



Transport Planning and Design
Level 1, 284 Kilmore Street
www.viastrada.nz

Shirley Road / Marshland Road Raised Safety Platform

Scheme design safety audit



Report prepared for
Christchurch City Council

January 2023



This document has been prepared for the benefit of Christchurch City Council. No liability is accepted by ViaStrada Ltd, or any of its employees or sub-consultants with respect to its use by any other party.

Quality Assurance Statement		
ViaStrada Ltd Level 1, 284 Kilmore Street PO Box 22 458 Christchurch 8140 New Zealand Phone: (03) 366-7605 www.viastrada.nz info@viastrada.nz	Project manager:	David McCormick Transportation Engineering 021400232 David@viastrada.nz
	Prepared by:	David McCormick Transportation Engineering 021400232 David@viastrada.nz
	Reviewed by:	Warren Lloyd Director – Senior Transportation Engineer 027 292 9830 warren@viastrada.nz
Project number:	1139-11-1	
Project name:	Shirley Road / Marshland Road Raised Safety Platform	
Document version	Date	
Final report	FinalDate	
First draft	24/01/2023	

Disclaimer

The findings and recommendations in this report are based on the site visit undertaken by the safety audit team (SAT), an examination of available relevant plans, the specified road and environs, and the SAT's professional knowledge and experience. However, it must be recognised that no audit can guarantee the elimination of all possible safety concerns as all traffic environments consist of a multitude of elements that are never completely within the control of engineering design.

Safety audits, by nature, focus on aspects relating to safety and therefore do not constitute a complete review of design or assessment of standards with respect to engineering or planning documents. Similarly, the safety audit focuses on the plans provided and the relevant design stage.

This audit applies to the stated project. Whilst some issues covered are general and might be applicable to other locations, the SAT does not take any responsibility for transferral of concepts to other projects or locations.

While every effort has been made to ensure the accuracy of the report, it is made available on the basis that anyone relying on it does so at their own risk without any liability to the safety audit team or their organisations.



Table of Contents

1.	Introduction	3
1.1	Brief and project description	3
1.2	The safety audit team.....	3
1.3	Meetings and site visits	3
1.4	Project information provided	3
1.5	Design vehicles.....	4
1.6	Items not covered	4
	Safe system audit procedure	4
1.7	Identification of safety concerns.....	4
1.7.1	Crash probability	4
1.7.2	Crash severity.....	5
1.7.3	Crash risk rating	5
1.7.4	Recommendations	6
1.8	Project team response process.....	7
2.	Crash history.....	8
	Identification of safety concerns.....	9
2.1	General	9
2.1.1	Non platformed pedestrian crossing Significant.....	9
2.1.2	No pedestrian crossing lighting Comment	10
2.1.3	Driveway proximity to platform ramp Comment	10
2.2	Design issues.....	11
2.2.1	Bus blocking slip lane Minor	11
2.2.2	Right turning from driveways Comment	13
2.3	Intersections	14
2.3.1	Western pedestrian crossing alignment Comment.....	14
2.3.2	Cyclists merging on approach to Intersection Moderate	14
2.3.3	Cycle detection Comment	15
2.3.4	Existing tactile paving Comment.....	16
2.4	Signs and markings.....	17
2.4.1	Cycle waiting facilities at intersections Comment	17
2.4.2	Missing continuity lines across cycle lane on North Parade Minor.....	17
2.4.3	No turning arrow for Palms entry Minor	18



2.4.4	RG17 sign for new median island Minor	20
3.	Audit statement	21

1. Introduction

1.1 Brief and project description

ViaStrada (the safety auditors) have been commissioned by the client to undertake a scheme stage safe system audit of Shirley Road / Marshlands road raised safety platforms, that complies with the Waka Kotahi NZ Transport Agency *Safe System audit guidelines* (2022).

