



Kent Road, Pascoe Vale

Road Safety Audit

Audit Stage: Post-completion

**SAFE
SYSTEM
SOLUTIONS** 
ROAD SAFETY · AUDITING · ENGINEERING · PROJECT DEVELOPMENT

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Information Page

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Safe System Solutions Pty Ltd

Victoria: Brunswick | Camberwell | Hamilton | Bendigo
Queensland: Brisbane
Sweden: Lidköping

info@SafeSystemSolutions.com.au

Office 4/35 Hope Street, Brunswick, Vic, 3056
694 Burke Road, Camberwell, Vic, 3124
Level 11/88 Tribune Street, South Brisbane, Qld, 4101
+61 3 9381 2222

www.SafeSystemSolutions.com.au

ACN: 164 341 084 ABN: 98 164 341 084 Industry Code: 99994
Professional Indemnity Insurance Policy Number: 201908-0659 R1 BIA
Public Liability Insurance Policy Number: 15T2402729
Victorian WorkCover Policy Number: 14074213

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List of Abbreviations

AGRD – Austroads Guide to Road Design

RDN – Road Design Note

RSA – Road Safety Audit

vpd - Vehicles per day

1. Introduction

Safe System Solutions Pty Ltd has been engaged by Merri-Bek City Council to undertake a Post-completion Road Safety Audit (herein referred to as either RSA or audit) for Kent Road, Pascoe Vale.

The location of the RSA is shown in Figure 1.

