



Christchurch City Council City Streets Unit

Road Safety Audit and Inspection

**Riccarton Road
Deans Avenue to Curletts Road**

June 2002



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Contents

1	Introduction.....	1
1.1	Purpose of the Route Safety Audit	1
1.2	The Team.....	1
1.3	Inspection and Reporting Format.....	2
1.4	Location of the Study.....	5
2	Description of the Road	7
2.1	Geographical Features and Zones	7
2.2	Traffic Volumes	7
2.3	Road Environment.....	7
2.4	Crash Data.....	9
2.5	Map of Area Denoting Roads Audited.....	9
3	Safety Audit Report	10
3.1	Maintenance Items.....	10
3.1.1	Route Delineation	10
3.1.2	Speed Limit Signs	11
3.1.3	Signage	12
3.1.4	Vegetation Control	13
3.1.5	Traffic Signals.....	14
3.1.6	Pedestrian/Disabled Persons Facilities	15
3.1.7	Road Surface.....	16
3.2	Level of Service Items.....	17
3.2.1	Uncontrolled and Controlled Intersections	17
3.2.2	Street Lighting.....	18
3.2.3	Railway Crossing.....	18
3.2.4	Cyclist Facilities	19
3.2.5	Advertising signage	21
3.2.6	Pedestrian Crossing Points.....	23
3.2.7	Intersection Redesign.....	25
3.2.8	Intersection exit merge areas.....	26
4	AUDIT TEAM STATEMENT	28

APPENDIX A

Health and Safety and Temporary Traffic Management Plan

APPENDIX B

SIDD (Safety Inspection Deficiency Data)

Road Safety Inspection Output

APPENDIX C

Black and Grey Spot Analysis

APPENDIX D

LTSA (AIS & CAS Data)

1 Introduction

1.1 Purpose of the Route Safety Audit

The objectives of this process are:

- To identify real and potential safety hazards/problems for all road users;
- To ensure that measures suggested to eliminate or reduce the hazards/problems, which have been identified, are fully considered.

The Route Safety Audit will:

- Audit the achievement of the Christchurch City Council, as a Road Controlling Authority, in complying with Transfund New Zealand's objectives of providing a safe and efficient roading system;
- Minimise the number, risk and severity of crashes that may be attributed to the existing condition of the road and its furniture;
- Reduce the whole life operating costs of the road.

The Safety Audit team carried out the audit inspections along the route of Riccarton Road including Main South Road between Deans Avenue intersection and Curletts Road intersection.

1.2 The Team

The Safety Audit and this report was commissioned by and undertaken for Mr Bill Greenwood, Transportation Safety Engineer, Christchurch City Council, City Streets Unit.

The fieldwork for the audit was undertaken on the following dates:

- Daytime Safety Audit/Inspection – 4 & 5 June 2002;
- Night-time Safety Audit/Inspection – 4 June 2002.

The Audit Team comprised:

- Mr Jeff Kaye, NZCE, TMIPENZ.
State Highway Corridor and Road Safety Manager
National Highway Safety Co-ordinator
Opus International Consultants Ltd
Christchurch

- Mr Mark Millar, NZCE (Civil), REA.
Network Road Safety Engineer
Opus International Consultants Ltd
Christchurch
- Mr Jeff Owen
Community Engineer
Christchurch City Council
Christchurch
(As an audit observer)

1.3 Inspection and Reporting Format

The methodology used for the audit and this report is generally as defined in the Transfund New Zealand Document – *Report No RA 97/623S “Safety Audit Procedures for Existing Roads – December 1998”*. This audit differs from these procedures in that the full extent of the road including the intersections within the route were audited, rather than the representative sample as prescribed in the Transfund NZ procedures.

The methodology for the Road Safety Inspection and recording of defects identified, broadly follows the process described in the *Transit New Zealand “State Highway Asset Maintenance Manual – Chapter 2”*, and the *Opus International Consultants Ltd, Safety Management Strategy*.

- ***Entry Meeting***

At the request of the client, the Christchurch City Council and as detailed in the request for service, an entry meeting was held on 16 May 2002 at 2.00pm in Conference Room B at the Christchurch City Council. Those present at the meeting were:

- Christchurch City Council - Mr Bill Greenwood, Mr Don Cameron and Mr Brian Neill;
- Opus International Consultants - Mr Jeff Kaye, Mr Mark Millar;
- Montgomery Watson Harza - Mr Marten Oppenhuis, Mr Mike Smith;
- Beca Carter Hollings & Ferner Ltd - Mr Shane Turner, Mr Paul Durdin.
- ***Background Information***

The client supplied copies of the Christchurch City Council Policy for:-

- Road Marking - (Maintenance and Traffic Management) detailing the required standards;

- A schedule of Street Lighting Categories detailing the target lighting levels;
- The RAMM data for the route to be audited detailing the route positions and traffic count data.
- ***Exit Meeting***

Details of the exit meeting to be held on the 27th of June 2002 will be included in the final report

- **Inspection Methodology**

The audit/inspections were undertaken over the total length of the route from Deans Avenue and Curletts Road.

