RO 18185

28/01/2015

Attention: Not Relevant

Queensland Government

Altus Traffic Pty. Ltd.
c/- Altus Traffic C/- Energex
Fax: 32924433

Dear

Traffic Control Permit - RO-18185
Ipswich-Rosewood Road (304) ROSEWOOD
Ipswich-Rosewood Road (304) and Rosewood-Warrill View Road (305), Rosewood (between Keanes Rd and Reillys Rd)

Thank you for your application, received 22 January 2015 requesting the Department of Transport and Main Roads' agreement to undertake temporary traffic control on Ipswich-Rosewood Road (304) and Rosewood-Warrill View Road (305), Rosewood (between Keanes Rd and Reillys Rd) for the purpose of removing and replacing power cables.

The Department of Transport and Main Roads (Metropolitan Region, Brisbane Office) would have no objection to the above traffic control permit, subject to the following conditions:

1. Full road closure is not permitted. Shoulder closure on Ipswich-Rosewood Road (304) and Rosewood-Warrill View Road (305), Rosewood (between Keanes Rd and Reillys Rd) in accordance with the final agreed Traffic Management Plan from this Department, **is only permitted between the hours of 8:00am and 6:00pm on all days from Tuesday 03 February 2015 to Tuesday 03 March 2015.**

   The distance between 'reduce speed' and end of taper should be 150-300m. Please use a 2D buffer zone for high speed approaching motorists. The distance D needs to be selected as per Part 3, MUTCD 2003 – sixth edition, depending on the posted speed of the section. Also please use the correct posted speed with the end of roadwork sign. The access to properties need to be maintained. The safety aspects of cyclists and pedestrians if any need to be maintained.

   MG Traffic Services contact , Traffex Pty Ltd contact , Verifact Pty Ltd trading as Men at Work Traffic Control contact are currently working in the vicinity of your proposed works. To avoid conflicts between these works it will be necessary to contact the above contractors regarding the timing of the works. This department will not be responsible for any delays or bear any costs incurred by the works contractor as a result of works carried out under your proposal. **The temporary 40km/h speed zone shall be no longer than 500 metres with a minimum separation of 1000 metres to other temporary 40km/h speed zones.**

   All traffic lanes are to remain open at all other times.

2. A police permit is to be obtained from Queensland Police Services.

3. Emergency Services, including Police, are to be notified of the traffic control by fax on (07) 3239 0934.

4. Traffic control devices are to be implemented in accordance with the provisions of Part 3 of the Queensland Manual of Uniform Traffic Control Devices (2010). Where traffic control occurs, qualified Traffic Controllers are to be engaged to assist in the traffic control.

5. The Applicant must notify the Traffic Management Centre by telephone (3292 6095) at the following times:
   - One hour prior to implementation of the Traffic Management Plan
   - Immediately in the event of any unexpected disruption to traffic or a traffic incident at or near the site
   - Immediately prior to departure of site after all traffic control devices are removed

6. The Traffic Controller is to monitor the surrounding traffic flow. Should there be significant queuing, the Traffic Controller is to advise the contractor to clear the lane and allow the traffic queues to clear before resuming work on the lane. The lane is not to be used for stockpiling of material unless otherwise specified by the Department of Transport and Main Roads.

7. Any amendments to the original Application and Traffic Management Plans are to be provided to the Department of Transport and Main Roads, PO Box 70, Spring Hill QLD 4004, at least five (5) working days prior to commencement of work. Alternatively, the amended Application and Traffic Management Plans can be faxed to (07) 3832 4984, at least five (5) working days prior to commencement of work.

8. The State of Queensland, acting through the Department of Transport and Main Roads, is indemnified in writing against any claim whatsoever, by Deed of Indemnity supplied by your company.

9. The Department of Transport and Main Roads does not accept any responsibility for damage to or repair work resulting from the activities carried out by the approved applicant or a person acting on behalf of the approved applicant.

10. Following completion of the works, the road is to be left in a neat and tidy manner, to the satisfaction of the Regional Director's nominated representative.

11. The contractor for the work is required to adhere to the necessary conditions as specified by this Department. A copy of the conditions is to be obtained from the Client, prior to commencement of work, and kept on site by the contractor for the full duration of the work.

12. In reference to the approved conditions for these works in State-controlled roads, the Department of Transport and Main Roads has appointed the Client, who has commissioned these works, or its approved contractor performing the works to be appointed Principal Contractor.

13. Subsequently, as the appointed Principal Contractor, you are required to meet the obligations of the Work Health and Safety Act 2011. You are authorised to have management and control of the workplace and are responsible for discharging your duties in relation to work, health and safety matters regarding the workplace. You are responsible for ensuring all risks to health and safety are eliminated as reasonably practicable, and required to consult with the Superintendent in relation to matters of safety that cannot be resolved.

Yours sincerely

Not Relevant

Andrew Wheeler
DIRECTOR SEQ ROAD OPERATIONS
Brisbane Office
Metropolitan Region

Metropolitan Region
Brisbane Office
183 Wharf Street
Spring Hill Qld 4000
PO Box 70 Spring Hill Queensland 4004
ABN 57 836 727 711

Our ref E Ref1-
Your ref
Enquiries Permits Team
Telephone +61 73066 5511
Facsimile +61 73832 4984
Website www.tmr.qld.gov.au

RO 18185

FW: Amended - New RO18185 - Permit Application for Ipswich Rosewood Rd Rosewood
Lekamwasam Liyanage N PushpaKumara
28/01/2015 08:15 AM
To:
permits.bne@tmr.qld.gov.au
Cc:
Kamal M Weerasooriya
Hide Details
From: Lekamwasam Liyanage N PushpaKumara <Lekamwasam.Liyanage.N.PushpaKumara@tmr.qld.gov.au>
To: "permits.bne@tmr.qld.gov.au" <permits.bne@tmr.qld.gov.au>
Cc: Kamal M Weerasooriya <Kamal.M.Weerasooriya@tmr.qld.gov.au>

2 Attachments

23012015135154-0001.pdf 23012015142519-0001.pdf

The distance between 'reduce speed' and end of taper should be 150-300m. Please use a 2D buffer zone for high speed approaching motorists. The distance D needs to be selected as per Part 3, MUTCD 2003 – sixth edition, depending on the posted speed of the section. Also please use the correct posted speed with the end of roadwork sign. The accesses to properties need to be maintained. The safety aspects of cyclists and pedestrians if any need to be maintained.

Time from 08:00 to 18:00 is approved

Pushpa PushpaKumara
Senior Engineer (Civil) | Metropolitan Region / Brisbane Office
Program Delivery & Operations | Department of Transport and Main Roads

Floor 10 | 313 Adelaide Street| Brisbane Qld 4000
PO Box 70 | Spring Hill Qld 4004
P: (07) 30665681 | F: (07) 32206071
M: Not Relevant
E: lekamwasam.liyanage.n.pushpakumara@tmr.qld.gov.au
W: www.tmr.qld.gov.au

From: Kamal M Weerasooriya
Sent: Tuesday, 27 January 2015 3:38 PM
To: Lekamwasam Liyanage N PushpaKumara
Subject: FW: Amended - New RO18185 - Permit Application for Ipswich Rosewood Rd Rosewood

FYA

Kind regards,

Kamal Weerasooriya
Engineer (Civil) | Metropolitan Region / Brisbane Office
Program Delivery & Operations | Department of Transport and Main Roads

Floor 10 | 313 Adelaide Street | Brisbane Qld 4000
PO Box 70 | Spring Hill Qld 4004
P: (07) 3066 5850 | F: (07) 3220 6071
E: kamal.m.weerasooriya@tmr.qld.gov.au
W: www.tmr.qld.gov.au

From: Amy K Rodgers **On Behalf Of** Metropolitan Permits
Sent: Tuesday, 27 January 2015 3:30 PM
To: Kamal M Weerasooriya

Cc: Cameron J Messer
Subject: Fw: Amended - New RO18185 - Permit Application for Ipswich Rosewood Rd Rosewood

Hey kamal

Attached is application. May you please give comment if required.

Thanks

Kind Regards,

Metropolitan Permits
Metropolitan Region | Brisbane Office
Program Delivery & Operations | Department of Transport and Main Roads

Floor 10 | 313 Adelaide Street | Brisbane Qld 4000
PO Box 1412 | Brisbane Qld 4001
P: (07) 3066 5512 | F: (07) 3832 4984
E: metropolitan.permits@tmr.qld.gov.au
W: www.tmr.qld.gov.au
Tomorrow's Queensland: strong, green, smart, healthy and fair – www.towardQ2.qld.gov.au
| Please consider the environment before printing this email
----- Forwarded by Amy K Rodgers/SouthEast/QMR/Au on 27/01/2015 03:29 PM -----

From: Not Relevant @altustraffic.com.au>
To: <metropolitan.permits@tmr.qld.gov.au>
Date: 23/01/2015 02:30 PM
Subject: Amended - New RO18185 - Permit Application for Ipswich Rosewood Rd Rosewood

Hi,

Please find UBD Map attached.

Apologies for not supplying this originally.

Regards,

Kind Regards,

@altustraffic.com.au

T 07 3292 4400 | F 07 3292 4433

www.altustraffic.com.au

On 23 January 2015 at 14:04, [Not Relevant]@altustraffic.com.au> wrote:

Hi,

Please find permit application attached.

Kind Regards,

[ ] [ ]@altustraffic.com.au

T 07 3292 4400 | F 07 3292 4433

www.altustraffic.com.au

(See attached file: 23012015135154-0001.pdf)(See attached file: 23012015142519-0001.pdf)

Metropolitan Region

Road Operations Traffic Management Centre	Approval Issue Date: 28/01/2011
Traffic Control Application	**TM04F01**

Details of Application

Application Type	☐ Notification (for existing Transport and Main Roads Contract) ☒ New Application ☐ Amendment or Extension to Existing Application [ ] (Initial Permit Number)			**NOTE** This application must be submitted for approval a minimum of 10 working days to allow time for processing. An incomplete application or an application submitted by a non-registered traffic management company will not be processed.	
Applicants performing work	Altus Traffic Control on behalf of Energex Include Sub-contractor, Contractor and Principal Contractor			**ABN**	84 102 768 061
Applicant's Contact Detail	Not Relevant			**Telephone**	
Authorised Representative of Applicant	Single point of contact for the processing of the application			**Mobile**	
Email	@altustraffic.com.au	**Telephone**	3292 4400	**Fax**	3292 4433
Emergency Site Contact				**Mobile**	
Traffic Controller	Altus Traffic Control			**Registration Number**	26

Proposed Works requiring Transport and Main Roads agreed Letter of No Objection with conditions to be attached to the application

Type of Work For Third Parties (tick appropriate box)	☐ **Works** (e.g. Public Utility Works, Development Control Works and Corridor Access for other works). ☒ **Maintenance Works** (e.g. repairs, inspections, maintenance impacting on traffic flow). ☐ **Transport and Main Roads Pre Construction** (Public utilities works). ☐ **Events** (Cycle Events, Charity Walks, Festivals etc)

General description of activity requiring traffic control (include type of activity, specific works requiring traffic control and broad description of the overall job)

Removing and replacing power cables

Road Name(s)	Ipswich Rosewood Rd	**Suburb**	Rosewood	**UBD Reference**	

Does this work affect Wide Load and/or Weight Restrictions: ☐ **Yes** (provide information below) ☒ **No** (no further action)

Details Required:

Available Width **Available Height** **Maximum Mass**

General description of location requiring traffic control (include any specific requirements as contained in the Traffic Control Plan)

Btwn Keanes Rd & Rilies Rd

Lanes Closed 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○

Other: SHOULDER

Direction of Closure (Select one or more)

☐ North Bound	☐ Northeast Bound
☒ East Bound	☐ Southeast Bound
☐ South Bound	☐ Southwest Bound
☒ West Bound	☐ Northwest Bound
☐ In Bound	☐ Out Bound

Metropolitan Region

Road Operations Traffic Management Centre	Approval Issue Date: 28/01/2011
Traffic Control Application	**TM04F01**

Requested Dates	From: 03/02/2015	To: 03/03/2015	☒ Traffic Control undertaken on weekdays and/or	
Requested Hours	From: 0800	To: 1800	☒ Traffic Control undertaken on weekends	
Total estimated duration of work requiring Traffic Control		2 weeks	days	hours

Mandatory Attachments (tick to confirm the following have been completed and included with application) :

☒ **Traffic Guidance Scheme** A traffic control plan (minimum size A4 with sufficient locality details) that details the devices to be implemented in accordance with the provisions of Part 3 of the Queensland Manual of Uniform Traffic Control Devices (current edition).

☒ **Indemnity** A signed Traffic Control Indemnity Form (not required where the Applicant has a current and applicable Memorandum of Understanding between the Department of Transport and Main Roads and the Applicant and Deed of Indemnity in place).

☒ **Insurance** A copy of a certificate of public liability insurance cover with a reputable insurer for an amount not less than $10 million, to provide cover to third parties as a result of activities associated with granting the approval (not required where applicants have a current and applicable Memorandum of Understanding between the Department of Transport and Main Roads and the Applicant in place).

☒ **Street Map** A photocopy of a street directory map, or equivalent, showing the location of the works.

☐ **Appointment of Principal Contractor – Form 34** A copy of the Form 34 which has been lodged with Workplace Health and Safety Queensland is to be provided if the final price of the work is over $80,000. This form can be obtained via the Department of Industrial Relations website: http://www.deir.qld.gov.au/workplace/resources/pdfs/principalcontractor_form1995.pdf

Definition of Principal Contractor - Section 13 *Workplace Health &Safety Act 1995* provides:
*(1) The **principal contractor** for construction work, other than prescribed construction work, is the person appointed by the client as the principal contractor for the construction work under section 184A;*
(2) If the client does not appoint a principal for the construction work, the client is taken to be the principal contractor for the construction work; and
*(3) The **principal contractor** for prescribed construction work is the person who is in control of the prescribed construction work.*

☐ **Works confirmation letter** Applications relating to works must include a copy of Transport and Main Roads works confirmation letter. Please include the department's correspondence reference number (E ....)

