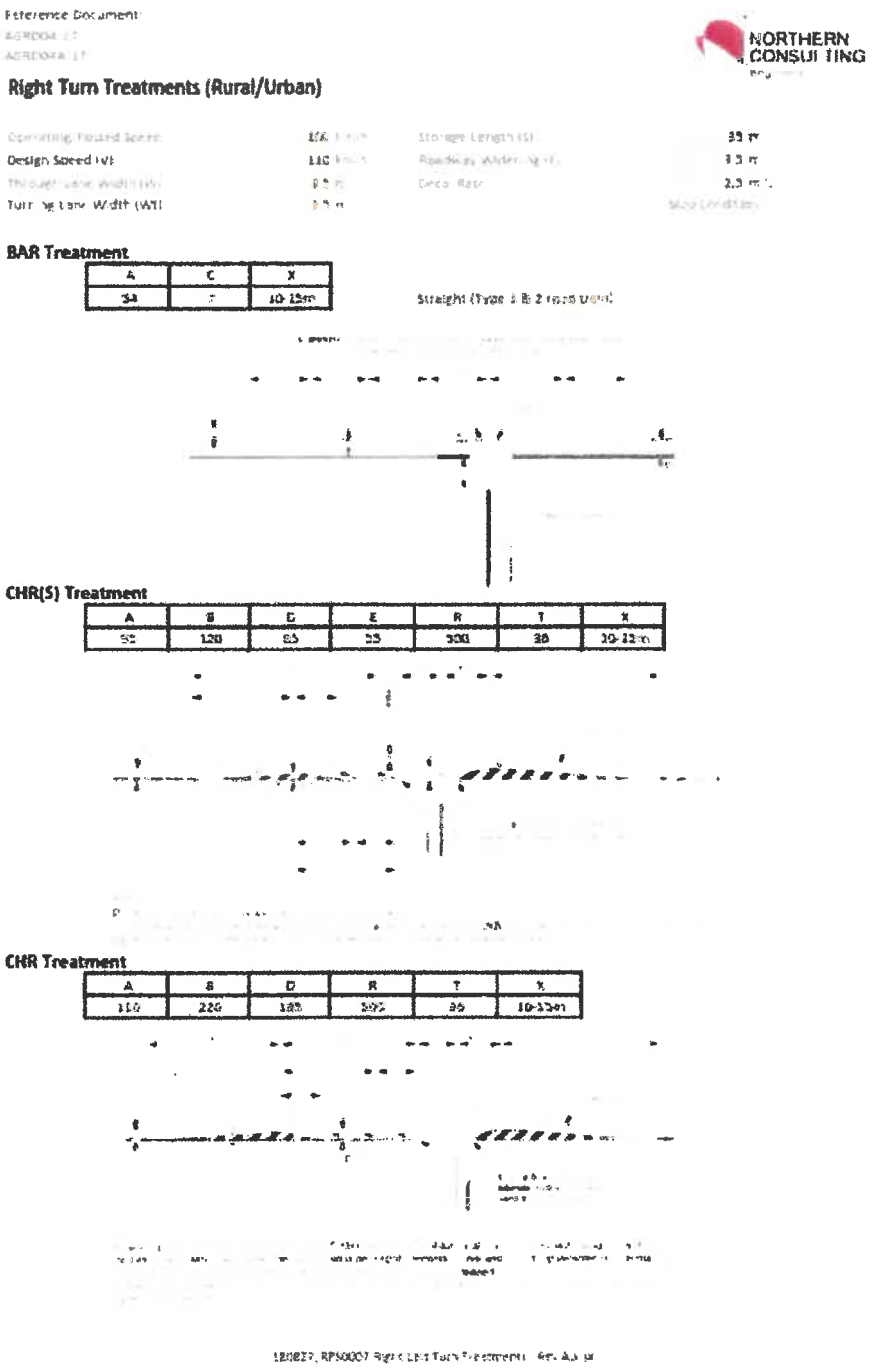
Figure 3-3 – Trip Distribution, Traffic Volume Calc and Intersection Warrant [Typical]

3.7 Intersection Form

As evidenced within the appendices, design traffic within the Burnett Highway combined with the predicted development generated traffic can be accommodated safely within the existing CHR / AUL intersection between the Burnett Highway and Tomlins Road.

Given the number of semi-trailers expected to utilise the Tomlins Road / Dodsons Road intersection during the construction phase the adoption of a configuration that is sympathetic to this vehicle type is recommended.

Given the low traffic volumes within Tomlins and Dodson's Roads and the fact that construction traffic will be aware of the location of the intersection and will generally access the site during daylight hours the adoption of an CHR(s) / AUL(s) intersection at Tomlins / Dodson's Road is recommended.



Reference Document:

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Right Turn Treatments (Rural/Urban)

Design Speed (V)			
Turning Lane Width (W)			

BAR Treatment

A	C	X
34		10-15m

Straight (Type 1 & 2 roads only)

CHR(S) Treatment

A	B	D	E	R	T	X
55	120	85	55	300	30	10-22m

CHR Treatment

A	B	D	R	T	X
110	220	185	595	35	10-33m

Figure 3-4 – Northern Consulting Engineers – Intersection configuration calculation spreadsheet

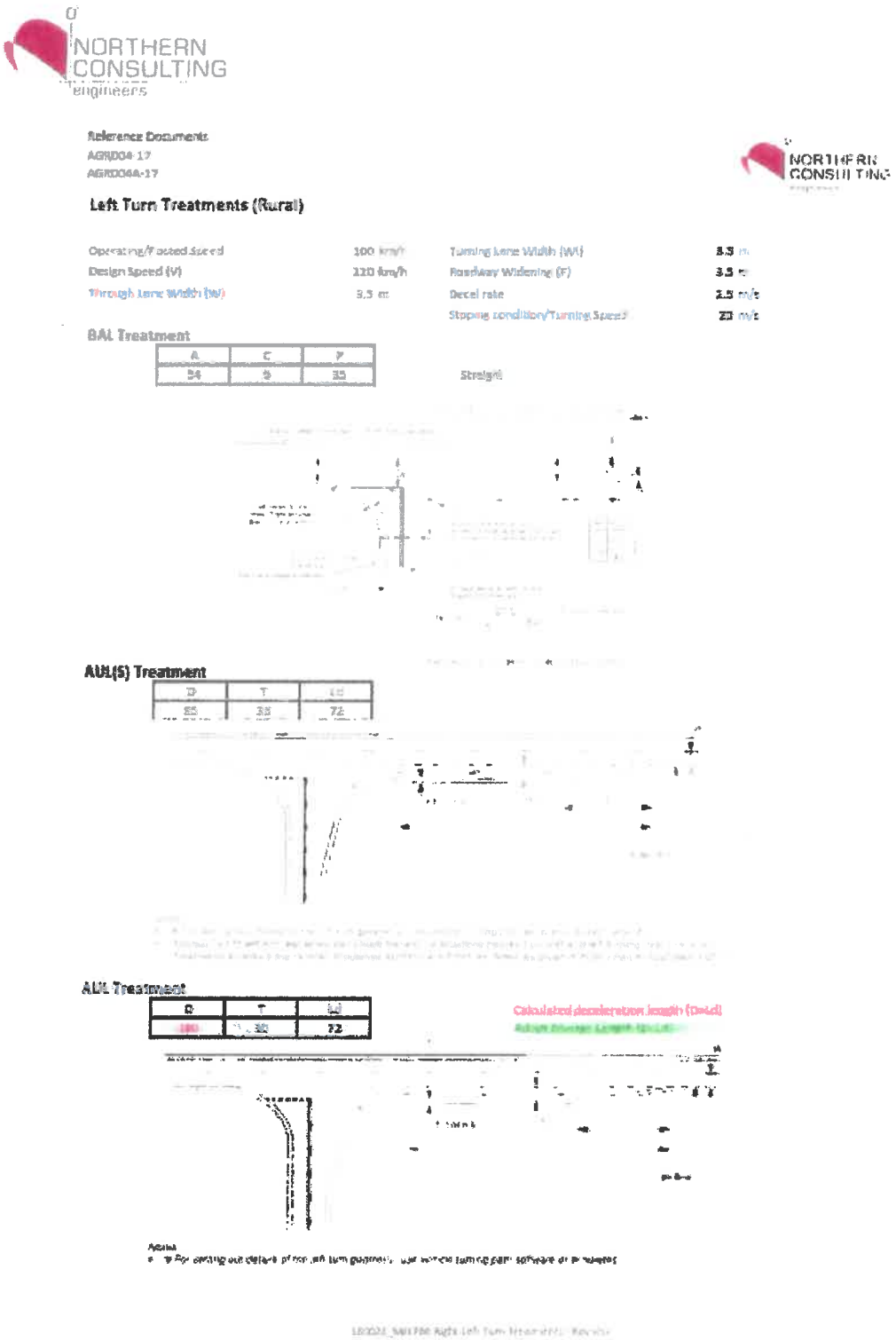

Figure 3-5 – Northern Consulting Engineers – Intersection configuration calculation spreadsheet

4.0 SAFETY ASSESSMENT

4.1 Desk top Preliminary Design Safety Audit

Northern Consulting Engineers have undertaken a desktop preliminary design stage safety audit of the proposed access intersection.

The key outcomes from the audit are listed below:

- The existing intersection at Burnett Highway and Tomlins Road is considered safe for existing and proposed traffic loads for both construction phase and operational phase.
- The proposed upgrade to Tomlins / Dodson's Road intersection is expected to provide a suitable and safe intersection for the existing and proposed traffic loads for both construction phase and operational phase.
- If further investigation reveals Dodson's Road formation is less than the minimum standard for a (2 way / 2 lane) unsealed gravel roadway, it is recommended that an upgrade be considered to adequately addresses the movement of the design vehicle (Class 9)
- The Access route proposed is orientated so as not to incur adverse impacts from dawn and dust sun light impacts
- Advanced warning signs indicating the frequent truck turning movements are expected during the construction phase are recommended to be installed along the route from the Burnett Highway through to the site.

A full copy of the Preliminary Design Stage Safety Audit is contained within the Appendices.

5.0 CONCLUSION

In conclusion, the anticipated increase in traffic volume during the construction of the proposed solar farm can be accommodated within the existing road networks with upgrades.

An upgraded intersection configured in accordance with Figures 7.6 and 8.2 - Rural property access (BAL/BAR) specifically design for articulated vehicles (see Figures 2-24 and 2-25) Austroads "Guide to Road Design Part 4A: Unsignalised and Signalised Intersections, 2017", is recommended to be installed at the intersection of Tomlins Road and Dodson's Road.

A pre-construction dilapidation report should be prepared and utilised as a bench mark to compare the performance of the pavement surfacing and pavement profile during and following the construction phase to ensure a safe and usable road profile is available for the development and the greater community.

A properly prepared action plan for the maintenance and repair of Tomlins Road and Dodson's Road should form any documentation utilised as part of the development.

From 'Google Earth' imagery, Dodsons Road appears to offer an unsealed pioneered/gravel formation 5.0 - 5.5m wide two way / one - one and a half lanes. Further investigation will be required to confirm the exact roadway formation width; however, it is recommended that Dodsons Road be upgraded to the minimum standard listed below should the current formation not meet the standard suggested:

Description	Two Lane / Two Way
Traffic Lane	2 x 3.0m
Shoulder	2 x 0.5m
Carriageway	7.0m
Pavement (unsealed)	150mm - Type 2.3

A desktop safety assessment concluded that the proposed solar farm can be safety constructed and operated with the following upgrades:

- The existing intersection at Burnett Highway and Tomlins Road is considered safe for existing and proposed traffic loads for both construction phase and operational phase.
- The proposed upgrade to Tomlins / Dodson's Road intersection is expected to provide a suitable and safe intersection for the existing and proposed traffic loads for both construction phase and operational phase.
- If further investigation reveals Dodson's Road formation is less than the minimum standard for a (2 way / 2 lane) unsealed gravel roadway, it is recommended that an upgrade be considered to adequately addresses the movement of the design vehicle (Class 9)
- The Access route proposed is orientated so as not to incur adverse impacts from dawn and dust sun light impacts
- Advanced warning signs indicating the frequent truck turning movements are expected during the construction phase are recommended to be installed along the route from the Burnett Highway through to the site.

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APPENDIX A

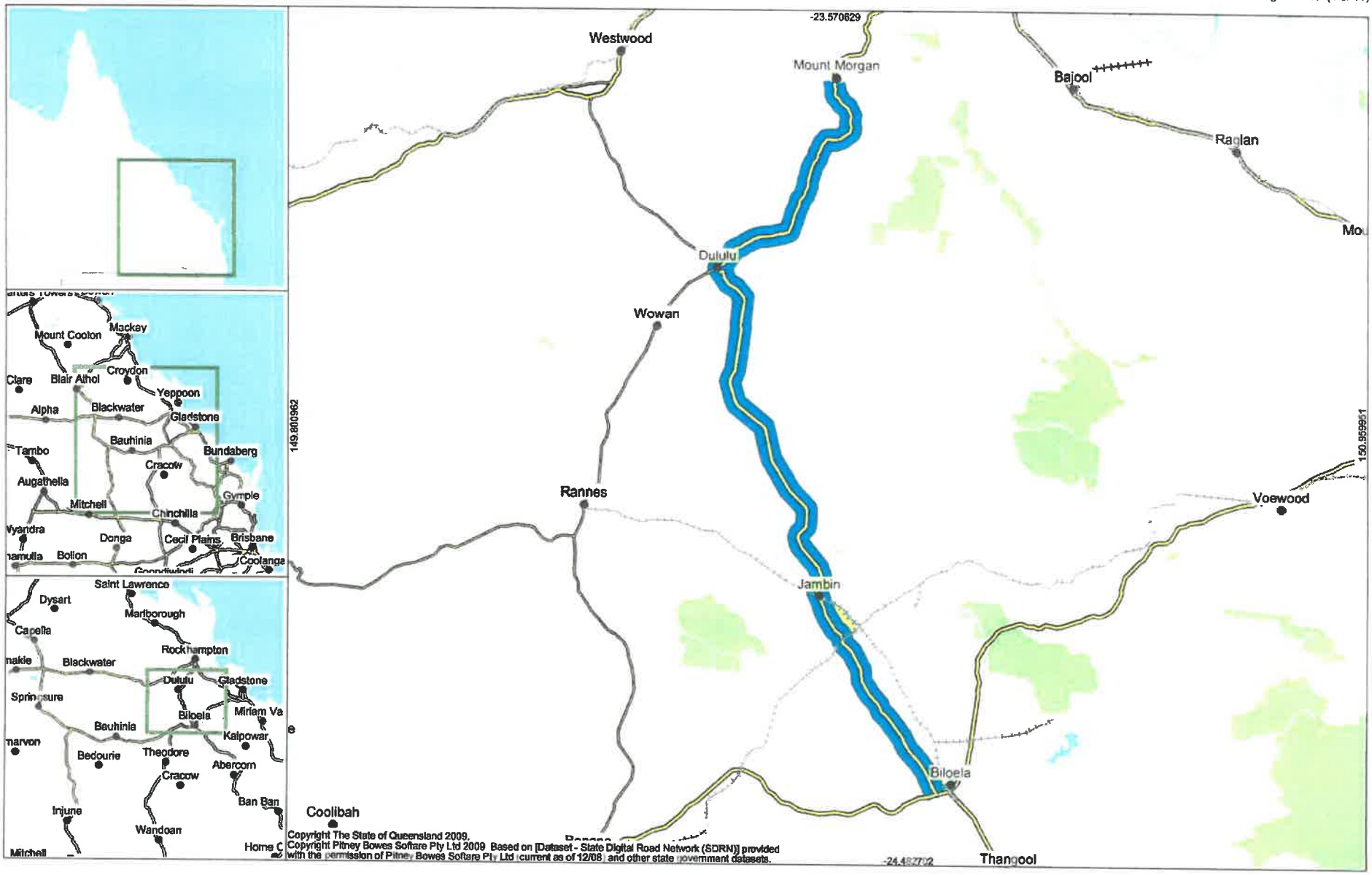
Department of Transport and Main Roads Traffic Analysis and Report System (TARS) Data Sheets

Traffic Analysis and Reporting System

AADT Segment Analysis Report (Complete)

Road Section 41E - BURNETT HIGHWAY (BILOELA - MT MORGAN)

Traffic Year 2017



AADT Segment Analysis Report (Complete)

Road Section 41E - BURNETT HIGHWAY (BILOELA - MT MORGAN)

Traffic Year 2017

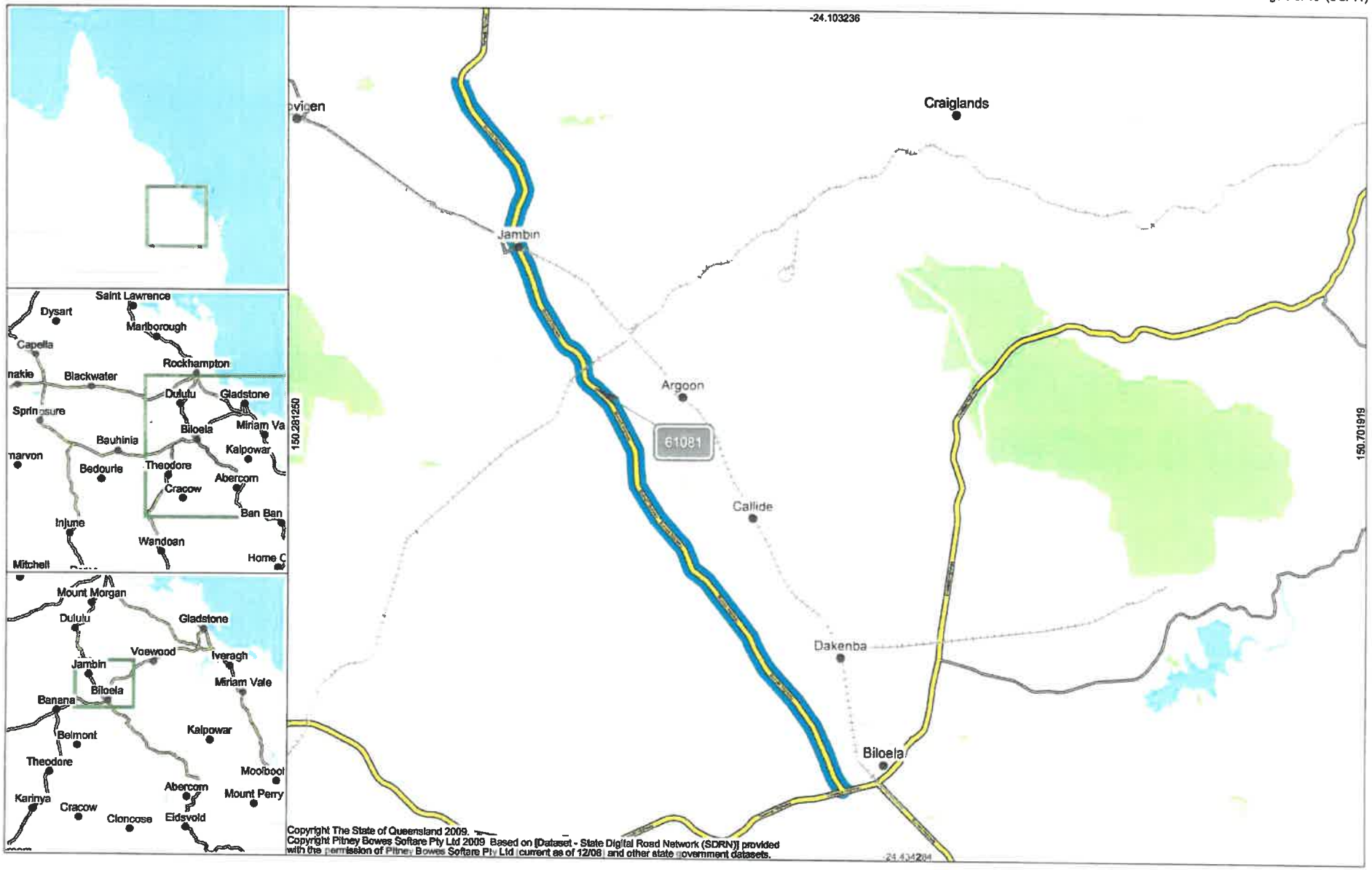
Road Segments Summary - All Vehicles

Region	Segment Start Tdist	Segment End Tdist	Site	Site Tdist	Description	AADT G	AADT A	AADT B	VKT (Millions) G	VKT (Millions) A	VKT (Millions) B	Data Year	Page
404	0.000 km	35.401 km	61081	20.310 km	Burnett Hwy 1km South Callide Creek	557	535	1,092	7.19720	6.91293	14.11013	2017	2
404	35.401 km	71.730 km	60055	54.260 km	Burnett Hwy 120m N of Don River	436	421	857	5.78140	5.58250	11.36389	2017	3
404	71.730 km	101.344 km	60056	98.945 km	Burnett Hwy 20m Nth Hamilton Ck	389	395	784	4.20474	4.26960	8.47434	2017	4
404	101.344 km	102.775 km	61082	102.725 km	Burnett Hwy 50 Metres Sth of Gordon St	1,178	1,197	2,375	0.61529	0.62521	1.24050	2017	5
								Totals	17.79863	17.39024	35.18886		

Road Segments Summary - Heavy Vehicles only

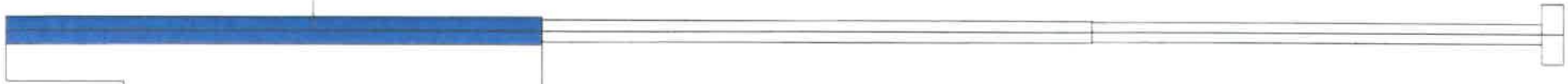
VKT totals are calculated only if traffic class data is available for all sites.

Region	Segment Start Tdist	Segment End Tdist	Site	Site Tdist	Description	HV AADT G AADT	HV AADT G HV %	HV AADT A AADT	HV AADT A HV %	HV AADT B AADT	HV AADT B HV %	HV VKT (Millions) G	HV VKT (Millions) A	HV VKT (Millions) B	Data Year	Page
404	0.000 km	35.401 km	61081	20.310 km	Burnett Hwy 1km South Callide Creek	113	20.29%	103	19.25%	216	19.78%	1.46011	1.33090	2.79101	2017	2
404	35.401 km	71.730 km	60055	54.260 km	Burnett Hwy 120m N of Don River	97	22.25%	73	17.34%	170	19.84%	1.28623	0.96799	2.25421	2017	3
404	71.730 km	101.344 km	60056	98.945 km	Burnett Hwy 20m Nth Hamilton Ck	29	7.46%	36	9.11%	65	8.29%	0.31346	0.38913	0.70259	2017	4
404	101.344 km	102.775 km	61082	102.725 km	Burnett Hwy 50 Metres Sth of Gordon St	145	12.31%	102	8.52%	247	10.40%	0.07574	0.05328	0.12901	2017	5
											Totals	3.13554	2.74129	5.87683		


-24.103236
Craiglands
Jambin
Argoon
61081
Callide
Dakenba
Biloela
150.281250
150.701919
Saint Lawrence
Dysart
Marlborough
Capella
Rockhampton
Blackwater
Dululu
Gladstone
Biloela
Miriam Va
Bauhinia
Kalpowar
Bedourie
Theodore
Cracow
Abercorn
Ban Ban
Injune
Wandoan
Mitchell
Mount Morgan
Dululu
Gladstone
Woowood
Iveragh
Jambin
Biloela
Miriam Vale
Banana
Belmont
Kalpowar
Theodore
Mooloolo
Abercorn
Mount Perry
Karinya
Cracow
Cloncose
Eidsvold
Copyright The State of Queensland 2009.
Copyright Pitney Bowes Softare Pty Ltd 2009 Based on [Dataset - State Digital Road Network (SDRN)] provided with the permission of Pitney Bowes Softare Pty Ltd (current as of 12/08) and other state government datasets.

Site 61081. Point 260000784. Burnett Hwy 450m South Callide Ck.
20.31 km

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



0.00 km
Start Point 260000378. Burnett Hwy to Mt Morgan @ Dawson Hwy.

35.40 km
End Point 260000095. Burnett Hwy to Mt Morgan@Goovigen Conn Rd.

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 557 100%
A 535 100%
B 1,092 100%

Light Vehicles (0A)
G 444 79.71%
A 433 80.93%
B 877 80.31%

Heavy Vehicles (0B)
G 113 20.29%
A 103 19.25%
B 216 19.78%

Short Vehicles (1A)
G 444 79.71%
A 433 80.93%
B 877 80.31%

Trucks and Buses (1B)
G 70 12.57%
A 64 11.96%
B 134 12.27%

Articulated Vehicles (1C)
G 30 5.39%
A 27 5.05%
B 57 5.22%

Road Trains (1D)
G 13 2.33%
A 12 2.24%
B 25 2.29%

Short 2-Axle Vehicles (2A)
G 421 75.58%
A 410 76.64%
B 831 76.10%

Short Vehicles Towing (2B)
G 23 4.13%
A 23 4.30%
B 46 4.21%

2-Axle Trucks and Buses (2C)
G 61 10.95%
A 56 10.47%
B 117 10.71%

3-Axle Trucks and Buses (2D)
G 8 1.44%
A 7 1.31%
B 15 1.37%

4-Axle Trucks (2E)
G 1 0.18%
A 1 0.19%
B 2 0.18%

3-Axle Articulated (2F)
G 2 0.36%
A 2 0.37%
B 4 0.37%

4-Axle Articulated (2G)
G 5 0.90%
A 5 0.93%
B 10 0.92%

5-Axle Articulated (2H)
G 5 0.90%
A 3 0.56%
B 8 0.73%

6-Axle Articulated (2I)
G 18 3.23%
A 17 3.18%
B 35 3.21%

B Double (2J)
G 13 2.33%
A 12 2.24%
B 25 2.29%

Double Road Trains (2K)
G 0 0%
A 0 0%
B 0 0%

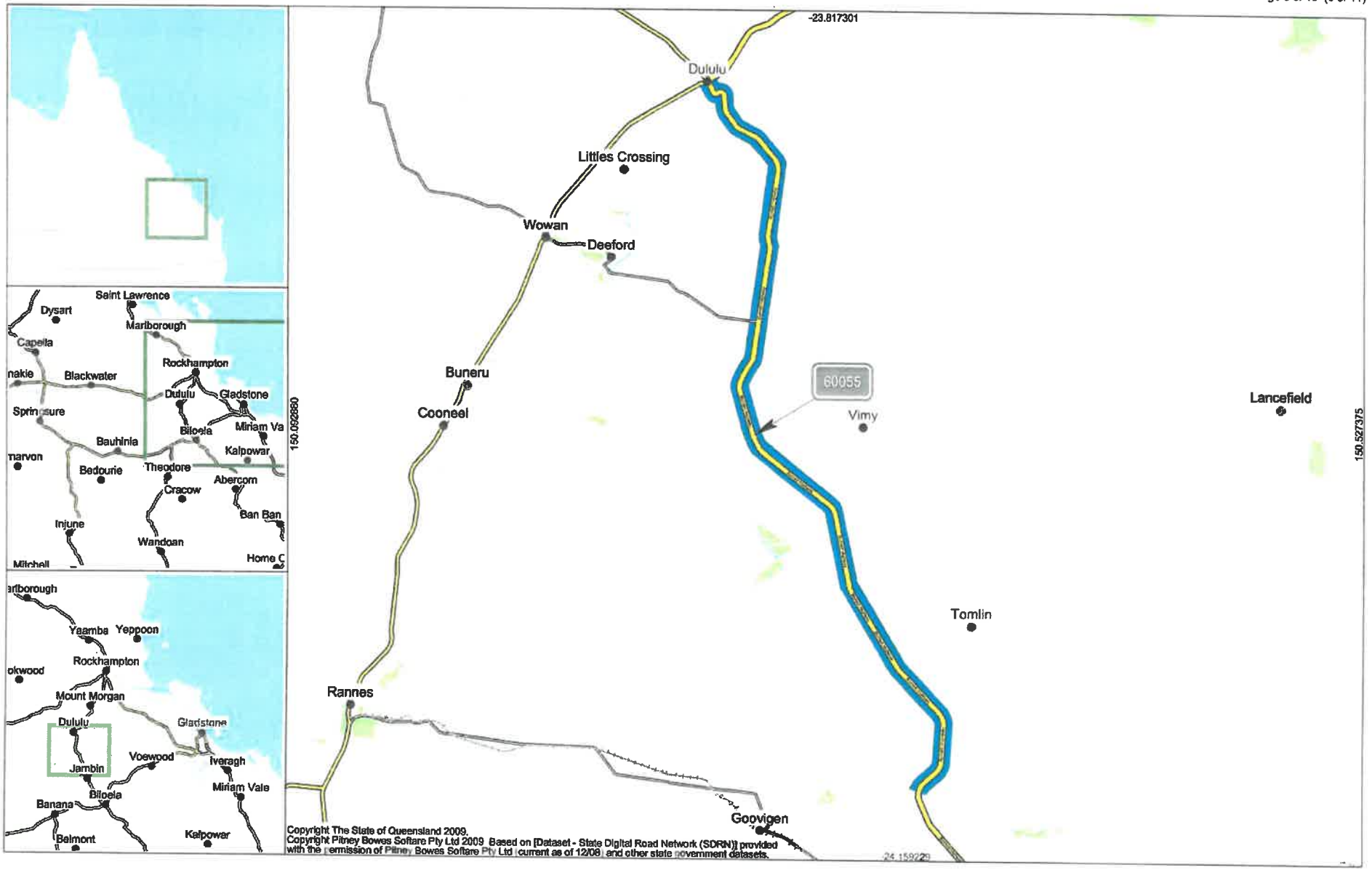
Triple Road Trains (2L)
G 0 0%
A 0 0%
B 0 0%

Traffic Analysis and Reporting System

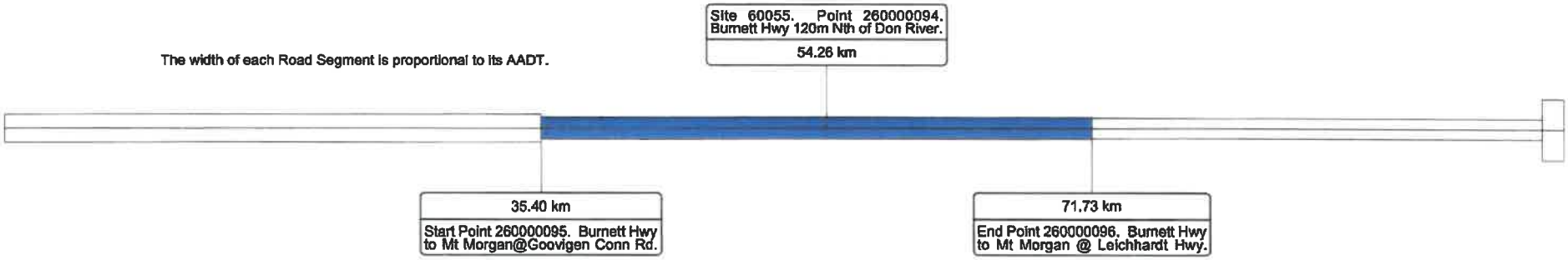
AADT Segment Analysis Report (Complete)

Area 404 - Fitzroy District Road Section 41E - BURNETT HIGHWAY (BILOELA - MT MORGAN)

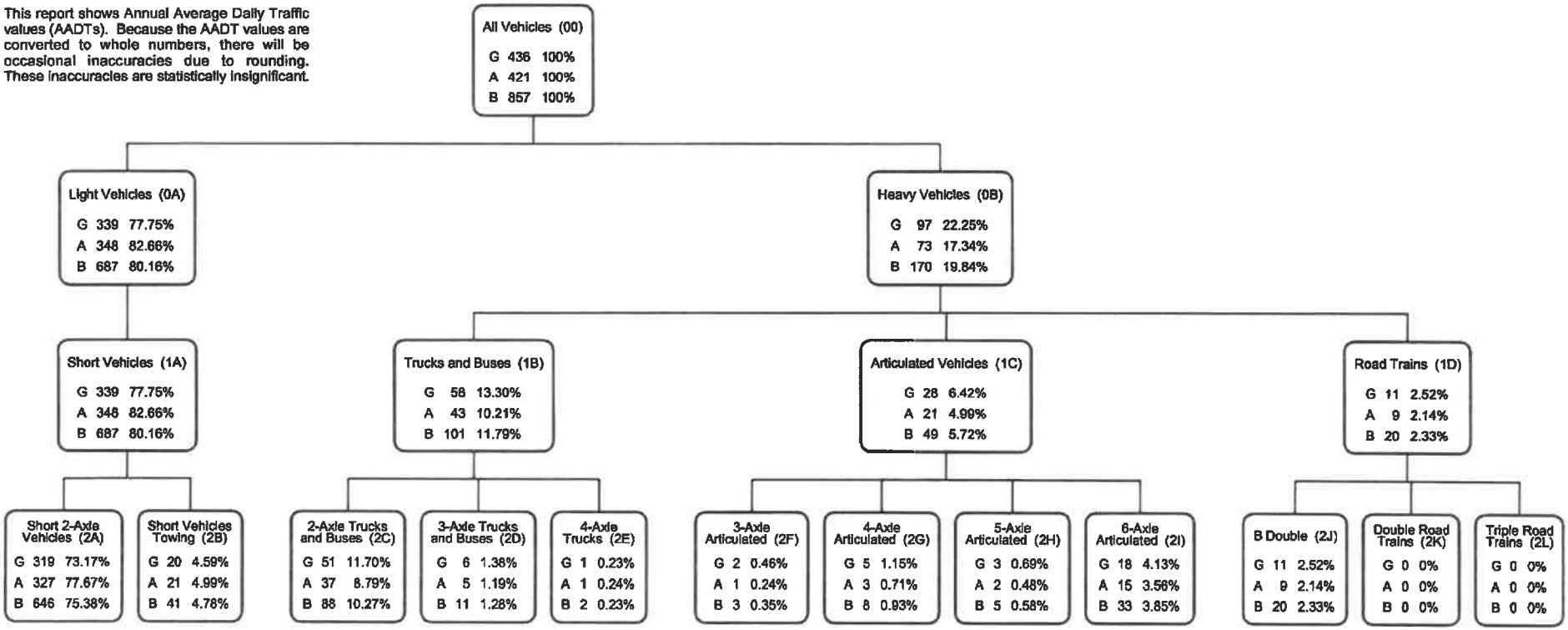
Traffic Year 2017 - Data Collection Year 2017

