



Curlew Street Streetscape Upgrade

Pre-Construction Detailed Design Road Safety Audit

Prepared for:
Northrop

9 February 2024

The Transport Planning Partnership

Curlewis Street Streetscape Upgrade – Old South Head Road to Campbell Parade

Pre-Construction Detailed Design Road Safety Audit

Client: Northrop

Version: V02

Date: 9 February 2024

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Quality Record

Version	Date	Prepared by	Reviewed by	Approved by	Signature
V01	22/11/2023	Doris Lee	Wayne Johnson	Wayne Johnson	
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A. DESIGN DRAWINGS

1 Road Safety Audit Summary

Audited project:	Curlewis Street Streetscape Upgrade – Old South Head Road to Campbell Parade
Client:	Northrop
Project manager:	Andrew Rivett
Email address:	ARivett@northrop.com.au
Telephone:	0400 124 424
Audit Team:	Wayne Johnson (level 3 lead road safety auditor) Doris Lee (level 3 road safety auditor)
Audit type:	Detailed Design (Pre-Construction)
Commencement meeting:	N/A
Audit date:	Tuesday 14 November 2023
Completion meeting:	Not required

2 Introduction

2.1 Background

A bi-directional cycleway is proposed along the north side of Curlewis Street between Old South Head Road and Campbell Parade for approximately 800m in length, as part of the Curlewis Street Streetscape Upgrade project.

The Transport Planning Partnership (TPPP) has been commissioned by Northrop to complete a Detailed Design (Pre-construction) Road Safety Audit along the Curlewis Street corridor for the cycleway and streetscape upgrade.

Typically, the cross section of Curlewis Street would be adjusted as follows:

- The width of the existing footpath would be reduced from 1.8m to 1.35-1.5m
- The width of the existing landscape would be reduced from 1.8m to 1.5m
- The new bi-directional cycleway would be 2.85m wide on the footpath level
- The roadway would be 10.8m wide to accommodate a travel lane and a parking lane on each side of the road, with a shift of the centreline to the south.
- The southern kerblines would be unadjusted.

2.2 Audit Objective

The objective of this Audit was to examine road safety issues associated with the detailed design of the cycleway and associated streetscape upgrades on Curlewis Street.

2.3 Procedures and Reference Material

The procedures used are described in the following guidelines:

- Roads and Maritime Services' 2011 Guidelines for Road Safety Audit Practices
- Austroads Guide to Road Safety 2022: Part 6 Road Safety Audits

2.4 Audit Team

The RSA was carried out by the following team:

- Wayne Johnson (RSA-02-0769) – level 3 road safety auditor (lead auditor)
- Doris Lee (RSA-02-0128) – level 3 road safety auditor (team member)

Wayne and Doris are registered road safety auditors with the NSW Centre for Road Safety and are experienced in traffic engineering and design/ inspection of traffic management schemes.

3 Road Safety Audit Program

3.1 Commencement Meeting

A formal meeting was not held.

3.2 Site and Field Audit

Day and nighttime inspections were carried out on Tuesday 7th March and again on Tuesday 14 November 2023. Weather during the inspection was fine and visibility was excellent.

The audited road sections were driven and the cycleway was walked to identify road safety concerns. Photographs and driving footage were captured during the site inspection and have been included in the audit findings (Section 4.3).

3.3 Completion Meeting

Not required.

4 Road Safety Audit Findings

4.1 Introduction

Table 4.1 provides specific details of the road safety deficiencies and a risk rating as extreme, high, medium, low, or negligible. The risk ratings have been based on the risk matrix presented in Table 4.1, which has been adopted from the latest Austroads Guide to Road Safety: Road Safety Audit (2022).

Table 4.1: Risk Matrix

			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)

The terms in Table 4.1 are described below.

Likelihood:

- Almost certain – occurrence once per quarter
- Likely – occurrence once per quarter to once per year
- Possible – occurrence once per year to once every three years
- Unlikely – occurrence once every three years to once every seven years
- Rare – occurrence less than once every seven years.

Severity:

- Insignificant – property damage
- Minor – minor first aid
- Moderate – major first aid and/or presents to hospital (not admitted)
- Serious – admitted to hospital
- Fatal – at scene or within 30 days of the crash.