Conditions of Application:

1. The signatory warrants that he/she is authorised to sign on behalf of the Applicant.
2. No Works/Maintenance/Event shall commence until an approved signed Traffic Control Permit is issued and received by the Applicant.
3. The Queensland Department of Transport and Main Roads does not accept any responsibility for damage to or repair work resulting from the activities carried out by the approved Applicant or a person acting on behalf of the approved Applicant.
4. The Applicant is responsible for all aspects of site control and safety.
5. The Applicant must notify the Brisbane Metropolitan Traffic Management Centre (BMTMC) by telephone **(3292 6095)** at the following times:
   - One hour prior to implementation of the Traffic Guidance Scheme;
   - Immediately in the event that there is any unexpected disruption to traffic or a traffic incident at or near the site; and
   - Immediately prior to departure of site after all traffic control devices are removed.

Upon receipt of a Traffic Control Permit:

1. The Applicant must ensure the Traffic Control Permit is available for inspection at the work site during the traffic control.
2. The Applicant must notify the respective Local Authority where local roads are affected by the traffic control.
3. The Applicant must notify Emergency Services of the traffic control by facsimile.
4. The Applicant must engage qualified Traffic Controllers to assist in the traffic control. The Traffic Controller is to monitor the surrounding traffic flow. Should there be significant queuing, the Traffic Controller is to advise the contractor to clear the lane and allow the traffic queues to clear before resuming work on the lane. The lane is not to be used for stockpiling of material unless otherwise specified by Transport and Main Roads.
5. On completion of the works, the road is to be left in a neat and tidy manner, to the satisfaction of the Regional Director's nominated representative.

The Applicant must adhere to the necessary conditions as specified by the Queensland Department of Transport and Main Roads. A copy of the conditions is to be obtained from the Principal (asset owner) or Contractor prior to commencement of work and kept on site for the duration of the work.

Signature of Authorised Representative of Applicant	Date	Office Use Only	
Not Relevant	22/1/15	Traffic Control Permit Number	

Recommended	Date	Approved (Delegate of the Director-General)	Date

Queensland Government

Submit application either by:

Fax: (07) 3137 8363
Email: metropolitanregion@tmr.qld.gov.au
Post: PO Box 70 Spring Hill, Qld 4004

Background Information: Transport and Main Roads has a lane closure database for recording all approved lane closure locations and contractors details. This enables Transport and Main Roads to notify the contractor in short notice to clear the site at times of an emergency to allow through access of emergency vehicles.

Queensland Government

TRAFFIC CONTROL INDEMNITY FORM

DEED OF INDEMNITY

Not Relevant

Not Relevant

CERTIFICATE OF CURRENCY

Not Relevant

ABN 84 102 768 061
Altus Traffic Pty Ltd
address: 71 Raubers Rd, NORTGATE Qld 4013
postal address: 71 Raubers Rd, NORTGATE Qld 4013
telephone: 07 3292 4400 facsimile: 07 3292 4433
web: www.altustraffic.com.au

Client Information:

1. **Client: Energex**
2. **Contact Number:** Not Relevant
3. **Date: 22 January 2015**

Traffic Considerations for the Traffic Guidance Scheme:

1. **M.U.T.C.D PART 3:** The Traffic Guidance Scheme will be implemented in accordance with the MUTCD Part 3 2003 Edition "Works on Roads" Sixth Issue 2014
2. **Scope of Works/Work Method:** Energex will be removing and replacing power cables between poles P12081 & P12184.
3. **Day/Night Works**: Will occur during approved hours.
4. **Work Site**: Ipswich Rosewood Rd, ROSEWOOD between Keanes Rd & Reillys Rd Work site shall be in accordance with the MUTCD Part 3 2003 Edition "Works on Roads" Sixth Issue 2014 at all times.
5. **Speeds**: The current posted speed limit on Ipswich Rosewood Rd is 50/60 km/h and will be reduced to 40 km/h where workers are less than 1.2m to a trafficked lane, for the duration of the works. Posted speed limit shall be reinstated at the completion of the works.
6. **Signage Set-up/ Recovery**: All signage/devices will be set up and recovered in accordance with clause 2.5.3 of the MUTCD Part 3 2003 Edition "Works on Roads" Sixth Issue 2014.
7. **Signage Placement:** All signage/devices including side streets will be in accordance to Diagram 10 of the MUTCD Part 3 2003 Edition "Works on Roads" Sixth Issue 2014. Signage and device shall be installed and recovered by a competent person (Level 2 or higher in Traffic Management)
8. **Signage:** All signage/devices conforms in size and reflectivity to the MUTCD Part 3 2003 Edition "Works on Roads" Sixth Issue 2014 and AS1742.4
9. **Pedestrians**: When pedestrian access is required on site, it will be controlled by accredited Traffic Control Officers in accordance with the MUTCD Part 3 2003 Edition "Works on Roads" Sixth Issue 2014 and the Traffic Controllers Accreditation Scheme 2011 edition.
10. **Business/Property Access:** Existing access to property and business will be maintained.
11. **Emergency Vehicles – Police/Fire/Ambulance:** Wherever possible emergency vehicles will be given right of way through the worksite. If worksite is under stop/slow conditions, emergency vehicle delays will be kept to a minimum by stopping all traffic an alerting workers to incoming emergency vehicle over 2 way radio.

SHORT TERM - SHOULDER CLOSURE - TWO WAY ROAD

www.invarion.com

40 km/h - 60 km/h Roads

Based on Diagram 10

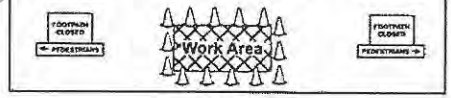
Notes:

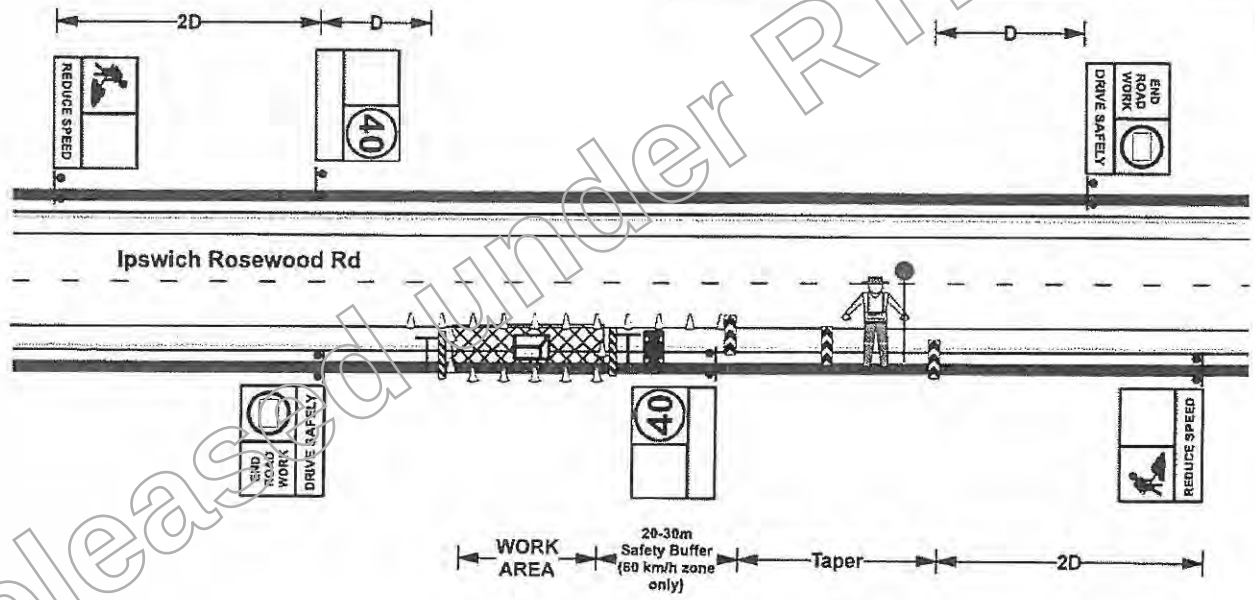
- End Road Work signage to have posted speed limit reinstated as per MUTCD clause 4.9.7
- 40 km/h signs to be removed if workers are more than 1.2 m clear of the travel path as per MUTCD clause 4.2 (c) (iii)
- If a side road approach enters the work site, additional signage will be required as per generic Side Road Approach A & B
- Any changes to this TGS will require consultation with a Level 3. Changes to be noted on the TGS as per MUTCD Appendix K3

Table 4.2 - Value of Dimension D

Posted Speed Limit	Dimension D m	Taper Length m
40	5 to 10	15
50	10 to 15	15
60	15 to 45	30

Pedestrian control at the worksite to be appropriately managed as per MUTCD clause 2.3.7 & 2.3.8





N NOT TO SCALE	ALTUS TRAFFIC Safely Managing Risk PH: (07) 3292 4400 FAX: (07) 3292 4433 EMAIL: qld_operations@altustraffic.com.au	M.U.T.C.D. DIAGRAM NO: 10 SIGNAGE ERECTED IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PART 3 "WORKS ON ROADS 2014", SIXTH ISSUE SIGN POSITIONING: As per Clause 2.5.2 M.U.T.C.D Part 3 Sixth Issue CONE SPACING: As Per Table 3.7 M.U.T.C.D Part 3 Sixth Issue	Shoulder Closure on Ipswich Rosewood Rd, ROSEWOOD between Keanes Rd & Reillys Rd to allow Energex to remove and replace power cables between poles P12081 & P12184	energex CONTACT: Charlie Millers M: 3664 8766 E:	DRAWN BY: Not Relevant ISSUE DATE: 22/01/2015 TCP NO: 15-0294M RevA

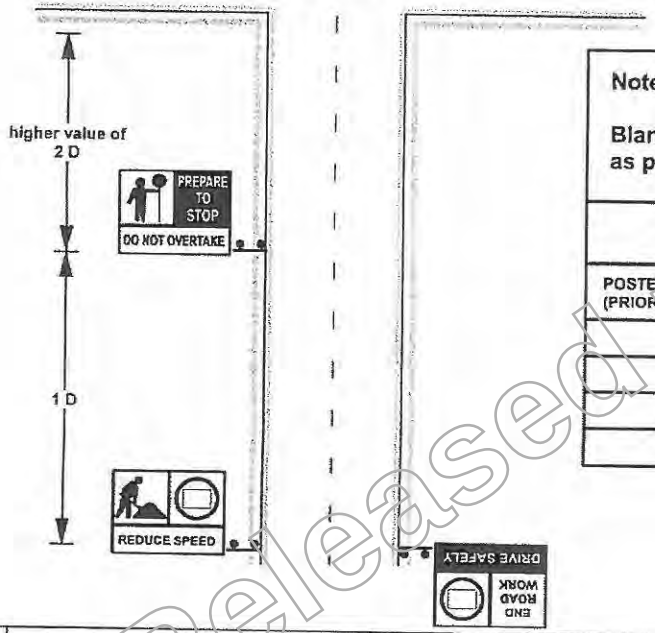
SIDE ROAD APPROACHES - ALL DIAGRAMS

www.invarion.com

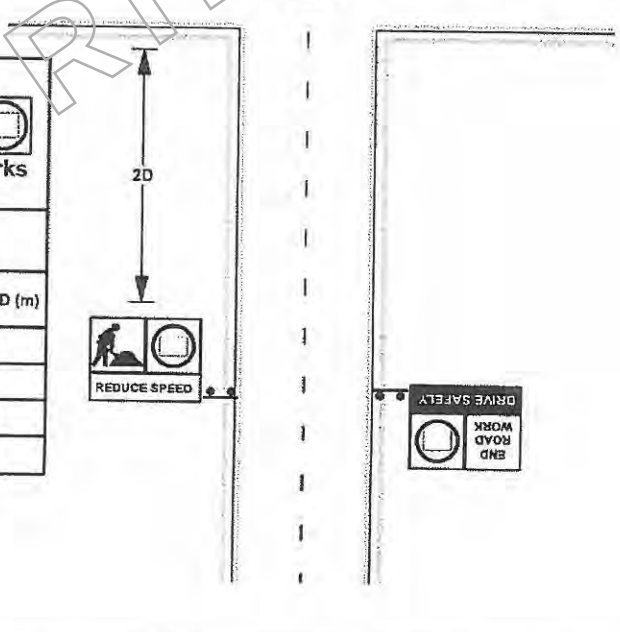
Notes:

- Any changes to this TGS will require consultation with a Level 3.
  Changes to be noted on the TGS as per MUTCD Appendix K3

Side road approach between Flagman signage and Traffic Controller



Side road approach between Workman signage and Flagman signage (if present) or worksite