The deficiencies identified were recorded on the inspection check sheets under the two broadly defined headings:

- Maintenance Items;
- Level of Service Items.

Defects were also recorded in our Safety Inspection Deficiency Database (SIDDD). A copy of the SIDDD output is included in this report in Appendix B. An electronic copy of the SIDDD data exported to MS Excel, will be supplied with the Final report.

The length of the route was inspected as followed:

- The road was driven several times in both directions at “normal” road user speed, both during the day and at night;
- The team then undertook the detailed inspection survey of the total route “on foot” noting defects and specific items of concern. This was necessary due to safety issues, the high traffic volumes, to observe factors affecting pedestrians and disabled users and to observe factors affecting cyclist. Items of concern were recorded by dictaphone and in written form.

The inspections, both day and night were carried out during periods of fine and overcast weather. The road was dry for both the day and night inspections.

- ***Post Inspection Meeting/Report Notes***

Following each type of audit inspection, the team reviewed the previous inspection and compiled notes on all points of concern. These notes, and the SIDDD output were used during the production of this report.

- **Risk Levels**

The assessment of risk levels, with respect to inappropriate standards or road safety problems, involved a judgement call by the audit team to assist in prioritising:

- Remedial works;
- Implementation on studies/strategies;
- Consideration for changes to standards and policies.

Recommendations: Have been included in the safety audit section of this report.

The recommendations have been assigned a risk level rating ranging through Urgent, High Risk, Medium Risk to Low Risk. The assessment of risk levels has been undertaken in terms of the matrix shown in Appendix 5 of the *Transfund NZ Procedures for Safety Audits of Existing Road*, and involved a judgement call by the audit team. The following is an explanation of the risk level ratings:

- **URGENT** These items should be scheduled for immediate attention as it presents a severe safety hazard which is likely to result in a fatal or serious crash in the near future.
- **HIGH** This item should be scheduled for action under normal maintenance programmes, within a six month period, as it presents a crash-promoting situation, but is not considered urgent.
- **MEDIUM** This item will generally include improvements to the overall service level of the road. The item presents an occasional remote risk of a crash occurring. The implementation of recommendations should be considered within a 12 to 24 month period.
- **LOW** This item will generally include defects of a minor nature and present a remote risk of a crash occurring. The implementation of recommendations should be programmed to be undertaken in conjunction with reconstruction or cyclic maintenance works on the road.

- **Priorities (SIDD output – Appendix B)**

The assessment of priorities, contained in the SIDD output, identifies the recommended timeframe accorded to the action, with respect to the deficiency, to the following scale:

- (i) **A** – the safety of the road user is being endangered, work should be implemented urgently (priority work) to rectify the deficiency;
- (ii) **B1** – improvement to the safety of the road will result. Work to rectify the deficiencies should be scheduled as part of the normal maintenance cycle, but requires a timeframe to be stated (maximum 30 days);
- (iii) **B2** – improvement to the safety of the road will result. Work to rectify the deficiencies should be scheduled as part of the normal maintenance cycle, but requires a timeframe to be stated (maximum 90 days);
- (iv) **B3** – improvement to the safety of the road will result. Work to rectify the deficiencies should be scheduled as part of the normal maintenance cycle, but requires a timeframe to be stated (maximum 1 year);
- (v) **C** – a decrease in operating/environmental costs or improvement to the aesthetics of the Christchurch City Council’s road will result. These are lower priority works, which should be completed over a time frame that best suits the overall roading network;
- (vi) **PF** – project feasibility, relates to more significant work, which should be added to the list of projects requiring funding to establish the project’s feasibility. An opinion on the perceived urgency of the work to be undertaken should be stated under the “description of defect” listing.

NOTE:For many items, the comments and recommendations shown in “Section 3 Safety Audit Report”, will override the comments made in the SIDD output. This is a result of the field observations, recorded in SIDD being subject to further consideration by the team, following the fieldwork.

1.4 Location of the Study

The study area for this Safety Audit covers the full length of the route from Deans Avenue/Riccarton Road roundabout to the Main South Road/ Curletts Road intersection.

