11. Email dated 23 November 2011, addressed to Mr Russell Smith, DTMR seeking advice on risk assessment conducted for relevant section of Warrego Highway, where fatal traffic crash occurred, for cyclists; and

12. Heavy Vehicle Incident Inspection Report of Senior Inspector, Mr Scott Hall, DTMR.

A copy of the Supplementary Form 1 has been forwarded to the Office of the State Coroner.

It is recommended that this correspondence be forwarded to the Ipswich District Prosecutions Corps for overview and then to the Ipswich Coroner for necessary attention.

Forwarded for your information.

K W McDonald
Inspector
IPSWICH DISTRICT – SPECIALIST SUPPORT

Phone number: (H) [redacted] (W) _____ (M) _____

Email address: _____

Notebook No.: _____ Notebook pages: _____ to _____

Name: _____

Address: _____

Occupation: _____

Relationship to deceased: _____

Date of birth: _____

Phone number: (H) _____ (W) _____ (M) _____

Email address: _____

Notebook No.: _____ Notebook pages: _____ to _____

REPORTING/INVESTIGATING OFFICER

I, the reporting officer declare the above information is true and correct to the best of my knowledge and belief.

D I Morrison	Sgt	6264
(Name)	(Rank)	(Reg. No.)

Ipswich Forensic Crash Unit	3817 1441
(Police Station /Establishment)	(Contact number)

Dated this 18 (Day) day of January (Month), 2012 (Year)

(Signature)

Caveat

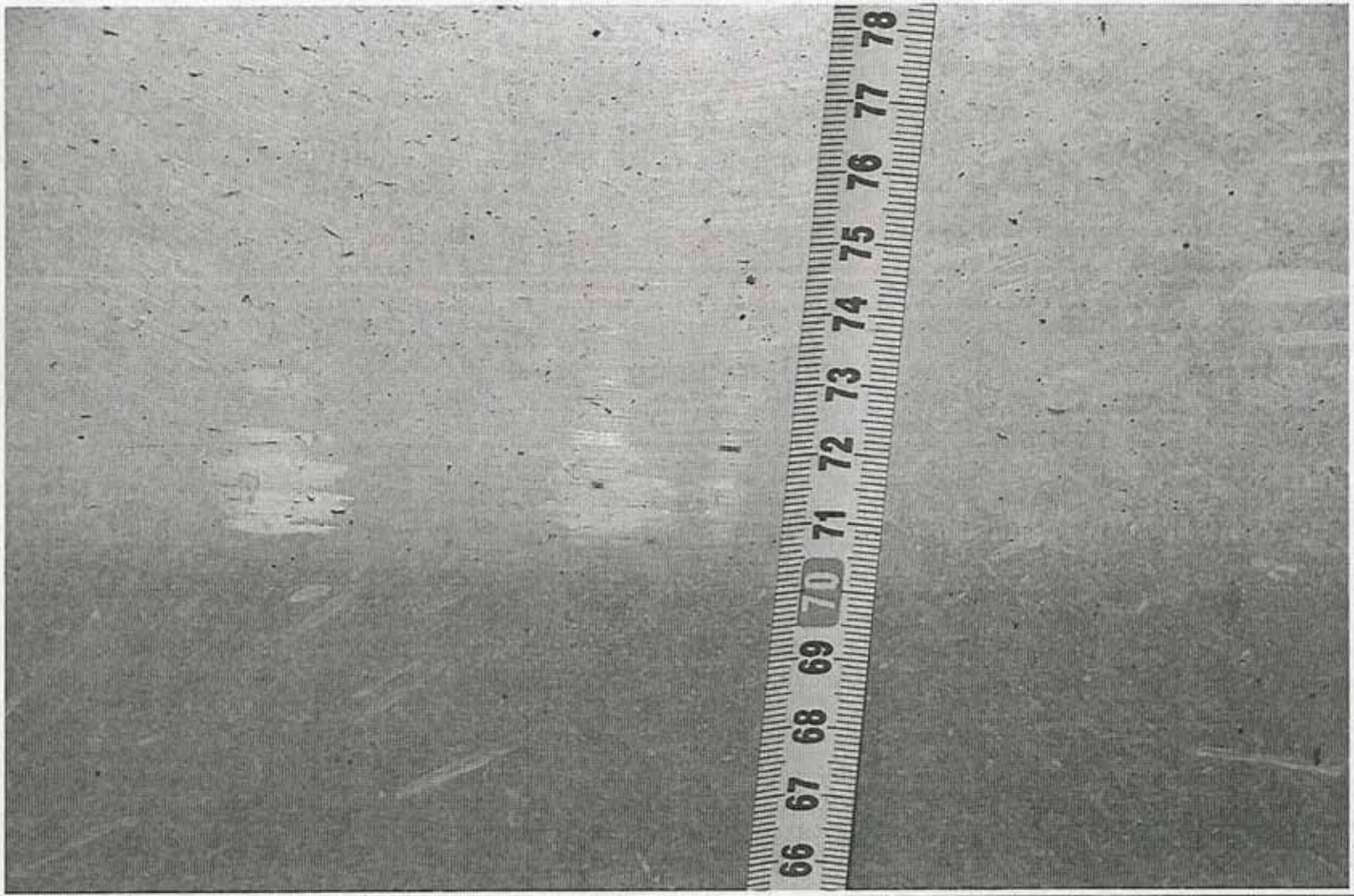
"The information in this form is disclosed pursuant to Information Privacy Principle 11(1)(b) of Information Standard 42. Under Information Privacy Principle 11(3), a person, body or agency to whom personal information is disclosed shall not use or disclose the information for a purpose other than the purpose for which the information was given to the person, body or agency."

Queensland Police Service

Ipswich Forensic Crash Unit

INCIDENT

Traffic incident on Warrego Highway, North Ipswich on 05/06/2011



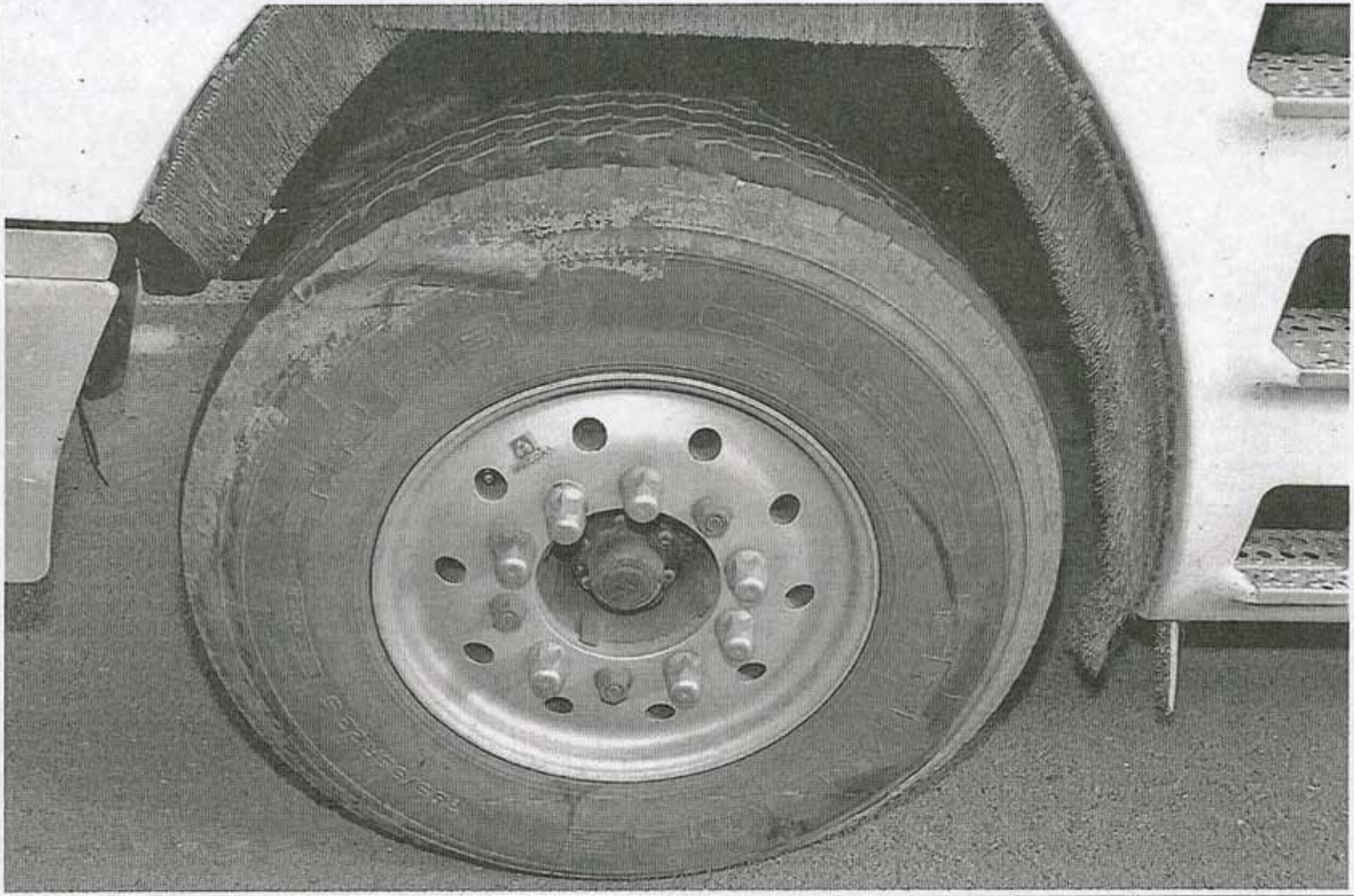
Photograph 29	Shows a closer view of the front left side of the semitrailer.

Queensland Police Service

Ipswich Forensic Crash Unit

INCIDENT

Traffic incident on Warrego Highway, North Ipswich on 05/06/2011



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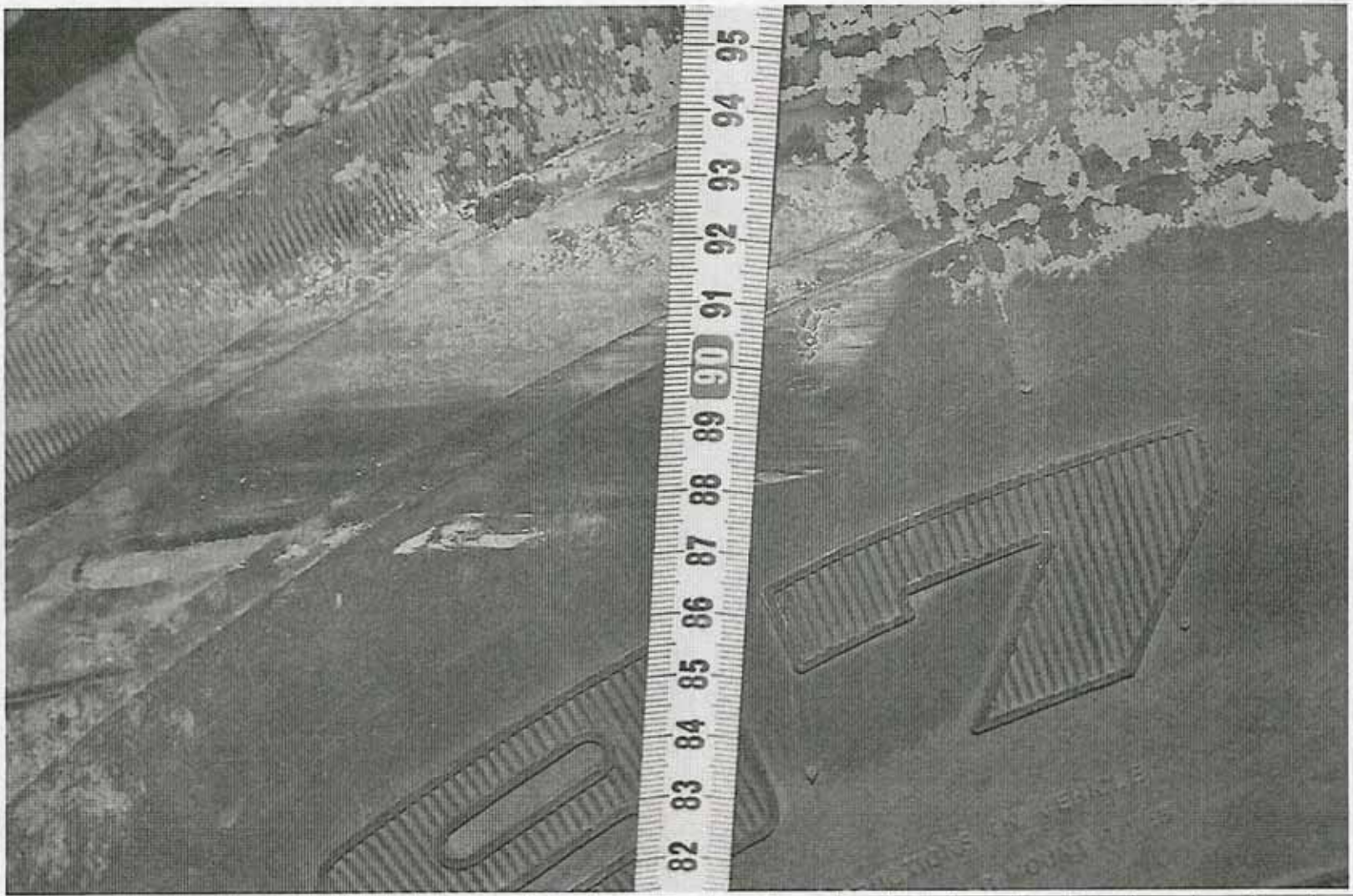
Photograph 30	Shows a closer view of the front steer tyre of the semi trailer.

Queensland Police Service

Ipswich Forensic Crash Unit

INCIDENT

Traffic incident on Warrego Highway, North Ipswich on 05/06/2011



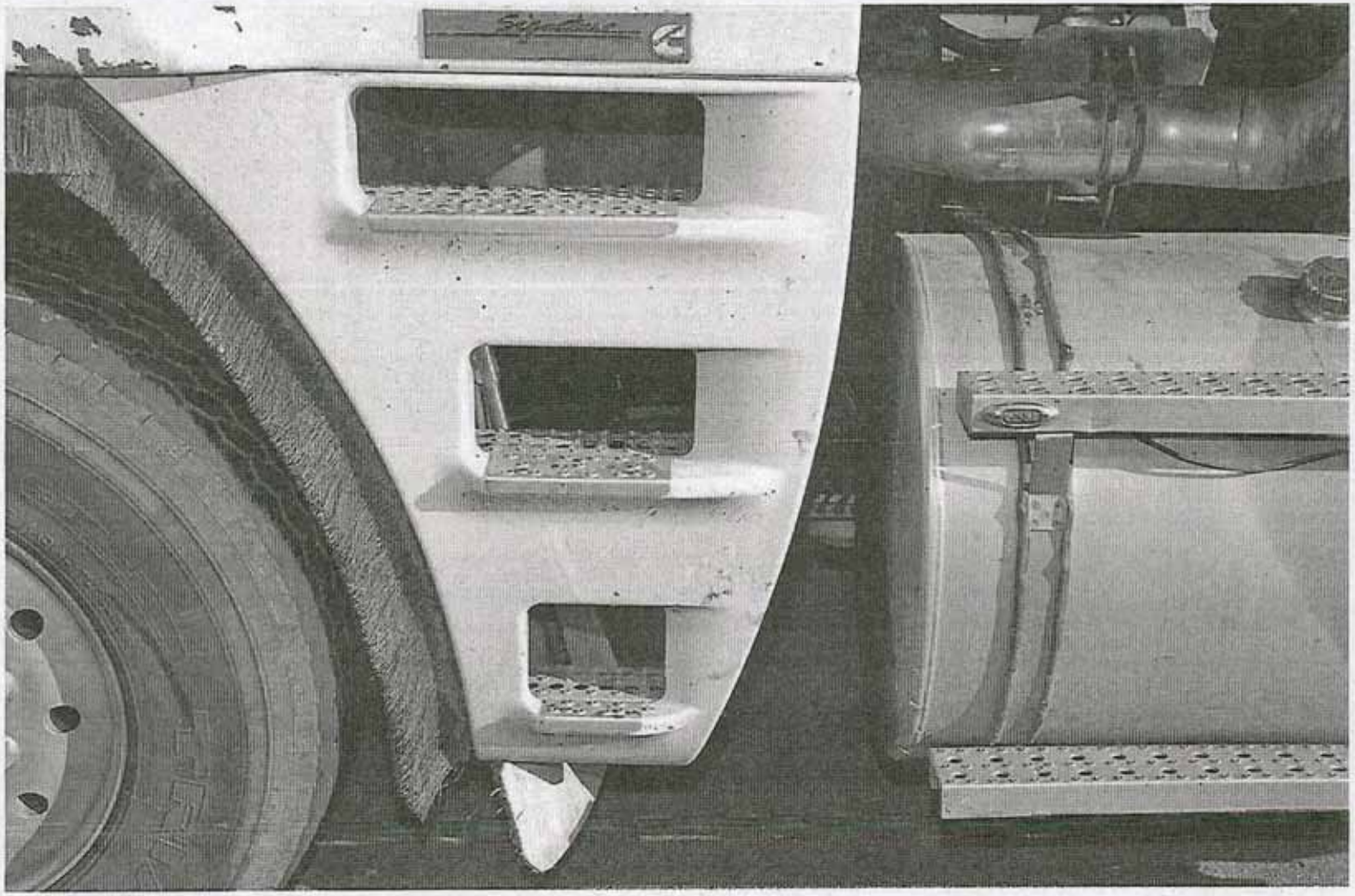
Photograph 31	Shows a view of the left front steer tyre of the semitrailer.

Queensland Police Service

Ipswich Forensic Crash Unit

INCIDENT

Traffic incident on Warrego Highway, North Ipswich on 05/06/2011



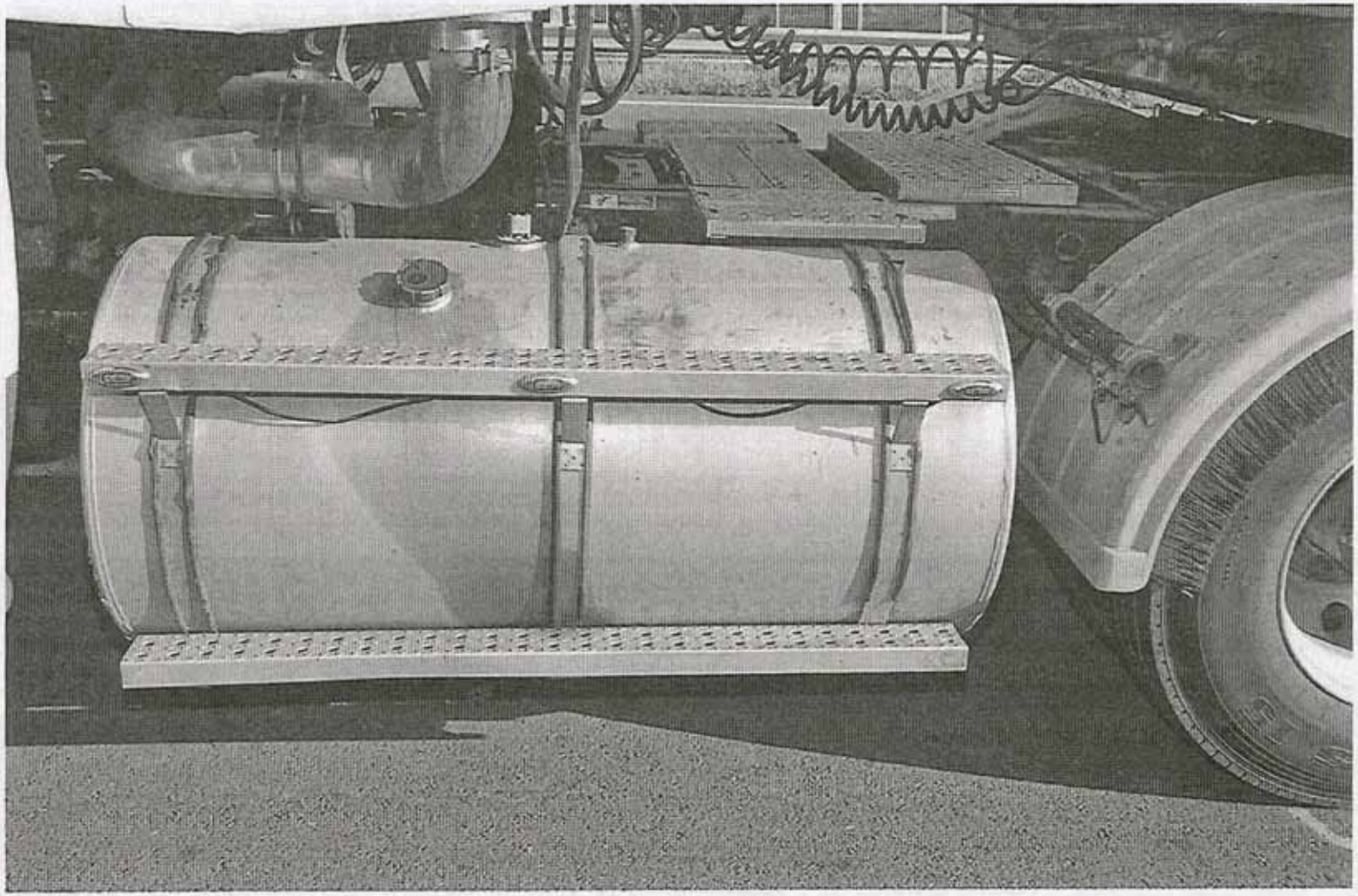
Photograph 32	Shows a closer view of the left side of the semitrailer.

Queensland Police Service

Ipswich Forensic Crash Unit

INCIDENT

Traffic incident on Warrego Highway, North Ipswich on 05/06/2011



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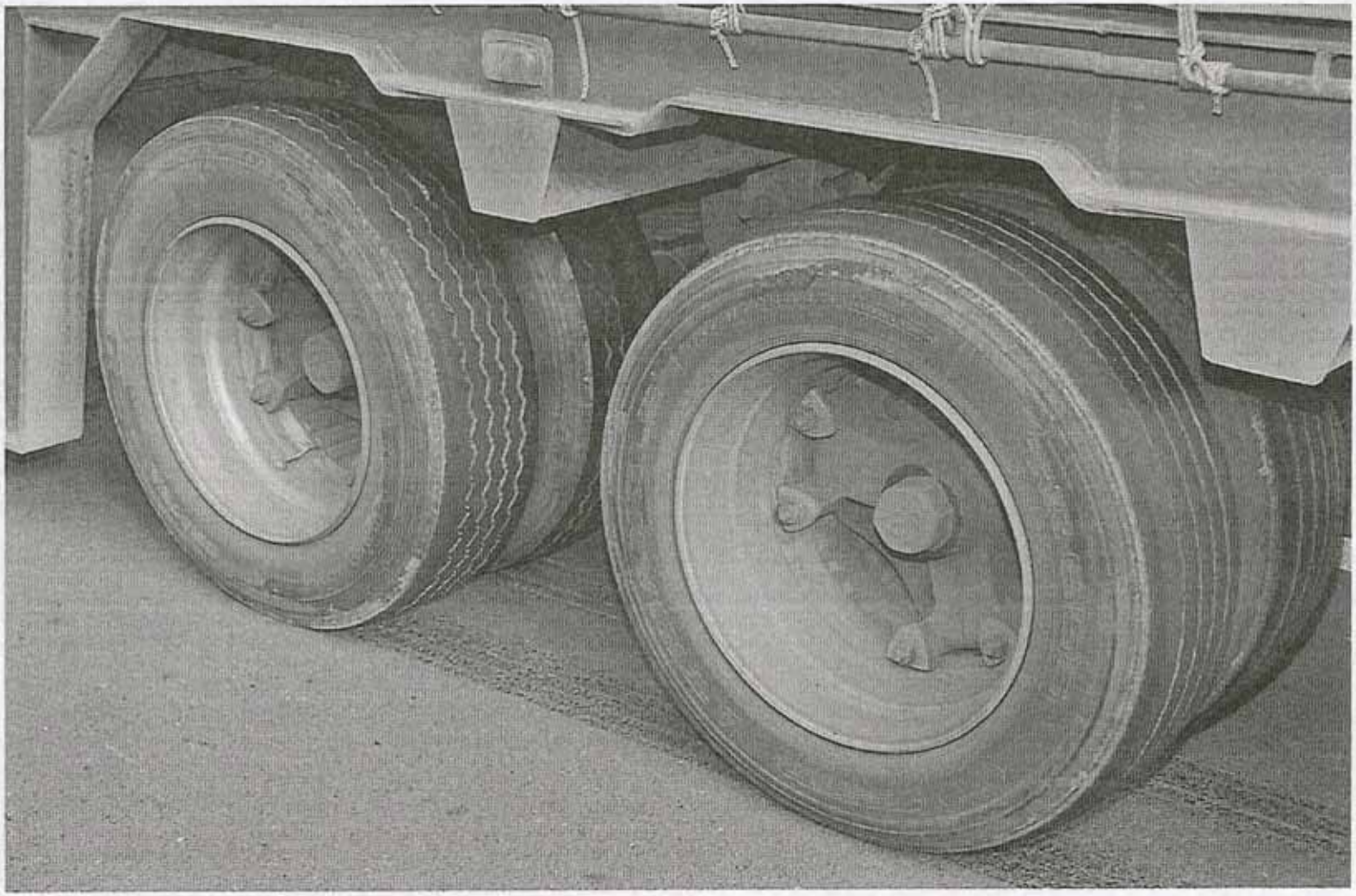
Photograph 33	Shows a closer view of the left side of the semitrailer.

Queensland Police Service

Ipswich Forensic Crash Unit

INCIDENT

Traffic incident on Warrego Highway, North Ipswich on 05/06/2011



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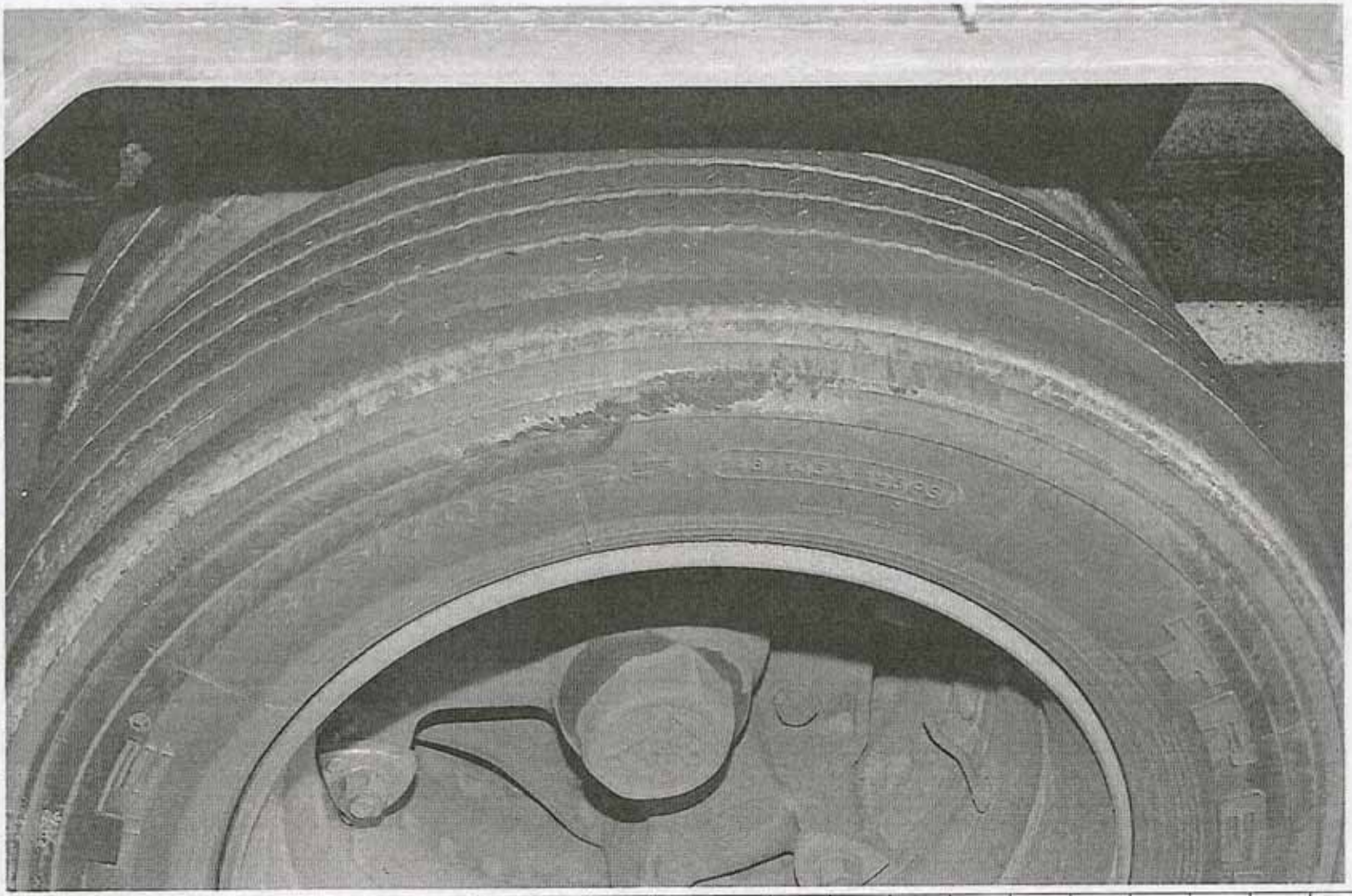
Photograph 34	Shows a closer view of the left rear trailer tyres of the semitrailer.

Queensland Police Service

Ipswich Forensic Crash Unit

INCIDENT

Traffic incident on Warrego Highway, North Ipswich on 05/06/2011



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Photograph 35	Shows a closer view of the left rear trailer tyres of the semitrailer.

Queensland Police Service

Ipswich Forensic Crash Unit

INCIDENT

Traffic incident on Warrego Highway, North Ipswich on 05/06/2011

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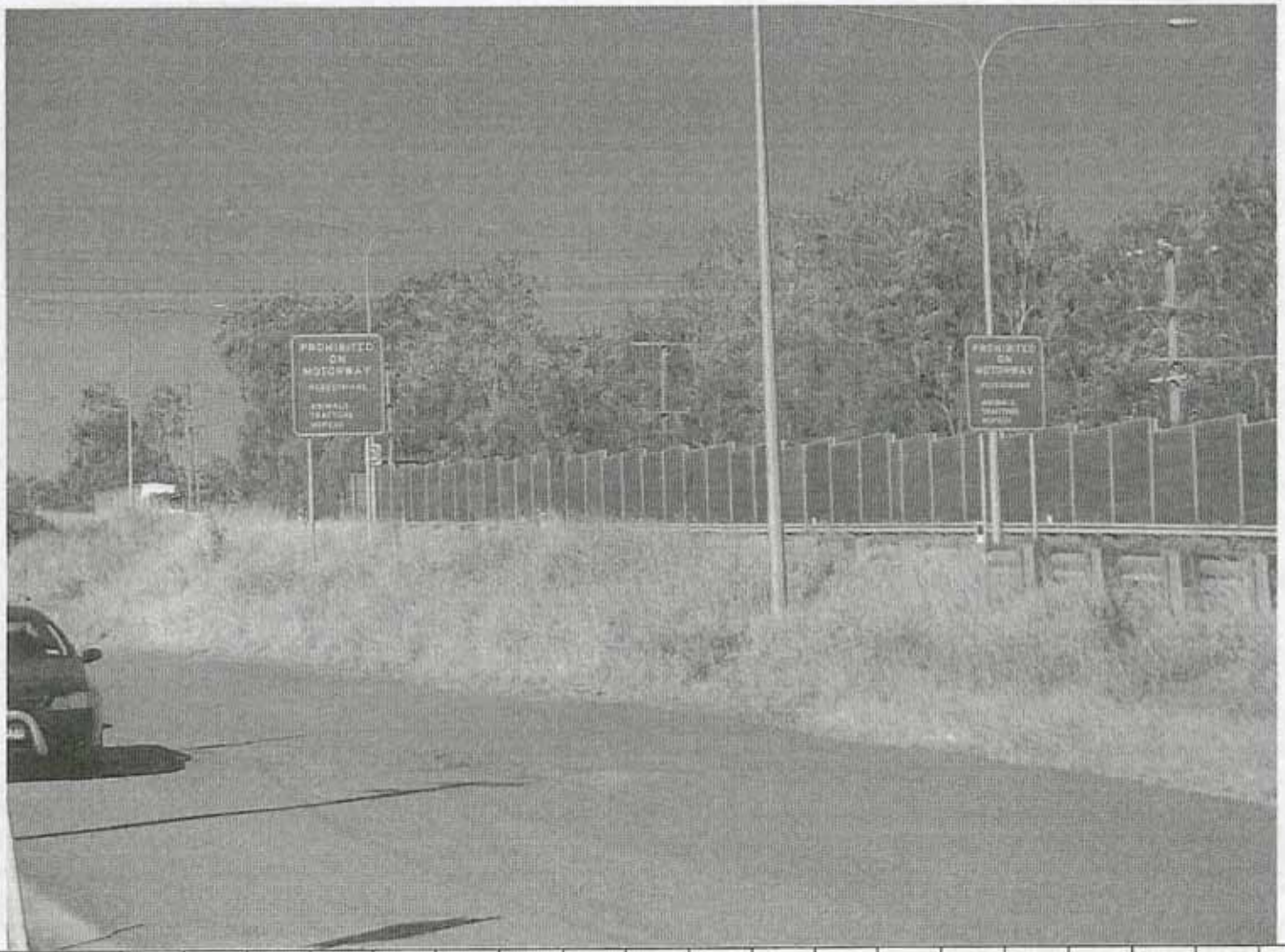
Photograph 36	Shows a closer view of the right rear trailer tyres of the semitrailer.

Queensland Police Service

Ipswich Forensic Crash Unit

INCIDENT

Traffic incident on Warrego Highway, North Ipswich on 05/06/2011



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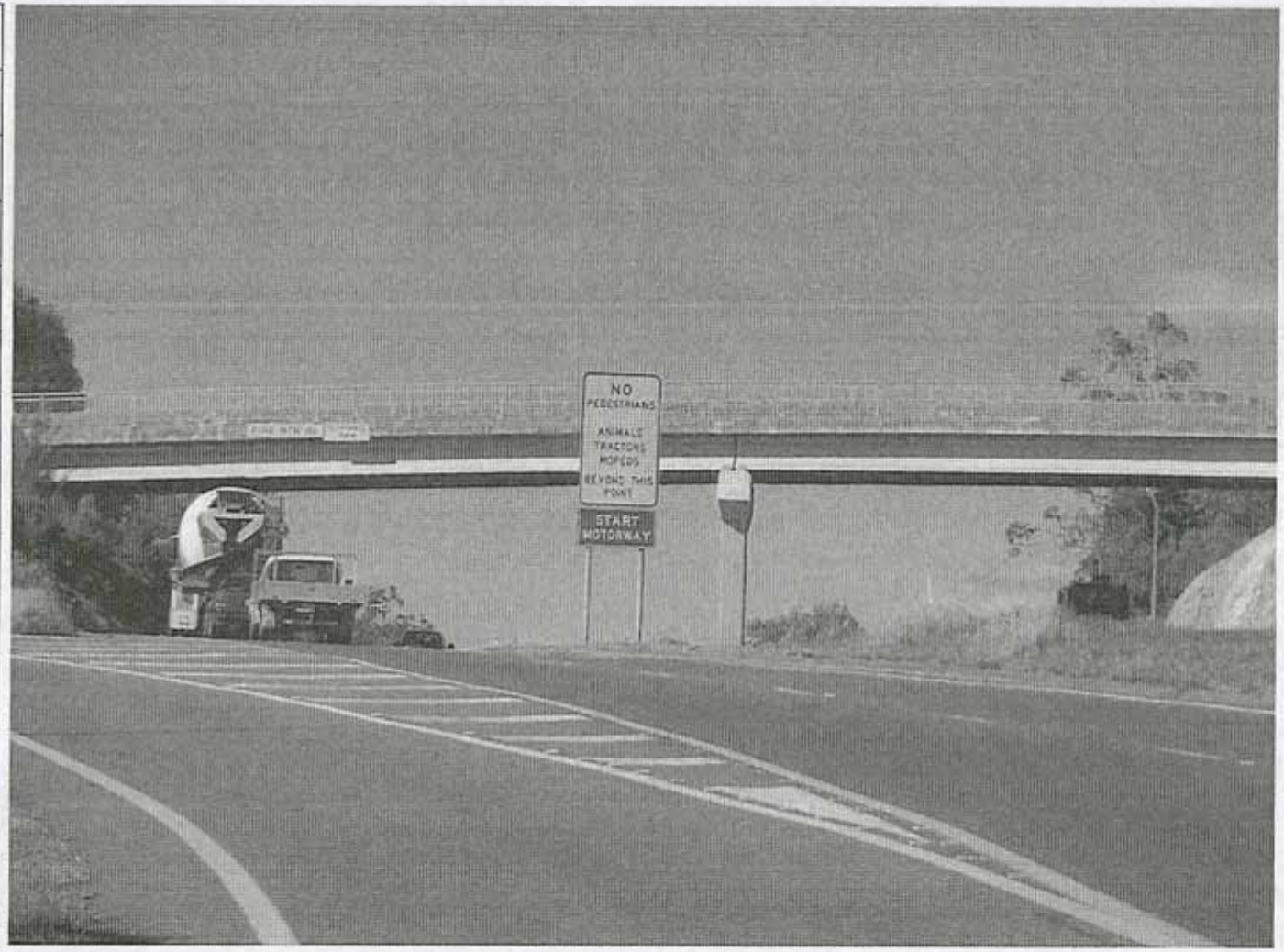
Photograph 37	Shows a view of "Road Access" signs erected on the eastbound lanes of the Warrego Highway prior to the Pine Mountain road offramp.

Queensland Police Service

Ipswich Forensic Crash Unit

INCIDENT

Traffic incident on Warrego Highway, North Ipswich on 05/06/2011



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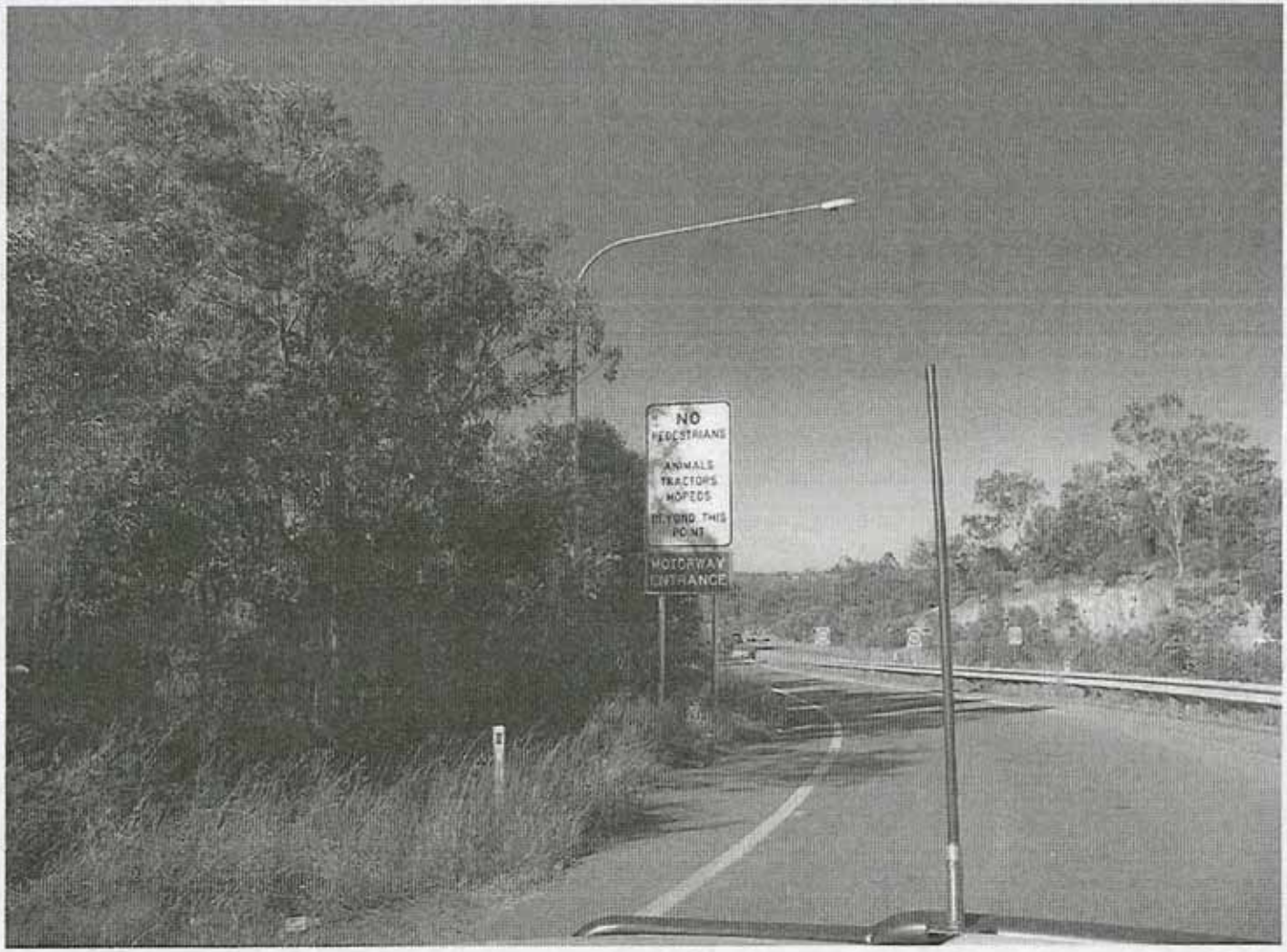
Photograph 38	Shows a view of "Road Access" signs erected on the eastbound lanes of the Warrego Highway at the Pine Mountain Road offramp.

Queensland Police Service

Ipswich Forensic Crash Unit

INCIDENT

Traffic incident on Warrego Highway, North Ipswich on 05/06/2011



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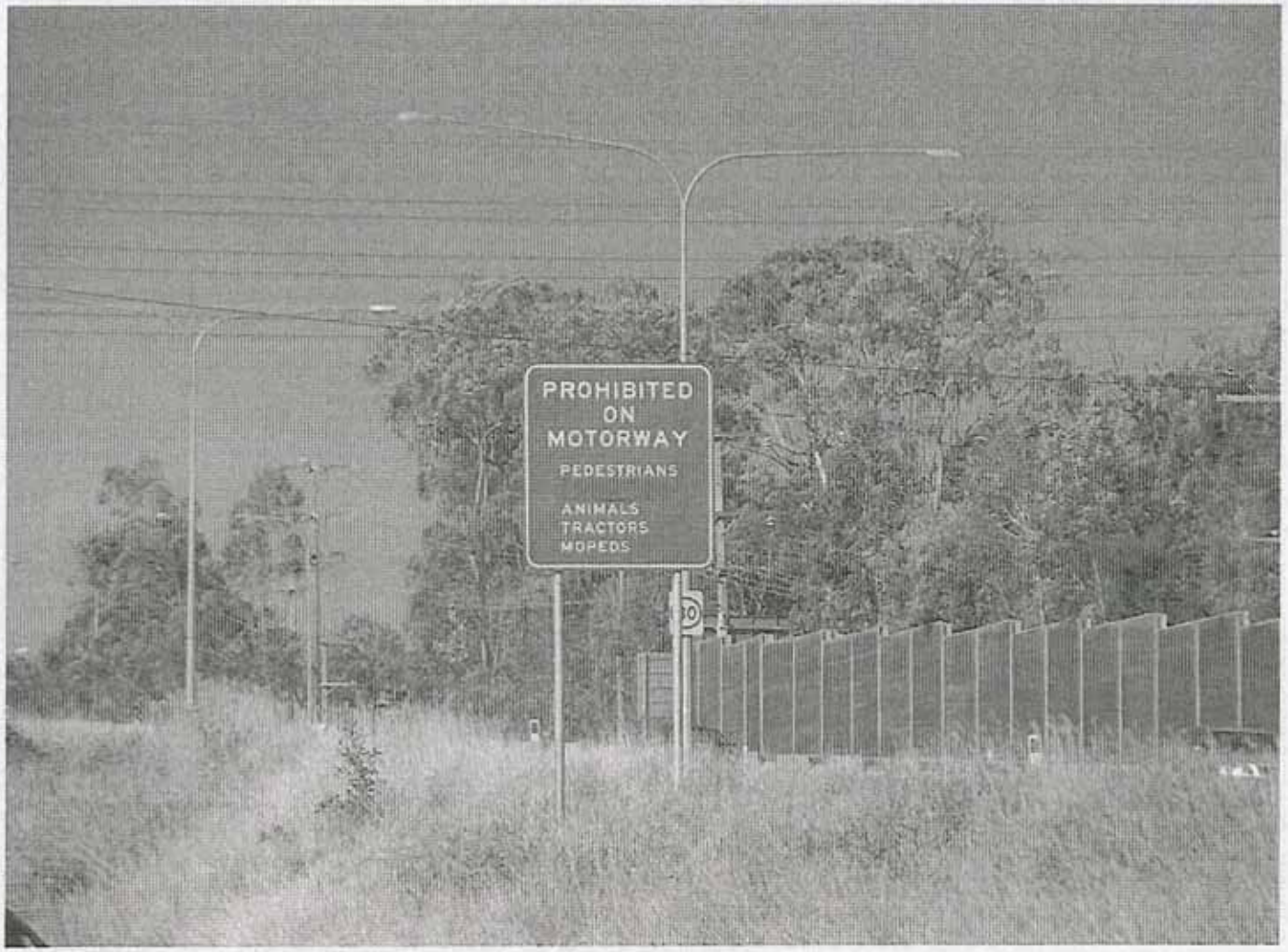
Photograph 39	Shows a view of "Road Access" signs erected on the Pine Mountain Road onramp to the eastbound lanes of the Warrego Highway.

Queensland Police Service

Ipswich Forensic Crash Unit

INCIDENT

Traffic incident on Warrego Highway, North Ipswich on 05/06/2011



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Photograph 40	Shows a closer view of "Road Access" signs erected on the eastbound lanes of the Warrego Highway prior to the Pine Mountain Road onramp

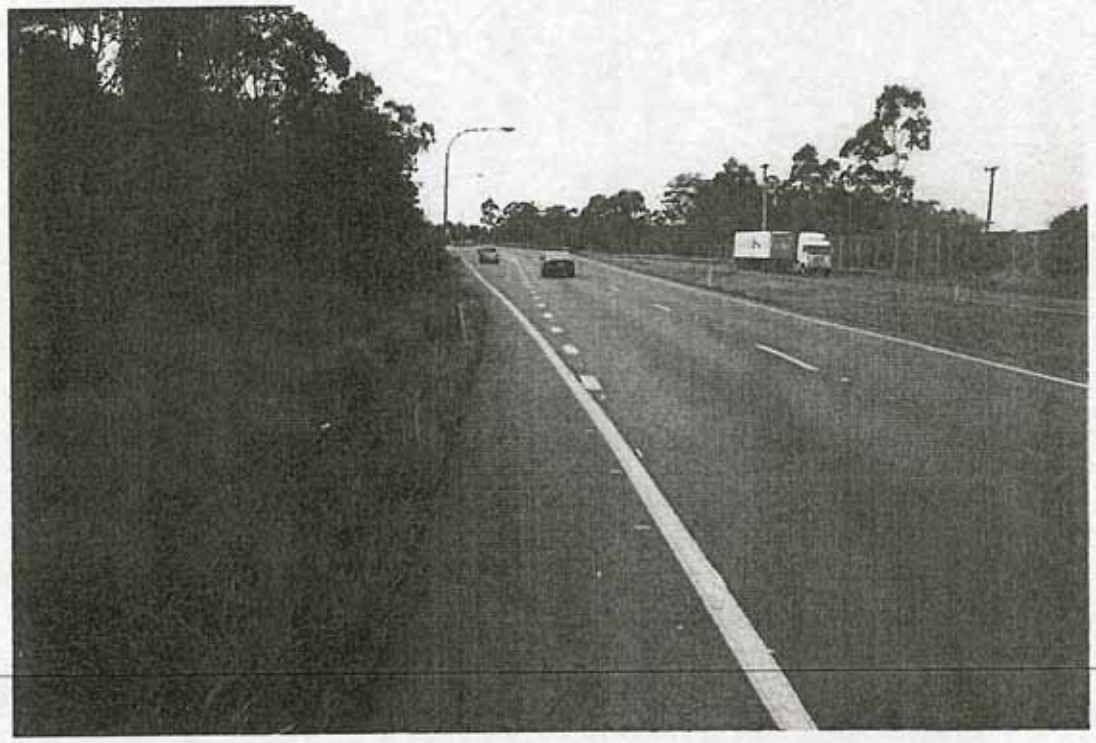
Transport and Main Roads

FATAL CRASH INVESTIGATION

Warrego Highway

370m west of Kholo Road Overpass in the eastbound Off Ramp to Kholo Road

05/06/11



Compiled by	Andrew Robbins
Title	Senior Traffic Officer and Senior Crash Investigator
Branch	Metropolitan Region
Section	Road Operations
Location	Floor 2, 170 Leichhardt St, Spring Hill 4004
Version	Final Investigation Report
DMS ref. no.	505/00018
Pursuit no.	CI - 1127

Crash No. 20110490989

Document control sheet

Contact for enquiries and proposed changes

If you have any questions regarding this document please contact:

Contact Officer	Prakash Kolarkar
Title	Principal Engineer
Phone	3135 5599

Report history

Date of Crash	Date notified	Report Submitted to	Report Submitted	Nature of report
05/06/11	06/06/11			Started Investigation
		Principal Engineer ND&I	27/06/11	Draft A
		Manager 'Road Operations'		Draft A
		Principal Engineer ND&I	27/07/11	Final Report
		Manager 'Road Operations'	27/07/11	Final Report

Document sign off

Investigated By:

Name: Andrew Robbins

Position: Senior Crash Investigator

Signature:  Date: 27/7/11

Submitted by:

Name: Prakash Kolarkar

Position: Principal Engineer (Road Operations - Network Data and Intelligence)

Signature:  Date: 28/07/11

Approved for Committee to Review:

Name: Mike Carter

Position: Manager (Road Operations)

Signature:  Date: 28/7/11

Contents

1 Introduction

This investigation report provides details of a fatal traffic crash that occurred within the jurisdiction of the Department of Transport and Main Roads Metropolitan Region. The crash occurred on Sunday 5th June 2011 on the Warrego Highway just west of the eastbound off ramp to Kholo Road.

The Kholo Road overpass is within a section of the Warrego Highway that has been classed as a Motorway. The Motorway ends just west of the Pine Mountain Road Overpass. Within this section local side roads enter the Warrego highway with acceleration lanes provided.

Definition of a Motorway: *A divided highway for through traffic with full control of access and with interchanges provided at intersections where access to the local road system is required. (See also Freeways)*

This crash involved a truck and push bike at approximately 1pm on a clear and dry day.

Site inspections were carried out on Tuesday 7th June 2011 and Wednesday 8th June 2011. Video and Photographs were taken for documentation of the site.

NOTE: The eastbound lanes will only be described in this report as the crash occurred in the eastbound direction.