Priority:

- 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.

4.2 Responding to the Audit Report

As set out in the road safety audit guidelines, the responsibility for the road rests with the project manager, not with the auditor. The project manager is under no obligation to accept the audit findings. Neither is it the role of the auditor to agree to, or approve the project manager's responses to the audit.

The audit provides the opportunity to highlight potential road safety problems and have them formally considered by the project manager in conjunction with all other project considerations.

4.3 Road Safety Audit Findings

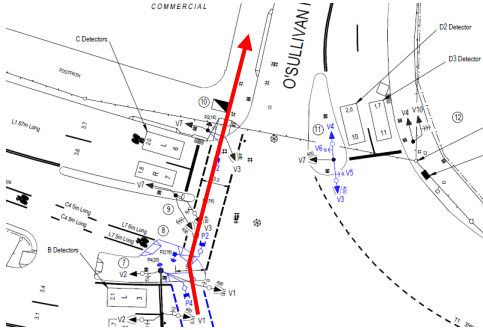
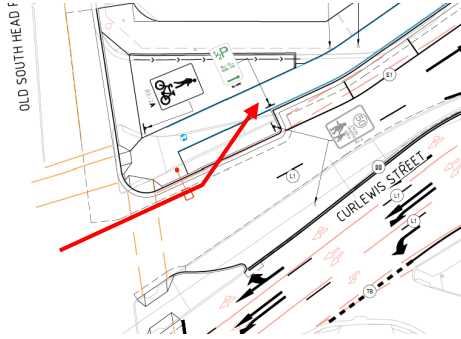
The audit findings are documented in Table 4.2 which provides:

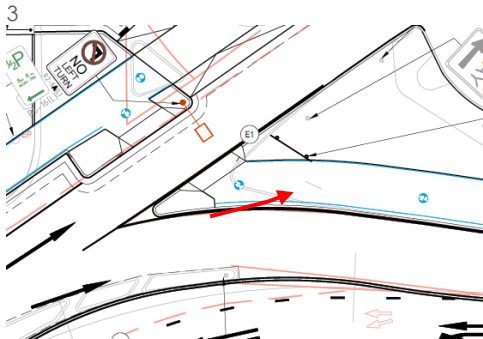
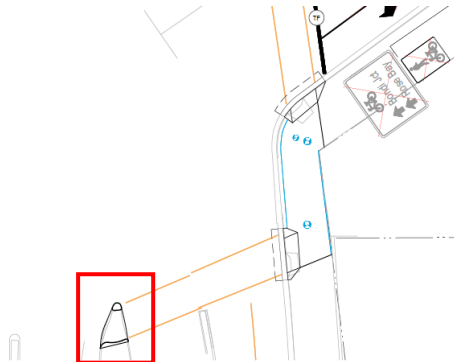
- specific details of the road safety issues identified during the audit
- a risk level rating for each of the road safety audit findings.

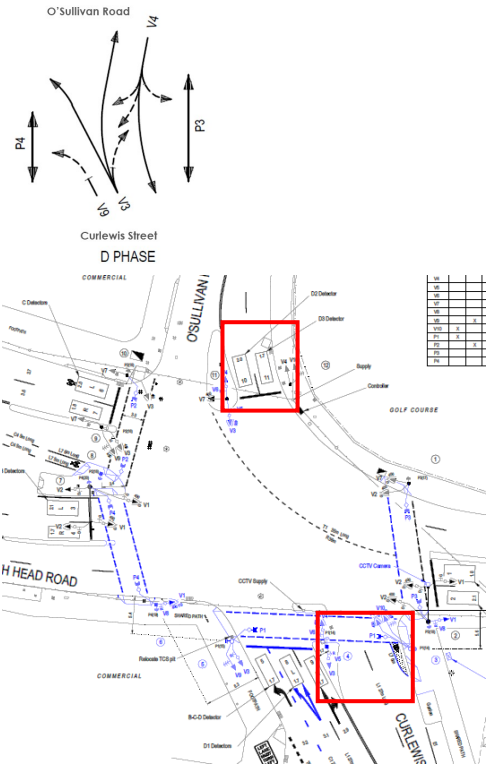
It should be acknowledged that positive attributes of the audited road section have not been discussed. Deficiencies that do not cause a safety problem are also not listed.