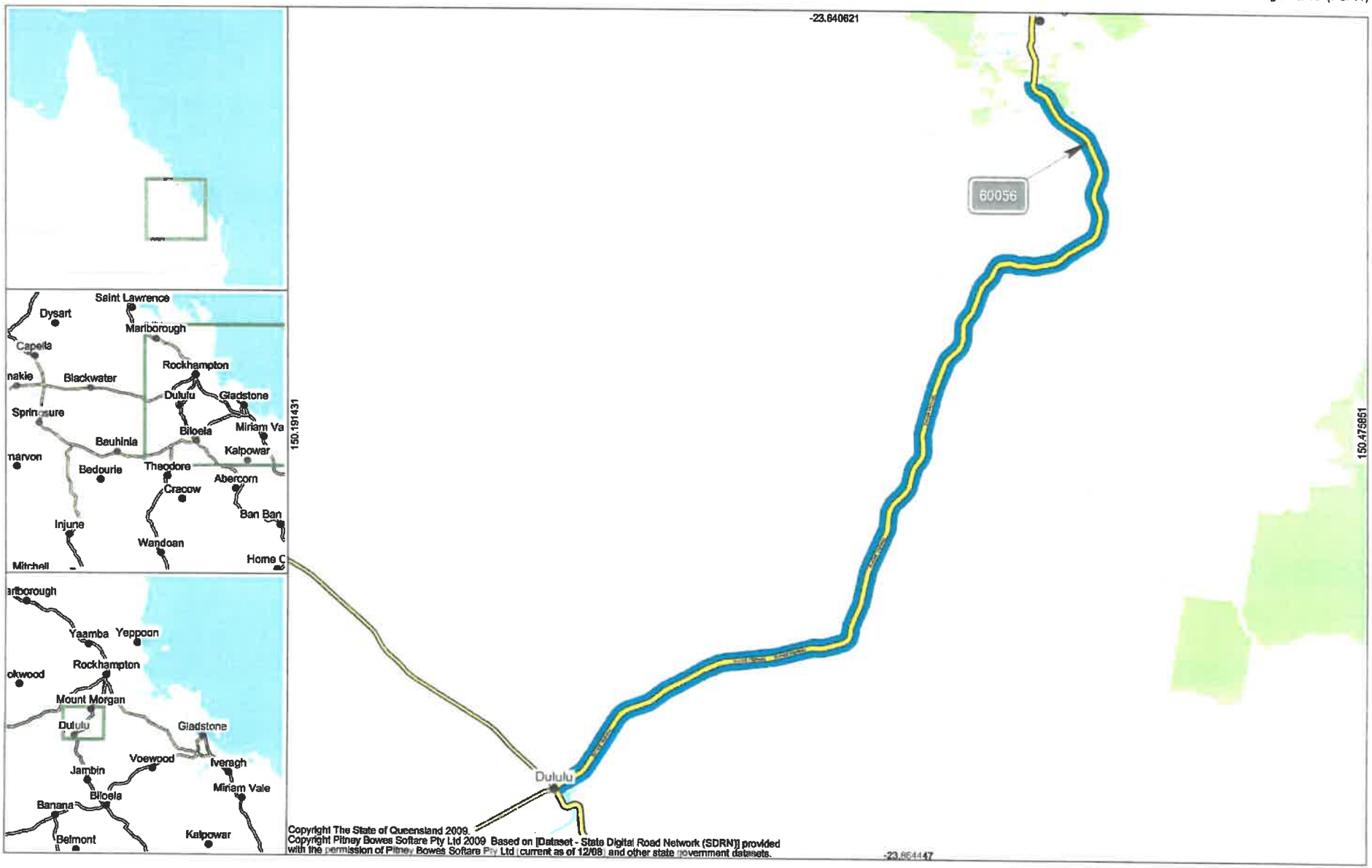


The width of each Road Segment is proportional to its AADT.



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 Analysis Report (Complete)

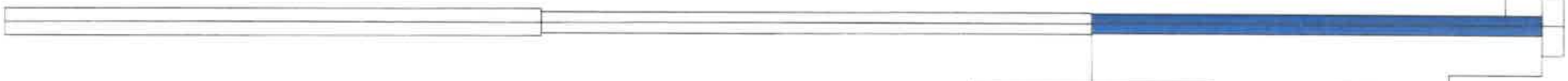
Area 404 - Fitzroy District Road Section 41E - BURNETT HIGHWAY (BILOELA - MT MORGAN)

Traffic Year 2017 - Data Collection Year 2017

Site 60056. Point 260000097. Burnett Hwy N Hamilton Ck.

98.94 km

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



71.73 km

Start Point 260000096. Burnett Hwy to Mt Morgan @ Leichhardt Hwy.

101.34 km

End Point 260000098. Burnett Hwy to Biloela @ Showground Rd.

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 389 100%
A 395 100%
B 784 100%

Light Vehicles (0A)
G 361 92.80%
A 360 91.14%
B 721 91.96%

Heavy Vehicles (0B)
G 29 7.46%
A 36 9.11%
B 65 8.29%

Short Vehicles (1A)
G 361 92.80%
A 360 91.14%
B 721 91.96%

Trucks and Buses (1B)
G 24 6.17%
A 29 7.34%
B 53 6.76%

Articulated Vehicles (1C)
G 4 1.03%
A 6 1.52%
B 10 1.28%

Road Trains (1D)
G 1 0.26%
A 1 0.25%
B 2 0.26%

Short 2-Axle Vehicles (2A)
G 347 89.20%
A 345 87.34%
B 692 88.27%

Short Vehicles Towing (2B)
G 14 3.60%
A 15 3.80%
B 29 3.70%

2-Axle Trucks and Buses (2C)
G 20 5.14%
A 26 6.58%
B 46 5.87%

3-Axle Trucks and Buses (2D)
G 3 0.77%
A 2 0.51%
B 5 0.64%

4-Axle Trucks (2E)
G 1 0.26%
A 1 0.25%
B 2 0.26%

3-Axle Articulated (2F)
G 1 0.26%
A 1 0.25%
B 2 0.26%

4-Axle Articulated (2G)
G 1 0.26%
A 2 0.51%
B 3 0.38%

5-Axle Articulated (2H)
G 0 0.00%
A 1 0.25%
B 1 0.13%

6-Axle Articulated (2I)
G 2 0.51%
A 2 0.51%
B 4 0.51%

B Double (2J)
G 1 0.26%
A 1 0.25%
B 2 0.26%

Double Road Trains (2K)
G 0 0%
A 0 0%
B 0 0%

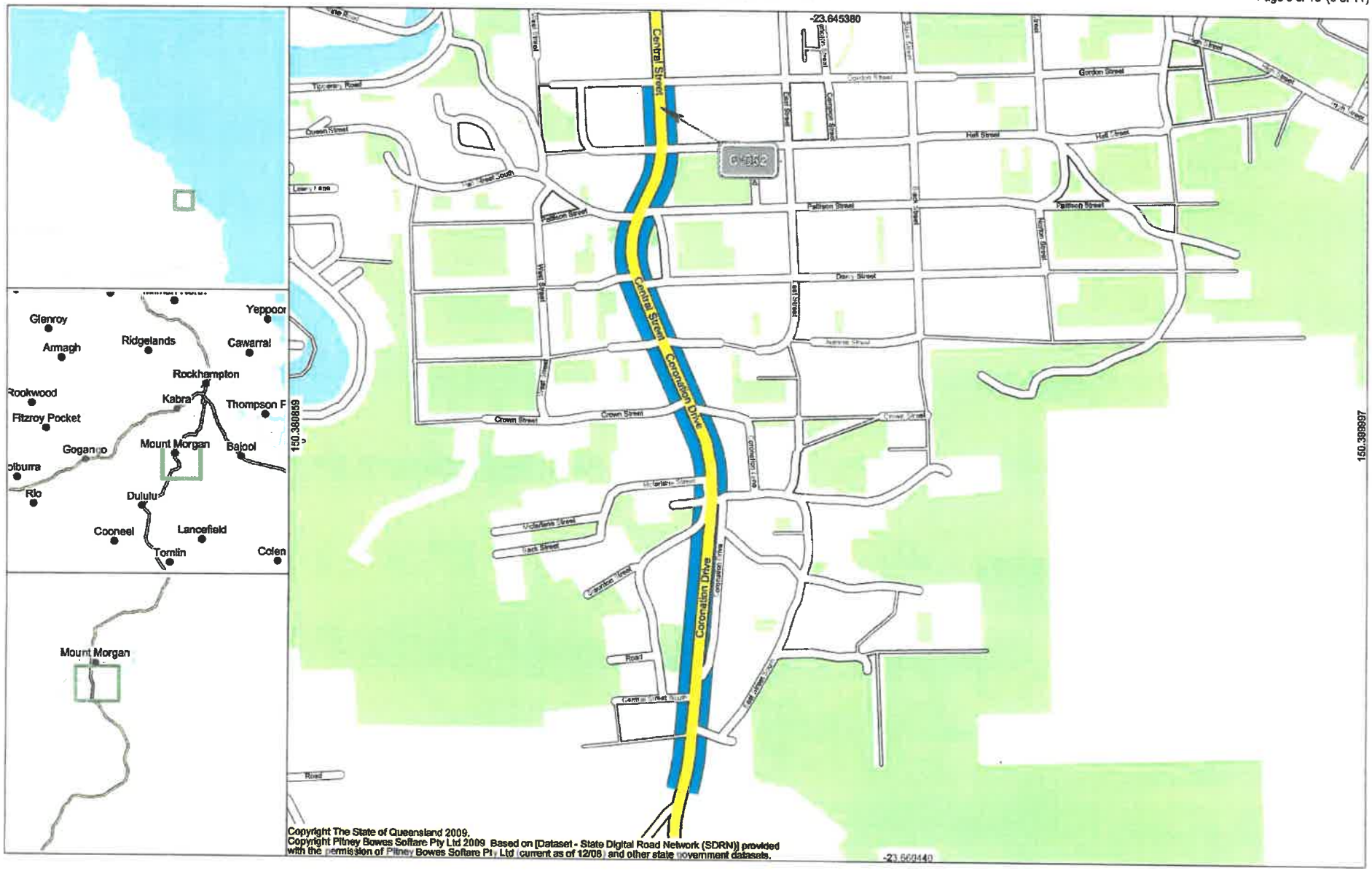
Triple Road Trains (2L)
G 0 0%
A 0 0%
B 0 0%

Traffic Analysis and Reporting System

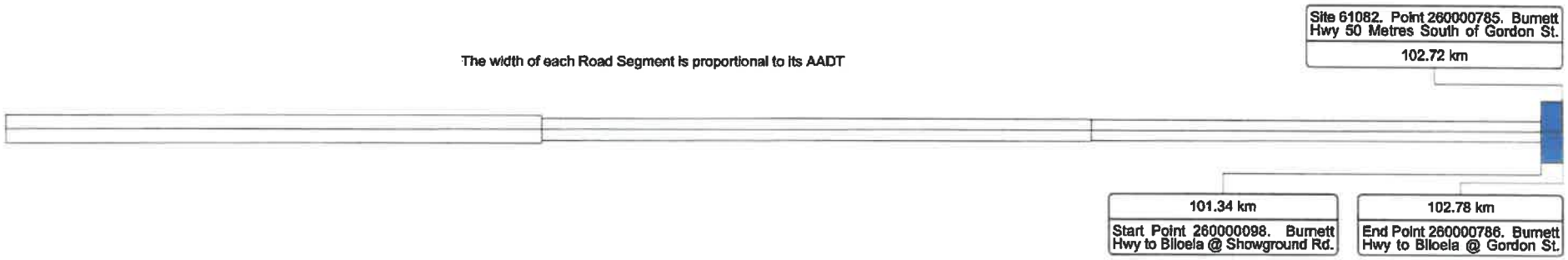
AADT Segment Analysis Report (Complete)

Area 404 - Fitzroy District Road Section 41E - BURNETT HIGHWAY (BILOELA - MT MORGAN)

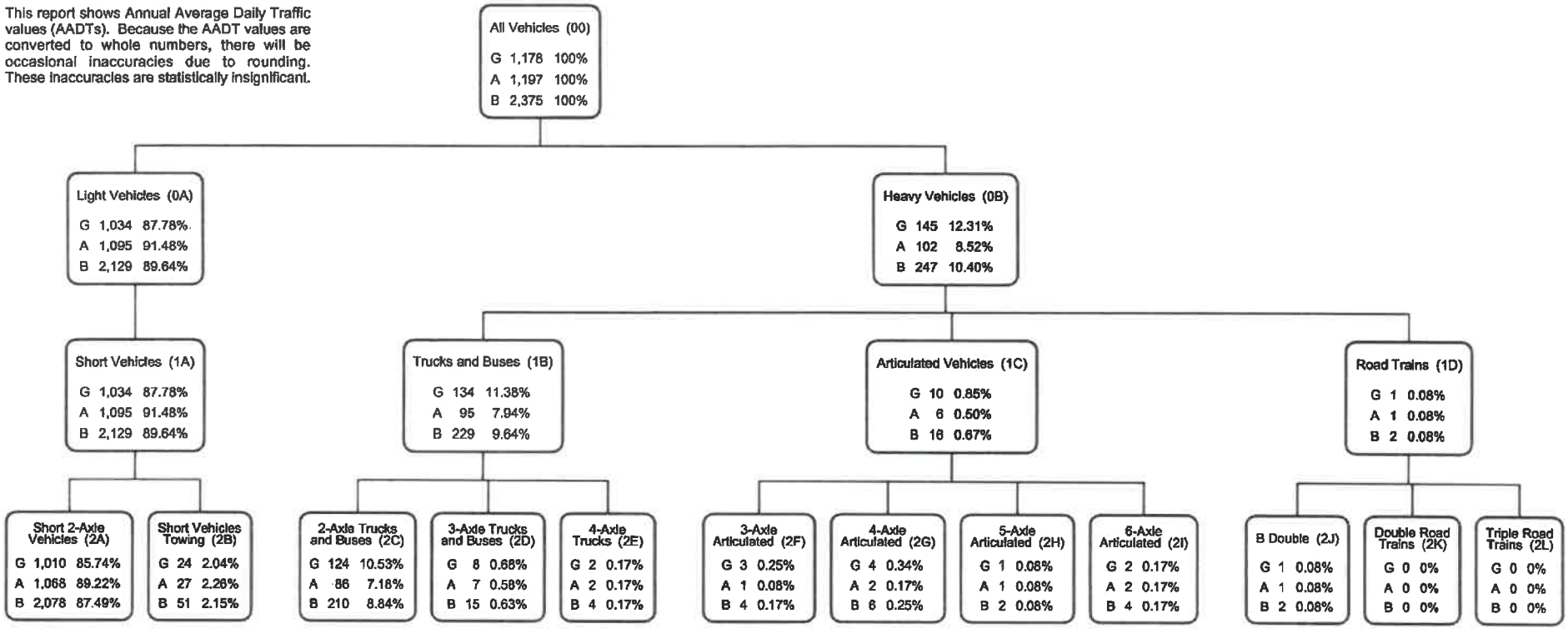
Traffic Year 2017 - Data Collection Year 2017



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 Report
Provides AADT Segment details for a Road Section together with the traffic flow data collected at the related Site. Traffic data is reported by the start and end Through Distance of the AADT Segments on each section of road. The road segments are represented diagrammatically with AADT data including:

AADT	by direction of traffic flow
VKT	Vehicle Kilometres Travelled
%VC	Percentage Vehicle Class as per the Austroads vehicle classification scheme

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 Segment
Is a subdivision of a Road Section. The boundaries of an AADT Segment are it's Start Point and End Point (or Start and End Through Distance (TDist)) within the Road Section. These distances are measured in kilometres from the begining of the Road Section in Gazettal Direction. AADT Segments are determined by the traffic volume, collected at a count Site, located within the limits of each AADT Segment.

Annual Segment Growth (when displayed)
A percentage that represents the increase or decrease in AADT for the AADT Segment,using an exponential fit, calculated over a 1, 5 or 10 year period.

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

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

Data Year
The most recent year the traffic data was collected for this AADT Segment.

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

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

Site TDist
The Through Distance in gazettal direction from the start of the Road Section at which the site is located.

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.

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

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

Vehicle Kilometres Travelled (VKT)
Daily VKT is a measure of the traffic demand. It is calculated by the length of an AADT Segment in kilometres multiplied by its AADT. The yearly VKT is the daily VKT multiplied by 365 days.

AADT Segment Summary - All Vehicles
The Total VKT can be used to gauge the demand on an entire Road Section.

AADT Segment Summary - Heavy Vehicles only
A blank field indicates that vehicle classification data was not collected for this AADT Segment.

Queensland Government

Road Crash 2
CRASH SUMMARY REPORT

Crash Types

Crash Dates: 21-AUG-2008 - 20-AUG-2018
Owner: MR DEPARTMENT OF MAIN ROADS
DCA Code:
Group:
Fatalities: =
Severity:
Nature:
Alignment: Vertical:
Horizontal:
Feature:
Traffic Ctrl:
Speed Limit:
Contrib Circ.:
Unit Type:
Risk Factor:

Area

LGA:
SLA:
Police Division:

Road Sections

All Road Sections: S
Include Crashes on: Y Thru road Mid-block Y Thru roads at Intersections Y Intersecting roads at Intersections

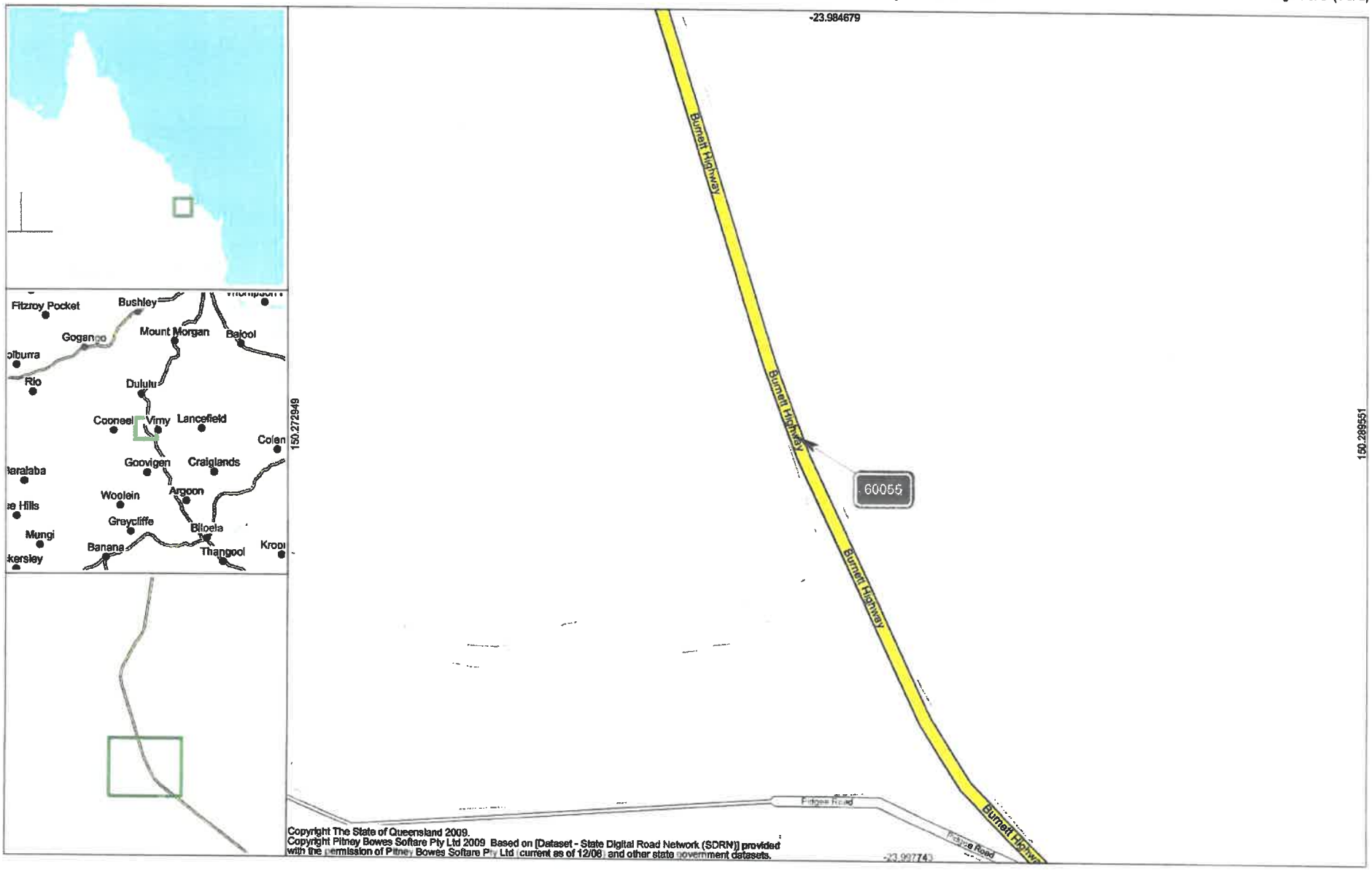
Road Section	Cway	Start RPC	Start Dist	End RPC	End Dist	Tdist Start	Tdist End	Number of Crashes Fatal	Hosp.	Medical	Minor	PDO	Total
41E BILOELA - MT MORGAN		1	0.000	11	0.000	0.000	102.775	2	27	21	2	4	56

Intersections

All Intersections: N

Annual Volume Report

Area 404 - Fitzroy District
Road Section 41E - BURNETT HIGHWAY (BILOELA - MT MORGAN)
Site 60055 - Burnett Hwy 120m N of Don River
TDist 54.260km
Speed Limit 100

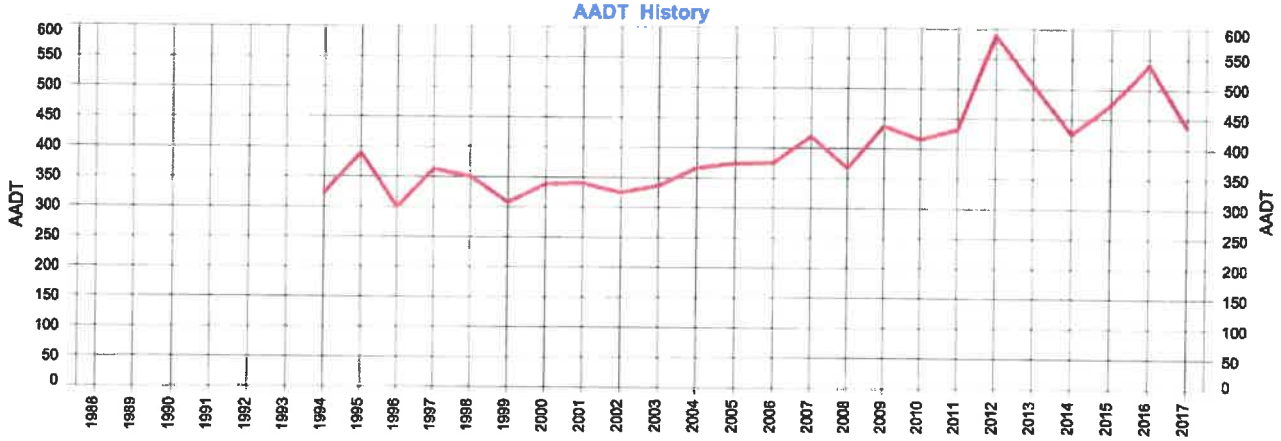


Area	404 - Fitzroy District
Road Section	41E - BURNETT HIGHWAY (BILOELA - MT MORGAN)
Site	60055 - Burnett Hwy 120m N of Don River
Thru Dist	54.26
Type	C - Coverage
Stream	T1 - Thru traffic in Lane 1 -in gazettal dirn

Year	2017
AADT	436
Avg Week Day	440
Avg Weekend Day	327

Growth last Year	-19.41%
Growth last 5 Yrs	-4.29%
Growth last 10 Yrs	-0.03%

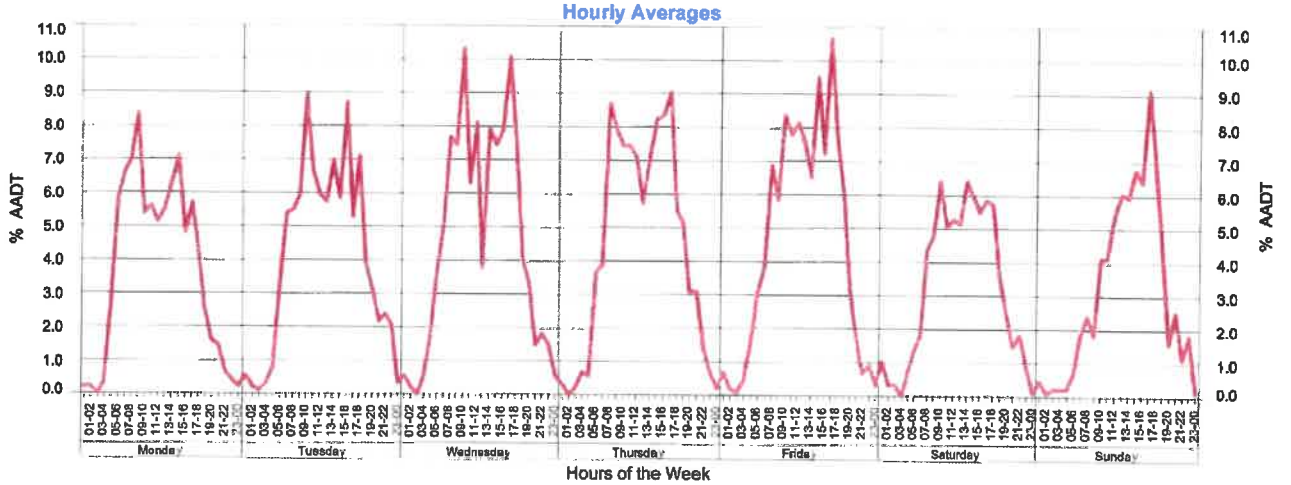
AADT History



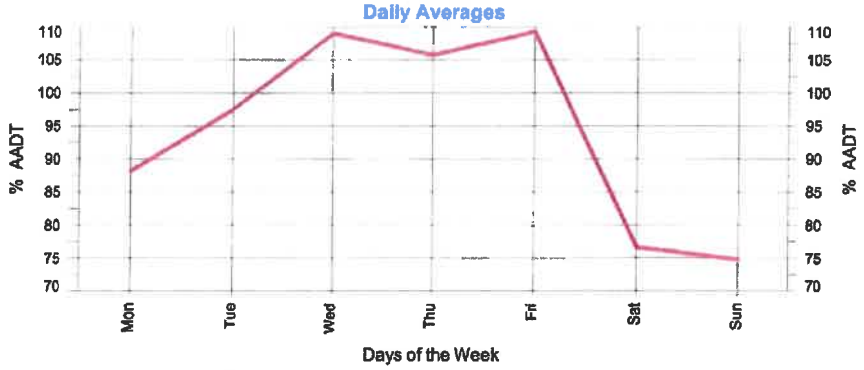
Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2017	436	-19.41%	-4.29%	-0.03%
2016	541	14.14%	2.94%	3.63%
2015	474	11.53%	0.65%	2.12%
2014	425	-16.17%	-1.66%	0.96%
2013	507	-13.92%	5.57%	4.16%
2012	589	36.34%	10.49%	7.04%
2011	432	4.10%	2.44%	2.72%
2010	415	-5.03%	1.99%	2.40%
2009	437	19.07%	4.12%	3.62%
2008	367	-12.62%	0.40%	1.09%
2007	420	12.00%	5.48%	2.97%
2006	375	0.27%	2.66%	1.71%
2005	374	2.19%	2.85%	1.31%
2004	366	8.93%	3.19%	1.15%
2003	336	3.38%	0.22%	

Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2002	325	-4.41%	-1.49%	
2001	340	0.59%	0.89%	
2000	338	9.74%	-0.74%	
1999	308	-12.25%	-2.74%	
1998	351	-3.31%		
1997	363	21.40%		
1996	299	-23.14%		
1995	389	20.81%		
1994	322			
1993				
1992				
1991				
1990				
1989				
1988				

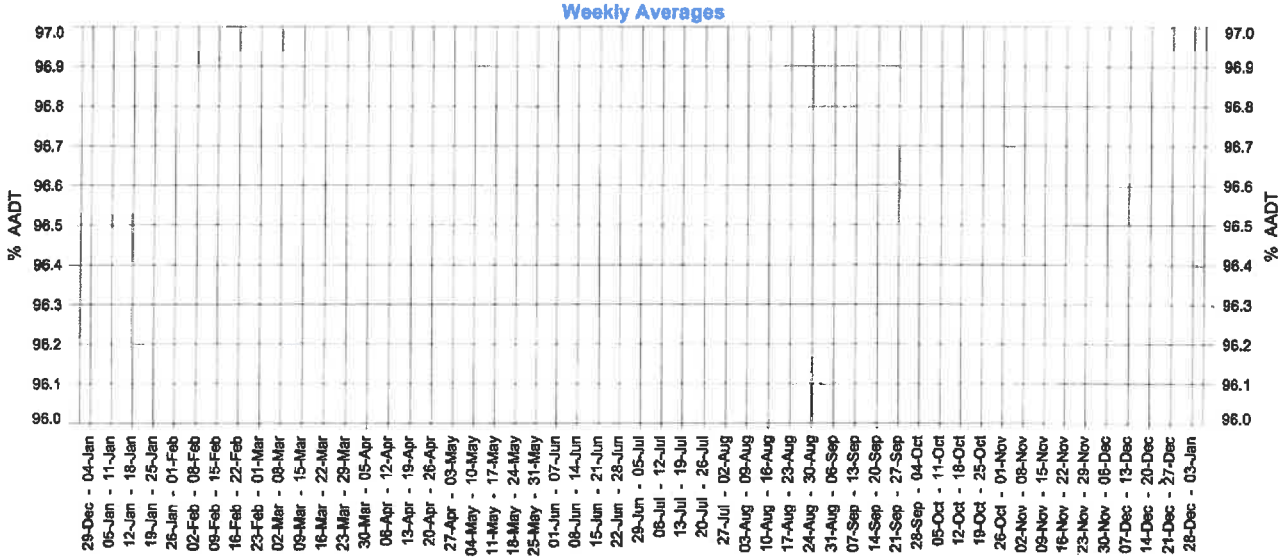
Hourly Averages



Daily Averages



Weekly Averages



2017 Calendar

January

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

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
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

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
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

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

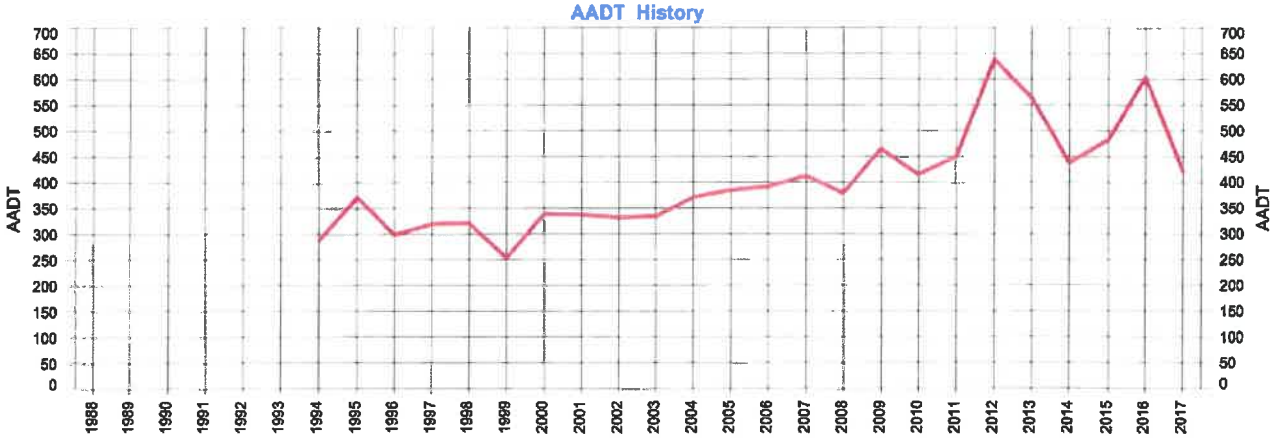
Days on which traffic data was collected.