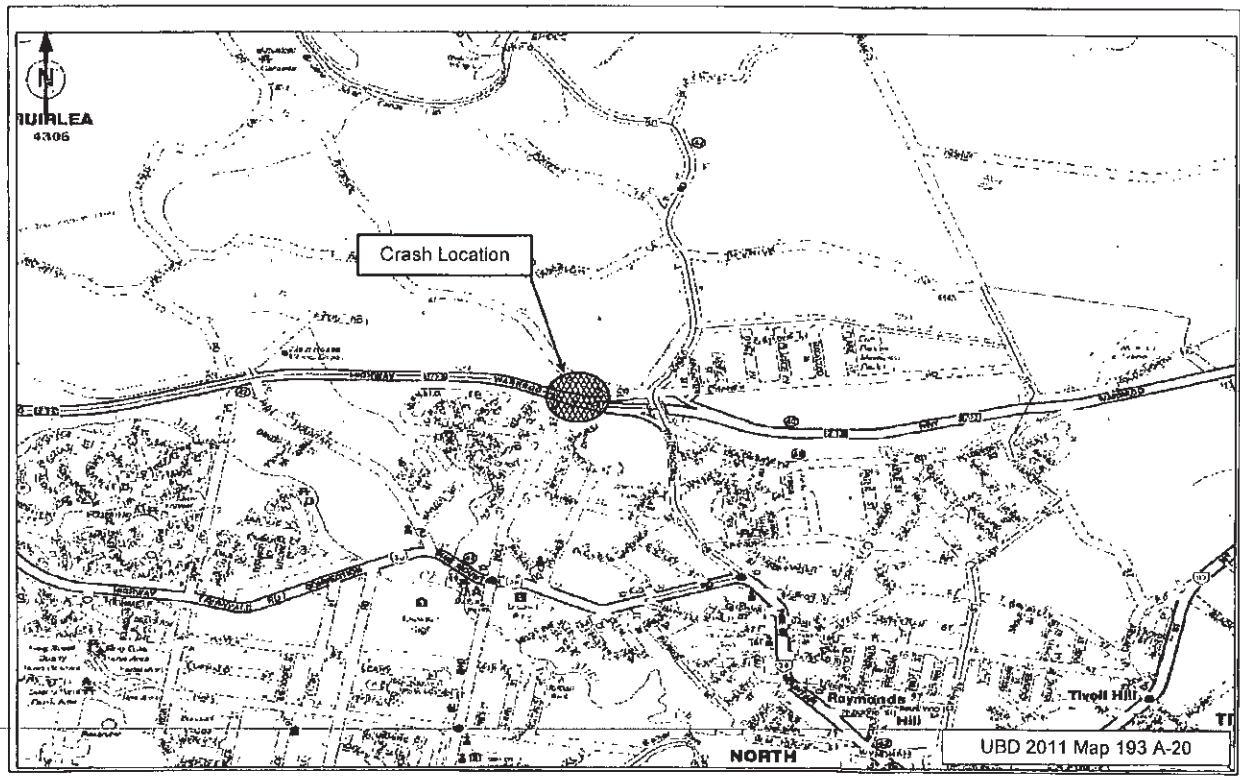


Figure 1 "Crash Location"

3 Site Details

3.1 Location Information

The crash location is on the Warrego Highway near the start of the eastbound off ramp to Kholo Road (Refer to Figure 1 'Crash Location').

Through chainage on the Warrego Highway – 10.640km

Local Government Authority – Ipswich City Council

3.2 Road Description

The Warrego Highway is a four lane (two lanes each direction), road set in a rural environment. The eastbound and westbound lanes are separated by a depressed median which is grass lined.

The eastbound off ramp to Kholo Road starts approximately 403 metres west of Kholo Road overpass and is a single lane.

3.3 Traffic Information

Speed Limit: - 100 km/h "Warrego Highway Through lanes"
- Exit speed 80 km/h "Off Ramp to Kholo Road"

Vehicle Types Using Road - All

AADT (All Vehicles):

34,158 Total – 17,439 Gazettal & 16,719 against Gazettal
(Site 135715 Ch 11.286 west of Kholo Rd Overpass)

AADT (Heavy Vehicles Only):

5,644 Total (16.52%) – 2,765 (15.86%) gazettal & 2,879 (17.22%) against Gazettal
(Site 135715 Ch 11.286 west of Kholo Rd Overpass)

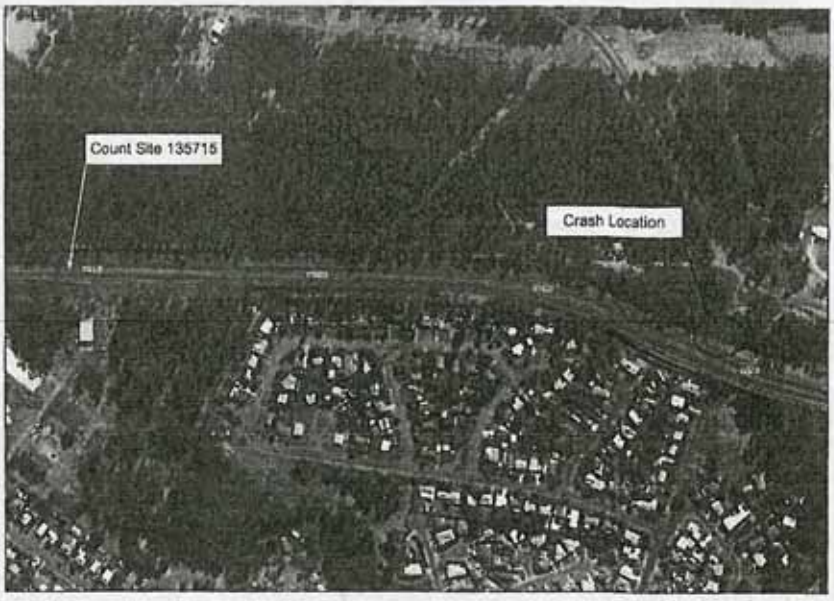


Figure 2 "Traffic Count site 135715"

Traffic Information cont .....

Tubes were installed on the Kholo Road off ramp to collect traffic volumnes by class. Data presented below is from 12am Sunday 12 June to 12am Monday 13 June 2011(24 hrs).

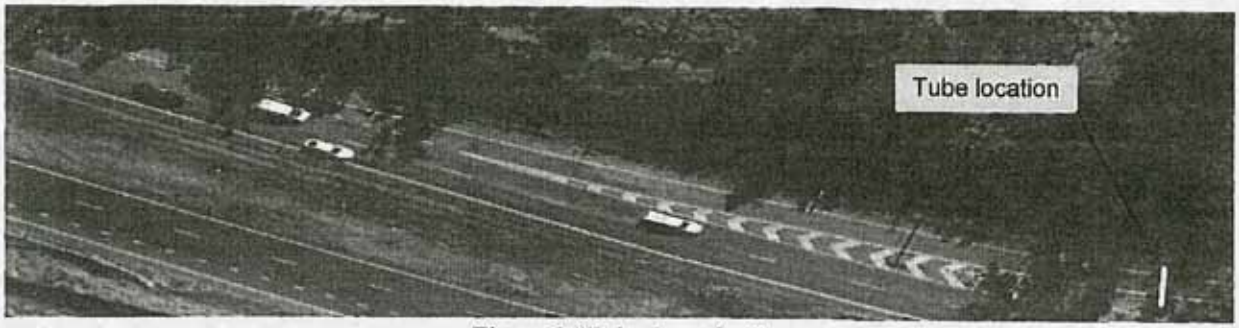


Figure 3 "Tube Location"

Class Speed Matrix

ClassMatrix-1699
Site: 211601.2E
Description: **EB offramp from 18A to Kholo Rd UBD193 B20 2AE <60>**
Filter time: **0:00 Sunday, 12 June 2011 => 0:00 Monday, 13 June 2011**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(20,120) Headway(>0)

Speed (km/h)	Class 1	2	3	4	5	6	7	8	9	10	11	12	Speed Totals	
20 - 25													0	0.0%
25 - 30													0	0.0%
30 - 35													0	0.0%
35 - 40	2												2	0.1%
40 - 45	7												9	0.5%
45 - 50	15	1	1										18	1.0%
50 - 55	44	4	9										57	3.2%
55 - 60	134	6	1										161	8.9%
60 - 65	314		5										329	18.2%
65 - 70	426	14	9										449	24.9%
70 - 75	354	11	8										378	21.0%
75 - 80	224	1	1										228	12.6%
80 - 85	116	1											120	6.7%
85 - 90	34	2	3										39	2.2%
90 - 95	13												13	0.7%
95 - 100	1												1	0.1%
100 - 105													0	0.0%
105 - 110													0	0.0%
	1713	42	42	3	0	0	3	0	1	0	0	0	1804	
	95.0%	2.3%	2.3%	0.2%	0.0%	0.0%	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%		
	Class Totals													

Figure 4 "Traffic Count data"

In the 24 hr period, 1804 vehicles used the off ramp to Kholo Road. 95% of these vehicles are class 1 (cars) and 1327 of these passed over the tubes between 60 km/h and 80 km/h.

The AM Peak (1045 – 1145) results show 236 vehicles using the off ramp to Kholo Road. (The result was obtained from data collected but is not shown in figure 4)

3.4 Traffic Control

Linemarking

The two eastbound lanes are separated by a broken lane line (Figure 4.1 'Longitudinal and Transverse Line Types' 3a) of the MUTCD. Edge lines are provided on both sides of the eastbound lanes (Figure 4.1 'Longitudinal and Transverse Line Types' 4) of the MUTCD.

A continuity line (Figure 4.1 'Longitudinal and Transverse Line Types' 5) of the MUTCD is provided for the taper of the off ramp to Kholo Road.

A painted chevron is provided between the off ramp and eastbound left lane.

The whole Warrego Highway was painted from the 29-08-10 to the 07-09-10 (Information supplied by Roadtek).

Guide Posts / RRPM's

Approaching the eastbound off ramp to Kholo Road, RRPM's (Retroreflective Raised Pavement Markers) are provided along the centre broken lane line and both edge lines.

White RRPM's are located along the centre broken lane line at spacing's of approximately 24 metres and yellow RRPM's are located opposite on the median edge line.

At approximately 150 metres prior to the start of the off ramp, green RRPM's at spacing's of 6.0 – 6.5 metres are located along the left side edge line. At the start of the taper for the off ramp, green RRPM's are located 1.3 – 1.4 metres apart for a length of 9 metres then are spaced at 6.0 – 6.5 metres along the off ramp.

White RRPM's are located on the inside of the painted chevron between the off ramp and eastbound left lane.

RRPM's approaching and on the off ramp comply with the following standard from the MUTCD.

Table 4.5 'Normal Spacing (N) Between RRPMs' from the MUTCD shows that for '*Unlit roads generally, lane lines and dividing lines*' require to be spaced at 24m and '*Markers on edge lines including outlines of painted median strips and separators*' require spacing's to be at 24m preferred and 36m max.

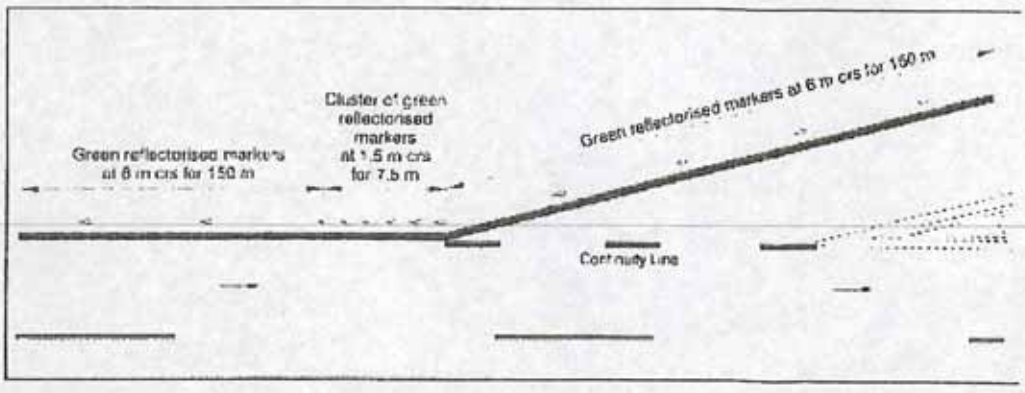


Figure 5 "*Marking at an exit ramp*"

Traffic Control cont .....

Guide Posts / RRPM's

Guide posts are provided in the centre median and on the outside (left side) of the curve two guide posts are provided between the end of the guardrail and off ramp to Kholo Road. These two guide posts are approximately 100 metres apart.

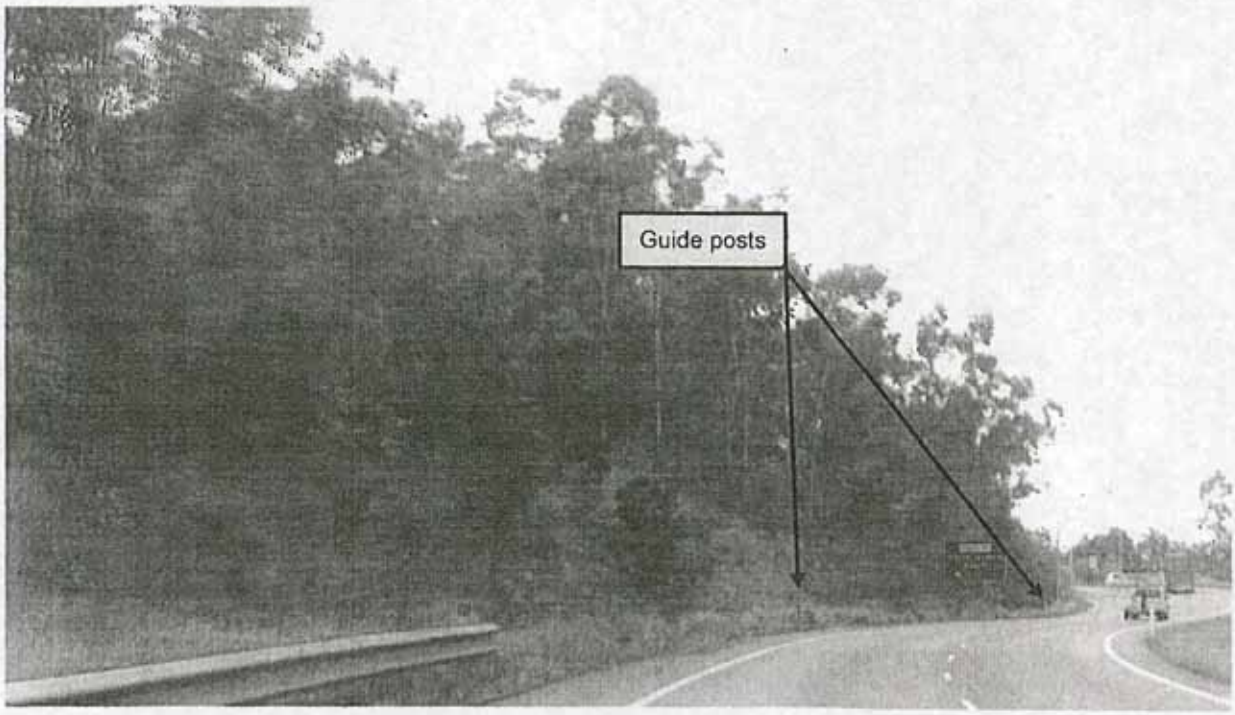


Figure 6 "Location of Guide Posts on outside (left side) of curve prior to off ramp"

Delineators are provided along the top of the w-beam guardrail.

The guide posts after the guardrail and prior to the off ramp do not comply with Table 3.1 *'Spacing of guide posts on curves'* from the MUTCD. Table 3.1 shows that spacing of guide posts should be 40 metres through a curve with a radius between 600 to799. This curve has a radius approximately of 679 metres.

Traffic Control cont .....

Signs approaching the Kholo Road off ramp in eastbound direction:

1 x R2-Q01 – 'No Stopping on Motorway'

1 x GE1-5 – First Advance exit (distance) (the number 5 on the sign is partly covered by black material)

1 x GE2-1-3 – Exit Direction (sign is marked with dints and the reflective material is peeling off).

1 x W1-9-1 – Exit speed 80 km/h (parts of the black writing is peeling off).

1 x D4-Q01 – Bidirectional Hazard Marker

1 x GE2-3 – 'Exit gore'

Sign diagram is provided in Attachments.

3.5 Geometry

Horizontal Alignment:

Approaching the Kholo Road off ramp in the eastbound direction the Warrego Highway curves to the right with a radius approximately of 679 metres. The road straightens before the off ramp and starts to curve to the left near the start of the gore area.

The radius of the curve complies with Table 11.5 'Horizontal Curve Design Parameters for Rural Roads' at a design speed of 100 and 110 km/h.

Vertical Alignment:

Approaching the Kholo Road off ramp in the eastbound direction, the Warrego Highway inclines.

Ch	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170
%	4	4	4.1	3.6	3.5	3.3	3.2	3.4	3.3	3.4	3.4	3.2	3.3	3.7	3.6	3.7	3.5	4.2

Table 1 "Gradient measurements"

Refer to figure 11 on page 15 for cross section locations.

Geometry cont ....

Widths:

The eastbound lanes on the Warrego Highway are 3.5 metres wide, and comply with the below statement.

Section 7.2.5 "National Highways" from the Road Planning and Design Manual indicates that *'The width of all lanes shall be not less than 3.5m'.*

The sealed shoulder on the left side approaching the off ramp is between 1.4 metres to 1.6 metres wide. The sealed shoulder starts to narrow at the start of the taper for the off ramp and reaches a width of 800mm at the first light pole and 550mm at the second light pole.

Section 5.5.4 "Road Design Criteria for Cyclists" from the Road Planning and Design Manual indicates that *'A side "wind" force is exerted on Cyclists by passing heavy vehicles and it is desirable to provide adequate clearance between the bicycle envelope and a heavy vehicle. At motor vehicle design speeds of 60, 80 and 100 km/h, clearance between the cyclist envelope and truck of 1.0, 1.5 and 2.0m respectively are desirable for cyclist safety'.*

The off ramp lane is 4.6 metres wide at the second light pole.

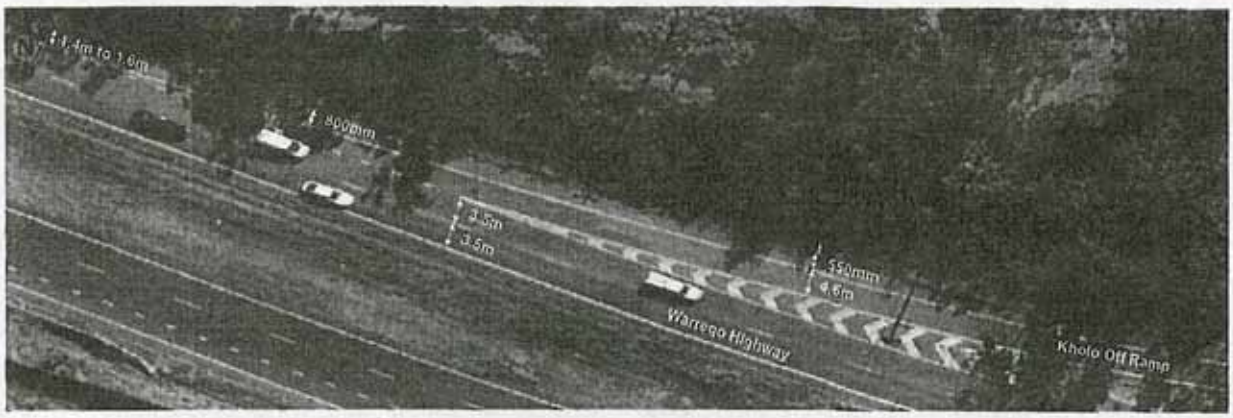


Figure 7 "Geometry -Widths"

NOTE: The linemarking in figure 7 is not as it is currently. This aerial photo is the latest from MapInfo and has been used to show measurements.

Geometry cont .....

Widths:

Figure 8 below shows the off ramp to Kholo Road in September 2008. Note the width of the sealed shoulder.

Figure 8 "DVR September 2008"

Figure 9 shows an overlay in progress June 2009. Note the placement of the TRPM's in relation to sealed shoulder width.

Figure 9 "DVR June 2009"

Geometry cont .....

Widths:

Figure 10 shows the linemarking in June 2010 and as it is currently. Note width of the sealed shoulder compared to the width of shoulder in figure 8 on page 13.

Figure 10 "DVR June 2010"

The width of the shoulder has been reduced since the overlay in June 2009.

Job number 148/18A/720, plan 450730 'A' indicates in *'General Notes'* clause 2 – Pavement marking and RPM's installation to be performed by others (MDSS 631). The contractor shall record the existing pavement markings and perform line spotting in accordance with MDSS 630.

Geometry cont .....

Crossfalls:

NOTE: Crossfalls were taken in the left eastbound lane only with a smart level (1m long). The measurement was taken approximately in the middle of the lane.

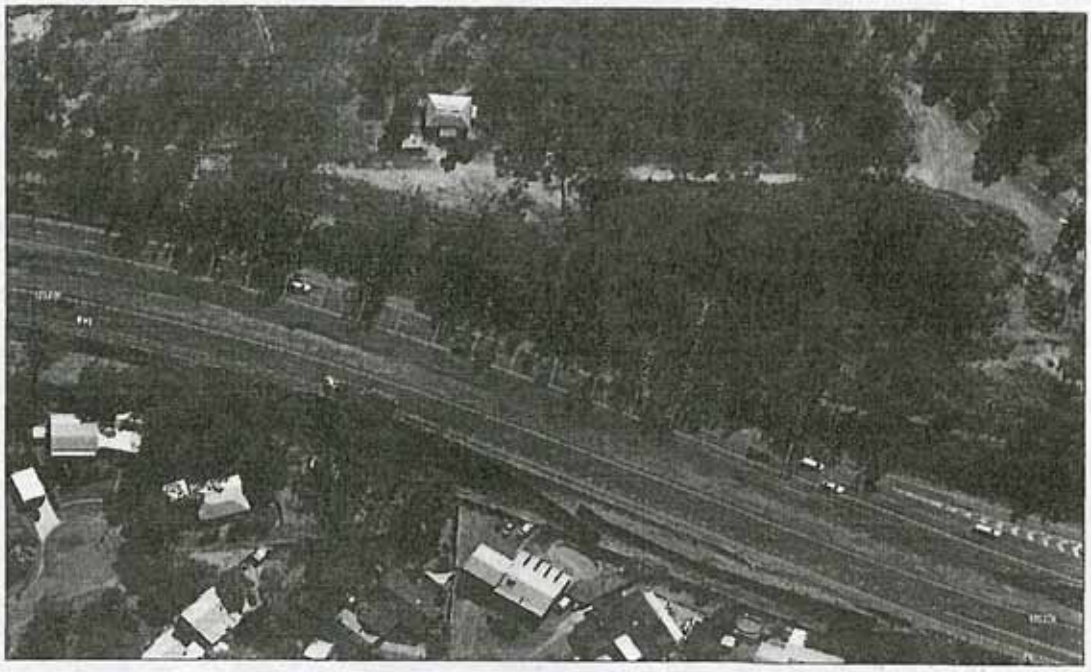


Figure 11 "Cross section locations"

Chainage	Crossfall %
170	← 2.1
160	← 2.7
150	← 3.4
140	← 3.4
130	← 3.0
120	← 2.9
110	← 1.9
100	← 0.6
90	0.1 →
80	0.5 →
70	2.2 →
60	2.1 →
50	2.4 →
40	2.4 →
30	3.1 →
20	2.1 →
10	2.6 →
0	2.2 →

Table 2 "Crossfall measurements" (→ means superelevation)

Geometry cont .....

Crossfalls:

As stated in 11.4.6 'Maximum Rate of Rotation of Crossfall' from the Road Planning and Design Manual. The maximum rate of rotation for roads with vehicles that carry livestock is 0.025 radians or 2.5% per second.

At 100 km/h, a vehicle travels approximately 27 metres a second. The rate of rotation between Ch 70 and Ch 100 is 2.8%.

3.6 Roadside Conditions

Clear Zone for 100km/h is 9.0m

This road is a rural road with signs, Light poles, kerbing and guardrail found within the clear zone.

The embankment on the left side of the eastbound lanes declines from edge of pavement into the earth lined v-drain. The embankment is gravel (road profiling)

Light poles are located between the edge of pavement and centre of drain along the off ramp.

3.7 Sight Distance

Sight Distances (m) Adopted in Current designs

Sight Distance	50km/h	60km/h	70km/h	80km/h	90km/h	100km/h	110km/h
Manoeuvre	45	60	75	95	120	155	
Stopping	45	65	85	115	140	170	210

Manoeuvring and stopping sight distance approaching the off ramp meets the required sight distance for the posted speed limit.

3.8 Road Surface

The road surface on the Warrego and Off Ramp to Kholo Road is a DG14 asphalt (job number 148 / 18A / 720, plan 450740 A and 450739 A). These works were part of the Warrego Highway Pavement Rehabilitation project between chainages 8000-13920. The project as shown in figure 9 was in progress in June 2009.

The shoulder is the same material as the through lanes however loose stone (gravel) is located along the shoulder in varies areas before the off ramp to Kholo Road.

3.9 Drainage

Water drains to either side of the eastbound lanes into the centre median drain or the earth lined v-drain along the left side of the road.

3.10 Parking

No Stopping on Motorway signs are provided through this section of the Warrego Highway.

3.11 Public Transport Facilities

N/A

3.12 Pedestrian and Bicycle Facilities

Bicycles are allowed on the Warrego Highway. Prohibition signs are located on entries to the Warrego Highway between Ipswich Motorway and Pine Mountain Road Interchange; however Bicycles are not included on the signs. A word on the signs has been covered up.

Figure 12 is provided in advance of figure 13 at all entries were these signs are provided.

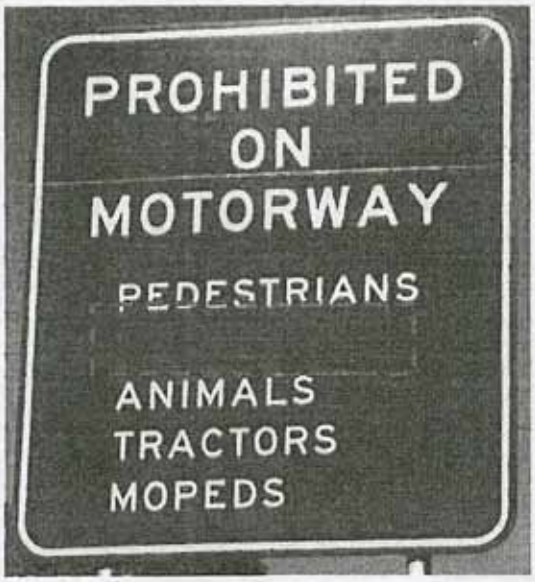


Figure 12

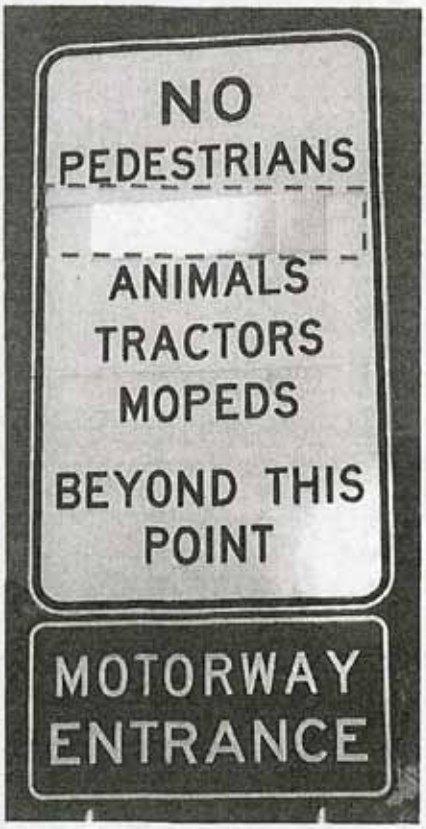


Figure 13

Prohibited Signage plans are provided in Attachments

Pedestrian and Bicycle Facilities cont ....

Chapter 5 'Traffic *parameters and Human Factors'* states in section 5B.8 'Signage' *'Signage is only necessary if the cycle route is marked. Cycles may not be banned from using a Motorway, but the department may choose not to mark the cycle route'.*

There are no cycle signs along the Warrego Highway from Pine Mountain Road to the Kholo Road off ramp in the eastbound direction.

Section 5B.2 'Single Lane Ramp Volumes' indicates that *'Cyclists can cross motorway ramps if there are sufficient gaps in traffic flow.* The clause goes on about minimum times for cyclists to cross the ramps, however at the end of the clause it states *'cyclists may be permitted to cross single lane freeway ramps if motor vehicle volumes do not exceed 800 vehicles per hour at any time during the day'.*

The highest peak from 12am Sunday 12 June to 12am Monday 13 June 2011(24 hrs), was the AM Peak (1045 – 1145) 236 vehicles using the off ramp to Kholo Road.

3.13 Recent Work Undertaken

Pavement Overlay in 2009 (job number 148 / 18A / 720).

3.14 Crash History and Analysis

In the verified 5 year crash data range (1 July 2004 – 30 June 2009) RoadCrash 2 database retrieved two crashes between chainage 10.300 and 10.800 which includes the off ramp to Kholo Road.

Both of these crashes occurred before the off ramp in dry road conditions. The first crash occurred for unknown reasons; however the police report indicates the driver had a significant mental illness.

The second crash occurred when the driver attempted to adjust side mirror and lost control.

4 Additional Information

Information supplied to Main Roads from the Police was that Unit 2 (cyclist) was travelling on the lane side of the eastbound edge line.

5 Summary

This investigation report provides details of a fatal traffic crash that occurred within the jurisdiction of the Department of Transport and Main Roads Metropolitan Region. The crash occurred on Sunday 5th June 2011 on the Warrego Highway just west of the eastbound off ramp to Kholo Road.

The Kholo Road overpass is within a section of the Warrego Highway that has being classed as a Motorway. The Motorway ends just west of the Pine Mountain Road Overpass. Within this section local side roads enter the Warrego highway with acceleration lanes provided.

Definition of a Motorway: *A divided highway for through traffic with full control of access and with interchanges provided at intersections where access to the local road system is required. (See also Freeways)*

The Crash Incident Report (RoadCrash2) describes the crash as:

U1 stated that he was travelling east bound on the Warrego Hwy in the left hand lane (slow lane) where he observed a push bike rider heading in the same direction. When U1 was getting closer he stated that he moved over in his lane to give the bike rider more room. As U1 has driven past U2 he has heard a loud noise and has braked, locking up the brakes causing the truck to come to a complete stop a short distance from the incident on the Kholo Rd exit ramp.

Linemarking:
Linemarking on the whole Warrego Highway was painted from the 29-08-10 to the 07-09-10 (Information supplied by Roadtek).

RRPM's:
RRPM's approaching and on the off ramp comply with Table 4.5 'Normal Spacing (N) Between RRPMs' from the MUTCD.

Guide Posts/Delineators:
Guide posts are provided in the centre median and on the outside (left side) of the curve two guide posts are provided between the end of the guardrail and off ramp to Kholo Road. These two guide posts are approximately 100 metres apart.

Delineators are provided along the top of the w-beam guardrail.

The guide posts after the guardrail and prior to the off ramp do not comply with Table 3.1 *'Spacing of guide posts on curves'* from the MUTCD. Table 3.1 shows that spacing of guide posts should be 40 metres through a curve with a radius between 600 to799. This curve has a radius approximately of 679 metres.

Summary cont ....

Horizontal Alignment:

Approaching the Kholo Road off ramp in the eastbound direction the Warrego Highway curves to the right with a radius approximately of 679 metres. The road straightens before the off ramp and starts to curve to the left near the start of the gore area.

The radius of the curve complies with Table 11.5 'Horizontal Curve Design Parameters for Rural Roads' at a design speed of 100 and 110 km/h.

Geometry (Widths):

The eastbound lanes on the Warrego Highway are 3.5 metres wide, and comply with the below statement.

Section 7.2.5 "National Highways" from the Road Planning and Design Manual indicates that *'The width of all lanes shall be not less than 3.5m'.*

The sealed shoulder on the left side approaching the off ramp is between 1.4 metres to 1.6 metres wide. The seal shoulder starts to narrow at the start of the taper for the off ramp and reaches a width of 800mm at the first light pole and 550mm at the second light pole.

Section 5.5.4 "Road Design Criteria for Cyclists" from the Road Planning and Design Manual indicates that *'A side "wind" force is exerted on Cyclists by passing heavy vehicles and it is desirable to provide adequate clearance between the bicycle envelope and a heavy vehicle. At motor vehicle design speeds of 60, 80 and 100 km/h, clearance between the cyclist envelope and truck of 1.0, 1.5 and 2.0m respectively are desirable for cyclist safety'.*

Crossfalls:

As stated in 11.4.6 'Maximum Rate of Rotation of Crossfall' from the Road Planning and Design Manual. The maximum rate of rotation for roads with vehicles that carry livestock is 0.025 radians or 2.5% per second.

At 100 km/h, a vehicle travels approximately 27 metres a second. The rate of rotation between Ch 70 and Ch 100 is 2.8%.

Summary cont ....

Pedestrian and Bicycle Facilities:

Bicycles are allowed on the Warrego Highway. Prohibition signs are located on entries to the Warrego Highway between Ipswich Motorway and Pine Mountain Road Interchange; however Bicycles are not included on the signs. A word on the signs has been covered up.

Chapter 5 'Traffic *parameters and Human Factors'* states in section 5B.8 'Signage' *'Signage is only necessary if the cycle route is marked. Cycles may not be banned from using a Motorway, but the department may choose not to mark the cycle route'.*

There are no cycle signs along the Warrego Highway from Pine Mountain Road to the Kholo Road off ramp in the eastbound direction.

Section 5B.2 'Single Lane Ramp Volumes' indicates that *'Cyclists can cross motorway ramps if there are sufficient gaps in traffic flow.* The clause goes on about minimum times for cyclists to cross the ramps, however at the end of the clause it states *'cyclists may be permitted to cross single lane freeway ramps if motor vehicle volumes do not exceed 800 vehicles per hour at any time during the day'.*

The highest peak from 12am Sunday 12 June to 12am Monday 13 June 2011(24 hrs), was the AM Peak (1045 – 1145) 236 vehicles using the off ramp to Kholo Road.

Additional Information:

Information supplied to Main Roads from the Police was that Unit 2 (cyclist) was travelling on the lane side of the eastbound edge line.

6 Investigating Officers Statement

This Crash Investigation Report was carried out by a Metropolitan Region Road Operations' Crash Investigator, using observations and information made available to the officer. Every effort was made to ensure that all relevant safety issues were considered.

PLEASE NOTE: Comparison of measurements and data contained within this report is with respect to current Main Roads standards.

7 Equipment Check Record

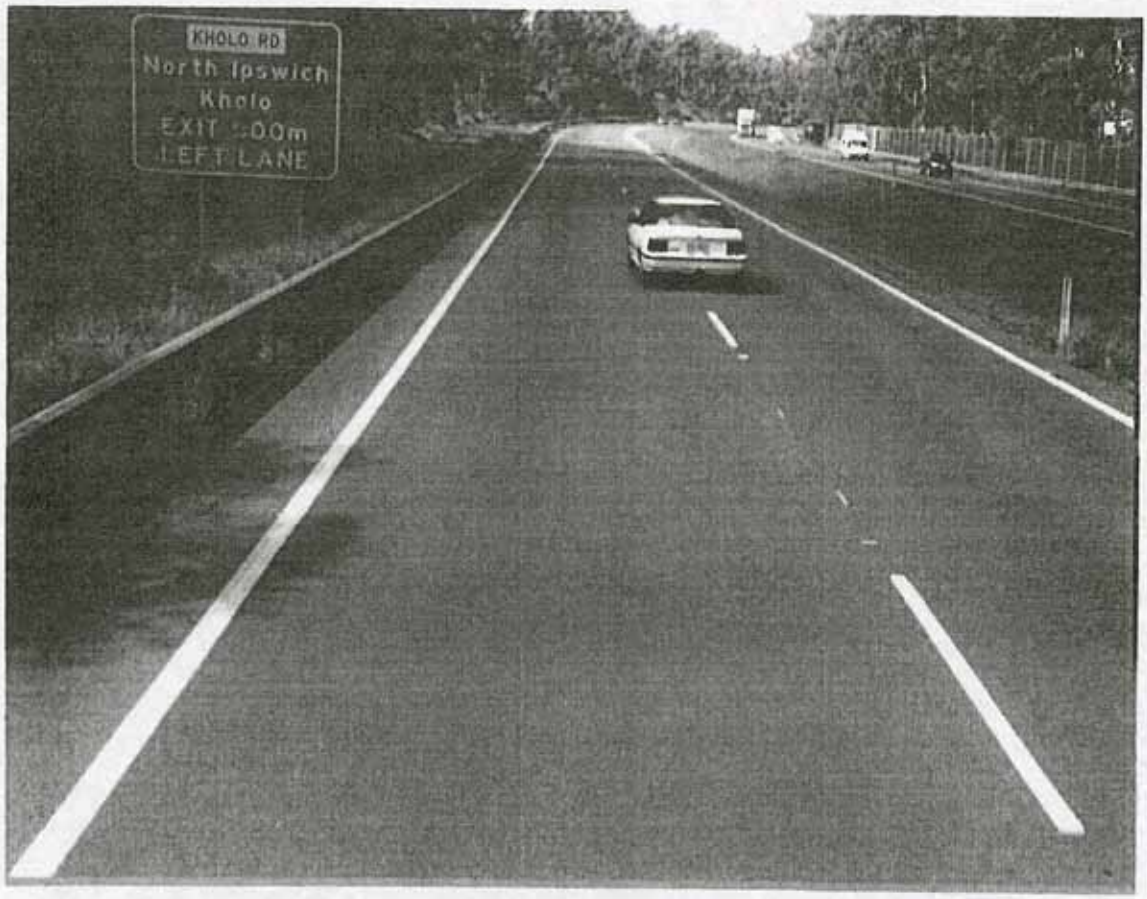
Equipment Used	Date used	Date last checked	Comments
Camera	07/06/11	-----	-----
Smart Level	23/06/11	19/01/11	Nudgee Beach Calibration Range
Measuring Tape	07,08/06/11	-----	-----
Trupulse	07,08/06/11	19/01/11	Nudgee Beach Calibration Range

8 References

Road Planning and Design Manual

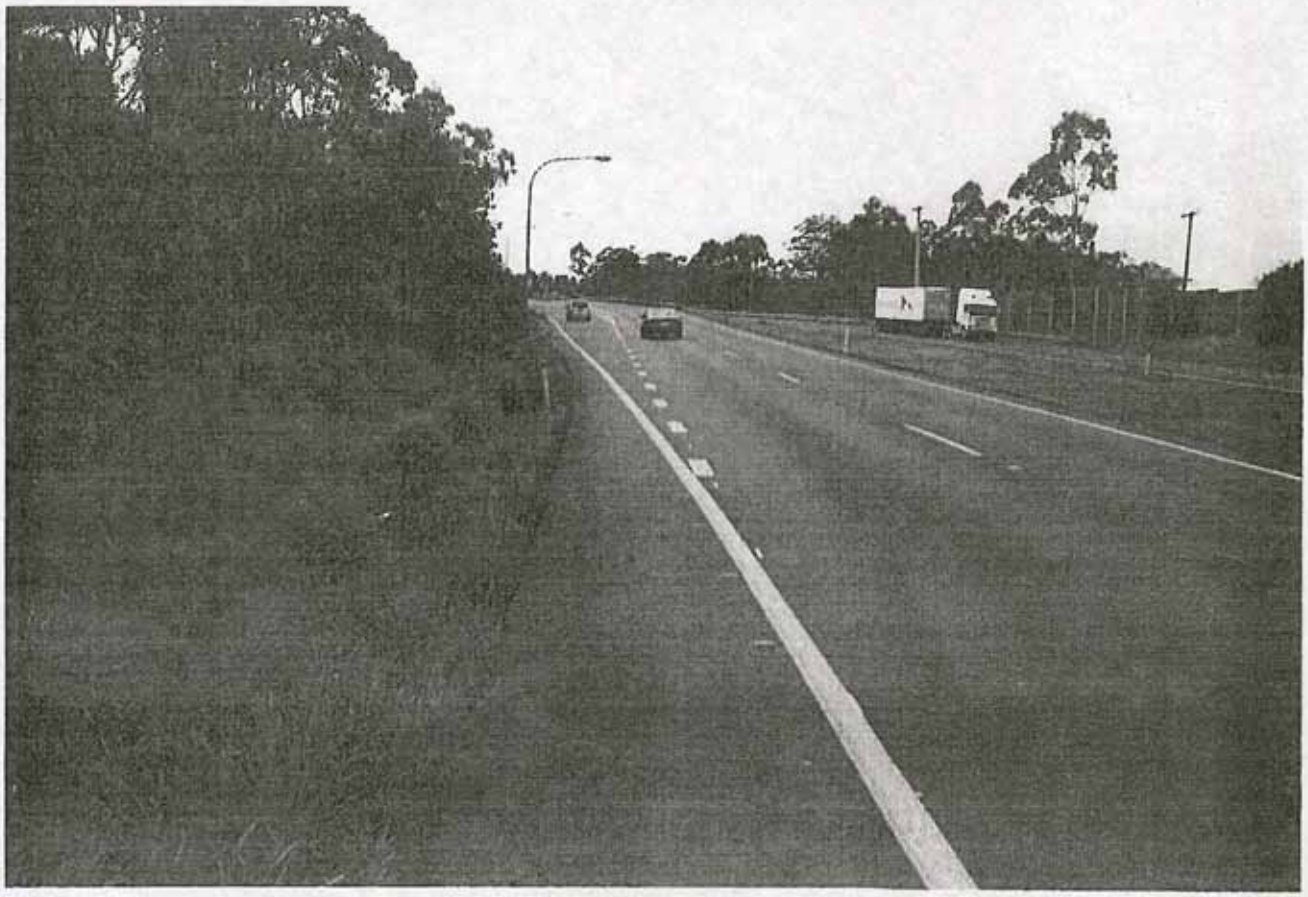
Manual of Uniform Traffic Control Devices – Ed 2003

9 Photos

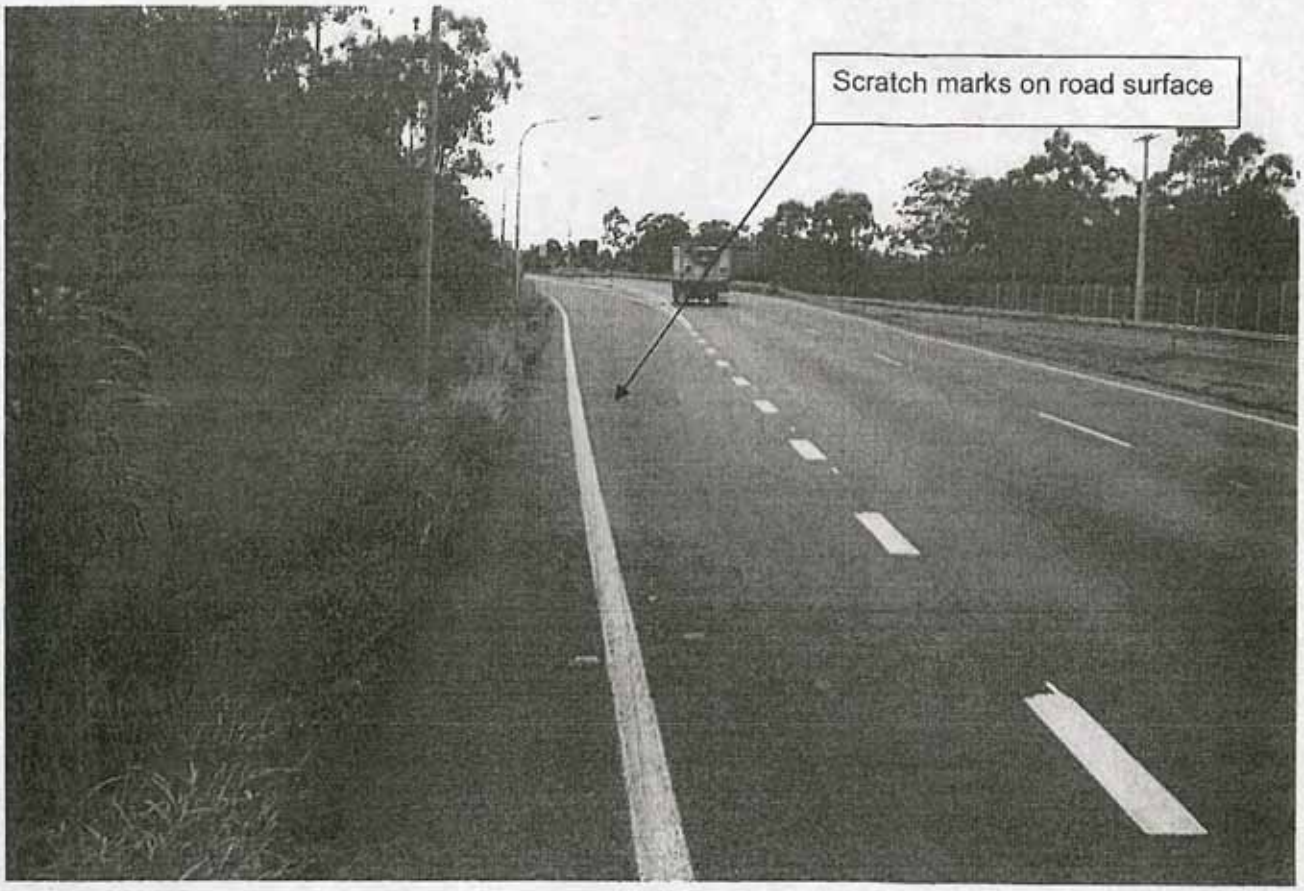


Travelling eastbound on Warrego Highway

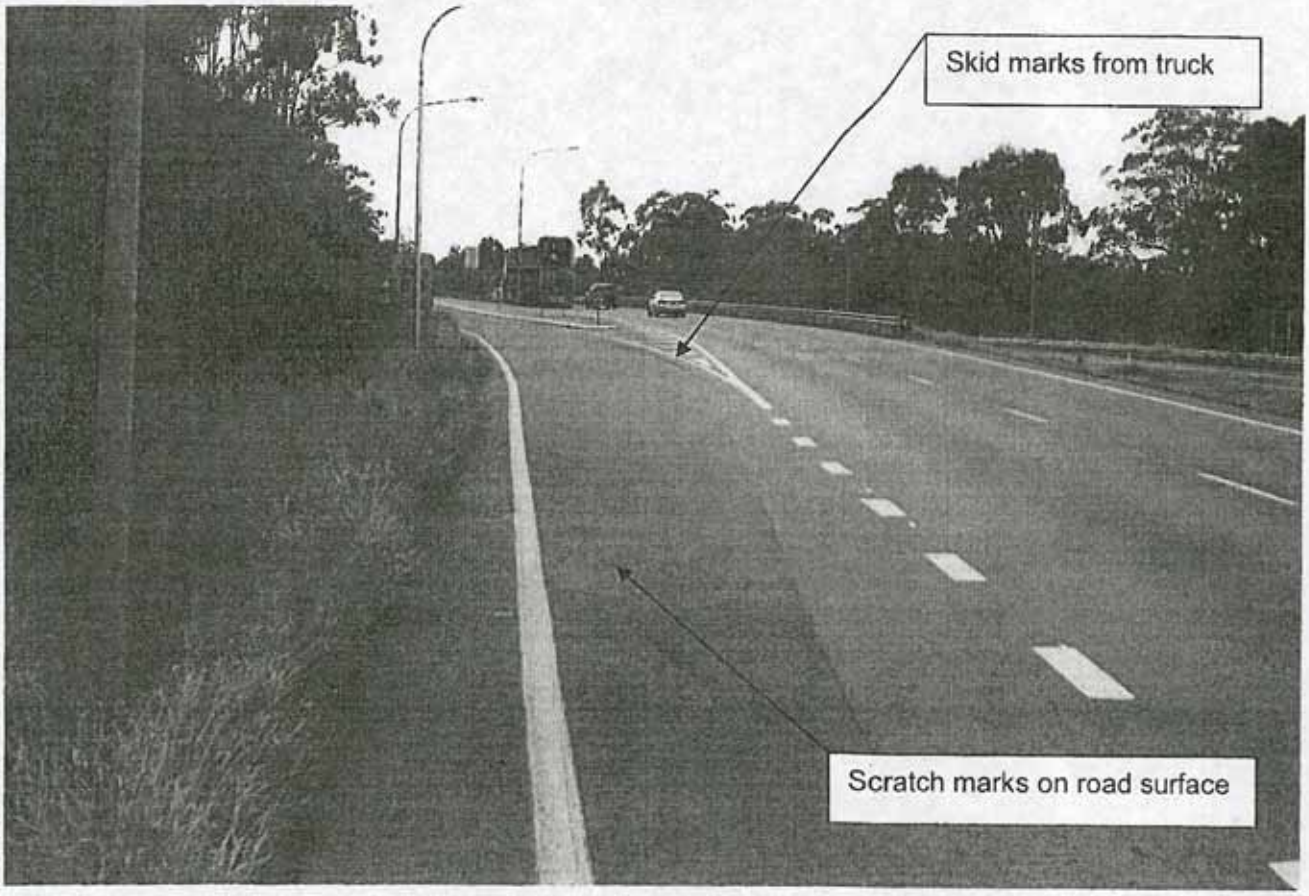
"approximately 500 metres prior to crash location"