In-line with TfNSW's best practice recommendations have not been included in the road safety audit findings.

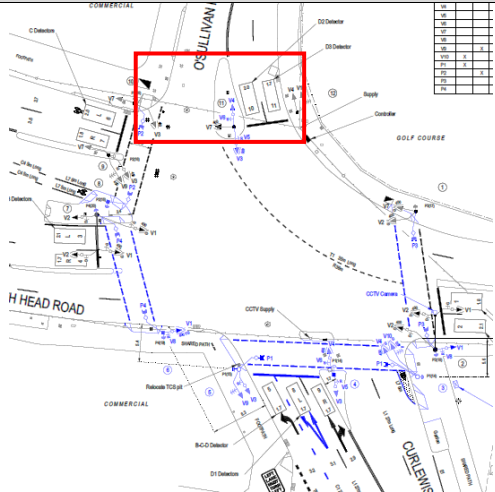
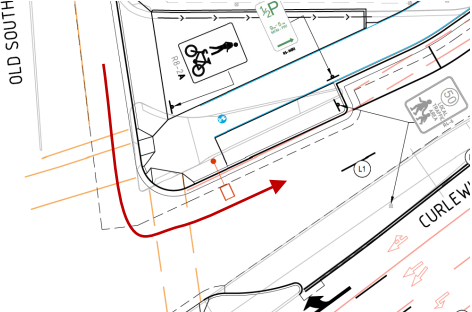
Table 4.2: Road Safety Audit Findings

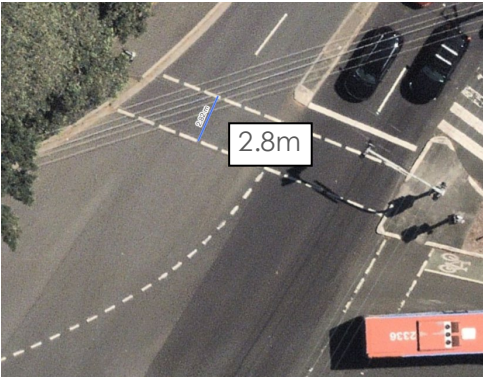
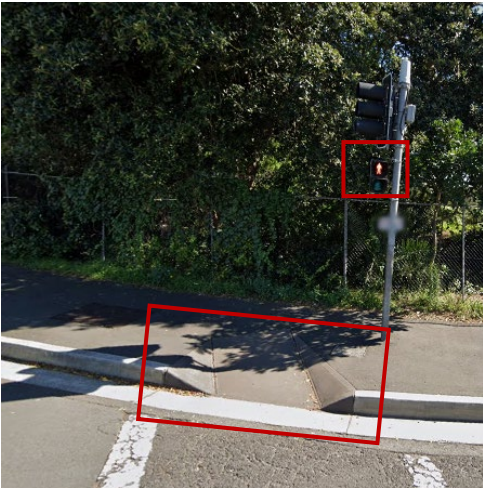
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
1	West side of O'Sullivan Road	The cycleway design does not integrate with O'Sullivan Road in the northbound direction north of Old South Head Road. There is no shared use path on the west side of O'Sullivan Road north of Old Sullivan Road. Further, there is no bike ramp to enable a connection with O'Sullivan Road. This may result in cyclists continue cycling on the footpath, which would increase the likelihood of pedestrian/cyclist conflict. Alternatively, cyclists may rejoin O'Sullivan Road, however there is no delineation to inform northbound O'Sullivan Road motorists. It is noted that using a property driveway to connect with the roadway is considered unsafe due to the conflict with vehicles travelling into and out of the driveway.		Unlikely	Moderate	Medium	
2	Various locations in Curlewis Street	Confident cyclists cycling eastbound on Curlewis Street may avoid crossing points east of Old South Head Road, however they may want to connect with the shared path after the intersection. There is no provision of a bike ramp at the identified locations for on-road cyclists to access the shared path.				Note only	