Area	404 - Fitzroy District
Road Section	41E - BURNETT HIGHWAY (BILOELA - MT MORGAN)
Site	60055 - Burnett Hwy 120m N of Don River
Thru Dist	54.26
Type	C - Coverage
Stream	T2 - Thru traffic in Lane 2 -against gazettal

Year	2017
AADT	421
Avg Week Day	442
Avg Weekend Day	349

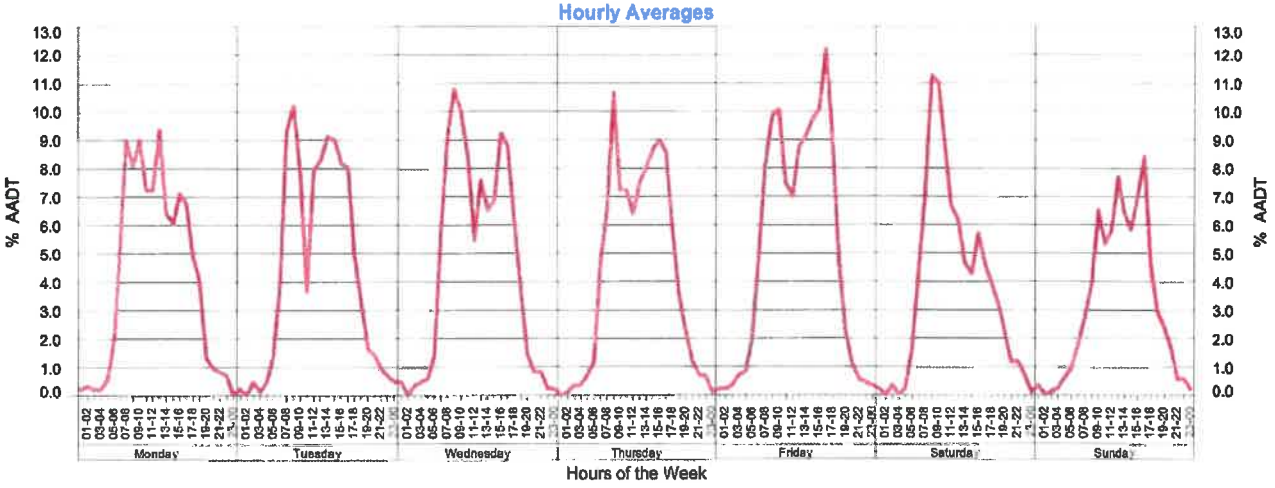
Growth last Year	-30.30%
Growth last 5 Yrs	-7.03%
Growth last 10 Yrs	-1.03%

AADT History

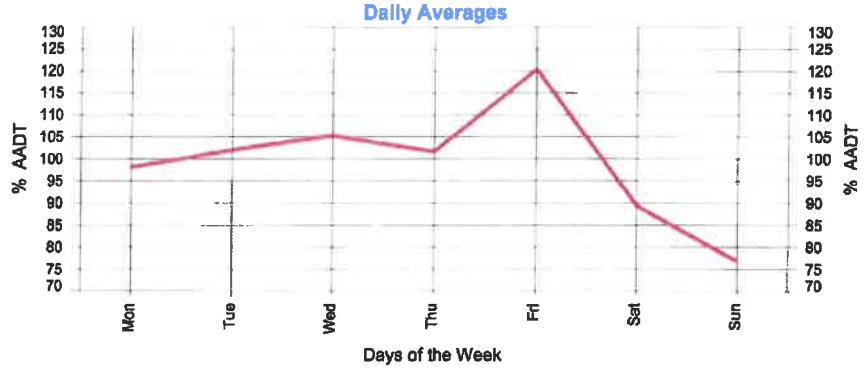


Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth	Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2017	421	-30.30%	-7.03%	-1.03%	2002	332	-1.78%	1.93%	
2016	604	25.05%	4.30%	4.75%	2001	338	-0.29%	2.85%	
2015	483	10.27%	-0.02%	1.92%	2000	339	33.46%	1.13%	
2014	438	-22.34%	-2.11%	1.00%	1999	254	-21.12%	-5.88%	
2013	564	-11.74%	7.56%	5.46%	1998	322	0.62%		
2012	639	42.00%	12.42%	8.00%	1997	320	7.02%		
2011	450	8.43%	2.88%	3.12%	1996	299	-19.41%		
2010	415	-10.75%	1.25%	2.24%	1995	371	28.82%		
2009	465	22.69%	5.30%	4.95%	1994	288			
2008	379	-8.23%	0.92%	2.16%	1993				
2007	413	5.36%	4.54%	3.62%	1992				
2006	392	1.82%	3.71%	3.17%	1991				
2005	385	3.77%	3.55%	2.57%	1990				
2004	371	10.75%	5.34%	2.37%	1989				
2003	335	0.90%	2.32%		1988				

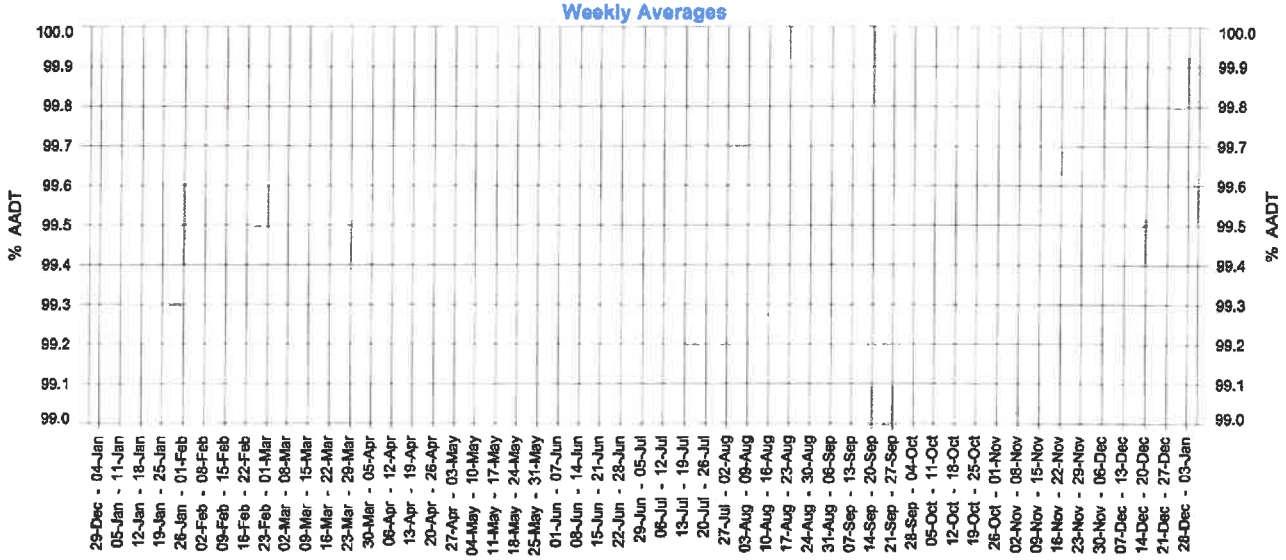
Hourly Averages



Daily Averages



Weekly Averages



2017 Calendar

January

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

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
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

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
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

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

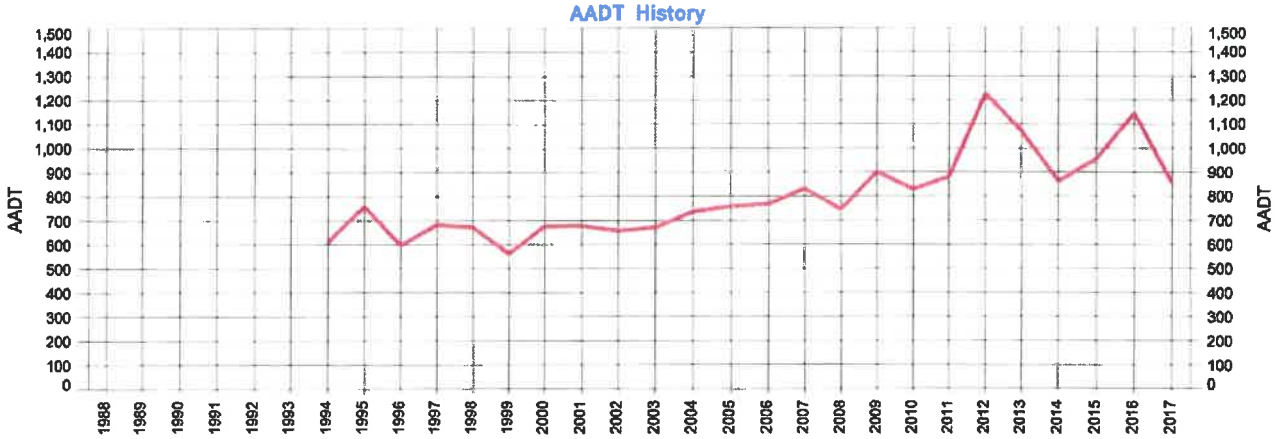
M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Days on which traffic data was collected.

Area	404 - Fitzroy District
Road Section	41E - BURNETT HIGHWAY (BILOELA - MT MORGAN)
Site	60055 - Burnett Hwy 120m N of Don River
Thru Dist	54.26
Type	C - Coverage
Stream	TB - Bi-directional traffic flow

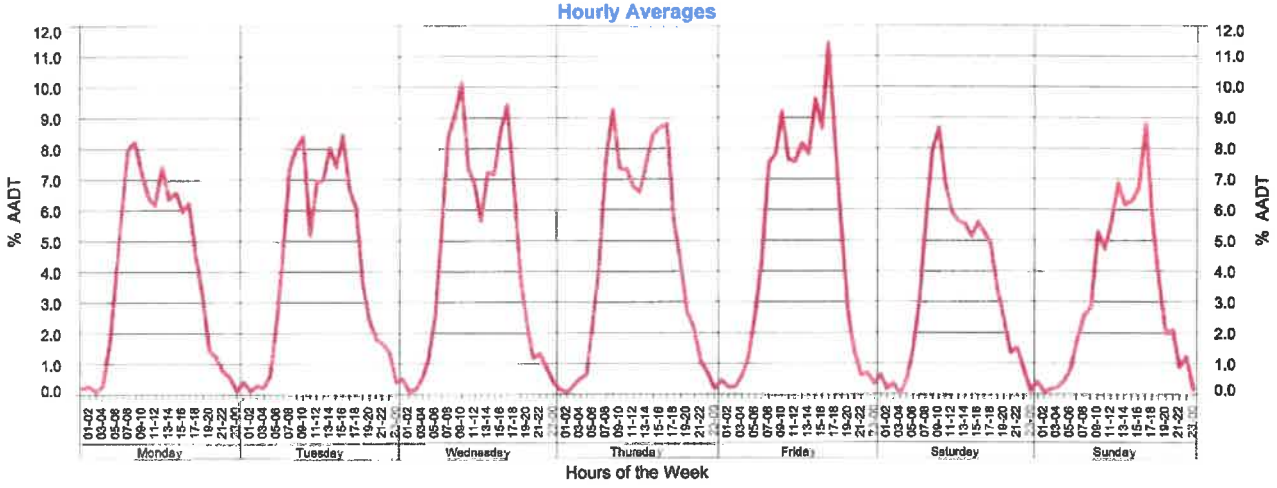
Year	2017	Growth last Year	-25.15%
AADT	857	Growth last 5 Yrs	-5.69%
Avg Week Day	882	Growth last 10 Yrs	-0.53%
Avg Weekend Day	677		

AADT History

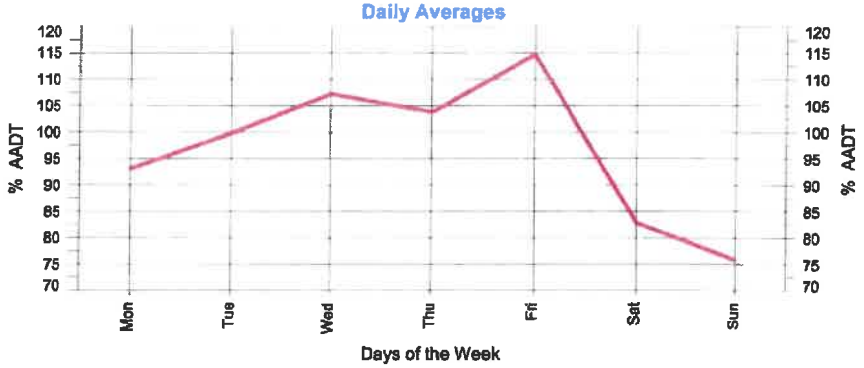


Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth	Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2017	857	-25.15%	-5.69%	-0.53%	2002	657	-3.10%	0.16%	
2016	1,145	19.64%	3.65%	4.21%	2001	678	0.15%	1.83%	
2015	957	10.89%	0.31%	2.02%	2000	677	20.46%	0.16%	
2014	863	-19.42%	-1.89%	0.98%	1999	562	-16.49%	-4.22%	
2013	1,071	-12.79%	6.59%	4.83%	1998	673	-1.46%		
2012	1,228	39.23%	11.47%	7.53%	1997	683	14.21%		
2011	882	6.27%	2.66%	2.92%	1996	598	-21.32%		
2010	830	-7.98%	1.62%	2.32%	1995	760	24.59%		
2009	902	20.91%	4.72%	4.28%	1994	610			
2008	746	-10.44%	0.66%	1.61%	1993				
2007	833	8.60%	5.01%	3.28%	1992				
2006	767	1.05%	3.19%	2.43%	1991				
2005	759	2.99%	3.20%	1.93%	1990				
2004	737	9.84%	4.21%	1.74%	1989				
2003	671	2.13%	1.22%		1988				

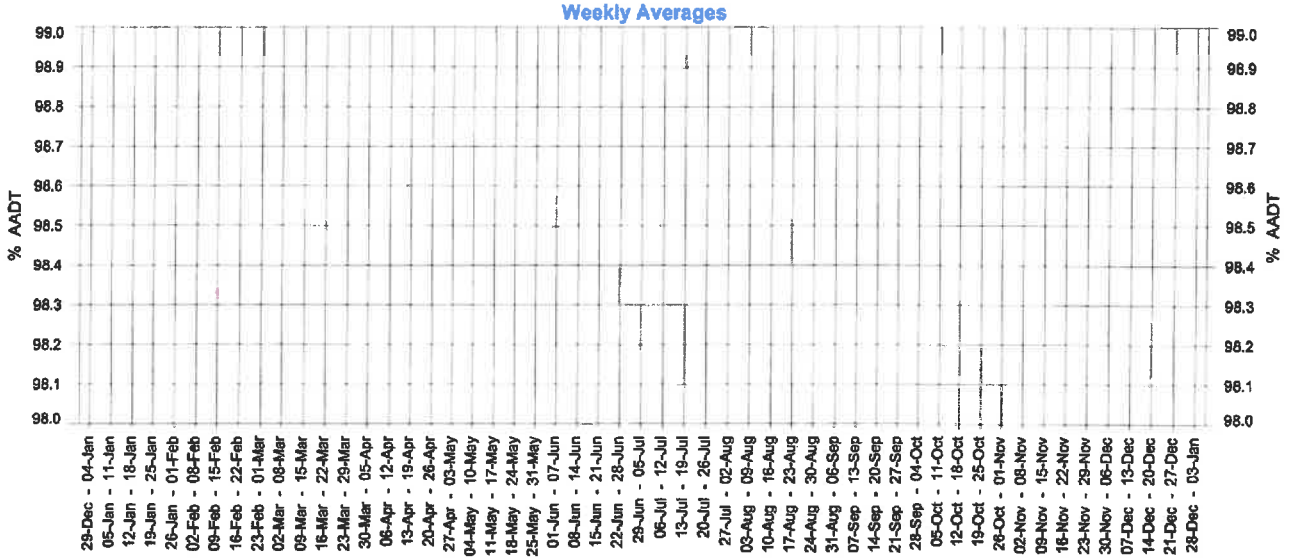
Hourly Averages



Daily Averages



Weekly Averages



2017 Calendar

January

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

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
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

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
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

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

Days on which traffic data was collected.

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

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

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

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

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

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

Avg Weekend Day
Average daily traffic volume during the weekend.

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

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.

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 varies depending on the time of day, the day of the week and the week of the year. The ebb and flow of the volume of traffic travelling through a site over a period of time forms a pattern. The Hour, Day and Week Averages are 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 physical location of a traffic counting device. Sites are located at a specified Through Distance along a Road Section.

Stream or Site Stream
The lane number in which the vehicles are travelling.

TB	Traffic flow in both directions
TG	Traffic flow in gazettal direction
TA	Traffic flow against gazettal direction
T1, T3, T5, T7...	Traffic flow in gazettal direction at lane level
T2, T4, T6, T8...	Traffic flow against gazettal direction at lane level

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
Current year or years chosen. A separate report will be produced for each year selected.

Queensland Government

Road Crash 2
CRASH LISTING REPORT

Crash Types

Crash Dates: 21-AUG-2008 - 20-AUG-2018

Owner: MR DEPARTMENT OF MAIN ROADS

DCA Code:

Group:

Fatalities: =

Severity:

Nature:

Alignment: Vertical:

Horizontal:

Feature:

Traffic Ctrl:

Speed Limit:

Contrib Circ.:

Unit Type:

Risk Factor:

Area

LGA:

SLA:

Police Division:

Road Sections

All Road Sections: S Include Crashes on: Y Thru road Mid-block: Y Thru roads at Intersections: Y Intersecting roads at Intersections

Road Section	Cway	Start RPC	Start Dist	End RPC	End Dist	Tdist Start	Tdist End	Number of Crashes Fatal	Hosp.	Medical	Minor	PDO	Total
41E BILOELA - MT MORGAN		1	0.000	11	0.000	0.000	102.775	2	27	21	2	4	56

Intersections

All Intersections: N

Queensland Government

Road Crash 2
CRASH LISTING REPORT

Road Section 41E Biloela - Mt Morgan **Cway** **Tdist** 0.000 - 102.775

Road Section 26A Westwood - Taroom

Crash No.	Date	Day	Hour	Dca	Key	Seve	Fatal	Feature	Vehicle 1	Vehicle 2	Inter	Cway	RPC	Dist	Tdist	Street 1	Street 2
20100550177	05-JUN-2010	Sat	10	101	N	Hosp	0	10	Car, Station \	Utility, Panel	51	1	3	0.000	25.680	Burnett Hwy	Leichhardt Hwy
20101028174	15-NOV-2010	Mon	09	101	S	Treat	0	10	Special Purp	Truck	51	1	3	0.000	25.680	Burnett Hwy	Leichhardt Hwy

Road Section 41E Biloela - Mt Morgan

Crash No.	Date	Day	Hour	Dca	Key	Seve	Fatal	Feature	Vehicle 1	Vehicle 2	Inter	Cway	RPC	Dist	Tdist	Street 1	Street 2
20151091859	06-AUG-2015	Thu	12	703	E	Treat	0	99	Car, Station \			1	1	1.017	1.017	Burnett Hwy	
20100544163	03-JUN-2010	Thu	15	301	S	Treat	0	99	Car, Station \	Car, Station \		1	1	3.613	3.613	Burnett Hwy	
20170053049	10-JAN-2017	Tue	04	703	E	Hosp	0	99	Utility, Panel			1	1	6.431	6.431	Burnett Hwy	
20900425091	05-JUN-2009	Fri	04	703	N	Treat	0	99	Car, Station \			1	2	2.248	10.768	Burnett Hwy	
20141377102	06-OCT-2014	Mon	10	703	N	Treat	0	99	Car, Station \			1	2	3.640	12.160	Burnett Hwy	
20900261063	05-APR-2009	Sun	09	704	S	Prop	0	99	Car, Station \			1	2	7.370	15.890	Burnett Hwy	
20131046842	30-AUG-2013	Fri	11	805	S	Hosp	0	99	Truck			1	2	8.579	17.099	Burnett Hwy	
20161407569	28-JUL-2016	Thu	13	804	S	Hosp	0	20	Truck			1	2	11.231	19.751	Burnett Hwy	
20130094976	22-JAN-2013	Tue	17	703	N	Hosp	0	99	Car, Station \			1	2	11.336	19.856	Burnett Hwy	
20120668122	12-JUL-2012	Thu	13	804	S	Hosp	0	99	Utility, Panel			1	2	12.097	20.617	Burnett Hwy	
20900320727	27-APR-2009	Mon	15	803	S	Hosp	0	10	Car, Station \			1	3	1.590	22.350	Burnett Hwy	Mccanns Rd
20140515758	17-APR-2014	Thu	13	805	S	Hosp	0	11	Truck			1	4	0.020	27.240	Biloela - Duaringa Rd	Burnett Hwy
20130331232	20-MAR-2013	Wed	05	801	N	Treat	0	99	Utility, Panel			1	4	2.440	29.660	Burnett Hwy	
20110079734	29-JAN-2011	Sat	06	201	S	Hosp	0	99	Car, Station \	Truck		1	4	2.446	29.666	Burnett Hwy	
20900729819	18-SEP-2009	Fri	19	804	N	Prop	0	99	Utility, Panel			1	4	2.460	29.680	Burnett Hwy	
20170562933	29-MAR-2017	Wed	07	408	S	Hosp	0	20	Utility, Panel	Car, Station \		1	4	2.504	29.724	Burnett Hwy	Jambin Threeways R
20900163074	01-MAR-2009	Sun	14	803	N	Treat	0	99	Car, Station \			1	4	2.660	29.880	Burnett Hwy	
20150614876	03-MAY-2015	Sun	20	703	N	Hosp	0	99	Car, Station \			1	4	4.030	31.250	Burnett Hwy	
20120329693	05-APR-2012	Thu	20	609	S	Treat	0	99	Car, Station \	Animal - Stoc		1	4	5.681	32.901	Burnett Hwy	

Queensland Government

Road Crash 2
CRASH LISTING REPORT

Road Section 41E Biloela - Mt Morgan **Cway** **Tdist** 0.000 - 102.775

Road Section 41E Biloela - Mt Morgan

Crash No.	Date	Day	Hour	Dca	Key	Seve	Fatal	Feature	Vehicle 1	Vehicle 2	Inter	Cway	RPC	Dist	Tdist	Street 1	Street 2
20900677568	31-AUG-2009	Mon	18	703	S	Treat	0	20	Car, Station \			1	4	7.689	34.909	Burnett Hwy	
20900189930	10-MAR-2009	Tue	04	703	S	Treat	0	99	Utility, Panel			1	4	9.572	36.792	Burnett Hwy	
20150585564	27-APR-2015	Mon	09	703	N	Hosp	0	99	Utility, Panel			1	4	10.580	37.800	Burnett Hwy	
20800545432	29-AUG-2008	Fri	17	704	S	Hosp	0	99	Car, Station \			1	4	18.001	45.221	Burnett Hwy	
20120427426	04-MAY-2012	Fri	18	802	S	Treat	0	99	Car, Station \			1	4	18.521	45.741	Burnett Hwy	
20900061276	23-JAN-2009	Fri	17	703	N	Prop	0	99	Car, Station \			1	4	20.501	47.721	Burnett Hwy	
20110503819	09-JUN-2011	Thu	15		N	Prop	0	99	Truck			1	4	24.810	52.030	Burnett Hwy	Invalid Street From P
20170592233	03-APR-2017	Mon	12	704	N	Hosp	0	20	Car, Station \			1	5	2.199	56.199	Burnett Hwy	
20110348281	20-APR-2011	Wed	18	201	S	Inj	0	99	Car, Station \	Car, Station \		1	5	3.243	57.243	Burnett Hwy	
20110651492	26-JUL-2011	Tue	23		S	Prop	0	99	Car, Station \			1	5	4.870	58.870	Invalid Street From P	Invalid Street From P
20900204817	16-MAR-2009	Mon	10	102	E	Prop	0	10	Articulated V	Car, Station \	1673	1	5	5.479	59.479	Burnett Hwy	Dixalea-Deeford Rd
20800694985	30-OCT-2008	Thu	09	704	S	Hosp	0	20	Car, Station \			1	6	0.015	63.175	Burnett Hwy	
20900084427	01-FEB-2009	Sun	12	704	S	Hosp	0	20	Car, Station \			1	6	3.959	67.119	Burnett Hwy	
20110628707	19-JUL-2011	Tue	18		S	Prop	0	99	Car, Station \			1	6	6.730	69.890	Burnett Hwy	Invalid Street From P
20110415530	12-MAY-2011	Thu	13	803	N	Hosp	0	99	Articulated V			1	6	6.732	69.892	Burnett Hwy	
20171865159	24-OCT-2017	Tue	07	805	N	Hosp	0	99	Articulated V			1	6	6.746	69.906	Burnett Hwy	
20160094822	16-JAN-2016	Sat	04	804	N	Fatal	1	99	Utility, Panel			1	6	7.520	70.680	Burnett Hwy	
20900709478	11-SEP-2009	Fri	16	801	N	Hosp	0	99	Motor Cycle			1	6	7.761	70.921	Burnett Hwy	
20100299851	09-MAR-2010	Tue	13	101	W	Hosp	0	11	Car, Station \	Car, Station \	****	1	6	8.303	71.463	Burnett Hwy	Dee St
20900996441	19-DEC-2009	Sat	02	700	N	Hosp	0	99	Car, Station \			1	6	8.476	71.636	Burnett Hwy	
20100118849	07-JAN-2010	Thu	06	101	W	Treat	0	10	Utility, Panel	Truck	51	1	7	0.000	71.730	Burnett Hwy	Leichhardt Hwy
20110826570	17-SEP-2011	Sat	11	104	W	Treat	0	10	Utility, Panel	Car, Station \	51	1	7	0.000	71.730	Burnett Hwy	Leichhardt Hwy
20121115790	03-NOV-2012	Sat	12	101	S	Treat	0	10	Car, Station \	Car, Station \	51	1	7	0.000	71.730	Burnett Hwy	Leichhardt Hwy

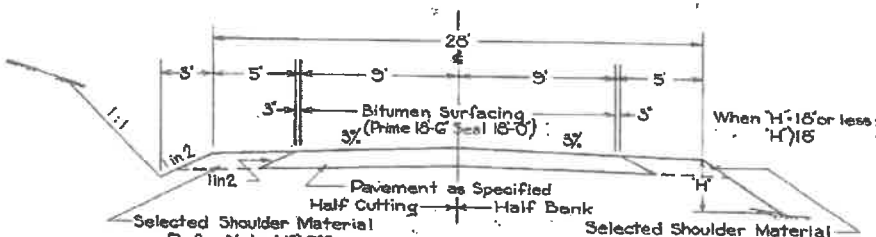
Queensland Government

Road Crash 2
CRASH LISTING REPORT

Road Section 41E Biloela - Mt Morgan **Cway** **Tdist** 0.000 - 102.775

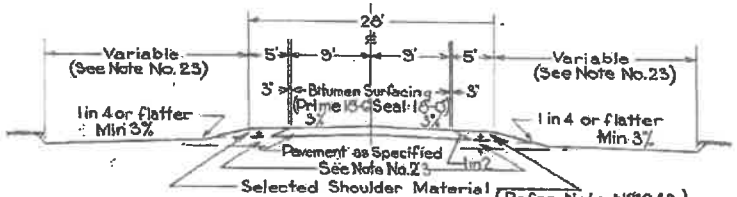
Road Section 41E Biloela - Mt Morgan

Crash No.	Date	Day	Hour	Dca	Key	Seve	Fatal	Feature	Vehicle 1	Vehicle 2	Inter	Cway	RPC	Dist	Tdist	Street 1	Street 2
20141051041	06-AUG-2014	Wed	17	704	W	Hosp	0	99	Car, Station \			1	7	1.230	72.960	Burnett Hwy	
20100641790	07-JUL-2010	Wed	14	804	S	Hosp	0	99	Car, Station \			1	7	5.335	77.065	Burnett Hwy	
20900311549	24-APR-2009	Fri	06	301	E	Hosp	0	99	Utility, Panel	Car, Station \		1	8	2.370	80.930	Burnett Hwy	
20120138386	10-FEB-2012	Fri	13	800	S	Hosp	0	99	Car, Station \			1	8	3.432	81.992	Burnett Hwy	
20150085187	17-JAN-2015	Sat	16	805	S	Treat	0	99	Car, Station \			1	9	3.595	87.160	Burnett Hwy	
20151832949	11-DEC-2015	Fri	14	201	S	Fatal	1	99	Motor Cycle	Utility, Panel		1	9	7.580	91.145	Burnett Hwy	
20110165363	25-FEB-2011	Fri	12	800	S	Treat	0	99	Car, Station \			1	10	0.985	92.410	Burnett Hwy	
20120197410	27-FEB-2012	Mon	11	803	S	Treat	0	99	Car, Station \			1	10	3.463	94.888	Burnett Hwy	
20100621932	30-JUN-2010	Wed	09	804	E	Inj	0	99	Car, Station \			1	10	5.765	97.190	Burnett Hwy	
20100648316	09-JUL-2010	Fri	04	804	S	Treat	0	99	Utility, Panel			1	10	5.767	97.192	Burnett Hwy	
20130435694	12-APR-2013	Fri	17	803	S	Treat	0	99	Car, Station \			1	10	6.475	97.900	Burnett Hwy	
20160759029	02-MAY-2016	Mon	11	408	E	Hosp	0	11	Car, Station \	Truck		1	10	7.756	99.181	Burnett Hwy	Murray St
20180149053	23-JAN-2018	Tue	14	803	N	Treat	0	20	Articulated Ve			1	10	9.657	101.082	Burnett Hwy	
20120493090	23-MAY-2012	Wed	15	003	S	Hosp	0	11	Car, Station \	Pedestrian	1914	1	10	11.112	102.537	Burnett Hwy	Pattison St
20900224278	23-MAR-2009	Mon	08	001	N	Treat	0	99	Pedestrian	Car, Station \		1	10	11.330	102.755	Burnett Hwy	



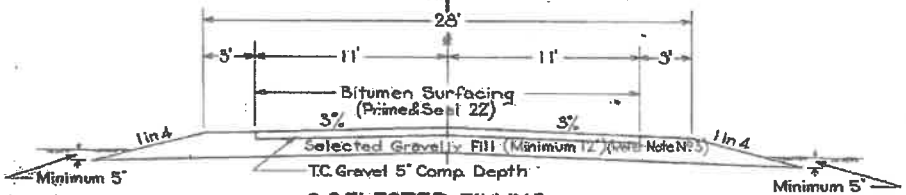
A. EARTHWORKS

(See also Dwg. No 814)

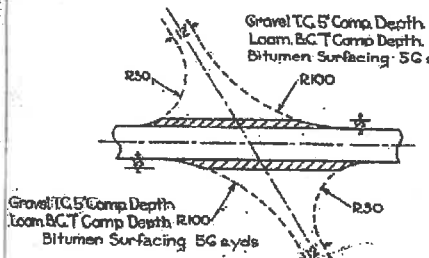


B. SURFACE FORMATION

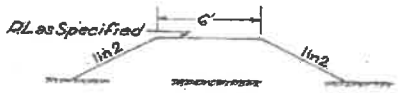
(See also Dwg. No 815)



C. SELECTED FILLING



TURNOUT AT 48975

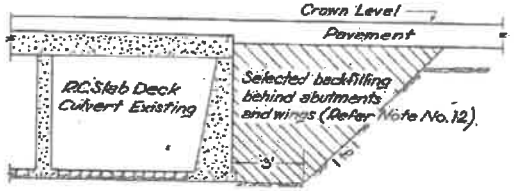


LEVEES

(Refer Plan Nos. 104305 & 104306)

SPECIAL CATCH DRAINS

(Refer Note No. 16.)



BACKFILLING AT R.C. SLAB DECK CULVERTS

FLOODWAY

W.82
30'x30'

41900L, 45100R, 50200L, 51600R, 54800L, 56100R, 61300L, 62800L, 63000R, 64600R, 75500L, 80500R, 83400L, 85600R.

1 EARTHWORKS

The earthwork quantities shown on the plans are, for cut, the net solid volumes, and for fill, the net compacted volumes, but when calculating the quantities or earthwork shown in the Schedule an allowance has been made of 20% for compaction of material led to banks from cuttings and borrow pits.