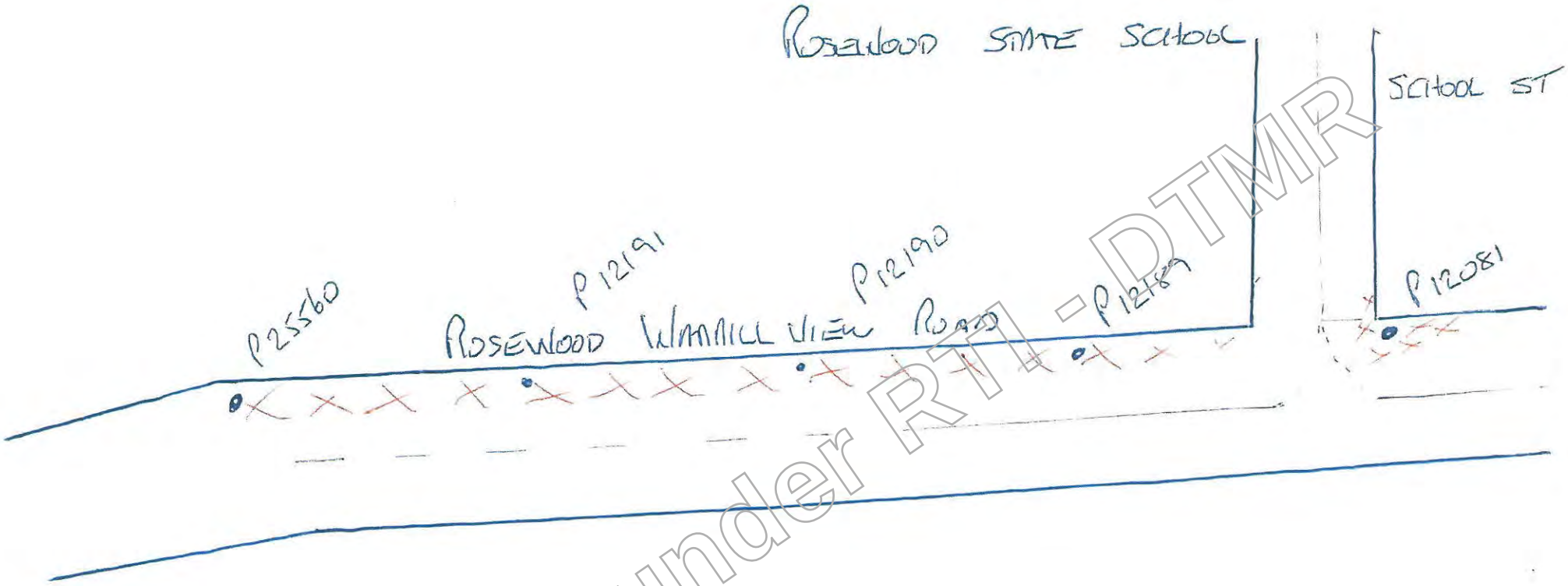
Note:

Blank speed inserts to be filled as per posted limit before roadworks

TABLE 4.2 VALUE OF DIMENSION D

POSTED SPEED LIMIT (PRIOR TO ROADWORKS) (km/h)	DIMENSION D (m)
40 OR LESS	5 TO 10
50	10 TO 15
60	15 TO 45
70,80	60 TO 80

NOT TO SCALE	ALTUS TRAFFIC *Safely Managing Risk* PH: (07) 3292 4400 FAX: (07) 3292 4433 EMAIL: qld_operations@altustraffic.com.au	SIGNAGE ERECTED IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PART 3 "WORKS ON ROADS 2014". SIXTH ISSUE SIGN POSITIONING: As per Clause 2.5.2 M.U.T.C.D Part 3 Sixth Issue CONE SPACING: As Per Table 3.7 M.U.T.C.D Part 3 Sixth Issue	Side Road Approaches	energex CONTACT: - M: E:	DRAWN BY: Not Relevant ISSUE DATE: 09/10/2014 TCP NO: -



ROSEWOOD WAMILL VIEW ROAD

ROSEWOOD

210 B15

REFUSE POWER CABLES BTN P25560 TO P12081

RO-18251

Metropolitan Region

Program Delivery
Construction Delivery

Approval
Issue Date: 01/11/2010

Notification of Approved Works/Event within Boundaries of State Controlled Roads

CD09F01

Fax To:	3137 8363	Reference Number: 830/00465	Date: 11/02/15
Maintenance or DMR Scheme No: RMPC			
DMR Officer approving lane closure:		Signature: Not Relevant	
Name: Lance Rose		Phone number: (07)38106930	

Does the lane closure adhere to Metropolitan Region policy and the MUTCD? ☒ YES
Have you checked the Metropolitan Region Guide to Lane Closure Restrictions for Correct Times? Refer to http://haltcserver/Analysis/LCR/LaneClosureRestrictions.aspx ☒ YES

1. APPROVAL DETAILS

Applicant:	**Ipswich City Council** (Principal Contractor/Company)			**ABN:**	
Authorised Representative of Applicant:	**Lance Rose** (Single point of contact for the processing of the Application)			**Mobile:**	
Email:	LRose@ipswich.qld.gov.au	**Telephone:**	(07) 38106930	**Fax:**	(07) 38120 406

2. NATURE OF WORK

General description of activity requiring traffic control (include type of activity, specific works requiring traffic control and broad description of the overall job)

Failure repairs from O'Neills Rd int. AMBERLEY to School St ROSEWOOD.

Road Name: Ipswich Rosewood Rd Road Number: 304

UBD Reference: Map 231 L14 - Map 210 B15 Suburb: AMBERLEY - ROSEWOOD

General description of location requiring traffic control (include any specific requirements as contained in the Traffic Control Plan)

Failure repairs from O'Neills Rd int. AMBERLEY to School St ROSEWOOD.

3. WIDE LOAD/ WEIGHT RESTRICTIONS

Available Width: Available Height: Weight: No Restrictions: ☒

4. CLOSURE TIMES

Lanes Closed 0 ☐ 1 ☒ 2 ☐ 3 ☐ 4 ☐ **Traffic Control Undertaken on:** ☒ Weekdays ☐ Saturday ☐ Sunday

Direction of Closure (Select one or more)

☐ North Bound ☐ South Bound ☐ East Bound ☐ West Bound ☒ In Bound ☒ Out Bound

Requested Dates	From: 16/02/15	To: 27/03/15
Requested Hours	From: 0700	To: 1700

Total Expected Duration of Traffic Control: Weeks 30 Days Hours ☐ **24 Hour Closure**

5. TRAFFIC CONTROLLER DETAILS (Contact must be available 24hrs during traffic control)

Emergency Contact:	MG Traffic Control	**Mobile:**	
Traffic Controller:		**ABN:**	

Notes:

1. **This form must be submitted a minimum of 7 days prior to the start date of the Works/Event. Late applications will not be processed.**
2. **Exact start and finish times of the Works/Event should be confirmed with the Brisbane Metropolitan Traffic Management Centre (ph 3292 6095 or fax 3292 6054) by 5pm the day before each work cycle is**

(No records on Page 2)

Queensland Government
Department of Main Roads

South East Queensland Region – Metropolitan District

Traffic Operations
Traffic Safety and Performance

Approval
Issue Date: 22/01/2002

Proposed Modifications to Speed Zoning

TS01F01

Shire/City: Ipswich City Council

Road: Rosewood Warrill View Road (305)

Location: Ipswich Rosewood Road to south of Bremer River – 0.0 to 1.025

Existing Speed: 60 **Proposed Speed:** 60

It is hereby agreed by the undersigned that the proposed modification to the existing speed limit zoning be implemented.

	Yes	No	Signature	Date
Department of Main Roads (Metropolitan)	☒	☐	Not Relevant	14/05/10
Queensland Police Services	☐	☐		
Local Government	☒	☐		4-6-10
Queensland Transport (Land Transport & Safety)	☐	☐		

☒ No change to speed limit in accordance with the criteria of the Speed Control Guidelines.

☐ Change to speed limit in accordance with the criteria of the Speed Control Guidelines.

☐ Change to speed limit in accordance with the criteria of the Speed Control Guidelines with the following criteria:

Queensland Government

South East Queensland Region – Metropolitan District

Traffic Operations
Traffic Safety and Performance

Approval
Issue Date: 22/01/2002

Proposed Modifications to Speed Zoning

TS01F01

Shire/City:	Ipswich City Council
Road:	Rosewood Warrill View Road (305)
Location:	South of Bremer River to 780m past Blanchs Road (Shire Boundary) – 1.025 to 10.12
Existing Speed:	100
Proposed Speed:	100

It is hereby agreed by the undersigned that the proposed modification to the existing speed limit zoning be implemented.

	Yes	No	Signature	Date
Department of Main Roads (Metropolitan)	☒	☐	Not Relevant	
Queensland Police Services	☐	☐		
Local Government	☒	☐		4-6-10
Queensland Transport (Land Transport & Safety)	☐	☐		

☒ No change to speed limit in accordance with the criteria of the Speed Control Guidelines.

☐ Change to speed limit in accordance with the criteria of the Speed Control Guidelines.

☐ Change to speed limit in accordance with the criteria of the Speed Control Guidelines with the following criteria:

Queensland Government
Department of Main Roads

Speed Limit Review

Rosewood-Warrill View Road (305)
From Ipswich-Rosewood Road (Ch0.00)
to 780m west of Blanchs Road (Ch10.12)

Document Control

This report is endorsed by:

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Contents

1 Background

1.1 Introduction

A speed limit review has been undertaken for the Rosewood-Warrill View Road (305) corridor from Chainage 0.00 to 10.12 km, a distance of 10.12 km. The road has been reviewed in accordance with Part 4 of the Manual of Uniform Traffic Control Devices (MUTCD), using a first principles approach considering any road safety implications for a modified speed zone and the Traffic and Road Use Management (TRUM) Manual Technical Note 3.23 for school zones. A number of different variables have been taken into account while undertaking the review which included:

- Environment in which the road is located;
- Pavement;
- Road cross section, shoulder and lane width;
- Horizontal and vertical road alignment;
- Traffic volume, activity and prevailing speeds;
- Frequency of intersections and property access;
- Presence of traffic signals;
- Magnitude of property setback;
- Presence of line marking, channelisation and medians;
- Proximity of roadside hazards and standard of protection; and
- School zones.

TRUM Technical Note 3.23 builds on the requirements of the MUTCD by providing additional information to practitioners to improve road safety by managing traffic and speeds at schools. Drivers need to recognise that children are impulsive, unpredictable and inexperienced, and that caution should be exercised in the vicinity of a school.

The extent of the study area for which the speed limit review was undertaken is shown in Figure 1.1 and Figure 1.2.

Figure 1.1: Extent of Study Area

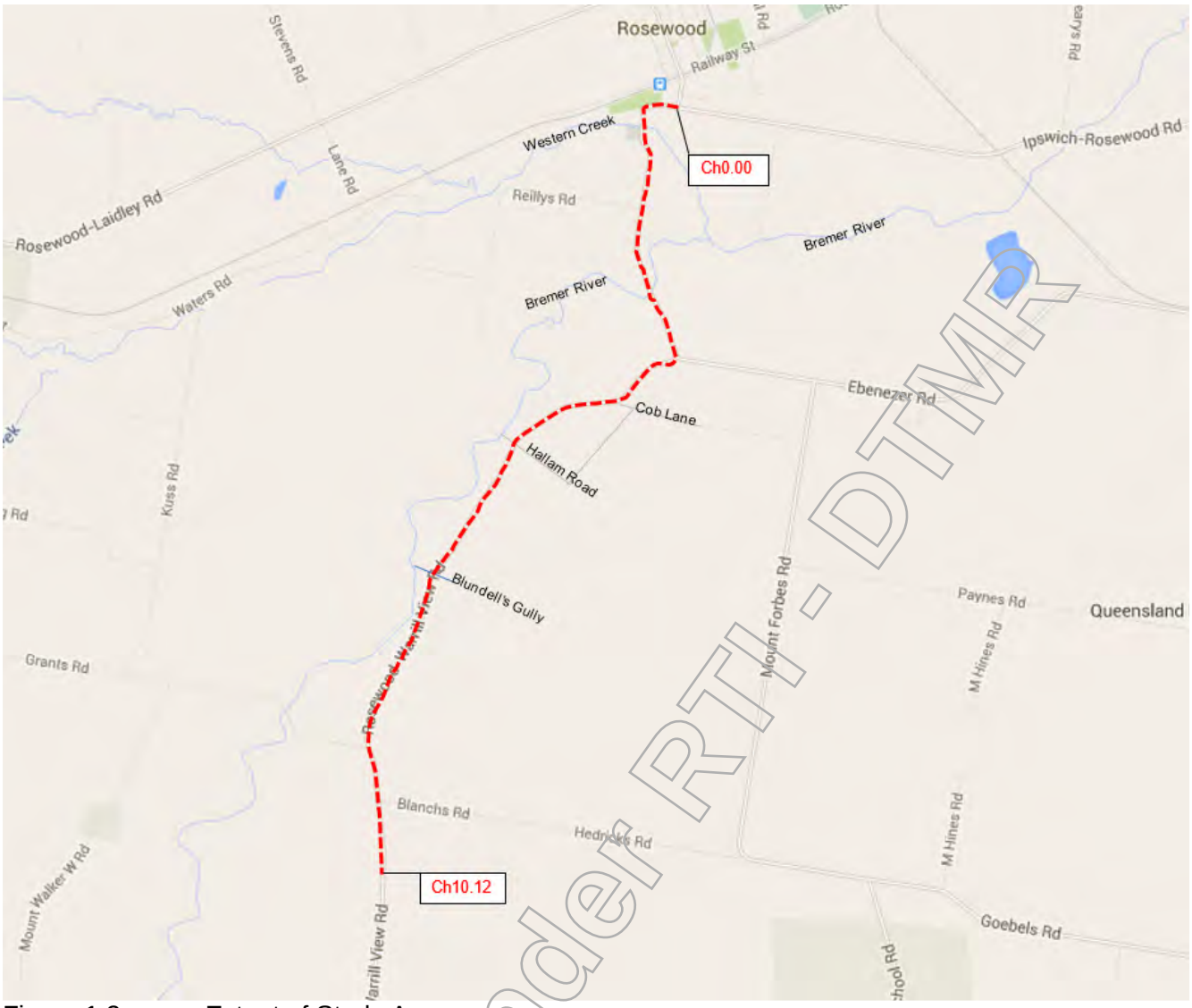

Figure 1.2: Extent of Study Area

1.2 Methodology

The review was developed in accordance with the guidelines and requirements as listed in the Part 4 (seventh issue, 14th March 2014) of the MUTCD.