Eastbound off ramp to Kholo Road



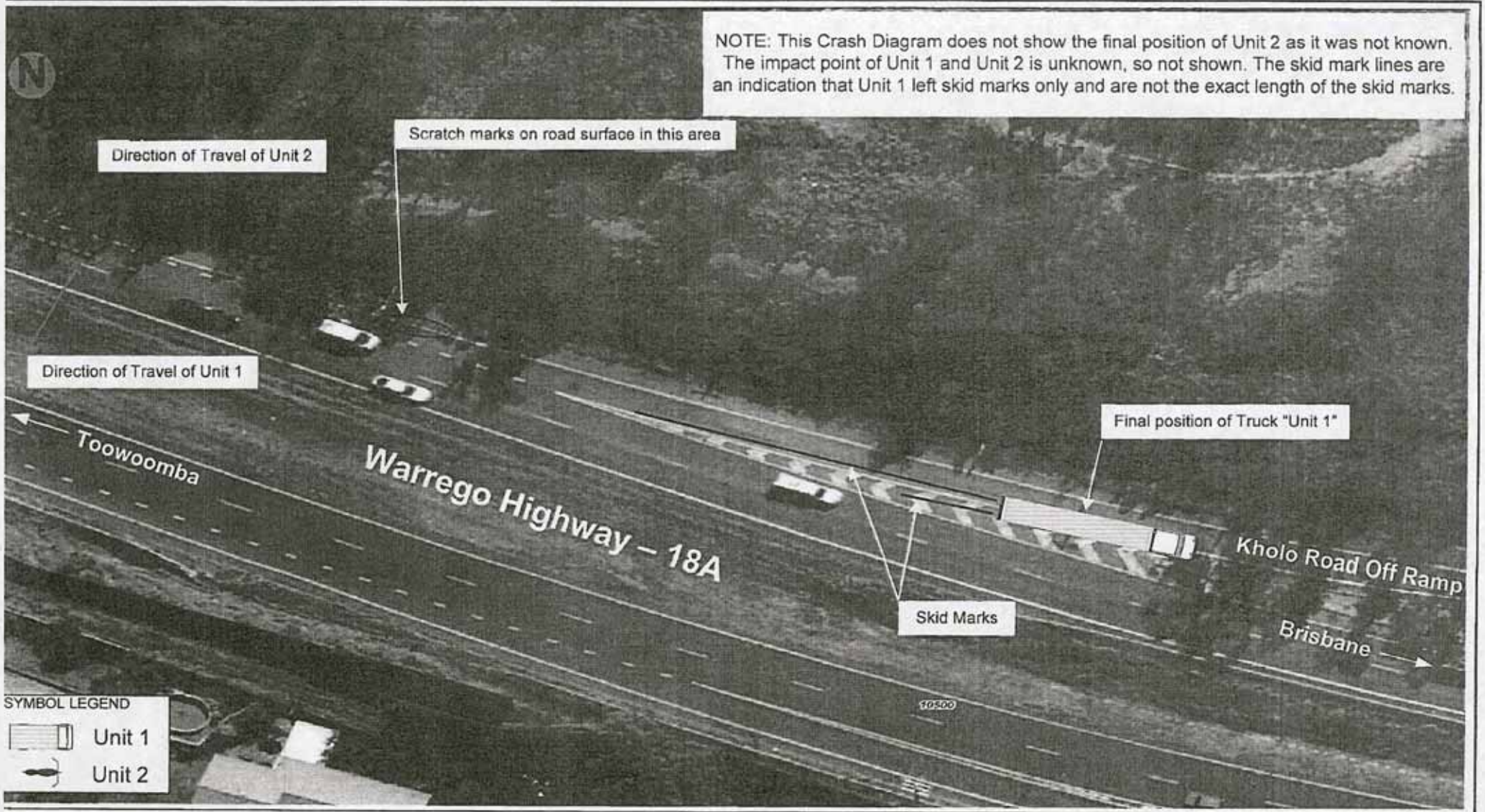
Crash Site



Crash Site

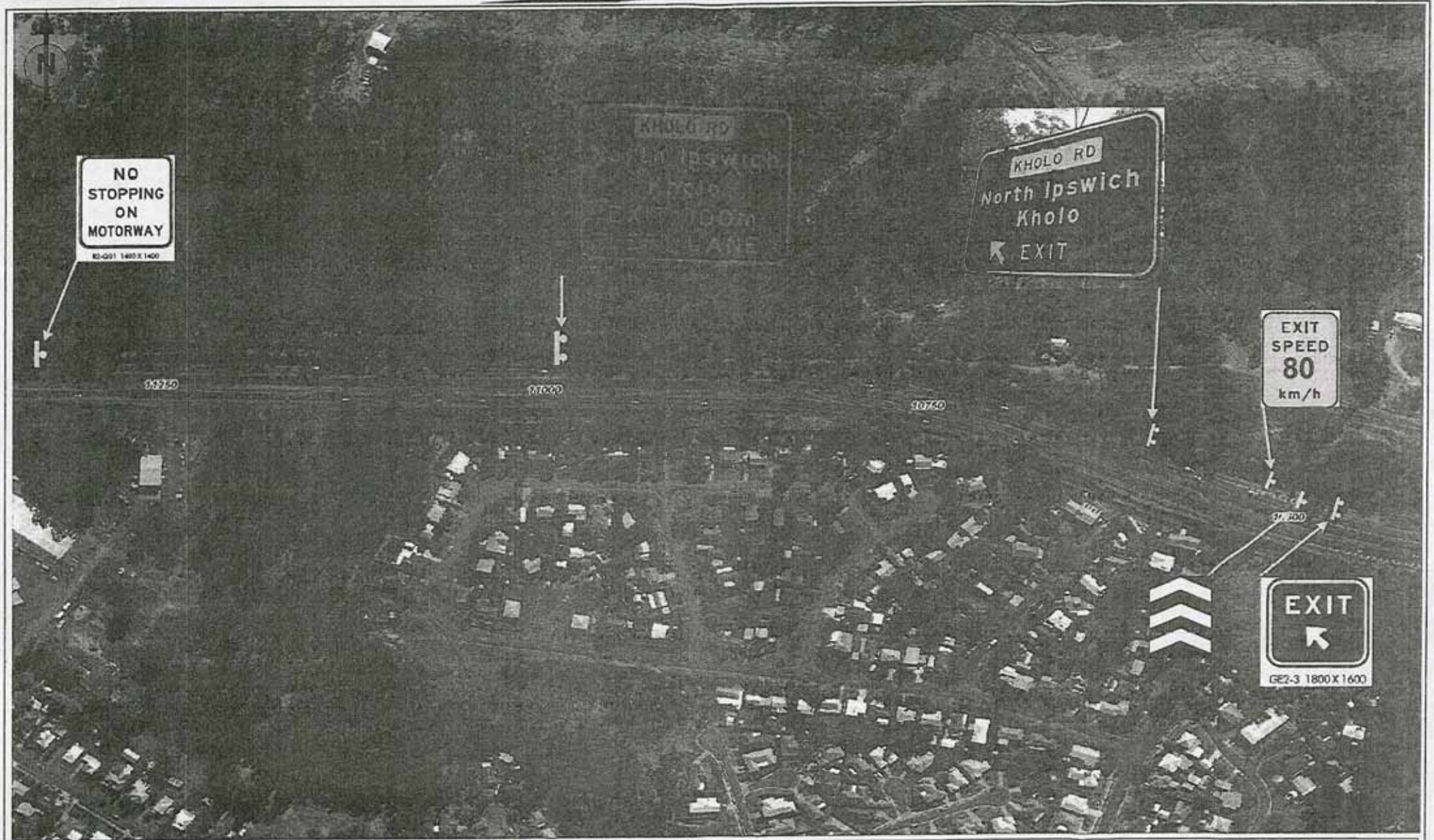
Attachments

Transport and Main Roads

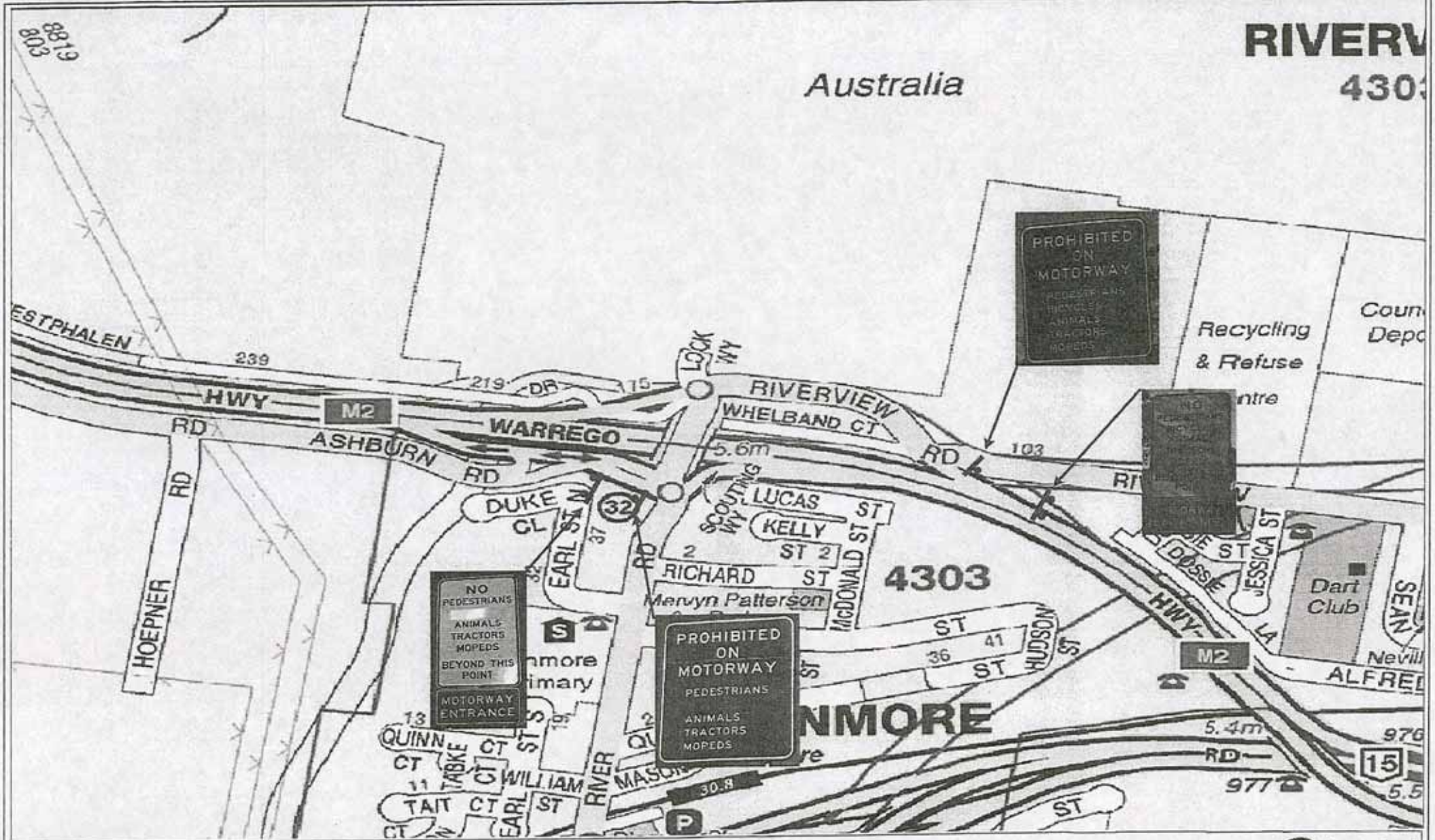


Crash Diagram

Queensland Government

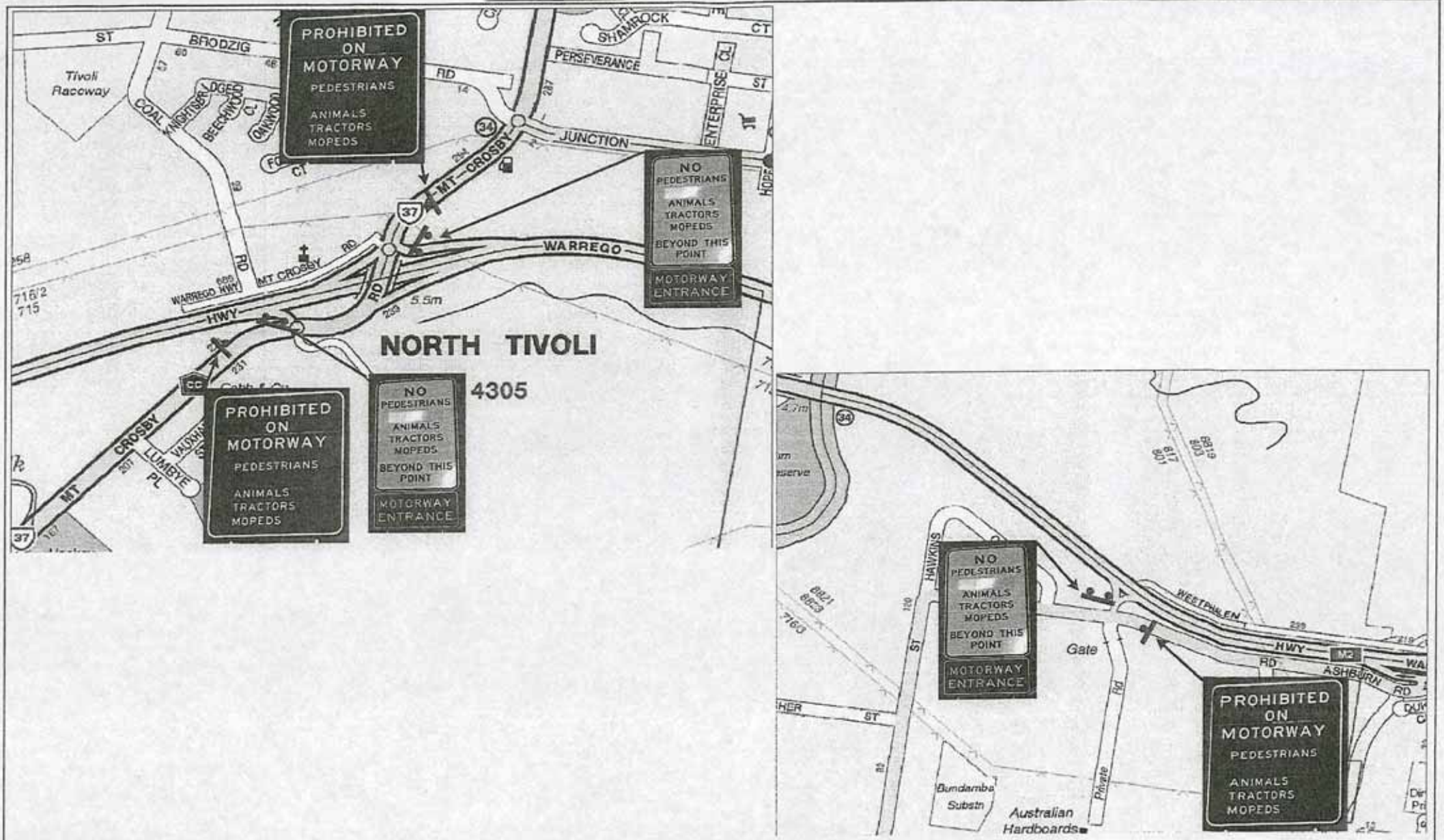

N
NO STOPPING ON MOTORWAY
KHOLO RD
North Ipswich
Kholo
EXIT
EXIT SPEED 80 km/h
EXIT
GE2-3 1800X1600

Signs



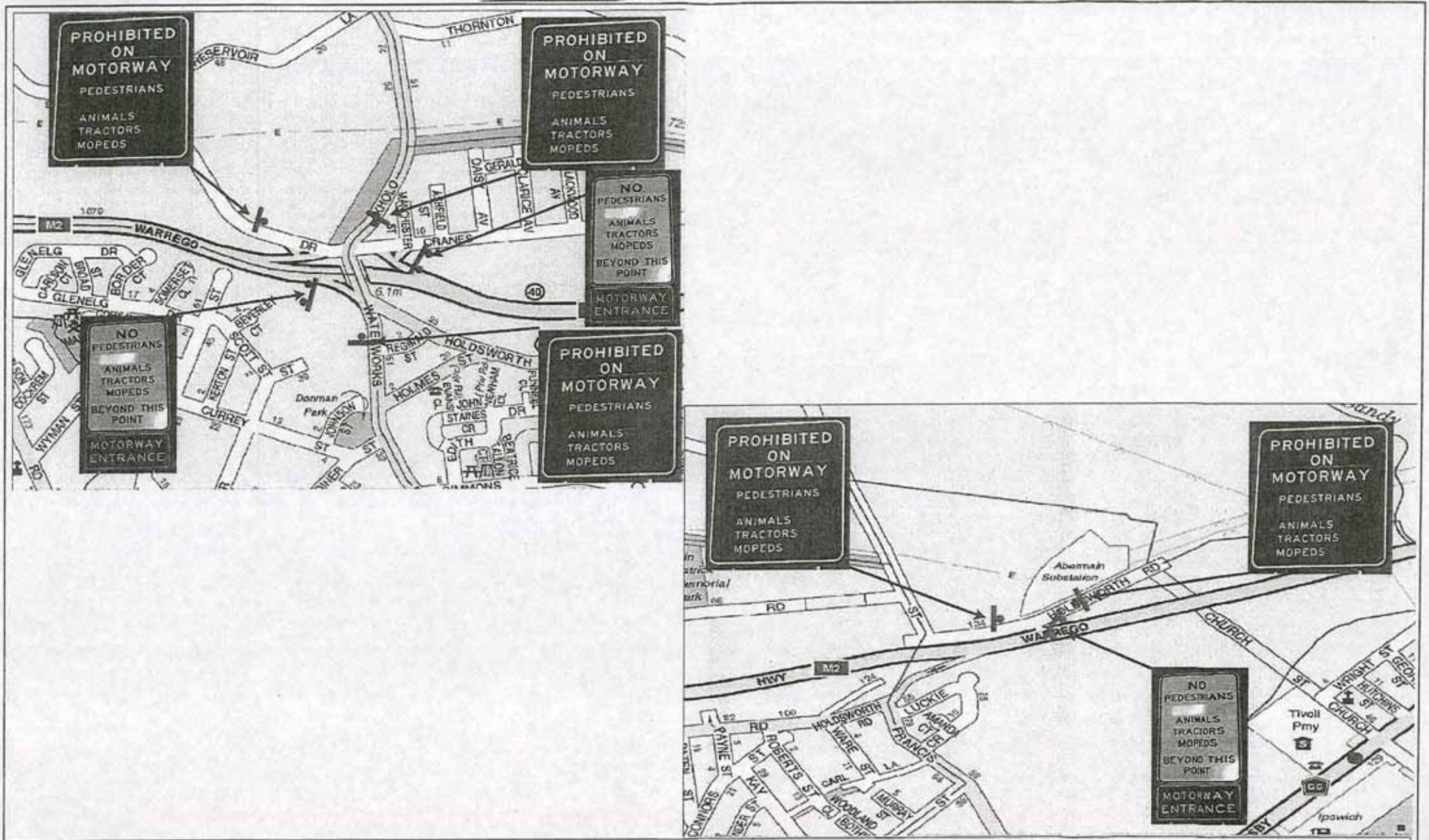
Prohibited Signage

Queensland Government



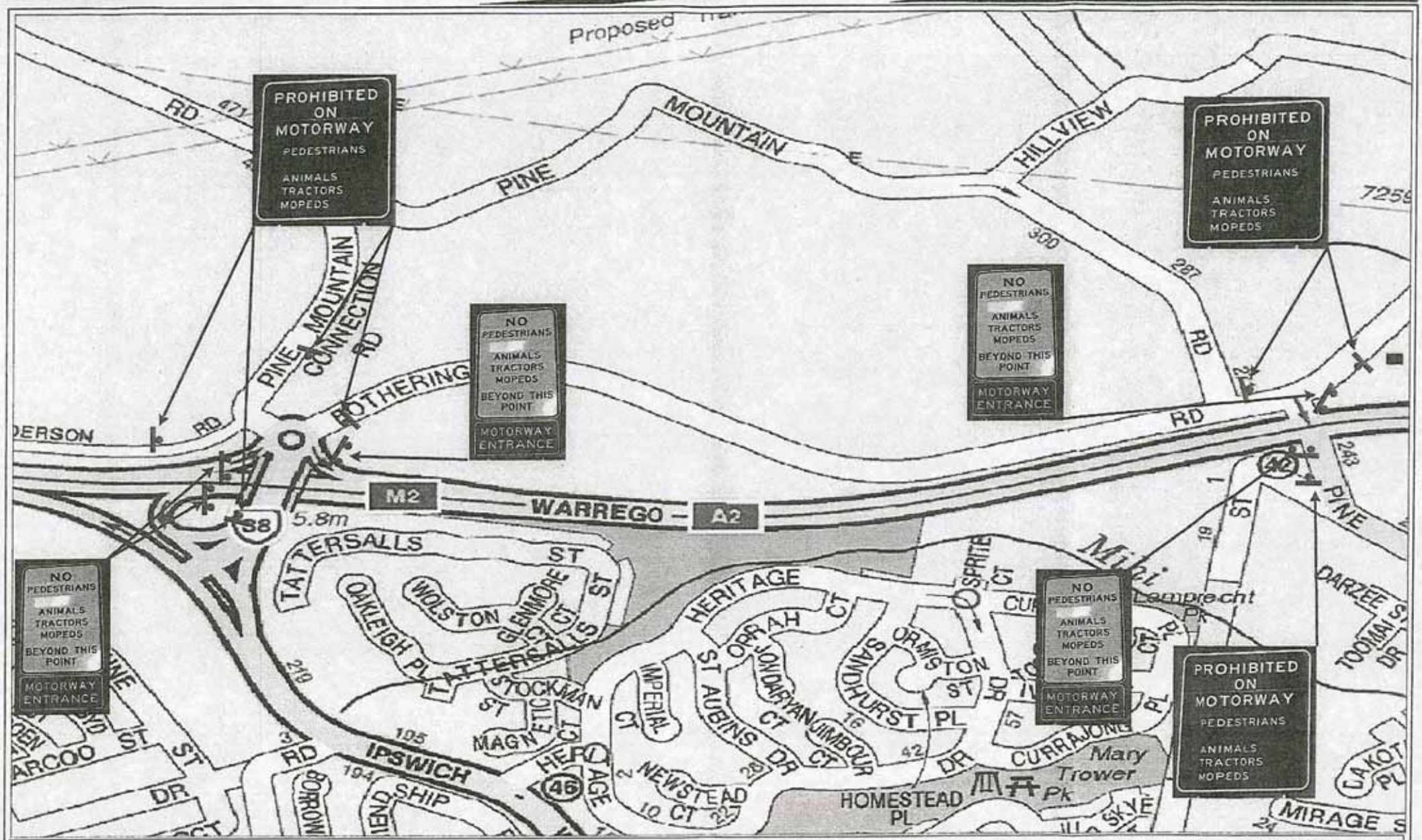
Prohibited Signage

Queensland Government



Prohibited Signage

Queensland Government



Traffic Analysis and Reporting System
AADT Segment Report
Road Section 18A - Warrego Highway (Ipswich - Toowoomba)
Traffic Year 2010

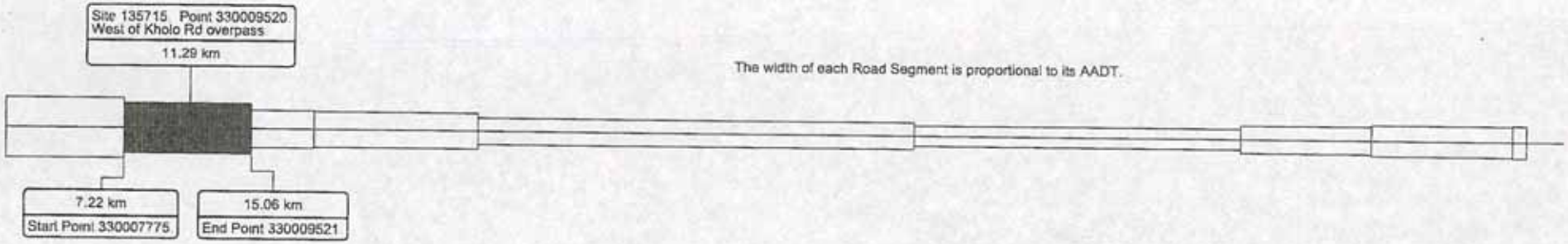
Road Segments Summary - All Vehicles

Region	Segment Start TDist	Segment End TDist	Site	Site TDist	Description	AADT			VKT (Millions)			Data Year	Page
						G	A	B	G	A	B		
206	0.000 km	7.220 km	135546	4.500 km	WIM Site Bremer River	20,365	20,624	40,989	53.66788	54.35043	108.01831	2010	2
206	7.220 km	15.060 km	135715	11.286 km	West of Kholo Rd overpass	17,439	16,719	34,158	49.90344	47.84309	97.74653	2009	3
206	15.060 km	18.880 km	135964	16.118 km	1Klm West of Brisbane Valley Hwy	12,449	12,956	25,405	17.35764	18.06455	35.42219	2010	4
206	18.880 km	28.900 km	10021	23.906 km	West of Seminary Road	12,019	12,139	24,158	43.95709	44.39596	88.35305	2010	5
206	28.900 km	55.520 km	30066	46.000 km	W of Laidley_Plainlands Intersection	9,151	8,930	18,081	88.91386	86.76656	175.68042	2010	6
206	55.520 km	75.370 km	30041	57.700 km	WIM Site Gatton Td 57.7km	6,769	7,191	13,960	49.04310	52.10059	101.14369	2010	7
206	75.370 km	83.350 km	30070	82.500 km	1Km East of Murphy Creek Rd	9,321	9,441	18,762	27.14928	27.49880	54.64808	2010	8
206	83.350 km	91.900 km	32636	86.930 km	300m West of Roches Road Tdist 86.39km	10,633	10,540	21,173	33.18293	32.89271	66.07564	2010	9
202	91.900 km	92.760 km	30001	92.100 km	Top of Range Perm Site Td 92.1	11,019	10,998	22,017	3.45888	3.45227	6.91114	2010	10
202	92.760 km	94.580 km	31147	94.560 km	James St To Neil Td 94.56		10,797			7.17245		2010	11
202	94.580 km	95.010 km	31145	94.760 km	James St To Hume St @/18A &Neil	10,226			1.60497			2010	12
								Totals					

Road Segments Summary - Heavy Vehicles only

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

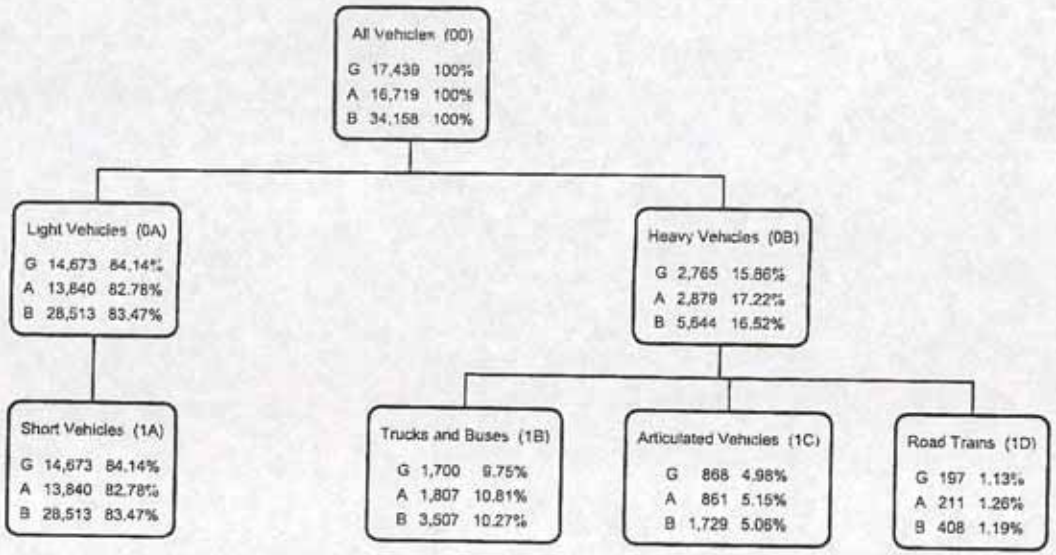
Region	Segment Start TDist	Segment End TDist	Site	Site TDist	Description	HV AADT						HV VKT (Millions)			Data Year	Page
						G		A		B						
						AADT	HV %	AADT	HV %	AADT	HV %	G	A	B		
206	0.000 km	7.220 km	135546	4.500 km	WIM Site Bremer River	2,406	11.81%	2,442	11.84%	4,848	11.83%	6.34053	6.43540	12.77593	2010	2
206	7.220 km	15.060 km	135715	11.286 km	West of Kholo Rd overpass	2,765	15.86%	2,879	17.22%	5,644	16.52%	7.91232	8.23855	16.15087	2009	3
206	15.060 km	18.880 km	135964	16.118 km	1Klm West of Brisbane Valley Hwy	1,967	15.80%	2,070	15.98%	4,037	15.89%	2.74259	2.88620	5.62879	2010	4
206	18.880 km	28.900 km	10021	23.906 km	West of Seminary Road										2010	5
206	28.900 km	55.520 km	30066	46.000 km	W of Laidley_Plainlands Intersection	1,672	18.27%	1,658	18.57%	3,330	18.42%	16.24565	16.10963	32.35528	2010	6
206	55.520 km	75.370 km	30041	57.700 km	WIM Site Gatton Td 57.7km	1,008	14.89%	1,011	14.06%	2,019	14.46%	7.30321	7.32495	14.62816	2010	7
206	75.370 km	83.350 km	30070	82.500 km	1Km East of Murphy Creek Rd	1,701	18.25%	1,601	16.96%	3,302	17.60%	4.95450	4.66323	9.61774	2010	8
206	83.350 km	91.900 km	32636	86.930 km	300m West of Roches Road Tdist 86.39km	1,595	15.00%	1,685	15.99%	3,280	15.49%	4.97760	5.25846	10.23606	2010	9
202	91.900 km	92.760 km	30001	92.100 km	Top of Range Perm Site Td 92.1										2010	10
202	92.760 km	94.580 km	31147	94.560 km	James St To Neil Td 94.56			1,532	14.19%				1.01771		2010	11
202	94.580 km	95.010 km	31145	94.760 km	James St To Hume St @/18A &Neil	1,614	15.78%					0.25332			2010	12
											Totals					



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.

	Annual Segment Growth		
	Based on 1 years data	Based on 5 years data	Based on 10 years data
G	0.00%	2.16%	
A	0.00%	2.43%	
B	0.00%	2.29%	



Class Speed Matrix

ClassMatrix-1699
Site: 211601.2E
Description: **EB offramp from 18A to Kholo Rd UBD193 B20 2AE <60>**
Filter time: **0:00 Sunday, 12 June 2011 => 0:00 Monday, 13 June 2011**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(20,120) Headway(>0)

Speed (km/h)

Speed (km/h)	Class 1	2	3	4	5	6	7	8	9	10	11	12	Speed Totals	
20 - 25	.	.	.	.	.	.	.	.	.	.	.	.	0	0.0%
25 - 30	.	.	.	.	.	.	.	.	.	.	.	.	0	0.0%
30 - 35	.	.	.	.	.	.	.	.	.	.	.	.	0	0.0%
35 - 40	2	.	.	.	.	.	.	.	.	.	.	.	2	0.1%
40 - 45	7	1	1	.	.	.	.	.	.	.	.	.	9	0.5%
45 - 50	15	1	1	1	.	.	.	.	.	.	.	.	18	1.0%
50 - 55	44	4	8	1	.	.	.	.	.	.	.	.	57	3.2%
55 - 60	154	6	1	.	.	.	.	.	.	.	.	.	161	8.9%
60 - 65	314	7	5	1	.	.	2	.	.	.	.	.	329	18.2%
65 - 70	424	14	9	.	.	.	1	.	1	.	.	.	449	24.9%
70 - 75	365	5	8	.	.	.	.	.	.	.	.	.	378	21.0%
75 - 80	224	1	3	.	.	.	.	.	.	.	.	.	228	12.6%
80 - 85	116	1	3	.	.	.	.	.	.	.	.	.	120	6.7%
85 - 90	34	2	3	.	.	.	.	.	.	.	.	.	39	2.2%
90 - 95	13	.	.	.	.	.	.	.	.	.	.	.	13	0.7%
95 - 100	1	.	.	.	.	.	.	.	.	.	.	.	1	0.1%
100 - 105	.	.	.	.	.	.	.	.	.	.	.	.	0	0.0%
105 - 110	.	.	.	.	.	.	.	.	.	.	.	.	0	0.0%
Class Totals	1713	42	42	3	0	0	3	0	1	0	0	0	1804	
	95.0%	2.3%	2.3%	0.2%	0.0%	0.0%	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%		

Queensland Government

e-Memo

Our ref: 505/00018
Your ref: 01/08/2011
Date: 1 August 2011

To	Jeffrey J Weeks Alex Z Pelevin
cc	Prakash N Kolarkar
Subject	Immediate Remedial Actions - Warrego Highway / Kholo Road off ramp

Alex and Jeff

Please find below the Immediate and Long term Remedial Actions assigned to you following the recent fatal crash on the Warrego Highway near the eastbound off ramp to Kholo Road.

Jeff Weeks:

Immediate Actions:

- Reinstate bicycles on Motorway Prohibition signs.
- Review guide posts and signage prior to eastbound off ramp to Kholo Road to comply with MUTCD standards.

Alex Pelevin:

Immediate Actions:

- Notify cycle groups of prohibition change and planning regarding an alternative route.

Long Term Actions:

- Metropolitan Region to provide alternative cycle route for this section of motorway

Please find attached a copy of the signed off Remedial actions and fatal report.

Remedial actions for 20110190989.pdf Crash 20110190989.pdf

Please send back the attached Close out form with details of actions undertaken.

BLANK CLOSE OUT FORM .doc

Andrew K Robbins
Senior Crash Investigator

Transport and Main Roads

Remedial Actions

for

Warrego Highway

370m west of Kholo Road Overpass in the eastbound Off Ramp to Kholo Road

05/06/11

Crash number 20110490989

Document control sheet

Crash number 20110490989

Contact for enquiries and proposed changes

If you have any questions regarding this document or if you have a suggestion for improvements, please contact:

Contact Officer Prakash Kolarkar
Title Principal Engineer
Phone 07 3135 5599

Prepared By:

Name Prakash Kolarkar

Position Principal Engineer (Network Data and Intelligence)

Signature _____ Date 25/07/11

Approved By:

Name Mike Carter

Position Manager (Road Operations)

Signature _____ Date 25/7/11

Approved By:

Name David Grosse

Position Acting Regional Deputy Director

Signature _____ Date 26/7/11

Additional Testing/Checking Required

No additional testing required

Immediate Remedial Actions

1. Reinstate bicycles on Motorway Prohibition signs.

   Action: Jeff Weeks (Principal Engineer – Civil)

2. Notify cycle groups of prohibition change and planning regarding an alternative route.

   Action: Alex Pelevin (District Director – Ipswich)

3. Review guide posts and signage prior to eastbound off ramp to Kholo Road to comply with MUTCD standards

   Action: Jeff Weeks (Principal Engineer – Civil)

Long Term Actions

1. Metropolitan Region to provide alternative cycle route for this section of Motorway

   Action: Alex Pelevin (District Director – Ipswich)

5

Chapter 5
Traffic Parameters and Human Factors

5

5.5 Bicycles

5.5.1 General

Studies have shown that bicycle travel accounts for 2% to 9% of all journeys in various towns and cities in Australia. The Queensland Cycle Strategy aims to increase cycling by 50% by 2011 and 100% by 2021. It aims to achieve this by a range of measures to:

- Improve the network of bicycle routes throughout the State;
- Improve the safety and security of bicycle riders;
- Integrate cycling and public transport;
- Provide convenient and secure end of trip facilities; and
- Promote and encourage cycling.

Convenient and safe bicycle facilities on roads are a prerequisite for this objective to be realised. Main Roads' Policy for Cycling on State Controlled Roads defines the approach to be adopted for providing bicycle facilities on State controlled roads in Queensland.

As bicycles are defined as vehicles in road regulations, they have a right to use the road system unless specifically excluded (e.g. on some motorways and controlled access highways). Bicycles are also allowed to travel on footpaths in Queensland unless specifically prohibited by a local law.

The safety principles for bicycle facilities are similar to those for pedestrians shown in Section 5.4.1. Substituting the word "cyclists" or "bicycles" for "pedestrian(s)" in that Section will give the appropriate principles.

Obviously, the design of facilities will be different, as bicycles travel faster and take up more space than pedestrians do.

The cycle network is only partially developed in most areas in Queensland, and long lengths of cycle facilities are uncommon. However, for safety reasons, cycle paths must not end at locations that could place users at risk. It is poor design practice to terminate a cycle facility because the road narrows and no alternative route is available.

The following sections provide an overview of design practice with respect to bicycles. More details can be found in the GTEP Part 14 (Austroads, 1999a), and MUTCD (Main Roads 2003)

5.5.2 Characteristics

Cyclists may be divided into the following five broad groups:

- Primary school children;
- Secondary school children;
- Recreational cyclists;
- Commuter cyclists (e.g. work, shopping); and
- Sports cyclists in training.

For any specific locality, the needs of all the potential users should be considered.

All will share common needs such as a smooth riding surface, a safe travelling corridor including connectivity of routes to potential destinations and somewhere to park the bicycle at the end of the trip.

Primary school children, particularly the younger ones, do not have developed road skills and awareness of dangerous situations and should preferably be provided with off road facilities.

Secondary school children are more adventurous and may prefer public roads to off-road paths, particularly if the latter

requires a longer journey.

Recreational cyclists prefer most of their travelling on the quieter off-road paths and streets and are usually not in any hurry to reach their destination. However, they will use the road system for longer journeys. For example, cycle tourers will travel extremely long distances within and between towns.

Commuter cyclists may have varying needs. Some will want to reach their destination in the shortest time, regardless of traffic conditions, and the others are prepared to take longer on less stressful routes. Secure bicycle parking facilities at the end of the journey are required, especially where stops for long periods occur.

Sporting cyclists travel long distances for training and will be found on arterial roads and highways. Many of these cyclists will also commute to work.

5.5.3 Types of Facilities

In considerations of whether special or separate facilities should be provided for cyclists, the following definitions apply: (refer to Table 5.12 and Austroads, 1999a):

- *Full integration* - motor vehicles and cyclists share the same lane.
- *Partial integration* - the left side lane shared by motor vehicles and cyclists is widened to allow motor vehicles to overtake cyclists without changing lanes.
- *Partial separation* - a separate lane or sealed shoulder is provided for cyclists (and parked vehicles).
- *Full separation* (i.e. off-road facilities) - a separate path away from the carriageway is provided for cyclists. This path may be exclusively for cyclists or shared with pedestrians.

The degree of integration or separation to be adopted depends on:

- Vehicle volumes;
- Bicycle volumes (12 hour two-way);
- Presence of parking; and
- Design speed of the road.

Off-street bicycle paths provide safety and access to local roads away from the high speed and limited access roads, but may also be warranted for other reasons such as:

- recreational value, allowing leisurely trips to parks and scenic areas etc;
- providing for inexperienced cyclists such as primary school children; and
- providing facilities that can also be used by pedestrians.

Appendix 5B discusses facilities associated with motorways.

5.5.4 Road Design Criteria for Cyclists

5.5.4.1 General

Bicycle operating space is defined in Figure 5.19. A desirable lateral clearance between bicycle operating spaces of 1.0m is required on cycleways where speeds may reach 30km/h. The required clearance to rigid obstacles beside the cycleway is 1.0m (refer to Austroads, 1999a).

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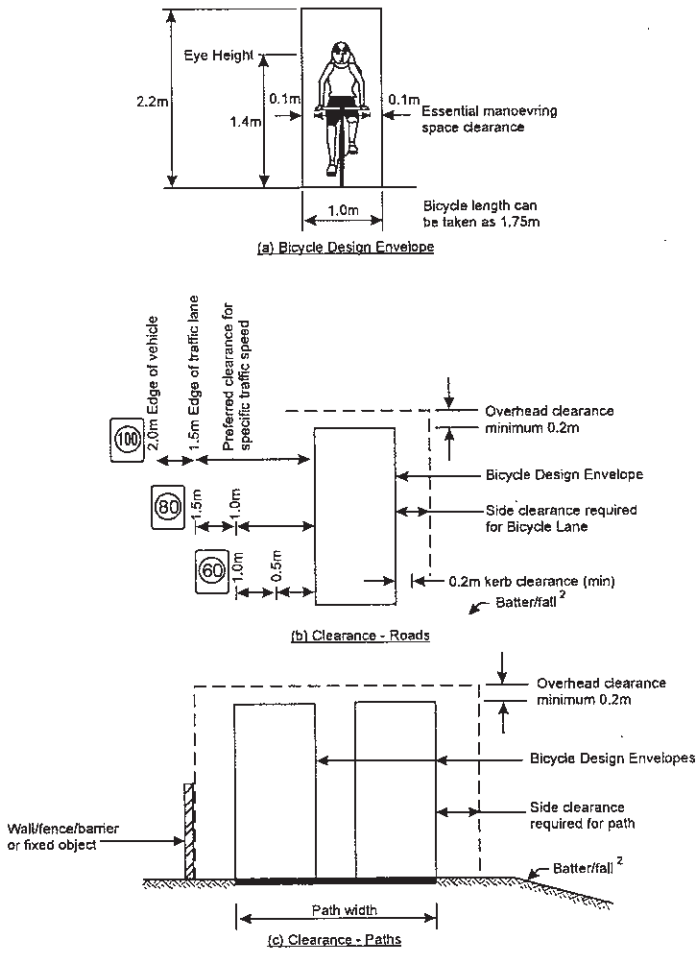
Table 5.12 Relationship of Bicycle Facilities Required and Traffic Volumes

Level of Facility	Vehicle Vol. (AADT)	Bicycle Vol.** (12 hr two-way)	Comments
Level 1: Full Integration	<3000vpd and <300vph	any	
Level 2: Part Integration	> 3000vpd	<50	
Level 3: Part Separation	>3000vpd	>50 <200	Generally acceptable except for some limited access and/or high design speed roads or where the special benefits of Level 4 facilities are not required.
Level 4: Full Separation	> 3000vpd	>200	Off road facilities required. Consider potential shared use with pedestrians.

* Or where inexperienced riders are prevalent.
** Note that bicycle usage may increase significantly when a facility is provided.



Note: below refer to Austroads 1999a

1 - See Reference 10, Section 6.3.5. for clearances to trees and other obstructions
2 - See Reference 10, Section 7.6.2. for protection measures where road/path shoulder falls away from road

Figure 5.19 Bicyle Operating Space (Austroads, 1999a)

Passing heavy vehicles exert a side "wind" force on cyclists and it is desirable to provide adequate clearance between the bicycle envelope and these vehicles. At motor vehicle design speeds of 60, 80 and 100 km/h, clearance between the cyclist envelope and a truck of 1.0, 1.5 and 2.0m respectively are desirable for cyclist safety. These clearances are not always achievable and absolute as well as desirable lane widths are shown in other sections of this Manual (refer to Chapter 7 of this manual).

Cyclists typically travel at 20 km/h to 30 km/h and can achieve downhill speeds of 50 km/h. Roads and paths should ideally be designed to allow travel at these speeds; incidences of compulsory stop or give way controls should be minimised (where it is safe, possible and practical to do so).

5.5.4.2 Gradients

Grades should be as flat as possible to avoid the hazard of down hill riding and to accommodate ease of riding up hill. Desirable maximum grades of 3% should be applied with a maximum of 5%. If steeper grades are unavoidable, their length must be limited and flatter sections used at regular intervals. Steep grades must not be combined with sharp horizontal curvature (i.e. curves < 200m radius).

On the steeper grades, experienced cyclists work the bicycle from side to side and inexperienced cyclists tend to wobble. Wider lanes should be used to allow for this operating characteristic.

Austroads (1999a) provides comprehensive guidance on this subject.

5.5.4.3 Horizontal Curvature

If possible, a generous alignment should be used to provide good operating characteristics. There will be constrained situations where smaller radii will be required. Table 5.13 provides data on acceptable curve radii for various design speeds. On the approach to intersections or on "hair-pin" bends in steep terrain, radii as small as 5m may be appropriate. In general, radii of 15m are considered "sharp".

Table 5.13 Minimum Horizontal Curve Radii (Austroads, 1999a)

Speed (km/h)	Superelevation (%)					
	0	2	3	4	5	6
20	10	10	9	9	9	9
30	25	24	23	22	21	21
40	50	47	45	43	41	41
50	94	86	82	76	73	73

5.5.4.4 Sight Distance

Cyclists have similar needs to drivers of vehicles in requiring adequate sight distance to negotiate horizontal and vertical curves safely. Parameters used to calculate stopping distance are:

- Perception/reaction time - 2.5s.
- Eye height - 1.4m.
- Object height - 0m.
- Coefficient of longitudinal deceleration - 0.25.

Stopping distance is required to be used:

- for intersection design;
- in setting out alignment of paths;
- in positioning terminals and handrails;
- at entries to underpasses;
- for landscaping in the field; and
- otherwise to ensure the safety of cyclists.

Figure 5.20 provides information on minimum stopping distances, Figure 5.21 provides the minimum length of crest vertical curves to meet the design requirements and Figure 5.22 sets out the lateral clearances on horizontal curves

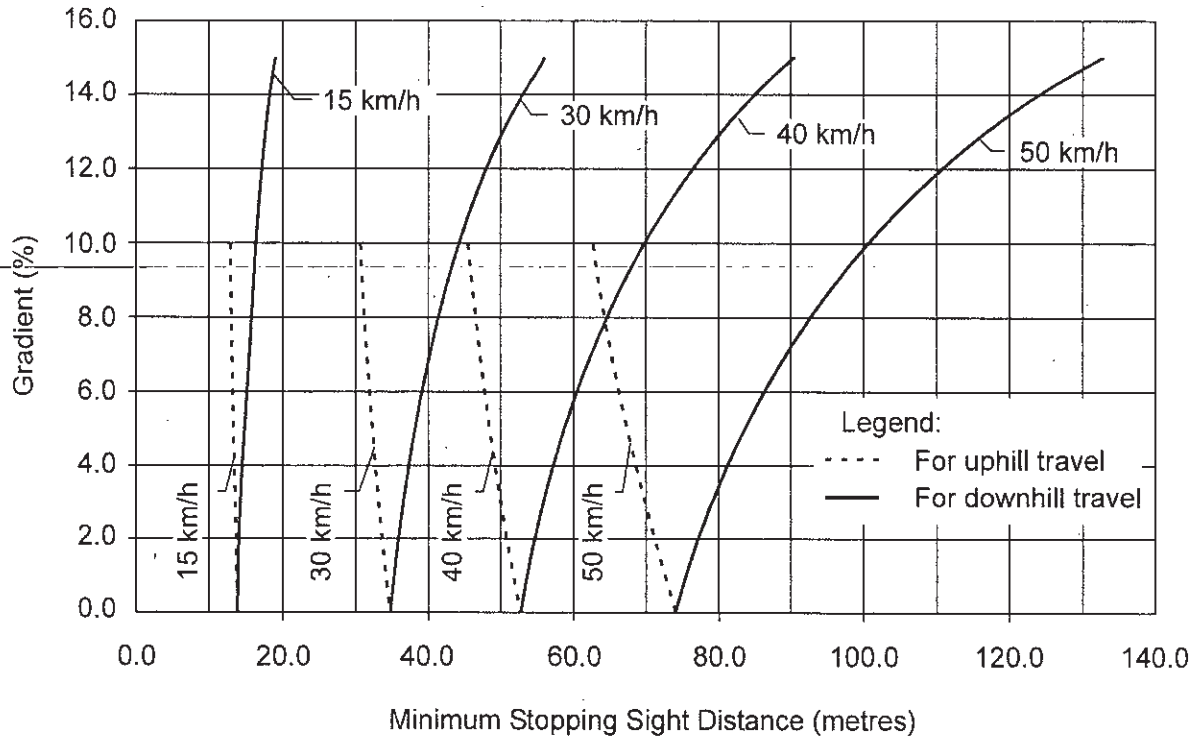


Figure 5.20 Minimum Stopping Sight Distances (Austroads, 1999a)

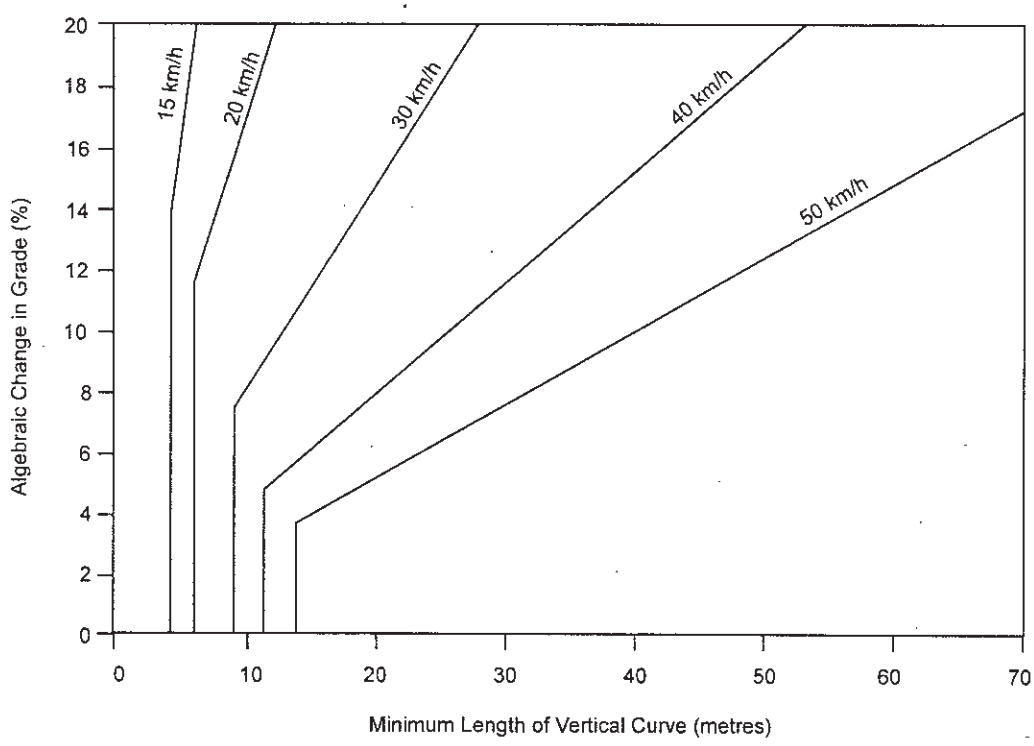
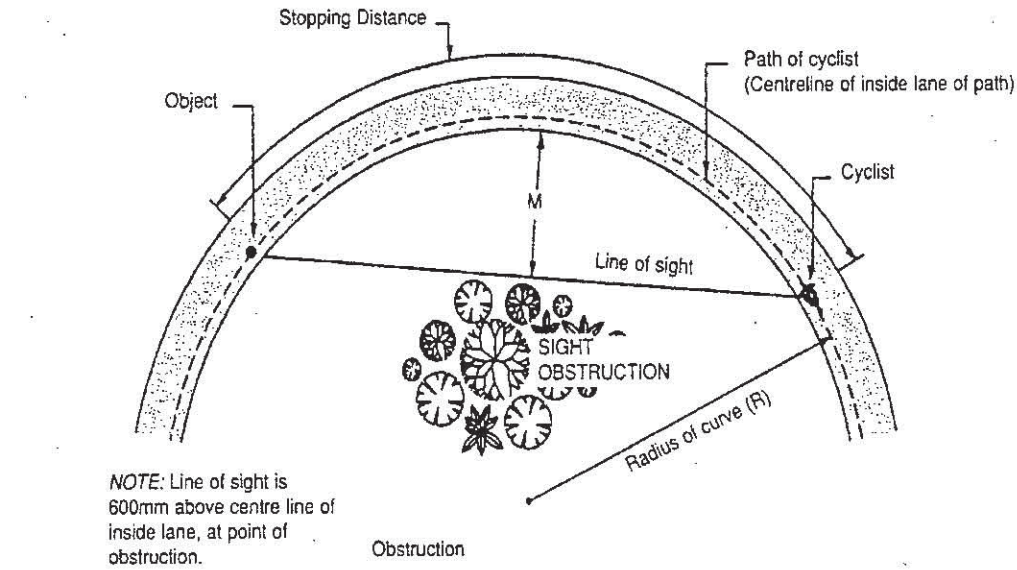


Figure 5.21 Minium Length of Crest Vertical Curves (Austroads, 1999a)



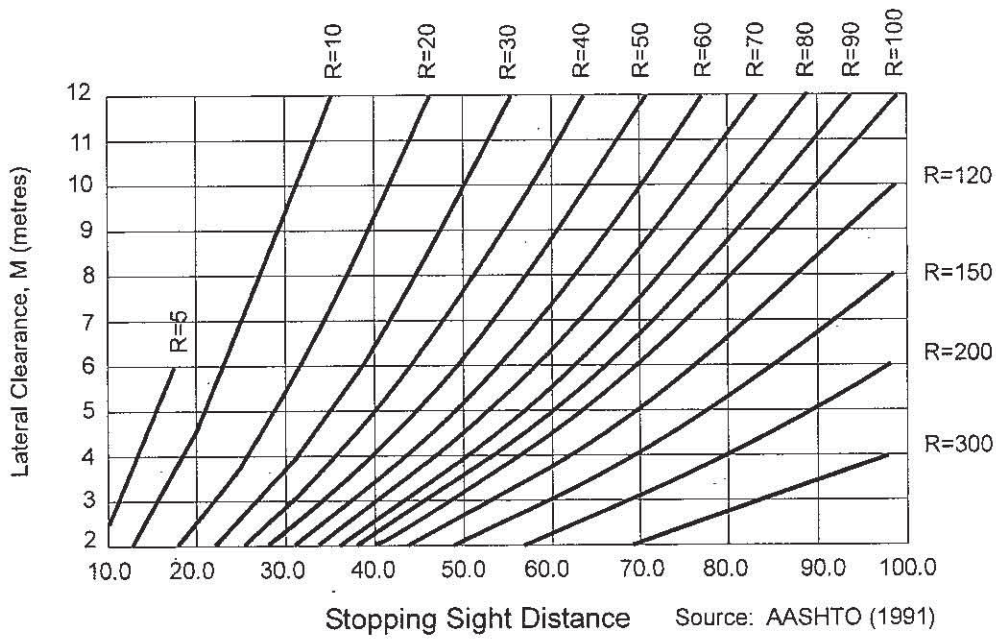


Figure 5.22 Lateral Clearances required on Horizontal Curves (Austroads, 1999a)

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5.5.4.5 Clearances

Horizontal clearances for safe operation are:

- 1.0m between bicycle operating spaces on other than recreational routes;
- 0.4m between bicycle operating spaces on recreational routes where bicycle speeds are generally no more than 20km/h; and
- 1.0m between the edge of the path and an obstacle, which if struck may result in cyclists losing control or being injured.

The minimum vertical clearance for bicycles is 2.4m measured above the riding surface (3.0m preferred).

5.5.4.6 Cross Section

This section should be read in conjunction with Chapter 7 of this manual.

Wide Kerbside Lanes

In part integration of cyclists and motorists, a wide kerbside lane is provided to give sufficient width to allow vehicles to overtake cyclists without having to effectively change lanes.

Figure 5.23 illustrates vehicle positions for wide kerbside lanes. The width should not be greater than 4.5m to avoid the potential for small vehicles to use the lane to form two queues.