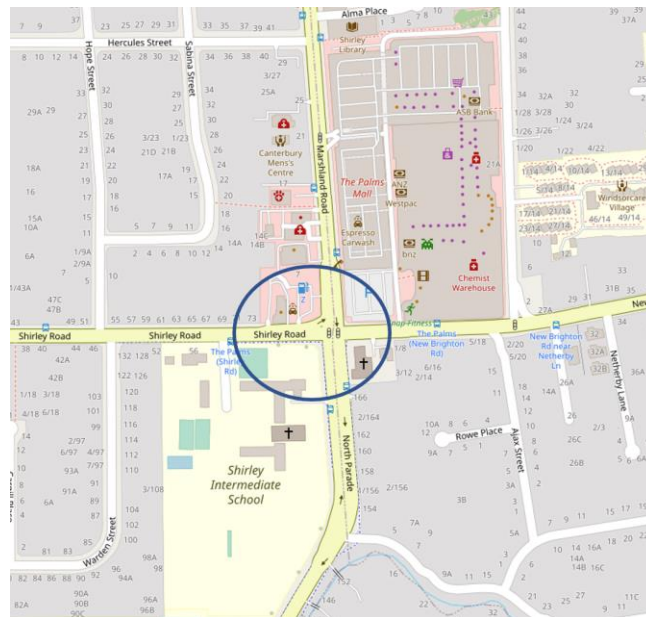


Figure 1-1: Extent of audit shown within blue circle

The infrastructure assessed in this audit includes all infrastructure within the site extents relating to the roading network.

To date, no safety audit has been completed for this project. The scheme design report completed by Beca includes a safe system assessment.

This safe system audit includes the identification of safety concerns (described in section 1.7 and detailed in section 2).

1.2 The safety audit team

The safe system audit was carried out by the Safety Audit Team (SAT) consisting of:

- David McCormick, the safety audit team leader of ViaStrada Ltd
- Jon Ashford, a safety audit team member of ViaStrada Ltd

1.3 Meetings and site visits

The SAT met at ViaStrada offices to review the drawings on 13/01/2023. The designer's representative Gemma Dioni briefed the safety audit team on the project and clarified the scope of the audit.

The daytime site visit was undertaken on 13/01/2023.

1.4 Project information provided

The SAT has received the following plans and information on the roads and traffic within the audit area:



Table 1-1: plans reviewed

Document	Date	Description
Shirley Road Marshland Road North Parade New Brighton Road Scheme Design Report	11/01/2023	Shirley Road Marshland Road North Parade New Brighton Road Scheme Design Report

1.5 Design vehicles

For intersections, Austroads *Guide to Road Design Part 4: Intersections and Crossings: General* (AGRD4, 2017) describes a design vehicle as the largest vehicle that can perform any particular turning movement from the appropriate approach lane to the appropriate departure lane with adequate clearances to features such as kerbs and roadside furniture.

The SAT has assumed the following design vehicles for this project:

- 11.5 m rigid truck or urban bus

1.6 Items not covered

This scheme stage safe system audit does not include a safe system assessment.

Safe system audit procedure

The primary objective of a Safe System audit is to deliver a project that achieves an outcome consistent with the Safe System approach, that is, minimisation of death and serious injury. This audit follows the Waka Kotahi NZ Transport Agency *Safe System Audit Guidelines* (2022) with respect to identification of safety concerns.

1.7 Identification of safety concerns

The identification of safety concerns is more akin to the traditional road safety audit, undertaken according to safe systems principles. Each issue is assessed in terms of the probability of a crash arising, the expected severity of that crash type, and the resulting crash risk rating. Recommendations to address or mitigate the safety concerns are provided.

1.7.1 Crash probability

The probability of a crash is qualitatively assessed based on expected exposure (how many road users will be exposed at the site) and the likelihood of a crash resulting from the presence of the particular safety issue. Probability ranges from “very likely” to “very unlikely”, and have been based on the categories in the Austroads *Guide to Road Safety part 6: Road Safety Audit* (2022) but adapted for the 4-tier probability structure used in the NZ guide (Waka Kotahi, 2022), see Table 0-1.