2 MASS DIAGRAM

The mass diagram is given in the documents for information only. The Schedule quantities of earthwork are based on the balance lines drawn thereon, but no responsibility can be accepted for the accuracy of the interpretation so shown.

3 GRAVELLY FILLING

The Selected Gravelly Fill shall be of approved material having a maximum particle size of 3" and be evenly graded. The material passing a No. 7 B.S. Sieve shall not be less than 20% and shall have a linear shrinkage not exceeding 8% and a miniature abrasion loss not exceeding 20%.

The quantities of selected Gravelly Fill shown on the longitudinal section and the quantity given in the Schedule are not.

4 PAVEMENT - SHOULDER OVERLAPS

The top of the completed pavement is to be wider on each side than the normal width by the amount given on the type cross sections. Unless stated otherwise on the plans, the priming coat for bitumen surfacing is to cover to full surface width including the overlaps but the seal coat is to cover the nominal width only.

5 NOMINAL WIDTH

The nominal width of gravel pavement shown on the plans coincides with the width of Bitumen Surfacing. The top of the gravel pavement shall have an actual width equal to the nominal width + 2/3" unless shown otherwise, and where tapered edges are specified the taper is to be constructed beyond the actual width (Taper 2 Horizontal to 1 Vertical), as shown on Type Cross Sections.

6 MAKING UP SHOULDERS

Earthworks - to - subgrade formation is to be compacted for the full width at the level of the subgrade which is to be parallel to the crossfalls of the pavement surface. The earthwork quantities shown on the plans and in the schedule are calculated to the subgrade. The shoulder volumes are calculated and scheduled separately from the earthwork quantities.

7 SHOULDER COMPACTION

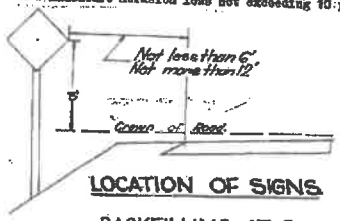
The schedule quantity of "Making Up Shoulders including Compaction" includes an allowance of 20% for compaction.

8 SHOULDER MATERIAL

The Selected Shouldering Material shall be either a loamy or gravelly material conforming to the following requirements:-

(a) Loamy material shall be of uniform quality and free from vegetable matter and lumps of clay, and the portion of the material passing the No. 36 B.S. Seive shall have a linear shrinkage not exceeding 6 per cent, and a miniature abrasion loss not exceeding 10 per cent.

(b) Gravelly material shall be evenly graded with a maximum particle size of 3 inches and that portion passing the No. 7 B.S. Seive shall be not greater than 70 per cent nor less than 20 per cent. The material passing the No. 36 B.S. Seive shall have a linear shrinkage not exceeding 8% and a miniature abrasion loss not exceeding 10 per cent.



LOCATION OF SIGNS

9 QUANTITIES

The pavement - shoulder overlap widths and pavement edge slopes may be varied by the Contractor provided that the final widths shall not be less than, nor the final slopes steeper than, the values specified on the type cross sections. The schedule quantities of earthworks, making up shoulders and paving materials have been based on the overlap widths and slopes stated on the type cross sections and the plans, in combination with the fill slopes, cut batters and table drain widths and slopes indicated on the plans, and no extra or deduction will be made on account of any variation in these values that may occur during construction.

10 ROLLING

Earthwork Banks, Surface Formation and Selected Filling are to be Sheepsfoot rolled. Other types of rollers may be used if approved in writing by the Engineer.

11 TRIMMING AND COMPACTION OF SUBGRADE

No separate payment will be made for the trimming and compaction of the subgrade. Such work shall be deemed to be included in the prices paid for the several items of earthwork (excluding the item for making up shoulders) and carried out in accordance with the provisions contained in the Earthworks Specification (Form 11D) under Section 5 (Tolerances) and Section 6 (Earthworks).

12 BACKFILLING BEHIND ABUTMENTS AND WINGS

The excavation for backfilling behind Abutments and Wings of the Existing R.C. Culverts has been carried out to the dimensions shown on the plans under Job No. 8/41E/8. The backfilling behind the Abutments shall be carried up to the level of the deck or the underside of the pavement whichever is the lower. A quantity of 582 cu.yds. has been allowed in the schedule.

Refer Specification Form 11D Clause 6.10.

13 TURNOUTS

Turnouts are to be set out by the Engineer.

14 TAPERS AND TURNOUTS

Tapers and Turnouts shall be constructed of the same material and to the same depths as those specified for the main pavement unless otherwise shown on the plans.

15 BANK PROTECTION

A quantity of 100 sq.yds. of Stone Pitching has been allowed in the Schedule for protection of the upstream batters of the Bank where directed by the Engineer at the R.C. Culvert at 70275'.

16 SPECIAL CATCH DRAIN

Special Catch Drains are to be provided where directed by the Engineer between the following chainages:- 49000 - 66000; 73100 - 75800; 82100 - 83700.

17 SIGNS

Signs are not included in the Contract.

18 CONNECTION TO EXISTING ROAD

The schedule provides for forming a connection to the existing road at the start of the job. A quantity of Top Course Gravel 56 cu.yds. comp. and Bottom Course Loam 78 cu.yds. comp. has been allowed in the Schedule.

19 RESUMPTION BOUNDARIES

The resumption boundaries are shown on the plans for information only and are not to be used for resumptions, fixing fence positions or any other similar purpose. Reference must be made to the official resumption plans for the details required for any of the above work.

20 EARTHWORKS TO SPOIL

The earthwork quantities shown on the longitudinal section include quantities of Earthwork to Cut over the sections where Selected Filling has been allowed. These quantities are not shown in the Mass Diagram. A quantity of 6237 cu.yds. "Earthwork to Spoil" has been allowed in the Schedule for this work.

21 ROAD RISE GUIDE POSTS

On floodways the road edge guide posts are to be tubular steel 4'-6" long. The posts are to be set in Class "B" Concrete not less than 6" diameter by 1'-6" deep.

22 SIDE TRACKS

Side tracks are only to be constructed where ordered in writing by the Engineer.

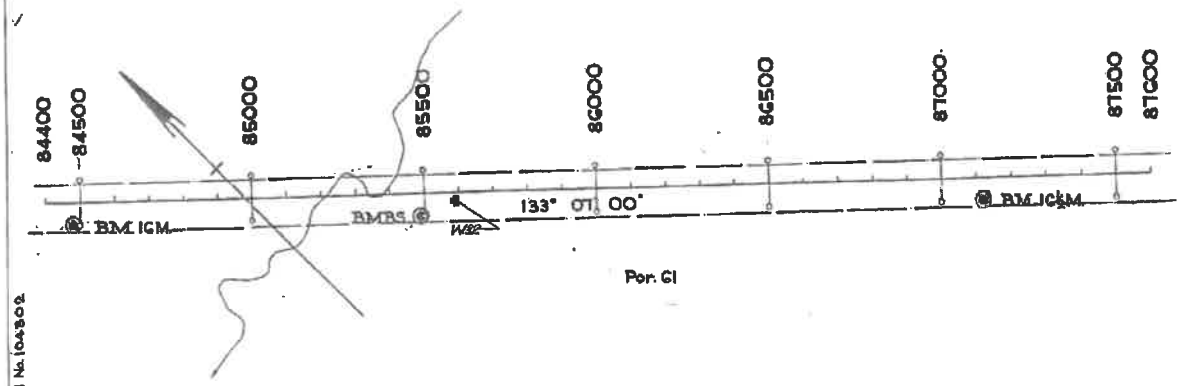
23 SURFACE FORMATION BORROW PITS

The width and depth of surface formation borrow pits are to be varied in such a way that the borrow pits will be graded and drained, so as to convey all surface water to the next culvert, or away from the borrow pit, without lodgement. The borrow pits shall have a minimum longitudinal grade of not less than 0.5% and a cross fall of 3% away from the road.

TYPE GROSS SECTIONS, TURNOUT, LEVEES, SIGNS, BACKFILLING AT R.C. SLAB DECK CULVERTS, SPECIAL CATCH DRAINS & NOTES.

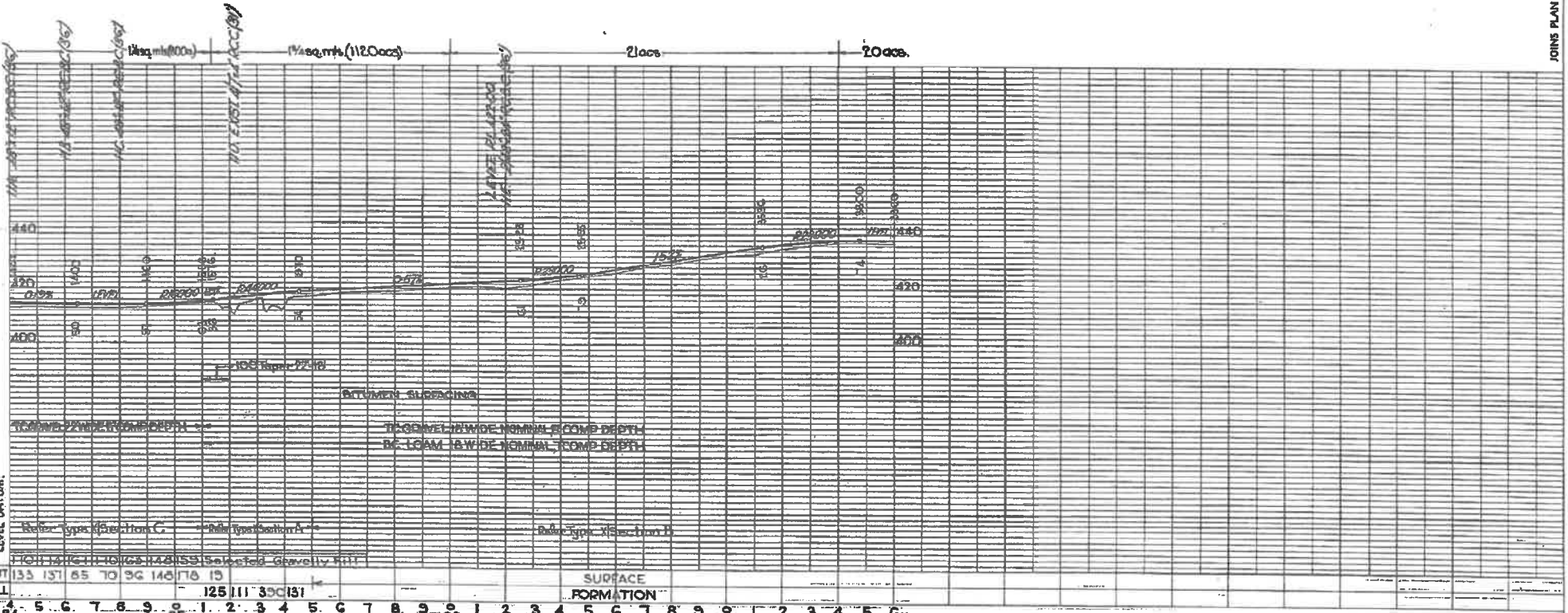
PLAN AMENDED	STATFILED 15 DEC 1966	MAIN ROADS DEPARTMENT	BANANA SHIRE	Designed B.T.H.	RECOMMENDED	APPROVED	No. 2 OF 34 PLANS	PLAN No.
		BURNETT HIGHWAY (BILOELA - MOUNT MORGAN)		Checked O.P.D. 29/9/66	DISTRICT ENGINEER	ASSISTANT COMMISSIONER & CO.	JOB No. 8-41E-9	104294
		PEGGED CHAINAGE 41600 - 91500		Photographed				

Parish of Don



JOINS PLAN No. 104302

JOINS PLAN No. 104304



LEVEL DATUM:

CURVE DATA

Town 22 acres.

PLAN AMENDED	STATFILED	ASSOCIATED JOB Nos.
	15 DEC 1965	

AUXILIARY PLANS No.
104294-104302,
104304-104319

PLAN & HORIZ. SECT. FT.

VERTICAL SECT. FT.

BENCH MARKS			
B.M.	CHGE.	DIST.	R.L.
IGM.	84480	GSR	418.66
BC.	85450	GSR	418.66
IGM.	87120	GSR	434.37

Plotted
Designed
Checked
Road Boundaries
Plotted
Checked
Photographed

MAIN ROADS DEPARTMENT — BANANA SHIRE

BURNETT HIGHWAY : (BILOELA – MT. MORGAN RD)

PEGGED CHAINAGE 84400 – 87600

THROUGH CHAINAGE FROM BILOELA

F.B. 6-13-96

L.B. 6-13-96

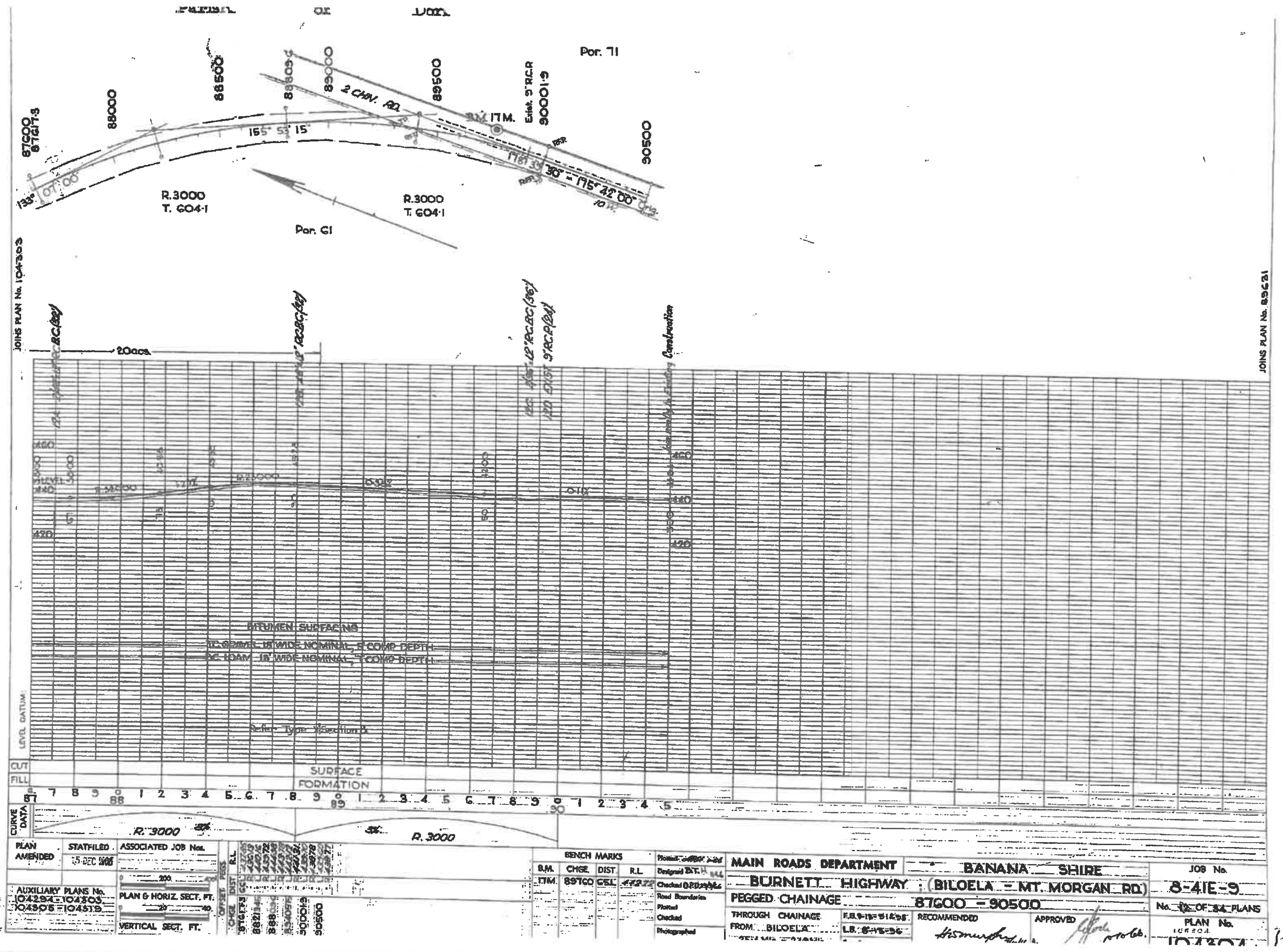
RECOMMENDED

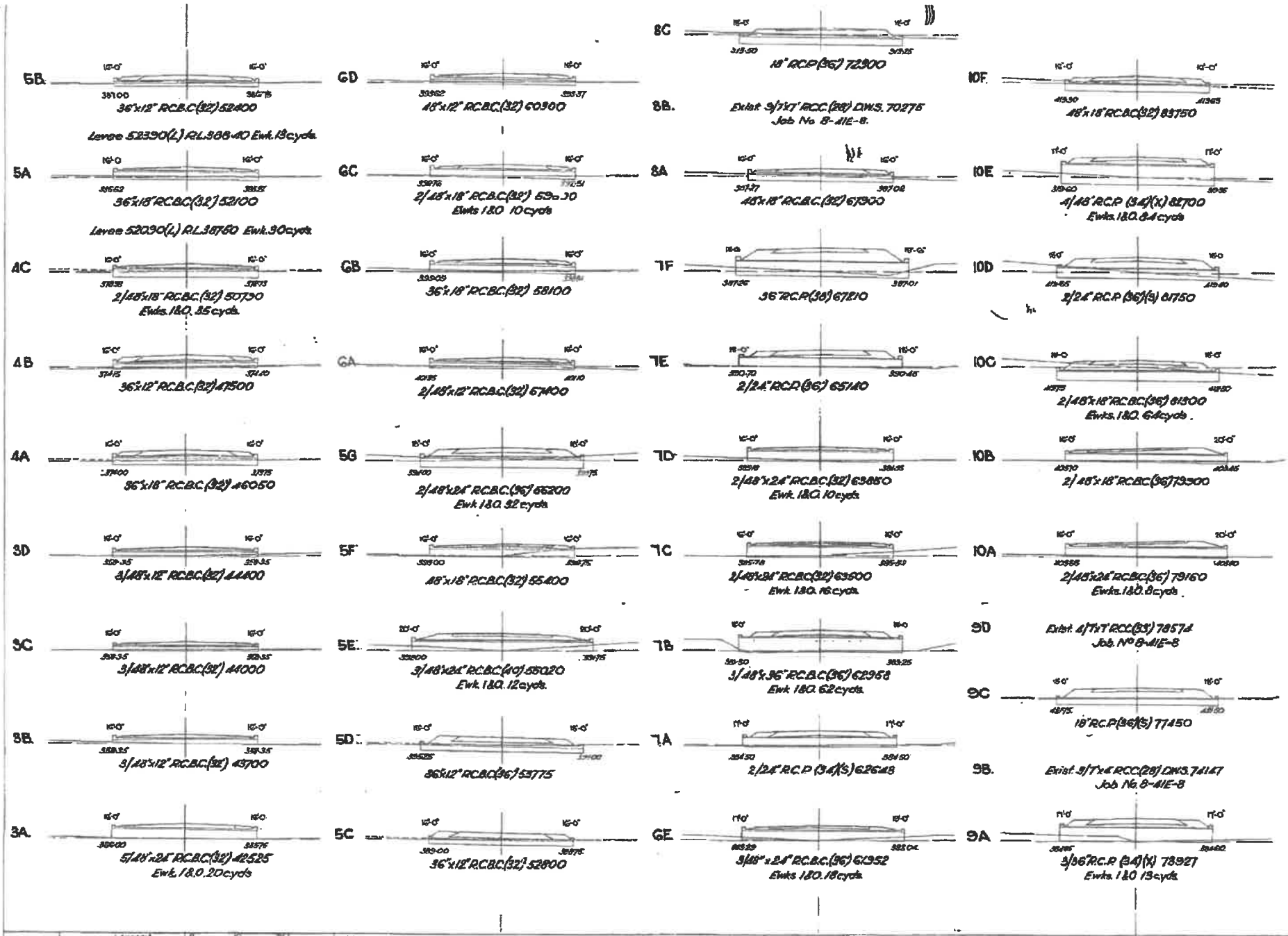
APPROVED 10.10.96.

JOB No. 8-41E-9

No. 11 OF 34 PLANS

PLAN No. 104303

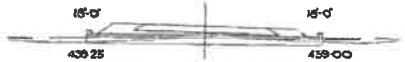

Por. 71
Por. 61
87600 87617·3
88000
88500
88803·6
89000
89500
90000·9
90500
2 CHN. RD.
Exist. 9"R.C.R
B.M. 17M.
165° 53' 15"
30" – 175° 42' 00"
R.3000
T. 604·1
R.3000
T. 604·1
JOINS PLAN No. 104303
JOINS PLAN No. 89631
20 ocs.
460
440
420
BITUMEN SURFACING
LEVEL DATUM
CUT
FILL
SURFACE
FORMATION
CURVE DATA
R. 3000
R. 3000
PLAN AMENDED
STATFILED 15 DEC 1966
ASSOCIATED JOB Nos.
AUXILIARY PLANS No. 104294–104303, 104305–104319
PLAN & HORIZ. SECT. FT.
VERTICAL SECT. FT.
BENCH MARKS
B.M. | CHGE. | DIST. | R.L.
17M. | 89760 | C.S.L. | 472.22
MAIN ROADS DEPARTMENT
BANANA SHIRE
BURNETT HIGHWAY : (BILOELA – MT. MORGAN RD.)
PEGGED CHAINAGE 87600 – 90500
THROUGH CHAINAGE
FROM BILOELA
RECOMMENDED
APPROVED
JOB No. 8-41E-9
PLAN No.



PLAN AMENDED	STAT FILED	Amendment Job Nos.	HORIZONTAL SCALE	V.S.	MAIN ROADS DEPARTMENT	BANANA SHIRE	Designed B.T.H.	RECOMMENDED	APPROVED	No. 13 OF 34 PLANS	PLAN No.
			VERTICAL SCALE	L.S.	BURNETT HIGHWAY	(BILOELA – MT. MORGAN)	Checked O.E.D.	DISTRICT ENGINEER	ASSISTANT COMMISSIONER	JOB No. 8-41E-9	104305
					PGD. CHGE.	42525 – 88150	Photographed				

C.D.O.N°11-11-4

12C



2/36'x12' R.C.B.C.(36) 89857

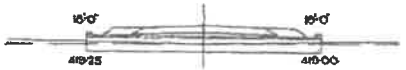
12B

48'x12' R.C.B.C.(32) 88810

12A

2/48'x12' R.C.B.C.(32) 87700

11E

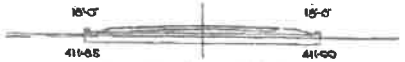


2/48'x24' R.C.B.C.(36) 86200
Ewks. 1&0. 56 c.yds
Levee 86150(L) R.L. 42·00 Ewks. 8 c.yds

11D

Exist. 4/7'x4' R.C.C.(31) 85216
Job. N°8-41E-9

11C

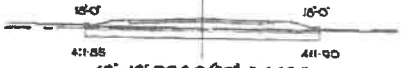


48'x12' R.C.B.C.(36) 84800
Ewks. 1&0. 10 c.yds

11B

48'x12' R.C.B.C.(36) 84600
Ewks. 1&0. 12 c.yds

11A



48'x12' R.C.B.C.(36) 84400
Ewks. 1&0. 14 c.yds

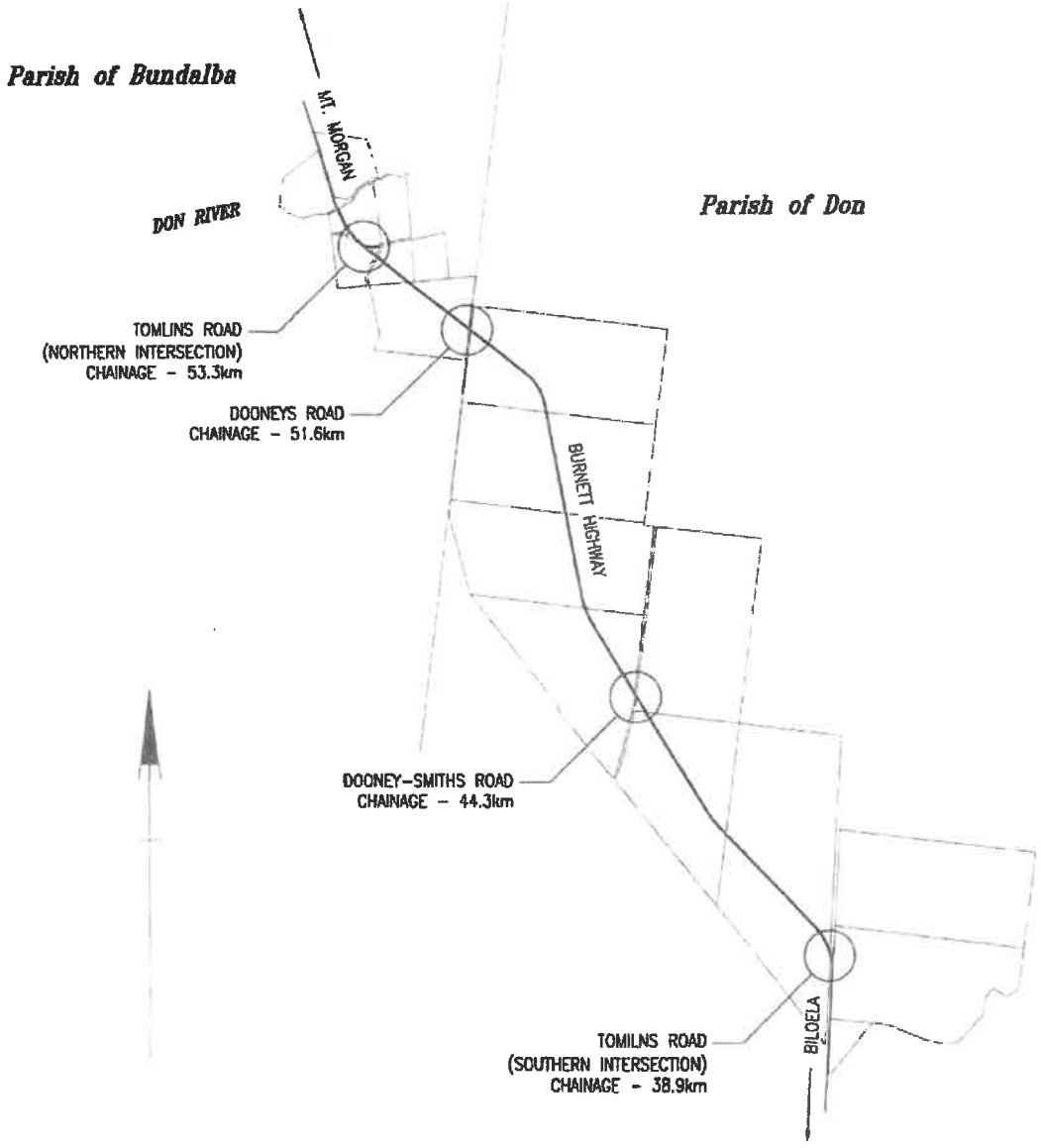
10G

2/48'x18' R.C.B.C.(32) 83330
Ewks. 1&0. 46 c.yds

12D. Exist. 3' R.C.P. (24) 83927
Take up & Stack

PLAN AMENDED	STAT FILED	Associated Job Nos.:	SCALE (FEET)	F.B. / L.B.	MAIN ROADS DEPARTMENT — BANANA SHIRE BURNETT HIGHWAY (BILOELA - MT. MORGAN) PGD. CHGE. 83930 - 89927	Designed B.T.H. 8/66 Checked G.P.C. 9/66 Photographed	RECOMMENDED A. DISTRICT ENGINEER	APPROVED 10.9.66 ASSISTANT COMMISSIONER C.O.	No. 14 OF 34 PLANS JOB No. 8-41E-9	PLAN No. 104306

C.D.O. N° 12-11-4



EXTENDED DESIGN DOMAIN DECISIONS

No.	Issue	File Reference
1	Tomlins Road North Intersection CHR(S) Intersection Layout	810/467

Drawing Number	Revision	Date	Series Number	Drawing Description
378987	B		1	LOCAL INDEX PLAN
378988	B		2	TYPE CROSS SECTIONS
378989	B		3	PROPERTY ACCESS DETAILS
404002	B		4	TOMLINS ROAD (SOUTH) INTERSECTION DETAIL
404003	B		5	TOMLINS ROAD (SOUTH) INTERSECTION LINEMARKING & DETAILS
404004	B		6	DOONEYS ROAD INTERSECTION DETAIL
404005	B		7	DOONEYS ROAD INTERSECTION LINEMARKING & DETAILS
404006	B		8	DOONEY-SMITHS ROAD INTERSECTION DETAIL
404007	B		9	DOONEY-SMITHS ROAD INTERSECTION LINEMARKING & DETAILS
404008	B		10	TOMLINS ROAD (NORTH) INTERSECTION DETAIL
404009	B		11	TOMLINS ROAD (NORTH) INTERSECTION LINEMARKING, ROAD FURNITURE & DETAILS
404010	B		12	VEHICLE STOPPING PLACE DETAILS
404011	B		13	DRAINAGE DETAILS

TOTAL NUMBER OF DRAWINGS = 13

SCHEME SUBMITTED *(External Consultants or Internal Business Unit)*:

I hereby certify that the design complies with the requirements of the 'Professional Engineers Act' and other relevant Legislation and Main Roads - Policies, References, Standards and Codes, Guidelines, Brief/Functional Specification and that the names inserted in the drawing title are correct.

SIGNED: *ORIGINAL SCHEME CERTIFICATION BY LAWRIE MURFIN* TITLE: *MANAGER (PD&D)*

RPEQ No.: *4580* DATE: *15/1/08*

SCHEME APPROVED: *(District Director or Delegate)*:

I hereby certify that the scheme complies with the intent of the relevant project on the Roads Program and funding is available for construction and the scheme release is approved for contract establishment purposes.