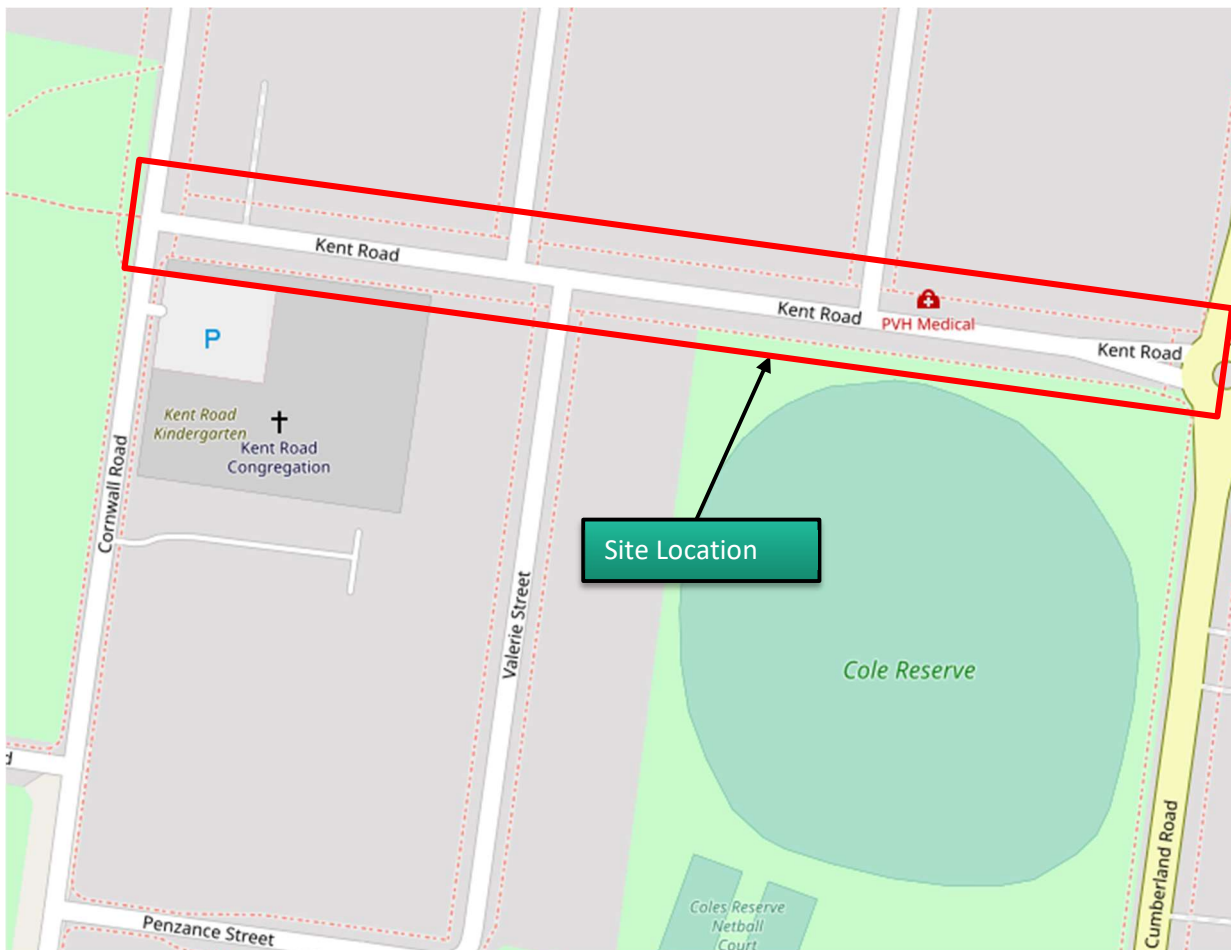


Figure 1: Locality plan (source: OpenStreetMap)

1.1 Purpose of this report

The purpose of this report is to document the findings of the completed RSA and offer recommended mitigations to identified road safety risks and hazards.

1.2 Scope and limitations

This report has been prepared by Safe System Solutions Pty Ltd for the client and may only be used and relied on by the client for the purpose agreed between Safe System Solutions Pty Ltd and the client as set out in Section 1.1 of this report.

2. Guidance for RSA

RSA is a term used internationally to describe a recognised process which identifies road safety related risks and hazards. The primary objective of the RSA is to reduce road trauma at the RSA location. The Guide to Road Safety Part 6: Road Safety Audit (Austroads, 2022) is the primary guidance for undertaking RSAs in Australia and New Zealand.

An RSA is not a review or check of compliance with standards and/or guidelines for design projects or existing roads and it is possible that not every risk or hazard that affects road user safety has been identified.

Although the adoption of the audit recommendations will improve the level of safety of the audit location it will not, however, eliminate all the road user safety risks.

RSA is a formal process and responses to audit findings and recommendations should be documented by the client in writing. If recommendations are not accepted by the client, then reasons should be included within the written response. A client is under no obligation to accept all the audit findings and recommendations and should consider these in conjunction with all other project considerations. It is not the role of the auditor to approve the client's response to an audit.

2.1 RSA within the Safe System

The RSA pre-dates the emergence of the Safe System approach. Within the Safe System, an RSA is relevant as it is recognised that full compliance with road standards alone may not result in a road system that eliminates fatal and serious injury road crashes.

The Guide to Road Safety Part 6: Road Safety Audit states:

Safe System principles must be given due consideration in all activities within the road safety management of a road network, including RSA.

In basic terms this is to be achieved during the RSA process by:

- *Identifying and considering key crash types that result in fatal and serious injury*
- *Relating possible crash forces to tolerable levels, regardless of the likelihood, when identifying and assessing risks/hazards*
- *Consideration of audit findings and mitigation measures by their alignment with the Safe System e.g. in terms of operating speed, impact angles etc.*

While RSAs are intended to identify risks and hazards associated with all crash types, increased focus is required to identify risks and hazards that may result in fatal and serious injury crashes. For this reason, sound knowledge in the Safe System is essential for all participants in the RSA process.

VicRoads Safe System Assessment Guidelines (2019) states that a Safe System assessment *must* be undertaken for any Victorian Government project greater than \$5M in value, is *desirable* for where the project value is greater than \$2M and *optional* for projects under \$2M. Where A Safe System Assessment is not undertaken, the project team should document how the project has considered Safe System alignment. Safe System assessments are most valuable when conducted during the early stages of a project.

2.2 The RSA process

The simplified process to undertake an RSA is shown by Figure 8.1 (Austroads, 2022), reproduced as Figure 2.