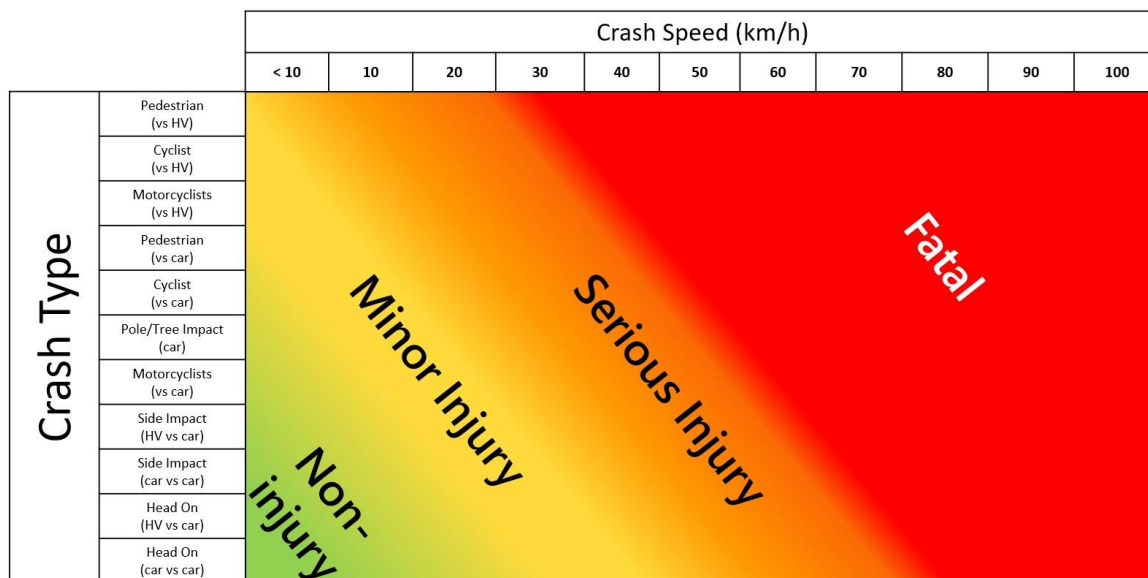
Table 0-1: Relationship between crash probability and frequency

Probability of a crash occurring	Frequency of crashes expected
Very likely	One crash every 3 months (4+ crashes / year)
Likely	One crash every 3-12 months (1-4 crashes / year)
Unlikely	One crash every 1-7 years (0.1-1 crashes / year)
Very unlikely	One crash every 7+ years (<0.1 crashes / year)



1.7.2 Crash severity

The expected crash severity is qualitatively assessed based on factors such as expected speeds, type of collision, and type of user/vehicle/object involved; Figure 0-1, which is based on Austroads *Guide to Road Safety part 6: Road Safety Audit* (2022) but in colour instead of greyscale, gives an indication of the expected crash severity based on these factors. Table 0-2 describes the four crash severities used.



General indication only – professional judgement required

Figure 0-1: Expected crash severity by crash type and crash speed (adapted from Austroads GRS6, 2002)

Table 0-2: Crash severity descriptions (adapted from Waka Kotahi Safe Systems Audit Guidelines, 2022)

Severity outcome	Description
Fatal	Where Safe System boundary conditions are exceeded. A death occurring as the result of injuries sustained in a road crash within 30 days of the crash.
Serious	Where Safe System boundary conditions are exceeded. Injury (fracture, concussion, severe cuts or other injury) requiring medical treatment or removal to and retention in hospital.
Minor	Where Safe System boundary conditions are met. Injury which is not 'serious' but requires first aid, or which causes discomfort or pain to the person injured.
Non-injury	Where Safe System boundary conditions are met. Property damage crashes.

Reference to historic crash data or other research for similar elements of projects, or projects as a whole, have been drawn on where appropriate to assist in understanding the likely crash types, probability and severity that may result from a particular concern.

1.7.3 Crash risk rating

The probability and severity ratings are used together to develop a combined qualitative risk ranking for each safety issue using the Waka Kotahi Safety Concern Risk Rating Matrix shown in Table 0-3. The



qualitative assessment requires professional judgement and experience from a wide range of projects of varying sizes and locations.