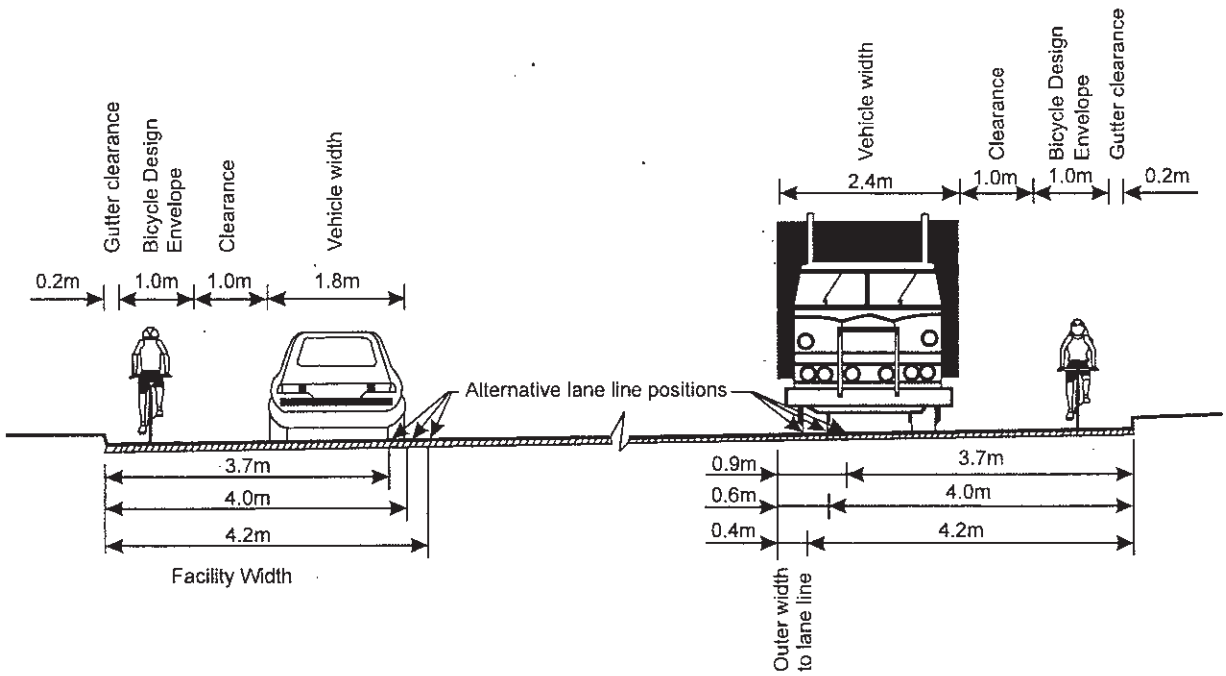

Figure 5.23 Vehicle Positions on Road Carriageway associated with Wide Kerbside Lanes (Speed ≤ 60km/h) (Austroads, 1999a)

Partial Separation

Partial separation may be achieved by:

- sealed shoulders;
- exclusive bicycle lane; or
- shared bicycle / car parking lanes.

Sealed Shoulders

Sealed shoulders are provided to reduce road edge maintenance and repair costs and to improve safety for motorists. In addition they may also effectively provide separate lanes for cyclists provided they meet certain conditions such as:

- an edge line between the shoulder and the traffic lane;
- smooth riding surface, free of debris and obstructions so that cyclists prefer to ride on the shoulders rather than in the traffic lanes;
- the edge of the shoulder being flush with the adjacent ground; and
- lengths of sealed sections to be a desirable minimum of 500m to avoid short sections with narrowing at each end (squeeze points).

Exclusive Bicycle Lane

An exclusive bicycle lane is the preferred option where motor vehicle speeds exceed 80 km/h and/or bicycle traffic is concentrated (e.g. near schools or along major routes near city or town areas). They should:

- be provided on both sides of the road so that use is in the same direction as motor vehicle traffic;
- not be placed between the kerb and parked cars as there is no escape for cyclists should a car door be opened suddenly;
- only be used where there is little demand for parking throughout the day or where parking can be prohibited during certain designated hours to suit the peak travel demand of cyclists and motor vehicles (e.g. clearway times, school journey hours);
- not be delineated with raised markers or raised barriers as these are hazardous to cyclists.

They are:

- of considerable advantage on long uphill grades where there is a higher speed differential between motor vehicles and cyclists and cyclists tend to weave about whilst working their way uphill; and
- advantageous on long downhill grades where extra room to manoeuvre is desirable.

Because debris from the adjacent lanes tends to accumulate in exclusive bicycle lanes (they are not "swept" by motor traffic travelling in them), it is important that they are regularly swept as part of routine road maintenance.

Figure 5.24 gives widths of exclusive bicycle lanes and sealed shoulders.

The absolute maximum width to avoid the lane being attractive to vehicular traffic is 3m. This width is desirable where the adjacent motor traffic is moving at high speed (e.g. 100 km/h) and large vehicles are a significant proportion of the traffic stream. It may be required where demand for cycling is so great that this width is required to provide adequate level of service to the cyclists (3.0m allows cyclists to overtake each other without encroaching into the adjacent traffic lane).

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Shared Bicycle/Car Parking Lanes

Shared bicycle/car parking lanes are appropriate in speed zones that are 60 km/h or less. These roads will normally have a significant parking demand and, therefore, bicycle/car parking lanes will generally be required.

These lanes should be wide enough to allow cyclists to pass cars with open doors without crossing into a traffic lane. Cyclists also have to be aware of the possibility of doors opening and the additional space allows them to take this into account.

Although generally used where parallel parking is permitted, these lanes are sometimes installed with angle parking.

Pavement marking and signs give these lanes legal status, and cyclists are required to use these lanes unless it is impractical to do so. Cyclists may use the general traffic lanes to make a right turn or to avoid hazards in the bike lane. Vehicles may only use these lanes for parking, property access or turning. Refer to the MUTCD (Main Roads, 2003) for lane marking and traffic signs.

Figure 5.25 shows vehicle positions and gives widths of bicycle/car parking lanes for parallel parking. Further discussion of appropriate lane widths is provided in Chapter 7 of this manual.

The desirable minimum width of a combined bicycle/parking lane is 4.0 m. The desirable maximum width is 4.5m as a greater width may tempt cars to use it as a vehicle lane. It should be noted that 4.5m provides the cyclist with better capacity to avoid opening car doors when associated with a parking lane. If the lane is a combined bus/bicycle lane, the minimum width should be 4.1m. If the kerbside lane is a combined car/bicycle lane, the minimum width should be 3.7m (see Section 7.2.4)

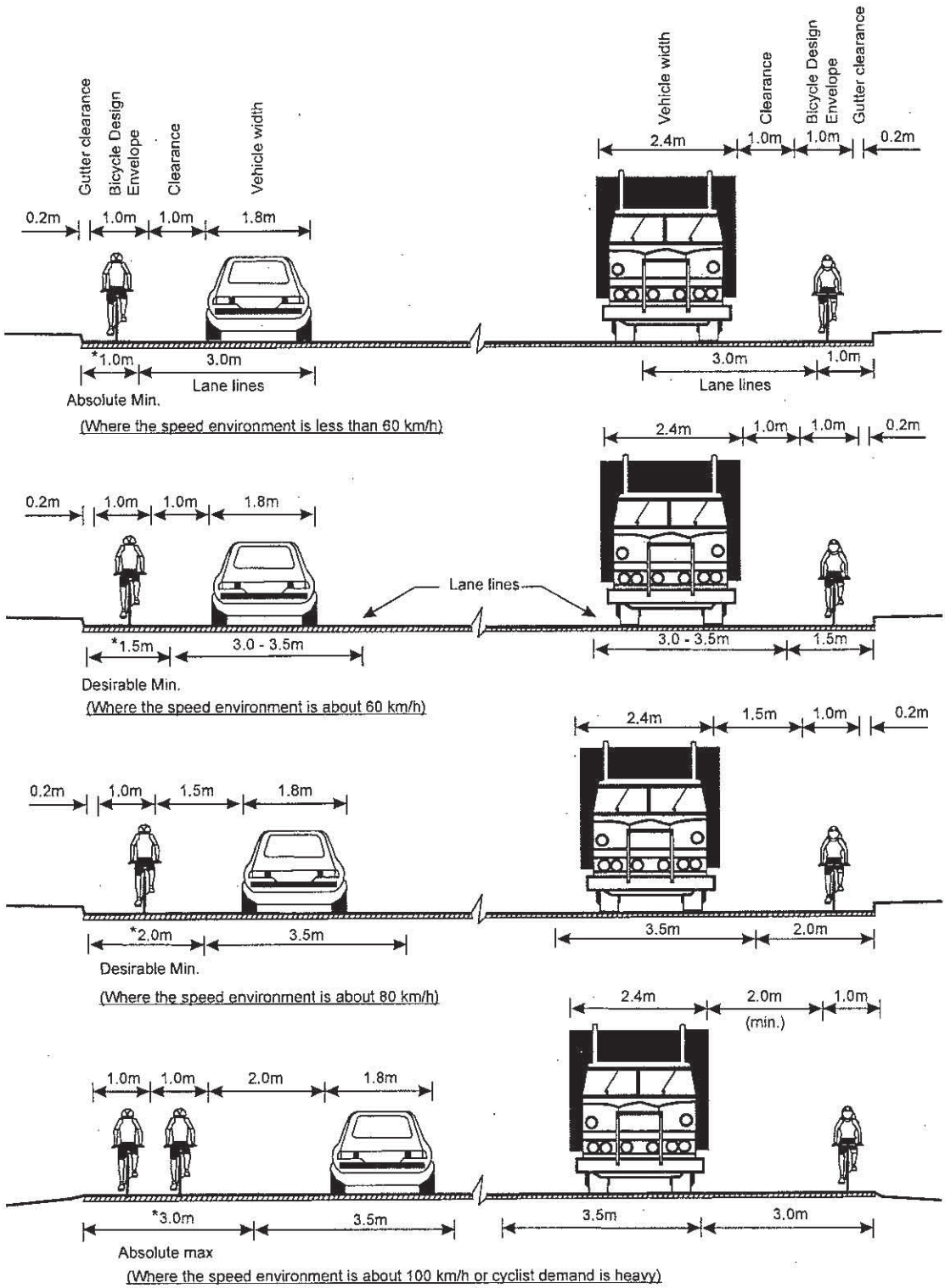
Austroads (1999a) gives other important aspects of bicycle/car parking lanes as:

- Full integration of bicycles with other traffic may be preferable where parking turnover is high, through traffic speeds are low and the desirable minimum width of 4.0m cannot be achieved.
- A bicycle lane should never be provided between parked cars and the kerb, either in the case of parallel parking or angle parking. A lane in this location creates a hazard with motor vehicle doors opening into the lane or vehicles overhanging the bicycle lane. Parked vehicles also unreasonably restrict cyclists from reaching desired destinations. Further, an additional conflict with pedestrian movement occurs.
- It is preferable to mark the parking bays or a line between parked cars and the edge line of the motor vehicle traffic lane to adequately define the spaces to be occupied by cyclists and opening car doors respectively.
- Additional width is required where heavy vehicles park frequently (nominally 0.6m).
- Angle parking can create hazardous situations for cyclists and requires careful consideration including the option of full integration with other traffic.

Separate Paths

Separate paths may be exclusively for cyclists or may be shared between pedestrians and cyclists. They may be located remote from the road or may be adjacent to the road separate from the vehicle carriageway. Figure 5.26 illustrates the latter case for an urban road.

On high-speed roads, the physical separation of off-road bikeways can be achieved with an appropriate safety barrier, allowing sufficient distance for the expected deflection of the



* Refer to Austroads for details regarding acceptable widths

Figure 5.24 Vehicle Positions on Road Carriageway associated with Exclusive Bicycle Lanes (Austroads, 1999a).

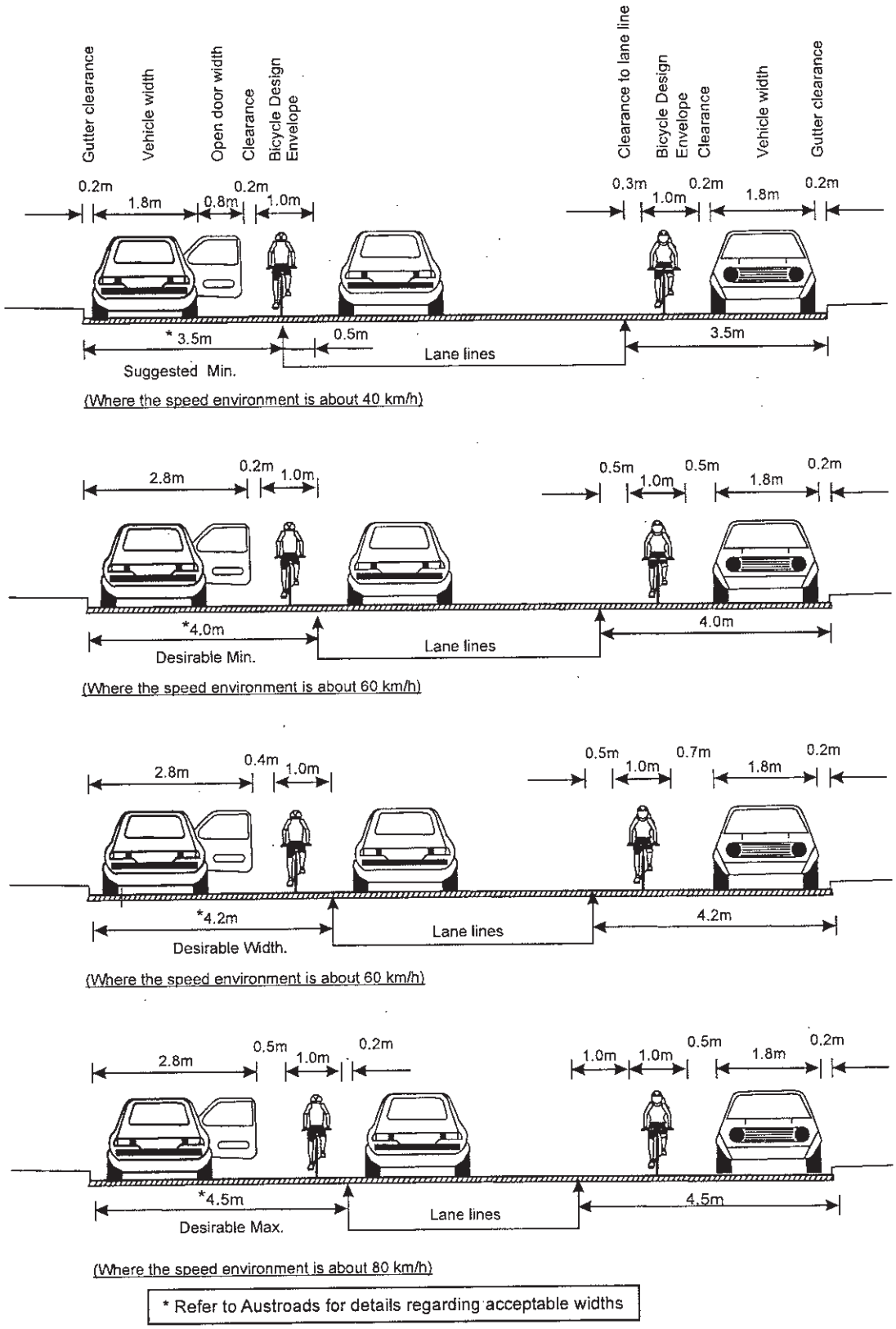


Figure 5.25 Vehicle Positions on Road Carriageway associated with shared Bicycle / Car Lanes for Parallel Parking (Austroads, 1999a)

barrier, or by an adequate separation distance. Desirably, the separation distance should be 10m or more, but not less than the clear zone required for the road (refer to Chapters 7 and 8 of this manual).

Where bicycles have exclusive use of the path, dimensions should be as shown in Figure 5.27.

If one-way bicycle operations are appropriate, Figure 5.28 shows the dimensions required to accommodate shared use.

Shared use path operation for a range of scenarios is shown in Figure 5.29.

For a more comprehensive discussion of these issues, refer to Guide to the GTEP Part 14 (Austroads, 1999a).

5.5.4.7 Other Road Design Issues

Other road design issues for bicycles include:

- bus/bicycle lanes;
- designing intersections for bicycles;
- providing for bicycles at roundabouts;
- maintaining roads for bicycles; and
- local area traffic management schemes.

These issues are dealt with in detail in Austroads (1999a) and some are covered in other Chapters of this manual.

Providing for cyclists on motorways is dealt with in Appendix 5B "Guideline for Motorway Cycling".

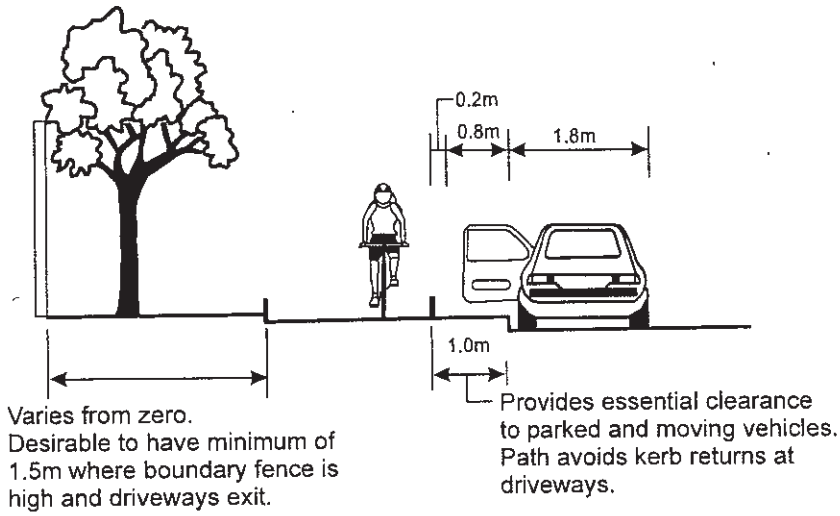


Figure 5.26 Location of Path in Road Reserve (Austroads, 1999a)

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Scenario	Overall Width of Path	Predominant Path Purpose • Typical circumstances of use
A	2.0m	Commuting and Local Access • Constrained conditions • 'Tidal flow' • Low use
B	2.5m	Commuting and Local Access • Regular use • 20 km/h
C	3.0m	Commuting • Frequent & concurrent use in both directions • 30 km/h+

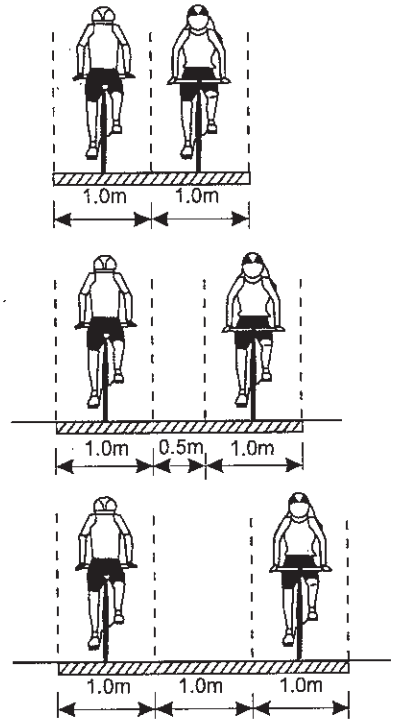

Figure 5.27 Exclusive Use Path Operation (Austroads 1999a)

Scenario	Overall Width of Path	Predominant Path Purpose • Typical circumstances of use
A	2.5m	Commuting and Local Access • Constrained conditions • 20 km/h
B	3.0m	Commuting • Frequent & concurrent use of both path sections • 30 km/h

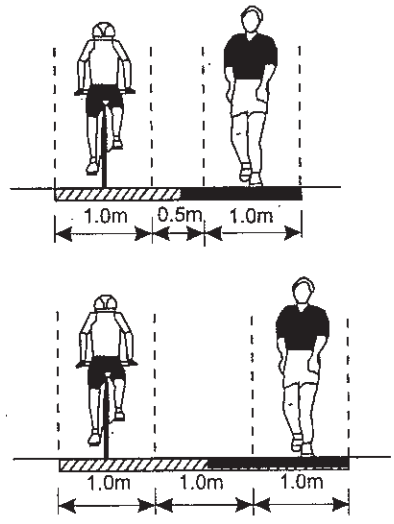

Figure 5.28 Separated One-Way Path Operation (Austroads, 1999a)

Scenario	Overall Width of Path	Predominant Path Purpose • Typical circumstances of use
A	2.0m	Commuting and Local Access • Constrained conditions • 'Tidal flow' • Low use
B	2.5m	Commuting and Local Access • Regular use • 20 km/h
C	3.0m	Commuting • Frequent & concurrent use in both directions • 30 km/h+
D	3.0m	Recreation • Regular use • 20 km/h
E	3.5m	Commuting and Recreation (concurrent) • Frequent & Concurrent use in both directions • 30 km/h+
F	4.0m	Major Recreation Path • 20 km/h • Heavy & concurrent use in both directions
G	4.0m	Major Recreational Path • Regular group rides • Heavy & concurrent use in both directions • Generally low speed due to congestion

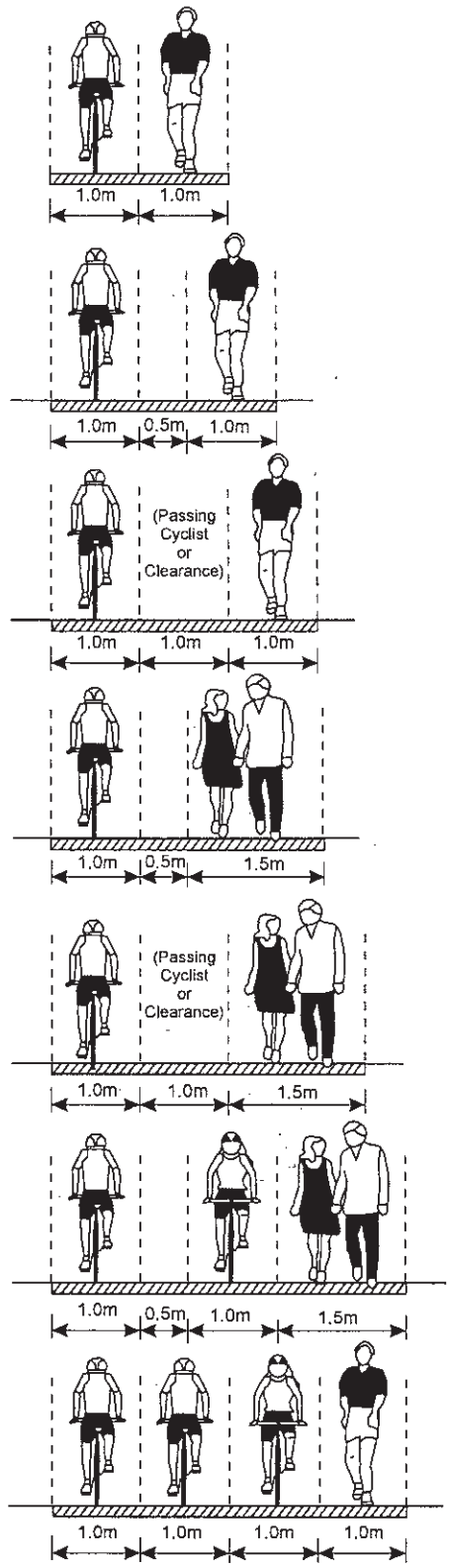

Figure 5.29 Shared Use Path Operation (Austroads, 1999a)

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5.5.5 Providing for Bicycles at Structures

If an exclusive bicycle lane exists on the approaches to a structure, then the same width facility should be carried across the structure. This will be possible for new structures, but may not be possible at existing structures.

The width between kerbs on bridges is often less than the formation width. Where no marked cycle facilities are provided on the adjacent road, a cycle / pedestrian facility across a new structure may still be appropriate to reduce risk to these road users.

Bridges generally have a design life of over 50 years. Even though no dedicated pedestrian / cycle facility may be planned in the initial construction of the adjacent roadway, providing a cycle / pedestrian facility or the substructure for a future cycle / pedestrian facility with the initial construction could be cost effective.

5.5.5.1 Bridges including Overpasses

The Bridge Design Code (Austroads), specifies the following for the required clear width:

- Bikeway on carriageway (one way cycling):
  - 2.0m preferred; and
  - 1.5m minimum.
- Separate bikeway (two-way cycling):
  - 3.0m preferred; and
  - 2.0m minimum.
- Dual use (two-way cycling and pedestrians):
  - 3.0m preferred; and
  - 2.5m minimum.

The vertical clearance above a roadway for overpass bridges for cyclists must be at least 5.5m since they are lighter than road bridges and considerably more damage might occur if hit by a high load. (Note this also applies to pedestrian bridges.). Where there are adjacent bridges, the clearance of the bridge for cyclists must be at least 0.2m greater than that of the adjacent bridges.

The vertical clearance above bikeways specified is:

- 3.0m preferred; and
- 2.5m minimum.

Ramp gradients specified are:

- 10% (1 in 10) for a desirable maximum length of 20m; and
- 7% (1 in 14 maximum) for a desirable maximum length, except for wheelchairs, of 50m. For wheelchairs, the maximum length of a 7% (1 in 14) grade is 9m. This will have to be accommodated on approaches to overpass bridges for pedestrians and bicycles.

5.5.5.2 Underpasses

As for pedestrian underpasses, actual and perceived safety of users is a factor. Sight distance approaching and leaving an underpass and light levels in the underpass must also be sufficient to engender confidence in the users.

A minimum width of 3.0m and a minimum vertical clearance of 2.4m (3.0m preferred) are desired. The best use of resources will mean that most if not all underpasses will be shared use facilities.

Large culverts may be used for bicycle underpasses provided the path is above long standing water levels.

5.5.5.3 Handrails

At bicycle bridges, the height of handrails should be between 1.1 and 1.35m. Railings should be designed to minimise the possibility of cyclists snagging their handlebars or pedals on the barrier.

Where bicycle safety railings are terminated, they should be flared away from the line of the rail to produce an offset of about 0.5m over a length of 5m (Figure 5.30). The end of the rails at all terminals should be joined smoothly to form a semi-circular face; this face forms the terminal presented oncoming cyclists, as illustrated in Figure 5.29.

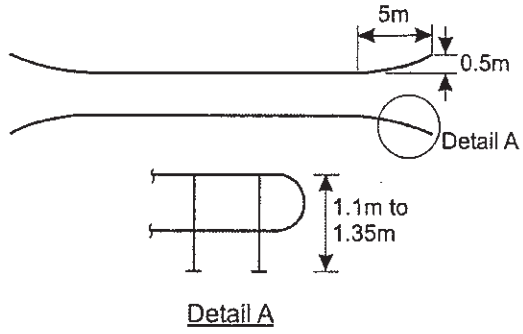


Figure 5.30 Bicycle Safety Railing.

If handrails are used, designers should ensure that any rigid horizontal components are located to prevent them from becoming spears if hit by an errant vehicle.

5.5.6 Bicycle Parking

At common destinations of bicycle trips, it is important that adequate facilities are provided. These facilities include:

- showers, lockers and secure long term parking for staff at workplaces;
- secure short term parking at public transport stations, interchanges and termini; and
- secure short term parking facilities in commercial and retail areas.

Brief comments only are given in this Manual. Detailed information is available in the GTEP - Part 14 (Austroads, 1999a).

Table 5.14 gives the required number of bicycle spaces to be provided for different land uses for planning purposes and as a guide for design.

Refer to Table 5.15 for details of the three classes of bicycle parking facilities offering different degrees of security.

Bicycle Lockers give the highest level of security. They are completely enclosed individual containers into which helmets and other gear can be placed with the bicycle and locked in. Bicycle lockers are most appropriate for all day parking at such places as bus and rail terminals.

Bicycle Enclosures provide a medium level of security. Although bicycles can be locked in, an enclosure is shared with the bicycles of several owners.

Bicycle Parking Rails are facilities to which both the bicycle frames and wheels can be locked if desired. They offer low level of security and are suited to short and medium term parking.

Bicycle Racks and Stands provide very little security and are generally unsuitable for public use in otherwise unsecured areas. Note that there are many existing bicycle racks and stands, which offer either support for only the front wheel of a bicycle or allow only one wheel to be locked with a device. These bicycle racks do not conform with the AS2890 for bicycle parking which requires the frame and at least one wheel to be able to be secured to the rack.

More comprehensive discussion and further details are contained in Austroads (1999a). Also, refer to local government planning scheme requirements for bicycle parking and end of trip facilities.

5

Table 5.14 Provision of Bicycle Parking for Planning Purposes (Austroads, 1999a).

Land Use	Employee/Resident Parking Spaces	Class	Visitor / Shopper Parking Spaces	Class
Amusement Parlour	-	1 or 2	2 plus 1 per 50m² gfa	3
Apartment House	1 per 4 habitable rooms	1	1 per 16 habitable rooms	3
Art Gallery	1 per 1500m² gfa	2	2 plus 1 per 1500m² gfa	3
Bank	1 per 200m² gfa	2	2	3
Cafe	1 per 25m² public area	2	2	3
Community Centre	1 per 1500m² gfa	2	2 plus 1 per 1500m² gfa	3
Consulting Rooms	1 per 8 practitioners	2	1 per 4 practitioners	3
Drive-in Shopping Centre	1 per 300m² sales floor	1	1 per 500m² sales floor	3
Flat	1 per 3 flats	1	1 per 12 flats	3
General Hospital	1 per 15 beds	1	1 per 30 beds	3
General Industry	1 per 150m² gfa	1 or 2	-	3
Health Centre	per 400m² gfa	1 or 2	1 per 200m² gfa	3
Hotel	1 per 25m² bar floor area & 1 per 100m² lounge, beer garden	1	1 per 25m² bar floor area & 1 per 100m² lounge, beer garden	3
Indoor Recreation Facility	1 per 4 employees	1 or 2	1 per 200m² gfa	3
Library	1 per 500m² gfa	1 or 2	4 plus 2 per 200m² gfa	3
Light Industry	1 per 1000m² gfa	1 or 2	-	3
Major Sports Ground	1 per 1500 spectators	1	1 per 250 spectator places	3
Market	-	2	1 per 10 stalls	3
Motel	1 per 40 rooms	1	-	3
Museum	1 per 1500m² gfa	1	2 plus 1 per 1500m² gfa	3
Nursing Home	1 per 7 beds	1	1 per 60 beds	3
Office	1 per 200m² gfa	1 or 2	1 per 750m² over 1000m²	3
Place of Assembly	-	2	-	3
Public Hall	-	1 or 2	-	3
Residential Building	1 per 4 lodging rooms	1	1 per 16 lodging rooms	3
Restaurant	1 per 100m² public area	1 or 2	2	3
Retail Show Room	1 per 750m² sales floor	1	1 per 1000m² sales floor	3
School	1 per 5 pupils over year 4	2	-	3
Service Industry	1 per 800m² gfa	1	-	3
Service Premises	1 per 200m² gfa	1	-	3
Shop	1 per 300m² gfa	1	1 per 500m² over 1000m²	3
Swimming Pool	-	1 or 2	2 per 20m² of pool area	3
Take-away	1 per 100m² gfa	1	1 per 50m² gfa	3
University/Institute of Technology.	1 per 100 f/t students[5] 2 per 100 f/t students[5]	1 or 2 2	- -	3 3

Notes:
1. A – indicates that no parking demand information is available, and therefore planners should make their own assessment of the required bicycle parking provisions, on an individual project basis.
2. gfa - gross floor area.
3. It is sometimes appropriate to make available 50% of the level of provision recommended in the table at the initial installation stage, however space should be set aside to allow 100% provision in the event that the full demand for bicycle parking is realised.
4. "Class" of parking is defined in Table 5.15 of this manual
5. f/t full time

Table 5.15 Classification of Bicycle Parking Facilities (Austroads, 1999a)

Class	Security Level	Description	Main User Type
1	High	Fully enclosed individual lockers	Bike and ride commuters at railways and bus stations
2	Medium	Locked compounds fitted with Class 3 facilities. Communal access using duplicate keys or electronic swipe cards.	Regular employees, students, regular bike and ride commuters.
3	Low	Facilities to which the bicycle frame and wheels can be locked.	Shoppers, visitors to Public offices, Places of employment where there ia security supervision of the parking facilities.

5.6 Motorcycles

5.6.1 General

The GTEP Part 15 (Austroads, 1999b) provides a detailed discussion of the requirements for motorcycles. Designers should consult this reference to canvass the range of good practice alternatives available. This section provides a summary of the relevant design features of GTEP Part 15 (Austroads 1999b).

Motorcycles are a significant part of the traffic stream, albeit a small proportion (1%), and require specific attention because of the differences in operating characteristics between motorcycles and other vehicles. What makes special consideration of motorcycles even more important is the over-representation of motorcycle casualties in road crashes in Australia (12% of deaths and hospitalisations with 1% of the road travel).

Design is a complex process in which the competing demands of various road users have to be provided for and compromises made to obtain the best result for the road users as a whole. Designers will have to make judgments on the proper mix of treatments to achieve this end. Providing for motorcycles has to be undertaken in this context and this section is intended to provide guidance on good practice.

5.6.2 Characteristics

Motorcycles are not just "smaller cars" (Austroads, 1999b):

- Motorcycle handling characteristics are different from cars;
- With only two tyres, motorcycles are far more dependent on good, consistent traction on the road surface;
- Motorcycles are more manoeuvrable than cars and will use different parts of the carriageway (e.g. on curves);
- Motorcycles provide no protection to riders in the event of an accident.

They are also not "fast bicycles" (Austroads, 1999b):

- Motorcycle handling characteristics are different from those of bicycles;
- Motorcycles have their own power source, resulting not only in greater speed, but also in greater opportunities to negotiate differing traffic conditions;
- Motorcycle riders are licensed;
- Motorcycles are motor vehicles, registered for on-road use.

Queensland Government

Memorandum

Department of **Main Roads**

Our ref E 870/01825
Your ref
Date 24 September 2007

To District Directors (see distribution list)

Copy to (See distribution list)

Subject **Cycling on motorways, shoulder widths for rural cycle routes and other cycling technical governance issues**

The Main Roads cycling policy was adopted in August 2004. Many districts and project teams have provided valuable feedback on issues arising in policy implementation.

The main purpose of this memo is to provide interim advice on two key policy issues – cycling on motorways, and rural road shoulder widths required for cycling. The memo also covers two other significant technical governance issues for cycling – the treatment of intersections for cyclists and additional design references.

Cycling on motorways and freeways

Main Roads has some guidance in the cycling policy which will continue to cover cycling on existing motorways and freeways. However, any new motorway/freeway projects and upgrades should be aiming to achieve a high level of safety and service for cyclists. Attachment 1 proposes a draft departmental position on cycling on motorways and freeways covering new projects and major upgrades. Can you please distribute this draft position to relevant district staff and provide any feedback to Robyn Davies, Program Manager (Pedestrian and Cycling Facilities) by Friday 26 October, 2007.

Rural road shoulder widths required for cycling

Provision of sealed road shoulders is justified on the basis of road safety benefits alone. When they are sufficiently wide, they have the added benefit of providing a cycling facility. There is currently no explicit guidance in the *Road Planning and Design Manual* on rural shoulder widths required to cater for cycling. Attachment 2 proposes draft shoulder width requirements to support cycling on sealed road in rural areas with an 80+km/hr posted speed limit. Note that the values proposed in the draft table are intended to be applied on all new roads and major road upgrades. For existing roads, the draft table is proposed as a reference and wherever practical, the values should be obtained. Can you please distribute this draft proposal to relevant district staff and provide any feedback to Robyn Davies, Program Manager (Pedestrian and Cycling Facilities) by Friday 26 October, 2007.

Planning, Design and Operations Division
Traffic Engineering and Road Safety Branch
Floor 10, Spring Hill Office Complex, 477 Boundary Street
Spring Hill, Queensland 4000
GPO Box 1412 Brisbane Queensland 4001

Enquiries Robyn Davies
Telephone **+61 7 3834 2820**
Facsimile +61 7 3834 2201

This interim advice, along with guidance on other policy implementation/interpretation issues will be incorporated into a draft policy guideline to be developed within the next 12 months. I welcome feedback on any other cycling policy implementation/interpretation issues which districts believe need to be addressed in a policy guideline.

Treatment of intersections for cyclists

Another purpose of this memo is to provide guidance for districts on treatment of intersections for cyclists. Attachment 3 provides a table summarising urban and rural intersection types and the treatment options that should be applied for cycling. The major point to note is that for all new and upgrade projects on urban arterials, Main Roads must provide marked bike lanes for the through movement of cyclists at intersections, regardless of whether the corridor is a priority cycle route. (For existing roads, this outcome should be achieved wherever practical). This reflects the outcomes of the design forum at the 2007 Main Roads Technology Forum and supports the implementation of the Main Roads cycling policy.

Additional design references for cycling

The final purpose of this memo is to notify you of additional design references on cycling that may be used by Main Roads districts and their contractors in Queensland.

The *Road Planning and Design Manual* is the Main Roads primary technical reference for people engaged in the planning and design of roads.

Although the manual provides design criteria for cyclists, there are other references that contain additional material regarding the selection and design of cycling facilities. These documents are (in order of priority):

- Austroads Guide to Traffic Engineering Practice Part 14: Bicycles ("Part 14")
- Queensland Transport Cycle Notes (specifically notes A7, B2, B3, B4, B5, B8, B9, C2, C6 and C7)
- NSW Bicycle Guidelines.

These documents may be used as a reference source for material not covered in the *Road Planning and Design Manual* except for a small number of practice exceptions. These exceptions are tabled in Attachment 4 to this memo.

Can you please ensure all relevant staff in your district are notified of the content of this memo.

Robin Stone
A/Executive Director (Planning, Design and Operations)

Encl (4)

Attachment 1: DRAFT position on cycling on freeways and motorways (new projects/major upgrades only)

Cycling will only be permitted on the shoulders of rural freeways and motorways and will not be permitted on the shoulders of urban freeways and motorways.

Cycling is permitted on the shoulders of rural freeways and motorways because:

- They usually provide the most practical route for cyclists.
- The entry and exit ramp volumes are lower, and generally below the Austroads volume threshold. Guidance on provision for cyclists at entry and exit ramps is provided in *Road Planning and Design Manual* Appendix 5b and in *Austroads Guide to Traffic Engineering Part 14: Bicycles*, section 4.6.

Cycling will not be permitted on urban freeways and motorways because:

- They carry relatively high volumes of traffic on main carriageways and on entry and exit ramps (generally above the Austroads volume threshold). In addition, urban freeway ramp spacing is significantly lower, and multi-lane ramps are not uncommon.
- Projects are expected to provide other high quality alternative routes that cyclists can take.

For motorways/freeways on the urban fringe or in semi-rural areas, if ramp volumes are projected to exceed 800 vehicles per hour within the next 20 years, projects must provide a high quality alternative cycling route in conjunction with the project.

For existing motorways and freeways

The wording in the current Main Roads cycling policy will continue to apply on existing motorways and freeways. That is:

> *Main Roads will, as necessary, restrict or prohibit cycle access to parts of the state controlled road network where there is unacceptable safety risk. Main Roads will not do this unless a risk assessment[1], including consideration of any crash records and alternative routes, indicates that cycling on the road presents an unacceptable safety risk to riders. This risk assessment will be undertaken in consultation with cycle groups, road user groups and other stakeholders.*

[1] Traffic Engineering & Road Safety Branch has made some progress on a risk assessment methodology and supporting tools and this will be further developed for release with a policy guideline.

Attachment 2: Shoulder width requirements to support cycling on sealed roads in rural areas with an 80+km/hr posted speed limit

In urban/built up areas (80km/hr or less), the *Austroads Guide to Traffic Engineering Practice Part 14: Bicycles* provides clear direction on bicycle facility design requirements.

For rural areas, refer to Table 1 below. The values in Table 1 are intended to be applied on all new roads and major road upgrades. For existing roads, the draft table is proposed as a reference and wherever practical, the values in the table should be obtained. Issues such as difficult or mountainous terrain, costly service relocations, resumptions and so on may need to be taken into account in developing a cost effective solution for cyclists on existing corridors.

Note that sealed shoulder provision is justified on the basis of road safety benefits alone. It also extends pavement life and reduces maintenance costs.

Table 1: Shoulder width requirements to support cycling on sealed roads in rural areas with an 80+ km/hour posted speed limit

Priority cycle route?	AADT (vehicles per day)	Provision for cyclists
Yes	>12,000	2.5m minimum sealed shoulder (3.5m lanes)
	6000 – 12,000	2m minimum sealed shoulder (3.5m lanes)
	< 6000	1.5m minimum sealed shoulder
No	>3000	Minimum 10m formation (1.5m minimum sealed shoulder + 3.5m lane width)
	1000 – 3000	Minimum 9.0m formation (1.0m sealed shoulder + 3.5m lane or 1.5m sealed shoulder + 3.0m lane)
	300-1000	Minimum 8.0m formation (0.5m sealed shoulder + 3.5m lane or 1.0m sealed shoulder + 3.0m lane)
	<300	No special provision

Notes:

- These widths are for where there is no roadside barrier. Where there is a roadside barrier, the shoulder widths shown become clear widths from lane edge to face of barrier.
- For new projects or upgrading works, the decision criteria should be based on design traffic, not current traffic. Typically, design traffic is calculated on a post-construction design life of 20 years for rural roads.
- These widths may need to be increased for other factors such as a high percentage of heavy vehicles, strong wind effects, steeper grades, high numbers of cyclists.
- Ensure seal covers full width of pavement (including during rehabilitation).
- Within a 20km radius of towns a 10mm maximum seal size is recommended.

Attachment 3: Intersection treatments for cycling

District business units associated with planning, design, development control, operations, construction and maintenance are asked to ensure the measures in Table 1 are applied as part of all new roads and major road upgrades. For existing roads, the table is proposed as a reference and wherever practical, the approaches should be applied to the greatest extent possible.

Table 1: Preferred intersection treatments for cycling in urban and rural settings

	Situation	***RP&D Manual* ref**	**Preferred treatment types**	***Austroads Part 14: Bicycles* ref**
Urban - all inter-sections (Note that on priority cycle routes, green surface treatment can be used to mark conflict points.)	BAL (Basic left turn)	Fig 13.71	Bicycle lane Wide kerbside lane (note - full bike lane preferred if achievable)	Fig 5.3a or 5.15a Section 5.3.3
	AUL (Auxilliary left turn) and AUL(S) (Auxilliary left turn – short)	Fig 13.73 Fig 13.74	Bicycle lane	Fig 5.3b or Fig 5.12
	CHL (Channelised left turn)	Fig 13.75	Bicycle lane	Fig 5.3b or Fig 5.12
	CHL (Channelised left turn with acceleration lane)	Fig 13.77	Bicycle lane	Fig 5.26
	Roundabout (<3000vpd and 50km/hr or less)		Cyclists can generally safely share the roundabout with other traffic	See *NSW Bicycle Guidelines* Fig 7.11
	Roundabout (>3000vpd and >50km/h)		Single and dual lane roundabouts can be marked with bike lanes around the circulating lane, but take measures to slow entering traffic. Splitter islands or similar dividers between the bike and other traffic lanes on the entries will assist, as will proper deflection.	See *NSW Bicycle Guidelines* Fig 7.9 – this bike lane marking approach can be used on single and dual lane roundabouts (but is not suitable for very large diameter, high speed roundabouts. Use *Austroads Part 14* Fig 5.29 & 5.30).
Rural and on priority cycle route	BAL (Basic left turn)	13.79 and 13.80	Set back the give way line and connect between the edge lines with a continuity line. Apply bicycle pavement symbols through intersection.	Section 4.4.4

	AUL(S) (Auxilliary left turn – short) and AUL (Auxilliary left turn)	13.81 and 13.82	Maintain approach shoulder width through intersection. Apply bicycle pavement symbols on shoulders.	Section 4.4.4
	CHL (Channelised left turn and channelised left turn with acceleration lane)	13.83 and 13.84	Maintain approach shoulder width through intersection using similar concepts to Austroads Part 14 Figs 4.28, 4.29 and 5.26 to get cyclists across high flows of left turning traffic	Figs 4.28, 4.29 and 5.26

- For semi-urban areas (posted speed limits around 80km/hr), treatments would be based around the characteristics of the intersection and may involve a combination of urban and rural treatments as appropriate. For example, it may not be desirable to have bike lanes between very long lengths of deceleration/acceleration lanes, so freeway-style treatments such as Figs 4.28 or 4.29 from *Austroads Part 14: Bicycles* may be useful.

Attachment 4: Supplementary cycling design references

The *Road Planning and Design Manual* is the Main Roads primary technical reference for people engaged in the planning and design of roads.

Although the manual provides design criteria for cyclists, there are other references that contain additional material regarding the selection and design of cycling facilities. These documents are (in order of priority):

- Austroads Guide to Traffic Engineering Practice Part 14: Bicycles ("Part 14")
- Queensland Transport Cycle Notes (Notes A7, B2, B3, B4, B5, B8, B9, C2, C6, C7)
- NSW Bicycle Guidelines (download from RTA website at www.rta.nsw.gov.au)

These documents may be used as a reference source for material not covered in the *Road Planning and Design Manual* except for a small number of practice exceptions. These exceptions are in Table 1 below.

Table 1: Main Roads' issues with supplementary cycling design references.

Issue	Comments	Austroads Part 14	NSW Bicycle Guideline
Right turn bike lanes	The incorporation of right turn bicycle lanes may be appropriate in some instances (for example, when cyclists have to cross one through lane, as shown in Figs 7.15 and 7.18 of the NSW Bicycle Guideline). In other instances, however, this treatment may cause operational and safety problems. For example, instances where there are multiple through lanes, heavy traffic volumes, and significant uphill grades. Such instances may not provide sufficient opportunities for cyclists to cross into the right-turn lane. Where right turn bicycle lanes are provided, it is assumed that alternative paths through the intersection will be provided for younger and less experienced cyclists. It is considered that bicycle hook turns would be a better treatment (see NSW Bicycle Guidelines, Fig 7.19, p. 58 or Austroads Part 14 Fig 5-16, and 5-17, p. 57 and 5-21 on p.59).	Fig 5-11, p. 53 and Fig 6-33, p. 95	Fig 7.15 and 7.18, pp. 54-57
Headstart / bicycle storage areas across multiple traffic lanes	The provision of headstart/bicycle storage boxes across multiple traffic lanes may result in some cyclists attempting to enter the boxes at the commencement of the green phase, causing potential safety problems (particularly when it is possible for visibility of cyclists to be obscured by large vehicles).	Austroads Fig 5-15, p. 56	Fig 7.18, p. 57
Off-road	In the NSW Bicycle Guidelines example, the conflict		Section

bicycle path bend out at intersection	areas (the cycle crossing and the intersection) are very close. This may create problems for car drivers in perceiving two Give Way signs in close proximity when approaching on the minor leg (the "see through" effect). It may also create problems for left turning drivers from the major road to perceive the Give Way sign. Also, design vehicles turning left from the major road stopped at the Give Way sign may well overhang onto the major road, causing operational and safety problems. It would be preferable to further separate the cycle crossing from the intersection. A general rule of road design is to locate conflict points a minimum of 4 seconds of travel time apart. The spacing would also have to take into account the length of the design vehicle plus clearances. Alternatively, use the bend-in treatment as shown in NSW Bicycle Guideline Figure 7.2, p 43. Additional options are Austroads Part 14 Fig 6-31, p. 94 and Fig 6-35, p. 97.		7.2.2, Fig 7.3, p. 44.
Shared bicycle and bus lane widths	Where a 4.2m or greater bus lane cannot be provided, and it must be shared by bicycles, it is preferable to segregate the cycle lane and if possible, limit the bus lane width to 3m to reduce the incidence of buses trying to squeeze past cyclists.		Figures 5.5 and 5.6, pp. 25-26
Bicycles at roundabouts	None of the roundabouts in Figures 7.6, 7.8, and 7.9 show good entry curvature, which is essential to slow motorists and maximise safety, including that for cyclists. Placing bicycle lanes immediately adjacent the entry curve (as in Figure 7.8, p48) reduces the ability to provide good entry curvature as motorists may cut across the bicycle lane. The treatment in Figure 7.9, p 49 does not have this problem and is much preferred, even for bike lanes on multi-lane roundabouts.		Figures 7.6 and 7.8, pp. 46 and 48.

Transport and Main Roads

Heavy Vehicle Incident – 5 June 2011
TMR File No. 162

Connecting Queensland
www.tmr.qld.gov.au

Queensland Government

QUEENSLAND TRANSPORT **STATEMENT OF WITNESS**	Statement No.

STATEMENT OF

Name of Witness **Scott Troy Hall**	Date **15 September 2011**
Address of Witness **Logan Motor Vehicle Inspection Centre, Jacaranda Avenue, Logan Central**	Age [redacted]
Occupation of Witness **Senior Transport Inspector**	Telephone Nos. Business: **3290 8212**

Scott Troy Hall states:

My full name is Scott Troy Hall and I am employed by Transport and Main Roads as a Senior Transport Inspector attached to the Compliance Unit for the SEQ South Region. I am an Authorised Officer (Senior Transport Inspector) within the meaning of the legislation administered by the Department of Transport in the State of Queensland and my identification number is 260.

My duties as a Senior Transport Inspector include the inspections and weighing of various types of motor vehicles including light vehicles, heavy vehicles, light and heavy trailers, buses and motor cycles. My responsibilities also include attending heavy vehicle crashes and conducting inspections of vehicles, load and work diaries to assist in determining whether any breaches of Transport legislation have occurred.

At about 1.38pm on the 5th of June 2011, I received a telephone call on the Transport and Main Roads, Incident Hotline.

As a result of the telephone call, at about 2.20pm on Sunday the 5th of June 2011, I attended the scene of a single vehicle and cyclist incident on the Warrego Highway Kohlo, East bound near the Kohlo exit off ramp.

On arrival at the scene, I took up with Sergeant Darryl Morrison of the Ipswich Forensic Crash Unit of the Queensland Police Service and we had a conversation.

As a result of that conversation I made an inspection of the scene and vehicles.

I saw that the scene of the incident consisted of a dual carriageway of two eastbound lanes and two westbound lanes separated by a centre median strip consisting of a grassed area.

The running lanes were demarcated by broken white lines separating the running lanes.

The running lanes were approximately 3.7 metres in width.

The bitumen pavement of the running lanes consisted of dry bitumen in excellent condition.

The weather conditions were clear with excellent visibility.

The scene of the incident is on a straight section of road with a slight grade.

I saw that there was a white Freightliner Argosy Prime Mover bearing Queensland Registration number and a red car Semi Trailer bearing South Australian number which appeared to have collided with a cyclist. The road bike had "TREK" on the frame and fork.

The combination had come to rest on the Kohlo exit off ramp. I could see that it had sustained no apparent damage other than what appeared to be a scuff mark of the left steer tyre.

I then completed a partial (in-situ inspection) of the Prime Mover and Semi Trailer. I checked the identifiers of the Prime Mover which consisted of the Queensland registration plate of and the compliance plate of the vehicle. I saw that the VIN number of the Prime Mover was which was identified on the compliance plate of the vehicle. I checked the identifiers of the Semi Trailer which consisted of South Australian plate

I also printed out one page of a NEVDIS registration details printout relating to the Semi Trailer

I now produce two TRAILS printout pages relating to the Freightliner Argosy Prime Mover Queensland registration (tendered and marked exhibit number …….).

I now produce one NEVDIS printout page relating to the Semi Trailer South Australian Number (tendered and marked exhibit number …….).

I then completed the Heavy Vehicle Incident Report in relation to this matter in accordance with Compliance Manual General Instruction 16. I subsequently emailed this report to the group email address for the Heavy Vehicle Accidents SEQ South.

I have retained a copy of the Heavy Vehicle Incident Report for my records.

I now produce the copy of the Heavy Vehicle Incident Report (tendered and marked exhibit number …….).

At 11.00am on Monday the 6th June 2011, I then conducted an inspection on both Freightliner Argosy and Semi Trailer utilising the pit, brake rollers and shaker plates of the Darra Motor Vehicle Inspection Centre.

During the inspection on the Freightliner Argosy Queensland Registration I conducted a brake test on all three axles using the MAHA brake rollers at the Darra Motor Vehicle Inspection Centre. At the conclusion of the brake test I printed out a MAHA Brake report on the condition of the Freightliner Argosy brakes.

During the inspection on the Semi Trailer South Australian Registration , I conducted a brake test on both axles using the MAHA brake rollers at the Darra Motor Vehicle Inspection Centre. At the conclusion of the brake test I printed out a MAHA Brake report on the condition of the Semi Trailer brakes.

I now produce that MAHA brake report on the Freightliner Argosy Queensland Registration (tendered and marked exhibit number …….).