SIGNED: *ORIGINAL SIGNED BY TERRY HILL* TITLE: *DISTRICT DIRECTOR (CENTRAL)* DATE: *16/1/08*

Revisions	Verified	Date	Mic-related
B As Constructed			
A Original Issue			

Associated Job Nos

Auxiliary Drg Nos
378987-378989
404002-404011

Survey Data
Horiz. Datum
Azimuth Datum
Height Datum
Survey Books

Scales
NOT TO SCALE

BANANA SHIRE
BURNETT HIGHWAY (BILOELA-MT.MORGAN)
CTL CHGE 38650km - 53623km (ARMIS GPS)

Reference Points

Preceding RP	Dist. to start of Job (km)	From start to end of Job	From end to Following RP	Following RP
41E/4	11.32	14.97	0.49	41E/5

LOCAL INDEX PLAN

Drawing	Design	Design Review	Engineering Certification
T/R Checked CDP	T/R Verified CDP	GMcT 1/08	Original Certified by Lawrie Murfin 15/1/08 RPEQ No. 4580

For scheme approval status refer Drg. No. 378987 (1 of 13)

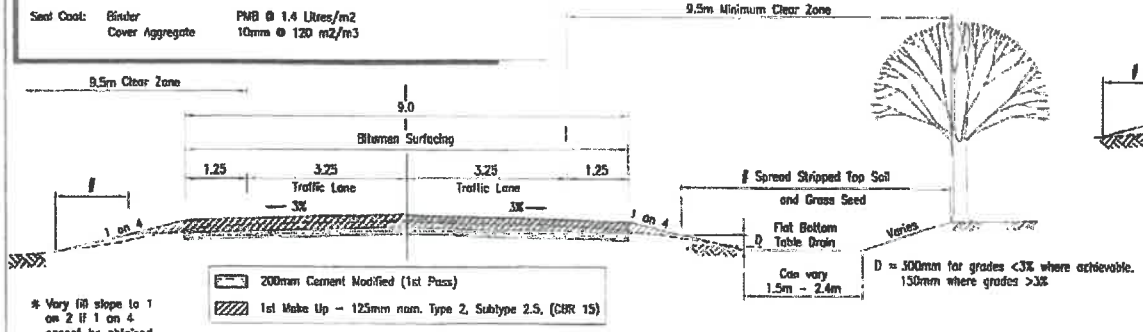
Queensland Government
Department of Main Roads

Job No.	8/41E/307
Contract No.	CEND 792
Drawing No.	378987 B
Sheet Number	1 of 13

BITUMEN SURFACING

FULL WIDTH

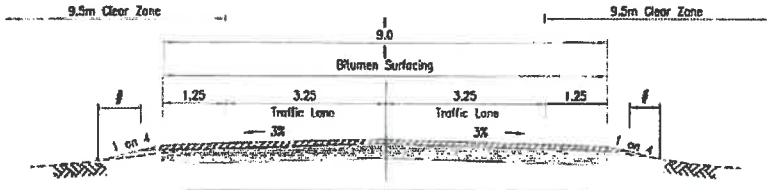
Primerseal	Binder	CL170 (3% Cutter – mixed on site) @ 1.9 Litres/m2
	Cover Aggregate	16mm @ 85 m2/m3
Seal Coat:	Binder	PMB @ 1.4 Litres/m2
	Cover Aggregate	10mm @ 120 m2/m3



* Vary fill slope to 1 on 2 if 1 on 4 cannot be obtained without creating silver embankment widening

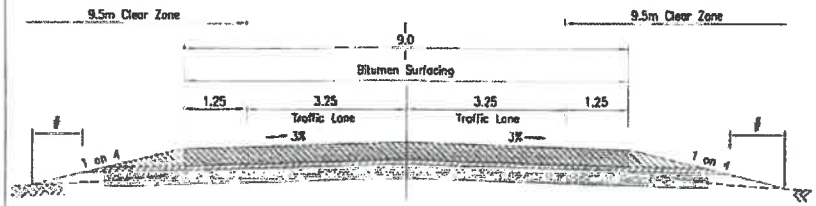
A: WIDENING AND REHABILITATION

SECTION: 38.60km – 40.491km



B: WIDENING AND REHABILITATION

SECTION: 40.491km – 45km

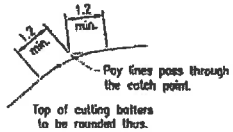


C: WIDENING AND REHABILITATION

SECTION: 45km – 48km

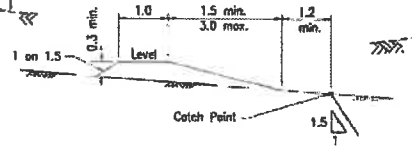
PAVEMENT DESIGN
Design Traffic – 1 x 10^6 ESA's
Design Life – 10 years (Second Design Life)
Subgrade – CBR 5 Chg 39.540km
CBR 5 Chg 40.060km
CBR 10 Chg 41.110km
CBR 7 Chg 41.900km
CBR 3 Chg 42.770km
CBR 5 Chg 43.330km
CBR 10 Chg 44.050km
CBR 15 Chg 44.470km
CBR 3 Chg 47.030km
CBR 3 Chg 48.090km
CBR 3 Chg 49.300km
CBR 3 Chg 50.250km
CBR 3 Chg 51.700km
CBR 3 Chg 52.320km
CBR 3 Chg 52.623km

Subgrade Treatment:
150mm Subgrade Treatment Type A



ROUNDING OF BATTERS

(N.T.S)

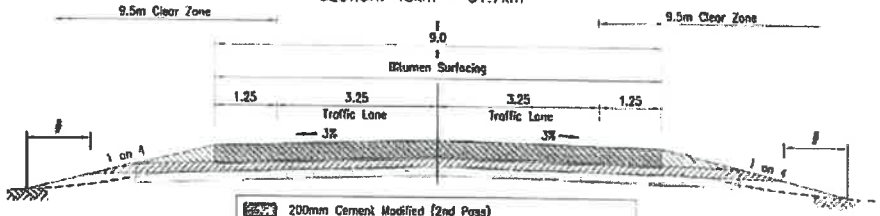


CATCH DRAIN EMBANKMENT

(N.T.S)

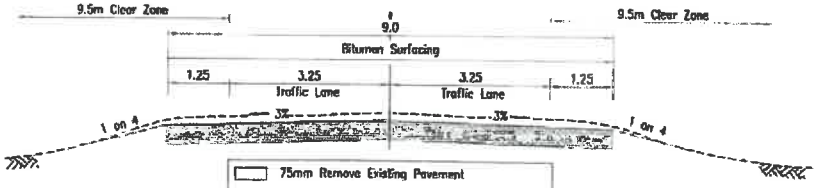
D: WIDENING AND REHABILITATION

SECTION: 48km – 51.7km



E: WIDENING AND REHABILITATION

SECTION: 51.7km – 52.497km; 53.197km – 53.623km



F: REHABILITATION

SECTION: 52.497km – 53.197km

Revisions	Verified	Date	Micrafilm
B As Constructed			
A Original Issue			

CAD FILES

Associated Job Nos

Ancillary Org Nos
378987-378989
404002-404011

Survey Data
Horiz. Datum
Azimuth Datum
Height Datum
Survey Books

Scales
NOT TO SCALE

BANANA SHIRE
BURNETT HIGHWAY (BILOELA–MT.MORGAN)
CTL CHGE 38650km – 53623km (ARMIS GPS)

Reference Points

Processing RPC	Dist. to start of Job (km)	From start to end of Job	From end to Following RPC	Following RPC
41C/4	11.32	14.97	0.03	41C/5

Through Chainage from to

TYPE CROSS SECTIONS

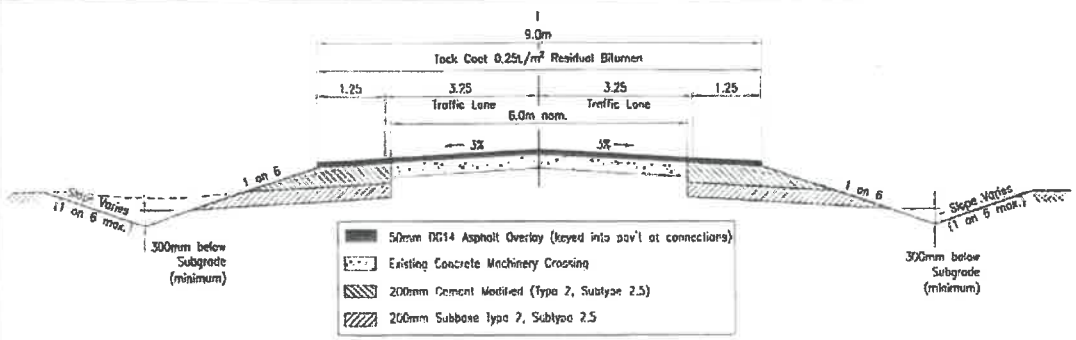
Drawing	Design	Design Review	Engineering Certification
CDP Checked RAC	CDP Verified RAC	GMcT 1/08	Original Scheme Certified by Laurie Murfin RPEQ No. 4580 15/1/08

For scheme approval status refer Drg. No. 378987 (1 of 13)

Queensland Government
Department of Main Roads

Job No.	8/41E/307
Contract No.	CEND 792
Drawing No.	378988 B
Series Number	2 of 13

MRR Detail A1 (11/96)



G: MACHINERY CROSSING

Location: Refer Property Schedule

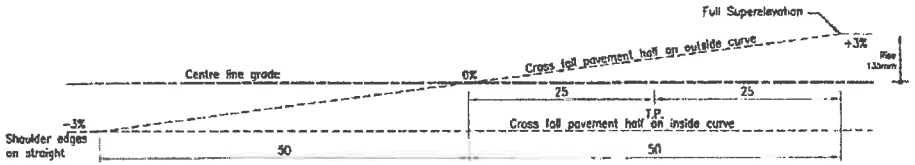
N.T.S

SUPERELEVATION TABLE

CURVE DETAILS			SUPERELEVATION LHS		SUPERELEVATION RHS	
R915	Left	TC 38.676	38.601	-3%	38.601	-3%
			-	-3%	-	-
			-	-3%	38.701	3%
		CT 39.403	-	-3%	39.378	3%
			39.478	-3%	39.478	-3%
R1219	Right		41.536	-3%	41.536	-3%
		TC 41.711	-	-	-	-3%
			41.736	3%	-	-3%
			41.938	3%	-	-3%
		CT 41.963	-	-	-	-3%
			42.038	-3%	42.038	-3%
R1219	Right	TC 45.752	45.677	-3%	45.677	-3%
			-	-	-	-3%
			-	3%	45.777	-3%
		CT 46.194	-	3%	46.169	-3%
			-	-	-	-3%
			46.269	-3%	46.269	-3%
R915	Left	TC 49.359	49.284	-3%		-3%
			-	-3%		-
			49.359	-3%		3%
			49.966	-3%		3%
		CT 49.991	-	-3%		-
			50.066	-3%		-3%
R1219	Right	TC 53.399	53.324	-3%		-3%
			53.424	3%		-3%

PROPERTY SCHEDULE

CHAINAGE	LAYOUT	MACHINERY CROSSING	DRAINAGE SIZE	DRAINAGE LENGTH	REMARKS
39.133 L	Paddock Gate	Yes	-	-	-
40.785 L&R	Paddock Gate	Yes	-	-	-
41.681 L	Paddock Gate	-	-	-	-
42.683 L	Property Access	Yes	-	-	-
44.108 L&R	Paddock Gate	-	-		-
45.110 L&R	Paddock Gate	Yes	-		-
46.776 L&R	Paddock Gate	Yes	-		-
48.799 L	Property Access	-	375	9.8	To Remain
47.528 R	Paddock Gate	-	-	-	-
47.533 L	Paddock Gate	-	-	-	-
47.826 R	Paddock Gate - Telstra	-	-		
48.391 R	Paddock Gate	-	-	-	
48.409 L	Paddock Gate	-		-	-
49.227 L&R	Paddock Gate	Yes	-	-	-
49.737 L	Paddock Gate	-			-
50.220 L&R	Paddock Gate		-	-	
51.122 L	Paddock Gate		-	-	-
51.176 L	Paddock Gate		-	-	-
51.192 R	Paddock Gate	-			
52.410 L	Paddock Gate	Yes	600	6.2	Remove
52.410 R	Paddock Gate	Yes	600	7.2	Remove
53.111 L	Paddock Gate	-	-	-	-
53.114 L	Property Access	-	375	7.2	To Remain
53.118 R	Paddock Gate	-	-	-	-
53.121 L	Paddock Gate	-	-	-	-
53.294 L	Paddock Gate	-	-	-	-



SUPER-ELEVATION DEVELOPMENT DIAGRAM

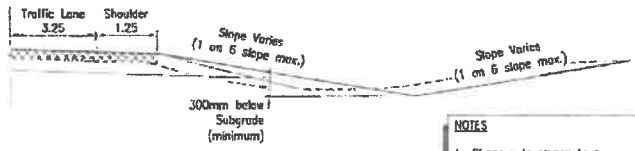
NOTES:

1. Project Engineer to confirm the cover over all drainage structures and concrete slabs and adjust the depth of stabilisation to prevent damage to these structures.
2. Existing crossfall to be confirmed on site by the Project Engineer prior to finalising actual tip rates.
3. Bottom of table drains 300mm below subgrade is desirable, minimum depth below subgrade is 150mm. Table drain dimensions to be confirmed on site by the Project Engineer.
4. 3% super-elevation is required on all curves in accordance with the adjacent super-elevation development diagram unless otherwise noted.
5. 3% nominal cross fall is required for the typical crowned road profile. Cross fall construction tolerance is ±1%. (Refer typical section)
6. Project Engineer to confirm cement content based on testing of imported/existing gravel mixtures.
7. Project Engineer to confirm that the locations of the specified level transition ramps between pavement subsections do not compromise geometrical design standards.
8. Linemarking to match existing or as specified on access and intersection plans.
9. The following note applies to all sections of the works.

Telstra Cable. No work is to be done within 4m of cable without first consulting Telstra.

Road Edge Guide Post Spacings (m)		
Curve Radius	On Outside of Curve	On Inside of Curve
300 - 399	20	40
400 - 599	30	60
600 - 799	40	60
800 - 1199	60	60
1200 - 2000	90	90
>2000 & straights	150	

All road side furniture shall be installed in accordance with the Manual of Uniform Traffic Control Devices.



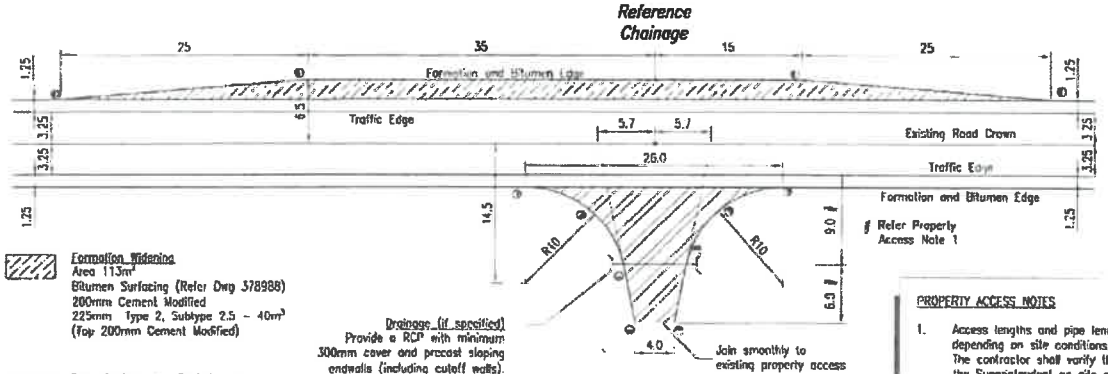
TRAVERSIBLE BATTER

Apply to all paddock gates

(N.T.S)

NOTES

1. Changes in slopes to be transitioned over 5 metres.
2. Treatment to be applied 3 metres either side of specified chainage.



Formation Widening
Area 113m²
Bitumen Surfacing (Refer Dwg 378988)
200mm Cement Modified
225mm Type 2, Subtype 2.5 - 40m³
(Top 200mm Cement Modified)

Property Access - Sealed Area
Area 122m²
Bitumen Surfacing (Refer Dwg 378988)
150mm Type 2, Subtype 2.2 - 20.1m³
150mm Subgrade Treatment Type A

Drainage (if specified)
Provide a RCP with minimum 300mm cover and precast sloping endwalls (including cutoff walls). Grade table drains to suit. Refer to Property Schedule for installation locations.

PROPERTY ACCESS

0 2 4 6 8 10m

Scale

PROPERTY ACCESS NOTES

1. Access lengths and pipe lengths may vary depending on site conditions. The contractor shall verify these lengths with the Superintendent on site prior to construction.
2. All chainages are approximate only. Contractor shall confirm location of features with Superintendent on site prior to construction.

Revisions	Verified	Date	Microfilmed
B As Constructed			
A Original issue			

Associated Job Nos
Auxiliary Drg Nos
378987 - 378988
404002 - 40401

Survey Data
Horiz. Datum
Azimuth Datum
Height Datum
Survey Books

Scales
NTS

BANANA SHIRE
BURNETT HIGHWAY (BILOELA-MT.MORGAN)
CTL CHGE 38650km - 53623km (ARMIS GPS)

Reference Points

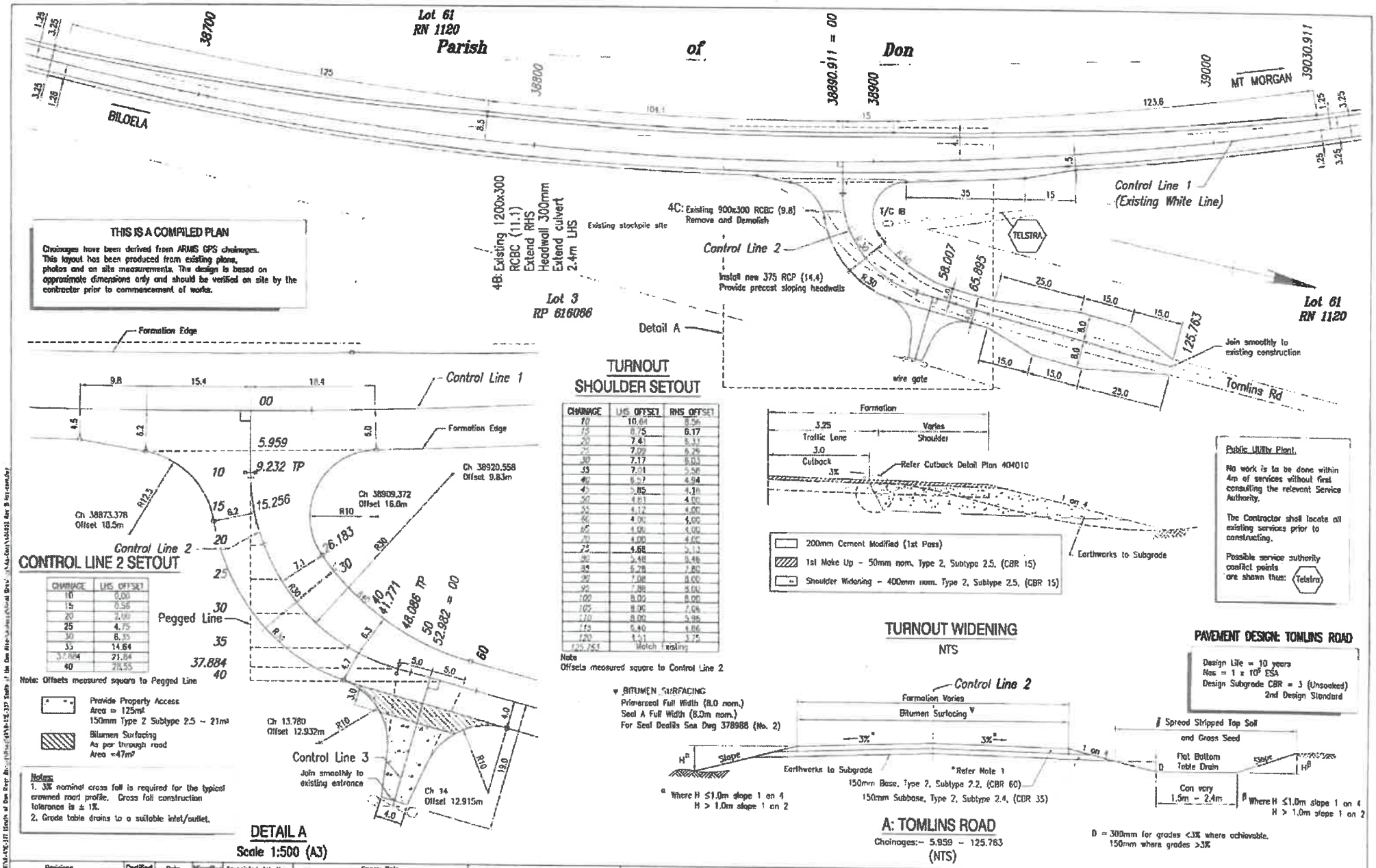
Preceding RPC	Dist. to start of job (km)	From start to end of job	From end to Following RPC	Following RPC
41E/4	11.52	16.97	0.49	41E/5

PROPERTY ACCESS DETAILS

Drawing	Design	Design Review	Engineering Certification	For scheme approval status refer
CDP	CDP	CMcT	Original Scheme Certified by Lawrie Martin 15/1/08	Drg. No. 378987 (1 of 13)
Checked RAC	Verified RAC	1/08	RPEQ No. 4580	

Queensland Government
Department of Main Roads

Job No.	8/41E/307
Contract No.	CEND 792
Drawing No.	378989 B
Series Number	3 of 13



Revisions	Certified	Date	Microfilm
B As Constructed			
A Original Issue A1/A3			

Associated Job Nos
Auxiliary Drg Nos
378987 – 378988
404002 – 40401

Survey Data
Horiz. Datum
Azimuth Datum
Height Datum
Survey Blocks

Scales
0 5 10 15 20m
1:1000 (A3)

BANANA SHIRE
BURNETT HIGHWAY (BILOELA–MT.MORGAN)
CTL CHGE 38661.811 – 39030.911 (ARMIS GPS)

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
41E/4	11.52	14.97	0.69	41E/4

Through Chainage from Balance 38.0km = 39.0km

TOMLINS ROAD (SOUTH)
INTERSECTION DETAIL

Drawing	Design	Design Review		For scheme approval status refer
CDP Checked RAC	CDP Verified RAC	GMcT Date: 1/08	Original Scheme Certified by Lawrie Martin RPEQ 4580 15/1/08	Drg. No. 4 (1 of 13)

Queensland Government
Department of Main Roads

Job No.	8/41E/307
Contract No.	CEND 792
Drawing No.	404002 B
Series Number	4 of 13

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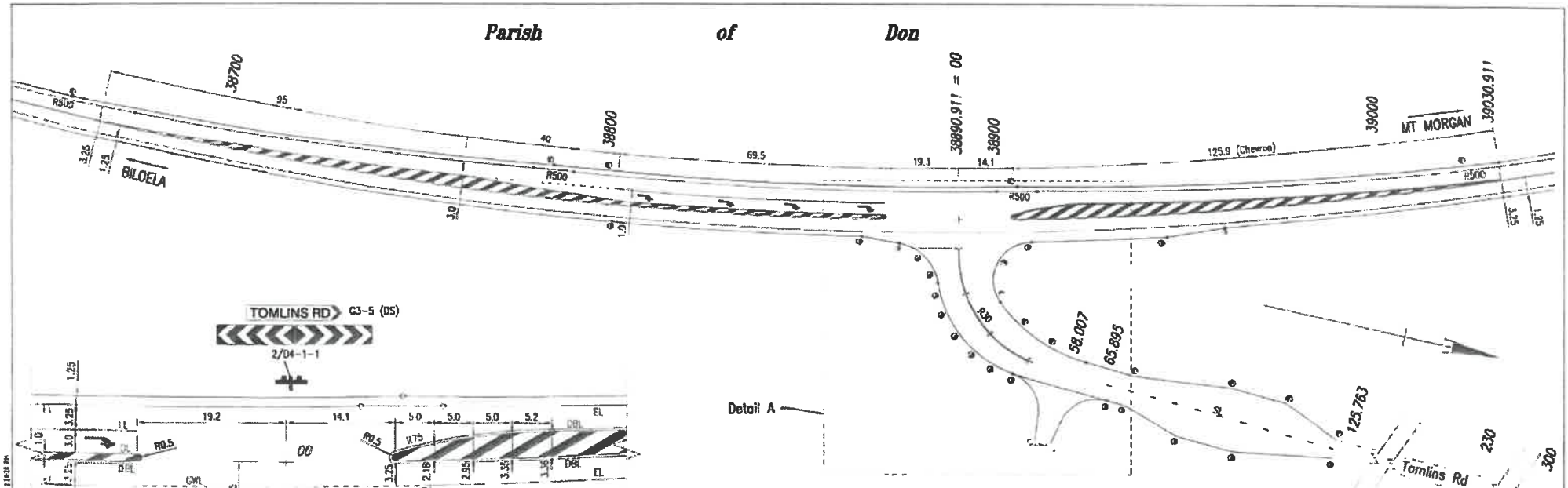
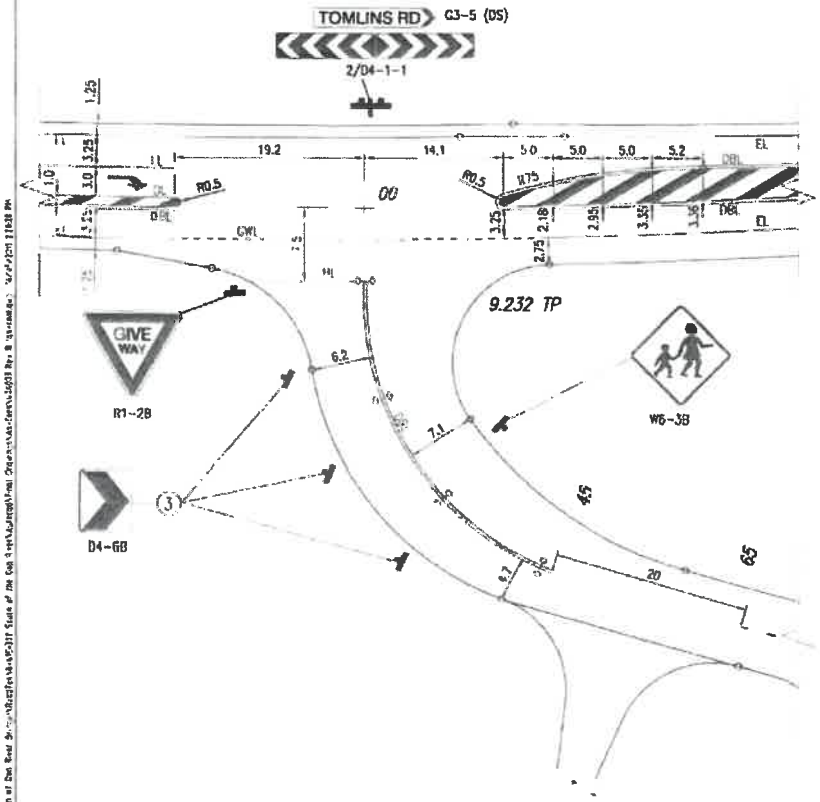
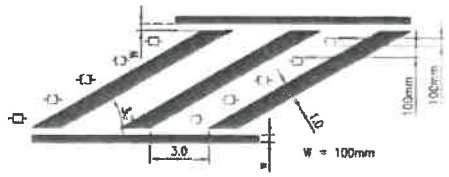




DETAIL A
Scale 1:500 (A3)

LINEMARKING AND ROAD FURNITURE



CHEVRON DETAIL
(Dimensions in mm)

RRPMs

NOTE:
All pavement marking and RRPMs are to be in accordance with the Manual of Uniform Traffic Control Devices.

NOTES:
1. Road edge guide posts to be installed 300mm outside shoulder.

CONTROL LINES OMITTED FOR CLARITY

THIS IS A COMPILED PLAN

Chainages have been derived from ARMIS GPS chainages. This layout has been produced from existing plans, photos and on site measurements. The design is based on approximate dimensions only and should be verified on site by the contractor prior to commencement of works.

Revisions	Certified	Date	Microfiched	Associated Job Nos
B As Constructed				Auxiliary Drg Nos 378987 - 378988 404002 - 404001
A Original Issue A1/A3				

CAD FILES

Survey Data: Horiz. Datum; Azimuth Datum; Height Datum; Survey Books

Scales
0 5 10 15 20m
1:1000 (A3)

BANANA SHIRE
BURNETT HIGHWAY (BILOELA–MT.MORGAN)
CTL CHGE 38667.111 – 39030.911 (ARMIS GPS)

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
41L/4	11.32	14.97	0.69	41E/6

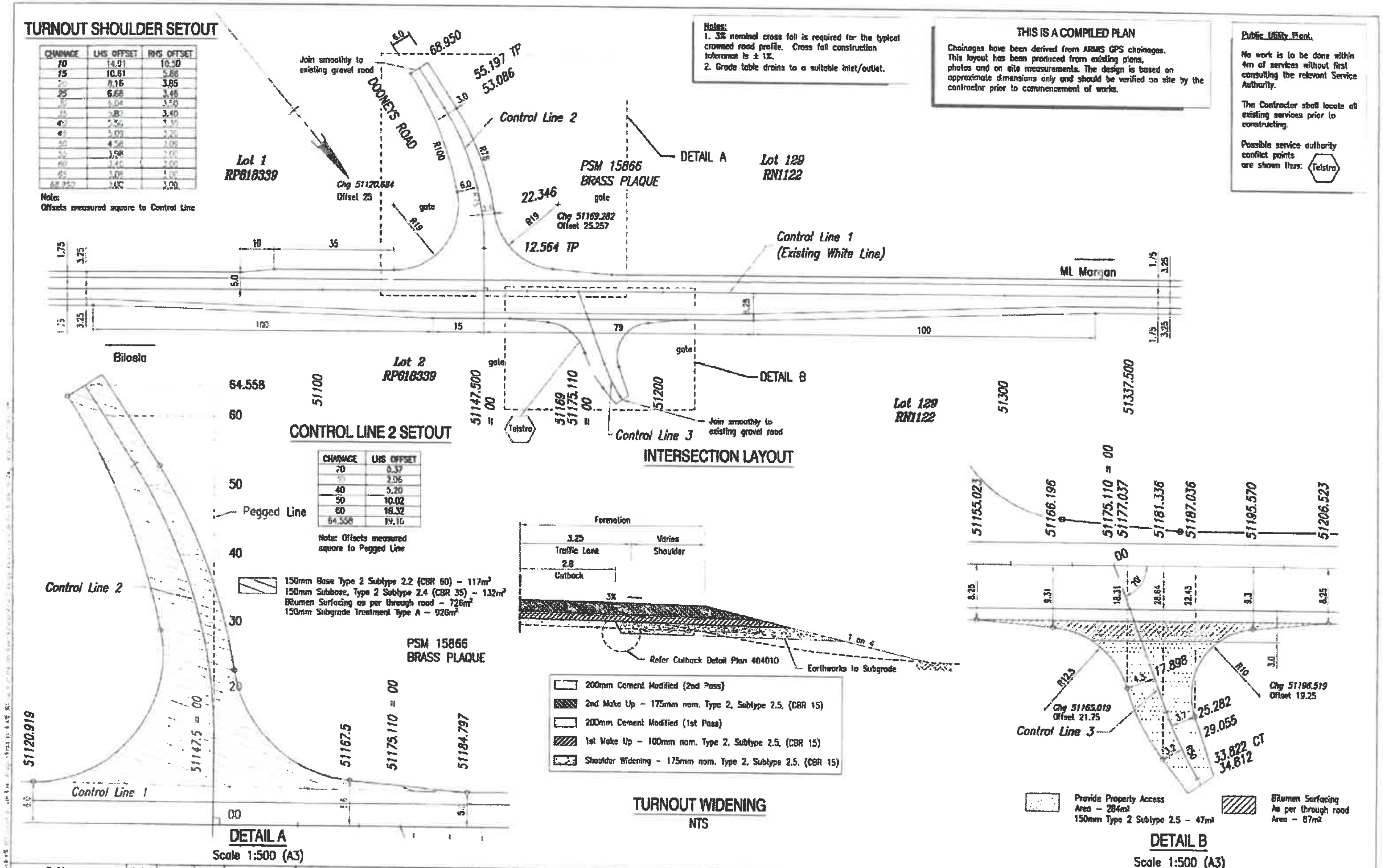
Through Chainage from

TOMLINS ROAD (SOUTH) INTERSECTION
LINEMARKING & DETAILS

Drawing	Design	Design Review		
CDP	CDP	CMcT	Original Scheme Certified by Lawrie Martin 15/1/08	For scheme approval status refer Drg. No. 378987 (1 of 13)
Checked RAC	Verified RAC	Date: 1/08	RPEQ 4580	

Queensland Government
Department of Main Roads

Job No.	8/41E/307
Contract No.	CEND 792
Drawing No.	404003 B
Series Number	5 of 13



TURNOUT SHOULDER SETOUT

CHAINAGE	LHS OFFSET	RHS OFFSET
10	14.91	10.50
15	10.61	5.88
20	8.16	3.85
25	6.68	3.46
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	3.40
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	3.98	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
68.950	[illegible]	3.00

Note:
Offsets measured square to Control Line

Notes:
1. 3% nominal cross fall is required for the typical crowned road profile. Cross fall construction tolerance is ± 1%.
2. Grade table drains to a suitable inlet/outlet.

THIS IS A COMPILED PLAN

Chainages have been derived from ARMIS GPS chainages. This layout has been produced from existing plans, photos and on site measurements. The design is based on approximate dimensions only and should be verified on site by the contractor prior to commencement of works.

Public Utility Plant.

No work is to be done within 4m of services without first consulting the relevant Service Authority.

The Contractor shall locate all existing services prior to constructing.