Figure 2: Simplified RSA process (source: Austroads, 2022)

3. Conducting the RSA

3.1 Selection of the RSA team

It is a requirement in Victoria that audits are undertaken in teams of two or more, with at least one Senior Road Safety Auditor. Each auditor must be accredited and registered on VicRoads Register of Road Safety Auditors (www.vrsa.com.au). Table 1 provides details of the RSA team.

Table 1: RSA team

Name	Accreditation	Employer
	Senior Road Safety Auditor	Safe System Solutions Pty Ltd
	Road Safety Auditor	Safe System Solutions Pty Ltd

3.2 Existing conditions

At the subject site, Kent Road in Pascoe Vale, between Cumberland Road and Cornwall Road is subject to the new speed limit of 40km/h. The road is single lane which caters for traffic in both directions. An eastbound and westbound bike lane is provided, one on each side of the road. Parking is also allowed for on both north and south sides of the road.

Kerb side protected bicycle lanes were recently installed on both sides of Kent Road. Speed humps are present on Kent Road, along with bicycle sharrow markings on the eastern approach to the Cumberland Road roundabout.

According to the traffic survey conducted in December 2021, the daily traffic volume for Kent Road in the audit area is 2,074 vpd. The site visit revealed a badly congested area at the end of Kent Rd between Cumberland Road and Joffre Road.

The surrounding area is predominantly residential with one church on the western end of Kent Road and a Medical Centre on the north-east corner of Joffre Road.

3.3 Undertaking the RSA

3.3.1 Meetings and site inspection

Table 2 lists site inspections completed for the audit.

Table 2: Site inspections

Activity	Location	Date	Time
Day site inspection	Kent Road, Pascoe Vale	20 December 2022	1745
Night site inspection	Kent Road, Pascoe Vale	20 December 2022	2115

Photos taken during the site inspection are included as Appendix A.

3.3.2 Risk assessment

Risk and hazards identified by the audit have been assigned a risk rating based on the **likelihood** and **severity** of the crash type associated with the risk or hazard.

The Austroads risk assessment matrix (Figure 10.2, Austroads, 2022) is reproduced as Figure 3.

			Severity*				
			Insignificant	Minor	Moderate	Serious	Fatal
			Property damage	Minor first aid	Major first aid and/or presents to hospital (not admitted)	Admitted to hospital	Death within 30 days of the crash
Likelihood (includes exposure)	Almost Certain	One per quarter	Medium	High	High	Extreme (FSI)	Extreme (FSI)
	Likely	Quarter to 1-year	Medium	Medium	High	Extreme (FSI)	Extreme (FSI)
	Possible	1 to 3 Years	Low	Medium	High	High (FSI)	Extreme (FSI)
	Unlikely	3 to 7 Years	Negligible	Low	Medium	High (FSI)	Extreme (FSI)
	Rare	7 years+	Negligible	Negligible	Low	Medium (FSI)	High (FSI)

*see Severity Guidance Sheet

Safe System crash outcome threshold

Figure 3: Risk assessment matrix (source: Austroads, 2022)

Corresponding to the assessed level of risk, Austroads provides the priorities for mitigation:

- Negligible – no action required
- Low – should be corrected or the risk reduced if the treatment cost is low
- Medium – should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high
- High – should be corrected or the risk significantly reduced, even if the treatment cost is high
- Extreme – must be corrected regardless of cost

The risk matrix is intended to be used in conjunction with the severity guidance sheet (Figure 10.3, Austroads 2022), reproduced as Figure 4. The severity guidance sheet provides an indication of crash severity outcomes for a range of crash types and crash speeds. Professional engineering judgement is required to confirm the severity outcomes indicated by the guidance sheet, as research into Safe System tolerance speeds continues to evolve.

		Crash Speed (km/h)										
		< 10	10	20	30	40	50	60	70	80	90	100
Crash Type	Pedestrian (vs HV)											
	Cyclist (vs HV)											
	Motorcyclists (vs HV)											
	Pedestrian (vs car)											
	Cyclist (vs car)											
	Pole/Tree Impact (car)											
	Motorcyclists (vs car)											
	Side Impact (HV vs car)											
	Side Impact (car vs car)											
	Head On (HV vs car)											
Head On (car vs car)												

General indication only – professional judgement required

Figure 4: Severity guidance sheet (source: Austroads, 2022)

3.3.3 Making recommendations

Recommendations are provided for all identified risks and hazards. Recommendations are categorised into one of the Safe System treatment categories described in Table 3.