For the purpose of location of defects and features along the length of the study area, route position distances have been quoted from Deans Avenue to Curletts Road as set out in the following table:

RS/RP	Side	Road Name	Intersecting Road	Other Feature
0/0.000	B	Riccarton Road	Deans Avenue	
0/0.147	R	Riccarton Road	Darvel Street	
0/0.200	L	Riccarton Road	Barlett Street	
0/0.279	R	Riccarton Road	Mona Vale Avenue	
0/0.30	B	Riccarton Road		Railway Crossing
0/0.510	L	Riccarton Road	Mandeville Street	
0/0.535	R	Riccarton Road	Harakeke Street	
0/0.653	L	Riccarton Road	Picton Avenue	
0/0.847	R	Riccarton Road	Straven Street	
0/0.847	L	Riccarton Road	Clarence Street	
0/0.982	L	Riccarton Road	Rotherham Street	
0/1.024	R	Riccarton Road	Rimu Street	
0/1.113	L	Riccarton Road	Division Street	
0/1.216	R	Riccarton Road	Kauri street	
0/1.370	L	Riccarton Road	Matipo Street	
0/1.574	L	Riccarton Road	Wainui Street	
0/1.673	R	Riccarton Road	Puriri Street	
0/1.688	L	Riccarton Road	Rattray Street	
0/1.742	L	Riccarton Road	Shand Crescent East	
0/1.856	R	Riccarton Road	Konini Street	
0/1.883	L	Riccarton Road	Shand Crescent West	
0/1.948	L	Riccarton Road	Paeroa Street	
0/2.039	L	Riccarton Road	Euston	
0/2.085	R	Riccarton Road	Clyde Road	
0/2.135	L	Riccarton Road	Wharenui Road	
0/2.470	R	Riccarton Road	Balgay Street	
0/2.542	L	Riccarton Road	Field Terrace	
0/2.630	R	Riccarton Road	Ilam Road	
0/2.650	L	Riccarton Road	Middleton Road	
0/2.830	R	Riccarton Road	Newnham Terrace	
0/3.035	L	Riccarton Road	Auburn Avenue	
0/3.106	R	Riccarton Road	Waimairi Road	
0/3.153	L	Riccarton Road	Hansons Lane	
0/3.220	B	Riccarton Road		Pedestrian Xing Point
0/3.285	R	Riccarton Road	Main South Road Yaldhurst Road	
0/3.668	B	Main South Road	Curletts Road	

2 Description of the Road

2.1 Geographical Features and Zones

- The whole of the route is flat and travels through a range of land use zones;
- RP 0/0.000 to 0/0.535 - is bordered by local business centre and residential zones;
- RP 0/0.535 to 0/1.370 is bordered by business districts and inner city industrial zones;
- RP 0/1.370 to 0/3.106 is bordered by the local business centre and residential zones;
- RP 0/3.106 to 0/3.285 is bordered by central business district zone;
- RP 0/3.285 to 0/3.668 is bordered by residential zone.

2.2 Traffic Volumes

From the information supplied by the Christchurch City Council the most recent estimated AADT's are:

- RP 0/0.000 to 0/0.535 - 25,000;
- RP 0/0.535 to 0/1.370 - 25,000;
- RP 0/1.370 to 0/1.688 - 27,500;
- RP 0/1.688 to 0/1.948 - 27,000;
- RP 0/1.948 to 0/2.650 - 26,000;
- RP 0/2.650 to 0/3.035 - 25,750;
- RP 0/3.035 to 0/3.153 - 25,500;
- RP 0/3.153 to 0/3.285 - 24,000;
- RP 0/3.285 to 0/3.668 - 20,000.

2.3 Road Environment

The road audited is surfaced with either chip seal, asphaltic concrete, friction course or short sections of paving stones. Generally this provides the road user with a relatively poor running surface.

The surface has the following defects:

- Flushing/bleeding;

- Pavement cracking;
- Bandaged cracking which is the cause of delineation identification problems;
- Minor potholes;
- Uneven surface texture;
- Rough ride; and
- Uneven service covers, some with slippery surfaces.

The pavement width varies from 10-14 metres.

The environmental speed over sections of the audit route varies and is generally too fast when there is traffic congestion and / or queuing at the signal controlled intersections.

The speeds are generally still within the legal speed limits.

The audit team felt that drivers using the road would not be exposed to unnecessary hazards and safety would not be compromised if they:

- Drove to the legal speed limits;
- Drove to suit the weather and road conditions when affected by the weather;
- Exercised due caution at roundabouts and traffic signals.

Existing delineation of the roads audited varies over different sections. Generally this is as follows:

- Centreline and flush median marking with white RRPM's;
- Reflectorised edge lines;
- Some red RRPM's.

The delineation is generally of a poor quality and of varying standard. It appears to have been designed and installed in a piecemeal fashion, section by section. The existing markings are not consistent throughout the route audited.

The directional signing is generally to a good standard but of varying quality and type.

Cyclists/Pedestrians/Disabled are catered for to varying standards with a less than desirable quality generally over most of the route audited.