I now produce that MAHA brake report on the Semi Trailer South Australian Registration (tendered and marked exhibit number …….).

During the inspection on both Freightliner Argosy Queensland Registration and Semi Trailer South Australian Registration took a further series of digital photographs.

I have numbered these photographs consecutively from the last photograph taken at the scene of the incident on 5th June 2011. These photographs consist of the following:

- Photograph 15: Oil Leaks of Freightliner Argosy Queensland Registration
- Photograph 16: Engine oil leaks of Freightliner Argosy Queensland Registration
- Photograph 17: Engine oil leaks of Freightliner Argosy Queensland Registration
- Photograph 18: Right side second axle inner tyre of Freightliner Argosy Queensland Registration
- Photograph 19: Right side second axle inner tyre of Freightliner Argosy Queensland Registration
- Photograph 20: Left side second axle outer tyre of Semi Trailer South Australian Registration
- Photograph 21: Left side second axle outer tyre of Semi Trailer South Australian Registration
- Photograph 22: Cracks in right side windscreen of Freightliner Argosy Queensland Registration

- Photograph 23: Cracks in right side windscreen of Freightliner Argosy Queensland Registration

- Photograph 24: Cracks in right side windscreen of Freightliner Argosy Queensland Registration

I now produce the full series of 24 digital photographs that I have taken in relation to this investigation, (tendered and marked exhibit number …….).

At 12.30pm on Monday the 6th of June 2011, I completed Defect Notice number SD15600079 in relation to the Freightliner Argosy . The defects listed on this notice were:

1. Ensure all tyres comply to safety standards to include right side second axle inner depletion of tread.
2. Rectify cause of engine oil leaks.
3. Make all lights operate correctly to include left side low beam, right side rear indicator and right side spot light.
4. Rectify cause of air leak second axle area when foot brake applied.
5. Replace cracked right side windscreen.

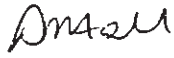
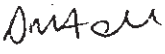
I now produce the blue copy of Defect Notice SD15600079 in relation to the Freightliner Argosy (tendered and marked exhibit number …….).

At this time I also completed Defect Notice number SD15818649 in relation to the Semi Trailer . The defects listed on this notice were:

1. Ensure all tyres comply to safety standards to include left side second axle outer depletion of tread.

I now produce the blue copy of Defect Notice SD15818649 in relation to the Semi Trailer (tendered and marked exhibit number …….).

* **Please use a copy of the vehicle details section if there is more than 1 vehicle involved.** *

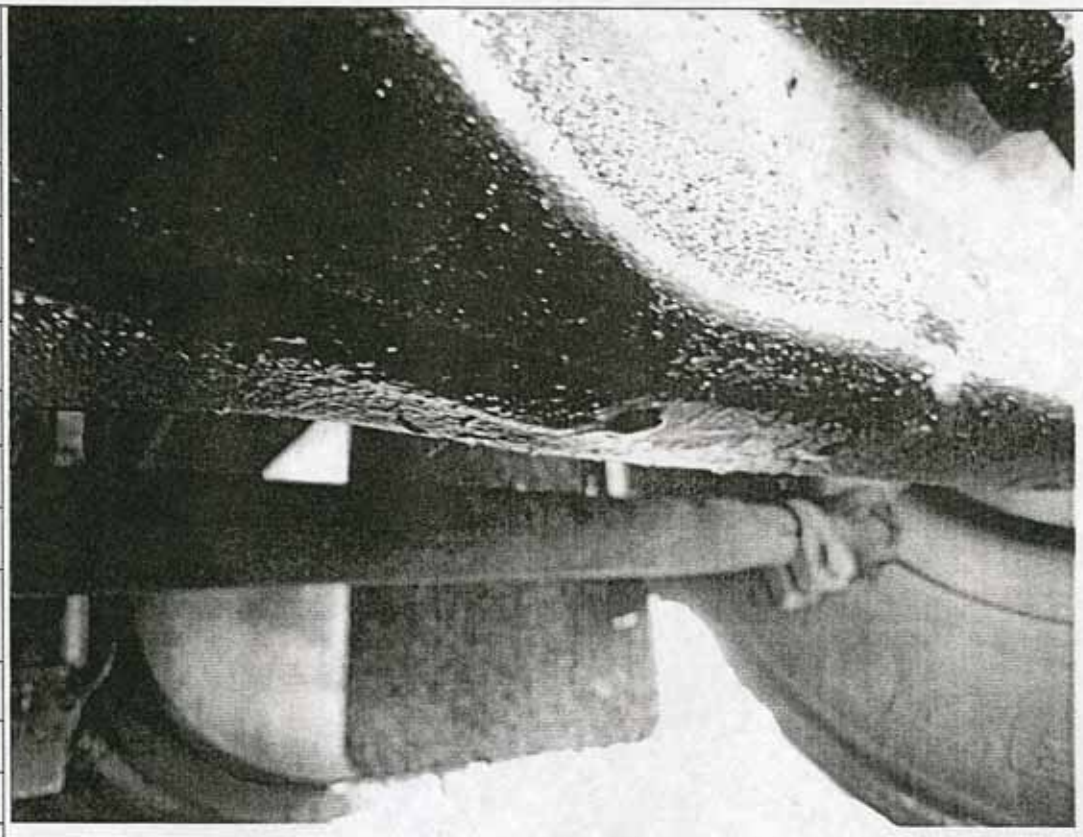
Inspector actions taken:	Notes, photos were taken at scene A more detailed inspection will be conducted at Darra Motor Vehicle Inspection Centre.	
Defect Notice Issued: **Yes/No. Defect No.** **Category of Defect:**	No Defect Notices were issued until detailed mechanical inspections are completed (When entering defect notice into TRAILS please ensure correct code is entered into the (Cert/Rpt) field. For an accident this code is AR 1. For further information see Compliance Manual GI 16 and MV 47.)	
Comments/ Recommendations:	Investigations continuing into the mechanical condition of both units and the drivers Fatigue Management. A download of the engine management system to be conducted.	
Attending Transport Inspectors:	Name: Scott Hall Signature:  Name: Signature:	Date of Report: 05/06/2011
Reviewing STI:	Name: Scott Hall Signature: 05/06/2011 	Date:
Reviewing STI comments:		

Queensland Transport Compliance

Investigation File: 162
Incident Date: 05/06/2011
Incident Location: Warrego Highway Kohlo
Photograph Date: 06/06/2011

I hereby certify that the photograph contained within this document is a true and accurate reproduction of the original.

Signature *Date* 15/08/2011



Oil leaks of Freightliner Argosy Queensland Registration

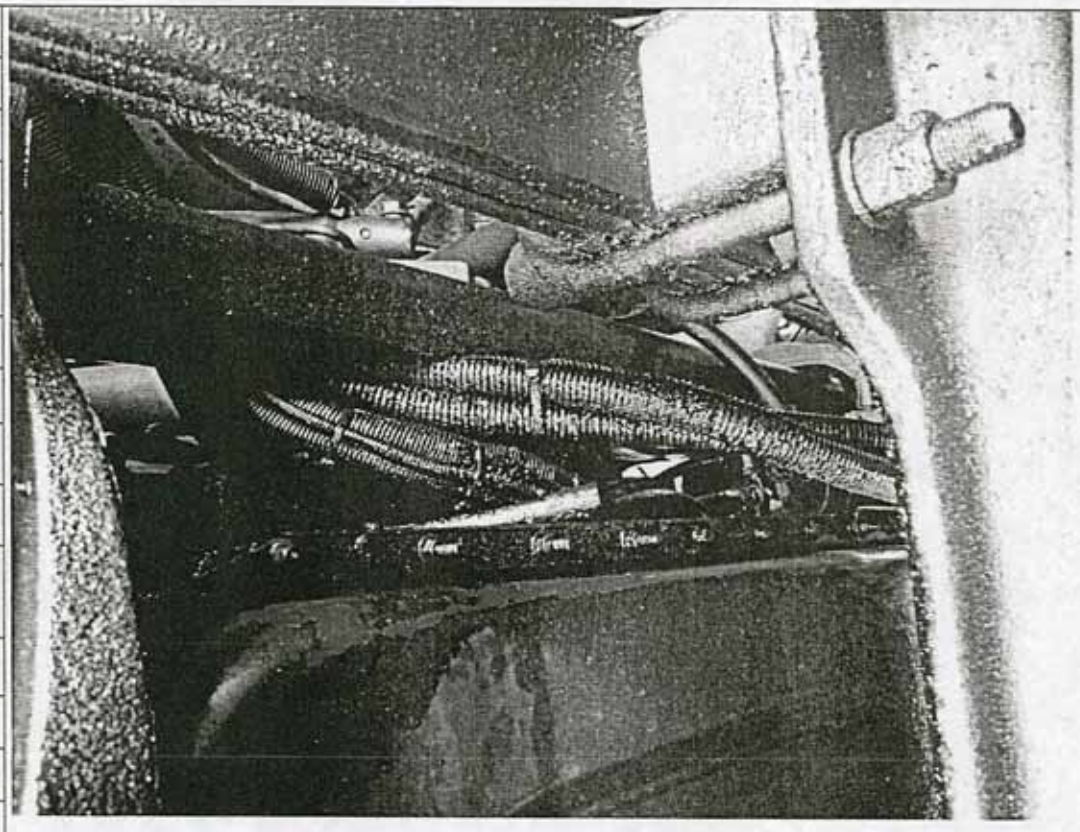
Photograph 15

Queensland Transport Compliance

Investigation File: 162
Incident Date: 05/06/2011
Incident Location: Warrego Highway Kohlo
Photograph Date: 06/06/2011

I hereby certify that the photograph contained within this document is a true and accurate reproduction of the original.

Signature *Date* 15/08/2011



Engine oil leaks of Freightliner Argosy Queensland Registration

Photograph 16

Queensland Transport Compliance

Investigation File: 162
Incident Date: 05/06/2011
Incident Location: Warrego Highway Kohlo
Photograph Date: 06/06/2011

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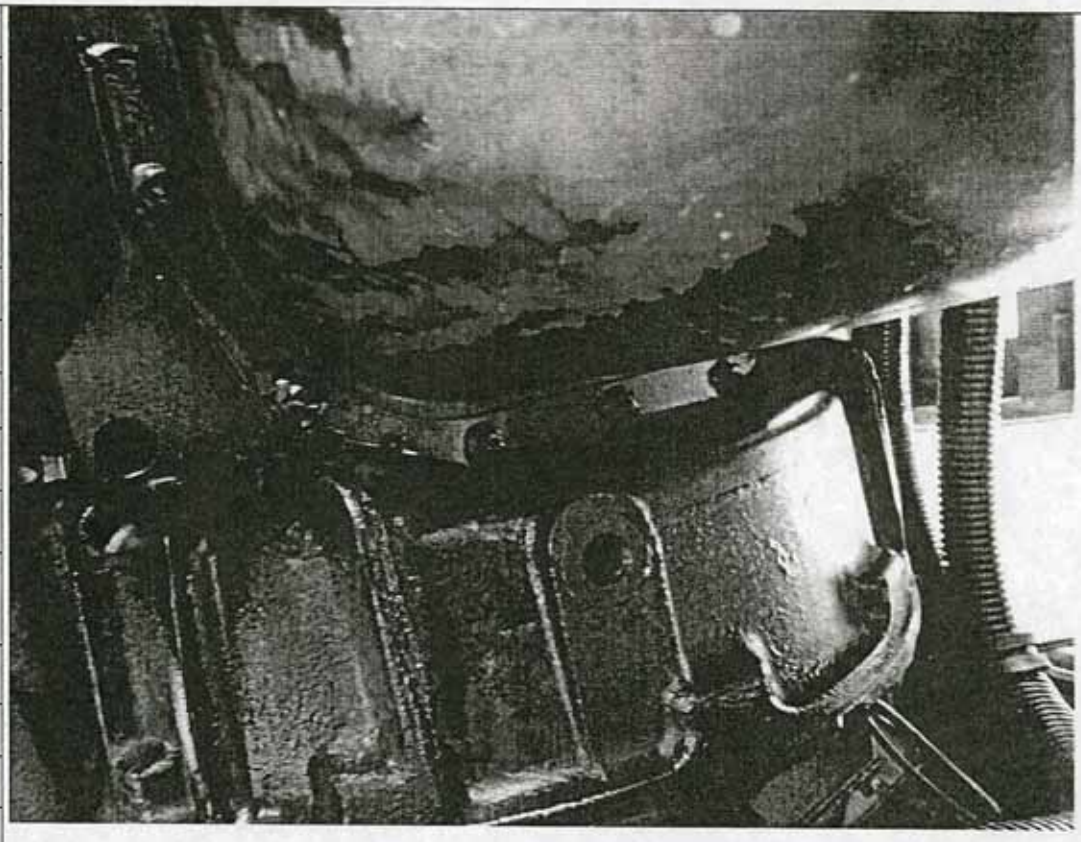
Signature *Date* 15/08/2011



Engine oil leaks of Freightliner Argosy Queensland Registration

Photograph 17

Queensland Transport Compliance

Investigation File: 162
Incident Date: 05/06/2011
Incident Location: Warrego Highway Kohlo
Photograph Date: 06/06/2011

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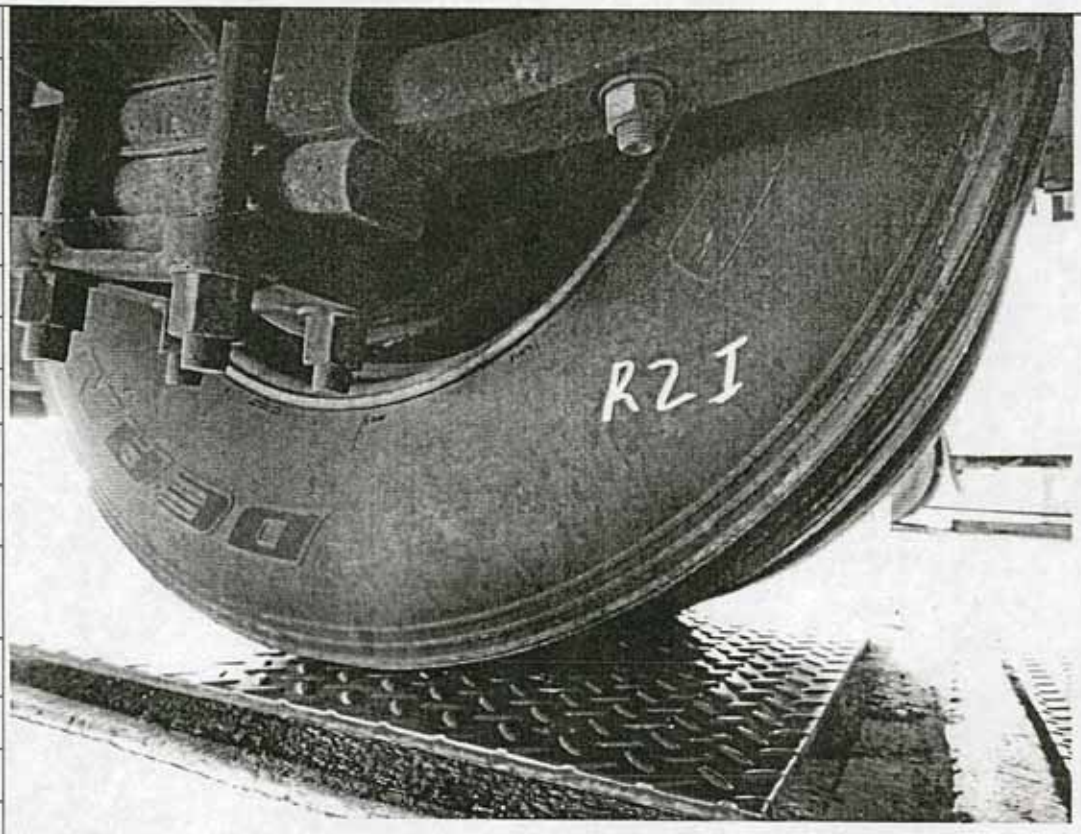
Signature *Date* 15/08/2011



Right side second axle Inner tyre of Freightliner Argosy Queensland Registration

Photograph 18

Queensland Transport Compliance

Investigation File: 162
Incident Date: 05/06/2011
Incident Location: Warrego Highway Kohlo
Photograph Date: 06/06/2011

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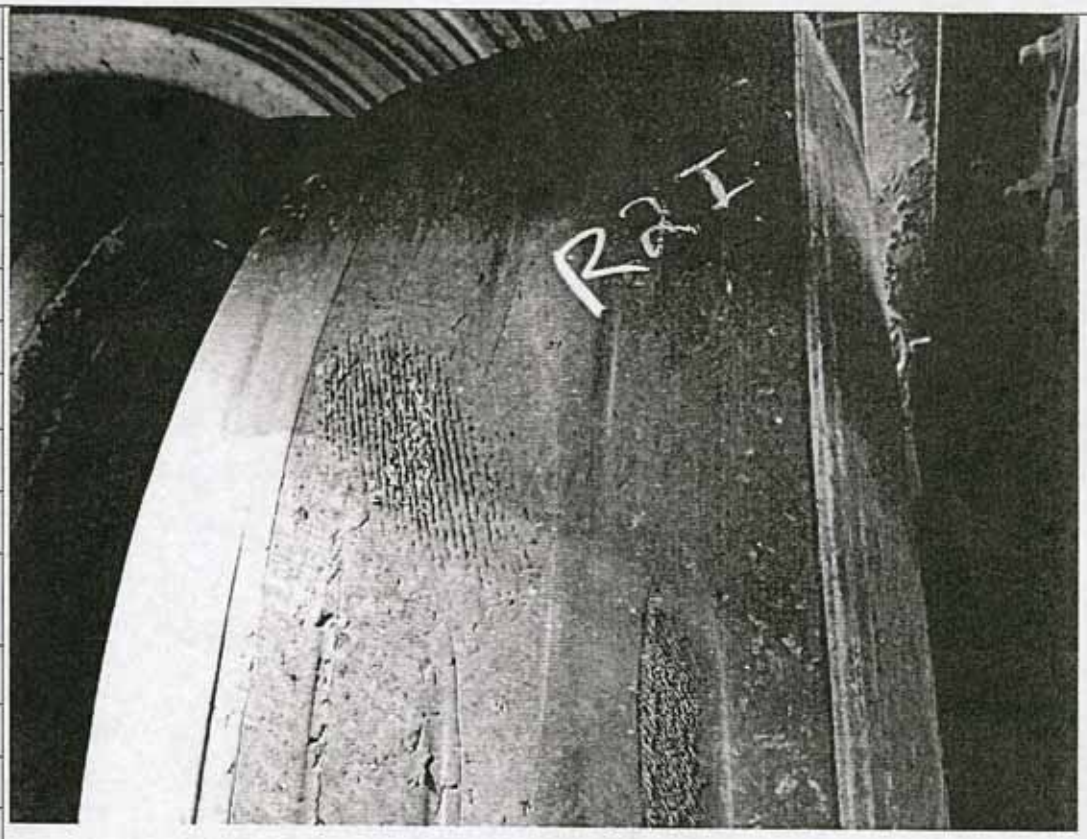
Signature *Date* 15/08/2011



Right side second axle Inner tyre of Freightliner Argosy Queensland Registration

Photograph 19

Queensland Transport Compliance

Investigation File: 162
Incident Date: 05/06/2011
Incident Location: Warrego Highway Kohlo
Photograph Date: 06/06/2011

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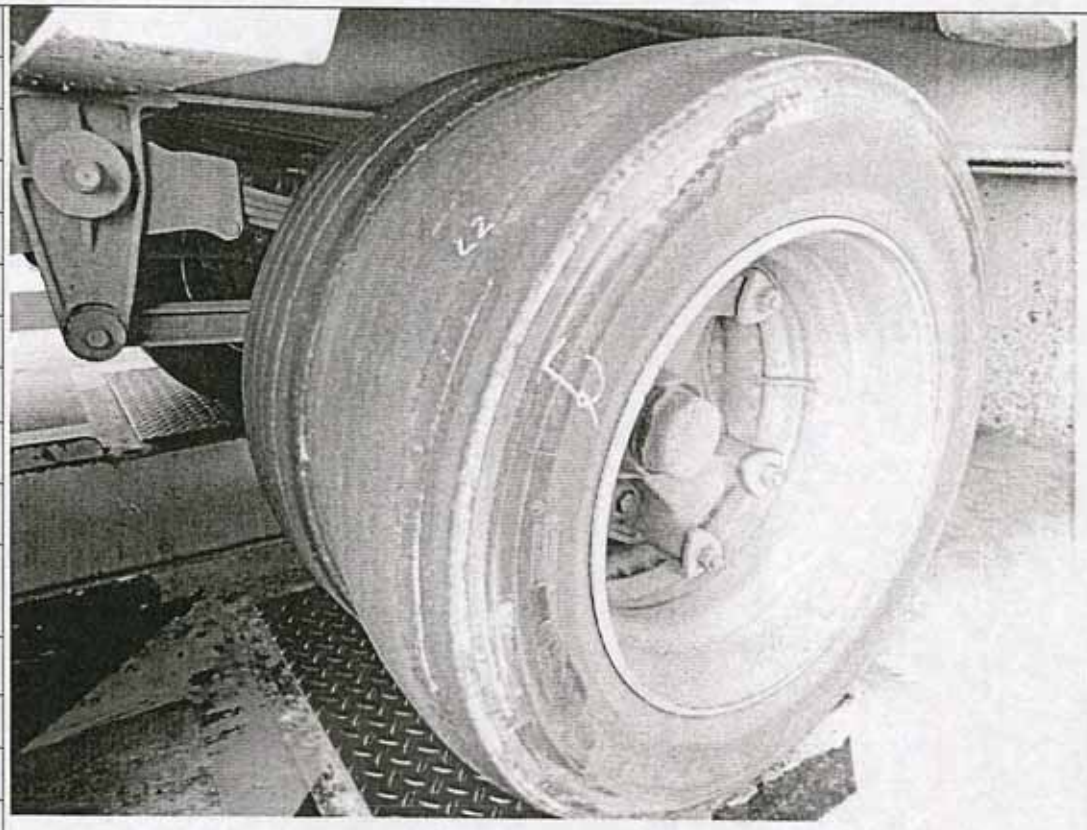
Signature *Date* 15/08/2011



Left side second axle outer tyre that is devoid of tread of Semi-trailer South Australian Registration

Photograph 20

Queensland Transport Compliance

Investigation File: 162
Incident Date: 05/06/2011
Incident Location: Warrego Highway Kohlo
Photograph Date: 06/06/2011

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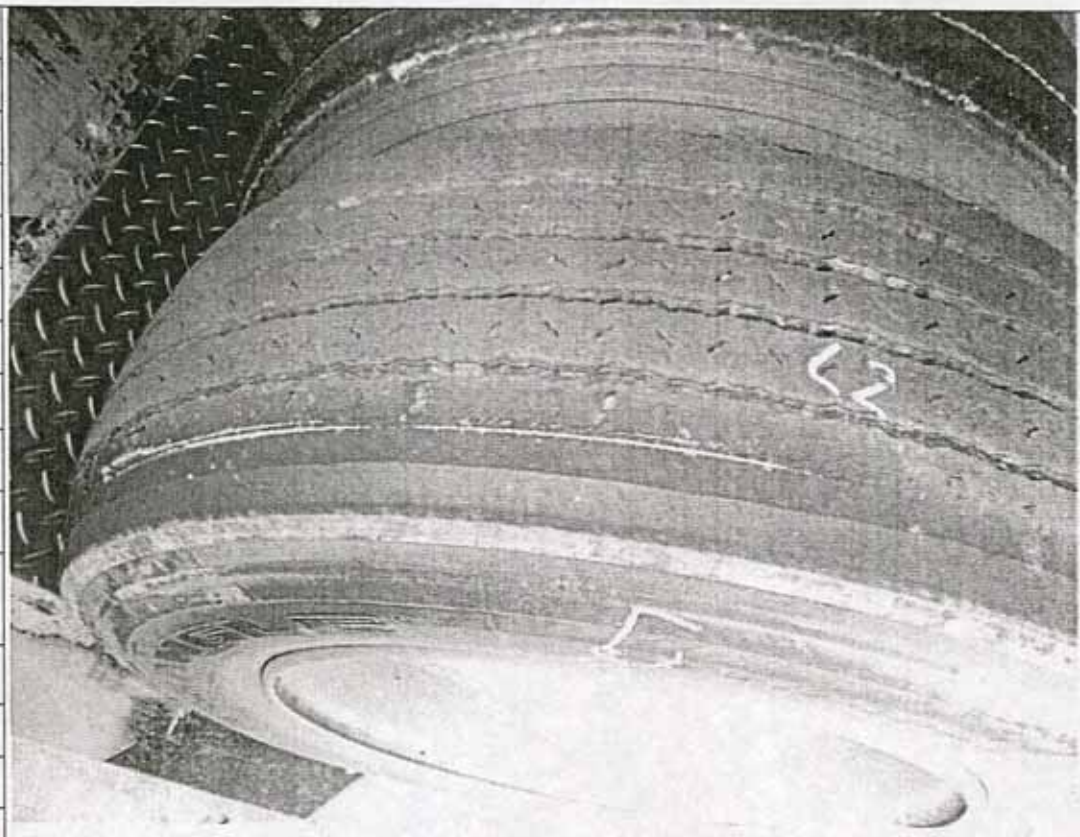
Signature *Date* 15/08/2011



Left side second axle outer tyre that is devoid of tread of Semi-trailer South Australian Registration

Photograph 21

Queensland Transport Compliance

Investigation File: 162
Incident Date: 05/06/2011
Incident Location: Warrego Highway Kohlo
Photograph Date: 06/06/2011

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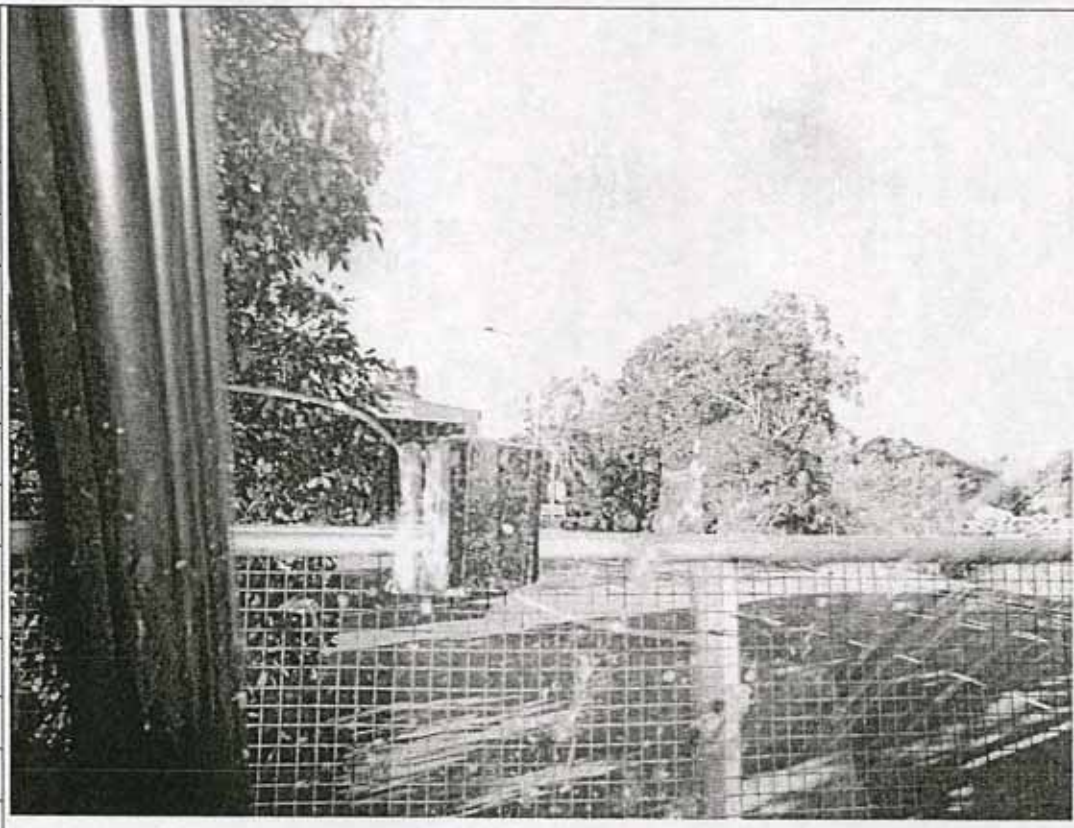
Signature *Date* 15/08/2011



Cracks in right side windscreen of Freightliner Argosy Queensland Registrati

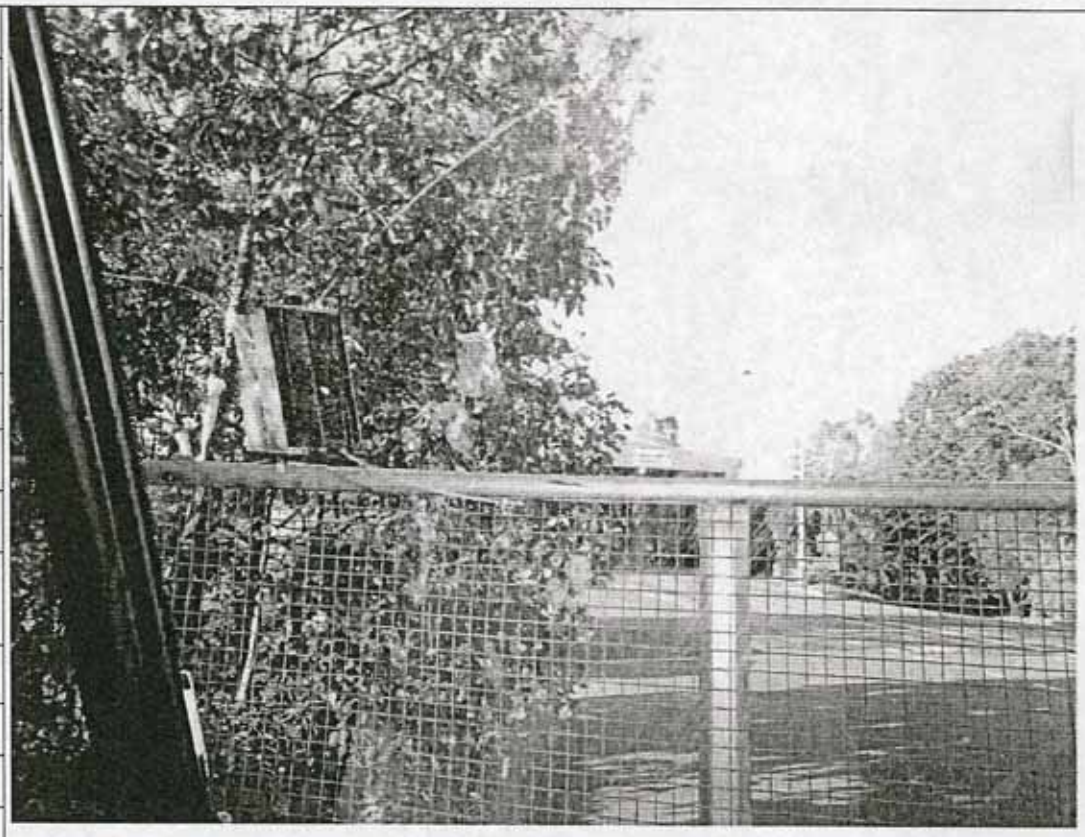
Photograph 22

Queensland Transport Compliance

Investigation File: 162
Incident Date: 05/06/2011
Incident Location: Warrego Highway Kohlo
Photograph Date: 06/06/2011

I hereby certify that the photograph contained within this document is a true and accurate reproduction of the original.

Signature *Date* 15/08/2011



Cracks in right side windscreen of Freightliner Argosy Queensland Registration

Photograph 23

Queensland Transport Compliance

Investigation File: 162
Incident Date: 05/06/2011
Incident Location: Warrego Highway Kohlo
Photograph Date: 06/06/2011

I hereby certify that the photograph contained within this document is a true and accurate reproduction of the original.

Signature *Date* 15/08/2011

Cracks in right side windscreen of Freightliner Argosy Queensland Registration

Photograph 24

Handbrake/Park brake

Type:		Air Brake System
Operation:	First Axle:	N/A
	Second Axle:	Carried out park brake test on the departments MAHA electronic brake test machine. Test results were satisfactory. Visual inspection on second axle brakes was also in satisfactory working order.
	Third Axle:	Carried out park brake test on the departments MAHA electronic brake test machine. Test results were satisfactory. Visual inspection on third axle brakes was also in satisfactory working order.
	Fourth Axle:	N/A
Meter Reading		N/A
Comments:		Full park brake test carried out on the departments MAHA electronic brake test machine. Overall brake results recorded was 28 percent. (Minimum requirement for this type of vehicle is 15 percent). All other visual checks of the braking system show no obvious signs of defects. The brakes on the Freightliner Argosy were in satisfactory working order.

Steering

Type:	Power Assist Steering
Condition of Linkage:	All steering linkages to be in satisfactory condition.
Visual Alignment:	Off centre
Operation (lock to lock)	Test satisfactory
Box And Column:	Connected, test satisfactory.
Comments:	Visual inspection revealed steering linkages and steering box to be in satisfactory working order.

Tyres

	SIZE	TYPE	TREAD DEPTH	INFLATED
FIRST AXLE	385/65 R22.5	Radial	R = 11.77 mm L = 7.23 mm	Yes
SECOND AXLE	11R22.5	Radial	RI = Fail RO = 2.44 mm LI = 9.69 mm LO = 6.90 mm	Yes
THIRD AXLE	11R22.5	Radial	RI = 13.68 mm RO = 10.14 mm LI = 12.75 mm LO = 13.15 mm	Yes
FOURTH AXLE	N/A	N/A	N/A	N/A

	SIZE	TYPE	TREAD DEPTH	INFLATED
Remarks on general condition	Inspection of the tyres fitted to the Freightliner Argosy show that the right side second axle inner tyre was below safety standards, all other tyres would indicate that there was no defects pre incident. R = Right, L = Left, RI = Right Inner, RO = Right Outer, LI = Left Inner, LO = Left Outer.			

Wheels

Rim	Type	Sizes
First Axle	Alcoa Alloy	22.5 X 8.25
Second Axle	Alcoa Alloy	22.5 X 8.25
Third Axle	Alcoa Alloy	22.5 X 8.25
Fourth Axle	N/A	
Remarks	All rims fitted to the Freightliner Argosy were in as new condition. Inspection of the rims fitted to the vehicle would indicate that there was no defects pre incident.	

Body

Estimate condition prior to and after accident:
Pre incident would indicate that there were no obvious defects to the structure of the cabin/body. Post incident exhibited no defects.

Chassis

Estimate condition prior to and after accident:
Pre incident would indicate that there were no obvious defects to the Chassis. Post incident exhibited no obvious structural damage.

Shock Absorbers

Remarks on general condition:
All shock absorbers were attached and no obvious oil leaks or bush damage and in a serviceable condition.

Suspension

FRONT:	TYPE:	Parabolic leaf spring
	OPERATION:	Good mechanical condition
REAR:	TYPE:	Air Bag
	OPERATION:	Good mechanical condition
REMARKS:		All suspension components fitted to the Freightliner Argosy to be in good mechanical condition.

Lamps

		Condition	Operation
Head	High Beam	Serviceable	Test satisfactory
	Low Beam	Serviceable	Left side not working
Addition	Park	Serviceable	Test satisfactory
	Front	Serviceable	Test satisfactory
Tail			
Turn	Right Front	Serviceable	Test satisfactory
	Right Rear	Serviceable	Not working
	Left Front	Serviceable	Test satisfactory
	Left Rear	Serviceable	Test satisfactory
Clearance Lamps	Front	Serviceable	Test satisfactory
	Rear	Serviceable	Test satisfactory
Stop		Serviceable	Test satisfactory

	Condition	Operation
Reverse Lamp	Serviceable	Test satisfactory
Switches	Serviceable	Test satisfactory
Comments:	Test on all lights fitted to the Freightliner Argosy showed the left side low beam not working and the right side rear indicator not working, all other lights tested satisfactory.	

Rear Vision Mirror

Internal	N/A
External Right	Good condition
External Left	Good condition

Driver's Controls

Gauges	Test satisfactory
Speedometer	1026725KM

Seats

Good mechanical condition

Seat Belts

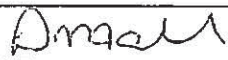
Good mechanical condition

Battery

Mounting	Satisfactory
Secure	Satisfactory
Terminals	Serviceable

GENERAL OPINION OF MECHANICAL CONDITION:	Inspection on the 2005 Freightliner Argosy, Queensland registration number revealed that the vehicle had defects that included right side second axle tyre was devoid of tread, engine oil leaks, left side low beam not working, right side rear indicator not working and right side spot light not working. There was also an air leak near second axle area when the foot brake was applied and there were numerous cracks in the right side windscreen.

INSPECTOR'S DETAILS

Inspector's Name	**Scott Hall**
Inspector's Signature	
Inspector's Authority/ Identification Number	**260**
Inspector's Location	**Corner Jacaranda Avenue & Civic Parade Logan Central.**

Office Use Only

Copy of this report forwarded to:

1 Sergeant Darryl Morrison / Ipswich Forensic Crash Unit	**Date 15/08/2011**
2	**Date / /**
3	**Date / /**
4	**Date / /**

Queensland Transport collects information on this form, on behalf of the Queensland Police Service, to assist them in assessing a vehicle's compliance with Transport Operations (Road Use Management – Vehicle Safety and Standards) Regulation 1999. This information may be released by the department or its agents to vehicle insurers, statutory entities, insolvency entities, persons involved in vehicle accidents/incidents or vehicle manufacturers and to or through interstate police and transport authorities. This information is accessible departmental officers who will not disclose your personal details to any other third party without your consent or unless required by law.

System and type	Air System
Fluid Level	N/A
Pressure	Satisfactory
Operation: First Axle	Carried out service brake test on the departments MAHA electronic brake test machine. Test results were satisfactory. Visual inspection on first axle brakes was also in satisfactory working order.
Second Axle	Carried out service brake test on the departments MAHA electronic brake test machine. Test results were satisfactory. Visual inspection on second axle brakes was also in satisfactory working order.
Third Axle	N/A
Fourth Axle	N/A
Comments	Full service brake test carried out on the departments MAHA electronic brake test machine. Overall brake results recorded was 69 percent. (Minimum requirement for this type of vehicle is 45 percent). All other visual checks of the braking system show no obvious signs of defects. The brakes on the semi - trailer were in satisfactory working order.

Emergency Brake

Type	Air System
Operation: First Axle	Not tested
Second Axle	Not tested
Third Axle	N/A
Fourth Axle	N/A
Comments	Not tested

Tyres

	Size	Type	Tread Depth	Inflated
First Axle	275/70R22.5	Radial	LO - 7.29 mm LI - 8.14 mm RO - 5.78mm RI - 6.30 mm	Yes
Second Axle	275/70R22.5	Radial	LO - 7.97 mm LI - 7.38 mm RO - 5.78 mm RI - 6.30 mm	Yes
Third Axle	N/A	N/A	N/A	N/A
Fourth Axle	N/A	N/A	N/A	N/A

Remarks on general condition	Inspection of the tyres fitted to the semi-trailer show that the left side second axle outer tyre was below safety standards, all other tyres would indicate that there was no defects pre incident.

Wheels

First Axle	Steel (6 stud spider)
Second Axle	Steel (6 stud spider)
Third Axle	N/A
Fourth Axle	N/A
Remarks on general condition	All rims as new prior to impact damage

Body / Chassis

Estimate condition prior to and after accident:	Pre incident would indicate that there were no obvious defects to the structure of the body/chassis. Post incident exhibited no obvious structural damage.

Suspension:

Front	Type	Multi leaf Spring
	Operation	Good working order
Centre	Type	N/A
	Operation	N/A
Rear	Type	Multi leaf Spring
	Operation	Good working order
Comment		All suspension components were in good working order.

Lamps

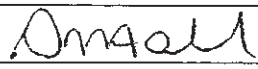
		Condition	Operation
Tail		Good working order	Good working order
Turn	Right Rear	Good working order	Good working order
	Left Rear	Good working order	Good working order
Clearance	Front	Good working order	Good working order
	Rear	Good working order	Good working order
Stop		Good working order	Good working order
Remarks on general condition:		All lights were in good working order.	

General Remarks/Inspector's Comments

Inspection on the 1984 Semi Trailer South Australian registration number [redacted] showed the left side second axle outer tyre was devoid of tread. There were no other obvious pre incident defects.

QPS Details:	
Investigating Officer:	Sergeant Darryl Morrison
Police Station Concerned:	Ipswich Forensic Crash Unit

Inspector's Details

Inspector's Name	**Scott Hall**
Inspector's Signature	
Inspector's Authority/ Identification Number	**260**
Inspector's Location	**Corner Jacaranda Avenue & Civic Parade Logan Central.**

Office Use Only

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1 Sergeant Darryl Morrison / Ipswich Forensic Crash Unit	**Date 15/ 6 /2011**
2	**Date / /**
3	**Date / /**
4	**Date / /**

Privacy Disclaimer

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NATIONAL DRIVER WORK DIARY APPLICATION FORM

THIS APPLICATION FORM MUST BE COMPLETED IN THE PRESENCE OF AN ISSUING OFFICER

DUPLICATE (to remain in work diary)

SECURITY NO. Q

Work Diary Details

Place of Issue:

State/Territory of Issue:

Date: / /

Time: am/pm

Is this your first work diary? ☐ Yes ☐ No

If no, please indicate the reason for a replacement work diary: ☐ Completed ☐ Lost ☐ Stolen ☐ Destroyed

What is the security number of the work diary being replaced?

State circumstances if lost, stolen or destroyed:

Driver's Details

Family Name:

Given Name/s:

Residential Address:

Postcode:

Driver's Licence No:

Licence Class:

State/Territory Issued:

I certify the above information is true and correct:

Driver's Signature:

I certify I have witnessed the driver's signature:

For office use only
If the applicant's licence was issued in a jurisdiction other than that of the issuing office, agency staff must send a photocopy of this application form to

Meeting with Bicycle Queensland

18/07/06 12:30PM-1:45PM

Western freeway bikeway

Attendance:

Eddie Peters - MR

Ross Blinco - MR

Jeff Ross –MR

Akua Afriyie Ahenkorah - MR

Ben Wilson -BQ

John Taylor –BQ

Change of designation for U18A/B to a motorway:

- Eddie Peters outlined that the Western Freeway is soon to be classed as a motorway, to control access to the road and to limit access to the road for tractors, animals, pedestrians and possibly bicycles.
- Need for upgrading to a motorway was based primarily on controlling accesses, however MR is considering closing access to bicycles as part of the reclassification as a motorway.
- John Taylor outlined the difficulties facing cyclists along this route.
- Close to a 50/50 bike/pedestrian split on some bike paths.
- Wide variety of different users for the current bikeway, including inline skaters, scooters, joggers, pedestrians with dogs on a leash and strollers.
- The mix of users coupled with the different experience/skill levels of the users leads to a problem with differential speeds on bikeways.
- Some more experienced riders can get up to speeds of 60km/h on the bike way, despite the fact that it is only designed for speeds of 35-40km/hr.
- The existing bikeway is only 3metres wide, and therefore there is little margin for error when cyclists pass at these speeds.
- Ben stated that while inexperienced riders and pedestrians are not a problem for the more recreational riders, there is a portion of the riding community who seek to travel at higher speeds, for training etc, and mixing pedestrians and semi-professional riders can create safety issues related to speed differential.
- Ben and John suggested that unless the bikeway is upgraded to a 6 metre wide shared facility it would be better to allow cyclists to retain access to the western freeway. The following points were made to reinforce this argument:
    - Serious riders can avoid pedestrians, therefore leading to fewer accidents on bike paths. While closing the motorway might lead to a reduction in accidents on the

motorway, it could lead to an increase in serious accidents on the bike path. Main Roads countered the argument by stating that many sections of the existing Western Freeway are not designed to accommodate cyclists. While allowing riders to travel on the side of the road might remove a significant proportion of these fast moving cyclists from the bike path, in the areas where bikes are forced to use a traffic lane they can create a speed differential between themselves and the vehicles.

- Those riders that elect to use the road side will be the more serious riders and are generally more experienced in road side ridding therefore are less likely to have accidents.
- There are some issues with security when using bikeways at night. Many people who ride at night perceive that they are safer on the road side because there are low traffic volumes and there is less chance of being attacked.
- It has proven to be difficult to enforce bans on bikes accessing motorways in the past because they are not registered and generally do not carry any identification.
- Many serious ridders prefer the road side because they do not have to stop at the various interchanges along the path. This allows them to keep up there pace and travel longer distances.

- Ben and John highlighted that direction signs would be helpful for the bike path. Jeff Ross replied that these are a part of the finished design and will be installed once construction of the bikeway is complete.
- Bikeway will possibly be designated as the V5.
- Main Roads highlighted that there are some sections of this route, particularly at the bridges and overpasses, where the road widths do not meet the specifications for bicycles travelling on the shoulder. The suggestion was made that perhaps some form of warning sign could be used to inform cyclists which sections of the road were not suitable for cycling on. Jeff Ross said that Vic Roads may have a warning sign for this situation that could be adapted for use in this situation.
- As a result of the discussions it was decided that for the time being Cyclists would retain access to the Western arterial after it is designated a motorway. Main Roads would continue to monitor the situation and make changes if necessary.
- Ben and John were both pleased with the existing maintenance of the bikeways.
- Lighting was highlighted as an issue on the bike path. Lighting is intermittent and this may be contributing to security concerns.

Moggill Road Western Arterial bike path crossing :

- Generally happy with the design layout that was proposed.
- The position of the pedestrian call up buttons should be on the left hand side of the pedestrian crossing.
- Hand rail locations on southeast intersection island needs to be altered so that they are on left hand side of pedestrian crossing.

Statement of Michael Carter

Annexure B

Signature .....

Witness... .....

Signed at Brisbane on 14 March 2014.

Queensland Government

Memorandum

Department of **Main Roads**
Your ref
Date 18 April 2007

To Brian Turnbull
Manager
Road Plan and Inventory

Attention: Alex Gleboff

Copy to Julie Mitchell, Manager (Transport Planning)

Subject **Motorway Declaration – Warrego Highway between the Warrego / Cunningham Highway intersection and the Ipswich / Warrego Highway Connection intersection.**

Metropolitan District is seeking to apply motorway declaration to a section of the Warrego Highway between the Warrego / Cunningham Highway intersection and the Ipswich / Warrego Highway Connection intersection (Fernvale Road).

The purpose of the declaration is to provide Main Roads with increased powers to ensure the strategic function of this section of the motorway is protected. This includes the management of the types of vehicles allowed on the motorway, the control of advertisement that can be seen from a motorway, and the prohibition of certain types of manoeuvres.

In accordance with Section 27 and Section 55, respectively, of the *Transport Infrastructure Act 1994*, Ipswich City Council were invited to make a submission to the Director-General of Main Roads regarding the department's proposal to declare motorway status (refer Attachment A). Ipswich City Council responded and indicated they would support motorway declaration subject to the resolution of two issues (refer Attachment B). Main Roads responded to the two issues (refer Attachment C) and Council verbally indicated they were satisfied their concerns have been addressed. Council were requested to provide formal advice that their issues were resolved on 3 April 2007 but to date no response has been received.

In view of the above, would you office commence the motorway declaration process for the section of the Warrego Highway, as shown on the attached plans, at your earliest convenience.

Your advice on the timeline for the declaration process would be appreciated.

If you have any queries in regards to this, please contact Stephen Larter (Town Planner) on 3834 8464.

Yours faithfully

Eddie Peters
District Director (Metropolitan)

Metropolitan District
Strategic Planning
Level 1, 183 Wharf Street, Spring Hill

Enquiries Stephen Larter
Telephone +61 7 3834 8464
Facsimile +61 7 3834 3067

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Attachment A

28 April 2006

Mr Ray Rapinette
A/Chief Executive Officer
Ipswich City Council
PO Box 191
Ipswich Qld 4305

Attention: Mr Andrew Underwood

Dear Mr Rapinette

Warrego Highway - Proposed motorway declaration between intersection of Warrego and Cunningham Highways and the Ipswich - Warrego Connection Road

As you know, the Warrego Highway is a highway of national importance and provides an important inter-regional link between Brisbane, Toowoomba and out to Charleville.

To ensure this highway's strategic value in the metropolitan road network is maintained, the Department of Main Roads is intending to use its powers under Section 27 of the *Transport Infrastructure Act 1994* to declare motorway status to the section of highway between the intersection of the Warrego and Cunningham Highways and the Ipswich - Warrego Highway Connection Road.

The declaration of motorway would result in a number of road corridor management issues that Ipswich City Council would need to consider and comply with where applicable. Such issues include the need for council to refer to Main Roads all applications for the erection, alteration or operation of advertising signage that is visible from the proposed motorway.

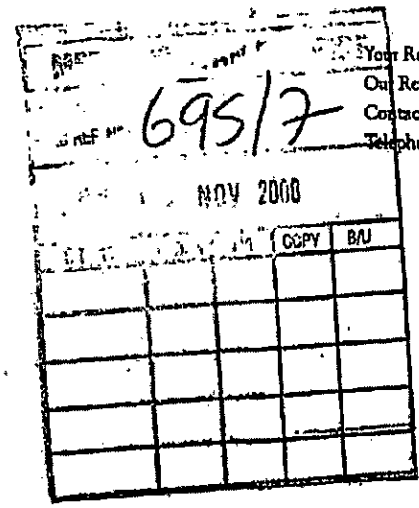
In accordance with Section 27 of the *Transport Infrastructure Act 1994*, Ipswich City Council may make a submission to the Chief Executive of Main Roads regarding the proposal to declare motorway status to this section of road. Main Roads would appreciate any submission on this proposal within 28 days from the date of this letter.

South East Queensland Region
Metropolitan District
183 Wharf Street
Spring Hill Queensland 4000
PO Box 70 Spring Hill Queensland 4004
ABN 57 836 727 711

Our ref 510/211
Your ref
Enquiries Neil Horrocks
Telephone +61 7 3834 8281
Facsimile +61 7 3834 8363
Website www.mainroads.qld.gov.au
Email ddmetropolitan@mainroads.qld.gov.au

Attachment B

Ipswich City Council



Your Reference: 510/211
Our Reference:
Contact Officer: Tony Dileo
Telephone No.: 3810 7818

9 November 2006

Dear Steve,

Re: **Warrego Highway – Proposed Motorway declaration between intersection of Warrego and Cunningham Highways and the Ipswich – Warrego Connection Road**

I refer to our letter dated 14 August 2006 attached, requesting a meeting to discuss the Departments proposal to declare the Warrego Highway a motorway. During a subsequent telephone conversation between Steve Larter from Main Roads and Mary Torres from Council, it was requested that Council express its concerns in writing.

Council does not object to the Warrego Highway being declared a motorway following the resolution of a number of issues as noted below:

1. Following a motorway declaration, it is understood that access for certain road users will be restricted. Of particular concern is that cyclists will no longer be able to travel on the declared motorway section of the Warrego Highway. If the Warrego Highway is declared a motorway then a dedicated cyclist facility will need to be considered.

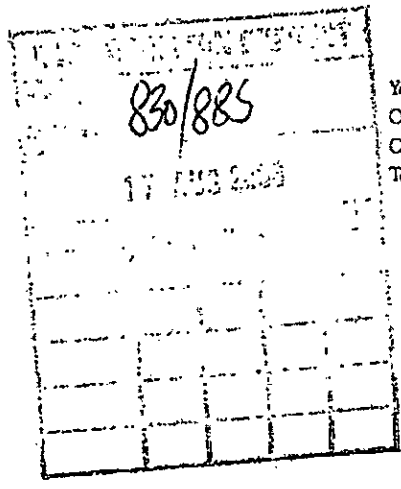
2. It is understood that direct property accesses onto a motorway is not permitted. We are concerned that Council may subsequently have to provide local road connectivity and access.

In addition to our above concerns, Council notes that the Warrego Highway, in its current form, does not meet the engineering standards required to classify it a motorway. It is our understanding that a motorway has grade separated accesses only.

