



Kent Road Protected Bike Lanes, Pascoe Vale

Road Safety Audit



Audit Stage: Post Construction

Report for Moreland City Council



Moreland City Council



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Information Page

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Executive Summary

Safe System Solutions Pty Ltd has been engaged by the Moreland City Council to undertake a post construction stage Road Safety Audit of the newly installed bicycle lanes along Kent Road between Cornwall Road and Cumberland Road, Pascoe Vale.

A number of issues have been identified which require further investigation and consideration:

- a. Cycle path issues
- b. Roadway width
- c. Parking

These issues are detailed in Section 3 of the Road Safety Audit report.

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List of Abbreviations

DDA – Disability Discrimination Act

RSA – Road Safety Audit

TGSI – Tactile Ground Surface Indicator

1. Background

1.1 Road Safety Audit Procedure

Road safety audit is a term used internationally to describe an independent review of a road project or existing road to identify any safety or performance concerns. The audit team considers the safety of all road users and qualitatively reports on road safety issues or opportunities for safety improvement. The team also considers other factors that are relevant to the existing site.

A road safety audit is therefore a formal examination of a road project, or any type of project which affects road users (including cyclists, pedestrians, mobility impaired etc.) or an existing road, carried out by an independent qualified team who identify and document road safety concerns. The objective of a road safety audit is to provide reasonable (but not absolute) assurance that potential, foreseeable hazards for all road users when a road is operational which may result in injury (in particular fatal and serious injury) are identified.

A road safety audit is intended to help deliver a safe road system and is **not** a review of compliance with standards.





1.2 The Safe System

The Austroads Guide to Road Safety Part 6 (2019): Managing Road Safety Audits states that: *"for any project, there is a responsibility on the road authority to maximise alignment with Safe System principles"*. The Guide continues to offer two methods for achieving this:

1. Undertake a Safe System Assessment in the early stages of the project.
2. Integrate Safe System principles into the Road Safety Audit process.

VicRoads Safe System Assessment Guidelines (2018) 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.

Table 1: Safe System Kinetic Energy

	Crash Type	Tolerable (10%) Speed (passenger vehicle)
	Head-On	~70km/h
	Side Impact (90°) Side Impact (45°)	~50km/h ~60km/h
	Side Impact into Point Source Hazard (eg. Tree, Power Pole)	30 – 40km/h
	Pedestrian, Cyclist, Motorcyclist	~30km/h

Source: Austroads (2018).

This RSA has been undertaken to conform with AGRS Part 6: Managing Road Safety Audits (2019). As such, an assessment has been undertaken for each RSA finding to determine if the kinetic energy associated with the possible crash is above tolerable levels (as set out above). Also, each recommendation has been categorised into one of the Austroads Safe System treatment categories described in Table 2 below.

Table 2: Safe System Treatment Categories

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.

Source: Austroads (2018a).

1.3 The Safety Audit Team

It is a requirement in Victoria that road safety 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). The team consisted of:

Table 3: Road Safety Audit Team

Senior Road Safety Auditors	Road Safety Auditor
<div>██████████</div> Safe System Solutions Pty Ltd	
<div>██████████</div> Safe System Solutions Pty Ltd	

1.4 Site inspections and meetings

A list of site inspections and meetings associated with this road safety audit is provided in the table below:

Table 4: Inspection and meetings

Activity	Location	Date	Time
PRE-AUDIT DISCUSSION	Phone call	12.07.2021	1520
DAYTIME SITE INSPECTION	Kent Road, Pascoe Vale	13.07.2021	0945
PRELIMINARY FINDINGS DISCUSSION	Video call	14.07.2021	1200
NIGHT TIME SITE INSPECTION	Kent Road, Pascoe Vale	21.07.2021	2210

1.5 Audit process

This road safety audit has been conducted in accordance with the procedures set out in the *Austroads Guide to Road Safety Part 6: Managing Road Safety Audits (2019)* and *Austroads Guide to Road Safety Part 6A: Implementing Road Safety Audits (2019)*. A review of the site has been completed and the details contained within the supporting documentation examined to identify issues that affect road user safety and other relevant issues. The auditors cannot guarantee that every issue that affects road user safety has been identified. Although the adoption of the audit recommendations will improve the level of safety of the site it will not, however, eliminate all the road user safety risks.

Road safety audit is a formal process and the 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.

1.6 Risk assessment

The potential road safety problems identified have been assigned a risk rating based on the **likelihood** of a crash occurring as a result of the deficiency together with the potential **consequence** of that crash.

The risk ratings adopted are:

- ⇒ **Intolerable**
- ⇒ **High**
- ⇒ **Medium**
- ⇒ **Low**

Tables 6 to 8 below show the risk rating process.