Possible service authority conflict points are shown thus: (Telstra)

CONTROL LINE 2 SETOUT

CHAINAGE	LHS OFFSET
20	0.37
[illegible]	2.06
40	5.20
50	10.02
60	18.32
64.558	19.16

Note: Offsets measured square to Pegged Line

150mm Base Type 2 Subtype 2.2 (CBR 60) – 117m²
150mm Subbase, Type 2 Subtype 2.4 (CBR 35) – 132m²
Bitumen Surfacing as per through road – 726m²
150mm Subgrade Treatment Type A – 926m²

200mm Cement Modified (2nd Pass)
2nd Make Up – 175mm nom. Type 2, Subtype 2.5, (CBR 15)
200mm Cement Modified (1st Pass)
1st Make Up – 100mm nom. Type 2, Subtype 2.5, (CBR 15)
Shoulder Widening – 175mm nom. Type 2, Subtype 2.5, (CBR 15)

Provide Property Access
Area – 284m²
150mm Type 2 Subtype 2.5 – 47m³

Bitumen Surfacing
As per through road
Area – 87m²

Revisions		Verified	Date
B	As Constructed		
A	Original Issue		

Associated Job Nos
Auxiliary Drg Nos
378987 – 37898
404002 – 40401

Survey Data: Horiz. Datum, Azimuth Datum, Height Datum, Survey Books — GDA

Scales: 0 5 10 15 20m — Intersection Layout

BANANA SHIRE
BURNETT HIGHWAY (BILOELA–MT.MORGAN)
CTL CHGE 51037.5 – 51337.5 (ARMIS GPS)

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
41E/4	11.32	14.87	0.49	41E/6

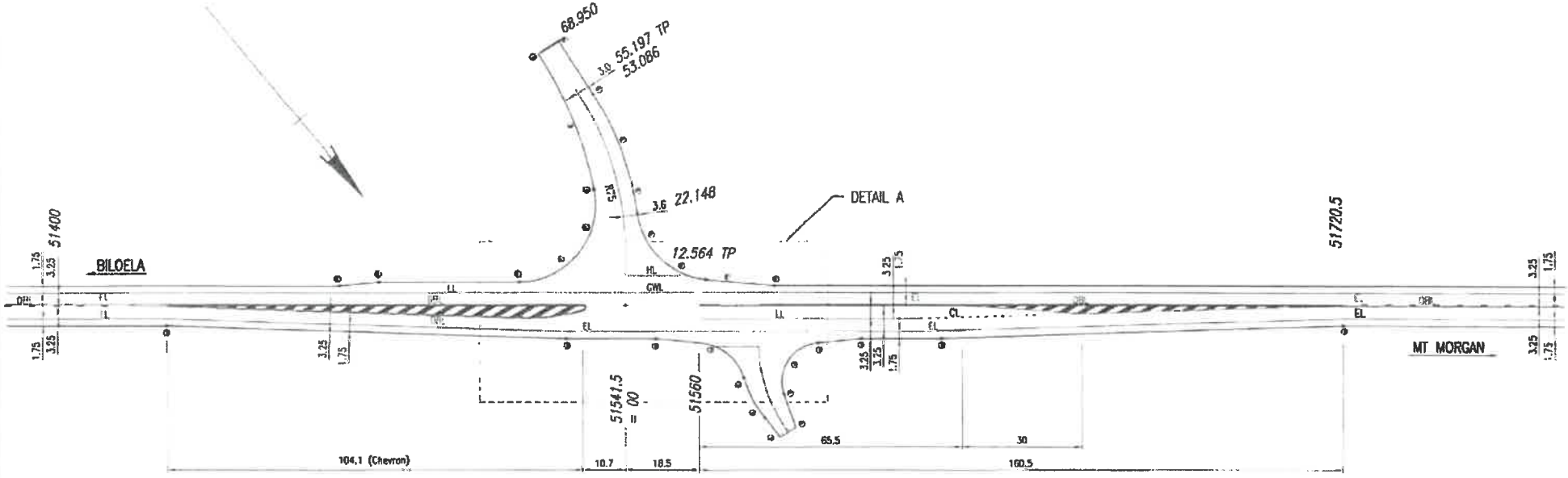
DOONEYS ROAD
INTERSECTION DETAIL

Drawing	Design	Design Review	Engineering Certification
CDP Checked	CDP Verified	GMcT 1/08	Original Scheme Certified by Lowrie Murfin 15/1/.. RPEQ 4580

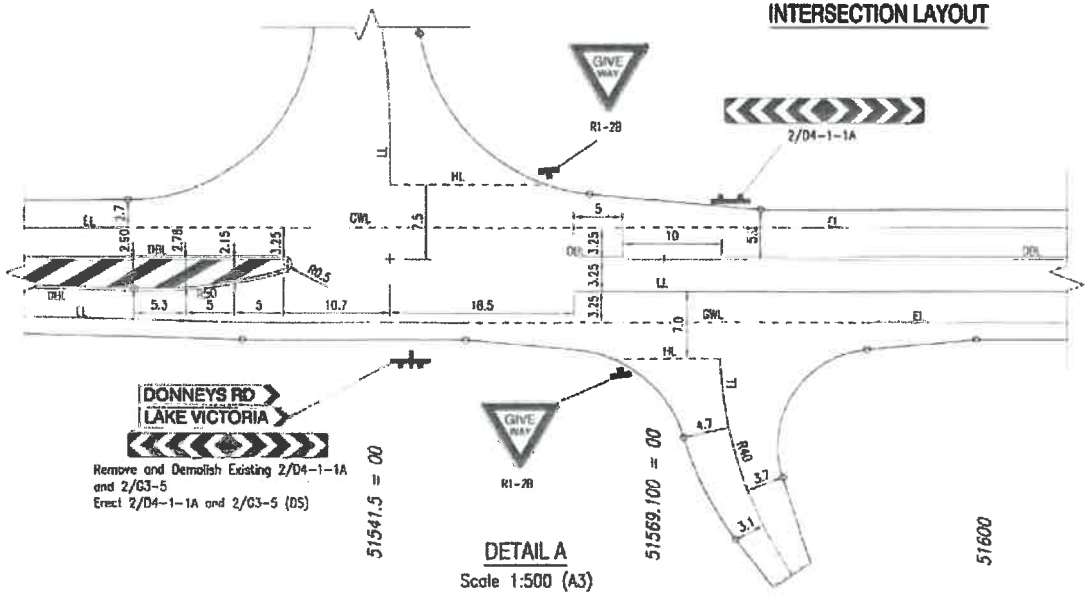
For scheme approval status refer Drg. No. 378987 (1 of 13)

Queensland Government
Department of Main Roads

Job No.	8/41E/307
Contract No.	CEND 792
Drawing No.	404004 B
Sheet Number	6 of 13



INTERSECTION LAYOUT



DETAIL A

Scale 1:500 (A3)

THIS IS A COMPILED PLAN

Chainages have been derived from Digital Road Centre Line (DRCL) This layout has been produced from existing plans photos and on site measurements. The design is based on approximate dimensions only and should be verified on site by the contractor prior to commencement of works.

CONTROL LINES OMITTED FOR CLARITY

NOTES:

1. Road edge guide posts to be installed 300mm outside shoulder.
2. For RRPM detail refer Plan 404003.

Revisions		Verified	Date
B	As Constructed		
A	Original Issue		

Associated Job Nos

Auxiliary Drg Nos
378987 - 378988
404002 - 404011

Survey Data
Horiz. Datum: GDA
Azimuth Datum
Height Datum
Survey Books

Scales
0 2 4 6 8 10m
Intersection Layout

BANANA SHIRE
BURNETT HIGHWAY (BILOELA–MT.MORGAN)
CTL CHGE 51037.5 – 51337.5 (ARMIS GPS)

Reference Points				
Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
41E/4	11.32	14.97	0.48	41E/5

DOONEYS ROAD INTERSECTION
LINEMARKING & DETAILS

Drawing	Design	Design Review	Engineering Certification
CDP Checked RAC	CDP Verified RAC	GMcT 1/08	Original Scheme Certified by Lawrie Murfin 15/1/08 RPEQ 4580

For scheme approval status refer Drg. No. 378987 (1 of 13)

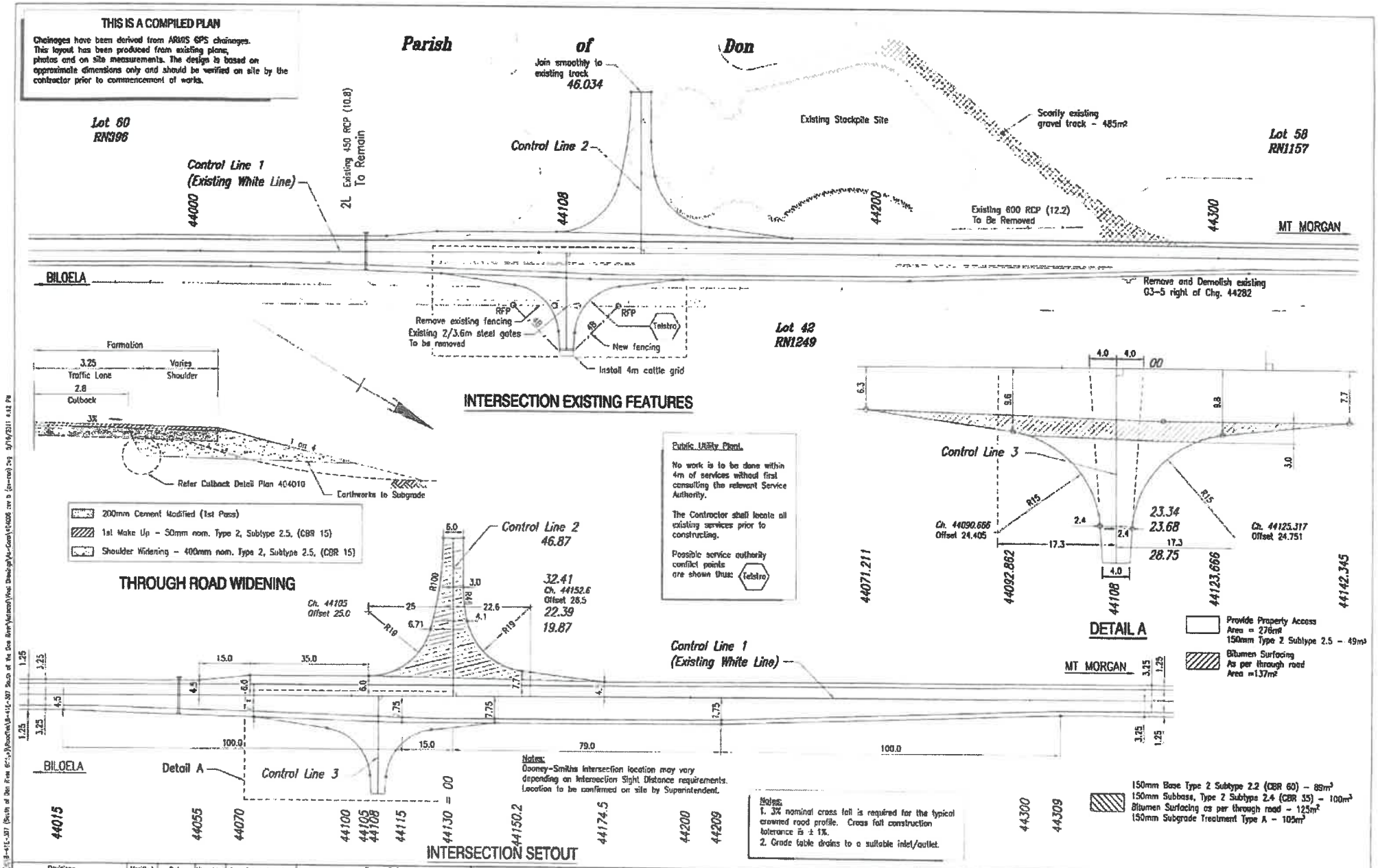
Queensland Government
Department of Main Roads

Job No.	8/41E/307
Contract No.	CEND 792
Drawing No.	404005 B
Sheet Number	7 of 13

MRR Detail A1 (11/00)

THIS IS A COMPILED PLAN

Chainages have been derived from ARMIS GPS chainages. This layout has been produced from existing plans, photos and on site measurements. The design is based on approximate dimensions only and should be verified on site by the contractor prior to commencement of works.



Notes:
Dooney-Smiths intersection location may vary depending on intersection Sight Distance requirements. Location to be confirmed on site by Superintendent.

Notes:
1. 3% nominal cross fall is required for the typical crowned road profile. Cross fall construction tolerance is ± 1%.
2. Grade table drains to a suitable inlet/outlet.

Revisions	Verified	Date	Mgr'd	Associated Job Nos	Survey Data
B As Constructed				Auxiliary Drg Nos 378987 - 378988 404002 - 404011	Horiz. Datum
A Original Issue					Azimuth Datum
					Height Datum
					Survey Books

Scales: 0 5 10 15 20m; 0 2 4 6 8 10m; DETAIL A

BANANA SHIRE
BURNETT HIGHWAY (BILOELA-MT.MORGAN)
CTL CHGE 44025 - 44319 (ARMIS GPS)

Preceding RPC	Dist. to start of Job (km)	From start to end of Job	From end to Following RPC	Following RPC
4E/4	11.32	14.57	0.49	4E/5

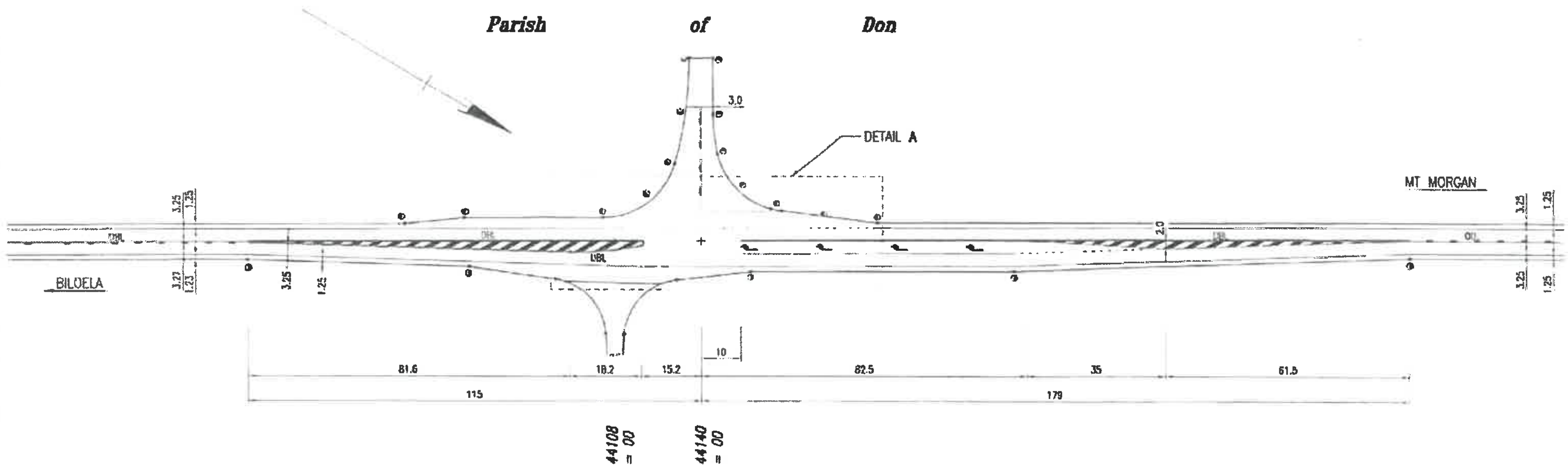
DOONEY-SMITHS ROAD
INTERSECTION DETAIL

Drawing CDP Checked RAC	Design CDP Verified RAC	Design Review GHcT 1/08	Engineering Certification: Original Scheme Certified by Laurie Martin RPEQ 4580 15/1/08	For scheme approval status refer Drg. No. 378987 (1 of 13)

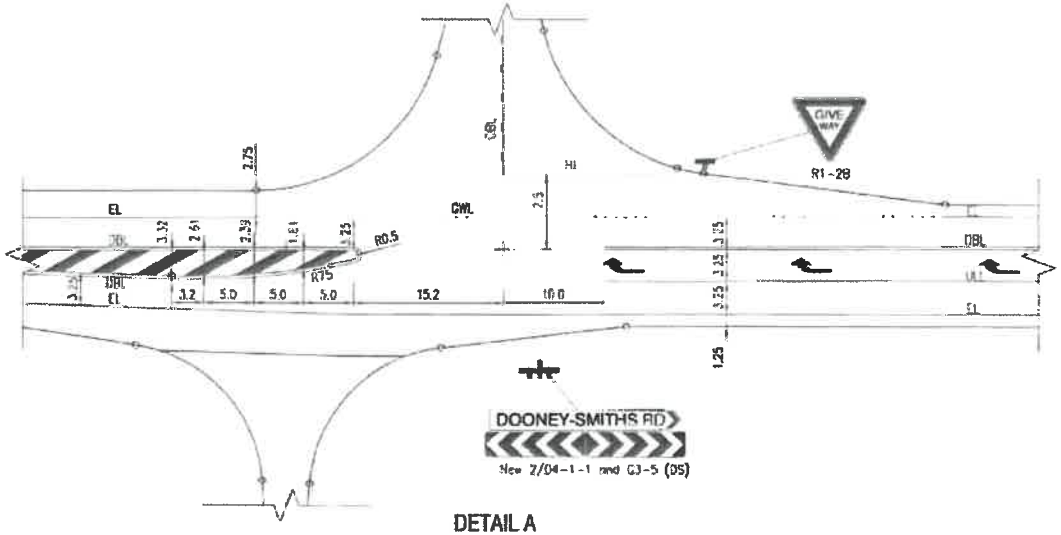
Queensland Government
Department of Main Roads

Job No.	8/41E/307
Contract No.	CEND 792
Drawing No.	404006 B
Series Number	8 of 13

Sheet Size A1 (ISO)



INTERSECTION LINEMARKING SETOUT



DETAIL A

Scale 1:500 (A3)

CONTROL LINES OMITTED FOR CLARITY

NOTES:

1. Road edge guide posts to be installed 300mm outside shoulder.
2. For RRPM detail refer Plan 404003.

THIS IS A COMPILED PLAN

Chainages have been derived from ARMIS GPS chainages. This layout has been produced from existing plans, photos and on site measurements. The design is based on approximate dimensions only and should be verified on site by the contractor prior to commencement of works.

Revisions	Verified	Date
B As Constructed		
A Original Issue		

Associated Job Nos — Auxiliary Drg Nos: 378987 – 378988, 404002 – 404010

Scales: 0 5 10 15 20m — Intersection Layout

BANANA SHIRE

BURNETT HIGHWAY (BILOELA–MT.MORGAN)

CTL CHGE 43960 – 44326.2 (ARMIS GPS)

Reference Points

Preceding RPC	Dist. to start of job (km)	From start to end of job	From end to Following RPC	Following RPC
41E/4	11.32	14.97	0.61	41E/6

DOONEY–SMITHS ROAD INTERSECTION
LINEMARKING & DETAILS

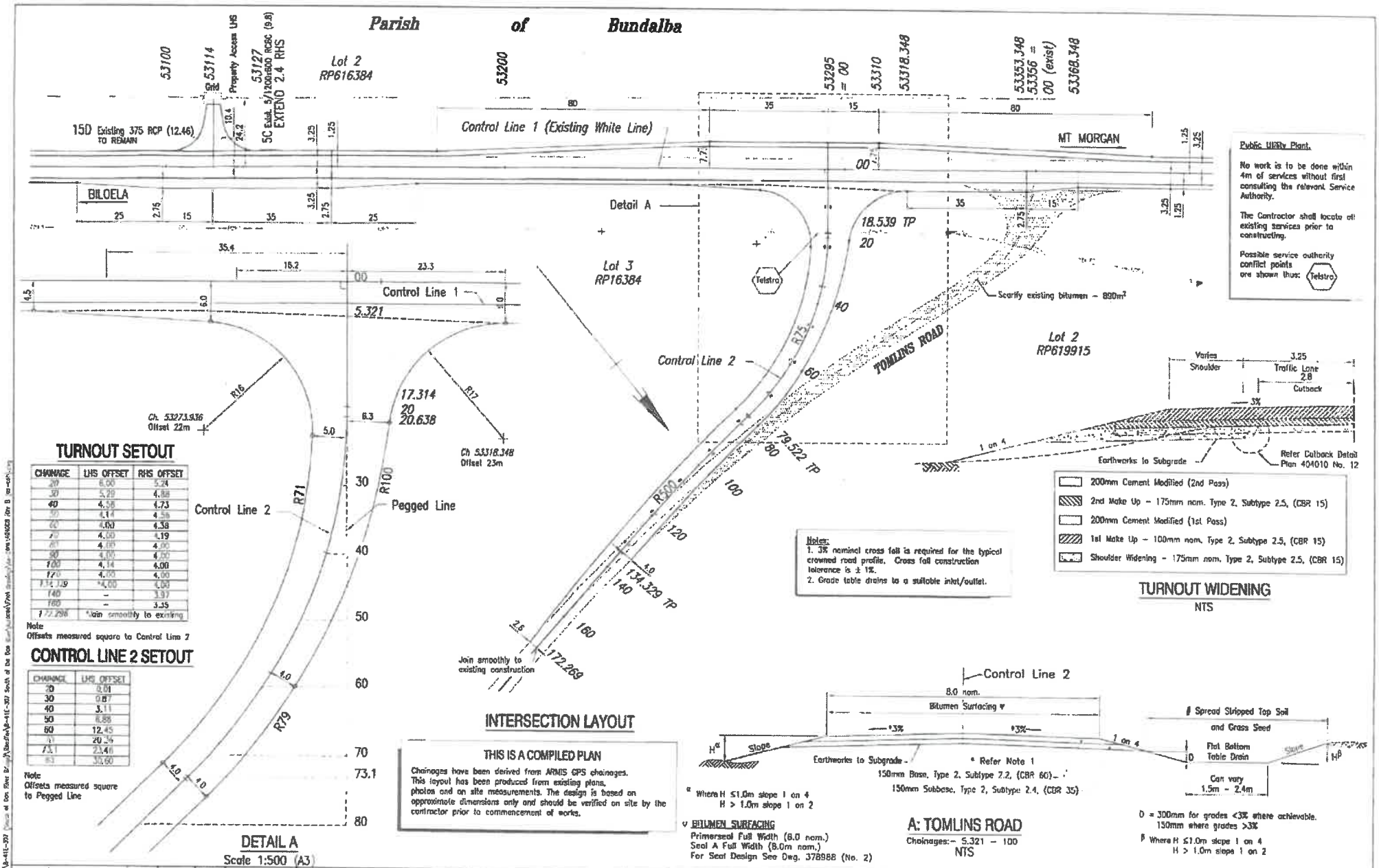
Drawing CDP · Checked RAC · Design CDP · Verified RAC · Design Review CMcT 1/08

Engineering Certification: Original Scheme Certified by Lawrie Martin 15/1/… RPEQ 4580

For scheme approval status refer Drg. No. 378987 (1 of 13)

Queensland Government — Department of Main Roads

Job No.	8/41E/307
Contract No.	CEND 792
Drawing No.	404007 B
Series Number	9 of 13



TURNOUT SETOUT

CHAINAGE	LHS OFFSET	RHS OFFSET
20	6.00	5.24
30	5.29	4.88
40	4.56	4.73
50	4.14	4.58
60	4.00	4.38
70	4.00	4.19
80	4.00	4.00
90	4.00	4.00
100	4.14	4.00
120	4.00	4.00
134.329	4.00	4.00
140	–	3.97
160	–	3.35
172.269	*Join smoothly to existing	

Note
Offsets measured square to Control Line 2

CONTROL LINE 2 SETOUT

CHAINAGE	LHS OFFSET
20	9.01
30	6.87
40	5.11
50	4.88
60	12.45
70	20.24
73.1	23.46
80	30.60

Note
Offsets measured square to Pegged Line

DETAIL A
Scale 1:500 (A3)

INTERSECTION LAYOUT

THIS IS A COMPILED PLAN

Chainages have been derived from ARMIS GPS chainages. This layout has been produced from existing plans, photos and on site measurements. The design is based on approximate dimensions only and should be verified on site by the contractor prior to commencement of works.

Notes:
1. 3% nominal cross fall is required for the typical crowned road profile. Cross fall construction tolerance is ± 1%.
2. Grade table drains to a suitable inlet/outlet.

TURNOUT WIDENING
NTS

α Where H ≤1.0m slope 1 on 4
H > 1.0m slope 1 on 2

v BITUMEN SURFACING
Primerseal Full Width (8.0 nom.)
Seal A Full Width (8.0 nom.)
For Seal Design See Dwg. 378988 (No. 2)

A: TOMLINS ROAD
Chainages:– 5.321 – 100
NTS

D = 300mm for grades <3% where achievable. 150mm where grades >3%

β Where H ≤1.0m slope 1 on 4
H > 1.0m slope 1 on 2

Public Utility Plant.

No work is to be done within 4m of services without first consulting the relevant Service Authority.

The Contractor shall locate all existing services prior to constructing.

Possible service authority conflict points are shown thus: Telstra

Revisions	Verified	Date
B As Constructed		
A Original Issue		

Associated Job Nos
Auxiliary Drg Nos 378987–378989, 404002–404011
Survey Data: Horiz. Datum, Azimuth, Datum, Height, Datum, Survey, Books

Scales: 0 5 10 15 20m
1:1000 (A3)

BANANA SHIRE
BURNETT HIGHWAY (BILOELA–MT.MORGAN)
CTL CHGE 53074 – 53408.1 (ARMIS GPS)

Reference Points	Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
	41E/4	11.32	14.37	0.61	41E/5

Through Chainage From 53.074 – 53.408

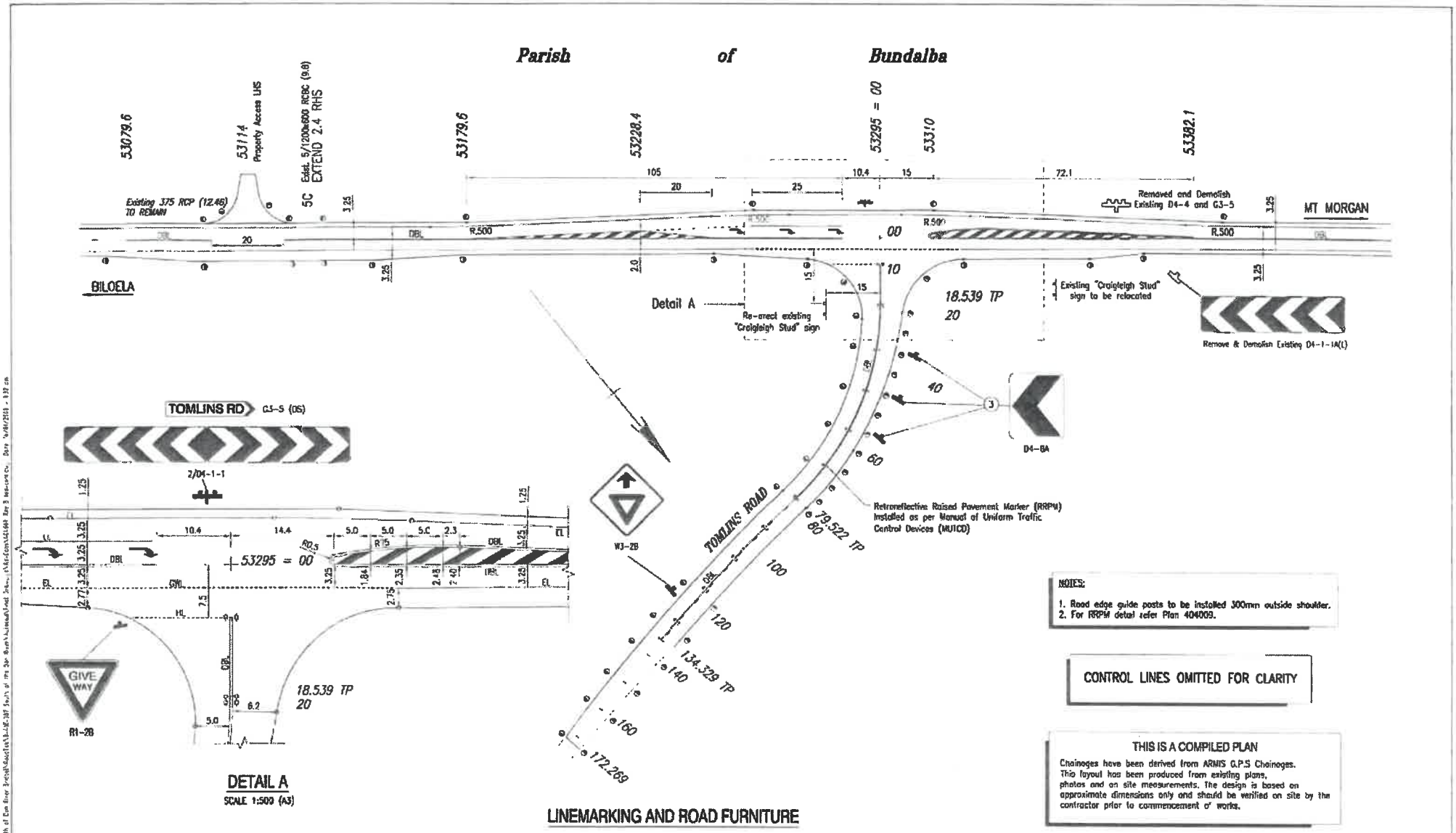
TOMLINS ROAD (NORTH) INTERSECTION DETAIL

Drawing	Design	Design Review	Engineering Certification
CDP	CDP	GMcT	Original Scheme Certified by Lowrie Martin 15/1/08
Checked RAC	Verified RAC	1/08	RPEQ 4580

For scheme approval status refer Drg. No. 378987 (1 of 13)

Queensland Government
Department of Main Roads

Job No.	8/41E/307
Contract No.	CEND 792
Drawing No.	404008 B
Series Number	10 of 13



Revisions	Verified	Date	Associated Job Nos
B As Constructed			Ancillary Drg Nos 378987-378989 404002-404011
A Original Issue			

Survey Data: Horiz. Datum; Azimuth Datum; Height Datum; Survey Books

Scales: 0 5 10 15 20m; 1:1000 (A3)

BANANA SHIRE
BURNETT HIGHWAY (BILOELA–MT.MORGAN)
CTL CHGE 53074 – 53408.1 (ARMIS GPS)

Reference Points				
Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP
41E/4	11.32	14.87	0.61	41E/5

Through Chainage From 53.0km – 53.6km

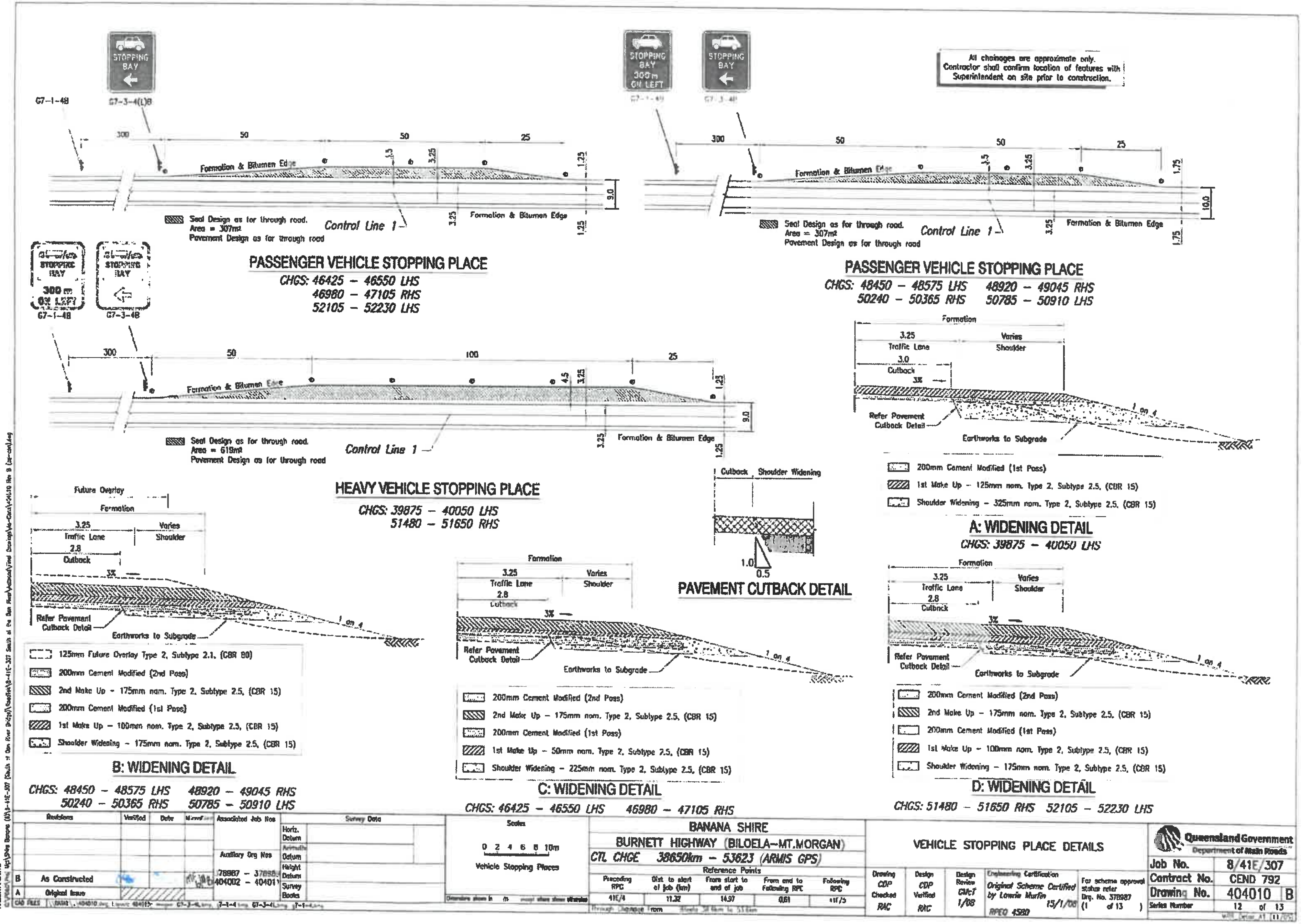
TOMLINS ROAD (NORTH)
INTERSECTION LINEMARKING, ROAD FURNITURE & DETAILS

Drawing	Design	Design Review	Engineering Certification
CDP Checked RAC	CDP Verified RAC	GMcT 1/08	Original Scheme Certified by Lawrie Murfin 15/1/08 RPEQ 4580

For scheme approval status refer Drg. No. 378987 (1 of 13)

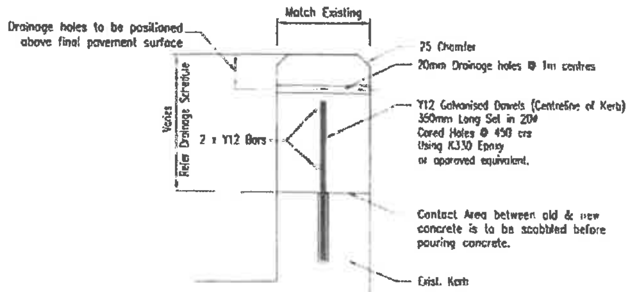
Queensland Government
Department of Main Roads