District Director (Metropolitan)
Queensland Department of Main Roads
(Attention: Steve Larter)
PO Box 70
SPRING HILL QLD 4004

Please Address All Correspondence to:
Chief Executive Officer
Ipswich City Council
A.B.N. 61 461 981 077
PO Box 191 Ipswich Qld 4305
Telephone: (07) 3810 6666
Facsimile: (07) 3810 6731
Email: council@gil.com.au
Website: www.ipswich.qld.gov.au

Ipswich
City Council



Your Reference:
Our Reference: H:\IPBRANCH\LETTERS\Warrego Highway Declaration.doc
Contact Officer: Mary Torres
Telephone No.: 07 3810 7932

14 August 2006

Dear Sir,

Re: **Warrego Highway – Proposed Motorway declaration between intersection of Warrego and Cunningham Highways and the Ipswich – Warrego Connection Road**

In reference to your recent letter, dated 28 April 2006, regarding the above noted matter, we provide the following comments.

Council understands that the Warrego Highway is an important strategic link of national importance within Ipswich. Therefore we have some reservations with the declaration of the Warrego Highway as a motorway.

Council would like to be given the opportunity to discuss our issues with Main Roads representatives, prior to a resolution being made. We can then express our concerns with the new declaration.

Please contact Mary Torres on the above noted phone number if you wish to further discuss this matter.

Yours sincerely,

Mary Torres
ENGINEER
(TRAFFIC AND TRANSPORT)

District Director (Metropolitan)
Queensland Department of Main Roads
(Attention: Neil Horrocks)
PO Box 70
SPRING HILL QLD 4004

Please Address All Correspondence to:
Chief Executive Officer
Ipswich City Council
A.B.N. 61 461 981 077
PO Box 191 Ipswich Qld 4305
Telephone: (07) 3810 6666
Facsimile: (07) 3810 6731
Email: council@gil.com.au
Website: www.ipswich.qld.gov.au

Attachment C

Queensland Government

13 March 2007

Department of **Main Roads**

Mr Carl Wulff
Chief Executive Officer
Ipswich City Council
PO Box 191
Ipswich Qld 4305

Attention: Tony Dileo

Dear Mr Wulff

Warrego Highway - proposed motorway declaration between the intersection of Warrego and Cunningham Highways and the Ipswich - Warrego Connection Road

I refer to your letter of 9 November 2006 in which council expressed concern about Main Roads intention to declare as motorway the section of highway between the intersection of Warrego and Cunningham Highways and the Ipswich - Warrego Connection Road.

It is noted that council does not object to motorway declaration subject to resolution of two issues. The two issues and Main Roads responses are as follows:

1. *Prohibition of cyclists on a motorway*

   The declaration of a section of road as a motorway itself does not prohibit certain users. However, once the declaration process is completed, Main Roads can decide to prohibit certain users such as cyclists. Council's concern about the lack of alternative infrastructure for cyclists to use if they were prohibited on this section of the Warrego Highway is noted. At this point in time, Main Roads will not seek to prohibit cyclists from travelling on this section of Warrego Highway. If this situation requires review, prior to any action being undertaken by Main Roads, the department will discuss the matter with council.

2. *Direct property access to the proposed motorway*

   The declaration of a motorway does not provide Main Roads with the power to prohibit direct property access to a motorway. The power to limit direct access from a property to a state-controlled road is contained in Section 62 of the *Transport Infrastructure Act 1994*. Section 62 allows Main Roads to manage individual access to a state-controlled road where no

Metropolitan District

183 Wharf Street
Spring Hill Queensland 4000
PO Box 70 Spring Hill Queensland 4004
ABN 57 836 727 711

Our ref 695/7
Your ref
Enquiries Stephen Larter
Telephone +61 7 3834 8464
Facsimile +61 7 3834 8363
Website www.mainroads.qld.gov.au
Email mr.dd.metro@mainroads.qld.gov.au

limited access plans are in place. Main Roads also manage access to state-controlled roads through limited access plans. Section 54 of the TIA provides Main Roads with the power to declare all or part of a state-controlled road a limited access road.

Main Roads has access limitation plans for the section of the Warrego Highway between the intersection of Warrego and Cunningham Highways and the Ipswich - Warrego Connection Road and the road was declared as a limited access road many years ago. Any application to have direct access to this section of road would be assessed against these plans and any current planning for this area.

Main Roads is seeking to begin the process of motorway declaration in the near future. It would be appreciated if council could, at it's earliest convenience, advise if Main Roads response to the above issues is satisfactory.

If you have any queries regarding this advice please contact Stephen Larter, A/Senior Town Planner, in Metropolitan District, on 3834 8464. Mr Larter will be pleased to assist.

Yours sincerely

Eddie Peters
District Director (Metropolitan)

Statement of Michael Carter

Annexure C

Signature .....

Witness .....

Signed at Brisbane on 14 March 2014.

DMS Document

Document Id:	E315897	Document Category:	External Document
Addressee:	Craig Gardner		

Date Written:	10/02/2008	Document Type:	Letter
		Project ID:	
Author:	Ross C Blinco		
Authors Title:	Manager (Traffic Operations)		
Corporate Author:	Management		
Subject:	Works Order No. TC-51478, Install Motorway Restriction Signage, Warrego Highway (Ips.-Toowoomba) (18A), Warrego Highway from Riverview to Brassall		
Action Officer:			
Group:			
Action Due:		Date Actioned:	
Action Status:	Action Completed		

Document.pdf Craig Gardner - Senior Inspector (Maintenance)
Deagon Depot, Depot Road, Deagon

Subject: Works Order No. **TC-51478**
Install Motorway Restriction Signage
Warrego Highway (Ips.-Toowoomba) (18A)
Warrego Highway from Riverview to Brassall

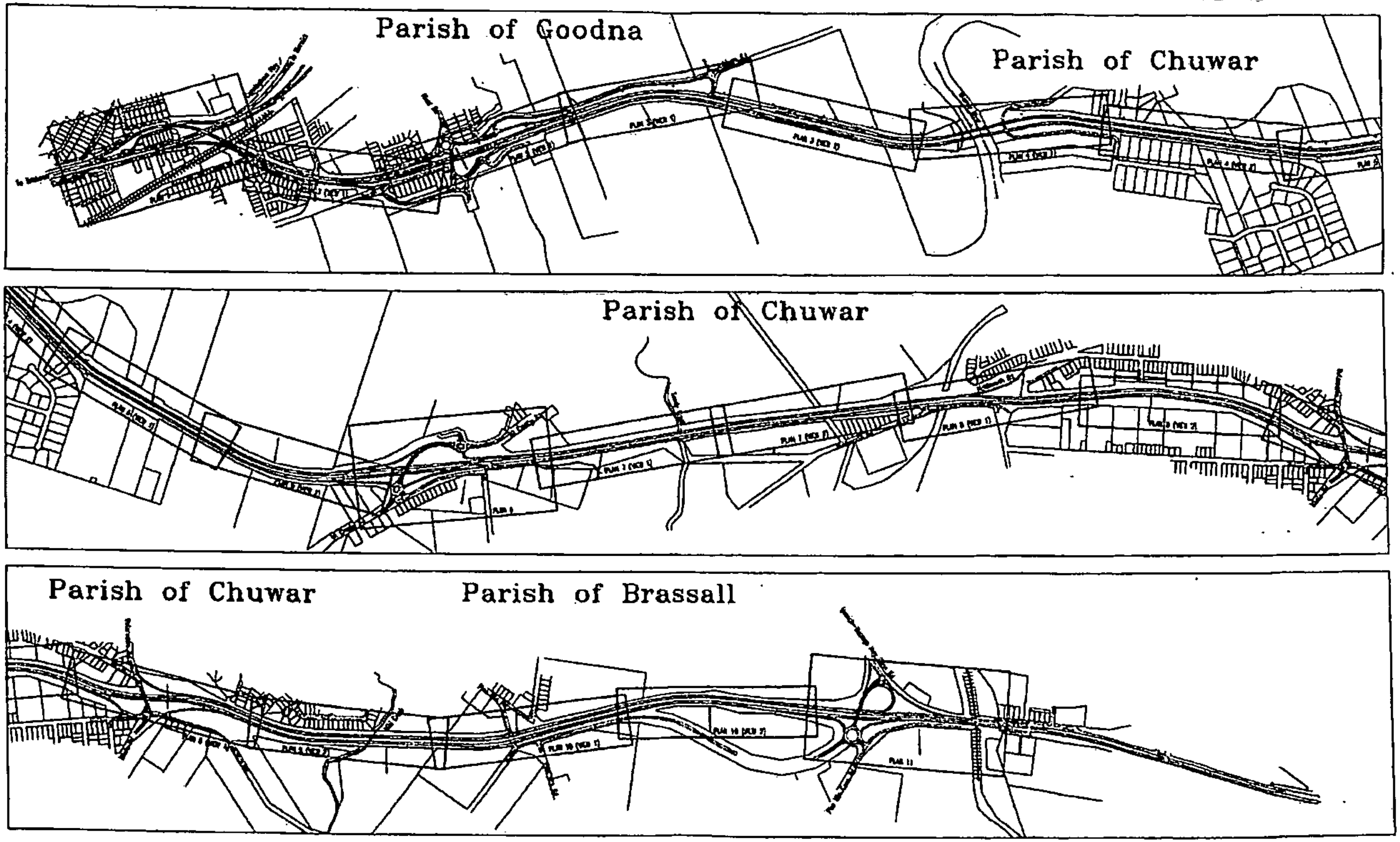
Account Name:				Road Name:	
District Wide Signage Upgrade				Warrego Highway (Ips.-Toowoomba) (18A)	
Account Code:	File No.:			Road Number:	Location:
40U021011.I.3	810/00147			18A	Warrego Highway from Riverview to Brassall
Issued By:	Phone	Date Issued:		Title:	
Alan Birch	31378204	10/03/2008		Install Motorway Restriction Signage	
Est. Cost:	Fixed Price:	Required By:		Description:	
$62800.00		13/06/2008		Warrego Motorway Install Advisory Restriction Signage GE6-Q01,Regulatory Restriction Signage R6-Q01 with Motorway Entrance Signage TC 1141 on same posts, Start Motorway signage TC1140 and End Motorway signage TC 1139	
Provider:					
Craig Gardner - Senior Inspector (Maintenance)					

The Motorway restrictions does not apply to bicycles. Therefore the word bicycles must be blanked out on all signage.

Form M994 detailing type, location and dates of removal/installation of regulatory traffic control devices (including regulatory signs and pavement markings) is required to be forwarded to the District Office upon completion of the work.

This work shall be performed under the Current Service Agreement for minor roadworks, special maintenance, traffic improvements and roadside hazards. Please provide a monthly progress report detailing the status and ledgered expenditure of this project.

Ross Blinco
MANAGER (ROAD OPERATIONS)



Revisions | Certified | Date | Microfilmed | Associated job nos | Dimensions in metres except where shown otherwise. Culvert sizes in millimetres. | Survey books

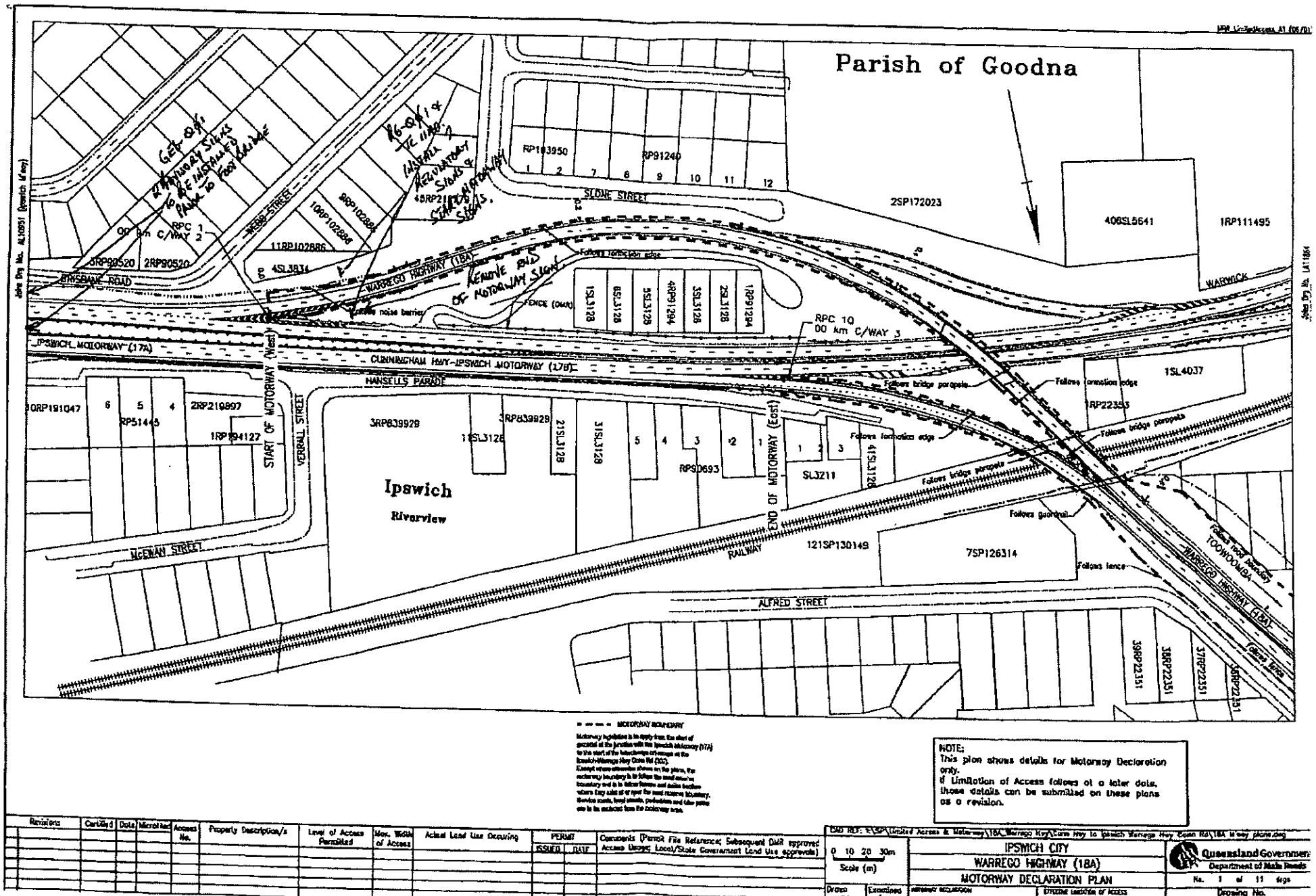
Auxiliary drawing nos | Scales | Through chainage here

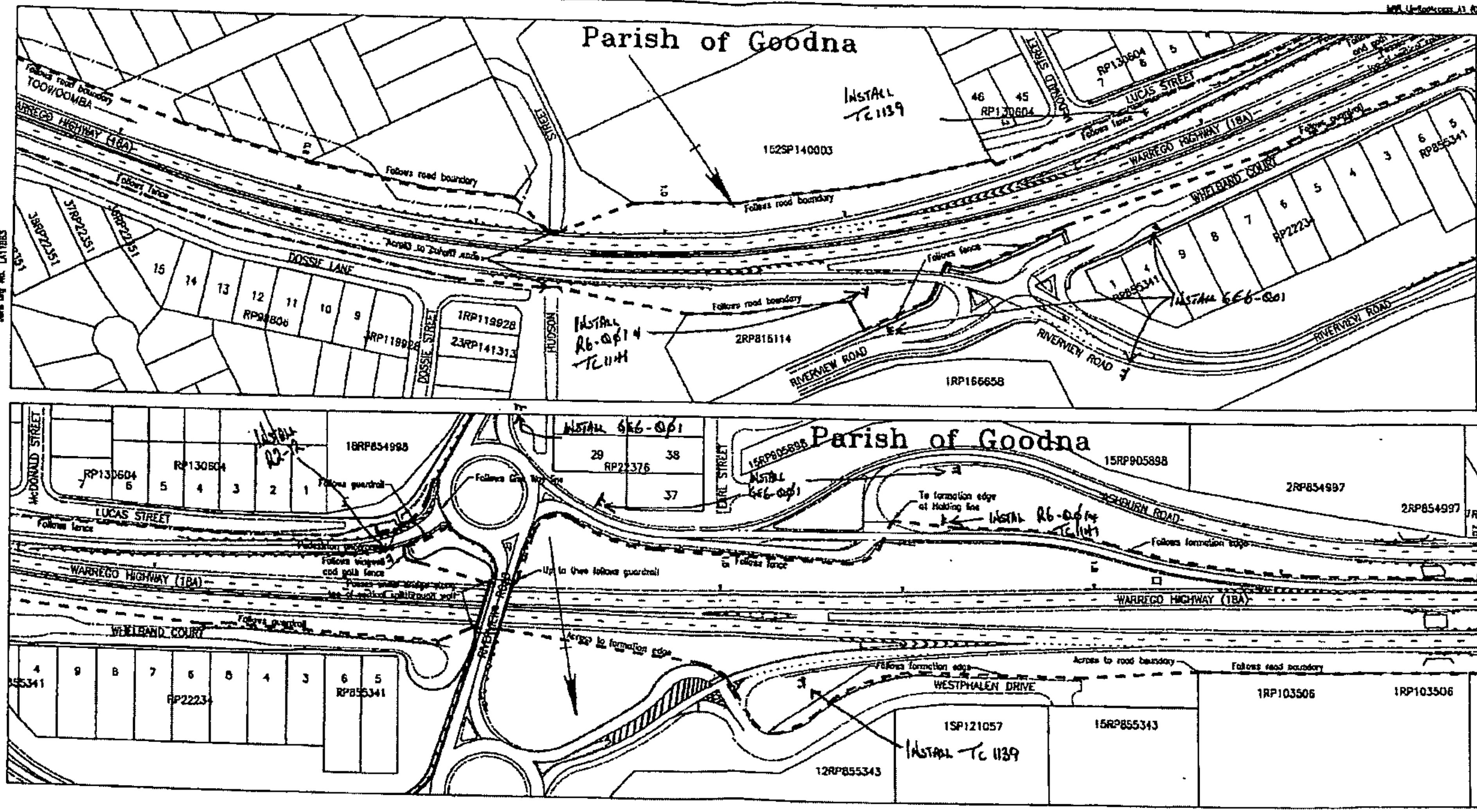
IPSWICH CITY
WARREGO HIGHWAY (18A)
Cunningham Hwy to Ipswich-Warrego Hwy Conn Rd
Reference Points

MOTORWAY PLANS KEY MAP

Survey | Bdys | Drawn | Design | Examined | Certified | Approved

Queensland Government
Department of Main Roads
JOB No.
Contract No.
No. 1 of 1
Drawing No.
LA11862





MOTORWAY BOUNDARY

Motorway legislation is to apply from the start of ... at the junction with the Ipswich Motorway (17A) to the start of the interchange ... of the Ipswich-Warrego Hwy Open Rd (28B).
Except where otherwise shown on the plans, the motorway boundary is to follow the road reserve boundary and is to adjoin fences and noise barriers where they exist at or near the road reserve boundary.
Service roads, local streets, pedestrian and bike paths are to be excluded from the motorway area.

NOTE:
This plan shows details for Motorway Declaration only.
If Limitation of Access follows at a later date, those details can be submitted on these plans as a revision.

Revisions	Certified	Date	Microfilmed	Access No.	Property Description/s	Level of Access Permitted	Max. Width of Access	Actual Land Use Occurring	PERMIT ISSUED	DATE	Comments (Permit File Reference; Subsequent DMR approved Access Usage; Local/State Government Land Use approvals)

CAD NO: F:\SP\Limited Access & Motorway\18A_Warrego Hwy\Cunn Hwy to Ipswich Warrego Hwy Open Rd\18A M'wy plans.dwg

Scale (m) 0 10 20 30m

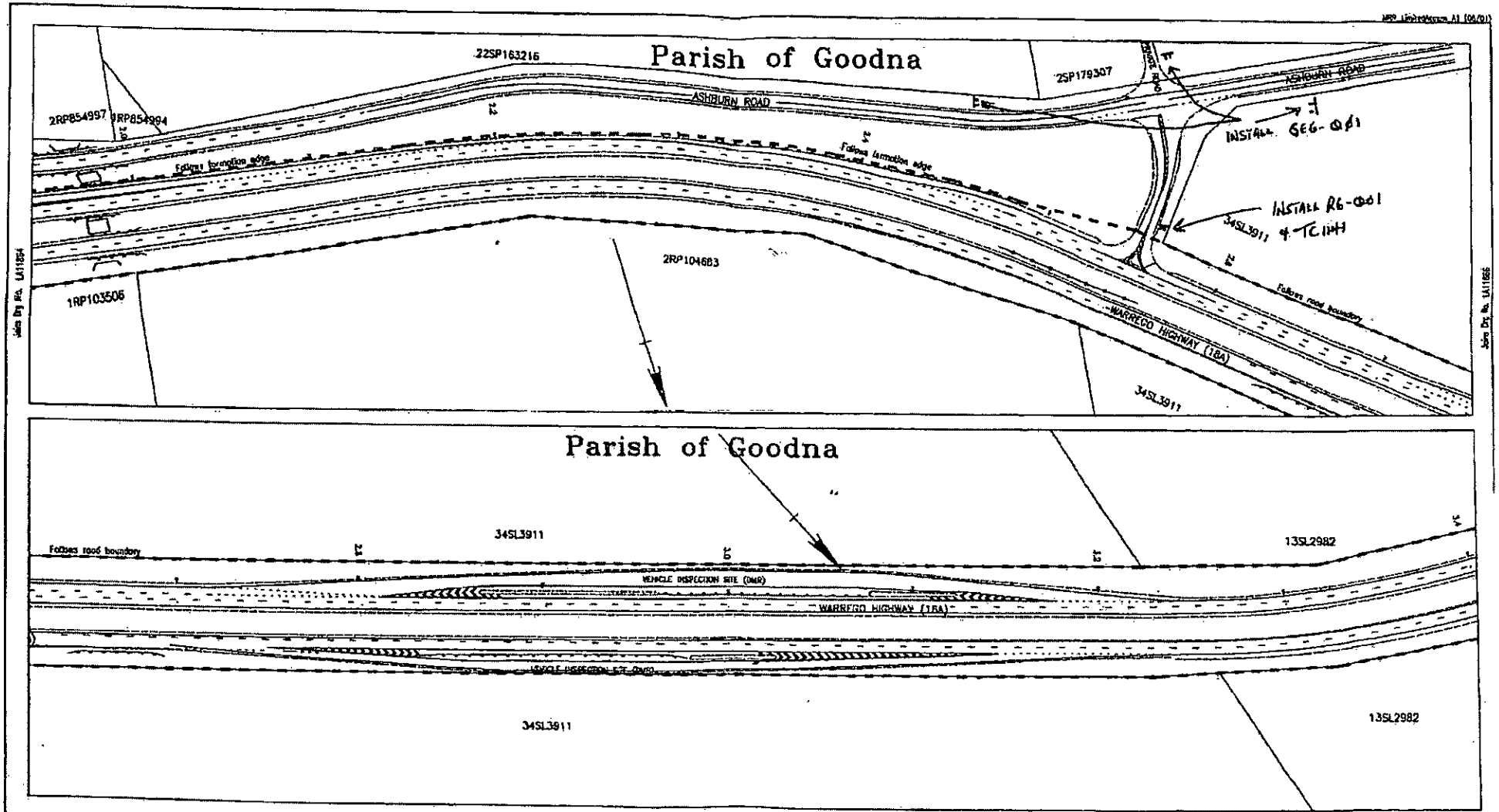
IPSWICH CITY
WARREGO HIGHWAY (18A)
MOTORWAY DECLARATION PLAN

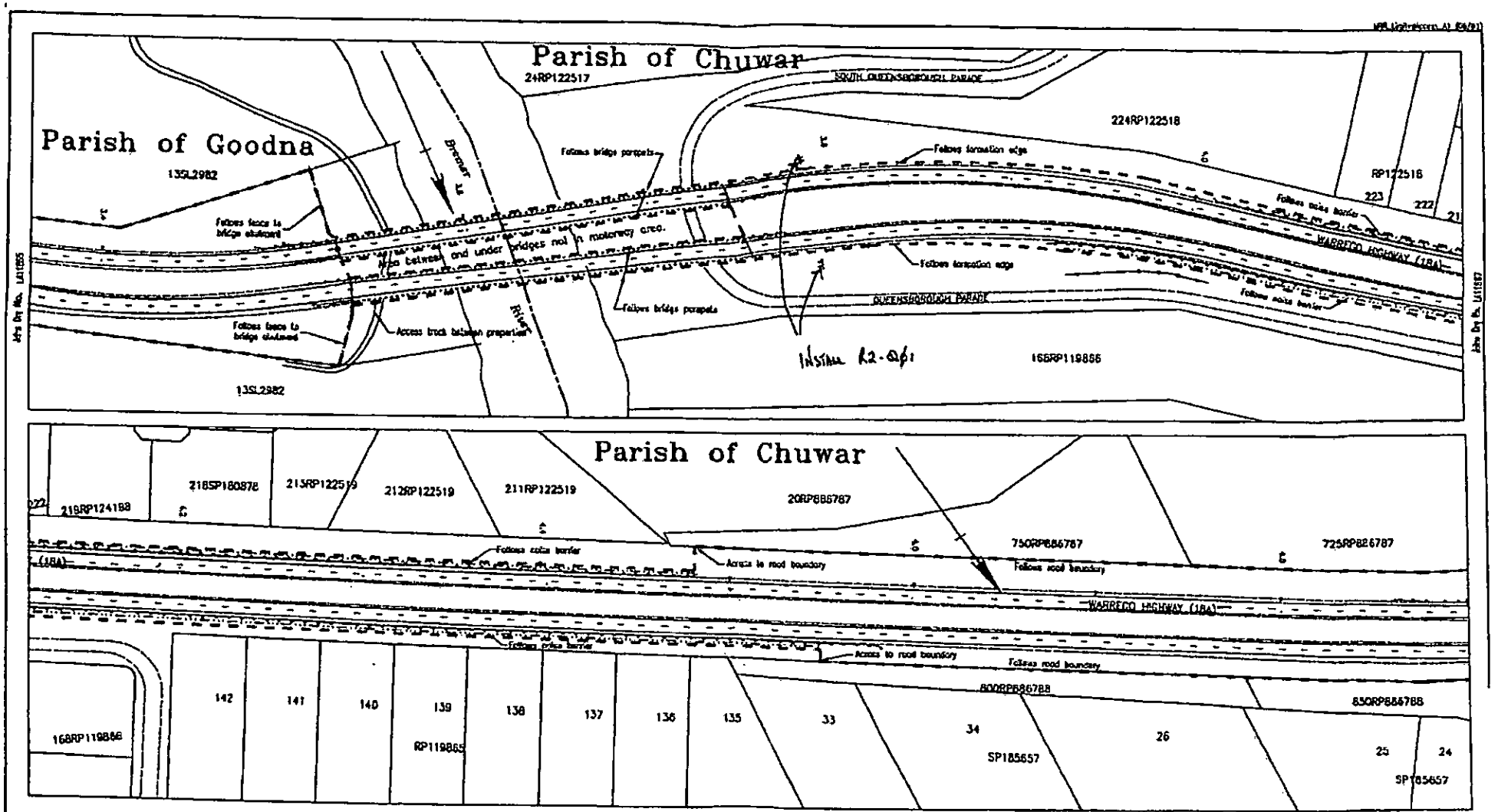
Drawn RGD | Examined

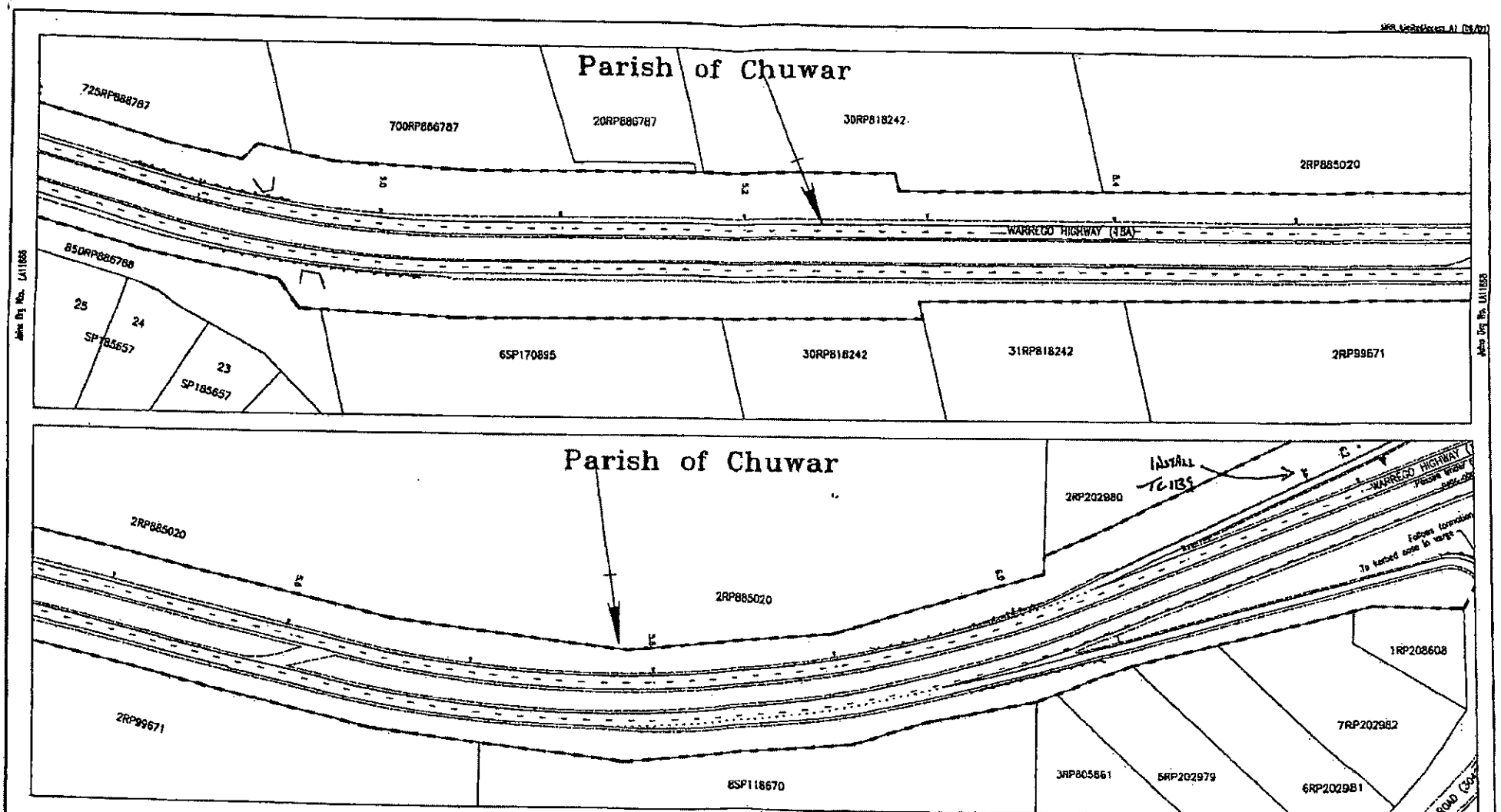
Queensland Government
Department of Main Roads

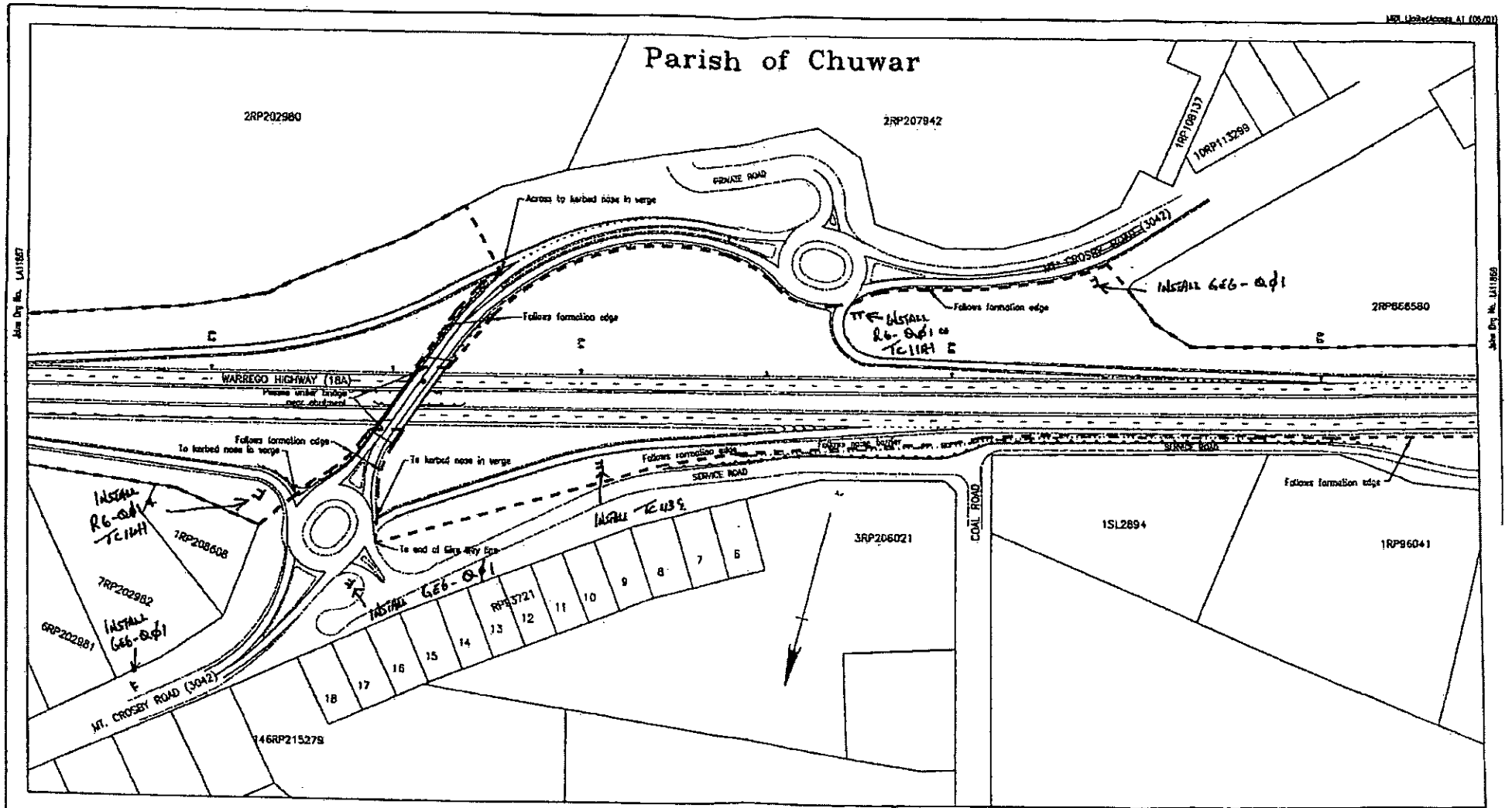
No. 2 of 11 drgs

Drawing No. LA11864









MOTORWAY BOUNDARY

NOTE:
This plan shows details for Motorway Declaration only.
If Unification of Access follows at a later date, those details can be submitted on these plans as a revision.

Revisions	Certified	Date	Microfilmed	Access No.	Property Description/s	Level of Access Permitted	Max. Width of Access	Actual Land Use Occuring	PERMIT ISSUED	PERMIT DATE	Comments (Permit File Reference; Subsequent DMR approved Access Usage; Local/State Government Land Use approvals)

CAD REF: E:\SP\Limited Access & Motorway\18A_Warrego Hwy\Cunn Hwy To Ipswich Warrego Hwy Conn Rd\18A Motorway plans.dwg

0 10 20 30m
Scale (m)

IPSWICH CITY
WARREGO HIGHWAY (18A)
MOTORWAY DECLARATION PLAN

Queensland Government
Department of Main Roads

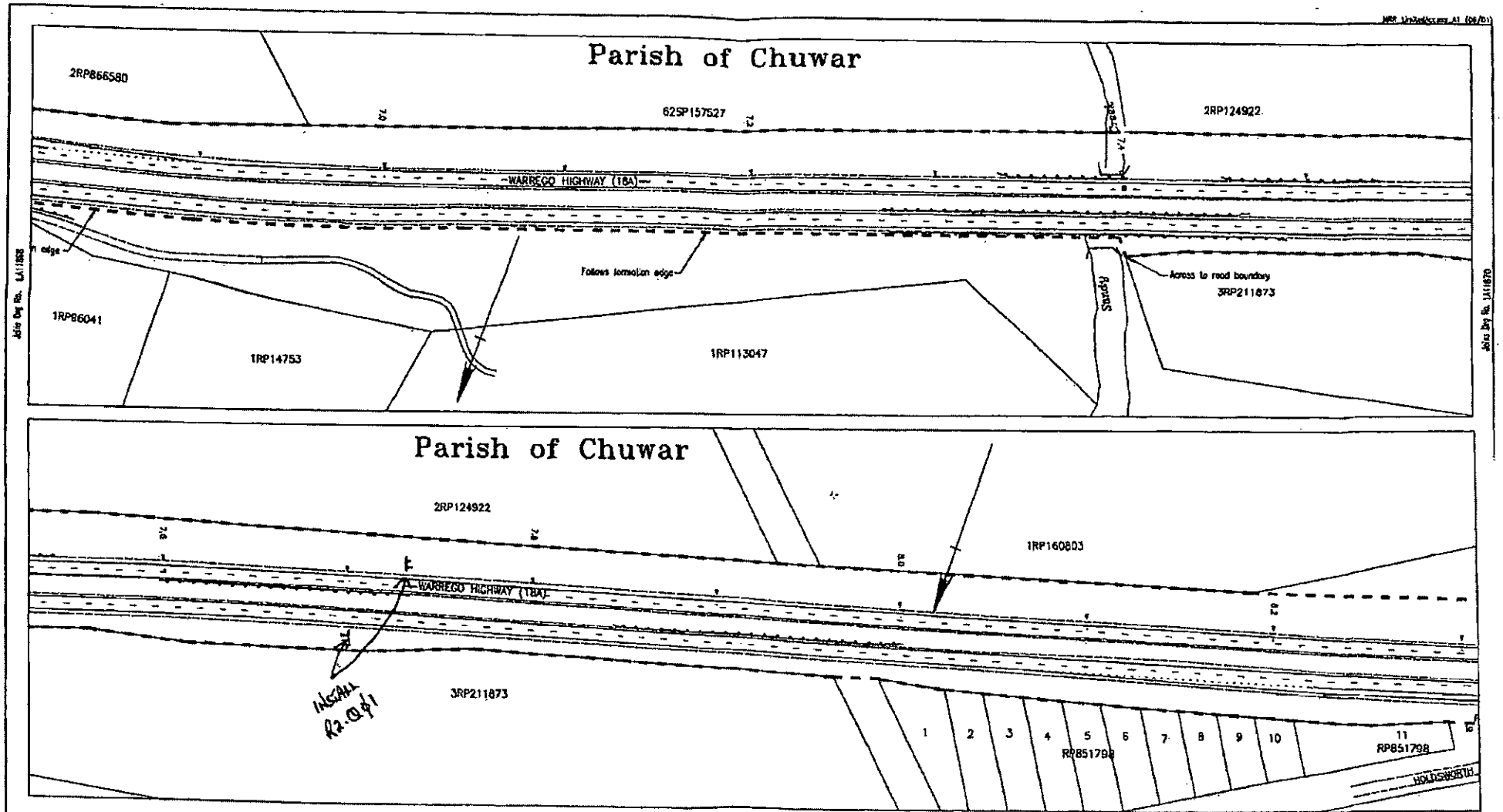
No. 6 of 11 dgs

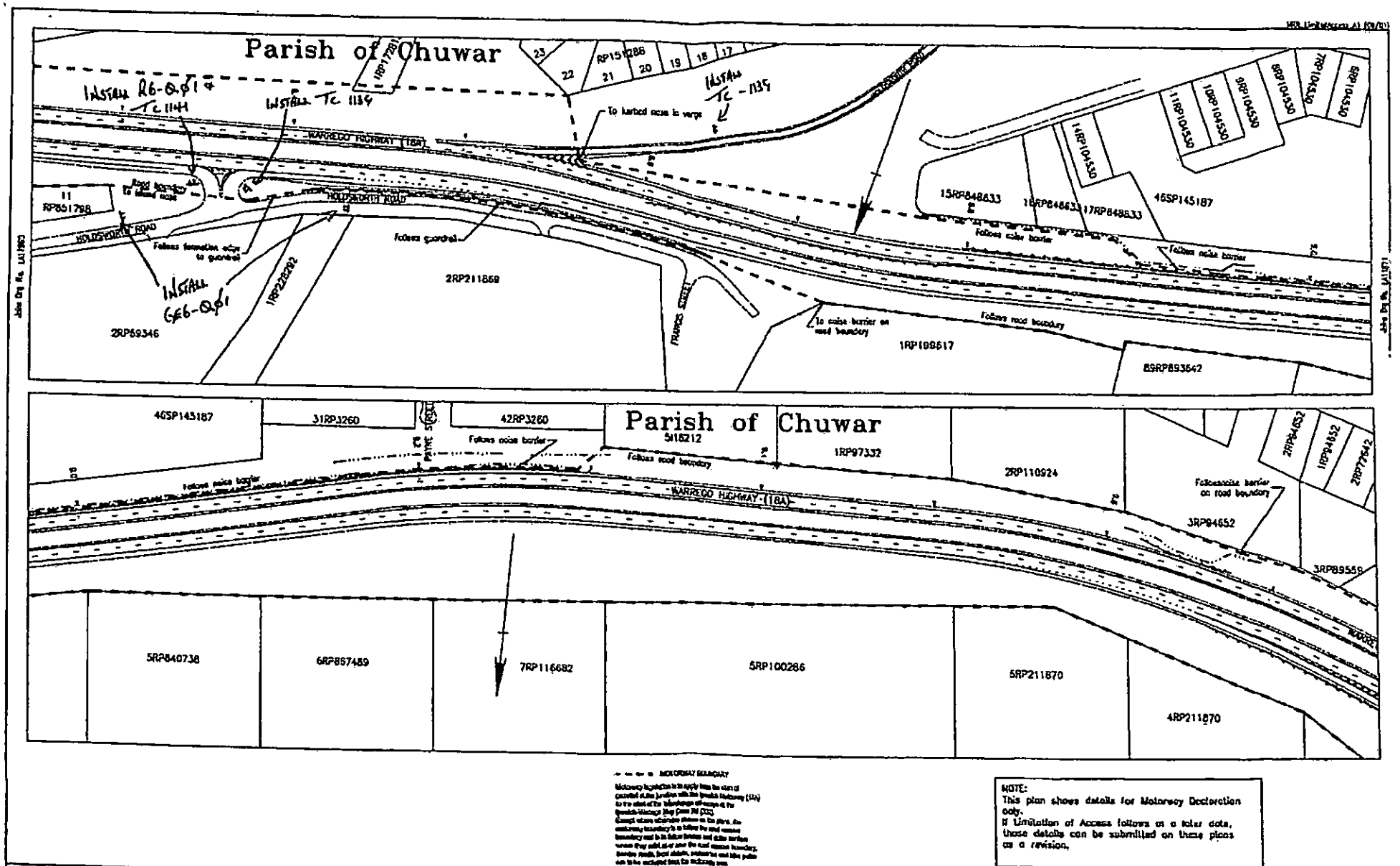
Drawn MCD | Examined

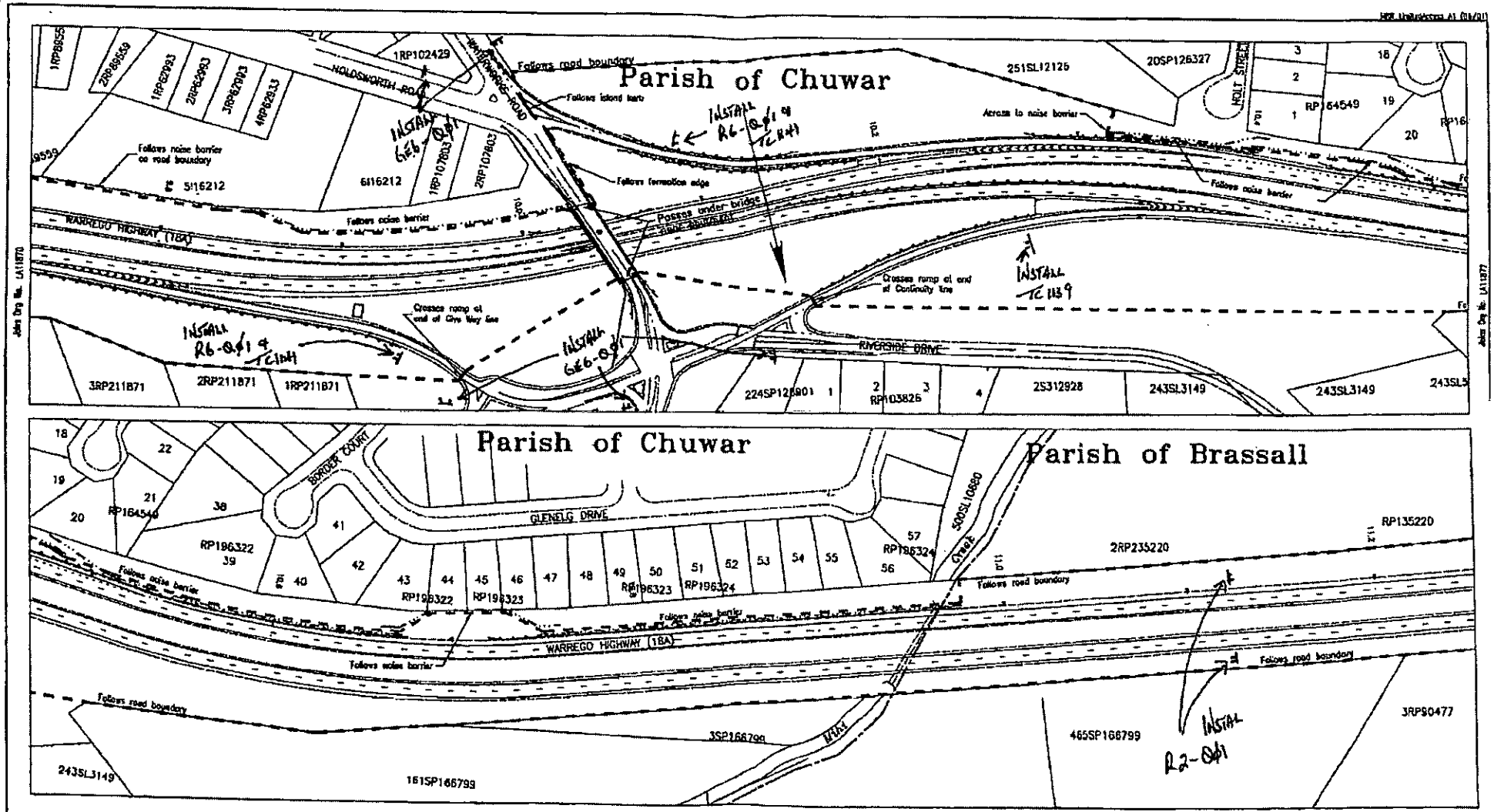
MOTORWAY DECLARATION Dec. Gaz. / / Page

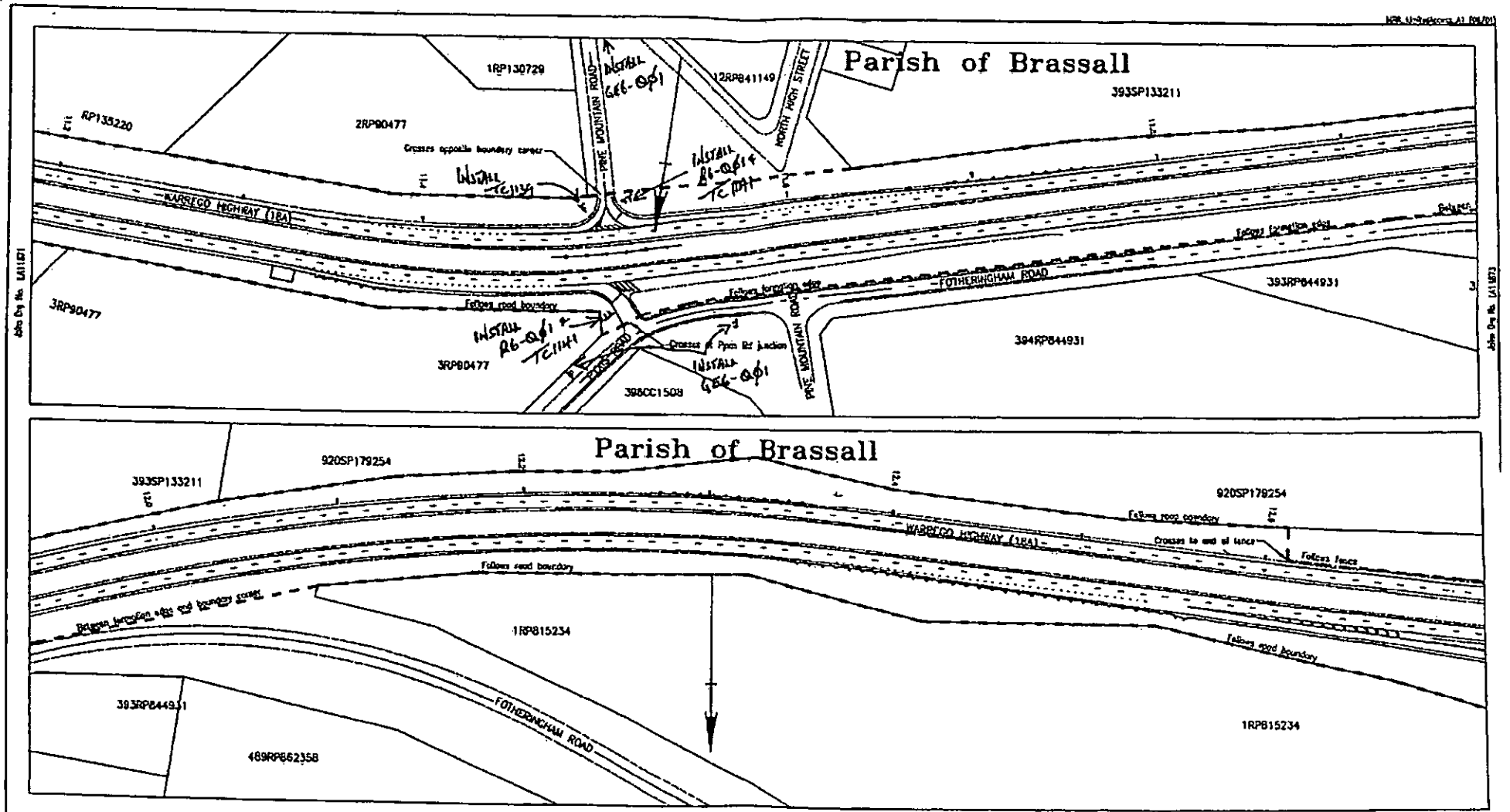
EFFECTIVE LIMITATION OF ACCESS Gaz. (Spec.) / / Page

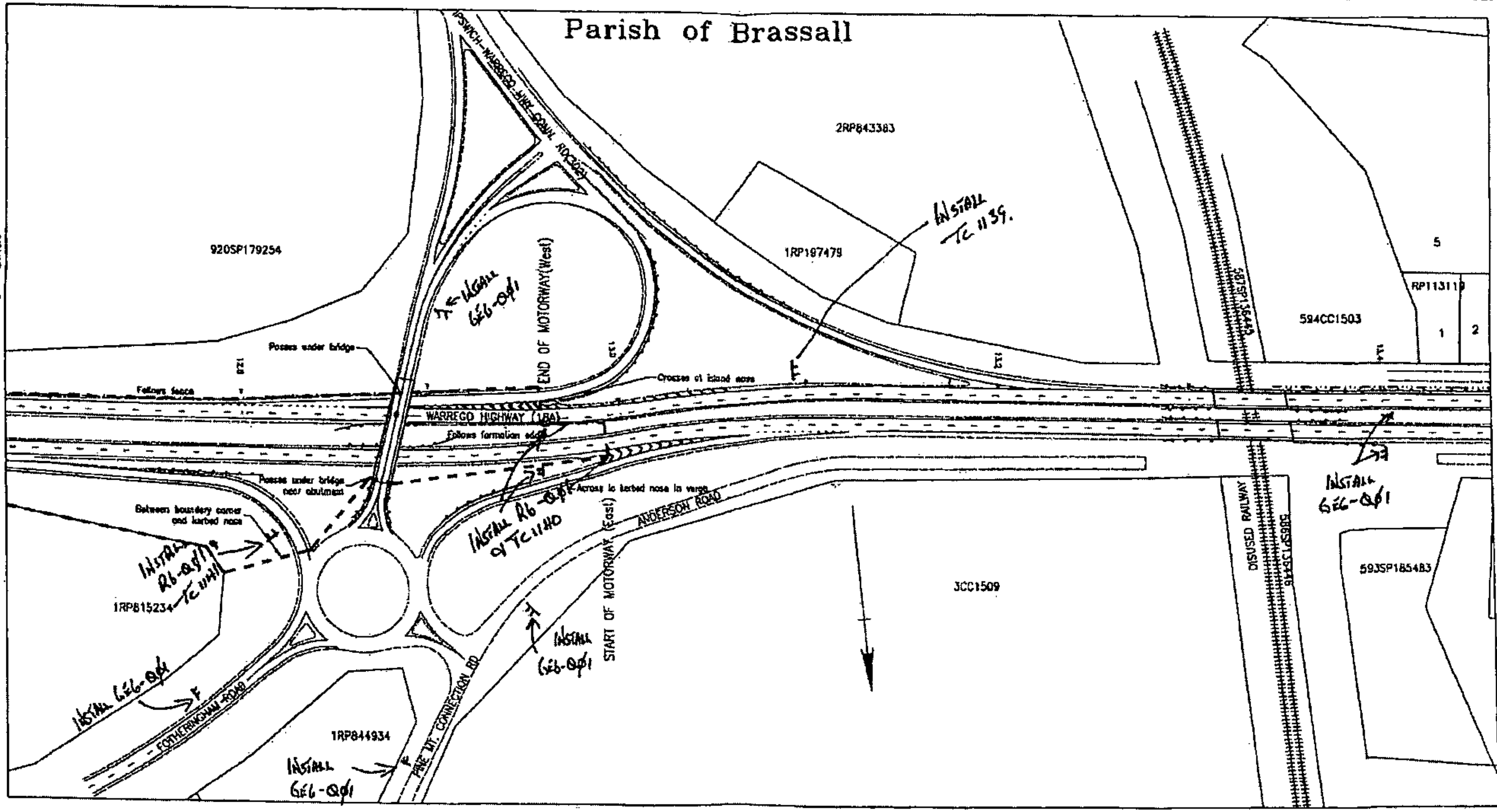
Drawing No. LA11868











MOTORWAY BOUNDARY

Motorway legislation is to apply from the start of [illegible] at the junction with the Ipswich Motorway (37A) to the start of the interchange off-ramps at the Ipswich-Warrego Hwy Conn Rd (302).
Except where otherwise shown on the plans, the motorway boundary is to follow the road reserve boundary and is to follow fences and noise barriers where they exist [illegible] near the road reserve boundary.
Service roads, local streets, pedestrian and bike paths are to be excluded from the motorway area.