2.4 Crash Data

The team obtained the LTSA, AIS & CAS data relating to the route for the period 01 January 1997- 23 May 2002.

A total of 461 crashes were recorded on the data:

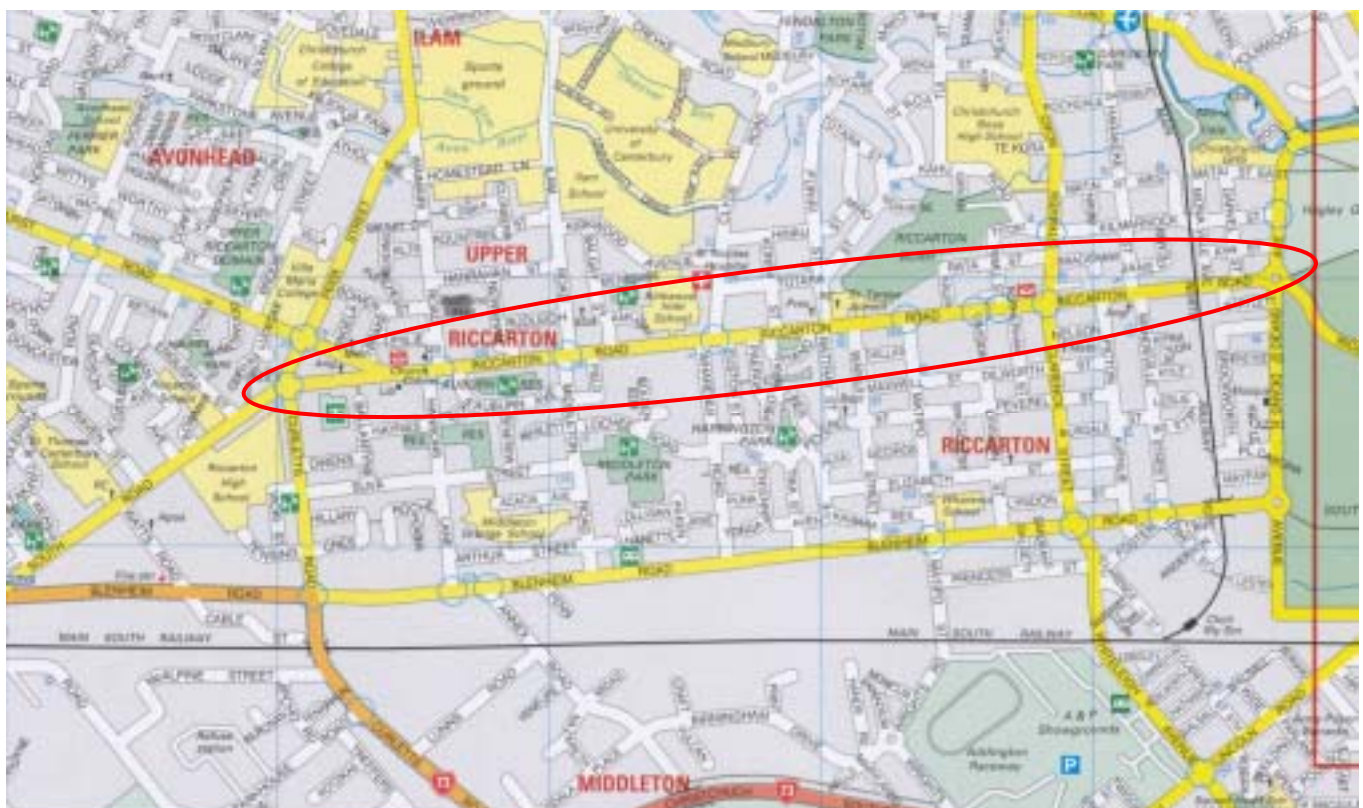
- 29% Mid Block crashes and 71% Intersections crashes;
- 22% or 101 crashes were injury crashes;
- 14 were serious injury crashes;
- 87 were minor injury crashes;
- 360 were non-injury crashes.

The crash types occurring on the route are:

- Overtaking 4%
- Lost Control/Head On 6%
- Pedestrian 4%
- Intersection 49%
- Rear end/Obstruction 37%

The Black and Grey Spot analysis for the route was referred to prior to and during the audit inspections. This analysis can be found in Appendix C.

2.5 Map of Area Denoting Roads Audited



3 Safety Audit Report

3.1 Maintenance Items

3.1.1 Route Delineation

- **Problem – Variations in Delineation**

The existing delineation of the route audited generally consisted of:

- Centreline and lane line markings with white RRPMS;
- Central flush median in some sections but not on other sections of the route that appeared to suit the installation of this feature;
- Reflectorised edge lines;
- Some red RRPM's on edge lines adjacent to obstructions;
- Edgeline tapers of varying lengths;
- No stopping lines of varying lengths and styles;
- Some redundant markings that were still visible;
- Inconsistent markings at intersections, in particular the location of intersection control limit lines.