The main principles in a speed limit review are that:

- Speed limits should be capable of being practically and equitably enforced by use of speed zones of adequate length, by limiting speed limit changes, and by clarity and frequency of speed signposting;
- Speed limits should be set to maintain a balance between a road user's reasonable perception of the speed environment and an acceptable level of environmental amenity for all road users and abutting land users; and
- Speed limits should be set to encourage, as far as practicable, a uniform speed of travel that will reduce the potential for conflicts due to speed differentials between vehicles.

The methodology was structured around the standard procedure for reviewing existing speed limits as follows:

- Stage 1 – Assessment of Road Function
- Stage 2 – Assessment of Prevailing Vehicles Speeds
- Stage 3 – Assessment of Speed Environment
- Stage 4 – Determination of Speed Limit

2 Road Details

2.1 General Information

Road Number:	305
Road Name:	Rosewood-Warrill View Road
Road Environment:	Rural
Road Function	Arterial Road
Road Geometry:	East-West alignment with westbound being Gazettal Direction
Local Government Authority:	Ipswich City Council

2.2 Classification

Rosewood-Warrill View Road (305) is a state controlled road that provides access between the towns of Rosewood, Mount Walker, Coleyville and Warrill View.

The road functional sections for the study corridor are best described as follows:

- Ch. 0.00 to 10.12 km – Rural Arterial.

Rural arterials form the principal avenues for communications between major regions including direct connections between cities, between a capital city and key towns and between key towns.

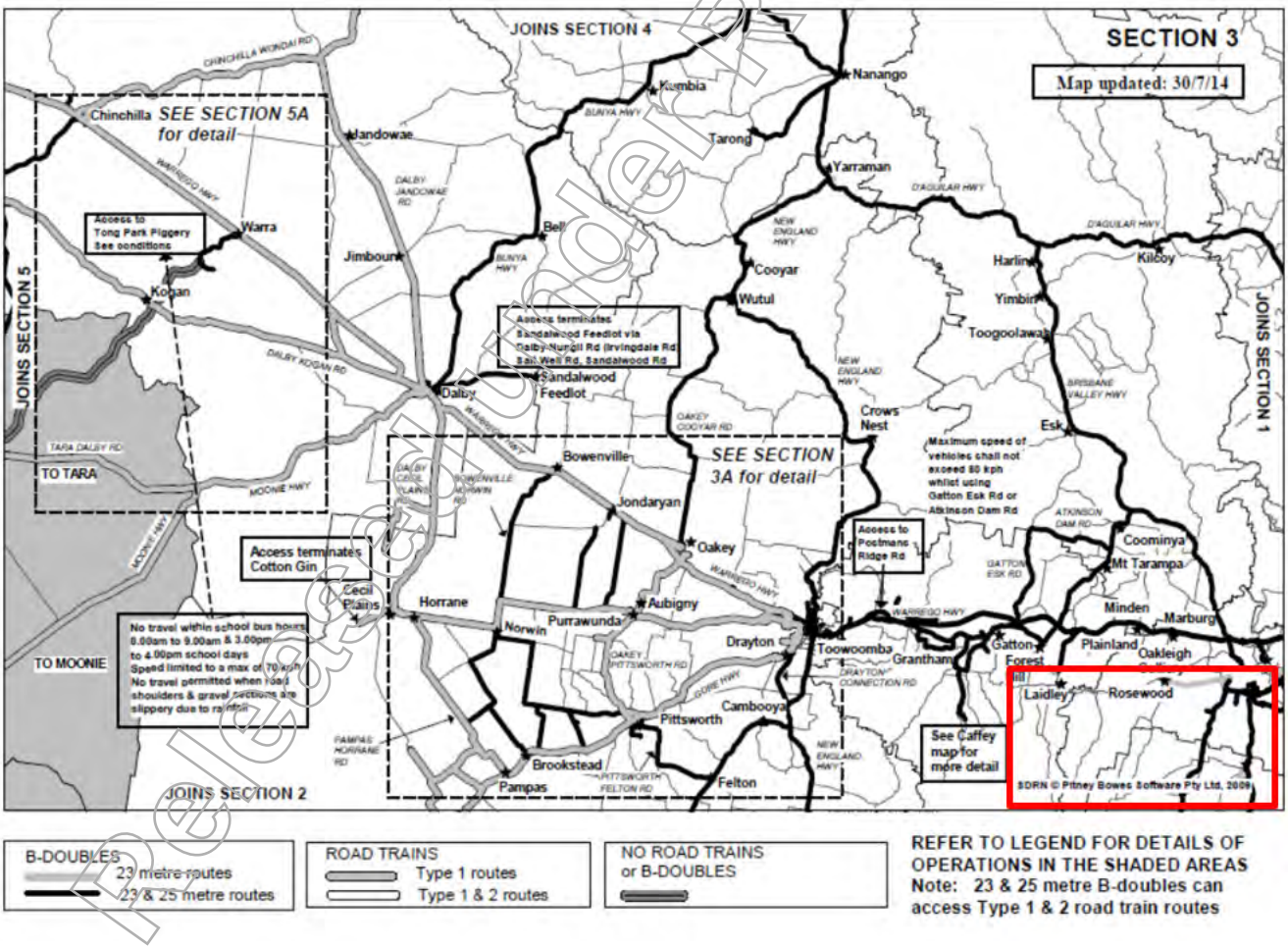

Figure 2.1: Multi-Combination Routes in Queensland (extract from TMR)

2.3 Speed Zone Review

2.3.1 Existing Speed Zone (in section of road under review)

MUTCD – Part 4 Speed Controls outlines the following criteria to be used when defining a roads speed zone/s; road function, prevailing traffic speeds, and speed environment. In applying these criteria the defined speed zones tend to be homogenous in nature and are not necessarily related to the posted speed limit.

A buffer zone is a speed zone of minimal length that is used as a transition between two speed limits that differ by more than 20km/h and they are not recommended in Queensland. Where there is a reduction in the speed limit exceeding 20km/h and there is no change in the speed environment leading up to the lower speed zone, the speed limit ahead sign shall be installed at least 300m of the reduced speed zone. However, where the speed environment between the higher speed zone and the approaching lower speed zone is different and a speed zone of intermediate value can be established, the minimum length of the speed zone shall comply with minimum length of a speed zone as specified in Table 2.3.

On undivided rural roads where the design standard is less than 100 km/h over a length of at least 2km, the use of a lower speed should be considered. The appropriate speed limit should be based on an analysis of the prevailing speed.

At school zones TRUM note 3.23 permits speed limits of 40 km/h, 60 km/h and 80 km/h in school zones. These speed limits are dependent on the speed limit of the road outside school zone times and the amount of school related activity for the higher speed zones.

The speed zones that exist along the Rosewood-Warrill View Road (305) corridor and their location are illustrated in Figure 2.2 and general corridor notes have been provided for each speed zone section in Table 2.1.

Table 2.1: Speed Zone Sections – General Corridor Notes

Speed Zone Section	Start Ch. (km)	End Ch. (km)	Speed (km/h)	General Corridor Notes
A / School Zone	-0.05	0.20	40 (School Zone)	No direct access. Access to the school is located on the adjacent Ipswich-Rosewood Road (304) corridor.
A	0.00	1.00	60	Rural Arterial, one sub-standard horizontal curve at the future intersection, creek crossings, direct property accesses, direct access for the Rosewood sewerage treatment plant. School Zone between Ch-0.05 to Ch0.20, access to the school is located on the adjacent Ipswich-Rosewood Road (304) corridor. 40km/h change of speed zone, increasing from 60km/h to 100km/h in gazettal direction and decreasing from 100km/h to 60km/h in against gazettal direction.
B	1.00	10.12	100	Rural Arterial, the cross section is generally narrow, many sub-standard horizontal curves, flat to rolling vertical alignment. Ebenezer Road intersection, many property access road intersections, direct property accesses. Bridge over the Bremer River, old bridge over Blundell's Gully. 40km/h change of speed zone, decreasing from 100km/h to 60km/h without speed limit ahead signage.

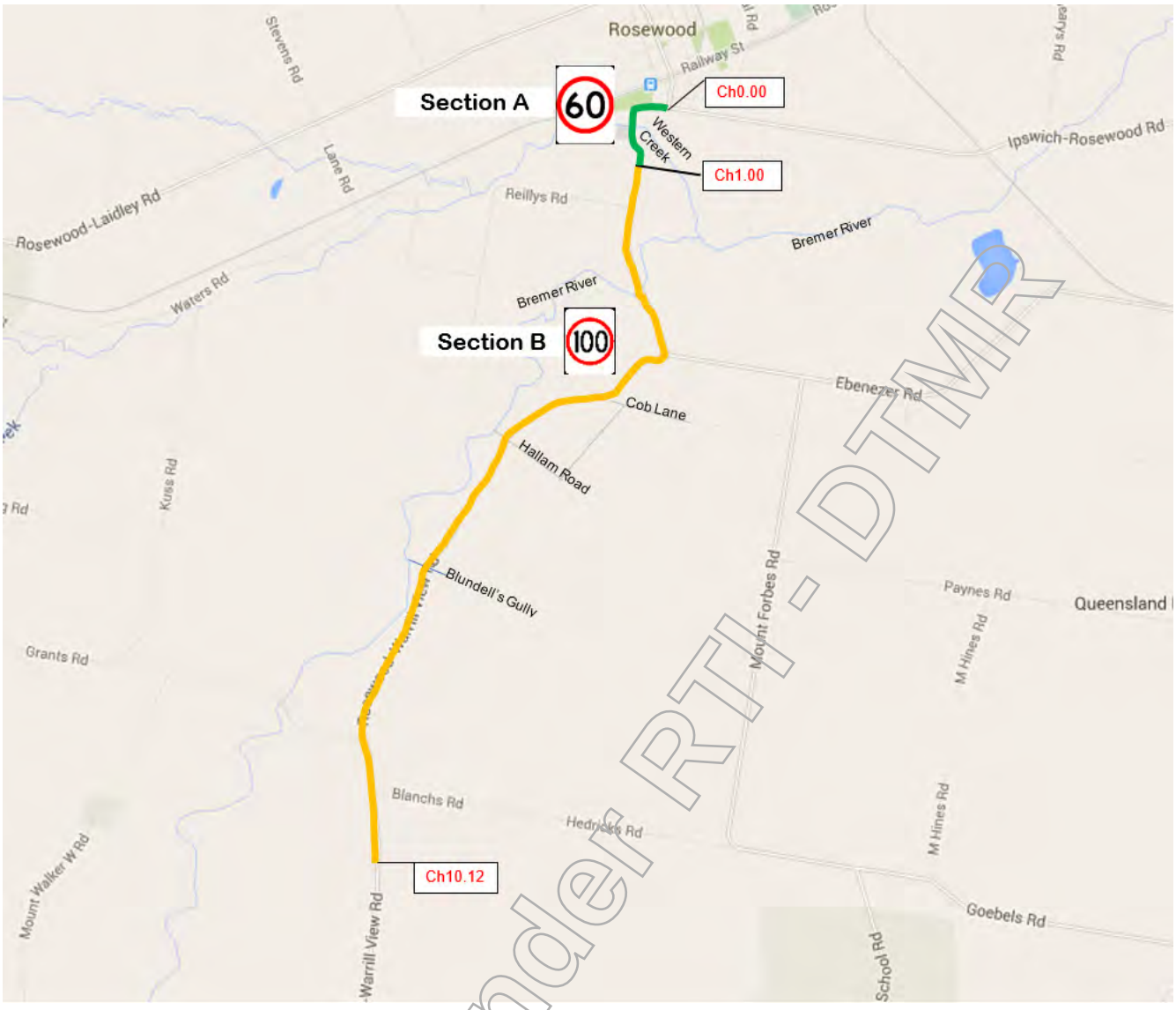

Figure 2.2: Speed Zone Overview of Rosewood-Warrill View Road (305)

The minimum length of a speed zone depends upon the speed limit as specified in Table 2.2.

Table 2.2: Speed Zone – Minimum Length Requirements

Speed Zone (km/h)	Normal Minimum Length (km)	Absolute Minimum Length (km)
40: School zone only	Not Applicable	0.20
60	0.6	Not Applicable
100	3.0	2.0

The length of each speed zone along the Rosewood-Warrill View Road (305) study area has been compared to the minimum required length for its respective speed limit as outlined in Table 2.2. The compliance of the speed zone lengths are outlined in Table 2.3.

Table 2.3: Existing Speed Zone Sections

Section/s	Start Ch. (adj. location)	End Ch. (adj. location)	Existing Speed (km/h)	Zone Length (km)	Zone Length Compliance
School / A	-0.05 (50m east of Ipswich-Rosewood Road)	0.20 (200m west of Ipswich-Rosewood Road)	40 School zone	0.25	Yes
A	0.00 (Ipswich-Rosewood Road)	1.00 (500m east of Reillys Road)	60	1.00	Yes
B	1.00 (500m east of Reillys Road)	10.12 (780m west of Blanchs Road)	100	9.12	Yes

2.3.2 Adjacent Speed Zone

The study corridor starts at the intersection with Ipswich-Rosewood Road (Ch. 0.00 km) and terminates 780m west of Blanchs Road (Ch. 10.12 km). The adjacent speed zones have a sign-posted speed of 60km/h with a 40km/h school zone at the eastern extent (Ipswich-Rosewood Road) and 100km/h at the western extent (Rosewood-Warrill View Road).

2.3.3 Typical Speed Limit for the Road Function

The typical speed limit for Rosewood-Warrill View Road (305) depends upon the general application as specified in Table 2.4.

Table 2.4: Typical Speed Limits for Roads in Rural Environment

Speed Limit (km/h)	General Application for Rural Roads
40	School zone (within 50km/h, 60km/h or 70km/h limit).
60	School zone (within 80km/h, 90km/h or 100km/h limit). Traffic carrying roads with abutting development and >4 accesses / 100m.
70	Traffic carrying roads with abutting development and 2-4 accesses / 100m.
80	Traffic carrying roads with abutting development and 1-2 accesses / 100m. Buffer zone. On undivided rural roads where the design standard is less than 100 km/h over a length of at least 2 km, the use of a lower speed should be considered. The appropriate speed limit should be based on an analysis of the prevailing speed.
90	On undivided rural roads where the design standard is less than 100 km/h over a length of at least 2 km, the use of a lower speed should be considered. The appropriate speed limit should be based on an analysis of the prevailing speed.
100	General rural speed limit.