NOTE:
This plan shows details for Motorway Declaration only.
If Limitation of Access follows at a later date, these details can be submitted on these plans as a revision.

Revisions	Certified	Date	Microfilmed	Access No.	Property Description/s	Level of Access Permitted	Max. Width of Access	Actual Land Use Occurring	Permit Issued	Permit Date	Comments (Permit File Reference; Subsequent DMR approved Access Usage; Local/State Government Land Use approvals)

CAD REF: [illegible]

Scale (m) 0 10 20 30m

IPSWICH CITY
WARREGO HIGHWAY (18A)
MOTORWAY DECLARATION PLAN

Queensland Government
Department of Main Roads

No. 11 of 11 drgs

Drawing No. LA11873

Drawn NGD | Examined

Queensland Government

Memorandum

Department of Main Roads

Our ref 148/18A/107
Your ref
Date 16 August 2007

To District Director (Metropolitan)

Subject **Motorway declaration**

The Minister for Transport and Main Roads, under the provision of the *Transport Infrastructure Act 1994*, has declared the following State-controlled road as a motorway, effective from 27 July 2007:-

- 18A Warrego Highway (Ipswich - Toowoomba), section between the Warrego/Cunningham Highway intersection in Riverview and the Ipswich - Warrego Highway Connection Road intersection in Brassall.

I have attached a copy of the notification published in the Queensland Government Gazette on Friday 27 July 2007 No. 83 page 1544, and copies of the relevant motorway plans, for your information.

Ipswich City Council will also receive a copy of the notification and relevant plans.

B.C. Turnbull.

Brian Turnbull
Manager (Road Plan and Inventory)

METROPOLITAN DISTRICT
FILE NO:
DMS REF NO: 695/7
20 AUG 2007

OFFICER	ACTION	PH	COPY	B/U

Business Solutions and Information
Road Plan and Inventory
Floor 23, Mineral House
GPO Box 2595 Brisbane Q 4001
ABN 57 836 727 711

Our ref 148/18A/107
Your ref
Enquiries Alex Gleboff
Telephone 3120 7208
Facsimile 3120 7211
Website www.mainroads.qld.gov.au

County of March, Parish of Maryborough - an area of 59 square metres being Lot 6 on SP205969 (being a plan to be registered in Queensland Land Registry, Department of Natural Resources and Water), being part of the land contained in Title Reference: 17055167.

County of March, Parish of Maryborough - an area of 3 square metres being Lot 5 on SP205969 (being a plan to be registered in Queensland Land Registry, Department of Natural Resources and Water), being part of the land contained in Title Reference: 10185094.

Maryborough City
Maryborough - Hervey Bay Road
R12-506(B)
775/259; 510/4563, 4564 and 4565"

ENDNOTES

1. Made by the Governor in Council on 19 July 2007.
2. Published in the Gazette on 27 July 2007.
3. Not required to be laid before the Legislative Assembly.
4. The administering agency is the Department of Main Roads.

Transport Infrastructure Act 1994

NOTIFICATION OF DECLARATION OF A STATE-CONTROLLED ROAD AS A MOTORWAY

Notice is hereby given under section 27 of the *Transport Infrastructure Act 1994* that the State-controlled road as described in the Schedule is declared a motorway.

Paul Lucas MP
Minister for Transport and Main Roads

THE SCHEDULE

That on and from 27 July 2007, the State-controlled road as described hereunder be a motorway under and for the purposes of the abovementioned Act:

WARREGO HIGHWAY
(Ipswich - Toowoomba)
Ipswich City
Motorway

Commencing at its intersection with the Ipswich Motorway and Cunningham Highway in Riverview, to its intersection with the Ipswich - Warrego Highway Connection Road in Brassall.

Length ... 13.50 kilometres (approximately)

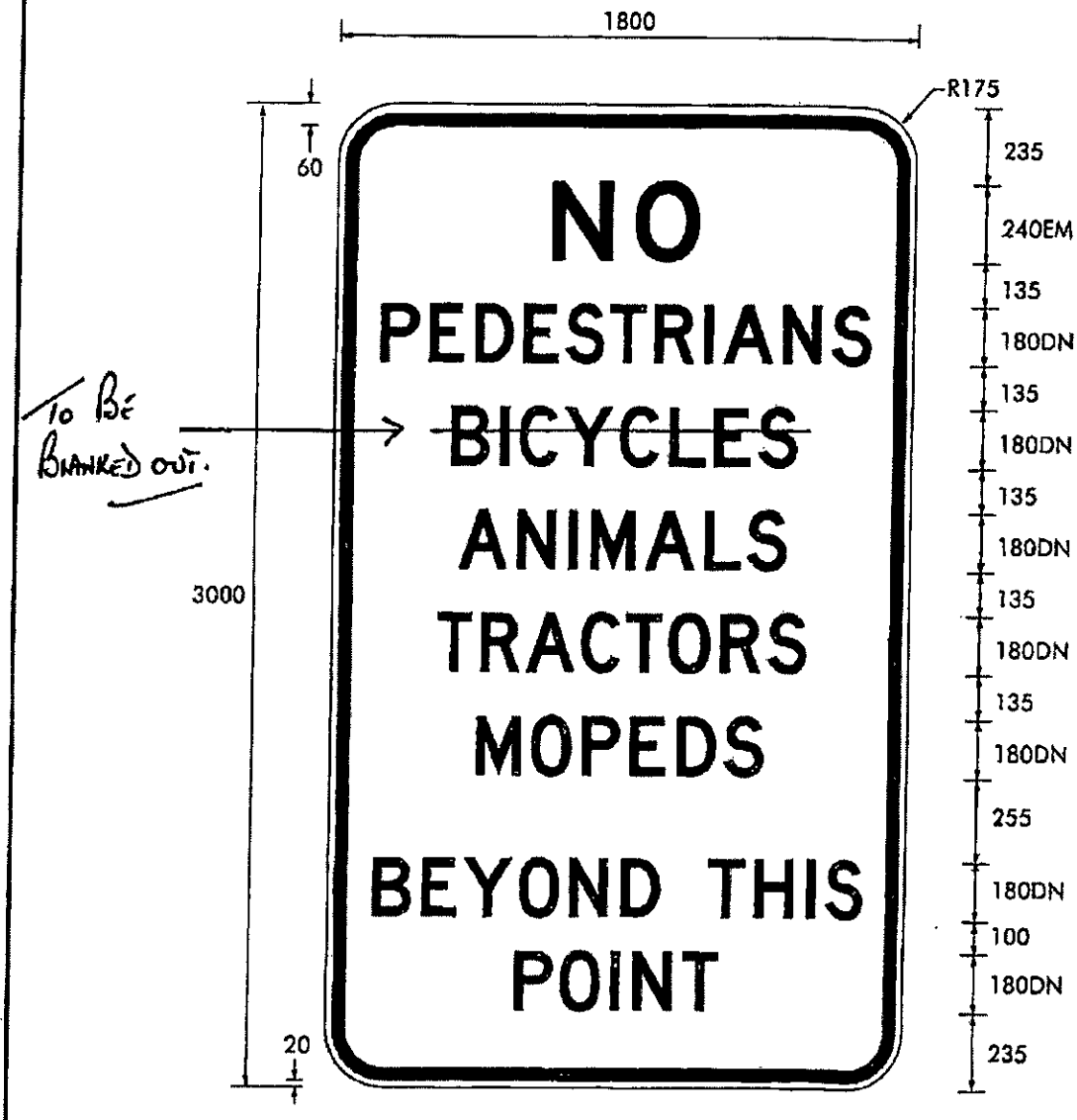
The relevant parts of the State-controlled road designated as motorway shall be as defined on Motorway Plans LA11863 - LA11873 (inclusive) held in the offices of the Director-General, Department of Main Roads, Brisbane and the Metropolitan District Office, Department of Main Roads, 183 Wharf Street, Spring Hill.

148/18A/107

ENDNOTES

1. Published in the Gazette on 27 July 2007.
2. Not required to be laid before the Legislative Assembly.
3. The administering agency is the Department of Main Roads.

BRISBANE
Printed by Government Printer, Vulture Street, Woolloongabba
27 July, 2007



Colour Legend

- Black
- Retroreflective white

Note:

Bicycles prohibited subject to risk assessment in accordance with cycling policy.

Queensland Government
Department of Main Roads

REGULATORY SIGN
"NO... BEYOND THIS POINT"

Traffic & Road Use Management Division
Traffic Engineering Section

Designed	Checked	Scale
TV 11/06	JD 11/06	Not to Scale

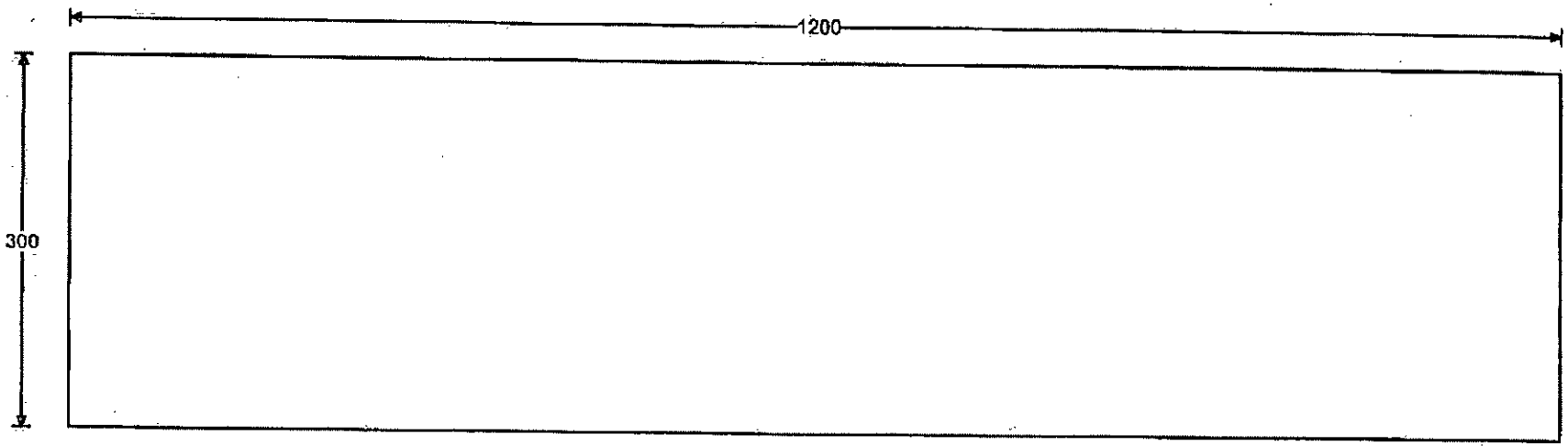
APPROVED AS OFFICIAL TRAFFIC SIGN

..... PRINCIPAL ENGINEER (Traffic Engineering)

10/11/06 Date

R6-Q01
(previously R6-13-1)

A B C



Legend Font Type Font Size

Overlay Patch to Cover "BICYCLES" on Signs R6 - Q01"

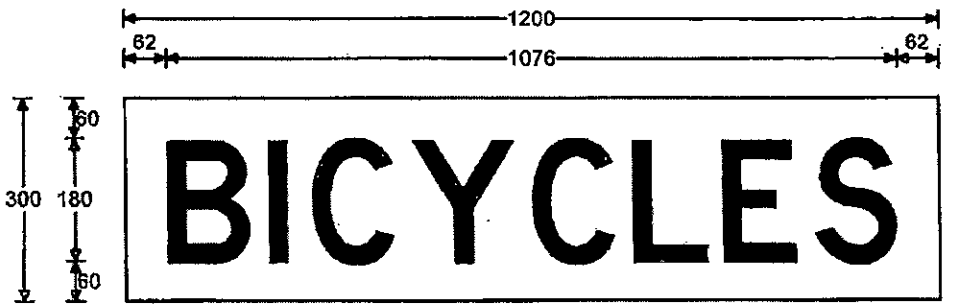
Specifications:
Required Aluminium Overlay Patch Sign:

Class 1 WA White Reflective Background.

Size:	300 x 1200	Date:	6/2/08
Area:	0.36 sq.m	Scale:	1:5
Border:	0 x 0	Drawn:	gndanie
Cnr Rad:	0	Checked:	
Patch CR:	NA	File:	OverlayToCoverR6-Q01
		Path:	\ATO Work files\18A Warrego Hwy\MotorwaySigns

Prepared using TraSICAD Product of QMR

OVERLAY PATCH ON SIGNS "R6-Q01"



Legend	Font Type	Font Size
BICYCLES	AS1744 Series D Narrow	180

Overlay Patch to Cover "BICYCLES" on Signs R6 - Q01"

Specifications:
Required Aluminium Overlay Patch Sign.

Class 1 WA White Reflective Background.

Size:	300 x 1200	Date:	6/2/08
Area:	0.36 sq.m	Scale:	1:10
Border:	0 x 0	Drawn:	gndanie
Cnr Rad:	0	Checked:	
Patch CR:	NA	File:	OverlayToCoverR6-Q01
		Path:	MTO Work Files\18A Warrego Hwy\MotorwaySigns

Prepared using TraSICAD Product of QMR

OVERLAY PATCH ON SIGNS "R6-Q01"

Traffic Sign Structures - Design Form

Job : 18A	Section : Regulatory	Sign Pos : R6Q01&TC1141B

Location Details

Wind Region	Region B
Exposed Terrain	No
Risk Category	Low Impact Risk
Foundation Soil	Firm to Stiff Clay Soil
Side of Road	Left
Distance from carriageway	1500
Road Height	2500

Slope Details

Segment	Length	Height
1	4000	0

Sign Face Details

Detail	Front Lower	Front Upper
Sign Code	TC1141B	R6Q01
Sign Width	1800	1800
Sign Depth	900	3000
Legend Class	1A	1A
Legend Colour	White	Black CAL
Background Class	1	1
Background Colour	Green Std	White
Sign Separation	0	0

Sign Stiffener Details

Detail	Front Lower	Front Upper
Stiffener Type	1	1
Number of Stiffeners	3	8
Stiffener Spacing	400	400
Number of Brackets	6	16

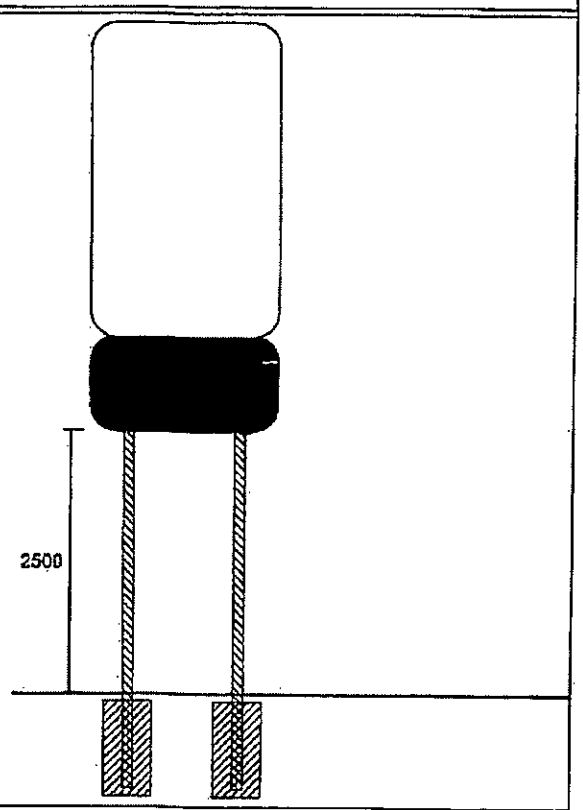
CHS Steel Design Details

Support Details

Number	2
Spacing	1080, Standard
Kerb Post Length	7300
Post 2 Length	7300
Post 3 Length	0
Post 4 Length	0
Stub Length	0
Post Dimensions	100 NB
Post Wall Thickness	3.6
Post Grade	C350
Slip Base Required	No

Footing Details

Diameter of Hole	450
Depth of Hole	900



Warnings, Errors and Suggestions

Traffic Sign Structures - Design Form

1141B

Job : 12A | Section : Regulatory | Sign Pos : R6Q01&TC~~1140B~~

Location Details

Wind Region	Region B
Exposed Terrain	No
Risk Category	High Impact Risk
Foundation Soil	Firm to Stiff Clay Soil
Side of Road	Left
Distance from carriageway	1500
Road Height	2500

Slope Details

Segment	Length	Height
1	3500	0

Sign Face Details

Detail	Front Lower	Front Upper
Sign Code	TC1140B	R6Q01
Sign Width	1800	1800
Sign Depth	900	3000
Legend Class	1A	1A
Legend Colour	White	Black CAL
Background Class	1	1
Background Colour	Green Std	White
Sign Separation	0	0

Sign Stiffener Details

Detail	Front Lower	Front Upper
Stiffener Type	1	1
Number of Stiffeners	3	6
Stiffener Spacing	400	400
Number of Brackets	6	16

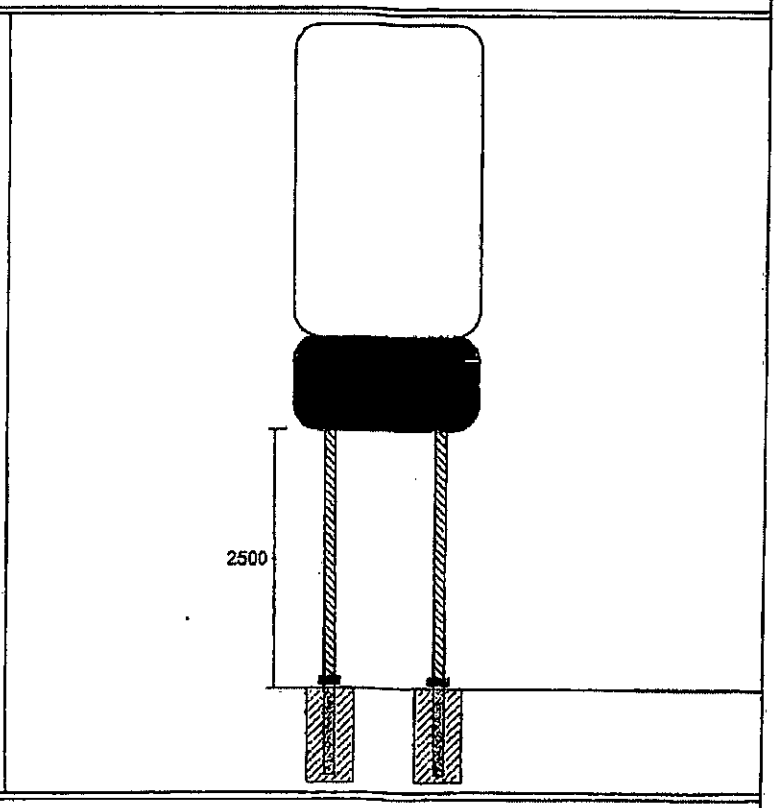
CHS Steel Design Details

Support Details

Number	2
Spacing	1080, Standard
Kerb Post Length	6400
Post 2 Length	6400
Post 3 Length	0
Post 4 Length	0
Stub Length	825
Post Dimensions	100 NB
Post Wall Thickness	3.6
Post Grade	C350
Slip Base Required	Yes

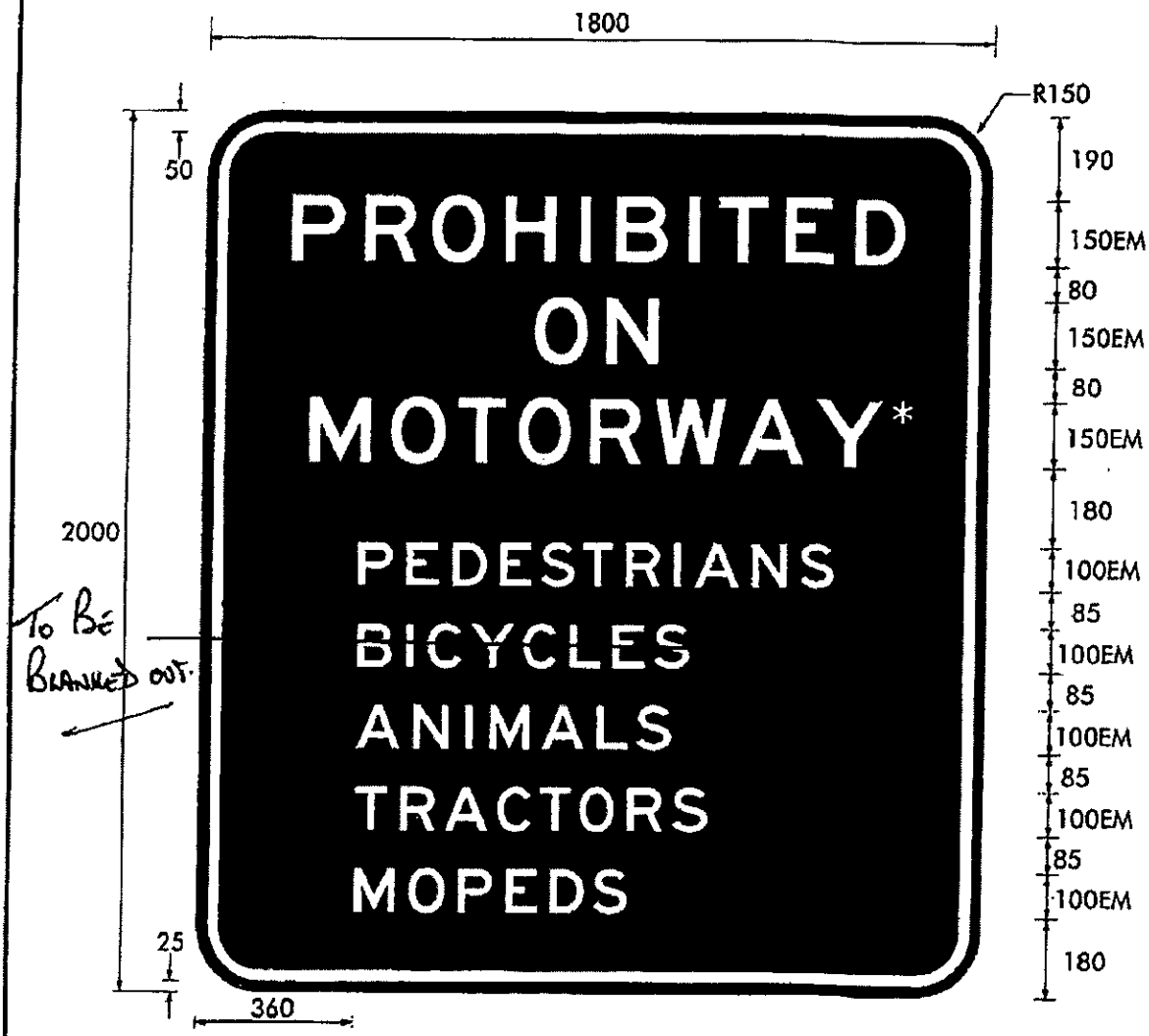
Footing Details

Diameter of Hole	450
Depth of Hole	900



Warnings, Errors and Suggestions

Post Spacing must be greater than 1500 mm for Slip Base Supports (where practical)



Colour Legend

- Retroreflective green
- Retroreflective white

Notes:

1. * The word "FREEWAY" could be used when appropriate.
2. Bicycles prohibited subject to risk assessment in accordance with cycling policy.

Queensland Government
Department of Main Roads

GUIDE SIGN
"PROHIBITED ON MOTORWAY/FREEWAY"

Traffic & Road Use Management Division
Traffic Engineering Section

Designed	Checked	Scale
TV 11/06	JD 11/06	Not to Scale

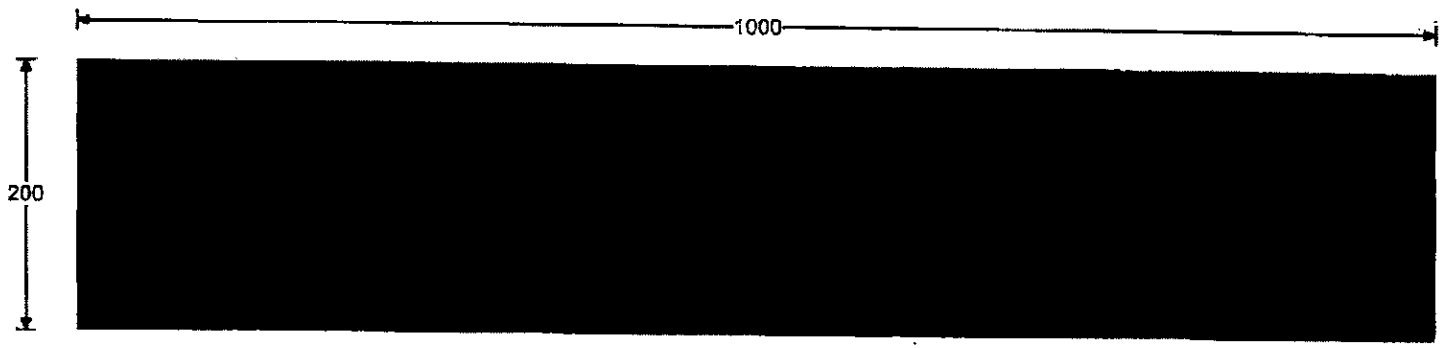
APPROVED AS OFFICIAL TRAFFIC SIGN

PRINCIPAL ENGINEER (Traffic Engineering)

10/11/06
Date

GE6-Q01
(previously GE6-2-3)

A B C D E



Legend **Font Type** **Font Size**

Overlay Patch to Cover "BICYCLES" on Signs GE6 - Q01"

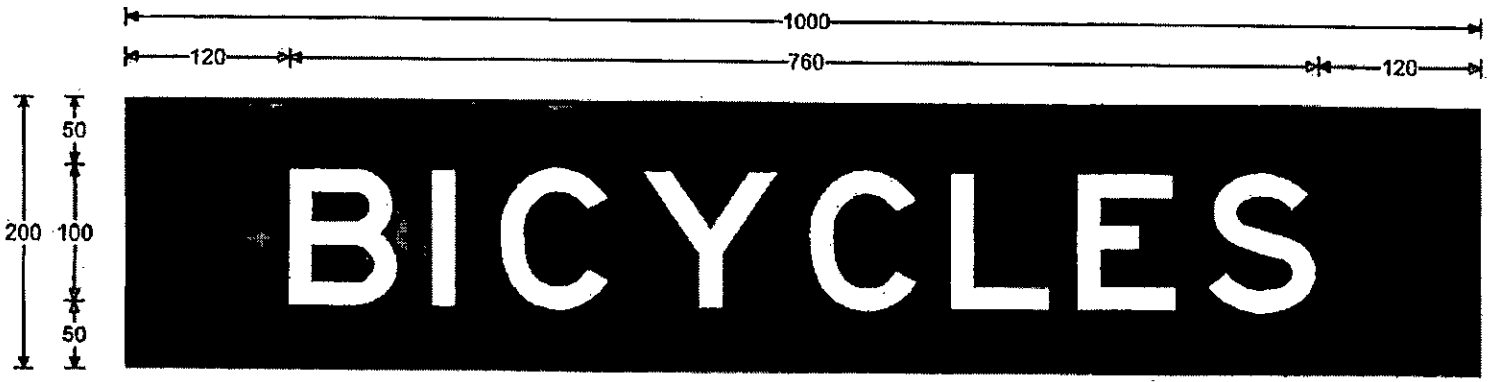
Specifications:
Required Aluminium Overlay Patch Sign.

Class 1 WA Standard Green Reflective Background.

Size:	200 x 1000	Date:	6/2/08
Area:	0.2 sq.m	Scale:	1:5
Border:	0 x 0	Drawn:	gndanie
Cnr Rad:	0	Checked:	
Patch CR:	NA	File:	OverlayToCoverGE6-Q01
		Path:	RTO Work files\1BA Warrego Hwy\MotorwaySigns

Prepared using TraSICAD Product of QMR

OVERLAY PATCH ON SIGNS "GE6-Q01"



Legend	Font Type	Font Size
BICYCLES	AS1744 Series E Medium	100

Overlay Patch to Cover "BICYCLES" on Signs GE6 - Q01"

Specifications:
Required Aluminium Overlay Patch Sign.

Class 1 WA Standard Green Reflective Background.

Size:	200 x 1000	Date:	6/2/08
Area:	0.2 sq.m	Scale:	1:5
Border:	0 x 0	Drawn:	gndanie
Cnr Rad:	0	Checked:	
Patch CR:	NA	File:	OverlayToCoverGE6-Q01
		Path:	MTO Work files\18A Warrego Hwy\MotorwaySigns

Prepared using TraSICAD Product of QMR

OVERLAY PATCH ON SIGNS "GE6-Q01"

Traffic Sign Structures - Design Form

Job : 12A	Section : GuideSign	Sign Pos : GE6Q01

Location Details

Wind Region	Region B
Exposed Terrain	No
Risk Category	High Impact Risk
Foundation Soil	Firm to Stiff Clay Soil
Side of Road	Left
Distance from carriageway	1500
Road Height	2500

Slope Details

Segment	Length	Height
1	3500	0

Sign Face Details

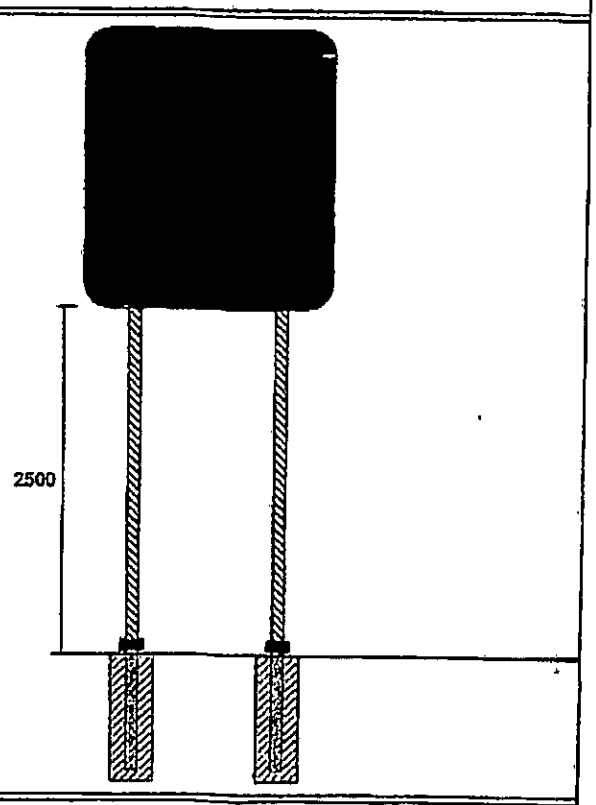
Detail	Front Sign
Sign Code	GE6Q01
Sign Width	1800
Sign Depth	2000
Legend Class	1A
Legend Colour	White
Background Class	1
Background Colour	Green Std
Sign Separation	0

Sign Stiffener Details

Detail	Front Sign
Stiffener Type	1
Number of Stiffeners	5
Stiffener Spacing	450
Number of Brackets	10

CHS Steel Design Details

Support Details	
Number	2
Spacing	1080, Standard
Kerb Post Length	4500
Post 2 Length	4500
Post 3 Length	0
Post 4 Length	0
Stub Length	825
Post Dimensions	80 NB
Post Wall Thickness	3.2
Post Grade	C350
Slip Base Required	Yes
Footing Details	
Diameter of Hole	300
Depth of Hole	900



Warnings, Errors and Suggestions

Post Spacing must be greater than 1500 mm for Slip Base Supports (where practical)

Traffic Sign Structures - Design Form

Job : GE6-Q01 | Section : Motorways | Sign Pos : NoSlipBase

Location Details

Wind Region	Region B
Exposed Terrain	No
Risk Category	Low Impact Risk
Foundation Soil	Firm to Stiff Clay Soil
Side of Road	Left
Distance from carriageway	1500
Road Height	2500

Slope Details

Segment	Length	Height
1	4000	0

Sign Face Details

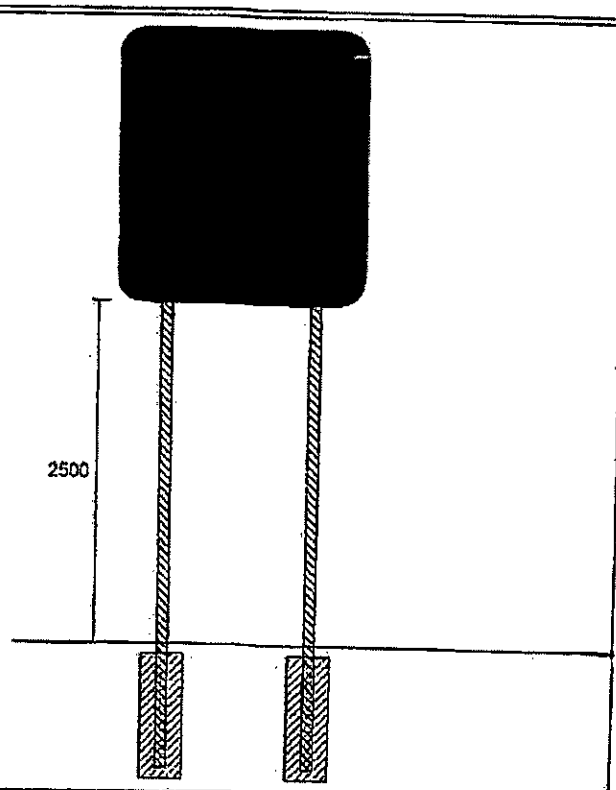
Detail	Front Sign
Sign Code	1
Sign Width	1800
Sign Depth	2000
Legend Class	1A
Legend Colour	White
Background Class	1
Background Colour	Green Std
Sign Separation	0

Sign Stiffener Details

Detail	Front Sign
Stiffener Type	1
Number of Stiffeners	5
Stiffener Spacing	450
Number of Brackets	10

CHS Steel Design Details

Support Details	
Number	2
Spacing	1080, Standard
Kerb Post Length	6400
Post 2 Length	5400
Post 3 Length	0
Post 4 Length	0
Stub Length	0
Post Dimensions	80 NB
Post Wall Thickness	3.2
Post Grade	C350
Slip Base Required	No
Footing Details	
Diameter of Hole	300
Depth of Hole	900



Warnings, Errors and Suggestions

Colour Legend

Black

Retroreflective white

Queensland Government
Department of Main Roads

REGULATORY SIGN

"NO STOPPING ON MOTORWAY"

Traffic & Road Use Management Division
Traffic Engineering & Road Safety

Designed	Checked	Scale
RH 3/94	JD 3/94	Not to Scale

APPROVED AS OFFICIAL TRAFFIC SIGN

PRINCIPAL ENGINEER (Traffic Engineering) — Date 25/3/94

R2-Q01

A | B

Traffic Sign Structures - Design Form

Job : 18A	Section : Regulatory	Sign Pos : R2-Q01

Location Details

Wind Region	Region B
Exposed Terrain	No
Risk Category	Low Impact Risk
Foundation Soil	Firm to Stiff Clay Soil
Side of Road	Left
Distance from carriageway	1500
Road Height	2500

Slope Details

Segment	Length	Height
1	4000	0

Sign Face Details

Detail	Front Sign
Sign Code	R2Q01
Sign Width	1400
Sign Depth	1400
Legend Class	1A
Legend Colour	Black CAL
Background Class	1
Background Colour	White
Sign Separation	0

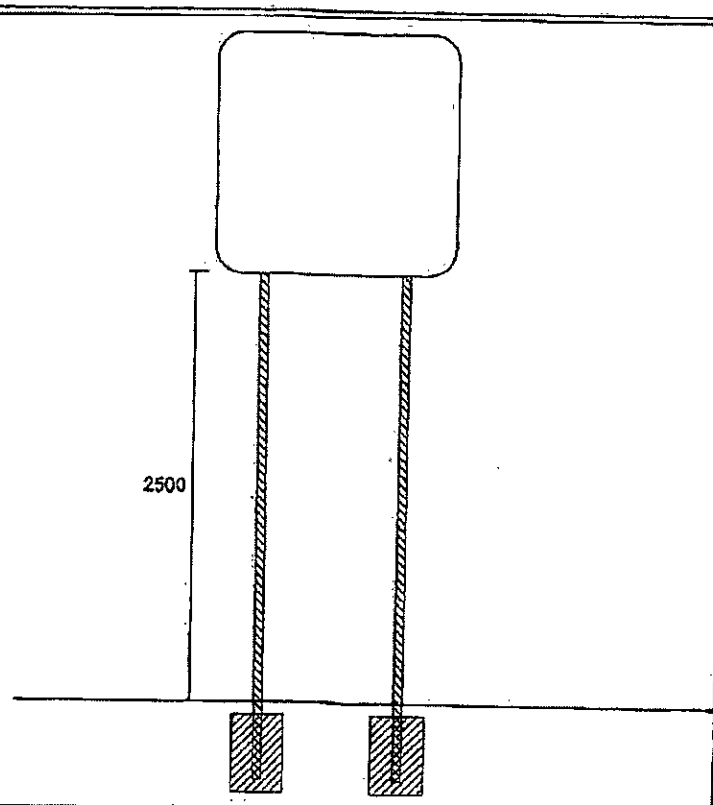
Sign Stiffener Details

Detail	Front Sign
Stiffener Type	1
Number of Stiffeners	4
Stiffener Spacing	450
Number of Brackets	8

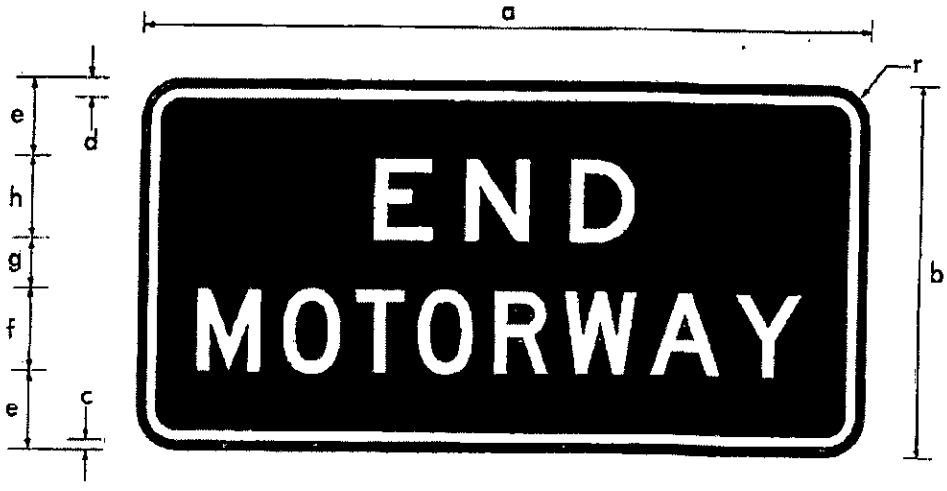
CHS Steel Design Details

Support Details	
Number	2
Spacing	840, Standard
Kerb Post Length	4350
Post 2 Length	4350
Post 3 Length	0
Post 4 Length	0
Stub Length	0
Post Dimensions	50 NB
Post Wall Thickness	2.9
Post Grade	C350
Slip Base Required	No

Footing Details	
Diameter of Hole	300
Depth of Hole	450



Warnings, Errors and Suggestions



	a	b	c	d	e	f	g	h	r
TC1139A	900	450	12	24	95	100DM	60	100EM	50
TC1139B	1800	900	24	48	190	200DM	120	200EM	100
TC1139C	2700	1350	36	72	285	300DM	180	300EM	150

Colour Legend

☐ White (legend and border)

■ Retroreflective green (background)

Main Roads

GUIDE SIGN

"END MOTORWAY"

Transport Technology Division
Traffic Engineering Section

ORIGINAL APPROVED AS OFFICIAL TRAFFIC SIGN

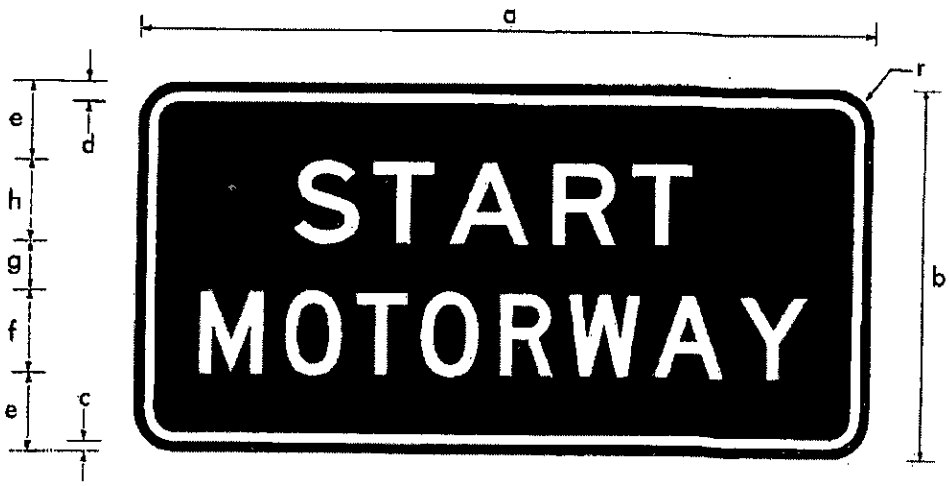
PRINCIPAL ENGINEER (Traffic Engineering)

31/05/99 Date

TC1139

A B

Designed	Checked	Scale
RH 05/99	JD 12/99	Not to Scale



	a	b	c	d	e	f	g	h	r
TC1140A	1200	600	16	32	130	130DM	80	130EM	75
TC1140B	1800	900	24	48	190	200DM	120	200EM	100

Colour Legend

☐ White (legend and border)

■ Retroreflective green (background)

Main Roads

GUIDE SIGN

"START OF MOTORWAY"

Transport Technology Division
Traffic Engineering Section

Designed	Checked	Scale
RH 05/99	JD 05/99	Not to Scale

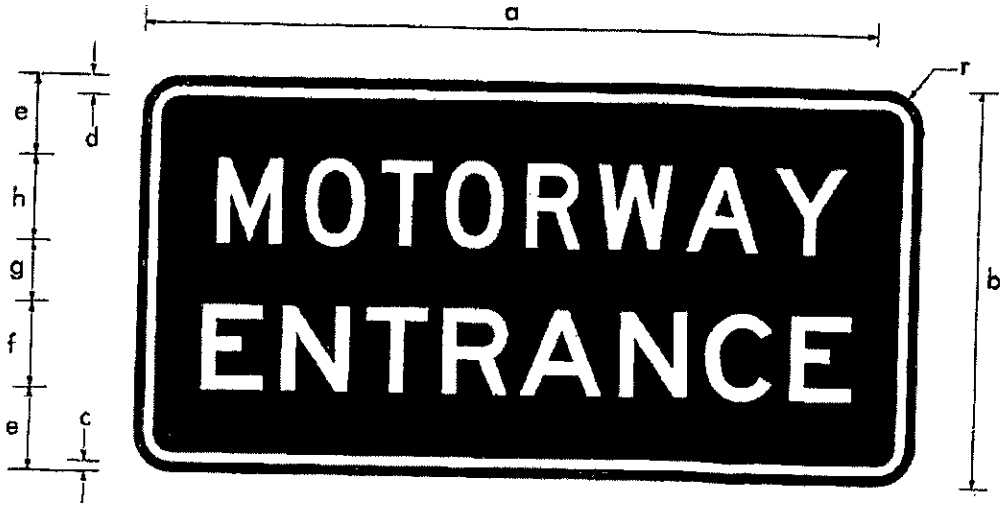
ORIGINAL APPROVED AS OFFICIAL TRAFFIC SIGN

PRINCIPAL ENGINEER (Traffic Engineering)

31/05/99
Date

TC1140

A



	a	b	c	d	e	f	g	h	r
TC1141A	1200	600	16	32	130	130EN	80	130DM	75
TC1141B	1800	900	24	48	190	200EM	120	200DM	100

Colour Legend

White (legend and border)

Retroreflective green (background)

Main Roads

GUIDE SIGN

"MOTORWAY ENTRANCE"

Transport Technology Division
Traffic Engineering Section

ORIGINAL APPROVED AS OFFICIAL TRAFFIC SIGN

PRINCIPAL ENGINEER (Traffic Engineering)

31/05/99 Date

TC1141

A

Designed	Checked	Scale
RH 05/99	JD 05/99	Not to Scale

Legend	Font Type	Font Size
M2	AS1744 Modified E	320
WARREGO HWY	AS1744 Series D Medium	240
36	AS1744 Modified E	320
Brisbane	AS1744 Modified E	320

ROAD NAME PATCH: Class 1 Black Legend on Class 1 White Reflective Background with Corner Radius of 50 mm.

LOCATION: Replaces Existing Damaged Sign. ERECT at same location.

POST SUPPORTS: Refer Traffic Sign Structures - Design Form "18A - Reassurance - Brisbane 36" for post details.

Specifications:
1 Required Aluminium Sign.

STIFFENERS: Type 2 / 6 / 450 (12 Brackets).

SIGN: Class 1 WA White Reflective Legend & Border on Class 1 Standard Green Reflective Background.

M2 LEGEND: Class 1 WA Yellow Reflective Legend.

Size:	2400 x 4000	Date:	7/3/08
Area:	9.6 sq.m	Scale:	1:30
Border:	40 x 40	Drawn:	gndanle
Cnr Rad:	300	Checked:	
Patch CR:	50	File:	Brisbane36
		Path:	RTO Work files\18A Warrego Hwy\Reassurance

Prepared using TraSICAD Product of QMR

SIGN " 1 "

Traffic Sign Structures - Design Form

Job : 18A	Section : Reassurance	Sign Pos : Brisbane 36

Location Details

Wind Region	Region B
Exposed Terrain	No
Risk Category	High Impact Risk
Foundation Soil	Firm to Stiff Clay Soil
Side of Road	Left
Distance from carriageway	1500
Road Height	2500

Slope Details

Segment	Length	Height
1	7000	0

Sign Face Details

Detail	Front Sign
Sign Code	Sign1
Sign Width	4000
Sign Depth	2400
Legend Class	1A
Legend Colour	White
Background Class	1
Background Colour	Green Std
Sign Separation	0

Sign Stiffener Details

Detail	Front Sign
Stiffener Type	2
Number of Stiffeners	6
Stiffener Spacing	450
Number of Brackets	12

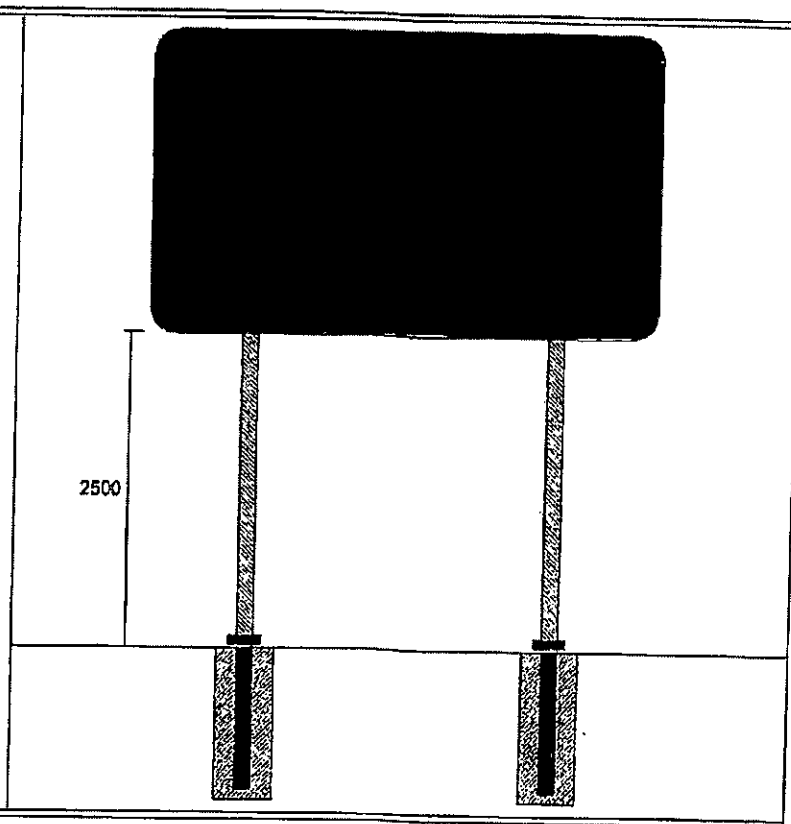
CHS Steel Design Details

Support Details

Number	2
Spacing	2400, Standard
Kerb Post Length	4900
Post 2 Length	4900
Post 3 Length	0
Post 4 Length	0
Stub Length	1125
Post Dimensions	125 NB
Post Wall Thickness	5.0/3.5
Post Grade	C250/C350
Slip Base Required	Yes

Footing Details

Diameter of Hole	450
Depth of Hole	1200



Warnings, Errors and Suggestions

Ground Slope will have to be determined by site inspection.


28.02.2008

Statement of Michael Carter

Annexure D

Signature .....

Witness... .....

Signed at Brisbane on 14 March 2014.

Statement of Michael Carter

Annexure E

Signature .....

Witness .....

Signed at Brisbane on 14 March 2014.

Queensland Government

Memorandum

Department of Main Roads

Our ref E 870/01825
Your ref
Date 24 September 2007

To District Directors (see distribution list)

Copy to (See distribution list)

Subject **Cycling on motorways, shoulder widths for rural cycle routes and other cycling technical governance issues**

The Main Roads cycling policy was adopted in August 2004. Many districts and project teams have provided valuable feedback on issues arising in policy implementation.

The main purpose of this memo is to provide interim advice on two key policy issues – cycling on motorways, and rural road shoulder widths required for cycling. The memo also covers two other significant technical governance issues for cycling – the treatment of intersections for cyclists and additional design references.