Table 3: Safe System treatment categories (source: Austroads, 2018)

Treatment category	Description
Primary	Road planning, design and management considerations that practically eliminate the potential of fatal and serious injuries occurring in association with the foreseeable crash types.
Supporting (step towards)	Road planning, design and management considerations that improve the overall level of safety associated with foreseeable crash types, but not expected to virtually eliminate the potential of fatal and serious injury occurring. Improves the ability for a Primary Treatment to be implemented in the future.
Supporting	Road planning, design and management considerations that improve the overall level of safety associated with foreseeable crash types, but not expected to virtually eliminate the potential of fatal and serious injury occurring. Does not change the ability for a Primary Treatment to be implemented in the future.
Non-Safe System Other Elements	Road planning, design and management considerations that are not expected to achieve an overall improvement in the level of safety associated with foreseeable crash types occurring. Reduces the ability for a primary treatment to be implemented in the future.

4. RSA findings and recommendations

A table containing audit findings and recommendations table is included as Appendix B.

5. Conclusion

This RSA has been conducted in accordance with the Guide to Road Safety Part 6: Road Safety Audit (Austroads, 2022).

The findings and recommendations of the RSA are provided for consideration and response by the client.

Auditors:



22 December 2022



22 December 2022

Appendix A: Site photos



Photo 1: Entrance to Kent Road from Cumberland Road. Looking west



Photo 2: Bicycle users using the path. Note that some still use the footpath



Photo 3: The first speed hump near Joffre Road showing line marking and bollards



Photo 4: Second speed hump close to Valerie Street. Parking bays are painted onto the hump



Photo 5: Green markings give warning for Bicycle path users and vehicles exiting from Valerie Street