Table 0-3: Safety concern risk rating matrix (from Waka Kotahi Safe Systems Audit Guidelines, 2022)

		Severity outcome				
		Non-injury	Minor	Serious	Fatal	
		Property damage only (PDO)	Injury which is not 'serious' but requires first aid, or which causes discomfort or pain to the person injured.	Injury (fracture, concussion, severe cuts or other injury) requiring medical treatment or removal to and retention in hospital.	A death occurring as the result of injuries sustained in a road crash within 30 days of the crash.	
Probability of a crash	Very likely	Minor	Moderate	Safe System injury threshold	Serious	Serious
	Likely	Minor	Moderate		Serious	Serious
	Unlikely	Minor	Minor		Significant	Serious
	Very unlikely	Minor	Minor		Significant	Significant

While all safety concerns should be considered for action, the client will make the decision as to what action will be adopted. This report gives safety ranking guidance and it is acknowledged the client must consider factors other than safety alone. The suggested action for each concern category is given in Table 0-4.

Table 0-4: Concern categories

Risk	Suggested Action
Serious	Serious safety concern that must be addressed and requires changes to avoid serious injury consequences.
Significant	Significant safety concern that should be addressed and requires changes to avoid serious injury consequences.
Moderate	Moderate safety concern that should be addressed to improve safety
Minor	Minor safety concern that should be addressed where practical to improve safety.

1.7.4 Recommendations

Each issue is accompanied by a list of recommendations to address the issue. As per the safe systems framework, these are classified as relating to either:



- Primary treatments – i.e. those capable of virtually eliminating death or serious injury resulting from the particular safety issue; or
- Supporting treatments – reduce the overall harm caused by the safety issue.

While safety comments do not require a specific recommendation, in some instances suggestions may be given by the SAT.

1.8 Project team response process

In accordance with the procedures set down in the Waka Kotahi NZ Transport Agency *Safe System Audit Guidelines (2022)* the audit report will be submitted to the client who will instruct the wider project team to respond.

No changes, however small they may appear, may be made to any of our writings in the main audit section of our report without our express review and consent. This restriction includes our CAT responses.

We do not consent to any changes ...
to be made to the main audit section
of our report.

The safety issues raised in this audit will require responses from the designer and, after the CAT has had a chance to clarify issues further, the project safety engineer. Finally, the client decision and action taken against the safety issues will also be recorded.

The following people have been identified by the client for these roles (Table 0-5).

Table 0-5: project team members relevant to this audit (to be completed by the client)

Role	Name	Organisation
Designer response	S Rajanayagam	BECA
Safety engineer		
Client decision		
Action taken by		



2. Crash history

Waka Kotahi holds a national database of crashes (CAS) for New Zealand. Crashes are generally investigated for the previous five years to ensure a crash pattern is monitored, rather than one off events.

The crash history for this project is detailed in Shirley Road Marshland Road North Parade New Brighton Road Scheme Design Report. Key points of relevance are:

- *Filtered right turning traffic is a safety concern at this intersection as indicated by four right turn against (LB) crashes noted in crash history. This was reinforced on site by observed late orange/red right-turns being made.*
- *For a recent crossing (no turns) crash, it is noted that the approach where the driver reportedly did not stop at a steady red light also is not equipped with overhead mast arm signals.*
- *Prohibited right-turning movements were observed out of The Palms Shopping Centre carpark from New Brighton Road. Whilst right-turn are allowed into, The Palms Shopping Centre carpark from New Brighton Road, the presence of the traffic island requires these vehicles to encroach into the through lane. This results in following through traffic encroaching into the cycle lane to pass queued traffic, increasing the risk of conflict with cyclists.*
- *A prohibited U-turn was also observed on the New Brighton leg around the median island, as well as right-turn movements existing The Palms Shopping Centre carpark.*



Identification of safety concerns

2.1 General

2.1.1 Non platformed pedestrian crossing

Significant

The left turn slip lane from Shirley Road into Marshland Road does not have a raised safety platform installed on the pedestrian crossing. The concern is that motor vehicles will accelerate from the raised safety platform to the limit line, past where vulnerable road users are crossing and in excess of tolerable collision speeds.

The crash type/s expected are pedestrians being struck by motor vehicles.

The risk factors:

- Higher speed of vehicles beyond the RSP,
- High volume of vehicles using the slip lane, (123 am, 189 noon, and 305 pm peak hour),
- Conspicuity of pedestrians due to low volumes.