The existing speed limits of each speed zone along the Rosewood-Warrill View Road (305) study corridor has been compared to the typical speed limits that may be typically expected for roads in a rural environment as outlined in Table 2.4. The compliance of the existing speed limits are outlined in Table 2.5.

Table 2.5: Typical Speed Limit for Speed Zone Sections

Speed Zone Section	Existing Speed (km/h)	Accesses / 100m	Typical Speed Limit (km/h)	Zone Limit Compliance
A	60	2.00	80	No
A / School Zone	40	N/A	40	Yes
B	100	0.53	100	Yes

A buffer zone is a speed zone of minimal length that is used as a transition between two speed limits that differ by more than 20km/h and are not recommended in Queensland. Where there is a reduction in the speed limit exceeding 20km/h and there is no change in the speed environment leading up to the lower speed zone, the speed limit ahead sign shall be installed at least 300m of the reduced speed zone. However, where the speed environment between the higher speed zone and the approaching lower speed zone is different and a speed zone of intermediate value can be established, the minimum length of the speed zone shall comply with minimum length of a speed zone as specified in Table 2.2.

On undivided rural roads where the design standard is less than 100 km/h over a length of at least 2 km, the use of a lower speed should be considered. The appropriate speed limit should be based on an analysis of the prevailing speed.

At school zones TRUM note 3.23 permits speed limits of 40 km/h, 60 km/h and 80 km/h in school zones. These speed limits are dependent on the speed limit of the road outside school zone times and the amount of school related activity for the higher speed zones.

2.4 Signage

2.4.1 Speed Restriction Signage

The locations of the existing speed restriction signage along the route are shown in Figure 2.3.

The Rosewood-Warrill View Road corridor (305) speed restriction signage should be erected on the left side of the roadway where suitable along the corridor. The Rosewood-Warrill View Road corridor (305) speed restriction signage was assessed and identified to be faded and not clearly visible during adverse conditions or at night time. For recommended signage refer to Section 6.1.

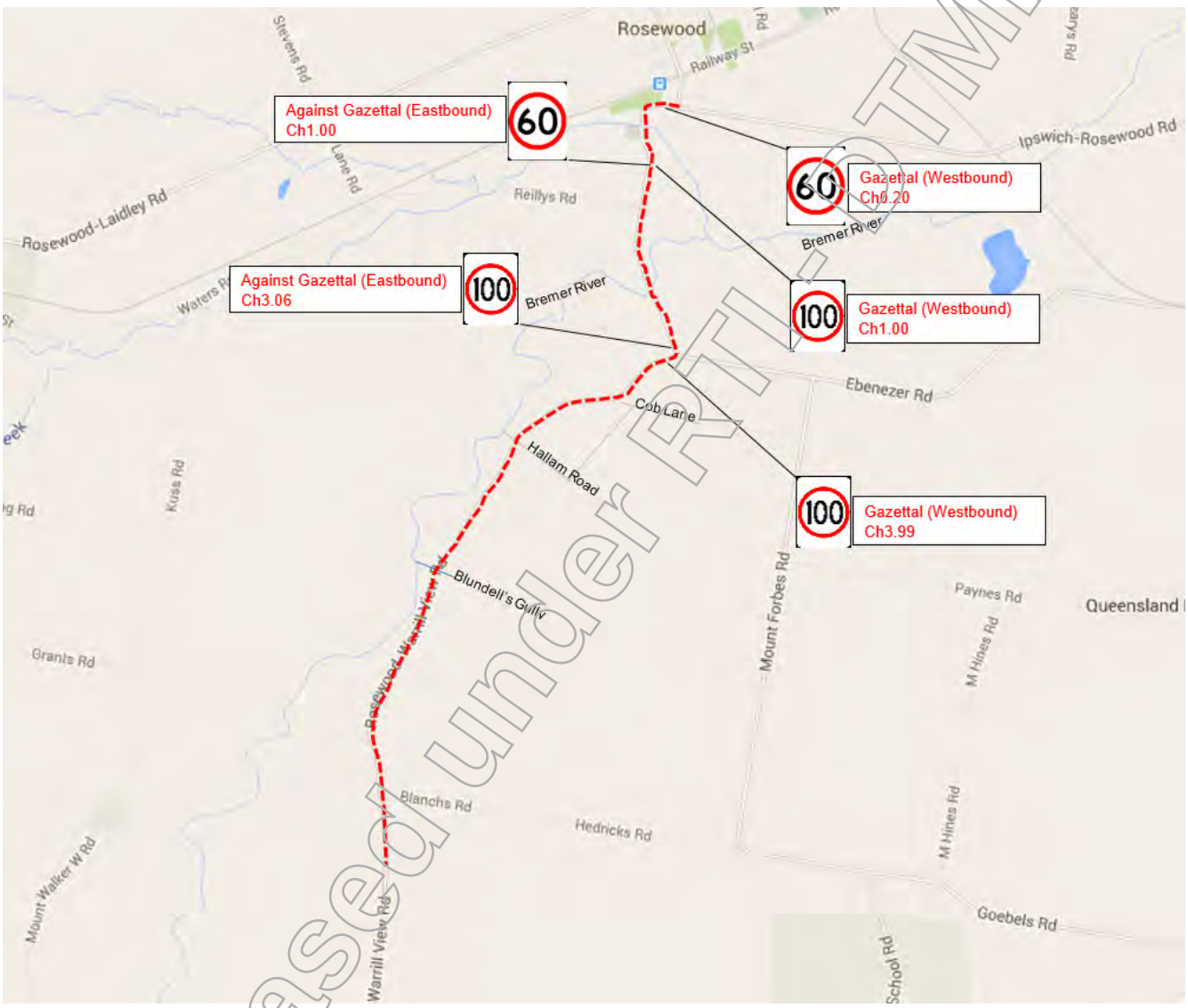

Figure 2.3: Speed Restriction Signs

2.4.2 Advisory Speed Signage

The locations of the existing curve warning and speed advisory signage along the corridor are shown in Figure 2.4.

The Rosewood-Warrill View Road corridor (305) curve warning and advisory speed signage was assessed and signs were identified to be missing, incorrect sign types, inappropriately sized, faded and not clearly visible during adverse conditions or at night time. A ball bank test has been conducted to determine and assess the curve warning and advisory speed signage refer to Section 2.6.

Figure 2.4: Advisory Speed Signs

2.4.3 School Zone Signage

The locations of the existing school zone signage along the corridor are shown in Figure 2.5.

The Rosewood-Warrill View Road corridor (305) school zone signage was assessed and although they were observed to have one slightly faded panel, no urgent works are thought to be required. The school access is located on the adjacent Ipswich-Rosewood Road (304) which has appropriate signage including TC1783 signage that were witnessed to be appropriately sized and in working condition.

Figure 2.5: School Zone Signs

2.5 Road Geometry

2.5.1 Horizontal Geometry

The horizontal alignment of the Rosewood-Warrill View Road (305) corridor is generally a series of straights and curves. There are many sub-standard horizontal curves and the road safety audit has identified the sections of the corridor that do not comply with current design standards and provided recommended treatments.

2.5.2 Vertical Geometry

The majority of the Rosewood-Warrill View Road (305) corridor has vertical geometry that is considered to be generally flat with some flat to moderate grades.

2.5.3 Cross Section

Rosewood-Warrill View Road (305) between the Ipswich-Rosewood Road intersection (Ch0.00) and 780m west of Blanchs Road (Ch10.12) is an undivided two-lane, two-way rural arterial road with 3.50m lane widths and sealed shoulders (0.00m to 2.00m). The road safety audit has identified the sections of the corridor that do not comply with current design standards.

2.6 Sub-standard Curves

The results from a ball bank test have been used to review the current advisory speed signs for horizontal curves along the Rosewood-Warrill View Road (305) corridor as outlined in Table 2.6.

Table 2.6: Ball Bank Test Results

Curve (No.)	Chainage (km)	Posted Speed Limit (km/h)	Gazettal (WB)		Against Gazettal (EB)	
			Current Advisory Speed (km/h)	Advisory Speed from Ball Bank test (km/h)	Current Advisory Speed (km/h)	Advisory Speed from Ball Bank test (km/h)
1	0.40	60	20 (TC1308_2)	20	20 (TC1308_2)	20
2	0.70	60	Nil	Nil	Nil	Nil
3	0.85	60	Nil	Nil	Nil	Nil
4	1.90	100	60	60	60	60
5	3.10	100	50	40	50	40
6	3.40	100	80	60	80	70
7	3.90	100	60	60	60	60
8	4.50	100	Nil	80	Nil	90
9	5.10	100	80	80	80	90
10	5.58	100	80	80	80	80
11	6.80	100	Nil	90	Nil	90
12	8.30	100	Nil	90	Nil	90
13	8.65	100	Nil	90	Nil	90
14	8.95	100	Nil	85	Nil	85

The ball bank tests were assessed with the MUTCD Part 2 Figure 4.5 and show that advisory speed signs are required for curves 1, 4, 5, 6, 7, 8 in the gazettal direction, 9 in the gazettal direction and 10.

The road safety audit has recommended changes to the advisory speed signage, chevron alignment markers, guide posts and raised reflective pavement markers for compliance to current design standards.

2.7 Previous Rosewood-Warrill View Road (305) Road Safety Audit

2.7.1 Safety Audit Findings

A safety audit has been undertaken along the study corridor and reported on in May 2015. The following are some of the key issues and recommendations identified with priorities (A, B, C and D).

- The pavement is in poor condition and the road is subject to flooding. There is significant rutting, heavy patching and poor drainage which is exacerbated by narrow shoulders with grass and soil at the interface that is up to 50mm above the pavement surface which is limiting the water runoff. This combination may result in driver discomfort, loss of control type crashes from aquaplaning and poor lane discipline from undesirable crossfall rotations which may lead to off path or head on type crashes. (A Planning).
- The W5-7-2 floodways warning signage and auxiliary plates are faded. Consider installation of new warning signage and new W8-17-1(9km) auxiliary plates. (A).
- There is a 40km/h change in speed between 100km/h and 60km/h. Poor compliance and erratic driver behaviour may lead to rear end type crashes and off path type crashes. There was one off path on curve at Ch0.92 in the against gazettal direction involving an articulated vehicle travelling too fast through the 100km/h to 60km/h speed zone change. Consider a speed limit review and implementation of the recommendations. It is noted that all of the existing speed restriction signs are faded and should be replaced. (A Important).
- There are many sections along the corridor with 0.0 – 0.5m shoulders. This may lead to an increased risk of off path type crashes as there is no recovery area, entering roadway type crashes from properties, overtaking same direction and rear end type crashes from residents entering their property from the mainline and potentially broken down vehicles within the travel lanes. Consider providing 1.0m sealed shoulders. (D Planning).
- There is a tight horizontal curve with W2-9 warning signage and 50km/h W8-5 auxiliary plates in a 100km/h sign posted environment at the intersection with Ebenezer Road. The cross section appears narrow with 0.0m shoulders. The crossfall appears to be less than 3% and there is a long water flow path through the intersection. This combination may result in poor lane discipline from the 50km/h change in speed, loss of control type crashes from aquaplaning which may lead to off path or head on type crashes. Short Term: Consider providing a wide centre line treatment between Ch2.70 to Ch5.90 (constrained by existing bridge structure) to potentially reduce the risk of head on type crashes. Long Term: Upgrade the corridor to provide desirable geometry and flood immunity. (A Planning).
- There are property access with non-traversable headwall hazards within the clear zone. This may lead to an increased severity for potential off path type crashes. Install traversable culvert headwalls. (B).
- The bridge over Blundell's Gully. The cross section is narrow for the 20m bridge as it has 0.0m shoulders. This may lead to a flow path within the wheel path. The structure appears to have barrier kerb with timber bridge rails which may lead to containment issues for errant vehicles. Settlement has occurred on the approaches leading to an undesirable crossfall rate of rotation which may lead to poor lane discipline. Consider upgrading the bridge structure to current design standards considering a wide centre line treatment noting the Transgrid power structure and clear zone. (D Planning).
- There are electricity poles within the clear zone, some on the outside of horizontal curves. This may lead to an increased crash severity for off path type crashes. Short Term: Consider installation of D4-3 hazard signage at a desirable orientation and at a mounting height not less than 1.5m above the travelled path in accordance with current design standards. (B Important). Long Term: Install w-beam guardrail, considering a future wide centre line treatment. (D Planning).

2.8 Public Correspondence

No public correspondence has been provided for Rosewood-Warrill View Road (305).

3 Data Analysis

3.1 Traffic Volumes

Traffic volume data for the corridor was sourced from the TMR Traffic Analysis and Reporting System at available locations. Midblock traffic volumes for the year 2013 summarised for all vehicles in Table 3.1 and summarised for heavy vehicles in Table 3.2.

Table 3.1: 2014 Speed Zone Section Traffic Volumes – All Vehicles

Chainage (km)	Site ID	Site Location	AADT		
			Gazettal (WB)	Against Gazettal (EB)	Total
2.50	135532	Rosewood-Warrill View Road at the Bremer River	523	539	1,062

Table 3.2: 2014 Speed Zone Section Traffic Volumes – Heavy Vehicles

Chainage (km)	Site ID	Site Location	AADT		
			Gazettal (WB)	Against Gazettal (EB)	Total
2.50	135532	Rosewood-Warrill View Road at the Bremer River	80 (15.30%)	52 (9.65%)	132 (12.43%)

3.2 Speeds

Speed surveys were provided by TMR. The location of the sites and their respective reference numbers are shown in Figure 3.1.