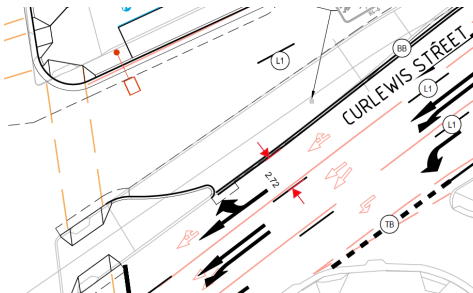
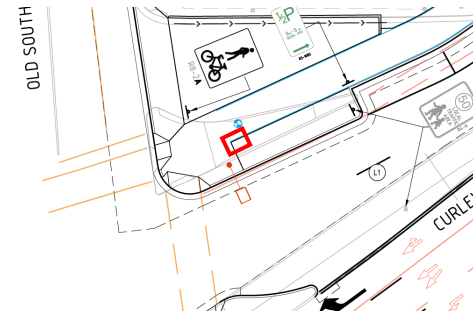
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
3	Old South Head Road	The central median is about 2.2m wide but narrows at the tip, which is insufficient to fully accommodate more than one bicycle (or pedestrian with a pram) at a time waiting to across Old South Head Road (south leg). Cyclists may be caught in the central median towards the end of the walk clearance time. If the central median cannot contain the cyclist or pedestrian with a pram, this would expose them to passing traffic, and hence increase the risk of an incident.	  	Rare	Moderate	Low	

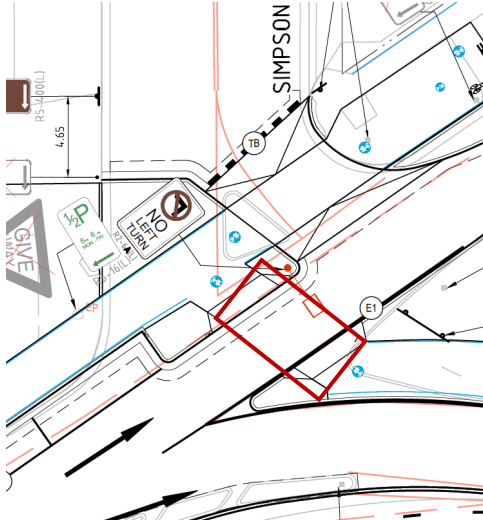
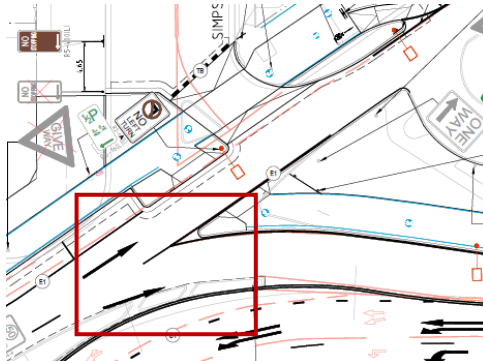
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
4	Old South Head Road, Curlewis Street, O'Sullivan Road and Birriga Road intersection	The intersection of Old South Head Road, Curlewis Street, O'Sullivan Road and Birriga Road intersection is complicated as a five-way intersection. A near miss involving a right turning vehicle from Curlewis Street running into a vehicle from O'Sullivan Road was observed whilst on-site. Furthermore, it appears there are two departure lanes in Curlewis Street. In conjunction with the undefined lane discipline in O'Sullivan Road, this may result in vehicles travelling straight through the intersection from O'Sullivan Road towards the two departure lanes in Curlewis Street. This would make the filtered right turn movement more difficult to make against two lanes of through traffic, as opposed to one through lane under the existing condition. This may increase the likelihood of through/right collisions.	 	Unlikely	Minor	Low	