Job No.	8/41E/307
Contract No.	CEND 792
Drawing No.	404009 B
Sheet Number	11 of 13



STOPPING BAY
G7-1-4B
G7-3-4(L)B
STOPPING BAY 300 m ON LEFT
All chainages are approximate only. Contractor shall confirm location of features with Superintendent on site prior to construction.
Formation & Bitumen Edge
Control Line 1
Seal Design as for through road. Area = 307m²
Pavement Design as for through road
PASSENGER VEHICLE STOPPING PLACE
CHGS: 46425 - 46550 LHS
46980 - 47105 RHS
52105 - 52230 LHS
PASSENGER VEHICLE STOPPING PLACE
CHGS: 48450 - 48575 LHS 48920 - 49045 RHS
50240 - 50365 RHS 50785 - 50910 LHS
G7-1-4B
G7-3-4B
Seal Design as for through road. Area = 619m²
Pavement Design as for through road
HEAVY VEHICLE STOPPING PLACE
CHGS: 39875 - 40050 LHS
51480 - 51650 RHS
Future Overlay
Formation
Traffic Lane
Shoulder
Varies
Cutback
Refer Pavement Cutback Detail
Earthworks to Subgrade
1 on 4
125mm Future Overlay Type 2, Subtype 2.1, (CBR 80)
200mm Cement Modified (2nd Pass)
2nd Make Up - 175mm nom. Type 2, Subtype 2.5, (CBR 15)
200mm Cement Modified (1st Pass)
1st Make Up - 100mm nom. Type 2, Subtype 2.5, (CBR 15)
Shoulder Widening - 175mm nom. Type 2, Subtype 2.5, (CBR 15)
B: WIDENING DETAIL
CHGS: 48450 - 48575 LHS 48920 - 49045 RHS
50240 - 50365 RHS 50785 - 50910 LHS
200mm Cement Modified (2nd Pass)
2nd Make Up - 175mm nom. Type 2, Subtype 2.5, (CBR 15)
200mm Cement Modified (1st Pass)
1st Make Up - 50mm nom. Type 2, Subtype 2.5, (CBR 15)
Shoulder Widening - 225mm nom. Type 2, Subtype 2.5, (CBR 15)
C: WIDENING DETAIL
CHGS: 46425 - 46550 LHS 46980 - 47105 RHS
Cutback Shoulder Widening
PAVEMENT CUTBACK DETAIL
200mm Cement Modified (1st Pass)
1st Make Up - 125mm nom. Type 2, Subtype 2.5, (CBR 15)
Shoulder Widening - 325mm nom. Type 2, Subtype 2.5, (CBR 15)
A: WIDENING DETAIL
CHGS: 39875 - 40050 LHS
200mm Cement Modified (2nd Pass)
2nd Make Up - 175mm nom. Type 2, Subtype 2.5, (CBR 15)
200mm Cement Modified (1st Pass)
1st Make Up - 100mm nom. Type 2, Subtype 2.5, (CBR 15)
Shoulder Widening - 175mm nom. Type 2, Subtype 2.5, (CBR 15)
D: WIDENING DETAIL
CHGS: 51480 - 51650 RHS 52105 - 52230 LHS
Revisions
B As Constructed
A Original Issue
Scales 0 2 4 6 8 10m
Vehicle Stopping Places
BANANA SHIRE
BURNETT HIGHWAY (BILOELA-MT.MORGAN)
CTL CHGE 38650km - 53623 (ARMIS GPS)
VEHICLE STOPPING PLACE DETAILS
Queensland Government
Department of Main Roads
Job No. 8/41E/307
Contract No. CEND 792
Drawing No. 404010 B
Series Number 12 of 13

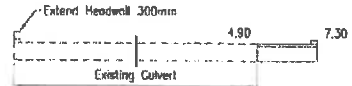
Chainage (ARMIS)	Field Number	Box Culvert (Barrel Length)	Pipe	Work Required	Wingwall Un-Reinforced m3	Wingwall Reinforced m3	Endwall Reinforced m3	Endwall Reinforced m3	Base Slab m3	Apron m3	Cut Off Walls m3
38 670		2/900 x 300 (11.1)		To Remain							
38 800	1A	1200 x 300 (11.1)		RHS headw all extend 300mm + Extend 2.4m LHS			0.20	0.20	0.70	0.10	0.10
Opp. 38 800		900 x 300 (9.8)		Remove and Demolish							
39 179	1B	2/1200 x 300 (9.9)		Raise headw all RHS 300mm			0.30				
39 808	1C	2/1200 x 600 (9.8)		New headw all RHS				0.50			
40 110	1D	4/2100 x 1200 RCC (9.8)		To Remain							
40 242	1E	1200 x 300 (11.0)		Rip Rap and apron LHS + New headw all RHS				0.20		0.20	
40 300	1F	1200 x 300 (11.2)		Rip Rap and apron LHS + New headw all RHS				0.20		0.20	
40 390	1G	1200 x 300 (11.2)		New headw all LHS				0.20			
40 508	2A	2/1200 x 450 (9.8)		New headw all LHS & RHS				0.60			
40 563	2B	1200 x 450 (9.8)		To Remain							
40 882	2C		4/1200 (10.3)	New wingwalls LHS	2.90	2.50					
41 153	2D		2/600 (11.0)	To Remain							
41 366	2E	2/1200 x 450 (11.0)		To Remain							
41 733	2F	2/1200 x 450 (10.[illegible])		To Remain							
41 957	2G	2/1200 x 600 (11.1)		New Headw all RHS				3.50			
42 136	2H	4/2100 x 2100 RCC (10.4)		To Remain							
42 490	2I		450 (11.2)	To Remain							
43 489	2J	3/2100 x 2100 RCC (9.0)		Asphalt Corrector - 8.5m3							
43 552	2K		3/900 (10.4)	To Remain							
44 048	2L		450 (10.8)	To Remain							
Opp. 44 284			600 (12.2)	Remove and Demolish							
44 688	2M	9/2100 x 2100 (9.0)		Asphalt Corrector - 3m3, Rip Rap - 20m3							
45 391	3A	1200 x 450 (9.8)		To Remain							
45 800	3B		900 (11.6)	Raise headw all 500mm LHS + Raise headw all 300mm RHS				0.25			
46 237	3C		2 x 600 (11.0)	Repair Headw all RHS			0.90				
46 625	3D	2/1200 x 600 (9.9)		New headw all LHS and Repair Headw all RHS			0.30	0.30			
46 734	3E	2/1200 x 600 (9.8)		New headw all LHS & RHS				1.10			
46 901	3F	3/1200 x 900 (11.2)		New headw all RHS			0.45				
47 208	3G	3/1200 x 600 (11.4)		New headw all LHS & RHS				1.20			
47 692	3H	1200 x 300 (10.1)		New headw all LHS repair RHS				0.20			
47 853	3I	2/1200 x 450 (10.1)		New headw all LHS & RHS (caps in culvert outer wheel path (where on))				0.60			
48 380	4A	900 x 450 (10.0)		RHS repair			0.15				
48 608	4B	2/1200 x 300 (10.0)		Raise headwall 200mm LHS + New headwall and raise 200mm RHS				0.55			
48 970	4C	2/1200 x 600 (11.2)		New headw all LHS				1.00			
49 211	4D	1200 x 450 (10.1)		To Remain							
49 321	4E	3/1200 x 600 (12.4)		Repairs LHS & RHS			0.40				
49 704	4F	900 x 300 (10.0)		Block ends				0.60			
50 000	4G	900 x 300 (10.0)		Repairs LHS & RHS			0.15				
50 111	4H	900 x 300 (10.1)		New headw all RHS				0.20			
50 220	4I	900 x 450 (10.2)		New headw all LHS & RHS				0.70			
50 580	4J	2/1200 x 450 (9.8)		New headw all LHS				0.40			
51 037	4K	900 x 300 (9.7)		To Remain							
52 308	5A	3/1200 x 300 (10.2)		New headw all LHS & RHS				0.60			
52 676	5B	3/1200 x 300 (9.9)		New headw all LHS & RHS				0.60			
52 772	5C	2/1200 x 300 (9.8)		New headw all LHS & RHS				0.60			
Opp. 53.114	5D		375 (12.48)	To Remain							
53 127	5C	5/1200 x 600 (8.8)		Raise Headw alls 300mm LHS & RHS +Extend 2.4m RHS		0.70	0.50	0.70	3.40	1.10	0.60
				TOTAL	2.90	3.20	3.35	12.40	4.10	1.60	0.70



SECTION THROUGH KERB

DETAIL OF KERB EXTENSIONS

Refer Drainage Schedule for Details
(Dimensions in millimetres)



5C 5/1200x600 RCBC (5/2.4) (12.20 overall length)
Base Slab Conc. 3.4m³
Endwalls (R)Conc. 0.7m³
Reinforced Conc Apron (Type 3) Conc. 1.1m³ C/O Wall Conc. 0.6m³
Standard Drawings - 1174 , 1359

1A 1200x300 RCBC (1/2.4) (13.50 overall length)
Base Slab Conc. 0.7m³
Endwalls (R)Conc. 0.2m³
Reinforced Conc Apron (Type 3) Conc. 0.1m³ C/O Wall Conc. 0.1m³
Standard Drawings - 1174 , 1359

CULVERT INVERT HEIGHT NOTE
Heights to be determined on site by Superintendent. Ensure a positive flow is maintained (culvert to be placed at 1% min. slope).

Revisions	Verified	Date	Microfilm	Associated Job Nos	Survey Data	Scale		
B As Constructed				378987 - 37898[illegible]	Horiz. Datum	NOT TO SCALE		
A Original Issue				404002 - 40401[illegible]	Azimuth Datum			
				Auxiliary Drg Nos	Height Datum			
					Survey Books			

BANANA SHIRE
BURNETT HIGHWAY (BILOELA–MT.MORGAN)
CTL CHGE 38650 – 53600 (ARMIS GPS)

Preceding RPC	Dist. to start of job (km)	From start to end of job	From end to Following RPC	Following RPC
41E/4	11.32	14.97	0.81	41E/3

DRAINAGE DETAILS

Drawing CDP	Design CDP	Design Review GMcT 1/08	Engineering Certification: Original Scheme Certified by Lonnie Martin 15/1/08 RPEQ 4580	For scheme approval status refer Drg. No. 378987 (1 of 13)
Checked RAC	Verified RAC			

Queensland Government
Department of Main Roads

Job No.	8/41E/307
Contract No.	CEND 792
Drawing No.	404011 B
Series Number	13 of 13

NORTHERN CONSULTING engineers

APPENDIX B

Northern Consulting Engineers – Traffic and Calculation Spreadsheets

Northern Consulting Engineers Project Number	RPS0007
Project Description	Smoky Creek Solar Farm
Construction Commencement Year	2019
Commencement of Use Year	2019
Projected 10 year design horizon	2029
Figure 2.27 (Left Approach)	Biloela
Figure 2.27 (Right Approach)	Mt Morgan
Figure 2.27 (Bottom Approach)	Development Access
Peak Hour Factor (12% Urban / 16% Rural)	16%
Existing Peak Hour Traffic on Development Access Rd (veh/hr)	10

Transport Component	CONSTRUCTION MONTH									TOTAL
	1	2	3	4	5	6	7	8		
PV Panels		463	463	463	463	463	463			2778
Power Conversion Units			63	63	63	63				250
Supports and fixings		834	834	834	834					3334
Switchgear				2						2
Power Transformer				2						2
Balance of system	83	83	83	83	83	83	83	83		667
Construction Labour Traffic (Light)	750	750	750	750	750	750	750	750		6000
Gravel roads (Internal)	372	372	372	372	372	372				2231
TOTAL	1205	2502	2564	2568	2564	1731	1296	833		15264
Assumed working days per month	26									
Daily Movements	46	96	99	99	99	67	50	32	Max	99
Assumed working hours per day	8									
Peak Movements per hour	17	23	23	23	23	19	17	15	Max	23

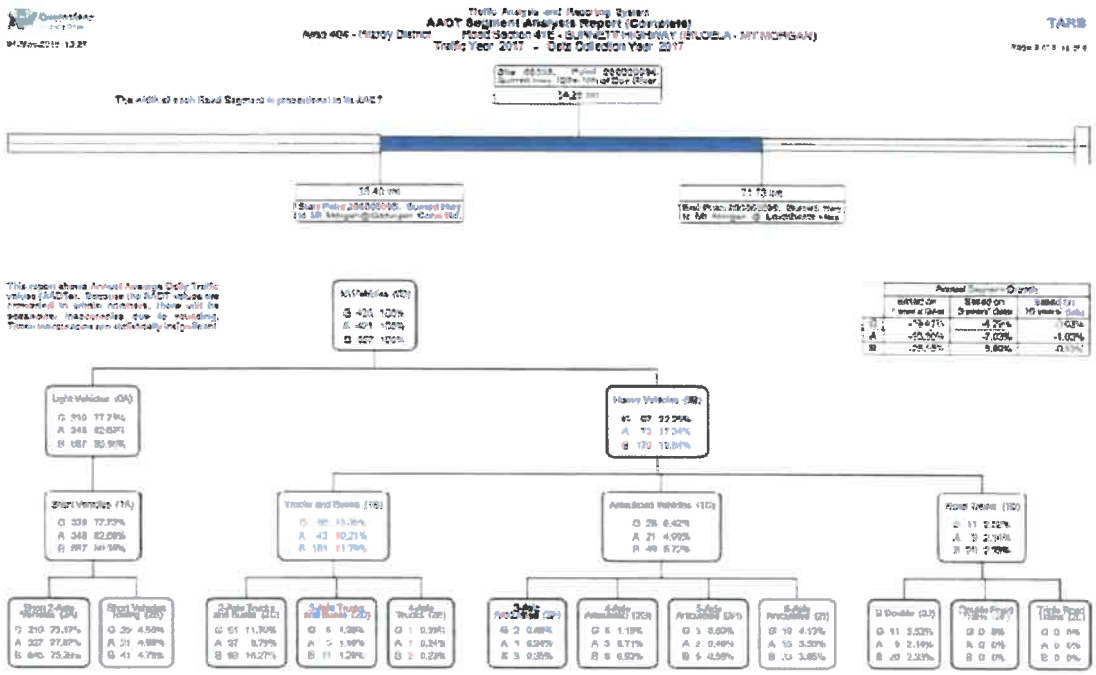
Solar Array System		
Expected MWp	500	
	MWp per Container	Movements
PV Panels	0.18	2778
Power Conversion Units	2.00	250
Supports and fixings	0.15	3334
Switchgear	250.00	2
Power Transformer	250.00	2
Balance of System	0.75	667
Construction Labour Traffic	0.08	6000
Gravel_58m3/MWp @13m3/HV	58	2231
Total Heavy Vehicle Movements		9264

Construction Labour		
Site Labour (20-40 trips 500MWp)	30	15000
Mini Bus Capacity		15
Mini Bus Activity		1000
Additional Daily LV (Misc	10	5000
Total Light Vehicle Movements		6000

Operations and Maintenance Traffic Movements	Trip / MWp / Wk	Trips per week	Trips per year		
			Year 1	Year 2	Year N
Electricians	0.075	38	1950	1463	975
Water Trucks	0.3	3	150	150	150
Labour for Module Cleaning	0.9	9	450	450	450
Labour for General Maintenance	0.52	5	260	325	390
Total Annual Movements			2810	2388	1965
Average Weekly Movements			54	46	38
Average Daily movement			8	7	5

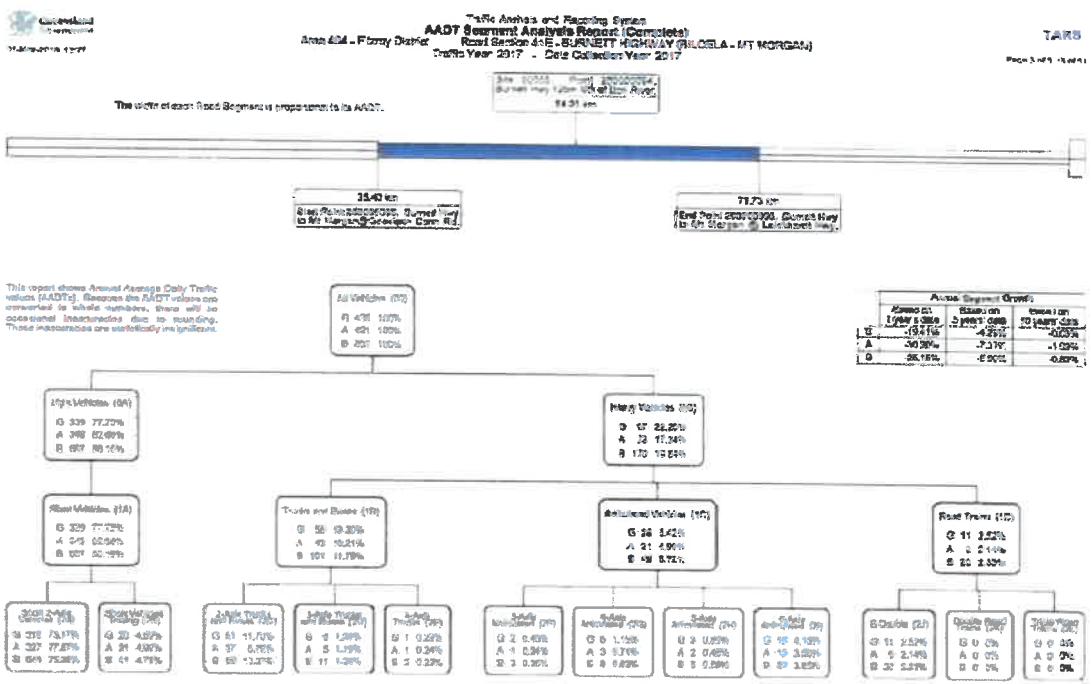
Description of entity		Road 41E
Linear Growth Equation A = rt+P		
Year - Traffic Survey Data Collected		2017
Year - Commencement of Use		2019
Year - Projected Design Horizon		2019
Projected Growth Rate (percentage)		0.00%
AADT (G) [Traffic Flow in Gazettal Direction]		436
AADT (A) [Traffic Flow Against Gazettal Direction]		421
AADT (B) [Traffic Flow Both Directions]		857
(G)	Future value including growth rate	436.0
(A)	Future value including growth rate	421.0
(B)	Future value including growth rate	857.0
P	Initial value	(G), (A) or (B) above
r	Annual growth rate (decimal)	0.00%

Description of entity		Road 41E
Continuos Compound Growth Equation $A = P.e^{Art}$		
Year - Traffic Survey Data Collected		2017
Year - Commencement of Use		2019
Year - Projected Design Horizon		2019
Projected Growth Rate (percentage)		0.00%
AADT (G) [Traffic Flow in Gazettal Direction]		436
AADT (A) [Traffic Flow Against Gazettal Direction]		421
AADT (B) [Traffic Flow Both Directions]		857
(G)	Future value including growth rate	436.0
(A)	Future value including growth rate	421.0
(B)	Future value including growth rate	857.0
P	Initial value	(G), (A) or (B) above
r	Annual growth rate (decimal)	0.0000
e	Continous Growth	exp
t	Number of year projected.	2.0



Description of entity		Road 41E
Linear Growth Equation A = rt+P		
Year - Traffic Survey Data Collected		2017
Year - Commencement of Use		2019
Year - Projected Design Horizon		2029
Projected Growth Rate (percentage)		0.00%
AADT (G) [Traffic Flow in Gazettal Direction]		436
AADT (A) [Traffic Flow Against Gazettal Direction]		421
AADT (B) [Traffic Flow Both Directions]		857
(G)	Future value including growth rate	436.0
(A)	Future value including growth rate	421.0
(B)	Future value including growth rate	857.0
P	Initial value	(G), (A) or (B) above
r	Annual growth rate (decimal)	0.00%

Description of entity		Road 41E
Continuos Compound Growth Equation $A = P.e^{rt}$		
Year - Traffic Survey Data Collected		2017
Year - Commencement of Use		2019
Year - Projected Design Horizon		2029
Projected Growth Rate (percentage)		0.00%
AADT (G) [Traffic Flow in Gazettal Direction]		436
AADT (A) [Traffic Flow Against Gazettal Direction]		421
AADT (B) [Traffic Flow Both Directions]		857
(G)	Future value including growth rate	436.0
(A)	Future value including growth rate	421.0
(B)	Future value including growth rate	857.0
P	Initial value	(G), (A) or (B) above
r	Annual growth rate (decimal)	0.0000
e	Continous Growth	exp
t	Number of year projected.	12.0



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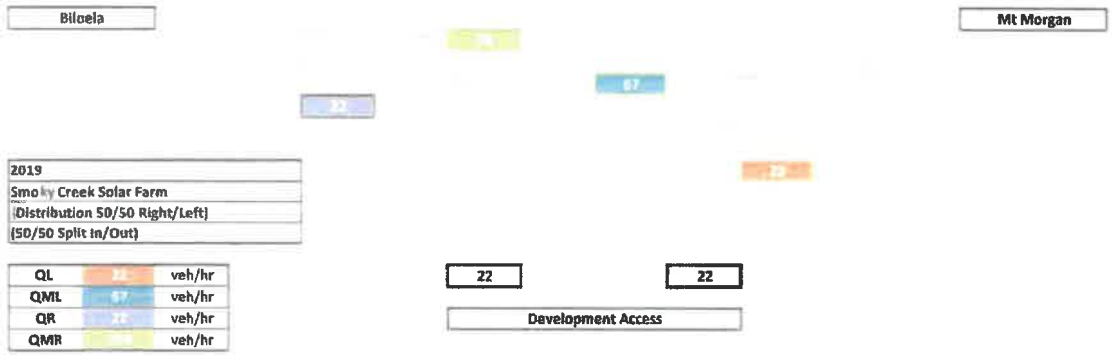
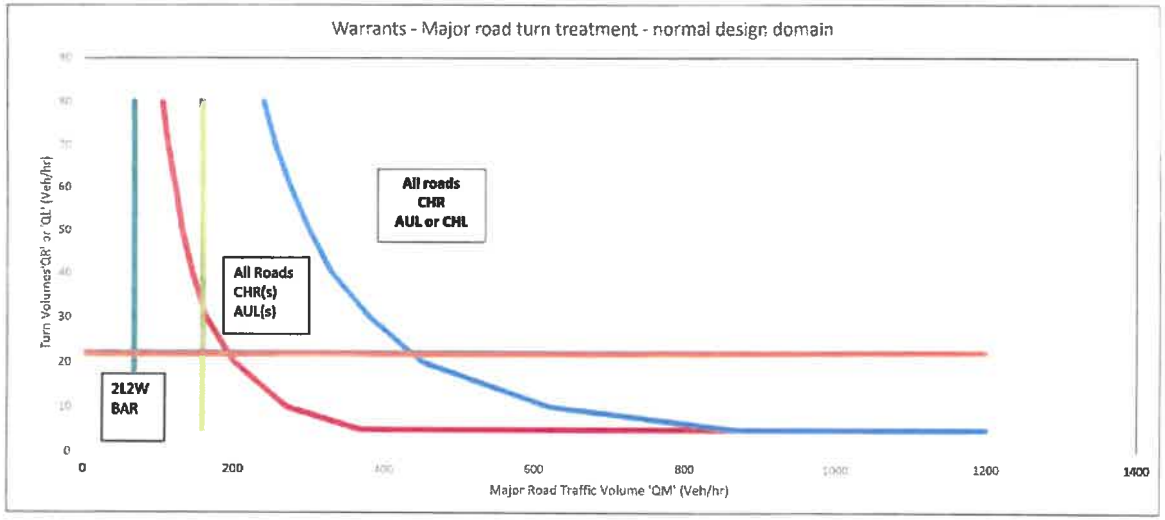

Biloela
Mt Morgan
2019
Smoky Creek Solar Farm
(Distribution 50/50 Right/Left)
(50/50 Split In/Out)
QL veh/hr
QML veh/hr
QR veh/hr
QMR veh/hr
22
22
Development Access


Warrants - Major road turn treatment - normal design domain
Turn Volumes 'QR' or 'QL' (Veh/hr)
Major Road Traffic Volume 'QM' (Veh/hr)
All roads
CHR
AUL or CHL
All Roads
CHR(s)
AUL(s)
2L2W
BAR
0
20
30
50
60
200
500
800
1200
1400

Bilpela

Q_{T1}

Q_R

33

Mt Morgan

2019
Smoky Creek Solar Farm
(Distribution 50/50 Right/Left)
(50/50 Split In/Out)

QL	10	veh/hr
QML	33	veh/hr
QR	33	veh/hr
QMR	147	veh/hr

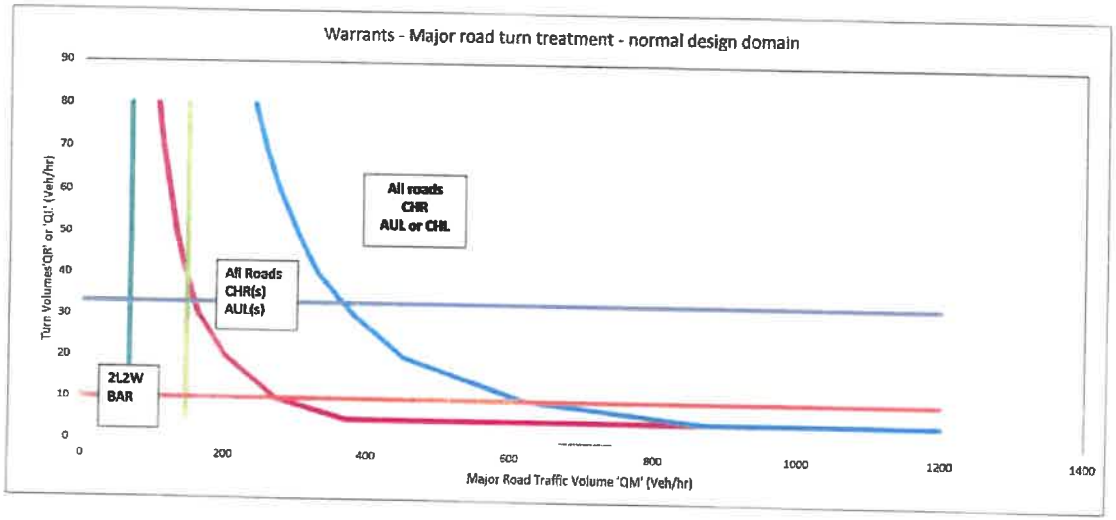
33

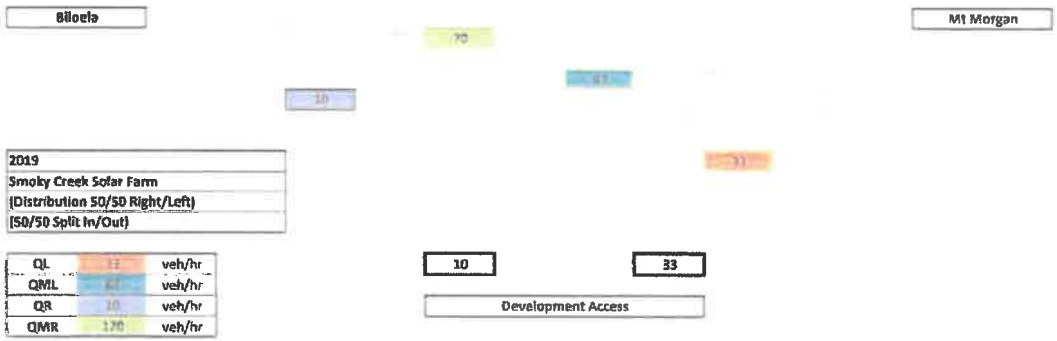
10

Development Access

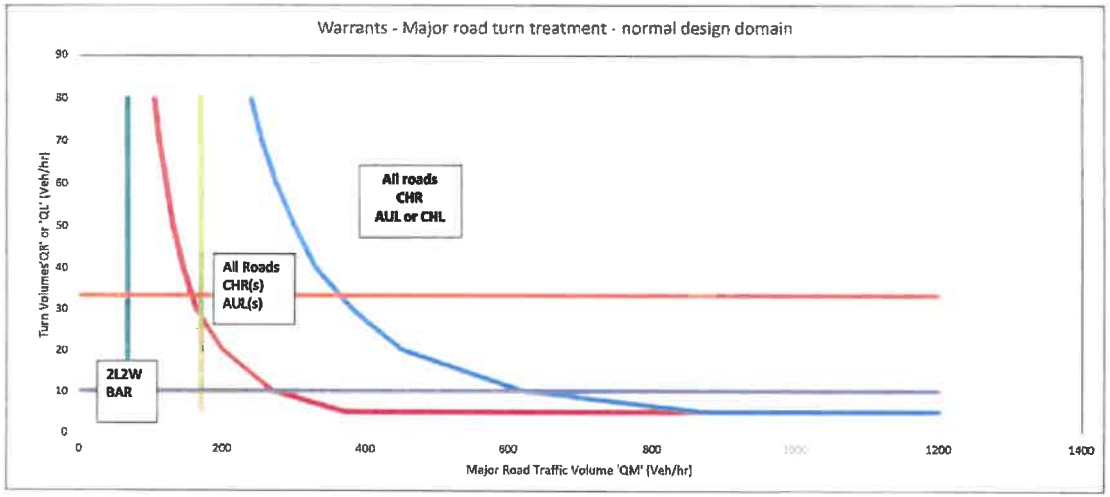
ad type

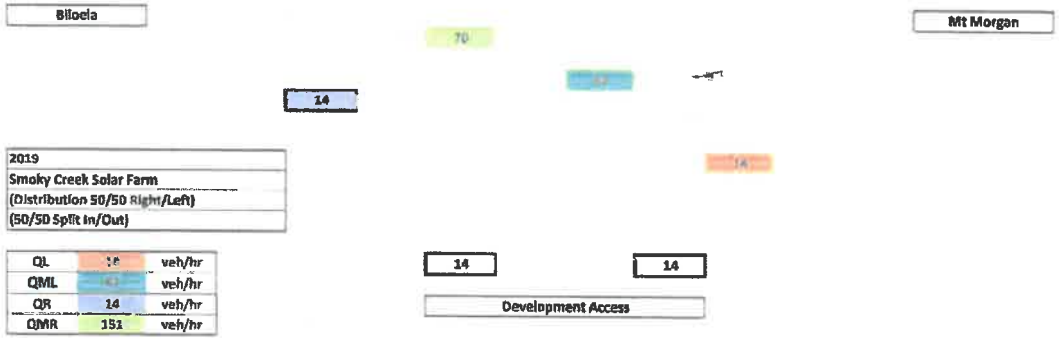
Two-lane



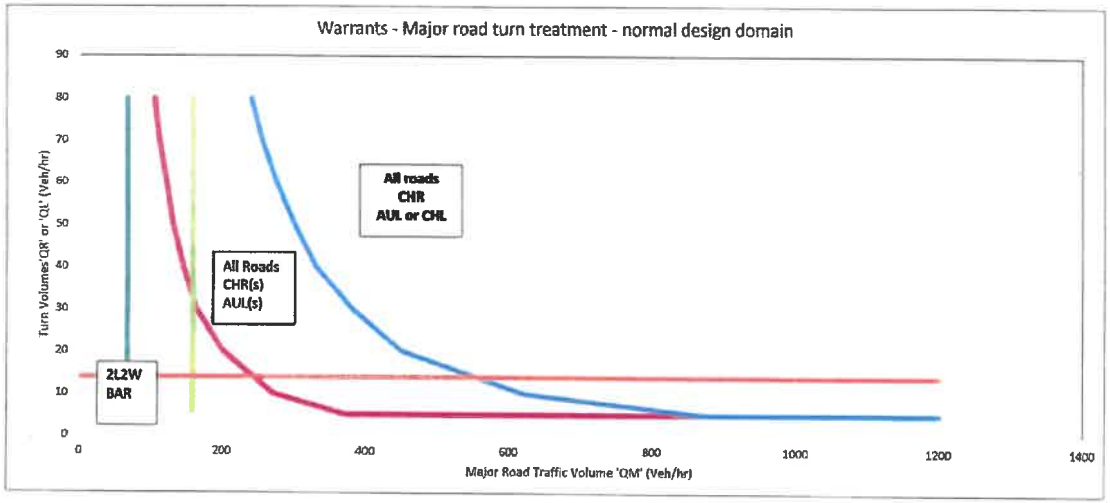

Biloela
Mt Morgan
2019
Smoky Creek Solar Farm
(Distribution 50/50 Right/Left)
(50/50 Split In/Out)
QL veh/hr
QML veh/hr
QR 10 veh/hr
QMR 170 veh/hr
10
33
Development Access