The locations of the survey sites for each speed section were selected on the basis of the constantly changing environment of the road corridor. The corridor was divided into sections based on the homogeneity of the road with the survey sites located to best represent the general road environment and operations of each respective section.

A vehicle considered to be operating under “free flowing” conditions is when the preceding vehicle has at least four (4) seconds headway and there is no apparent attempt to overtake the vehicle ahead. Of the vehicles surveyed, only those observed to be travelling under free flow conditions (minimum four (4) seconds headway) were considered in the survey results.

Figure 3.1: Speed Survey Site Locations

The speed distributions obtained from the speed survey were tested against the criteria in Appendix C – Part 4 Speed Controls of MUTCD to determine whether it conformed to an acceptable speed distribution for the existing speed limit. If the speed distribution conformed to an acceptable distribution for the existing speed limit then the existing speed limit was considered acceptable subject to a review of the crash data. If the speed limit did conform to the acceptable distribution for the existing speed limit then a suggested speed limit was determined from Table C2.

The results obtained from the analysis of the speed surveys for each of the sites are detailed from Table 3.3 and Table 3.4.

Table 3.3: Speed survey results at Site 1 (Speed Zone Section A) Ch0.62 – 100m south of Western Creek.

Data	Gazettal (WB)	Against Gazettal (EB)
Total Vehicles (sampled):	2,585	2,672
Posted Speed (km/h):	60	60
Mean Speed (km/h):	71.4	70.2
Upper Limit of 15km/h Pace (km/h):	79.0	78.0
Percent in Pace (%):	58.53	59.58
85th % Speed (km/h):	81.0	79.6

In both directions the mean speed was identified to be above the threshold (63km/h) for acceptable speed distribution and the upper limit of pace and 85th percentile were above the threshold (69km/h) for acceptable speed distribution. The prevailing speeds do not conform to the sign-posted speed of 60 km/h for Section A. The speed data provided suggests a speed limit of 80km/h in both directions.

Table 3.4: Speed survey results at Site 2 (Speed Zone Section B) Ch7.80 – 1000m west of Mount Walker West Road.

Data	Gazettal (WB)	Against Gazettal (EB)
Total Vehicles (sampled):	1,528	1,628
Posted Speed (km/h):	100	100
Mean Speed (km/h):	93.5	97.5
Upper Limit of 15km/h Pace (km/h):	102.0	105.0
Percent in Pace (%):	55.82	50.25
85th % Speed (km/h):	104.4	109.8

The gazettal direction was determined to conform to the sign-posted speed of 100 km/h for Section B. The speed data provided suggests a speed limit of 100km/h in the gazettal direction.
The against gazettal direction mean speed was identified to be marginally above the threshold (97km/h) for acceptable speed distribution for a 100km/h posted speed and significantly below the threshold (99km/h) for a 110km/h posted speed for Section B. The speed data provided suggests a speed limit of 100km/h in the gazettal direction.

However, while suggested speed limits have been provided for sections where the speed distribution does not conform to the acceptable distribution, the recommended speed limit should be determined only after an assessment of the road function and speed environment. Any significant difference between the current behaviour of drivers and the recommended speed limit will warrant further investigation.

The speed surveys provided, shown above in Table 3.3 and Table 3.4 demonstrate that the existing enforcement, compliance and environment do not match the current speed zoning in speed zone section A. If the speed limits are increased there may be an increase in off carriageway type crashes and an increased crash severity. The constrained existing horizontal geometry, narrow shoulders, non-traversable slopes and hazards within the clear zone do not support an increase to the current posted speeds. If the speed limits are decreased it is likely that there will be poor compliance which may lead to speed differentials.

3.3 Crash History

3.3.1 Road Crash Data Inclusion Requirements

For crashes to qualify as valid they must meet the following criteria:

- the crash occurred on a public road;
- a person was killed or injured;
- at least one vehicle was towed away; and
- the value of the property damage was:
  - $2,500 damage to property other than vehicles (after 1 December 1999);
  - $2,500 damage to vehicle and property (after 1 December 1991 and prior to 1 December 1999); and
  - $1,000 damage to property (prior to 1 December 1991).

In addition, crashes resulting from medical conditions or deliberate acts are excluded. The crashes detailed in the following section meet the above criteria.

3.3.2 Reported Midblock Crashes

The crash history was based on midblock data from reported crashes that have occurred along the corridor from the 1st January 2008 to 31st December 2012 over a five year period. During this period a total of seven (7) midblock crashes were reported along the corridor.

There has been a total of one (1) fatality within the study section during the five year period, a head-on type crash involving a motorcycle and a truck at Ch3.92 on a sub-standard horizontal curve with narrow shoulders with hazards within the clear zone.

Table 3.8: Rosewood-Warrill View Road (305) – Midblock Accident Type Summary

DCA Code Group	Crash Type	No. Crashes
1	Intersection, from adjacent approaches	0
2	Head on	1
3	Opposing vehicles turning	0
4	Rear end	0
5	Lane change	0
6	Parallel lanes, turning	0
7	U-turn	0
8	Entering roadway	0
9	Overtaking, same direction	0
10	Hit parked vehicle	0
11	Hit railway train	0
12	Pedestrian	0
13	Permanent obstruction on carriageway	0
14	Hit animal	0
15	Off carriageway on straight	0
16	Off carriageway on straight hit object	2

17	Out of control on straight	0
18	Off carriageway on curve	1
19	Off carriageway on curve hit object	1
20	Out of control on curve	2
21	Exceptions	0
	Total Crashes	**7**

The Road Safety Audit has highlighted the locations of crash clusters and has recommended measures to further improve safety.

Speed Zone Section A (Ch. 0.00 to 1.00 km)

A total of 3 crashes (43%) have occurred within speed zone Section A. Of these crashes, 1 crash (33%) involved a vehicle leaving the carriageway on a straight (DCA 704) and was attributed to wet weather and 2 crashes (67%) involved vehicles leaving the carriageway on a curve (DCA 804, DCA 805) and were attributed to late braking into sub-standard horizontal curves that have existing advisory speed signage.

Speed Zone Section B (Ch. 1.00 to 10.12 km)

A total of 4 crashes (57%) have occurred within speed zone Section B. Of these crashes, 1 crash (25%) was a head-on (DCA 201) and was attributed to poor lane discipline through a sub-standard horizontal curve that has advisory speed signage, 1 crash (25%) involved a vehicle leaving the carriageway on a straight (DCA 703) and was attributed to loss of control and driver error and 2 crashes (50%) involved vehicles leaving the carriageway on a curve (DCA 802, DCA 805) and were attributed to wet weather and poor lane discipline through a sub-standard horizontal curve that has advisory speed signage.

4 QLimits Assessment

The assessment of the speed environment for Rosewood-Warrill View Road (305) was conducted using the QLimits speed environment analysis software. It was used to determine the suitability of the speed limit based on the speed environment and crash history of each speed section.

QLIMITS analysis software is intended as an aid to practitioners only.

4.1 Summary

Table 4.1: Speed Zone Section A – Speed Site 1

Road Name:	Rosewood-Warrill View Road	
Road Number:	305	
Zone Length Description:	Ipswich-Rosewood Road to 500m east of Reillys Road	
Zone Length Through Distance:	0.00 km to 1.00 km	
Data	**Gazettal**	**Against Gazettal**
Equivalent direction:	Westbound	Eastbound
Existing speed limit:	60km/h	
Number of vehicles counted:	2,585	2,672
Upper limit of pace (km/h):	79.0	78.0
Mean speed (km/h):	71.4	70.2
85th Percentile speed (km/h):	81.0	79.6
Percentage of vehicles in pace (%):	58.53	59.58
AADT	1,062	
Length of zone	1.00 km	
Number of midblock accidents in zone	3	
Casualty Crash Rate ERU per 10^8 VKT	6139.9	
Average crash rate for similar roads	509.2	
Critical crash rate for similar roads	548.9	
Accesses - Residential	10	
Accesses – Average commercial	1	
Accesses – Heavy industry	1	
Accesses – Large Shopping Centre	0	
Intersection – Unsignalised of substantially lesser importance	0	
Intersection – Unsignalised of lesser importance	1	
Intersection – Unsignalised of comparable or greater significance	1	
Intersection – Roundabout or Signalised	0	
QLimits Recommended Speed Limit	**80km/h**	**80km/h**

For speed zone section A the typical speed limit for the road function is 80km/h. As shown in Table 3.3 the speed data does not correlates with the existing speed limit. The crash rate is significantly greater than the critical crash rate. QLimits is suggesting a crash investigation be undertaken. In this instance the QLIMITS recommendation is not considered to be representative when considered in the context of the overall speed limit review.

Table 4.2: Speed Zone Section B – Speed Site 2

Road Name:	Rosewood-Warrill View Road	
Road Number:	305	
Zone Length Description:	500m east of Reillys Road to 780m west of Blanchs Road	
Zone Length Through Distance:	1.00 km to 10.12 km	
Data	**Gazettal**	**Against Gazettal**
Equivalent direction:	Westbound	Eastbound
Existing speed limit:	100km/h	
Number of vehicles counted:	1,528	1,628
Upper limit of pace (km/h):	102.0	105.0
Mean speed (km/h):	93.5	97.5
85th Percentile speed (km/h):	104.4	109.8
Percentage of vehicles in pace (%):	55.82	50.25
AADT	1,062	
Length of zone	9.12 km	
Number of midblock accidents in zone	4	
Casualty Crash Rate ERU per 10^8 VKT	1895.23	
Average crash rate for similar roads	1049.6	
Critical crash rate for similar roads	1098.7	
Accesses - Residential	39	
Accesses – Average commercial	0	
Accesses – Heavy industry	0	
Accesses – Large Shopping Centre	0	
Intersection – Unsignalised of substantially lesser importance	3	
Intersection – Unsignalised of lesser importance	3	
Intersection – Unsignalised of comparable or greater significance	0	
Intersection – Roundabout or Signalised	0	
QLimits Recommended Speed Limit	**100km/h**	**100km/h**

For speed zone section B the typical speed limit for the road function is 100km/h. As shown in Table 3.4, the speed data in the against gazettal direction does not correlate with the existing speed limit. The crash rate is greater than the critical crash rate. QLimits is suggesting a crash investigation be undertaken.

5 Assessment of Speed Limit

5.1 Background

As a measure to improve road safety in Queensland, TMR has introduced a 'safe systems' approach. The approach involves a methodology based on best international practice, and consists of four key aspects as outlined below.

Safe Roads and Roadsides

Roads and roadsides should be designed and maintained to reduce the risk of crashes occurring and to lessen the severity of injury if a crash does occur. Safe roads prevent unintended use through design and encourage safe behaviour by users.

Safe Speeds

Speed not only determines the likely risk of a crash but also the outcome of the crash or severity. Lower speeds result in fewer crashes as road users have more time for decision making, are less likely to lose control and can stop within a shorter distance. Speed limits complementing the road environment should be implemented to manage crash impact forces to within human tolerance; and all road users complying with the speed limits.

Safe Vehicles

The introduction of vehicles which not only lessen the likelihood of a crash and protect occupants, but also simplify the driving task and protect vulnerable users. Increasingly this will involve vehicles that communicate with roads and other vehicles, while automating protective systems when crash risk is elevated.

Safe Behaviours

Encouragement should be given to safe, consistent and compliant behaviour through well-informed and educated road users. Licensing, education, road rules, enforcement and sanctions are all part of the Safe System.

This review has considered two of the key aspects; safe roads and roadsides and safe speeds. To take into consideration the 'safe system' approach we have adopted a risk-based system to determine the appropriate speed limit. The assessment of speed limit included the identification of the relative risk of each distinct road section reviewed.

5.2 Principles

The safe system approach as conceptually referred to in Austroads is shown in Figure 5.1.

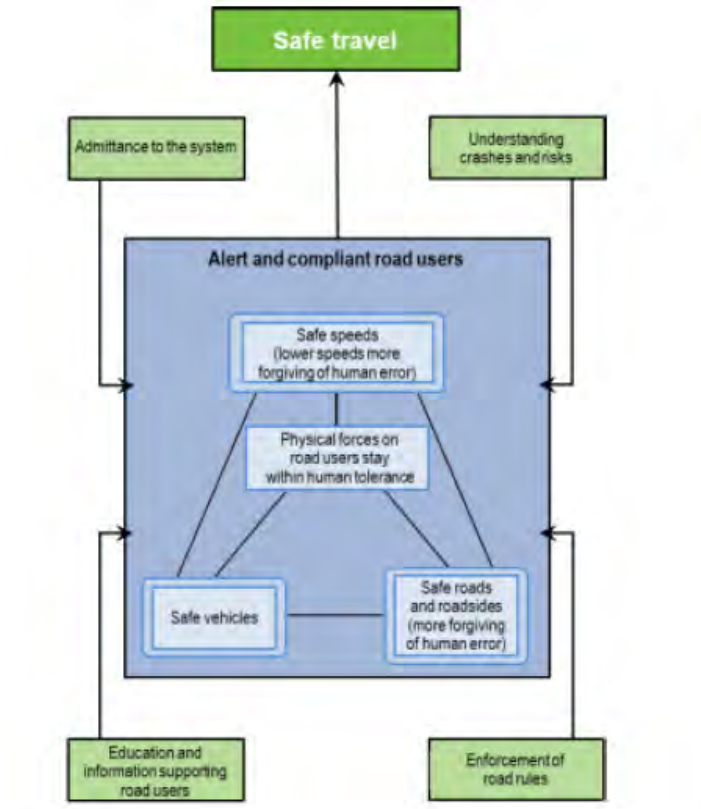

Figure 5.1: Safe Systems Approach

TMR (Metropolitan Region) have extended this framework to provide more detailed processes in the sub-area of "Understanding Crashes and Risks". The process is currently under development and is generically shown in Figure 5.2. The intent of the process is to enable a pro-active approach to responding to a network of Road Safety Audit/s, Speed Limit Review/s and Crash Investigation/s findings.