Photo 6: Exit from Valerie Street to Kent Rd. The left arrow is for the cyclists



Photo 7: Intersection of Kent Road and Cornwall Road looking east



Photo 8: Intersection of Joffre Road and Kent Road. Medical centre on corner

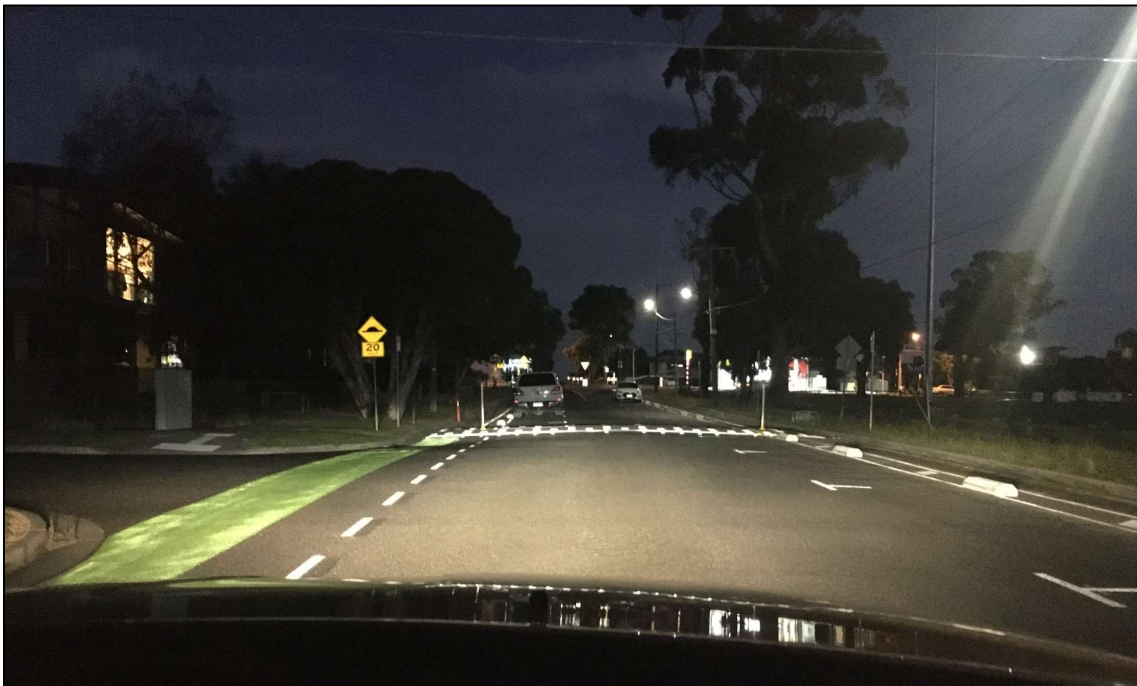
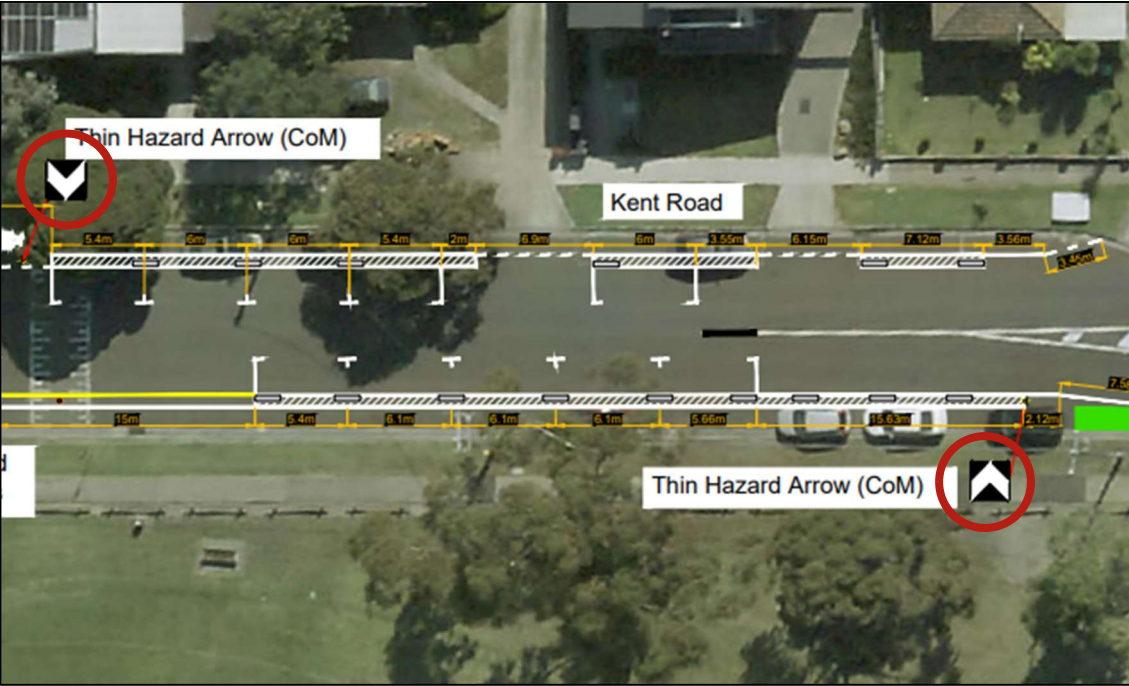


Photo 9: Retro Reflective markers help define the speed hump

Appendix B: RSA findings and recommendations

Audit findings and recommendations

Audit Findings	Risk Assessment			Recommendations P – Primary S – Supporting ST – Step Towards N – Non-Safe System	Responsible Officer	
	Likelihood	Severity	Level of Risk		Accept Yes/No	Comments
1. Hazard Marker signs not added yet. The design shows these signs to be placed on Kent Rd at east of Joffre Road, west of Cumberland Road, west of Valerie Street, east of Kitchener Road and east of Cornwall. There are 5 signs in total. These signs were not installed as of 20th December 2022 and should be installed as soon as possible to avoid vehicles exiting from side streets from entering the bike lane. 	Rare	Moderate	Low Safe System energy within tolerable levels	Consider installation of the signs (S)	Y	Signs have been ordered but they are a speciality, non-standard sign and take longer to fabricate. Signs will be installd as soon as they arrive.