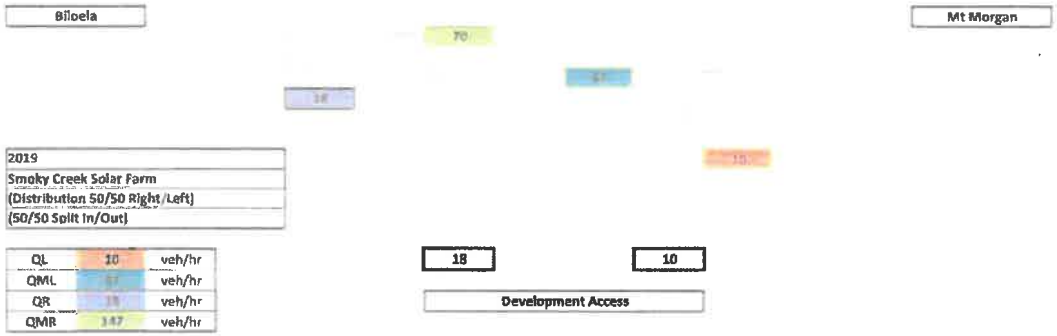
e

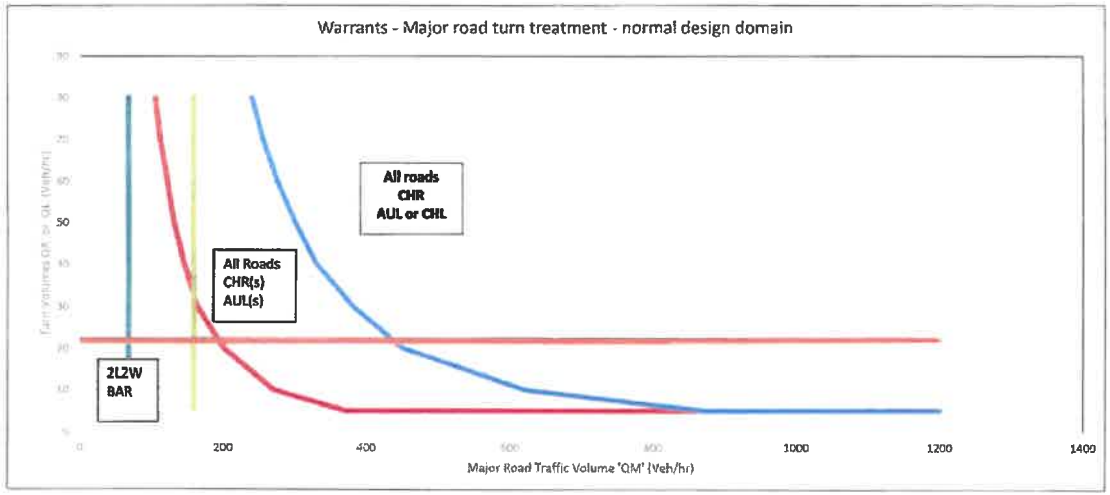

Warrants - Major road turn treatment - normal design domain
Turn Volumes 'QR' or 'QL' (Veh/hr)
Major Road Traffic Volume 'QM' (Veh/hr)
All roads
CHR
AUL or CHL
All Roads
CHR(s)
AUL(s)
2L2W
BAR
0
10
20
30
40
50
60
70
80
90
200
400
600
800
1000
1200
1400

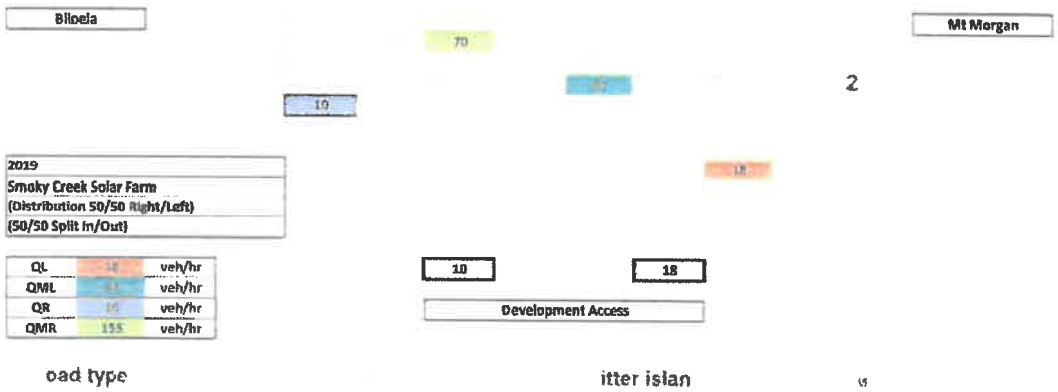

Biloela
Mt Morgan
70
14
2019
Smoky Creek Solar Farm
(Distribution 50/50 Right/Left)
(50/50 Split In/Out)
QL veh/hr
QML veh/hr
QR 14 veh/hr
QMR 151 veh/hr
14
14
Development Access

S ts ar


Warrants - Major road turn treatment - normal design domain
Turn Volumes 'QR' or 'QL' (Veh/hr)
Major Road Traffic Volume 'QM' (Veh/hr)
All roads CHR AUL or CHL
All Roads CHR(s) AUL(s)
2L2W BAR
0
10
20
30
40
50
60
70
80
90
0
200
400
600
800
1000
1200
1400


Bilbela
Mt Morgan
2019
Smoky Creek Solar Farm
(Distribution 50/50 Right/Left)
(50/50 Split In/Out)
QL 10 veh/hr
QML 67 veh/hr
QR 18 veh/hr
QMR 147 veh/hr
18
10
Development Access


Warrants - Major road turn treatment - normal design domain
All roads
CHR
AUL or CHL
All Roads
CHR(s)
AUL(s)
2L2W
BAR
50
200
400
1000
1200
1400
Major Road Traffic Volume 'QM' (Veh/hr)


Biloela
Mt Morgan
70
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2019
Smoky Creek Solar Farm
(Distribution 50/50 Right/Left)
(50/50 Split In/Out)
QL veh/hr
QML veh/hr
QR veh/hr
QMR 155 veh/hr
10
18
Development Access
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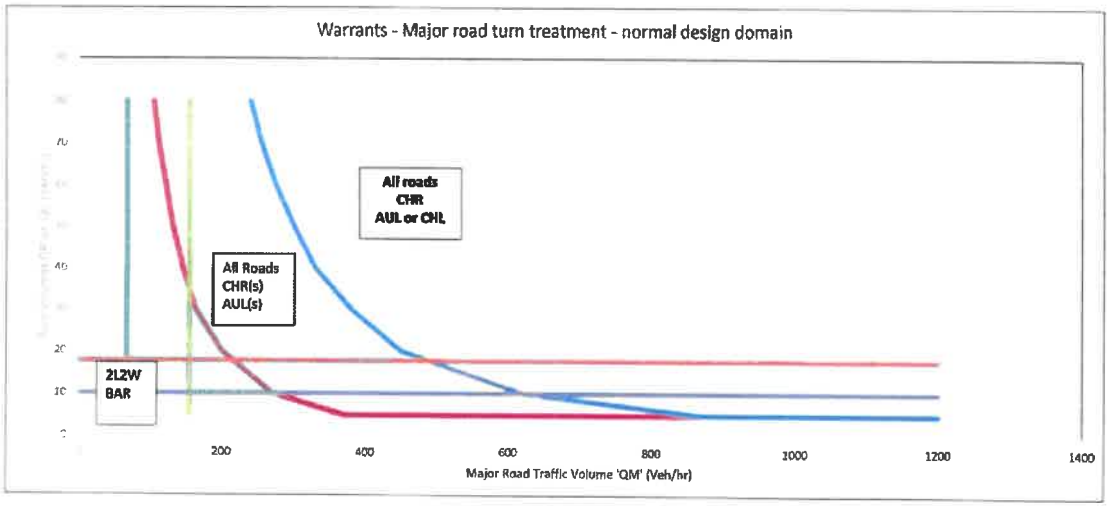
Left


Warrants - Major road turn treatment - normal design domain
All roads
CHR
AUL or CHL
All Roads
CHR(s)
AUL(s)
2L2W
BAR
200
400
600
800
1000
1200
1400
Major Road Traffic Volume 'QM' (Veh/hr)

Reference Documents
AGRD04-17
AGRD04A-17

NORTHERN CONSULTING engineers

Right Turn Treatments (Rural/Urban)

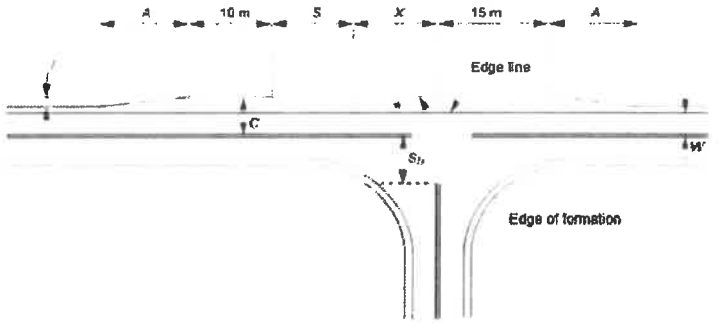
Operating/Posted Speed	100 km/h	Storage Length (S)	35 m
Design Speed (V)	110 km/h	Roadway Widening (F)	3.5 m
Through Lane Width (W)	3.5 m	Decal Rate	2.5 m/s
Turning Lane Width (Wt)	3.5 m		Stop Condition

BAR Treatment

A	C	X
54	7	10-15m

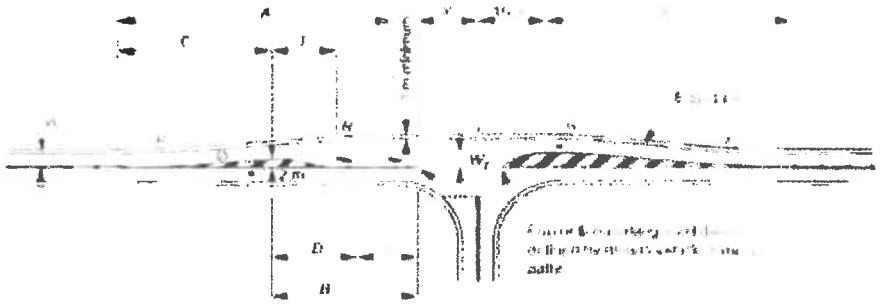
Straight (Type 1 & 2 road train)

* It is preferred that the widened shoulder is sealed, unless the shoulder can be maintained with a sound and even surface



CHR(S) Treatment

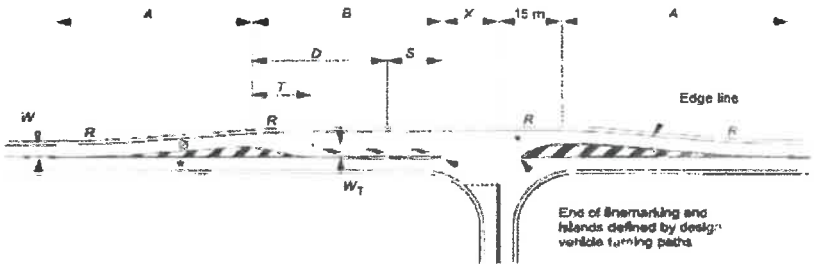
A	B	D	E	R	T	X
95	120	85	55	500	36	10-15m



Notes:
Ø - double barrier line not to be used this side of the island
** - Islands are to comprise linemarking only, i.e no raised or depressed medians. Diagonal rows of RRPMs within the painted islands should be used to improve the delineation of diagonal pavement marking*

CHR Treatment

A	B	D	R	T	X
110	220	185	500	36	10-15m



Notes:
An alternative to the double white line on the offside edge of the right-turn slot is a 1.0 m painted median. The 1.0 m median is particularly useful when the major road is on a tight horizontal curve and oncoming vehicles track across the centreline. Provision of this median will require the dimension 'A' to be increased.
A raised concrete median on the minor road may be used with this treatment to minimise 'corner cutting' particularly for higher turning volumes.

Reference Documents
AGRD04-17
AGRD04A-17

NORTHERN CONSULTING engineers

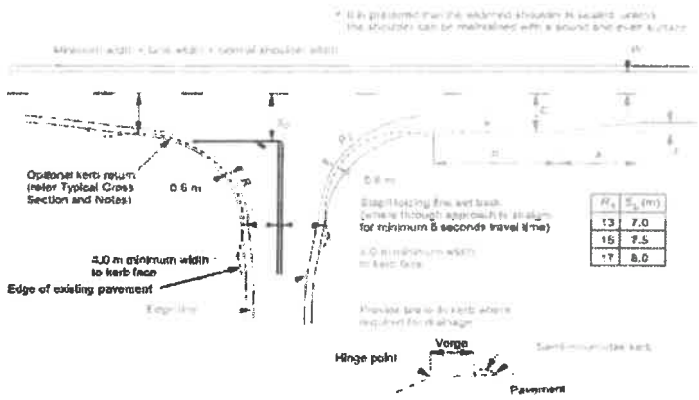
Left Turn Treatments (Rural)

Operating/Posted Speed	100 km/h	Turning Lane Width (Wt)	3.5 m
Design Speed (V)	110 km/h	Roadway Widening (F)	3.5 m
Through Lane Width (W)	3.5 m	Decel rate	2.5 m/s
		Stoping condition/Turning Speed	20 m/s

BAL Treatment

A	C	P
54	6	35

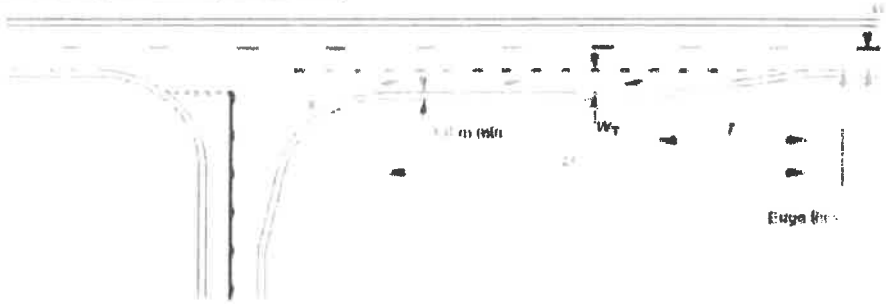
Straight



Typical cross-section – optional kerb return

AUL(S) Treatment

D	T	Ld
85	36	72

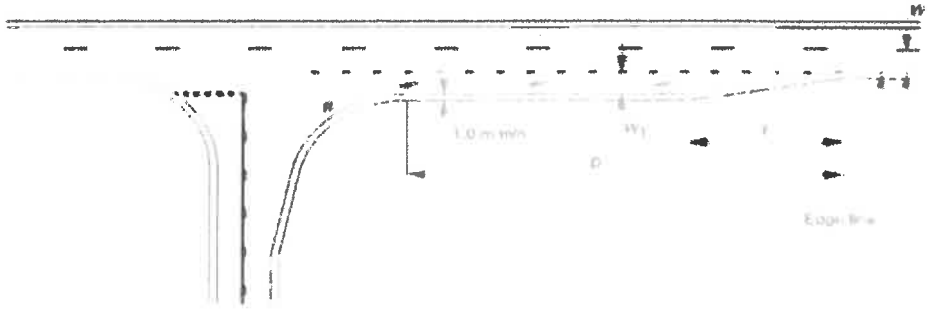


Notes.
- *# For setting out details of the left-turn geometry, use vehicle turning path templates and/or Table 8.2.*
- *Approaches to left-turn slip lanes can create hazardous situations between cyclists and left-turning motor vehicles. Treatments to reduce the number of potential conflicts at left-turn slip lanes are given in AGRD Part 4 (Austroads 2017)*

AUL Treatment

D	T	Ld
180	36	72

Calculated deceleration length (D>Ld)
Adopt Diverge Length (D<Ld)



Notes:
- *# For setting out details of the left-turn geometry, use vehicle turning path software or templates*

NORTHERN CONSULTING engineers

APPENDIX C

Northern Consulting Engineers – Preliminary Design Stage Safety Audit

CHECKLIST 2: PRELIMINARY DESIGN STAGE AUDIT

Issue	Yes	No	Comment
2.1 General topics			
2.1.1 Changes since previous audit			
Do the conditions for which the scheme was originally designed still apply? (for example, no changes to the surrounding network, area activities or traffic mix)	X		Lawful transport corridors to and from allotments.
Has the general form of the project design remained unchanged since previous audit (if any)?			N/A
2.1.2 Drainage			
Will the scheme drain adequately?			Assumed that the scheme will be designed to mimic existing conditions
Has the possibility of surface flooding been adequately addressed, including overflow from surrounding or intersecting drains and water courses?	X		Will form part of the development conditions
2.1.3 Climatic conditions			
Has consideration been given to weather records or local experience that may indicate a particular problem? (for example, snow, ice, wind, fog)			N/A
2.1.4 Landscaping			
If any landscaping proposals are available, are they compatible with safety requirements? (for example, sight lines and hazards in clear zones)		X	
2.1.5 Services			
Does the design adequately deal with buried and overhead services? (especially in regard to overhead clearances, etc)			
Has the location of fixed objects or furniture associated with services been checked, including the position of poles?			
2.1.6 Access to property and developments			
Can all accesses be used safely? (entry and exit/merging)	X		Introduction of a CHR(s) / BAL suitable for 19m Articulated vehciles within local government and suiable development access driveways, will ensure safe entry and exit movements.
Is the design free of any downstream or upstream effects from points of access, particularly near intersections?			Development Access off local roads to be assessed at OPW Phase.
Have rest areas and truck parking accesses been checked for adequate sight distance, etc.?			N/A
2.1.7 Adjacent developments			
Does the design handle accesses to major adjacent generators of traffic and developments safely?	X		Burnett Highway and Tomlins Road CHR/AUL intersection suitable to composition and volume of development generated traffic.

Issue	Yes	No	Comment
Is the driver's perception of the road ahead free of misleading effects of any lighting or traffic signals on an adjacent road?	X		
2.1.8 Emergency vehicles and access			
Has provision been made for safe access and movements by emergency vehicles?	X		
Does the design and positioning of medians and vehicle barriers allow emergency vehicles to stop and turn without unnecessarily disrupting traffic?	X		
2.1.9 Future widening and/or realignments			

If the scheme is only a stage towards a wider or dual carriageway is the design adequate to impart this message to drivers? (is the reliance on signs minimal/appropriate, rather than excessive?)		X	
Is the transition between single and dual carriageway (either way) handled safely?	X		
2.1.10 Staging of the scheme			
If the scheme is to be staged or constructed at different times: are the construction plans and program arranged to ensure maximum safety? do the construction plans and program include specific safety measures, signing; adequate transitional geometry, etc. for any temporary arrangements?		X	
2.1.11 Staging of the works			
If the construction is to be split into several contracts, are they arranged safely?		X	
2.1.12 Maintenance			
Can maintenance vehicles be safely located?	X		
2.2 Design issues (general)			
2.2.1 Design standards			
Is the design speed and speed limit appropriate? (for example, consider the terrain, function of the road)		X	Dodsons Road requires improved carriageway width to allow passing of construction traffic.
Has the appropriate design vehicle and check vehicle been used?	X		Class 9 (19m Semi-trailer)

Issue	Yes	No	Comment
2.2.2 Typical cross-sections			
Are lane widths, shoulders, medians and other crosssection features adequate for the function of the road?		X	**Tomlins Rd is considered to be satisfactory in relation to the predicted traffic volumes, however the pavement profile is yet to be confirmed. Dodsons Road is considered to be inadequate for the volume and composition of traffic generated from the development and is recommended to be upraded.**
Is the width of traffic lanes and carriageway suitable in relation to: alignment? traffic volume? vehicle dimensions? the speed environment? combinations of speed and traffic volume?		X	**Alignment = Yes Traffic Volume = No Vehciles Domensions = No Speed Environment = N/A Drivers will drive to conditons Speed and Volume = No**
Are overtaking/climbing lanes provided if needed?		X	
Have adequate clear zones been achieved?	X		**Clear zones in accordance with ARRB Unsealed roads manual are recommended.**
2.2.3 The effect of cross-sectional variation			
Is the design free of undesirable variations in cross-section design?	X		
Are crossfalls safe? (particularly where sections of existing highway have been used or there have been compromises to accommodate accesses, etc.)	X		
Does the cross-section avoid unsafe compromises such as narrowings at bridge approaches or past physical features?	X		
2.2.4 Roadway layout			
Are all traffic management features designed to avoid creating unsafe conditions?			**N/A**

Is the layout of road markings and reflective materials able to deal satisfactorily with changes in alignment? (particularly where the alignment may be substandard)			N/A
2.2.5 Shoulders and edge treatment			
Are the following safety aspects of shoulder provision satisfactory: provision of sealed or unsealed shoulders width and treatment on embankments crossfalls all of shoulders	X		
Are the shoulders likely to be safe if used by slow moving vehicles or cyclists?	X		
Are any rest areas and truck parking areas safely designed?			N/A

Issue	Yes	No	Comment
2.2.6 Effect of departures from standards or guidelines			
Any approved departures from standards or guidelines: is safety maintained?			N/A
Any hitherto undetected departures from standards: is safety maintained?			N/A
2.3 Alignment details **2.3.1 Geometry of horizontal and vertical alignment**			
Do the horizontal and vertical design fit together correctly?			Assumed to be satisfactory as they are existing roadways.
Is the design free of visual cues that would cause a driver to misread the road characteristics? (for example, visual illusions, subliminal delineation such as lines of trees, poles, etc.)			Assumed to be satisfactory as they are existing roadways.
Does the alignment provide for speed consistency?	X		
2.3.2 Visibility; sight distance			
Are horizontal and vertical alignments consistent with the visibility requirements?			Assumed to be satisfactory as they are existing roadways.
Will the design be free of sight line obstructions due to safety fences or barriers? boundary fences? street furniture? parking facilities? signs? landscaping? bridge abutments? parked vehicles in laybys or at the kerb? queued traffic?	X		
Are railway crossings, bridges and other hazards all conspicuous?			N/A
Is the design free of any other local features which may affect visibility?			Assumed to be satisfactory as they are existing roadways.
2.3.3 New/existing road interface			
Does the interface occur well away from any hazard? (for example, a crest, a bend, a roadside hazard or where poor visibility/distractions may occur)			Assumed to be satisfactory as they are existing roadways.
If carriageway standards differ, is the change effected safely?	X		Changes in road profiles effected at intersections.

Issue	Yes	No	Comment

Is the transition where the road environment changes (for example, urban to rural; restricted to unrestricted; lit to unlit) done safely?			N/A
Has the need for advance warning been considered?	X		Truck turning warning signs recommended during the constructiuon period.
2.3.4 Readability of the alignment by drivers			
Will the general layout, function and broad features be recognised by drivers in sufficient time?	X		Assumed to be satisfactory as they are existing roadways.
Will approach speeds be suitable and can drivers correctly track through the scheme?	X		Assumed to be satisfactory as they are existing roadways. Construction traffic expected to be breifed adequately.
2.4 Intersections **2.4.1 Visibility to and at intersections**			
Are horizontal and vertical alignments at the intersection or on the approaches to the intersection consistent with the visibility requirements?	X		Assumed to be satisfactory as they are existing roadways.
Will drivers be aware of the presence of the intersection? (especially on the minor road approach)	X		Assumed to be satisfactory as they are existing roadways. Construction traffic expected to be breifed adequately.
Will the design be free of sight line obstructions due to: safety fences or barriers? boundary fences? street furniture? parking facilities? signs? landscaping? bridge abutments?	X		Assumed to be satisfactory as they are existing roadways.
Are railway crossings, bridges and other hazards near intersections conspicuous?			N/A
Will the design be free of any local features which adversely affect visibility?	X		
Will intersection sight lines be obstructed by permanent or temporary features such as parked vehicles in laybys, or by parked or queued traffic generally?		X	
2.4.2 Layout, includes its appropriateness			
Is the type of intersection selected (cross roads, T, roundabout, signalised, etc.) appropriate for the function of the two roads?	X		
Are the proposed controls (Give Way, Stop signals, etc.) appropriate for the particular intersection?	X		
Are junction sizes appropriate for all vehicle movements?	X		

Issue	**Yes**	**No**	**Comment**
Are the intersections free of any unusual features which could affect road safety?	X		
Are the lane widths and swept paths adequate for all vehicles?	X		
Is the design free of any upstream or downstream geometric features that could affect safety? (for example, merging of lanes)	X		
Are the approach speeds consistent with the intersection design?	X		
Where a roundabout is proposed: have pedal cycle movements been considered? have pedestrian movements been considered? are details regarding the circulating carriageway sufficient?		X	
2.4.3 Readability by drivers			

Will the general type, function and broad features be perceived correctly by drivers?	X		
Are the approach speeds and likely positions of vehicles as they track through the scheme safe?	X		
Is the design free of sunrise or sunset problems that may create a hazard for motorists?	X		
2.5 Special road users			
2.5.1 Adjacent land			
Will the scheme be free of adverse effects from adjacent activity and intensity of land use? (if not, what special measures are needed?)	X		
2.5.2 Pedestrians			No pedestrian activity expected.
Have pedestrian needs been satisfactorily considered?			N/A
If footpaths are not specifically provided, is the road layout safe for use by pedestrians? (particularly at blind corners or on bridges)			N/A
Are pedestrian subways or footbridges sited to provide maximum use? (i.e. Is the possibility of pedestrians crossing at grade in their vicinity minimised?)			N/A
Has specific provision been made for pedestrian crossings, school crossings or pedestrian signals?			N/A
Where present, are these facilities sited to provide maximum use with safety?			N/A

Issue	Yes	No	Comment
Are pedestrian refuges/kerb extensions provided where needed?			N/A
Has specific consideration been given to provision required for special groups? (for example, young, elderly, disabled, deaf or blind)			N/A
2.5.3 Cyclists			No Cyclists activity expected
Have the needs of cyclists been satisfactorily considered, especially at intersections?			N/A
Have cycle lanes been considered?			N/A
Are all cycleways of standard or adequate design? Where a need for shared pedestrian/cycle facilities exists, have they been safely treated?			N/A
Where cycleways terminate at intersections or adjacent to the carriageway, has the transition treatment been handled safely?			N/A
Have any needs for special cycle facilities been satisfactorily considered? (for example, cycle signals)			N/A
2.5.4 Motorcyclists			
Has the location of devices or objects that might destabilise a motorcycle been avoided on the road surface?			Assumed to be satisfactory as they are existing roadways.
Will warning or delineation be adequate for motorcyclists?			Assumed to be satisfactory as they are existing roadways.
Has barrier kerb been avoided in high-speed areas?			Assumed to be satisfactory as they are existing roadways.
In areas more likely to have motorcycles run off the road is the roadside forgiving or safely shielded?			Assumed to be satisfactory as they are existing roadways.
2.5.5 Equestrians and stock			
Have the needs of equestrians been considered, including the use of verges or shoulders and rules regarding the use of the carriageway?		X	
Can underpass facilities be used by equestrians/stock?			N/A
2.5.6 Freight			

Have the needs of truck drivers been considered, including turning radii and lane widths?	X		
2.5.7 Public transport			
Has public transport been catered for?		X	
Have the needs of public transport users been considered?		X	

Issue	Yes	No	Comment
Have the manoeuvring needs of public transport vehicles been considered?		X	
Are bus stops well positioned for safety?		X	
2.5.8 Road maintenance vehicles			
Has provision been made for road maintenance vehicles to be used safely at the site?	X		
2.6 Signs and lighting **2.6.1 Lighting**			Access to the development is not proposed to be light.
Is this project to be lit? Will safety be maintained if the project is not lit?			N/A
Is the design free of features that make illuminating sections of the road difficult? (for example, shadow from trees or over bridges)			N/A
Has the question of sighting of lighting poles been considered as part of the general concept of the scheme?			N/A
Are frangible or slip-base poles to be provided?			N/A
Are any special needs created by ambient lighting? Will safety be maintained if special treatments are not provided?			N/A
Have the safety consequences of vehicles striking lighting poles (of any type) been considered?			N/A
2.6.2 Signs			
Are signs appropriate for their location?			Assumed to be satisfactory as they are existing roadways.
Are signs located where they can be seen and read in adequate time?			Assumed to be satisfactory as they are existing roadways.
Will signs be readily understood?			Assumed to be satisfactory as they are existing roadways.
Are signs located so that visibility to and from accesses and intersecting roads is maintained?			Assumed to be satisfactory as they are existing roadways.
Are signs appropriate to the driver's needs? (for example, destination signs, advisory speed signs, etc.)			Assumed to be satisfactory as they are existing roadways.
Have the safety consequences of vehicles striking sign posts been considered?			Assumed to be satisfactory as they are existing roadways.
Are signs located so that drivers' sight distance is maintained?			Assumed to be satisfactory as they are existing roadways.
Where signs are to be located in the clear zone, are they frangible or adequately shielded by a crash barrier?			Assumed to be satisfactory as they are existing roadways.

Issue	Yes	No	Comment
2.6.3 Marking and delineation			
Has the appropriate standard of delineation and marking been adopted?			Assumed to be satisfactory as they are existing roadways.
Are the proposed markings consistent with the works in the adjoining section of the route?			Assumed to be satisfactory as they are existing roadways.
Are the previous/adjacent markings to be upgraded? If not, will safety be maintained?			Assumed to be satisfactory as they are existing roadways.
2.7 Traffic management **2.7.1 Traffic flow and access restrictions**			

Can traffic volumes from the proposed scheme be safely accommodated on existing sections of road?	X		
Have parking provision and parking control been adequately considered?		X	
Can any turn bans be implemented without causing problems at adjacent intersections?		X	
Has the effect of access to future developments been considered?		X	
Is safety maintained for any traffic diverting to other roads? (for example, to avoid a traffic control device)			N/A
2.7.2 Overtaking and merges			
Are overtaking sight distance and stopping distance adequate?			N/A
Have suitable shoulder widths been provided at lane drop merges?			N/A
Have standard signs and markings been provided for any lane drop?			N/A
Has adequate sight distance been provided to any lane drop?			N/A
Are shoulders wide enough opposite access points and intersections?			N/A
2.7.3 Rest areas and stopping zones			
Are there sufficient roadside stopping areas, rest areas and truck parking areas?			N/A
Are any entries and exits to rest areas or truck parking areas safe?			N/A

Issue	Yes	No	Comment
2.7.4 Construction and operation			
If the scheme is to be constructed 'under traffic', can this be done so safely?	X		
Can the scheme be safely constructed?	X		
Have the maintenance requirements been adequately considered?	X		
Is safe access to and from the works available?	X		
2.8 Additional questions to be considered for development proposals **2.8.1 Horizontal alignment**			
Is visibility adequate for drivers and pedestrians at proposed accesses?			N/A
Is adequate turning space provided for the volume and speed of traffic? Are curve radii and forward visibility satisfactory?			Assumed to be satisfactory as they are existing roadways.
Are sight and stopping distances adequate?			Assumed to be satisfactory as they are existing roadways.
2.8.2 Vertical alignment			
Are gradients satisfactory?			Assumed to be satisfactory as they are existing roadways.
Are sight and stopping distances adequate?			Assumed to be satisfactory as they are existing roadways.
2.8.3 Parking provision			
Is on-site parking adequate to avoid on-street parking and associated risks?			N/A
Are parking areas conveniently located?			On-Site parking facilities will be made available.
Is adequate space provided in parking areas for circulation and intersection sight distance?	X		
2.8.4 Servicing facilities			

Are off-street loading/unloading areas adequate?	X		
Are turning facilities for large vehicles provided in safe locations?	X		
Is emergency vehicle access adequate?	X		
2.8.5 Signs and markings			
Have necessary traffic signs and road markings been provided as part of a development?			**Assumed to be satisfactory as they are existing roadways.**

Issue	Yes	No	Comment
Is priority clearly defined at all the intersection points within the car park and access routes?	X		
Will the signs and markings be clear in all conditions, including day/night, rain, fog, etc.?	X		
2.8.6 Landscaping			
Does landscaping maintain visibility at intersections, bends, accesses and pedestrian locations?			N/A
Has tree planting been avoided where vehicles are likely to run off the road?			N/A
2.8.7 Traffic management			
Have any adverse area-wide effects been addressed?			N/A
Will the design keep travel speeds at the safe level?			N/A
Are the number and location of accesses appropriate?			N/A
Are the facilities for public transport services safely located?			N/A
Are any bicycle facilities safely located in respect to vehicular movements?			N/A
Are pedestrian facilities adequate and safely located?			N/A
2.8.8 Other			
Has appropriate street lighting been provided?			**N/A**
Are any roadside hazards appropriately dealt with?	X		
Has safe pedestrian access to the development been provided?			**N/A**
2.9 Any other matter			
2.9.1 Safety aspects not already covered			
Have all unusual or hazardous conditions associated with special events been considered?			**N/A**
Is the road able to safely handle oversize vehicles, or large vehicles like trucks, buses, emergency vehicles, road maintenance vehicles?	X		
If required, can the road be closed for special events in a safe manner?	X		
If applicable, are special requirements of scenic or tourist routes satisfied?			N/A
Have all other matters which may have a bearing on safety been addressed?	X		