All road markings were generally in poor condition.



Example of redundant markings that are still visible – Clyde Road



Example of an obstruction, which is not delineated with red RRPM's – Kauri Street intersection.

Recommendation

- Install RRPMs and pavement marking as identified in the safety inspection section (SIDD output) (see Appendix B) to ensure a consistent standard and quality throughout the length of the route audited;
- Prior to the next scheduled remark consider undertaking a pavement marking design over the full route to ensure consistency over the total length;
- Risk level “**High Risk**”.

3.1.2 Speed Limit Signs

- **Problem – Lack of Speed Limit Signs**

The legal speed limit on the route audited is 50 km/hr throughout the full length.

The route has **no** speed limit signs installed.

Considering that Riccarton Roads is a major route, the auditors considered that some advise to the road user of the Posted Speed limit is essential.

Recommendation

- Install 50 km/hr Speed limit signs at appropriate positions and spacing along the full length of the route;
- Install additional speed limit signs adjacent to major feeder intersections long the route;

- Risk level – “**Medium Risk**”.

3.1.3 Signage

- **Problem – Inconsistent Signage**

Signage is inconsistent throughout the route audited and generally includes all types of signs.

- Street nameplate signs are of varying standard and in many cases are located in positions where they are not visible to road users on the main route;
- Parking control signs are of varying standard, are generally in poor condition and are erected at varying heights and angles to the main route;
- The signage associated with the railway crossing is in poor condition and is to the “old’ standard;
- Many intersection control signs are damaged and some have been erected over the old shape signs. The latter feature makes the identification of the side road control type difficult for main route road users.



Example of damaged intersection control sign installed over “old” style sign – Kauri Street intersection



Example of a badly located Street Name Plate that is not visible from Riccarton road – Bartlett Street intersection.

Recommendation

- Install consistent signage throughout the route in the appropriate location with additional signs as required;
- Use MOTSAM Part 1 as a reference to standardise signage type, installation and location;
- Review current Street Name signage with a view to upgrading. The installation of any new signs should generally be on dedicated supports and located where they can be clearly seen by main route road users;
- Install advanced warning signs for intersection, which have turning restrictions;
- Upgrade the Railway Crossing signage immediately;
- Risk level “**High Risk**”.

3.1.4 Vegetation Control

- **Problem – Lack of vegetation maintenance/control within road reserve.**

Vegetation is obscuring signs, blocking visibility and sight distances, overhanging the carriageway and footpaths and affecting pedestrians. See photograph below.



Example of vegetation overhanging footpath and blocking visibility to signage

Recommendation

- Trim or remove existing vegetation within the road reserve and implement maintenance programme;
- Give notice to property owners to trim or remove existing vegetation and follow up regularly;
- Risk level “**Medium Risk**”.

3.1.5 Traffic Signals

- **Problem – Traffic signals are misaligned, not visible and too low.**

Some traffic signals have been hit, twisted or damaged, while others are located out of view from approaching traffic. In many cases the signal aspects are mounted too low. Examples of defects are:

- Traffic signals at intersections being too low;
- Traffic signals behind poles, verandas or trees – example at Division Street intersection;
- Traffic signals that are rotated on their poles or have been hit, and are either damaged or broken.

Recommendation

- Review traffic signal location and heights;
- Check maintenance performance and review to ensure damage and rotation of signals is repaired;
- Risk Level – **“High Risk”**.

3.1.6 Pedestrian/Disabled Persons Facilities

- **Problem – Inadequate facilities for the Users**

Footpaths and pedestrian cut downs are in poor condition and in need of immediate review and modification.

- Cut downs at kerb and channel interface are generally of poor condition and require reconstruction to remove steps and improve slopes for mobile scooters and wheelchairs as well as pedestrians;
- Surfacing on footpaths is very rough and uneven/stepped in many places;
- Surfacing across the carriageway at road crossing points is rough and stepped in many places;
- In some locations remedial work on service trenches is of a poor standard. When this defect occurs in a pedestrian travel path the resulting trip hazard is of concern.



Example of poor pedestrian cut downs, trenches that have been poorly repaired and could be trip hazards and slippery service cover plates.

Recommendation

- Review existing condition of pedestrian cut downs, footpath and crossing point surfacing and manage replacement with remedial actions being prioritised to ensure the removal of the most hazardous defects first;
- Investigate the real needs required for disabled persons at crossing points and implement remedial repairs ASAP to effect immediate improvements for users of mobile scooters and wheelchairs;
- Risk level – “**High Risk**”.