Table 5: Likelihood of a crash (Austroads, 2019)

Frequency	Description
Frequent	Once or more per week
Probable	Once or more per year (but less than once a week)
Occasional	Once every five to ten years
Improbable	Less often than once every ten years

Table 6: Likely severity of a crash (Austroads, 2019)

Severity	Description	Examples
Catastrophic	Likely multiple deaths	<ul style="list-style-type: none"> - High speed, multi-vehicle crash on a freeway - Car runs into crowded bus stop - Bus and petrol tanker collide - Collapse of a bridge or tunnel
Serious	Likely deaths or serious injury	<ul style="list-style-type: none"> - High or medium speed vehicle/vehicle collision - High or medium speed collision with a fixed roadside object - Pedestrian or cyclists struck by a car
Minor	Likely minor injury	<ul style="list-style-type: none"> - Some low-speed vehicle collisions - Cyclist falls from bicycle at low speed - Left turn rear-end crash in a slip lane
Limited	Likely trivial injury or property damage only	<ul style="list-style-type: none"> - Some low-speed vehicle collisions - Pedestrian walks into object (no head injury) - Car reverses into post

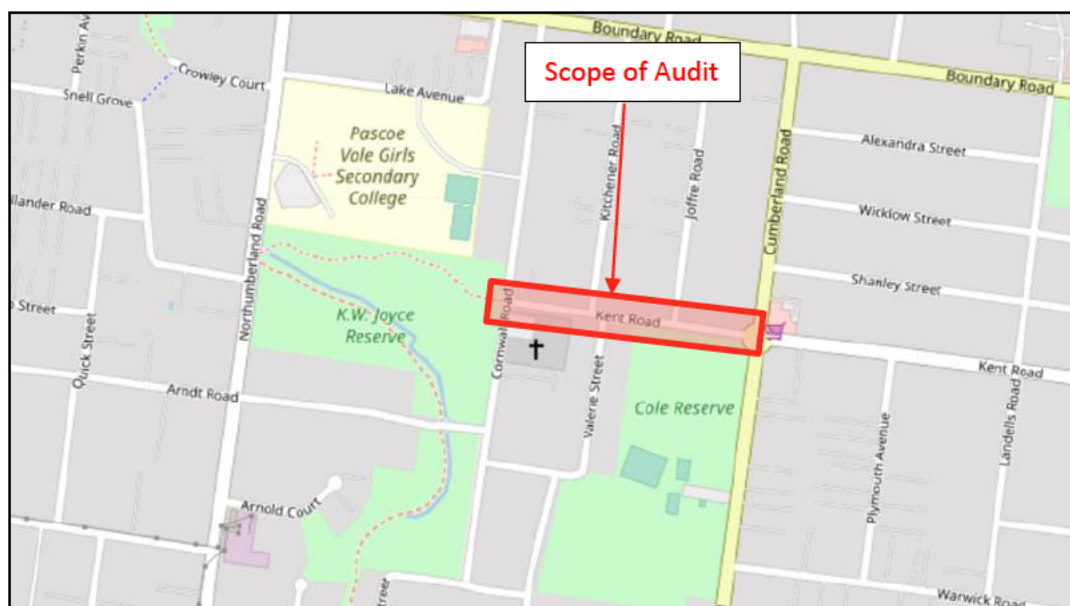
Table 7: Resulting level of risk (Austroads, 2019)

	Frequent	Probable	Occasional	Improbable
Catastrophic	Intolerable	Intolerable	Intolerable	High
Serious	Intolerable	Intolerable	High	Medium
Minor	Intolerable	High	Medium	Low
Limited	High	Medium	Low	Low

2. Scope of Audit

The subject of this audit is the recently installed protected bicycle lanes along Kent Road between Cornwall Road and Cumberland Road in the suburb of Pascoe Vale. A map of the audit location is shown in Error! Reference source not found. below.

Figure 1: Map of audit location (Source: Open Street Maps)



Kent Road, in the audit area, is a two-way undivided road with urban default speed limit of 50km/h. It runs in the east-west direction, bounded by Cornwall Road to the west, forming a T-intersection and by Cumberland Road to the east, forming a roundabout. The surrounding land use is predominantly residential, with nature reserves on the southern side of Cumberland Road intersection and to the west of Cornwall Road intersection.


Kerb side protected bicycle lanes were recently installed on both sides of Kent Road. Speed humps are present along with bicycle sharrow markings on eastern approach to Cumberland Road roundabout and at Cornwall Road, Valerie Street intersection. According to the traffic survey conducted in 2020, the daily traffic volume for Kent Road in audit area is 2,000 vpd.


During the 5-year period ending 24/07/2019, there have been two police recorded crashes in the audit area, both of which involved cyclists. The list of crashes has been presented in the table below:



Road	Persons Involved	Date	Severity
Kent Road/Cumberland Road Roundabout	2 (cyclist and vehicle)	16/05/2017	Serious (cyclist) Non-injury (vehicle)
Kent Road/Cumberland Road Roundabout	2 (cyclist and vehicle)	24/05/2017	Other (cyclist) Non-injury (vehicle)

3. Audit Findings and Recommendations

The findings and recommendations of the Road Safety Audit can be found in the table below.