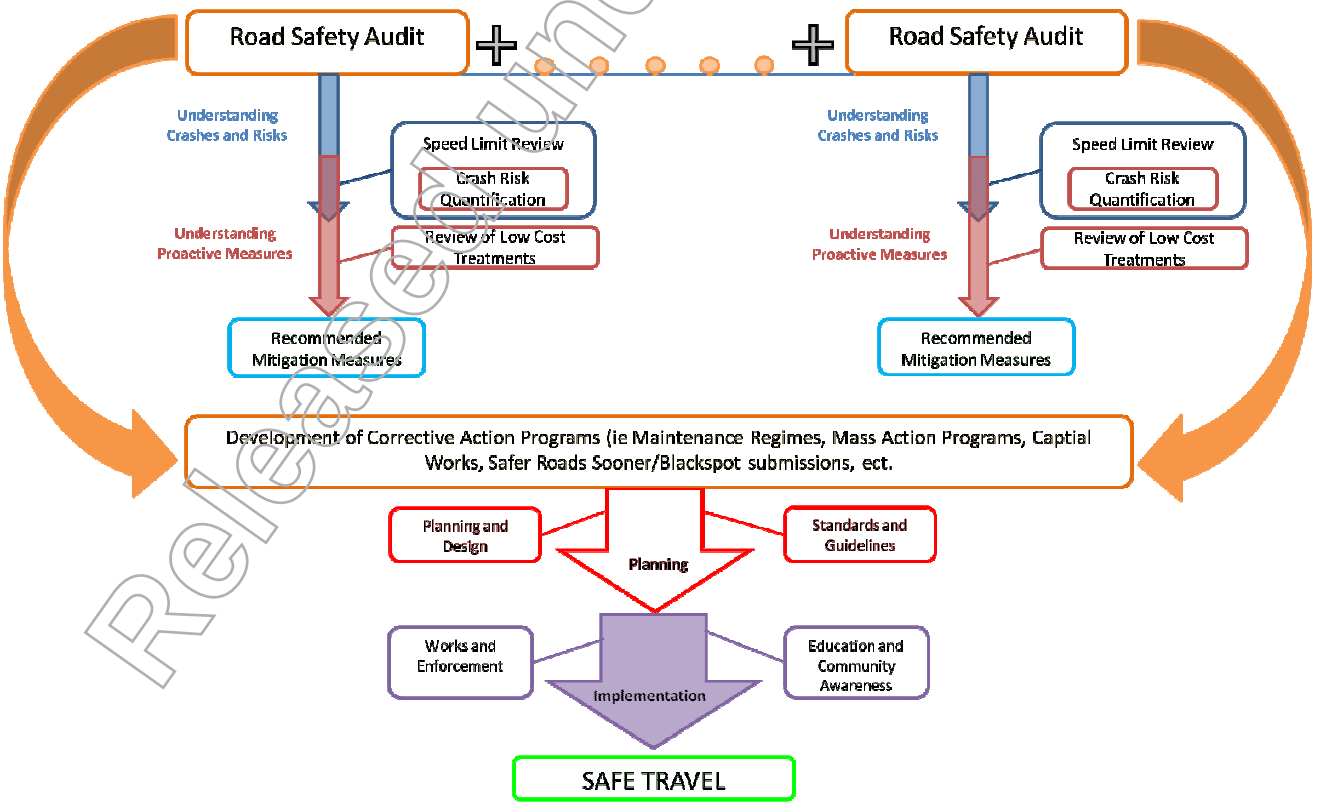

Figure 5.2: Pro-Active Approach to Road Safety

5.3 Crash Risk Quantification - Methodology

5.3.1 Overview

The two components of risk used in the assessment were frequency and severity. The frequency of the crashes relates to traffic volumes, speed, road width and cross section which included clear zone hazards, road curvature, intersection frequency, and roadside activity. Severity is related to the type of crash that is likely to occur such as the angle and speed of collision and type of hazard struck.

The severity of a crash increases distinctly above certain speed thresholds depending on the type of crash. The speed thresholds for surviving the different types of crashes that can occur are provided by the following:

- pedestrian struck by vehicle – 20 – 30 km/h;
- motorcyclist struck by vehicle (or falling off) – 20 – 30 km/h;
- side-impact vehicle striking a pole or tree – 30 – 40 km/h;
- side-impact vehicle to vehicle crash – 50 km/h; and
- head-on vehicle to vehicle (equal mass) crash – 70 km/h.

In order to pro-actively rank the crash risk associated with each road section a quantitative assessment methodology has been developed. The process quantifies the crash frequency and crash risk to develop a "Crash Risk Score (CRS)". The final crash scores obtained were categorised into Low/Medium/High/Extreme crash risks following the risk matrix described in Table 5.1.

Table 5.1: Risk Assessment Matrix

		CRASH FREQUENCY (Crash Rate per VKT^8)			
		Improbable (I) [1]	**Occasional (O) [4]**	**Probable (P) [9]**	**Frequent (F) [16]**
SEVERITY	**Limited (PD) [1]**	Low [1]	Low [4]	Medium [9]	High [16]
	Minor (MI / MT) [4]	Low [4]	Medium [16]	High [36]	Extreme [64]
	Serious (H) [9]	Medium [9]	High [36]	Extreme [81]	Extreme [144]
	Catastrophic (F) [16]	High [16]	Extreme [64]	Extreme [144]	Extreme [256]

5.3.2 Crash Frequency

The quantitative measures adopted for the crash frequency is the 'crash rate' (ie crashes per VKT x 10^8). A minimum 1km road section length is desirable for this calculation to reduce distance effects on the crash rate. The Rosewood-Warrill View Road (305) speed zone sections meet this criteria.

5.3.3 Crash Severity

The severities of the crashes in each DCA group were quantitatively assessed in order to assign a 'severity' rating. Adopting the 'crash cost' to determine a quantitative measure for 'crash severity' was given consideration, however, the relative difference between a 'fatality' and all

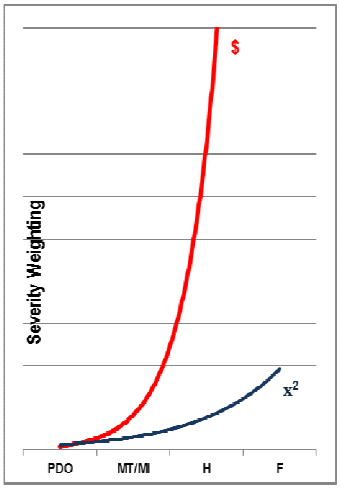

Figure 5.1 Severity Weighting

other crashes, presented an unrealistic relationship between the comparative value of 'severity' placed between these crash types.

A "squared" growth function was considered to present a more realistic relationship to quantify 'severity', particularly from an agency 'need to respond' perspective.

The subsequent crash score adopted for 'severity' was as follows:

- **Property Damage Only – Score = 1 (Limited Severity)**
- **Minor Injury / Medical Treatment – Score = 4 (Minor Severity)**
- **Hospitalisation – Score = 9 (Serious Severity)**
- **Fatality – Score = 16 (Catastrophic Severity)**

5.3.4 Total Crash Risk Score

The total crash risk score (CRS) (displayed as a Quantitative Rating in Table 5.2) was attained from multiplying the Crash Rate per VKT^8 for each crash severity by the relevant crash severity rating. For instance, the 'Crash Rate per VKT^8' for type 200-209 (DCA Code) crashes that resulted in a 'Minor Injury' in a particular section is "3.1". This value is multiplied by the respective 'Minor Injury' score of "4", giving a total CRS of "12.4". When more than one severity type (ie Minor Injury and Hospitalisation) occur for a particular set of crashes (ie 300-309 DCA) the multiplication process is done for each severity separately, each with their own 'Crash Rate per VKT^8' and 'Severity Score', then added together to get the total CRS.

For example:

Crash Risk Score

*Property Damage : Crash Rate per VKT^8 * Severity Score*

+

*Minor Injury / Medical Treatment: Crash Rate per VKT^8 * Severity Score*

+

*Hospitalisation : Crash Rate per VKT^8 * Severity Score*

+

*Fatalities: Crash Rate per VKT^8 * Severity Score*

=

Total Crash Risk Score [ie (4.6 * 1) + (3.2 * 4) + (4.4 * 9) + (2.2 * 16)]

The subsequent final CRS thresholds are as follows:

- **Low – 0 ≤ CRS < 7**
- **Medium – 7 ≤ CRS < 16**
- **High – 16 ≤ CRS < 50**
- **Extreme – CRS ≥ 50**

Table 5.2 shows the crash risk scores including the proposed risk assessment of speed zone sections.

Table 5.2: Risk Assessment of Speed Zone Sections

Section	DCA Group Code	Crash Rate per VKT (10^8 km)	Existing Speed Limit	Measured 85th%ile Speed	Existing Condition Risk Assessment					Based on QLIMITS Recommended Speed Limit					Action/s	Based on Recommended Action				Preferred Speed Limit
					Comment	Frequency	Severity	Overall Rating	Quantitative Rating	QLimits Speed Limit	Risk Comment	Frequency	Severity	Overall Rating		Risk Comment	Frequency	Severity	Overall Rating	
135-04861 - Page 47 of 54 **A** (Ch. 0.00 to 1.00 km)	16	51.60	**60**	81.0 (GAZ) 79.6 (AG)	The occurrence of one off carriageway on straight, hit object type crash. Resulting in 1 hospitalisation crash. Attributed to loss of control during wet weather.	F	H	E	**464**	**80**	Risk increased. A higher speed is likely to lead to an increased crash severity and an increased likelihood of crashes through the tight horizontal curves or with the non-traversable slopes and hazards within the clear zone.	F	F	E	Rehabilitate pavement and provide desirable crossfall. Install retro-reflective centre and edge linemarking. Install RRPM's and reflectors on barriers. Provide barriers or traversable slopes and remove hazards from within the clear zone.	Improved drainage, delineation, vehicle recovery and installation of barriers may reduce the risk of off carriageway on straight, hit object type crashes.	O	H	H	**60**
	19	51.60			The occurrence of one off carriageway on curve, hit object type crash. Resulting in 1 property damage crash. Attributed to speeding into a sub-standard curve. Suitable TC1308_2 is provided, some existing CAM's are faded or damaged	F	PD	E	**51.6**			F	PD	E	Install new CAM's. Install retro-reflective centre and edge linemarking. Install RRPM's. Install guideposts. Provide barriers or traversable slopes and remove hazards from within the clear zone.	Risk marginally improved.	F	PD	H	
	20	51.60			The occurrence of one out of control on curve type crash. Resulting in 1 hospitalisation crash. Attributed to speeding into the reverse curves after the speed zone change from 100km/h to 60km/h.	F	H	E	**464**			F	F	E	Install G9-79 signage with target boards and pavement numerals Install CAM's, retro-reflective linemarking, RRPM's and guideposts. Provide barriers or traversable slopes. Provide 2.0m sealed shoulders. Rehabilitate pavement and provide desirable crossfall.	Provision of advanced warning signage, pavement numerals at the speed zone change, sealed shoulders for recovery, improved delineation and enhanced enforcement may reduce the risk of out of control on curve type crashes.	O	H	H	

Section	DCA Group Code	Crash Rate per VKT (10^8 km)	Existing Speed Limit	Measured 85th%ile Speed	Existing Condition Risk Assessment					Based on QLIMITS Recommended Speed Limit					Action/s	Based on Recommended Action				Preferred Speed Limit
					Comment	Frequency	Severity	Overall Rating	Quantitative Rating	QLimits Speed Limit	Risk Comment	Frequency	Severity	Overall Rating		Risk Comment	Frequency	Severity	Overall Rating	
B (Ch. 1.00 to 5.20 km)	2	5.657	**100**	104.4 (GAZ) 109.8 (AG)	The occurrence of one head on type crash. Resulting in 1 fatal crash. Attributed to speeding into a sub-standard curve which is suitable for 40km/h less than the posted speed. A motorcyclist crossed the centre line, the opposing truck driver attempted to manoeuvre but there are narrow shoulders. Curve warning signage is provided but the CAM's are not positioned correctly and the first sign is obstructed by a tree.	O	F	E	**90.5**	**100**	Risk remains unchanged.	O	F	E	Install wide centre line treatment with 2.0m sealed shoulders. Install TC1308_2 signage / curve warning signage, CAM's, RRPM's and guideposts.	Risk of head on type crashes reduced. Consider a future upgrade with property resumptions to provide desirable geometry to further reduce risk.	I	F	H	**100**
	16	5.657			The occurrence of one off carriageway on straight, hit object type crash. Resulting in 1 hospitalisation crash. Attributed to travelling along the shoulder and striking a culvert headwall.	P	H	E	**50.9**			P	H	E	Rehabilitate pavement and provide desirable crossfall. Install traversable culvert headwalls. Install retro-reflective centre and edge linemarking. Install RRPM's. Install reflectors on barriers and remove hazards from within the clear zone.	Providing desirable crossfall will improve drainage, installation of traversable culverts and improved delineation may reduce the risk and severity of off carriageway on straight, hit object type crashes.	O	H	H	

Section	DCA Group Code	Crash Rate per VKT (10^8 km)	Existing Speed Limit	Measured 85th%ile Speed	Existing Condition Risk Assessment					Based on QLIMITS Recommended Speed Limit					Action/s	Based on Recommended Action				Preferred Speed Limit
					Comment	Frequency	Severity	Overall Rating	Quantitative Rating	QLimits Speed Limit	Risk Comment	Frequency	Severity	Overall Rating		Risk Comment	Frequency	Severity	Overall Rating	
135-04861 - Page 49 of 55 (CH 1.00 to 5.20 km)	18	5.657	**100**	104.4 (GAZ) 109.8 (AG)	The occurrence of one off carriageway on curve type crash. Resulting in 1 hospitalisation crash. Attributed to wet weather and a sub-standard horizontal curve.	P	H	E	**50.9**	**100**	Risk remains unchanged.	P	H	E	Install wide centre line treatment with 2.0m sealed shoulders. Rehabilitate pavement and provide desirable crossfall. Install traversable culvert headwalls. Install retro-reflective centre and edge linemarking. Install RRPM's. Install reflectors on barriers and remove hazards from within the clear zone.	Providing desirable crossfall will improve drainage, installation of traversable culverts and improved delineation may reduce the risk and severity of off carriageway on curve type crashes.	O	H	H	**100**
	20	5.657			The occurrence of one out of control on curve type crash. Resulting in 1 medical crash. Attributed to speeding into a sub-standard curve which is suitable for 40km/h less than the posted speed. A motorcyclist crossed the centre line at the same location as the fatal crash listed above.	P	MI / MT	H	**22.6**			P	MI / MT	H	Install wide centre line treatment with 2.0m sealed shoulders. Rehabilitate pavement and provide desirable crossfall. Install traversable culvert headwalls. Install retro-reflective centre and edge linemarking. Install RRPM's. Install reflectors on barriers and remove hazards from within the clear zone.	Providing desirable crossfall will improve drainage, installation of traversable culverts and improved delineation may reduce the risk and severity of loss of control on curve type crashes.	O	MI / MT	M	

6 Conclusion

A speed limit review has been undertaken on Rosewood-Warrill View Road (305) Ch. 0.00 – 10.12 km in accordance with Part 4 of the MUTCD and the methodology developed by TMR (Metropolitan Region). Recommendations from this review are summarised below.