3.1.7 Road Surface

- **Problem – The Road Surface is variable throughout this route**

The surface of the road throughout the route varies from nearly new fine textured surfacing through to badly worn friction course or chip seal surfacing. The major defects observed are: -

- Service trenches that have been installed with surfacing that provides a poor level of ride;
- Surface crack repairs (bandaging) and trench edge repairs that are slick. At night and in poor light conditions these repairs can be mistaken for centreline and lane or edge line delineation and transverse limit lines and the like;
- Some sections of the road are showing signs of polishing and flushing, which may result in reduced skid resistance and differential variations in skid resistance;
- Sections that have been surfaced with friction course are showing signs of heavy wear particularly at intersection turning paths and at intersection high demand braking areas.

Recommendation

- Consider undertaking skid resistance and texture depth testing of the road surface throughout the route to determine the current level of the top surface condition;
- Consider undertaking immediate remedial repairs to polished and flushed areas and sections of the road with surface and subsurface failures such as potholes as a holding measure;
- Consider developing a strategy to cater for the resurfacing of the total route and prioritise this action within the Councils resurfacing programme. This is a high use road that requires a good standard of ride and braking skid resistance;
- Risk level – “**High Risk**”.

3.2 Level of Service Items

3.2.1 Uncontrolled and Controlled Intersections

- **Problem – High Exposure for Right Turn Motorists**
 - Right turn bays were observed to be functioning well although in many cases the stacking length was inadequate resulting in queuing occurring in the through lane;
 - The installed flush median generally continued through the intersections with no gaps and associated right turn stacking areas. This may lead to road users being reluctant to move onto the flush median prior to the turn position;
- Some examples are:
- Riccarton Road/Matipo Street Intersection
 - Riccarton Road/ Wainui Street Intersection
 - Riccarton Road/Puriri Street Intersection
 - Riccarton Road / Rattray Street Intersection
 - Riccarton Road/ Bush Inn Shopping Centre Entrance
- Some sections of the road without a flush median have a high crash rate associated with rear hit and turning type crashes. These sections of the road generally have high use roadside development such as motels and medical facilities on both sides of the road.

Recommendation

- Consider the installation of a central flush median to increase the safety for vehicles turning into both residential and commercial properties. The Auditors recommend that the flush median be installed as per MOTSAM at the following locations:
 - R.P 0/0.00 to 0/ 0.850 – Deans Avenue to Clarence Street/Straven Road intersection;
 - R.P. 0/1.11 to R.P.0/1.37 – Division Street to Matipo Street intersection;
 - R.P. 0/2.135 to R.P.0/3.035 – Wharenui Road to Auburn Avenue Intersection.
- Modify the existing flush median to provide right turn bays at intersections where required;

- Consider the extension of right turn stacking areas at all right turn bays where queuing will affect the ability of through traffic to pass the section of road on the left hand side of vehicles waiting to make a right turn;
- Risk Level - “**High Risk**”.

3.2.2 Street Lighting

- **Problem – Standard of existing street lighting along the route.**
 - The standard of lighting varies over the route audited and generally would comply with the requirements of the previous “Main Road” standard. However the majority of the route will not comply with the requirements of Category V2;
 - The recently completed reconstruction from Matipo Street to Puriri Street was one of the worst lit sections of the route and would almost certainly not comply with the requirements of Category V2;
 - Generally intersections are not lit to a standard which is higher than the main route and some conflict areas are lit to quite a low standard – example Clarence Street/Straven Road intersection;
 - Conflict lighting on all gazetted pedestrian crossing does not appear to have a minimum of 20 Lux illumination over the total “Zebra” crossing.

Recommendation

- Consider an investigation of the current level of street lighting along the total route;
- Consider implementing a prioritised lighting upgrade strategy for this busy road;
- Review the installed lighting standard on the section of road from Matipo Street to Puriri Street;
- Risk Level - “**Medium Risk**”.

3.2.3 Railway Crossing

- **Problem – Railway Crossing set up not to new standards**
 - The audited team observed that the Railway Crossing at the eastern end of the road does not have signs and pavement markings that comply with the latest standard as described in MOTSAM;
 - The surfacing of the road adjacent to the crossing is very rough which provides poor ride characteristics;

- There is a pedestrian verses vehicle conflict on the north eastern side of the crossing, where the footpath is not defined. This could lead pedestrians into conflict with eastbound vehicles left turning into Mona Vale Avenue;
- The roadside barriers on both sides of the road adjacent to the crossing are a timber post and rail and are in poor condition. In the event of a wayward vehicle impacting the barriers the rail could be a hazard that may increase the severity if the crash.



View looking west showing the pedestrian/vehicle conflict area where the footpath terminates and the roadside barrier.