Probability of crash occurring	Unlikely
Expected crash severity	Serious injury
Primary treatment recommendations:	
2.1.1.1	Remove slip lane
2.1.1.2	Signalise the slip lane pedestrian crossing
2.1.1.3	Provide RSP for the pedestrian zebra crossing
Supporting treatment recommendations:	
2.1.1.4	Install red block marking
2.1.1.5	Install W16-2-Pedestrian crossing signage as per TCD manual requirements

Responses:	
Designer	
SAT	
Safety Engineer	
Client	



2.1.2 No pedestrian crossing lighting

Pedestrian safety can be compromised if the lighting is inadequate at their crossing locations. The crash types are motorised vehicles versus vulnerable road users. The standards for road lighting at pedestrian crossings may have changed since this installation. The existing pedestrian crossing lighting provisions are assumed to be sufficient within the scheme design report. No specific crossing lighting is provided at this location so lighting check should be completed.

AS NZ 1158.4 provides pedestrian crossing requirements.

Comment

Probability of crash occurring	N/A
Expected crash severity	N/A
Primary treatment recommendations:	
2.1.2.1	Confirm if adequate lighting is provided at the intersection and at the pedestrian crossings as per 1158:04
Supporting treatment recommendations:	
2.1.2.2	N/a

Responses:

Designer	
SAT	
Safety Engineer	
Client	

2.1.3 Driveway proximity to platform ramp

The driveway into 7 Marshland Road (Z – Shirley) is located within the raised safety platform approach ramp. The ramp proximity is not expected to result in loss of control crashes due to the levels required to raise to the platform height

Comment

Probability of crash occurring	N/A
Expected crash severity	N/A
Primary treatment recommendations:	
2.1.3.1	Consider relocating the platform away from the driveway
Supporting treatment recommendations:	
2.1.3.2	N/a

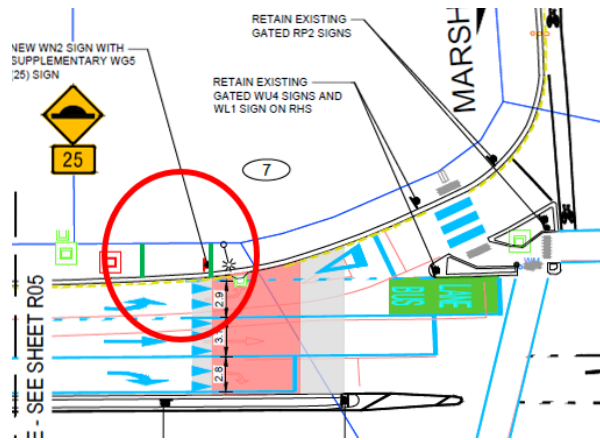


Figure 2-1: indicative driveway location

Responses:	
Designer	
SAT	
Safety Engineer	
Client	

2.2 Design issues

2.2.1 Bus blocking slip lane

The left turning slip lane from Shirley Road into Marshland Road will be blocked everytime a bus stops in the allocated space at the traffic lights. If the bus stops with the front wheels at the limit line, the front of the bus will encroach the pedestrian crosswalk.

Minor

Probability of crash occurring	Unlikely
Expected crash severity	Minor injury
Primary treatment recommendations:	
2.2.1.1	Remove the slip lane



The crash type/s expected rear end crashes between stopped buses and motor vehicles trying to access the turning lane.

The risk factors are:

- Regular volume of buses (11 per hour)
- High volume of turning vehicles using the slip lane (123 am, 189 noon, and 305 pm peak hour)
- There is roughly a two metre gap between kerb and rear of bus that some drivers may not mistake as being wide enough.
- The downhill platform gradient prior to the bus stop.

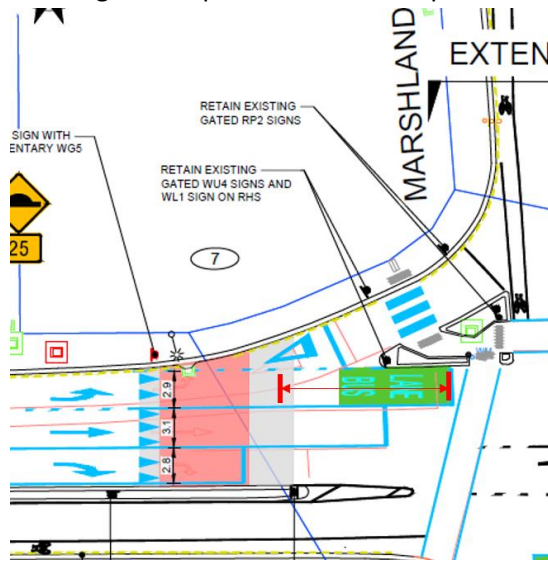


Figure 2-2: Extents of bus blocking slip lane

2.2.1.2 Re align crosswalk to push the limit line and bus stop back, which would completely block the sliplane.

Supporting treatment recommendations:

2.2.1.3 N/a

Responses:

Designer

SAT



Safety Engineer	
Client	

2.2.2 Right turning from driveways

Comment

The safety concern is drivers may drive over the median island to preform a right turn out of the Z Service Station because the new RSP puts them at the same height as the raised median that was put there to restrict this movement.



Figure 2-3: The current signs on the median island

Probability of crash occurring	N/A
Expected crash severity	N/A
Primary treatment recommendations:	
2.2.2.1	As the RSP is not a crossing, consider providing a physical deterrent to stop people driving across the RSP and median island.
Supporting treatment recommendations:	
2.2.2.2	Ensure the No Right Turn sign is correctly oriented and maintained to remind drivers not to right turn.

Responses:	
Designer	
SAT	
Safety Engineer	
Client	



2.3 Intersections

2.3.1 Western pedestrian crossing alignment

Pedestrians are required to walk on an angle across the western pedestrian crosswalk. This is believed to be a legacy issue from the existing layout.

Due to the legacy layout no hook turn box is possible, users walk further across the road, and some pedestrians go through or around the island and approaching drivers aren't sure if the pedestrians are continuing to the zebra crossing or crossing to the palms.

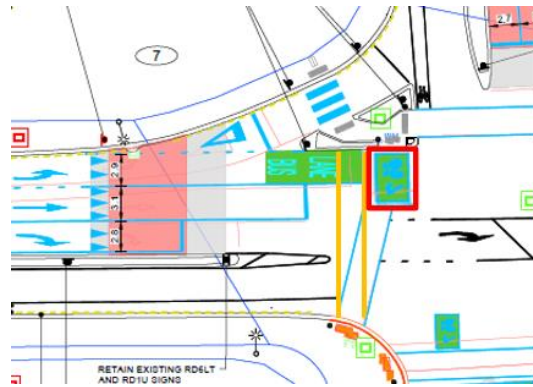


Figure 2-4: Straight crosswalk option

Comment

Probability of crash occurring	N/A
Expected crash severity	N/A
Primary treatment recommendations:	
2.3.1.1	Realign the crosswalk to be straight as shown in Figure 2-4.
Supporting treatment recommendations:	
2.3.1.2	N/a

Responses:

Designer	
SAT	
Safety Engineer	
Client	

2.3.2 Cyclists merging on approach to Intersection

Moderate

Probability of crash occurring	Likely
--------------------------------	--------



The safety issue is cyclists are expected to merge with buses and left turning traffic once the cycle lane ends on the Shirley Road west approach. *“There can be safety issues with traffic crossing bus lanes in and out of side roads and not checking first for the presence of cycles in the bus lane” (Newcombe and Wilson, 2010).*

The crash type/s expected buses and motor vehicles impacting cyclists from behind and side on.

The risk factors

- Regular volume of buses (11 per hour),
- High volume of motor vehicles using the slip lane, (123 am, 189 noon, and 305 pm peak hour),
- No provision for straight through cyclists (16 per day),
- The long length of left turn slip lane exposes cyclists for an extended time.

Expected crash severity	Minor injury
Primary treatment recommendations:	
2.3.2.1	Provide clear signage / markings and colour surfacing indicating that cyclists use this area.
Supporting treatment recommendations:	
2.3.2.2	Reduce length of continuity lines where motorised vehicles turn into the bus / left turn lane.

Responses:

Designer	
SAT	
Safety Engineer	
Client	

2.3.3 Cycle detection

No cycle detectors are shown on any approach. Providing cycle detection on the minor road though and turning movements is important to provide a good LOS to cyclists. Without detectors cyclists may run the red light during off peak periods.