Cycling on motorways and freeways

Main Roads has some guidance in the cycling policy which will continue to cover cycling on existing motorways and freeways. However, any new motorway/freeway projects and upgrades should be aiming to achieve a high level of safety and service for cyclists. Attachment 1 proposes a draft departmental position on cycling on motorways and freeways covering new projects and major upgrades. Can you please distribute this draft position to relevant district staff and provide any feedback to Robyn Davies, Program Manager (Pedestrian and Cycling Facilities) by Friday 26 October, 2007.

Rural road shoulder widths required for cycling

Provision of sealed road shoulders is justified on the basis of road safety benefits alone. When they are sufficiently wide, they have the added benefit of providing a cycling facility. There is currently no explicit guidance in the *Road Planning and Design Manual* on rural shoulder widths required to cater for cycling. Attachment 2 proposes draft shoulder width requirements to support cycling on sealed road in rural areas with an 80+km/hr posted speed limit. Note that the values proposed in the draft table are intended to be applied on all new roads and major road upgrades. For existing roads, the draft table is proposed as a reference and wherever practical, the values should be obtained. Can you please distribute this draft proposal to relevant district staff and provide any feedback to Robyn Davies, Program Manager (Pedestrian and Cycling Facilities) by Friday 26 October, 2007.

Planning, Design and Operations Division
Traffic Engineering and Road Safety Branch
Floor 10, Spring Hill Office Complex, 477 Boundary Street
Spring Hill, Queensland 4000
GPO Box 1412 Brisbane Queensland 4001

Enquiries Robyn Davies
Telephone +61 7 3834 2820
Facsimile +61 7 3834 2201

This interim advice, along with guidance on other policy implementation/interpretation issues will be incorporated into a draft policy guideline to be developed within the next 12 months. I welcome feedback on any other cycling policy implementation/interpretation issues which districts believe need to be addressed in a policy guideline.

Treatment of intersections for cyclists

Another purpose of this memo is to provide guidance for districts on treatment of intersections for cyclists. Attachment 3 provides a table summarising urban and rural intersection types and the treatment options that should be applied for cycling. The major point to note is that for all new and upgrade projects on urban arterials, Main Roads must provide marked bike lanes for the through movement of cyclists at intersections, regardless of whether the corridor is a priority cycle route. (For existing roads, this outcome should be achieved wherever practical). This reflects the outcomes of the design forum at the 2007 Main Roads Technology Forum and supports the implementation of the Main Roads cycling policy.

Additional design references for cycling

The final purpose of this memo is to notify you of additional design references on cycling that may be used by Main Roads districts and their contractors in Queensland.

The *Road Planning and Design Manual* is the Main Roads primary technical reference for people engaged in the planning and design of roads.

Although the manual provides design criteria for cyclists, there are other references that contain additional material regarding the selection and design of cycling facilities. These documents are (in order of priority):

- Austroads Guide to Traffic Engineering Practice Part 14: Bicycles ("Part 14")
- Queensland Transport Cycle Notes (specifically notes A7, B2, B3, B4, B5, B8, B9, C2, C6 and C7)
- NSW Bicycle Guidelines.

These documents may be used as a reference source for material not covered in the *Road Planning and Design Manual* except for a small number of practice exceptions. These exceptions are tabled in Attachment 4 to this memo.

Can you please ensure all relevant staff in your district are notified of the content of this memo.

Robin Stone
A/Executive Director (Planning, Design and Operations)

Encl (4)

Attachment 1: DRAFT position on cycling on freeways and motorways (new projects/major upgrades only)

Cycling will only be permitted on the shoulders of rural freeways and motorways and will not be permitted on the shoulders of urban freeways and motorways.

Cycling is permitted on the shoulders of rural freeways and motorways because:

- They usually provide the most practical route for cyclists.
- The entry and exit ramp volumes are lower, and generally below the Austroads volume threshold. Guidance on provision for cyclists at entry and exit ramps is provided in *Road Planning and Design Manual* Appendix 5b and in *Austroads Guide to Traffic Engineering Part 14: Bicycles*, section 4.6.

Cycling will not be permitted on urban freeways and motorways because:

- They carry relatively high volumes of traffic on main carriageways and on entry and exit ramps (generally above the Austroads volume threshold). In addition, urban freeway ramp spacing is significantly lower, and multi-lane ramps are not uncommon.
- Projects are expected to provide other high quality alternative routes that cyclists can take.

For motorways/freeways on the urban fringe or in semi-rural areas, if ramp volumes are projected to exceed 800 vehicles per hour within the next 20 years, projects must provide a high quality alternative cycling route in conjunction with the project.

For existing motorways and freeways

The wording in the current Main Roads cycling policy will continue to apply on existing motorways and freeways. That is:

> *Main Roads will, as necessary, restrict or prohibit cycle access to parts of the state controlled road network where there is unacceptable safety risk. Main Roads will not do this unless a risk assessment[1], including consideration of any crash records and alternative routes, indicates that cycling on the road presents an unacceptable safety risk to riders. This risk assessment will be undertaken in consultation with cycle groups, road user groups and other stakeholders.*

[1] Traffic Engineering & Road Safety Branch has made some progress on a risk assessment methodology and supporting tools and this will be further developed for release with a policy guideline.

Attachment 2: Shoulder width requirements to support cycling on sealed roads in rural areas with an 80+km/hr posted speed limit

In urban/built up areas (80km/hr or less), the *Austroads Guide to Traffic Engineering Practice Part 14: Bicycles* provides clear direction on bicycle facility design requirements.

For rural areas, refer to Table 1 below. The values in Table 1 are intended to be applied on all new roads and major road upgrades. For existing roads, the draft table is proposed as a reference and wherever practical, the values in the table should be obtained. Issues such as difficult or mountainous terrain, costly service relocations, resumptions and so on may need to be taken into account in developing a cost effective solution for cyclists on existing corridors.

Note that sealed shoulder provision is justified on the basis of road safety benefits alone. It also extends pavement life and reduces maintenance costs.

Table 1: Shoulder width requirements to support cycling on sealed roads in rural areas with an 80+ km/hour posted speed limit

Priority cycle route?	AADT (vehicles per day)	Provision for cyclists
Yes	>12,000	2.5m minimum sealed shoulder (3.5m lanes)
	6000 – 12,000	2m minimum sealed shoulder (3.5m lanes)
	< 6000	1.5m minimum sealed shoulder
No	>3000	Minimum 10m formation (1.5m minimum sealed shoulder + 3.5m lane width)
	1000 – 3000	Minimum 9.0m formation (1.0m sealed shoulder + 3.5m lane or 1.5m sealed shoulder + 3.0m lane)
	300-1000	Minimum 8.0m formation (0.5m sealed shoulder + 3.5m lane or 1.0m sealed shoulder + 3.0m lane)
	<300	No special provision

Notes:

- These widths are for where there is no roadside barrier. Where there is a roadside barrier, the shoulder widths shown become clear widths from lane edge to face of barrier.
- For new projects or upgrading works, the decision criteria should be based on design traffic, not current traffic. Typically, design traffic is calculated on a post-construction design life of 20 years for rural roads.
- These widths may need to be increased for other factors such as a high percentage of heavy vehicles, strong wind effects, steeper grades, high numbers of cyclists.
- Ensure seal covers full width of pavement (including during rehabilitation).
- Within a 20km radius of towns a 10mm maximum seal size is recommended.

Attachment 3: Intersection treatments for cycling

District business units associated with planning, design, development control, operations, construction and maintenance are asked to ensure the measures in Table 1 are applied as part of all new roads and major road upgrades. For existing roads, the table is proposed as a reference and wherever practical, the approaches should be applied to the greatest extent possible.

Table 1: Preferred intersection treatments for cycling in urban and rural settings

	Situation	*RP&D Manual* ref	Preferred treatment types	*Austroads Part 14: Bicycles* ref
Urban - all inter-sections (Note that on priority cycle routes, green surface treatment can be used to mark conflict points.)	BAL (Basic left turn)	Fig 13.71	Bicycle lane Wide kerbside lane (note - full bike lane preferred if achievable)	Fig 5.3a or 5.15a Section 5.3.3
	AUL (Auxilliary left turn) and AUL(S) (Auxilliary left turn – short)	Fig 13.73 Fig 13.74	Bicycle lane	Fig 5.3b or Fig 5.12
	CHL (Channelised left turn)	Fig 13.75	Bicycle lane	Fig 5.3b or Fig 5.12
	CHL (Channelised left turn with acceleration lane)	Fig 13.77	Bicycle lane	Fig 5.26
	Roundabout (<3000vpd and 50km/hr or less)		Cyclists can generally safely share the roundabout with other traffic	See *NSW Bicycle Guidelines* Fig 7.11
	Roundabout (>3000vpd and >50km/h)		Single and dual lane roundabouts can be marked with bike lanes around the circulating lane, but take measures to slow entering traffic. Splitter islands or similar dividers between the bike and other traffic lanes on the entries will assist, as will proper deflection.	See *NSW Bicycle Guidelines* Fig 7.9 – this bike lane marking approach can be used on single and dual lane roundabouts (but is not suitable for very large diameter, high speed roundabouts. Use *Austroads Part 14* Fig 5.29 & 5.30).
Rural and on priority cycle route	BAL (Basic left turn)	13.79 and 13.80	Set back the give way line and connect between the edge lines with a continuity line. Apply bicycle pavement symbols through intersection.	Section 4.4.4

	AUL(S) (Auxilliary left turn – short) and AUL (Auxilliary left turn)	13.81 and 13.82	Maintain approach shoulder width through intersection. Apply bicycle pavement symbols on shoulders.	Section 4.4.4
	CHL (Channelised left turn and channelised left turn with acceleration lane)	13.83 and 13.84	Maintain approach shoulder width through intersection using similar concepts to Austroads Part 14 Figs 4.28, 4.29 and 5.26 to get cyclists across high flows of left turning traffic	Figs 4.28, 4.29 and 5.26

- For semi-urban areas (posted speed limits around 80km/hr), treatments would be based around the characteristics of the intersection and may involve a combination of urban and rural treatments as appropriate. For example, it may not be desirable to have bike lanes between very long lengths of deceleration/acceleration lanes, so freeway-style treatments such as Figs 4.28 or 4.29 from *Austroads Part 14: Bicycles* may be useful.

Attachment 4: Supplementary cycling design references

The *Road Planning and Design Manual* is the Main Roads primary technical reference for people engaged in the planning and design of roads.

Although the manual provides design criteria for cyclists, there are other references that contain additional material regarding the selection and design of cycling facilities. These documents are (in order of priority):

- Austroads Guide to Traffic Engineering Practice Part 14: Bicycles ("Part 14")
- Queensland Transport Cycle Notes (Notes A7, B2, B3, B4, B5, B8, B9, C2, C6, C7)
- NSW Bicycle Guidelines (download from RTA website at www.rta.nsw.gov.au)

These documents may be used as a reference source for material not covered in the *Road Planning and Design Manual* except for a small number of practice exceptions. These exceptions are in Table 1 below.

Table 1: Main Roads' issues with supplementary cycling design references.

Issue	Comments	Austroads Part 14	NSW Bicycle Guideline
Right turn bike lanes	The incorporation of right turn bicycle lanes may be appropriate in some instances (for example, when cyclists have to cross one through lane, as shown in Figs 7.15 and 7.18 of the NSW Bicycle Guideline). In other instances, however, this treatment may cause operational and safety problems. For example, instances where there are multiple through lanes, heavy traffic volumes, and significant uphill grades. Such instances may not provide sufficient opportunities for cyclists to cross into the right-turn lane. Where right turn bicycle lanes are provided, it is assumed that alternative paths through the intersection will be provided for younger and less experienced cyclists. It is considered that bicycle hook turns would be a better treatment (see NSW Bicycle Guidelines, Fig 7.19, p. 58 or Austroads Part 14 Fig 5-16, and 5-17, p. 57 and 5-21 on p.59).	Fig 5-11, p. 53 and Fig 6-33, p. 95	Fig 7.15 and 7.18, pp. 54-57
Headstart / bicycle storage areas across multiple traffic lanes	The provision of headstart/bicycle storage boxes across multiple traffic lanes may result in some cyclists attempting to enter the boxes at the commencement of the green phase, causing potential safety problems (particularly when it is possible for visibility of cyclists to be obscured by large vehicles).	Austroads Fig 5-15, p. 56	Fig 7.18, p. 57
Off-road	In the NSW Bicycle Guidelines example, the conflict		Section

bicycle path bend out at intersection	areas (the cycle crossing and the intersection) are very close. This may create problems for car drivers in perceiving two Give Way signs in close proximity when approaching on the minor leg (the "see through" effect). It may also create problems for left turning drivers from the major road to perceive the Give Way sign. Also, design vehicles turning left from the major road stopped at the Give Way sign may well overhang onto the major road, causing operational and safety problems. It would be preferable to further separate the cycle crossing from the intersection. A general rule of road design is to locate conflict points a minimum of 4 seconds of travel time apart. The spacing would also have to take into account the length of the design vehicle plus clearances. Alternatively, use the bend-in treatment as shown in NSW Bicycle Guideline Figure 7.2, p 43. Additional options are Austroads Part 14 Fig 6-31, p. 94 and Fig 6-35, p. 97.		7.2.2, Fig 7.3, p. 44.
Shared bicycle and bus lane widths	Where a 4.2m or greater bus lane cannot be provided, and it must be shared by bicycles, it is preferable to segregate the cycle lane and if possible, limit the bus lane width to 3m to reduce the incidence of buses trying to squeeze past cyclists.		Figures 5.5 and 5.6, pp. 25-26
Bicycles at roundabouts	None of the roundabouts in Figures 7.6, 7.8, and 7.9 show good entry curvature, which is essential to slow motorists and maximise safety, including that for cyclists. Placing bicycle lanes immediately adjacent the entry curve (as in Figure 7.8, p48) reduces the ability to provide good entry curvature as motorists may cut across the bicycle lane. The treatment in Figure 7.9, p 49 does not have this problem and is much preferred, even for bike lanes on multi-lane roundabouts.		Figures 7.6 and 7.8, pp. 46 and 48.

Statement of Michael Carter

Annexure F

Signature .....

Witness... .....

Signed at Brisbane on 14 March 2014.

MAIN ROADS POLICY

Cycling on State Controlled Roads

Prepared by: Road Network Management Division

Version No: V1

Status

Version	Document Status	Date	Tick Box
V1	Signed off	10/08/04	✓

POLICY APPROVAL

This policy has been endorsed by:

Policy Owner

Name Russell Fisher **10/08/04**

Position Executive Director (Road Network Management)

This policy was launched by:

Paul Lucas MP
Minister for Transport and Main Roads on 10 August 2004

DEFINITIONS

Cycle-friendly	Road designs that make it easier and safer for cyclists to use a particular section of road. For example, eliminating squeeze points, setting traffic islands well back from edge lines or providing wider kerbside lanes may be considered ***cycle-friendly*** design in urban areas. In rural areas, adequately-sealed shoulders might be considered cycle-friendly design.
Positively provide	Providing marked cycle lanes, cycle paths, shared paths or other facilities for cyclists.
Priority cycling route	A planned cycling route, which is typically shown in an integrated regional cycle network plan or other cycle plan to which Main Roads is a signatory. It indicates the most important routes for cyclists within particular regions. Priority cycling routes may apply to both commuter and recreational cyclists.
Investigation route	Sections of the integrated regional cycle network plan that represent broad lines of intent of desired cycle routes. In most instances, further corridor investigation work will be required to determine the precise route and desired standard of cycle facility. Investigation routes do not become priority cycling routes until investigations confirm the need, practicality, and affordability.

POLICY STATEMENT

Main Roads will encourage and facilitate cycling. Cyclists are legitimate users of the Queensland road network and as such the planning for, and design, construction, maintenance and operation of state-controlled roads should be undertaken on the basis that cyclists will use the network.

Main Roads will allow for cycling as part of the planning and protection of new road corridors. This may include identifying instances where cyclists' needs are better met on an alternative alignment.

As with all road construction and maintenance projects, planning and investment in cycling will be subject to:

- consultation;
- available funding;
- competing priorities; and
- obtaining value for money.

Main Roads will seek to make state-controlled roads ***cycle-friendly*** by incorporating ***cycle- friendly*** design in traffic operations, road-upgrading, and maintenance projects. This may include the economical retrofitting of roads where necessary to accommodate cyclists.

Along ***priority cycling routes***, Main Roads will ***positively provide*** for cyclists in road-upgrading projects.

Where a state-controlled road is shown as part of a ***priority cycling route*** but where cycling cannot be ***positively provided*** for, Main Roads will negotiate with local government and stakeholders to achieve a suitable alternative solution. As an example, an alternative route could be provided along a nearby local government road parallel to the state-controlled road, or on other land. (Appendix A is the flow chart which outlines the process for providing for cycling.)

Main Roads will, as necessary, restrict or prohibit cycle access to parts of the state-controlled road network where there is unacceptable safety risk. Main Roads will not do this unless a risk assessment, including consideration of any crash records and alternative routes, indicates that cycling on the road presents an unacceptable safety risk to riders. This risk assessment will be undertaken in consultation with cycle groups, road user groups and other stakeholders.

Main Roads will continue to support the development of cycling facilities on local government roads through the Transport Infrastructure Development Scheme (TIDS), as part of the Roads Implementation Program (RIP), giving preference to ***priority cycling routes***.

APPLICABILITY

This policy applies to all state-controlled roads.

This policy statement will be supported by technical guidelines and other practical measures to assist Main Roads regional and district offices to facilitate cycling in a practical way on the state-controlled road network. A list of such measures is included at Appendix B.

CONTEXT

This policy was developed in accordance with a commitment made by Main Roads in the *Queensland Cycle Strategy* to formalise a policy about providing for cycling on State-controlled roads. The Queensland Cycle Strategy was jointly prepared by Queensland Transport and Main Roads and was endorsed by cabinet on 15 September 2003.

Queensland Transport is portfolio lead for cycling and this policy is one of Main Roads' supporting measures.

Main Roads invests in cycling facilities associated with the state-controlled road network through the RIP. It also invests in cycling facilities on local government roads through the TIDS program, which forms part of the RIP.

As a road system manager, Main Roads has a responsibility to plan and design roads and conduct its road business to facilitate cycling in a way that promotes safe and efficient travel for all road users. To enable this Main Roads will maintain appropriate guidelines.

The policy is consistent with the strategic direction and priorities of the State Government and Main Roads long-term strategic directions as documented in *Roads Connecting Queenslanders,* (RCQ).

Consistent with the Government's overall strategy to increase cycling in Queensland, one of the core policy priorities of RCQ is ensuring safer access to the road system for vulnerable road users (including cyclists). RCQ states that Main Roads will, where cost-effective, plan road corridors to encourage the safe use of motorised transport, and, where appropriate, public transport, cycling and walking as part of broader transport planning and whole-of-government objectives.

OBJECTIVES AND BENEFITS

The policy will achieve the following broad objectives:

1 Make cycling safer and more convenient in Queensland

2 Facilitate a growth in cycling trips

3 Improve cycling connectivity between communities

4 Move investment in cycling towards ***priority cycling routes***

CONSULTATION

Main Roads developed the policy for cycling on state-controlled roads, in consultation with the following bodies:

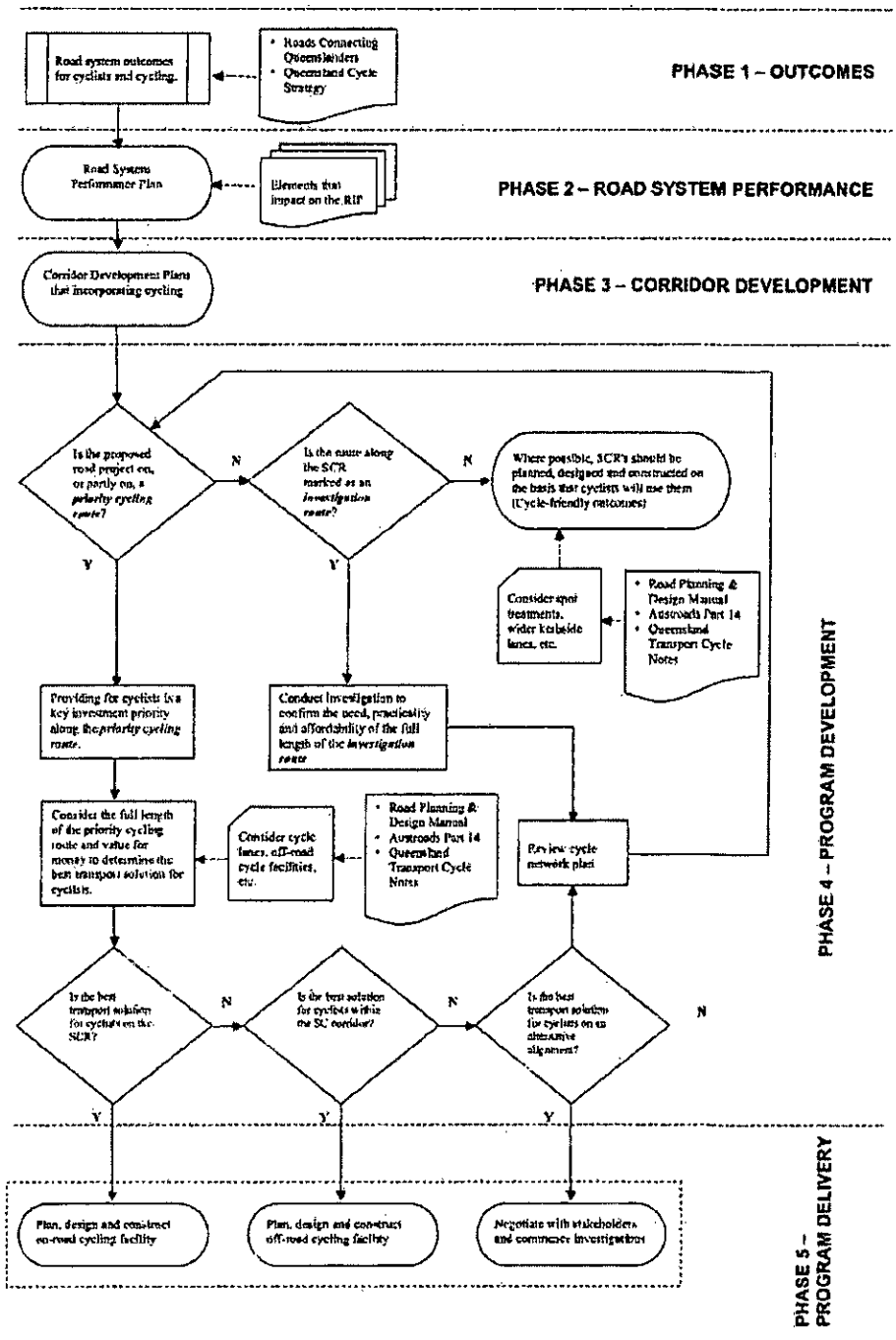
- Queensland Transport
- Queensland State Cycle Committee
- Bicycle representative groups

EVALUATION

Main Roads' Road System and Engineering Group is responsible for reviewing this policy in consultation with stakeholders. The review will be undertaken as necessary, in the light of experience of its application.

Cabinet requires annual reporting on the progress on implementation of the Queensland Cycle Strategy. Main Roads will report on implementation of this policy as part of cabinet reporting arrangements.

APPENDIX A Flowchart for Providing for Cycling by Main Roads



APPENDIX B DOCUMENTS AND MEASURES TO SUPPORT CYCLING ON STATE-CONTROLLED ROADS

The implementation of the policy on cycling on state controlled roads will be assisted by the following measures and documents.

- Queensland Cycle Strategy
- Main Roads will develop and maintain its expertise in best practice management for cycling, provision and maintenance of cycling facilities, and safety risk management for cycling.
- Road System Manager - The Strategic Framework for Road System (Asset) Management
- Road System Performance and Corridor Development Plans
- Integrated Regional Transport Plans
- Integrated Regional Cycle Network Plans
- Other local cycle network plans that Main Roads is signatory to
- The design standards and guidelines applicable to cycling as set out in the Road Planning and Design Manual
- National design standards and guidelines applicable to cycling (eg Austroads GTEP Part 14)
- Road Safety Strategy and Action Plan
- Queensland Transport's Cycle Notes
- Cost sharing arrangements with local government

Statement of Michael Carter

Annexure G

Signature .....

Witness.. .....

Signed at Brisbane on 14 March 2014.

Cycling Infrastructure Policy

Organisational Policy

Action statement

Date	Name	Position	Action required	Due date

Compliance to this policy is **mandatory**.

Prepared by	Robyn Davies
Title	Program Manager (Pedestrian & Cycling Facilities)
Branch	Road Safety Branch
Division	Road Safety & System Management Division
Location	Floor 7 | Transport House | 230 Brunswick Street | Fortitude Valley Qld 4006
Version no.	4
Version date	
Status	Final
DMS ref. no.	

Document control sheet

Contact for enquiries and proposed changes

Officer	Title	Phone number
Policy Owner	Bruce Ollason – General Manager (Road Safety & System Management)	45297000
Policy Officer	Robyn Davies – Program Manager (Pedestrian & Cycling Facilities)	32534563

Version history

Version no.	Date	Changed by	Nature of amendment
4			Final

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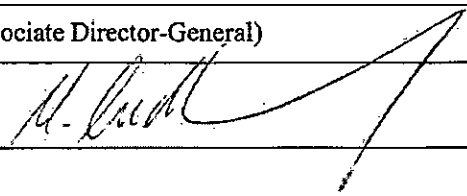
The BY attribution creative commons licence been included in this policy as a minimum requirement. The operational owner and review officer must review these statements and amend them according to the type of licence required.

Document sign off

This organisational policy is **approved** by:

Name Mark Cridland

Position (Associate Director-General)

Signature  Date 13 April 2011

This organisational policy is **endorsed** by:

Name Bruce Ollason

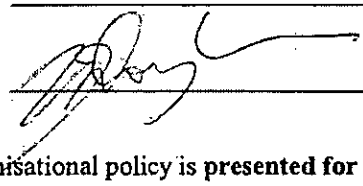
Position General Manager (Road Safety & System Management)

Signature  Date 13 April 2011

This organisational policy is **presented for approval** by the operational owner:

Name Jon Douglas

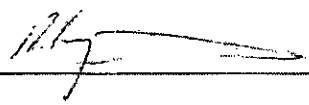
Position Director (Safer Roads), Road Safety & System Management Division

Signature  Date 6 April 2011

This organisational policy is **presented for approval** by the policy officer:

Name Robyn Davies

Position Program Manager (Pedestrian & Cycling Facilities)

Signature  Date 6 April 2011

Effective date

This policy will take effect from 13 April 2011.

Contents

1 Policy Statement

The Department of Transport and Main Roads will encourage and facilitate cycling. Cyclists are legitimate users of Queensland transport networks. The planning, design, construction, maintenance and operation of state-controlled transport corridors should be undertaken on the basis that cyclists will use the network both along the corridors and for access to and travel between stops/stations.

The Department of Transport and Main Roads require the integration of cycling network infrastructure and mid- and end-of-trip facilities as part of the planning of new transport (including road, rail, bus and pathway) projects and the protection of transport corridors. This may include identifying instances where cyclists' needs are better met on an alternative alignment.

Along ***principal cycle routes***, the Department of Transport and Main Roads will ***positively provide*** for cyclists in transport infrastructure projects.

Where a state-controlled transport corridor is shown as part of a ***principal cycle route*** but where cycling cannot physically be ***positively provided*** for, the Department of Transport and Main Roads will identify, plan and deliver an alternative route. The Department of Transport and Main Roads will negotiate with local government and other stakeholders to achieve a suitable alternative solution and provide it within the scope of the project. As an example, an alternative route could be provided along a nearby local government road parallel or adjacent to the state-controlled transport corridor, or on other land. (Appendix A is the flow chart which outlines the process for providing for cycling.)

Elsewhere, the Department of Transport and Main Roads will make state-controlled transport projects ***cycle-friendly*** by incorporating ***cycle- friendly*** design in transport infrastructure projects. This may include the economical retrofitting of transport corridors where necessary to accommodate cyclists.

It is the responsibility of the project proponent to include costing for land and infrastructure for cycling up front, and ensure that this remains within scope during the subsequent project phases.

As with all transport construction and maintenance projects, planning and investment in cycling will be subject to:

- consultation;
- safety considerations;
- competing priorities; and
- obtaining value for money and realising benefits.

2 Scope

This policy was originally developed in accordance with a commitment made by the former Department of Main Roads in the *Queensland Cycle Strategy* to formalise a policy about providing for cycling on State-controlled roads. The *Queensland Cycle Strategy* was jointly prepared by the former Queensland Transport and Main Roads Departments and was endorsed by Cabinet on 15 September 2003.

As part of the 2011 review of this strategy, this policy has been revised to cover the transport infrastructure (road, rail, bus and pathway) controlled by the combined Department of Transport and Main Roads, and partner agencies and organisations including:

- TransLink Transit Authority
- Queensland Rail
- Queensland Motorways Ltd
- Department of Public Works
- Department of Infrastructure & Planning
- Other wholly owned Queensland Government operations (such as Special Purpose Vehicles)

3 Applicability

This policy applies to all state-controlled transport projects and corridors, including government funded infrastructure projects, upgrades and sponsored projects at all stages of the transport network infrastructure process, including:

- corridor preservation,
- planning,
- design,
- construction,
- programmed maintenance/ rehabilitation (where current or intended surfacing width is adequate),
- operation and
- reporting.

This policy is also applicable to state projects jointly funded with other levels of government.

This policy recognises that facilities are needed to cater for the full range of cyclists, and may include provision of both on- and off-road network infrastructure but exactly what facilities and connections are needed is to be determined in the project planning phases. Where demand is identified, provision for pedestrian access should also be included, especially to public transport.

When making maintenance treatment selections, the Department of Transport and Main Roads will consider all users including cyclists.

The Department of Transport and Main Roads will seek to make cycling on all its facilities safe and enjoyable. However, the Department of Transport and Main Roads may as necessary, restrict or prohibit cycle access to parts of the state-controlled road where there is an unacceptable safety risk to cyclists. The Department of Transport and Main Roads will not do this unless a risk assessment, including consideration of any crash records and availability of alternative routes, indicates that cycling on the road or transport corridor presents an unacceptable safety risk to riders. This risk assessment will be undertaken in consultation with cycle groups, road user groups and other stakeholders.

The Department of Transport and Main Roads will continue to support the development of cycling facilities on local government roads through the Transport Infrastructure Development Scheme (TIDS), Cycle Infrastructure Program and as part of the Queensland Transport and Road Implementation Program (QTRIP), giving preference to ***principal cycle network routes*** and priorities as set out in the *Queensland Cycle Strategy*.

In any situation where there is an apparent inconsistency between the cycling policy and the *Cost Sharing Based on Responsibilities Within State-controlled Roads*, the *Cycling Infrastructure Policy* takes precedence.

This policy statement will be supported by technical guidelines and other practical measures to assist project managers to facilitate cycling in a practical way on the state-controlled transport network. A list of guidelines and measures is included in the references section.

4 Objectives

The policy will achieve the following broad objectives:

1 Make cycling safe, enjoyable and convenient in Queensland

2 Facilitate a growth in cycling trips

3 Improve cycling connectivity between communities

4 Focus investment on ***principal cycle routes***

5 Achieve consistent standards for a connected, safe network of facilities.

6 Provision for cycling during projects to avoid costly retrofits at a later date

7 Provision for cycling is included in all stages of the transport network infrastructure process, including:

- corridor preservation,
- planning,
- design,
- construction,
- programmed maintenance/rehabilitation,
- operation and
- reporting.

5 Rationale

The purpose of the expansion of this policy is to integrate cycling into each stage of the transport infrastructure planning process to increase the safety of cyclists and ensure the best value for money outcomes for the State Government, avoiding the need for costly retrofits at a later date.

The Department of Transport and Main Roads invests in cycling facilities associated with the state-controlled road network through the Queensland Transport and Roads Investment Program (QTRIP) (including the Cycle Infrastructure Program). It also invests in cycling facilities on local government roads through the Transport Infrastructure Development Scheme (TIDS) program, which forms part of the QTRIP.

As a transport system manager, the Department of Transport and Main Roads has a responsibility to plan and design transport infrastructure and conduct its transport business to facilitate cycling in a way that promotes safe and efficient travel for all users. To enable this, the Department of Transport and Main Roads will maintain appropriate guidelines.

The policy is consistent with the strategic direction and priorities of the State Government and the Department of Transport and Main Roads long-term strategic directions as documented in the *Transport Coordination Plan* and other relevant strategic documents.

Objective 4 of the *Transport Coordination Plan for Queensland (2008-2018)* is to get more people walking, cycling and using public transport:

Increasing the share of trips made by public transport, walking and cycling and providing alternatives to private car use.

Provision of safe, direct and continuous cycling facilities and end-of-trip facilities, as facilitated by this policy, is a fundamental requirement of achieving this objective.

6 Definitions

Term, abbreviations and acronyms	Definition
Cycle-friendly	Transport infrastructure that makes it easier and safer for cyclists to use a transport corridor. For example, sufficiently wide road shoulders, eliminating squeeze points, setting traffic islands well back from edge lines, rationalising raised reflective pavement markers (RRPMs), providing wider kerbside lanes, wider transit/bus lanes or bicycle parking, may be considered ***cycle-friendly*** design in urban areas. In rural areas, adequately-sealed shoulders might be considered cycle-friendly design.
Positively provide	Providing marked bicycle lanes, bicycle paths, shared paths or other suitable continuous operating space for cyclists. Where provision is off-road, and/or at public transport stations and stops, ***positively***

Term, abbreviations and acronyms	Definition
	provide also includes ancillary facilities such as wayfinding signage, lighting, and mid- and end-of-trip facilities. End-of-trip facilities can include any or all of the following: - Bicycle storage – rails, racks, lockers, enclosures, centres; - Personal amenities – showers, change rooms, gear storage lockers. In new public transport stations, end-of-trip facilities will include the full suite of end-of-trip facilities. In station upgrades, bicycle enclosures will be included.
Principal Cycle Route	A planned cycling route, which is typically shown in a *Principal Cycle Network Plan* or other cycle plan to which the Department of Transport and Main Roads is a signatory. It indicates the most important routes for cyclists within particular regions and known missing links. Principal cycle routes may apply to both commuter and recreational cyclists. Principal cycle routes represent cycling desire lines. In most instances, further corridor investigation work will be required to determine the precise route and desired standard of cycle facility.

7 Consultation

Transport and Main Roads has reviewed the cycling infrastructure policy in consultation with the following bodies:

- TransLink Transit Authority
- Queensland Rail
- Department of Infrastructure and Planning
- Queensland Treasury
- Queensland Motorways Limited.

8 Review

The Transport and Main Roads' Road Safety and System Management Division is responsible for evaluating this policy in consultation with stakeholders. Formal evaluation will be undertaken at least every two years to review policy application.

Transport and Main Roads will report on implementation outcomes of this policy (including length of network and value of infrastructure delivered) as part of Cabinet reporting arrangements for the *Queensland Cycle Strategy*.

To provide objective measures of progress, annual asset inventories of the state-controlled roads and transport infrastructure must now also include cycling facilities (including on the road surface and within the wider corridor). Similarly, traffic counts and passenger surveys will incorporate and report on cyclists as well as vehicles.

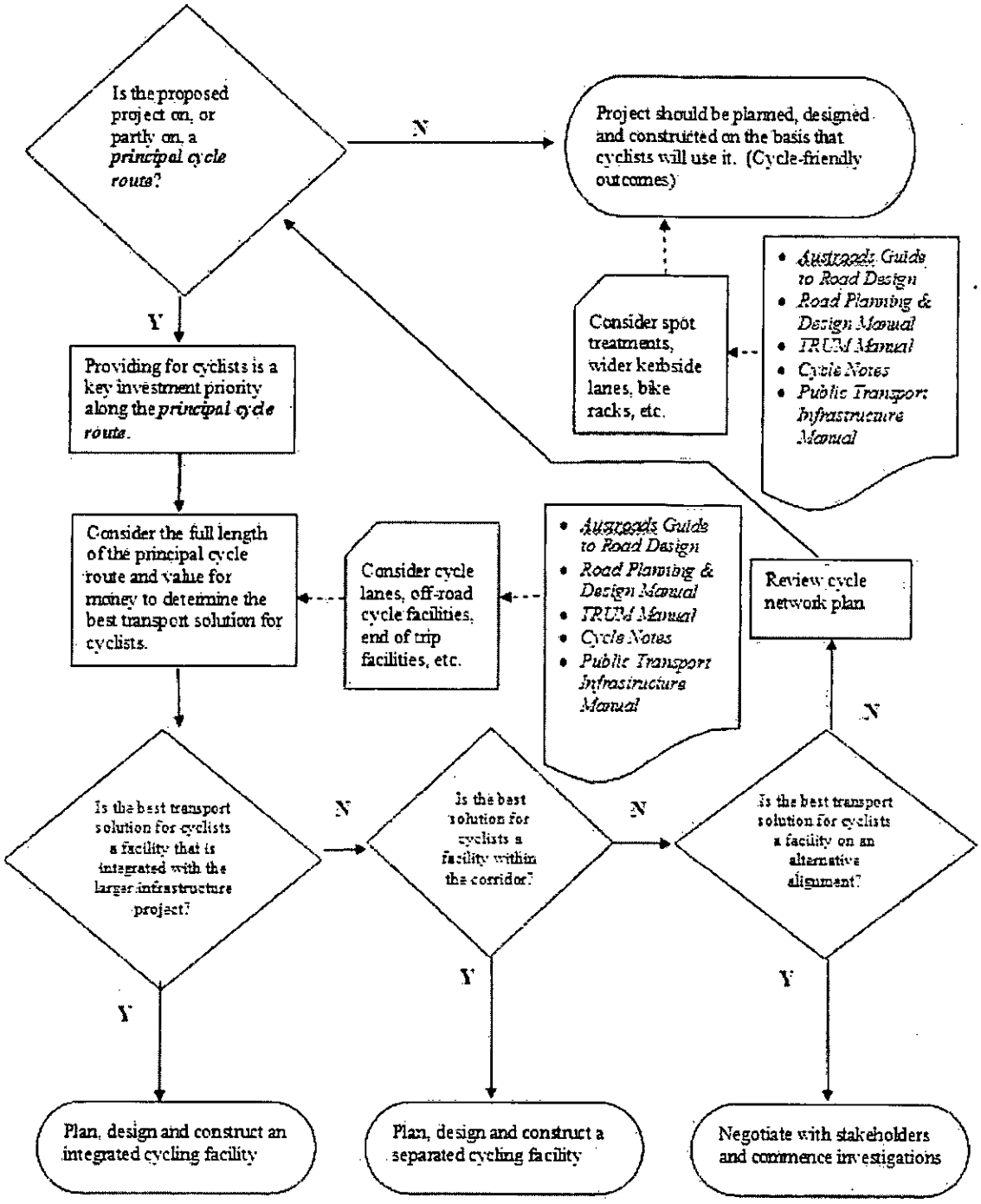
9 References

DOCUMENTS AND MEASURES TO SUPPORT CYCLING ON STATE-CONTROLLED ROADS

The implementation of the cycling infrastructure policy will be assisted by the following measures and documents.

- *Queensland Cycle Strategy*
- Transport and Main Roads will develop and maintain its expertise in best practice management for cycling, provision and maintenance of cycling facilities, and safety risk management for cycling.
- Road System Performance Plan and Corridor Strategies
- Integrated Regional Transport Plans
- Principal Cycle Network Plans
- Other local cycle network plans to which Transport and Main Roads is signatory
- The design standards and guidelines applicable to cycling as set out in the *Road Planning and Design Manual*, and the *Traffic and Road Use Management Manual*
- National design standards and guidelines applicable to cycling (eg *Austroads Guides to Traffic Management and Road Design*, *Queensland Manual of Uniform Traffic Control Devices*)
- *Road Safety Strategy* and *Action Plan*
- Transport and Main Roads *Cycle Notes*
- Australian Bicycle Council (2010), *Why provide cycling facilities for buildings: A fact sheet for developers.*
- TransLink Transit Authority (2010), *Draft Public Transport Infrastructure Manual.*
- Queensland Government and Local Government Association of Queensland (2000), *Cost Sharing Based on Responsibilities Within State-controlled Roads.*

Appendix A Flowchart for providing for cycling by Transport and Main Roads



Statement of Michael Carter

Annexure H

Signature .....

Witness... .....

Signed at Brisbane on 14 March 2014.

Cycling Infrastructure Policy

Organisational Policy

Action statement

Date	Name	Position	Action required	Due date
9/5/2012	Matt Johnson	Director (Cycling)	Revision to reflect engineering practice language and new government priorities	Complete
19/12/2012	Matt Johnson	Director (Cycling)	Updated Policy Owner and deleted irrelevant references. Minor amendments to reflective new Policy Owners requirements	Complete

Document Control sheet

Contact for enquiries and proposed changes

Officer	Title	Phone number
Policy Owners	Sal Petroccitto – General Manager (Roads, Rail and Ports System Management)	3066 7433
	Matt Johnson – Director (Cycling)	3066 3789
Policy Officer	Mark McDonald – Senior Technologist	30666494

Version History

Version no.	Date	Changed by	Nature of amendment
4			Final
5	10/5/2012	Matt Johnson – Director (Cycling)	Minor revision to reflect engineering practice language and new government priorities
6	19/12/2012	Matt Johnson – Director (Cycling)	Updated Policy Owner and deleted irrelevant references.

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Document sign off

This organisational policy is **approved** by:

Name Mark Cridland

Position Deputy Director-General (Policy, Planning and Investment)

Signature _____ Date 22/07/13

This organisational policy is **endorsed** by:

Name Sal Petroccitto

Position General Manager (Roads, Rail and Ports System Management)

Signature _____ Date 20/12/2012

This organisational policy is **presented for approval** by the operational owner:

Name Matt Johnson

Position Director (Cycling Program)

Signature _____ Date 20/12/2012

This organisational policy is **presented for approval** by the policy officer:

Name Mark McDonald

Position Principal Technologist (Cycling & Pedestrian Facilities)

Signature _____ Date _____

This policy is in effect from 13 April 2013

The department's vision statement 'Connecting Queensland – delivering transport for prosperity' outlines the department's long-term view and provides the goal our people work towards. The vision statement has been updated to align with the new future direction of the department and with the whole-of-government tagline 'Great state. Great opportunity.' The departmental key message '**We connect people to opportunity; that's how we deliver transport for prosperity throughout our great state.**' should be included in every document. It should be used in the body copy in either the introductory or closing paragraph. However please consider your material's content to determine if it's applicable to apply this message. For assistance incorporating the vision statement and key message into your material's content, email 'Communication Services' at cqc@tmr.qld.gov.au.

Contents

1 Policy Statement

The Department of Transport and Main Roads (TMR) is committed to optimising the safety, efficiency and reliability of the transport network by progressively implementing cycling network and facilities on state-controlled transport assets in Queensland. The planning, design, construction, maintenance and operation of the state-controlled transport network will be undertaken on the basis that cyclists will use the network. Projects are to supply and implement cycling infrastructure within scope including instance where the cycling network is more appropriately applied on an alternative route.

2 Scope

This policy requires:

1. Consideration that bicycles can legitimately use the road network and will require access to and amenities at public transport stops and stations.
2. The integration of cycling network infrastructure and end-of-trip facilities as part of planning for transport (road, rail, bus and pathway), project development and the protection of transport corridors.
3. On principal cycle network the department will explicitly provide for cycling in transport infrastructure projects.
4. In areas not identified as principal cycle network, the department will implicitly provide for cycling in transport infrastructure. This may include the economical retrofitting of transport corridors to improve safety.
5. If risk assessment or value engineering processes identify that an alternative route is the preferred higher capacity cycling network opportunity (across part or all of a project), the alternative route will be identified, planned, funded and delivered within the scope of the project. It should not be assumed that this approach will result in bicycle prohibition or remove all obligations to apply the policy to the main project transport route.
6. Ongoing maintenance and management of established bicycle facility asset, unless transfer of the facility is agreed with Local Government.

In any situation where there is an apparent inconsistency between the cycling policy and the *Cost Sharing Based on Responsibilities Within State-controlled Roads*, the *Cycling Infrastructure Policy* takes precedence.

3 Application

This policy applies to all state transport projects and corridors, including government funded infrastructure projects, state projects jointly funded with other levels of government and other sponsored projects.

This policy applies to the Department of Transport and Main Roads, and the following bodies:

- Queensland Rail;
- Department of Housing and Public Works;

- Department of State Development, Infrastructure & Planning; and

Other wholly owned Queensland Government operations (such as Special Purpose Vehicles).

This policy applies to all stages of the transport system lifecycle, including:

- corridor preservation,
- planning,
- design,
- construction,
- programmed resurfacing and rehabilitation (where current or intended surfacing width is adequate),
- operation,
- traffic survey and reporting.

As a transport system manager, TMR has a responsibility to deliver safe and efficient travel for all road users. Project Managers must determine the cycling requirements during project development, based on upstream planning advice, safety and other assessments. Various functional areas are required to contribute to different aspects of this policy and these expectations are described below.

Planning and Project Development

Policy and Planning develops the principal cycle network plan to support this policy. To cater for the full range of cyclists, facilities may include provision of both on-road and path network infrastructure. Facilities for both experienced and inexperienced users may be necessary subject to planning.

Function, form and scope are to be determined consistent with project development processes. Consistent level of service for users may require the cycling facility to extend beyond the geographical scope of core project to ensure safe connection to local networks.

Priority is to be given to completing cycling network and cycling facility design standards, however, pedestrian demand may require consideration for access to stations and stops and crossings within activity centres.

Negotiations with local government and other stakeholders are required if an alternative route is being investigated. (The flow chart in Appendix A outlines the cycling provision decision process.)

Investment Gating

It is the responsibility of the project team (or proponent) to appropriately assess and determine the cycling facility requirements, to include the cost of land and cycling infrastructure in the project cost, and to ensure that cost estimates are refined and remain within scope during the subsequent project gating.

This policy aims to ensure integration of the cycle network occurs concurrently with road, rail and other transport projects, however, Regions should also develop project proposals and business cases to for projects where completing the principal cycle network or improving cycling facilities is the primary work type, consistent with QTRIP guidelines, risk and asset management principles.

Delivery, Operations, Ownership and Asset Management

Routine maintenance treatment selections should consider all users including cyclists.

Ownership, maintenance and operation of the completed cycling asset remains with the project proponent unless otherwise agreed with TMR, local government or any other authority or agency. Negotiation of ownership and maintenance should seek to obtain the most logical and efficient extension of any current maintenance occurring in the area.

Project finalisation is to include ARMIS input of state owned and maintained facilities.

Traffic counts and passenger surveys are to incorporate cyclists as well as vehicles.

As with all transport projects, planning and investment in cycling will be subject to:

- consultation;
- safety considerations;
- competing priorities; and
- obtaining value for money and realising benefits.

4 Objectives

The policy will achieve the following broad objectives:

- Facilitate the growth of cycling trips to reduce demand for additional infrastructure and extend the life of transport assets.
- Focus investment on principal cycle routes.
- Expand catchments for public transport services.
- Improve cycling connectivity within and between communities.
- Provision for cycling is included in all stages of the transport network infrastructure lifecycle.
- Achieve consistent standards for a connected, safe network of facilities, across both State and Local Government roads.

5 Rationale

This policy acknowledges that cyclists will use Transport and Main Roads assets, both along the road transport network and when accessing public transport stops and stations. Transport and Main Roads has an obligation to provide a safe environment for cycling on its facilities and can achieve this through context sensitive planning, design and operation.

The policy is consistent with the priorities of the State Government and the department's long-term strategic direction as documented in the *Transport Coordination Plan 2008 – 2018*. Objective 4 of the *Transport Coordination Plan* is:

Increasing the share of trips made by public transport, walking and cycling and providing alternatives to private car use.

Provision of safe, direct and continuous cycling facilities and end-of-trip facilities, as facilitated by this policy, is a fundamental requirement for achieving this objective.

This policy integrates cycling into each stage of the transport infrastructure process to increase the performance of transport assets, provide efficient and safer roads and deliver the best value for money outcomes for the State Government

Completed cycle network can extend the life of transport assets by moving people more efficiently. Providing competitive transport options can limit traffic demand and lower the cost of living for families.

6 Benefits

- Cycling facilities are delivered in the most efficient, cost effective manner to avoid costly retrofits at a later date.
- Smoother operation, performance and safety of the road and transport network by separating vehicles travelling at different speeds.
- More efficient use of infrastructure, by providing additional throughput capacity, particularly at intersections during peak period demand.
- Engineering capability is developed for the provision of cycling facilities in planning, development, delivery and network operation.
- Cycling is catered for in corridor preservation and acquisition.
- TMR planning and investment frameworks align with the federal government's National Urban Policy and funding goals.

7 Definitions

Term, abbreviations and acronyms	Definition
Explicitly provide	Explicit provision includes a range of infrastructure including: • marked bicycle lanes; • bicycle paths including separated cycleways; • shared paths, where pedestrian demand warrants; • bicycle crossings at signals; • way-finding signage; • lighting; • ancillary facilities; and • end-of-trip facilities. End-of-trip facilities include bicycle parking rails, racks or enclosures, and consideration of personal amenities such as storage lockers, showers or change rooms.
Implicitly provide	Implicit provision in urban areas includes elimination of squeeze points, provision of sufficiently wide road shoulders, traffic islands are set back from edge lines, rationalisation of raised reflective pavement markers (RRPMs), provision of wider kerbside lanes and wider transit/bus lanes. In rural areas, sealed shoulders are considered implicit design. Traffic volume determines shoulder width requirements. Refer Austroads Guide to Road design Part 3.
Principal Cycle Route	An arterial level cycling route, which is typically shown in a Principal Cycle Network Plan or other cycle plan to which the Department of Transport and Main Roads is a signatory. Principal cycle routes represent cycling desire lines, indicate the most important routes and known missing links for cyclists within a particular region. In most instances, further corridor investigation work will be required to determine the precise route and desired standard of cycle facility. Principal cycle routes may form a desirable link for both commuter and recreational cyclists.
Alternative Route	A detour involving path(s) or road(s) to improve safety or enhance value for money. The alternative route must be over a comparable distance and provide similar connectivity and level of service to the facility that would have been otherwise provided on the main project. Route legibility is essential; treatments such as way-finding signage may be required to improve alternative route legibility.

8 Background

This policy has been in place on the State Controlled Road network since 2003.

In 2011, the policy was revised to cover all state transport infrastructure (road, rail, bus and pathway).

9 Review

Program Performance and Development will evaluate this policy on behalf of the Policy owner (Roads, Rail and Freight Branch) in consultation with stakeholders Formal evaluation will be undertaken at least every two years to review policy application.

TMR will report on implementation outcomes of this policy (including length of network and value of infrastructure delivered) as part of Cabinet reporting arrangements for the *Queensland Cycle Strategy*.

To provide objective measures of progress, annual asset inventories of the state-controlled roads and transport infrastructure must now also include cycling facilities (including on the road surface and within the wider corridor).

This policy statement will be supported by technical guidelines and resources to facilitate implementation of bicycle facilities on the state-controlled transport network. A list of guidelines and measures is included in the references section.

10 References

DOCUMENTS AND MEASURES TO SUPPORT CYCLING ON STATE-CONTROLLED ROADS

The implementation of the cycling infrastructure policy will be assisted by the following measures and documents.

- *Queensland Cycle Strategy 2011-2021*
- Transport and Main Roads will develop and maintain its expertise in best practice management for cycling, provision and maintenance of cycling facilities, and safety risk management for cycling.
- Principal Cycle Network Plans
- Other local cycle network plans to which Transport and Main Roads is signatory
- The design standards and guidelines applicable to cycling as set out in the *Road Planning and Design Manual, and the Traffic and Road Use Management Manual*
- National design standards and guidelines applicable to cycling (eg *Austroads Guides to Traffic Management and Road Design, Queensland Manual of Uniform Traffic Control Devices*)
- *National Road Safety Strategy*
- Transport and Main Roads *Cycle Notes*
- Australian Bicycle Council (2010), *Why provide cycling facilities for buildings: A fact sheet for developers.*
- Public Transport Infrastructure guidance and policies.
- Queensland Government and Local Government Association of Queensland (2000), *Cost Sharing Based on Responsibilities Within State-controlled Roads.*

Appendix A – Cycling Provision Decision Process