Recommendation

- Review and implement Railway Crossing signage and road marking in terms of the latest standards as shown in MOTSAM;
- Implement a project to upgrade the carriageway/railway crossing junction including surfacing, pedestrian facilities and safety barriers;
- Risk Level - “**High Risk**”.

3.2.4 Cyclist Facilities

- **Problem – Inconsistent Cyclist Facilities**
 - Generally there are few provisions for cyclists on the route;
 - Some of the cyclist provisions, which are currently in place, are inadequate, may be dangerous and in some cases may be better removed instead of providing a false impression of a safety zone for cyclists;

- Where there are no provisions at all, it was observed that there is a definite need to specifically cater for cyclists due to the numbers using the route;
- The future provision cycle facilities may result in the need to provide alternative routes for cyclists and restricting cyclist access to certain parts of the route.



View looking east, on the approach to Deans Avenue Roundabout, showing an inadequate cycle lane. Note position of sump grate.



Close up, showing narrow cycle lane and cycle marking extending into live lane

Recommendation

- Fully review all options available to cyclists and align these to other facilities provided in the Christchurch City Council Cycle Strategy and in accordance with MOTSAM standards;
- Consider the provision of off road facilities and the possibility of restricting access to certain sections of the route;
- Risk Level - “**High Risk**”.

3.2.5 Advertising signage

- **Problem – Free standing sandwich board signs on Road Reserve**

The audit team observed on a number of occasions the complete over use and obstruction caused by sandwich board signs, which were erected on footpaths and berms. This combined to the excessive amount of signage mounted on buildings and in private property must be a source of driver distraction for road users. These problems include:-

- Sandwich boards that reduce the available footpath area – this must be a problem for disabled users;
- Signage that is mounted on fences, buildings and private property that could be the cause of driver distraction;
- Signage of all types that are blocking visibility and / or sight lines;
- High numbers of internally lit signs adjacent to traffic signal controlled intersections that may cause the road users attention to be diverted from the driving task. An example of this is the McDonalds site on the corner of Riccarton Road and Matipo Street - 5 illuminated white strips on the roof, an illuminated red and yellow McDonalds sign on the roof, and two pole mounted illuminated signs (Drive in and Mc Café).



Example of excess signage – Puriri Street intersection



Example of excess signage – Church Corner.

Recommendation

- The Christchurch City Council should review the advertising signage policy for Riccarton road in term of the Bylaw for Signs in Public Places and to take enforcement action where this is warranted;

- Where appropriate the Christchurch City Council should review conditions of Resource Consents for roadside activities, with respect to advertising signage and where necessary take appropriate enforcement action;
- Risk Level - “**Medium Risk**”.

3.2.6 Pedestrian Crossing Points

- **Problem – Pedestrian Crossing location**

The audit team observed pedestrians crossing the road in large numbers close to but not at the provided crossing points.

This practice was occurring at the pedestrian crossing to the east of Bartlett Street, at the Westfield Shopping Centre (where no formal crossing place is installed) and adjacent to the pedestrian refuge located near the Countdown car park area.

Details of the problems are as follows:

- Bartlett Street crossing – appears to be located too far to the east with relation to the bus stops. School children and others are tending to not use the crossing place but to cross the road directly, hence putting themselves at risk. The existing Bartlett street pedestrian crossing does not stand out to the road users as no bulbous kerbs and central splitter islands have been installed;
- Adjacent to the Westfield Shopping Centre – no formal crossing place. Pedestrians are in the main crossing the road adjacent to the bus stops on both sides of the road. This presents a real hazard for pedestrians on a section of the route where drivers attention may be diverted by looking for access to the shopping centre and the McDonald’s outlet;
- Adjacent to the Countdown car park – Church Corner. The pedestrian refuge seems to be in the right place but access for the car park area does not line up with the access to the refuge. The problem is compounded by the entrance to and exit from the Countdown car park onto to Riccarton road, which is located between pedestrian access to the car park and the location of the refuge.

Recommendation

- Consider relocating the pedestrian crossing at Bartlett Street further to the east and installing Bulbous kerbs and a central splitter island to accent the existence of the crossing;
- Consider the installation of a pedestrian refuge adjacent to the Westfield Shopping Centre adjacent to the redundant vehicle crossing at No 140 Riccarton Road. See photos below.



Suggested Pedestrian crossing point location adjacent No 140 on the north side of Riccarton Road



Suggested Pedestrian crossing point location on the south side of Riccarton Road. Note the pedestrian access from the shopping centre car park may need to be relocated.

- Consider providing pedestrian directional signage (maybe modelled on the TW- 32 type signs) pointing towards the crossing point. Also consider closing the vehicle access and exits to the Countdown car park from Riccarton Road to improve pedestrian safety. This would require all access to the car park to be from Hansons Lane with access to Riccarton Road via the traffic signal controlled intersection;

- Risk Level - “**High Risk**”.