		Comment
Probability of crash occurring		N/A
Expected crash severity		N/A
Primary treatment recommendations:		
2.3.3.1	Provide cycle detection on side road approaches	
Supporting treatment recommendations:		



2.3.3.2 | N/a

Responses:	
Designer	
SAT	
Safety Engineer	
Client	

2.3.4 Existing tactile paving

The safety issue is that the existing directional ground tactile paving are guiding usings to continue along the footpath not directing them to the crossing point or traffic signal pole. The relevant standards are [Waka Kotahi RTS 14](#)



Figure 2-5: Incorrectly installed directional paving

Comment

Probability of crash occurring	N/A
Expected crash severity	N/A
Primary treatment recommendations:	
2.3.4.1	Reorientate directional paving shown in Figure 2-5
Supporting treatment recommendations:	
2.3.4.2	Check existing paving and confirm compliance as per RTS 14

Responses:	
Designer	
SAT	
Safety Engineer	
Client	



2.4 Signs and markings

2.4.1 Cycle waiting facilities at intersections

Comment

Advanced stop boxes (ASB) advanced stop lines (ASL) and hook-turn boxes (HTB) provide safer and user friendly opportunities for cyclists to wait at signalised intersections.

However, due to the different skillsets and experience of cyclists, some riders will not use a facility that has potential for conflict with moving traffic. For example an interested but concerned (IBC) cyclist is more likely to use an ASL and a HTB in preference to a ASB as they can access these facilities in parallel with moving traffic.

The designer needs to identify the type of cyclist they expect at the intersection, and provide the most appropriate type of facility for this user group.

[CNG – Cyclist waiting facilities at intersections](#)

Probability of crash occurring	N/A
Expected crash severity	N/A
Primary treatment recommendations:	
2.4.1.1	Designer to identify the expected cyclist type at the intersection and provide the most appropriate facility for this user.
Supporting treatment recommendations:	
2.4.1.2	N/a

Responses:

Designer	
SAT	
Safety Engineer	
Client	

2.4.2 Missing continuity lines across cycle lane on North Parade

Minor

The safety issue is that no continuity lines are shown in the scheme design through the conflict area of vehicles wanting to turn left from the through lane and across the cycle lane, out of North Parade. This can result in drivers crossing in locations that are not anticipated or expected by cyclists.

The crash type/s expected motor vehicles cutting off and striking cyclists

The risk factors

Probability of crash occurring	Unlikely
Expected crash severity	Minor injury
Primary treatment recommendations:	
2.4.2.1	Provide continuity lines across cycle lanes to indicate where vehicles should travel across the cycle lane.



- Low volume of left turning motor vehicles (53 am, 24 noon, 34 pm peak hour)
- Low volume of through cyclists (1 am, 16 noon, 2 pm peak hour)

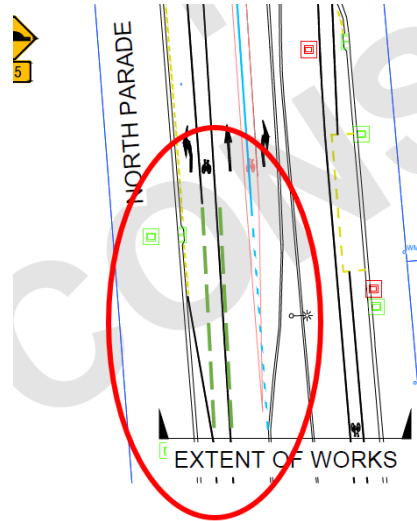


Figure 2-6: Location of missing continuity lines

2.4.2.2	Provide green road marking to highlight the conflict area
---------	---

Supporting treatment recommendations:

2.4.2.3	N/a
---------	-----

Responses:	
Designer	
SAT	
Safety Engineer	
Client	

2.4.3 No turning arrow for The Palms entry

Minor

The safety issue is the New Brighton Road entry into The Palms car park will be left-in left-out only. This will cause some drivers to find new routes from what they have previously

Probability of crash occurring	Very unlikely
Expected crash severity	Non-injury



done. Drivers can become frustrated with changes that they don't know about or understand the rationale behind the change.

The crash type/s expected is drivers making their previous turns and colliding with through vehicles on New Brighton Road or impacting the mountable median island.