Audit Findings	Risk Assessment			Recommendations P – Primary S – Supporting ST – Step Towards N – Non-Safe System	Responsible Officer	
	Likelihood	Severity	Level of Risk		Accept Yes/No	Comments
2. Relocation of hydrant marker and blue reflector not completed. The design plan shows the hydrant marked at wrong end of Kent Road. The hydrant is outside number 130 in Kent Road. Any delay in updating these markings could cause the Fire Brigade a failure / delay to find the hydrant. 	Rare	Moderate	Low Safe System energy within tolerable levels	Consider installation of blue reflector and associated pavement markings (S)	Y	Hydrant markers and blue reflectors are the responsibility of Fire Rescue Victoria (FRV), not Councils or road authorities. Council will relocate the road marker (triangle) and has sent a works order for this to occur, and has notified FRV of the missing blue reflector for them to action.

Audit Findings	Risk Assessment			Recommendations P – Primary S – Supporting ST – Step Towards N – Non-Safe System	Responsible Officer	
	Likelihood	Severity	Level of Risk		Accept Yes/No	Comments
3. Speed sign (40 km/h) is erected at the Cumberland Road end of Kent Road but none exists on the Cornwall Road end. This could cause drivers to travel at unsafe speeds, increasing the risk of all crash types. 	Possible	Moderate	High Safe System energy within tolerable levels	Consider installation of 40 km/h sign on Kent Road at west end. (S)	Y	Signs have been ordered and priority given to installation.

Audit Findings	Risk Assessment			Recommendations	Responsible Officer	
	Likelihood	Severity	Level of Risk	P – Primary S – Supporting	ST – Step Towards N – Non-Safe System	Accept Yes/No Comments
4. Reflective markers dislodging easily from pavement. The lack of reflective markers decreases the visibility of the speed hump at night.  	Rare	Moderate	Low Safe System energy within tolerable levels	Rectify and reinstate reflective markers (S)	Y	Have raised a works order as part of regular maintenance, and will continue to monitor during the trial.

Audit Findings	Risk Assessment			Recommendations P – Primary S – Supporting ST – Step Towards N – Non-Safe System	Responsible Officer	
	Likelihood	Severity	Level of Risk		Accept Yes/No	Comments
5. Reflective markers in bike lane area are hazardous to cyclists. The fixed and loose markers are a slipping hazard to cyclists, particularly when wet. 	Rare	Minor	Negligible Safe System energy within tolerable levels	Consider removing reflective markers in the bike lane area only. (S)	Y	Works request submitted to Council depot to remove.

Audit Findings	Risk Assessment			Recommendations P – Primary S – Supporting ST – Step Towards N – Non-Safe System	Responsible Officer	
	Likelihood	Severity	Level of Risk		Accept Yes/No	Comments
6. Bicycle lane needs cleaning on regular basis. Any build-up of rubbish or vegetation matter can be slippery to cyclists and increase the risk of a crash.  	N/A	N/A	To Note	Consider street sweeping of bike lanes. Add this cleaning process to regular maintenance schedule. (S)	Y	This bike lane is on Council's regular cleaning schedule.

Audit Findings	Risk Assessment			Recommendations P – Primary S – Supporting ST – Step Towards N – Non-Safe System	Responsible Officer	
	Likelihood	Severity	Level of Risk		Accept Yes/No	Comments
7. Sight lines are an issue when exiting Joffre Road. A lot of traffic is using the parking spaces in Kent Road and Joffre Road to attend the Medical Centre on the corner of Joffre Road. The Medical Centre has a car park for 9 vehicles and 1 disabled space. There are also 2 disabled park spaces on Joffre Road as well as 2 spaces for 5-minute parking. Users of this parking exit to Kent Road and turn left or right. In both directions there is parking along both sides of the road with single lane of traffic in the middle to cater for both directions. Exiting into Kent Road causes a clash with vehicles travelling along Kent Road. Vehicles can end up facing head on with other vehicles and cause a crash. The sight lines to view the traffic are difficult due to the parked cars along Kent Road. 	Possible	Moderate	High Safe System energy within tolerable levels	Consider: - Monitoring of timed and disabled parking areas in Joffre Road. (S) - Changing 5-minute parking to be relevant during business hours (S) - Education of road users on new speed limits (S) - Education of road users on method of passing other traffic (S)	N	Assessment of stopping sight distance as prescribed in the VicRoads Traffic Engineering Manual does not include parked vehicles, only fixed objects such as trees and poles. The speed limit on Kent Road has been reduced to 40km/h to improve safety at this intersection. The medical center has advised that they strongly prefer minimal impact to parking minimal impact to parking. The current parking is to the standard for all local roads. Will continue to monitor.