3.2.7 Intersection Redesign

- **Problem – Existing Complex Intersections**

The audit team observed three main intersections had significant problems inherent to the intersection design. These are:

- Riccarton Rd./Straven Rd./ Clarence Street;
- Riccarton Rd./Ilam Rd./Middleton Rd;
- Riccarton Rd./Main South Rd./Yaldhurst Rd.

Problems associated with these intersections are:

- Road user confusion with the some what strange right turn directions and movements;
- Queuing and lane confusion;
- Intersection exit merging conflicts;
- Traffic signals position, operation and guidance;
- Lack of advance intersection directional signs;
- Pedestrian and disabled persons facilities within the current intersections;
- Visibility for all road users.

Recommendation

- Consider the urgent redesign of intersections including the factors listed above and the increase in traffic flows since the existing intersections were installed;
- During the design process consider the provision for dedicated right turn lanes and controls for this movement;
- Incorporate provisions for cyclists, pedestrians and disabled users into the designs;
- The designs should aim at reducing the intersection conflict areas to a minimum;
- Risk Level - “**High Risk**”.

3.2.8 Intersection exit merge areas

- **Problem – Insufficient merge lengths at Intersections**

Many intersections were observed to have exit merge area of an insufficient length to allow the manoeuvre to be undertaken safely as the two lanes merge into one. This problem generally occurs on the exit from traffic signal controlled intersections.

Examples of this problem are as follows:

- Matipo Street intersection – west bound – edge line starts too soon after the intersection. This encourages motorists on the LH side to move towards the centreline too early. No merge advisory signs installed;
- Clyde road – east bound – no stopping restriction east of the intersection too short. No merge advisory signs installed;
- Wharenui Road intersection – westbound – Two lanes at the traffic signal controlled intersection are forced to merge into one lane through the intersection because of parked cars on the west side exit. No merge advisory signs installed;
- Ilam Road - east bound - no stopping restriction east of intersection too short. No merge advisory signs installed;
- Waimairi Road exit – westbound adjacent to Bush Inn Shopping centre entrance - edge line starts too soon after the intersection, no stopping restriction east of intersection too short. No merge advisory signs installed.



Looking west on approach to Wharenui Road intersection - Note two through lanes



Looking west on exit from Wharenui Road intersection - Note no merge length because of parking area - two lanes must merge through intersection.

Recommendation

- Matipo Street intersection – west bound - Install PW- 43 merge sign. Remove edge line back to bus stop and extend lane lines west of intersection;
- Clyde road – east bound – Install PW- 43 merge sign. Extend No Stopping restriction to 1st driveway;
- Wharenui Road Intersection – westbound – consider removing parking or providing setback parking to allow the two lanes to merge after the intersection exit. Install PW- 43 merge sign;
- Ilam Road - east bound - Install PW- 43 merge sign. Extend No stopping restriction to 1st driveway;
- Waimairi Road exit – westbound adjacent to Bush Inn Shopping centre entrance – Remove parking from in front of the Super Liquor outlet, extend the No Stopping restriction and start the edge line taper after the west entrance to the BP service station. Install PW- 43 merge sign;
- Consider redesigning the east bound entrance to the Bush Inn Shopping Centre east of Waimairi Road, to remove the concrete channel from the left turn lane and lengthen the left turn lane for the car park entrance;
- Risk Level - “**High Risk**”.

4 AUDIT TEAM STATEMENT

We certify that in the preparation for and during this safety audit we have used the following documents:

- Transfund New Zealand – Safety Audit Procedures for Existing Roads – December 1998 –Report No RA97/6235.
- Transit New Zealand – State Highway Asset Maintenance Management Manual – Chapter 2, Safety Management Strategy – February 1996.
- Road Location and Distance Data, including AADT’s – supplied by Christchurch City Council ex RAMM data.
- The Pavement Marking and Street lighting target standards - supplied by Christchurch City Council.

We have inspected the road over the length detailed in the report. We have endeavoured to identify features of the road and intersections on this road, which could be removed, modified or upgraded to improve safety. The problems identified have been included in this report, together with assessed risk levels and recommendations, which should be considered for implementation and/or remedial action.

Signed: Date:

JEFF KAYE, National Highway Safety Co-ordinator, Opus International Consultants Ltd, Christchurch.

Signed: Date:

Mark Millar, Network Road Safety Engineer, Opus International Consultants Ltd, Christchurch.

APPENDIX A

Health and Safety and Temporary Traffic Management Plan

APPENDIX B

**SIDD (Safety Inspection Deficiency Data)
Road Safety Inspection Output**

APPENDIX C

Black and Grey Spot Analysis

APPENDIX D

LTSA (AIS & CAS Data)