The risk factors

- Unknown volume of drivers that turn right into and out of this car park exit.
- High volume of through traffic on New Brighton Road that will conflict with peak hour commuter traffic (249 am, 238 noon, 492 pm peak hour)
- Higher speed of through traffic (perhaps check MegaMap re operating speed as it could be low???) I think this comment could apply to all safety 'factors'

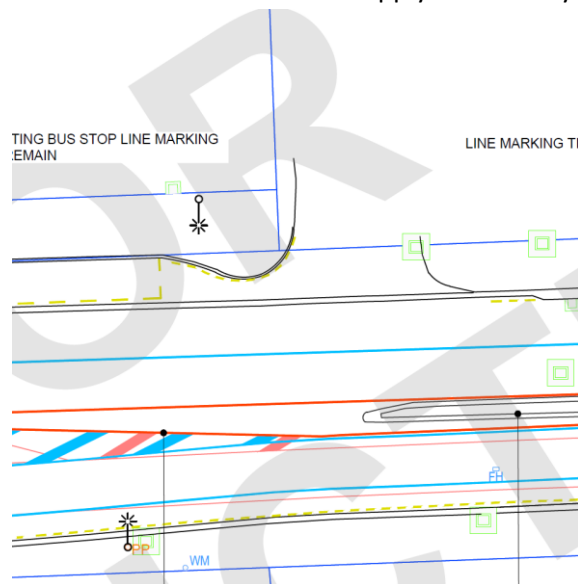


Figure 2-7: The Palms driveway on New Brighton Road

Primary treatment recommendations:

2.4.3.1	Provide no turning signs and arrow road markings from existing palms entry / exit
---------	---

Supporting treatment recommendations:

2.4.3.2	Target the consultation information to inform drivers that may have previously used this entry exit to turn right in or out of the Palms driveway on New Brighton Road
---------	--



Responses:	
Designer	
SAT	
Safety Engineer	
Client	

2.4.4 RG17 sign for new median island

Minor

The proposed median island along New Brighton Road does not have RG17 signs installed to identify the extents of the island for drivers.

The crash type/s expected is motor vehicles striking the island and possibly losing control or suddenly swerving away from the island and into the cycle lane.

The risk factors

- High volume of through traffic on New Brighton Road (319 am, 190 noon, 261 pm peak hour)

Probability of crash occurring	Unlikely
Expected crash severity	Minor injury
Primary treatment recommendations:	
2.4.4.1	Provide RG17 or RG17A signs to help identify the island extents.
Supporting treatment recommendations:	
2.4.4.2	Provide TTM for new road layout for existing drivers once project is complete

Responses:	
Designer	
SAT	
Safety Engineer	
Client	



3. Audit statement

We certify that we have used the available plans, and have examined the specified roads and their environment, to identify features of the project we have been asked to look at that could be changed, removed or modified to improve safety.

The safety issues identified and noted in this report are summarised in Table 3-1.

Table 3-1: Summary of Issues

<i>Serious</i>	<i>Significant</i>	<i>Moderate</i>	<i>Minor</i>	<i>Comments</i>	<i>Total</i>
0	1	1	4	6	12
<i>Issue</i>					<i>Ranking</i>
2.1.1 Non platformed pedestrian crossing					Significant
2.1.2 No pedestrian crossing lighting					Comment
2.1.3 Driveway proximity to platform					Comment
2.2.1 Bus blocking slip lane					Minor
2.2.2 Right turning from driveways					Comment
2.3.1 Western pedestrian crossing alignment					Comment
2.3.2 Cyclists merging on approach to Intersection					Moderate
2.3.3 Cycle lane detection					Comment
2.3.4 Existing ground tactile indicators					Comment
2.4.1 Cycle waiting facilities at intersections					Comment
2.4.2 Missing continuity lines across cycle lane on North Parade					Minor
2.4.3 No turning arrow for Palms entry					Minor
2.4.4 RG17 sign for new median island					Minor



Designer: **Position**

Signature Date

Auditor response: **Position**

Signature Date

Safety Engineer: **Position**

Signature Date

Project Manager: **Position**

Signature Date

Project sponsor - action completed: **Position**

Signature Date

Audit report distributed on: **Date**