6.1 Recommended Treatments

The recommended treatments from the speed limit review undertaken on Rosewood-Warrill View Road (305) between Ch. 0.00 – 10.12 km are both reactive and proactive, attempting to reduce the risk and likelihood of crashes to improve road safety using the safe systems approach.

For speed zone section A, it is recommended that the existing school zone be maintained.

For speed zone section A, it is recommended that the existing 60km/h speed zone be maintained as the existing section has an extreme crash risk rating, there are tight horizontal curves, non-traversable slopes and hazards within the clear zone. The road safety audit has recommended measures to further improve safety including providing traversable slopes, installation of traversable culvert headwalls, pavement rehabilitation, signage, linemarking and delineation.

For speed zone sections B, it is recommended that the existing 100km/h speed zone be maintained. The road safety audit has recommended measures to further improve safety.

It is strongly recommended that G9-79(C) signage with fluorescent target boards be provided on the approach to the change in posted speed change from 100km/h to 60km/h in accordance with MUTCD Part 4 Section 5.1.6 and pavement numerals be installed at the change in posted speed as shown in Figure 6.1.

It is strongly recommended that the existing R4-1 speed restriction signage along the corridor be replaced. Refer to Figure 6.1 and Table 6.1 for the recommended changes.

The ball bank tests show that new advisory speed signs are required for curves 1, 4, 5, 6, 7, 8 (in the gazettal direction), 9 (in the gazettal direction) and 10. The road safety audit has recommended changes to the curve warning signage, advisory speed signage, chevron alignment markers, guide posts and raised reflective pavement markers for compliance to current design standards. It is recommended that signage, guideposts and raised reflective pavement markers be installed to current design standards.

It is recommended that the existing shoulders be widened to 2.0m between the existing bridge over Western Creek at Ch0.65 and the existing bridge over the Bremer River at Ch2.30 to reduce the risk and severity of off carriageway type crashes.

It is recommended that a wide centreline treatment be installed between the existing bridge over the Bremer River at Ch2.30 to 150m west of Blanch Road at.Ch9.50 to reduce the risk of head on type crashes, especially at the sub-standard horizontal curves.

It is recommended that this corridor be upgraded to provide desirable horizontal curve geometry and flood immunity.

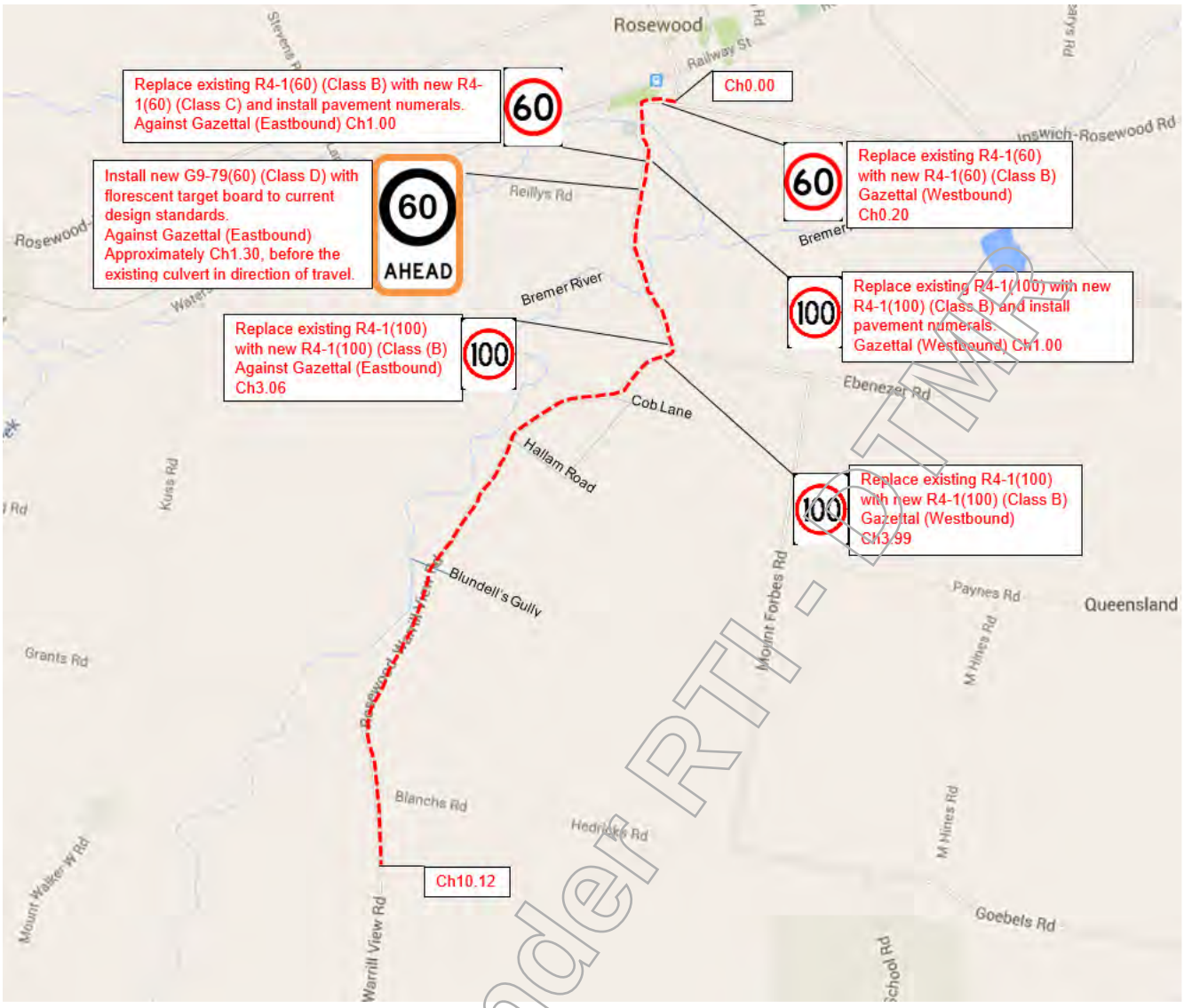

Figure 6.1: Recommended Treatments

6.2 Sign Purchase Requirements

The purchase list for the required signs based on the recommendations of the speed limit review are summarised in Table 6.1.

Table 6.1: Sign Purchase Requirements

Item No.	MUTCD No.	Sign Size	Description	Direction	Chainage	No. of Signs
1	R4-1 (60)	B	Speed Restriction	G	0.20	1
2	R4-1 (100)	B	Speed Restriction	G	1.00	1
3	R4-1 (60)	C	Speed Restriction	AG	1.00	1
4	G9-79 (60)	D	Speed Limit AHEAD	AG	1.30	1
5	R4-1 (100)	B	Speed Restriction	AG	3.06	1
6	R4-1 (100)	B	Speed Restriction	G	3.99	1

6.3 Existing and Recommended Speed Zone Sections

The existing and recommended changes to the speed zone sections are summarised in Table 6.2.

Table 6.2: Recommended Speed Zone Sections

Section	Existing				Recommended				Changes
	Chainage (km)	Speed (km/h)	Zone Length (km)	Length Complies	New Chainage (km)	Speed (km)	Zone Length (km)	Length Complies	
A	0.00 – 1.00 (Ipswich-Rosewood Road to 500m east of Reillys Road)	60	1.00	Yes	0.00 – 1.00 (Ipswich-Rosewood Road to 500m east of Reillys Road)	60	1.00	Yes	Nil.
B	1.00 – 10.12 (500m east of Reillys Road to 780m west of Blanchs Road)	100	9.12	Yes	1.00 – 10.12 (500m east of Reillys Road to 780m west of Blanchs Road)	100	9.12	Yes	Nil.

6.4 Existing Risk Rating Summary

The existing risk ratings for the each speed zone sections is shown in Figure 6.2. The existing risk rating of each segment should be considered when prioritising the schedule of works for the corridor.

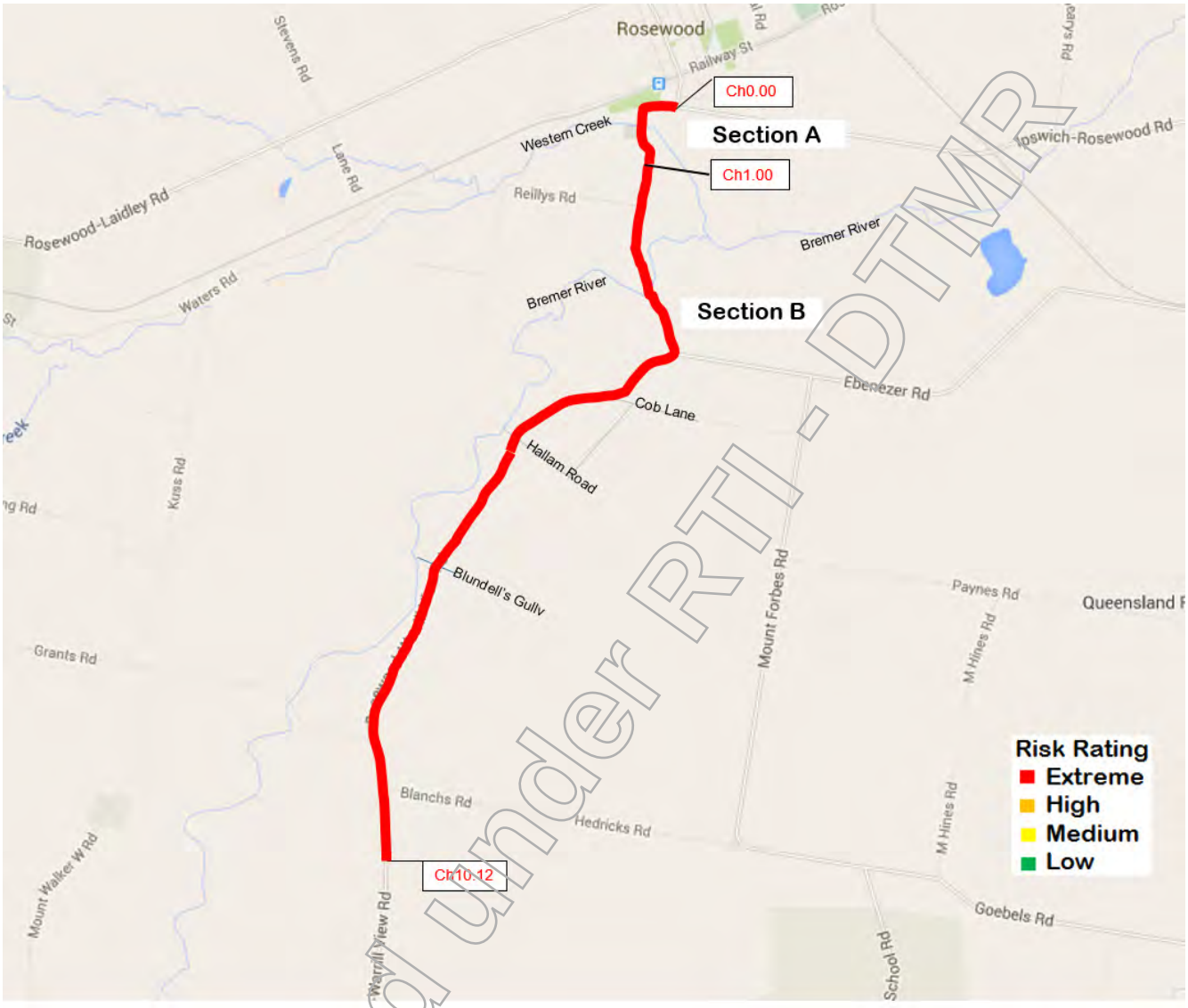

Figure 6.2: Existing Risk Rating of Road Segments

6.5 Reviewing Officers Statement

This Speed Limit Review Report was prepared by TMR Metropolitan Region (Program Delivery & Operations) and Hyder Consulting, using available information and observations. Every effort was made to ensure that all information included within this report and during the review process was correct and relevant. The review was completed using the methodology and templates supplied by the Department of Transport and Main Roads.

Name: Not Relevant

Position: Senior Road Safety Auditor

Signature: Date: 13/02/2017

Name:

Position: Registered Professional Engineer of Queensland

Signature: . . . . . Date: 13/02/2017