Audit Findings	Risk Assessment			Recommendations P – Primary S – Supporting ST – Step Towards N – Non-Safe System	Responsible Officer	
	Likelihood	Severity	Level of Risk		Accept Yes/No	Comments
8. Sight lines when exiting private driveways. Similar to item 6 (above) particularly in vicinity of Joffre Road. Some residents mentioned that they are now reversing into their driveways so that they can drive out instead of reversing out onto this busy road. 	Possible	Moderate	High Safe System energy within tolerable levels	Consider educational pamphlet for distribution to residents. (S)	N	Drivers are making choices to improve safety along the roadway. Reversing into driveways is encouraged as it allows the driver greater visibility of bike riders, improving safety for all road users. Drivers need to make their own choices. Council does not agree to prepare a pamphlet.

Audit Findings	Risk Assessment			Recommendations P – Primary S – Supporting ST – Step Towards N – Non-Safe System	Responsible Officer	
	Likelihood	Severity	Level of Risk		Accept Yes/No	Comments
9. The footpath is damaged outside 128/130 Kent Road and increasing the risk of pedestrians tripping. 	Possible	Minor	Medium Safe System energy within tolerable levels	Consider repair/replacement of footpath to consistent level. (S)	Y	This was not part of the bike lane infrastructure, and is addressed as part of Council's Road Management Plan, which includes regular inspections and interventions. Officers have passed this finding onto the relevant area of Council. Will raise with the road maintenance team to inspect and address.

Audit Findings	Risk Assessment			Recommendations P – Primary S – Supporting ST – Step Towards N – Non-Safe System	Responsible Officer	
	Likelihood	Severity	Level of Risk		Accept Yes/No	Comments
10. Bolted down concrete sections could cause tripping hazard for older people attending Medical centre. Residents mentioned that the Medical Centre attendees (particularly older ones) consider the bolt down concrete sections as a potential tripping hazard. 	Rare	Minor	Negligible	Consider the installation of flexible bollards on top of the concrete separators to improve the delineation of these items. (S)	Y	Barriers are designed to match the current road environment, and the barriers have been installed with large gaps in between. Bolt-down kerbing can be stepped over similar to normal kerbing. Council does not agree with installation of flexible bollards on top of the separators, due to the visual impact. Instead, works have been ordered to paint the bolted down separators yellow, to increase visibility. Part of the Council resolution to extend the trial included the design and approval for a formal pedestrian crossing outside the medical centre, which will provide a designated and fully accessible crossing. Works on this are currently underway.
11. People may have issues exiting their vehicles in the busy section of Kent Road. Residents mentioned that the Medical Centre attendees (particularly older ones) consider it difficult to exit from their vehicles amongst the busy traffic area between Cumberland Road and Joffre Road and also west of Joffre Road.	N/A	N/A	To Note	Consider a survey of Medical Centre attendees to determine extent of the issue. Encourage attendees of Medical Centre to use the provided parking behind the Medical Centre. (S)	Y	This is to be incorporated into engagement planned for April 2023. Will also include a request for the medical centre to allocate more of their parking to their customers.

Audit Findings	Risk Assessment			Recommendations P – Primary S – Supporting ST – Step Towards N – Non-Safe System	Responsible Officer	
	Likelihood	Severity	Level of Risk		Accept Yes/No	Comments
12. Construction bollard left behind 	N/A	N/A	To Note	Request removal when works are finished. (S)		Has been removed.