Audit Findings	Level of Risk	Safe System Energy	Recommendations P – Primary ST – Step Towards S – Supporting N – Non-Safe System	Responsible Officer	
				Accept Yes/No	Comments
a) Cycle path issues					
<p>i) On the westbound bicycle path just east of Valerie St, there is a longitudinal groove on the path surface that may be hazardous to cyclists. Narrow bicycle wheels can get caught and tramline in this groove.</p> <p>It appears to already have been identified as a hazard and highlighted with some yellow paint.</p> 	Probable Minor HIGH	Within tolerable limits	Consider resurfacing the path to remove these grooves (S)		

Audit Findings	Level of Risk	Safe System Energy	Recommendations P – Primary ST – Step Towards S – Supporting N – Non-Safe System	Responsible Officer	
				Accept Yes/No	Comments
<p>ii) Cycle paths are formed kerbside by the installation of a 1.0m wide temporary separator, positioned to provide approx. 1.2m cycle path width between kerb and separator. However the kerb channel forms part of this path width.</p> <p>The join between the channel lip and asphalt road/path forms a level change or a groove that may trap narrow bicycle tyres and may be hazardous to cyclists. This may be exacerbated over time as the asphalt and concrete parts of the path settle and form step changes in the surface.</p> 	Occasional Minor MEDIUM	Within tolerable limits	If space permits, consider widening the path to min 1.2m excluding the drainage channel, so that cyclists are less likely to contact this groove. (S)		

Audit Findings	Level of Risk	Safe System Energy	Recommendations P – Primary ST – Step Towards S – Supporting N – Non-Safe System	Responsible Officer	
				Accept Yes/No	Comments
b) Roadway width					
<p>The trafficable roadway width has been reduced due to the provision of the new cycle paths. Previously, the width of Kent Road accessible to motor vehicles was sufficient for vehicles four-abreast (two parked kerbside plus two concurrent traffic lanes). Two-way traffic were not required to take turns to pass.</p> <p>Post the installation of the protected cycle paths, the residual roadway width is in the vicinity of 7.5m wide. Where cars are parked on both sides (as is the case in areas of high parking demand), two-way traffic must take turns to pass, as illustrated in the photo below.</p>  <p>While this method of traffic operation is not inherently unsafe, a hazard may arise when the habitual behaviour of local drivers overrides any recognition of the new traffic layout. Drivers who are used to driving this street without having to take turns with oncoming traffic can experience cognitive dissonance and fail to perceive the risks when approaching another vehicle. As a result, they may also fail to take the appropriate evasive action. This is usually followed by a collision and much blaming of third parties, which are typical outcomes from driver cognitive dissonance.</p> <p>The risk outlined above is highest immediately after changes are implemented, and decay as drivers recognise that change has occurred and get used to the new layout.</p>	Occasional Minor MEDIUM	Within tolerable limits	Consider temporary signage to bring to the attention of all drivers that road conditions have changed. (S) An example sign is shown below. 		

Audit Findings	Level of Risk	Safe System Energy	Recommendations P – Primary ST – Step Towards S – Supporting N – Non-Safe System	Responsible Officer	
				Accept Yes/No	Comments
c) Parking					
<p>i) At the time of the daytime site visit, several cars were observed to have parked one wheel up on the temporary separators on the south side of Kent Road. This appears to be related to the use of semi-mountable kerb for this separator as this effect was not observed on the north side of Kent Road where a more upright barrier kerb design is used.</p> <p>Cars parking on the separators may be a hazard because:</p> <ol style="list-style-type: none"> 1. there is reduced buffer space between the parked car and the cycle path, which increases the risk of car dooring to cyclists. 2. Parking movements may be erratic as vehicles mount the kerb and may be harder to control. 	Improbable Minor LOW	Within tolerable limits	Consider replacing the mountable kerb separators with barrier kerb (S) Consider installing flexible bollards on the kerb separators. (S)		




d) Conclusion

This road safety audit has been conducted in accordance with the procedures set out in the *Austroads Guide to Road Safety Part 6: Managing Road Safety Audits (2019)* and *Austroads Guide to Road Safety Part 6A: Implementing Road Safety Audits (2019)*. The site has been inspected and the supporting documentation has been examined. The findings, recommendations and Safe System elements are provided for consideration by the client and any other interested parties.

Auditors:



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26.07.2021


Senior Road Safety Auditor

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26.07.2021

 
Senior Road Safety Auditor

Appendix A: Photos



Photo 1: Cornwall Road and Kent Road intersection – facing east towards Kent Road



Photo 2: Valerie Street and Kent Road intersection – facing south towards Valerie Street



Photo 3: Kent Road – facing west across frontage of Pascoe Vale Health



Photo 4: Kent Road approaching Cumberland Road roundabout – facing east



Photo 5: Parked Vehicles on Kent Road



Photo 6: Parked Vehicles on Kent Road opposite Pascoe Vale Health



Photo 7: Kent Road approaching Cumberland Road roundabout – facing east



Photo 8: Kent Road and Joffre Road intersection – facing east