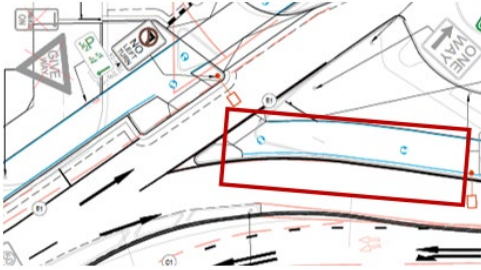
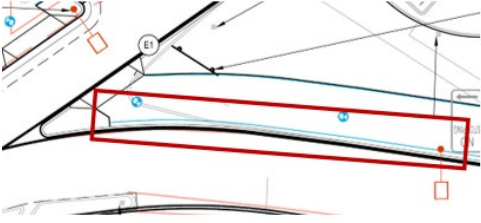
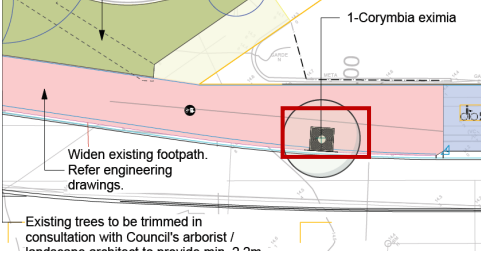
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
5	O'Sullivan Road	There is no provision of a signalised pedestrian crossing in O'Sullivan Road to accommodate the pedestrian desire line in the north-south direction. This may result in pedestrians mixing with traffic when crossing the road, which may lead to vehicle-pedestrian collisions.		Unlikely	Moderate	Medium	

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
							
6	Old South Head Road, Curlew Street, O'Sullivan Road and Birriga Road intersection	The swept path assessment does not include the left turn movement from Old South Head Road to Curlew Street. It is not clear whether sufficient clearance is available to accommodate the left turn movement as a result of removing the left turn slip lane.		-	-	Note only	

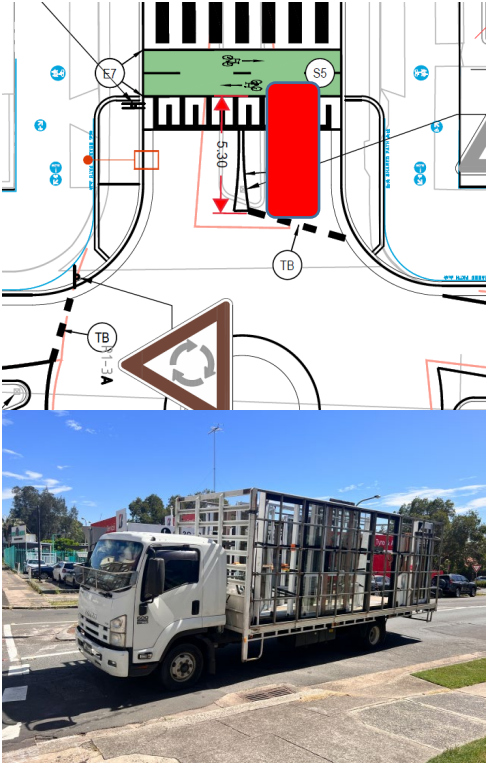
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
7	Old South Road, Curlewis Street and O'Sullivan Road intersection	The design does not include an upgrade of the marked footpath crossing in Old South Road to enable a safe connection between the proposed shared use path on Curlewis Street and the existing one on O'Sullivan Road: - The existing marked footpath crossing is 2.8m wide, which is less than the minimum requirement of 3.6m based on the TfNSW Delineation Guide. - The existing kerb ramp at the north-western corner of the intersection is too narrow to accommodate both pedestrians and cyclists across Old South Head Road. Consequently, this may increase the likelihood of conflicts between cyclists and pedestrians using the crossing. Users may also travel outside the marked foot crossing which may lead to potential conflicts with passing vehicles.	 	Unlikely	Minor	Low	

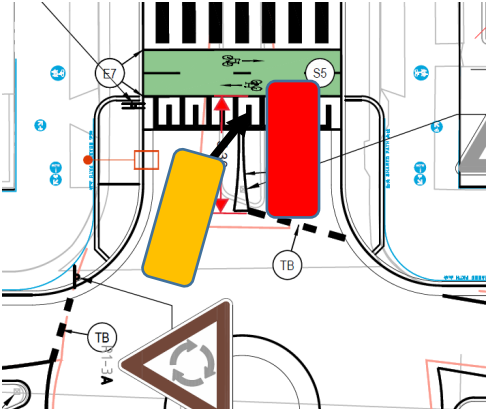
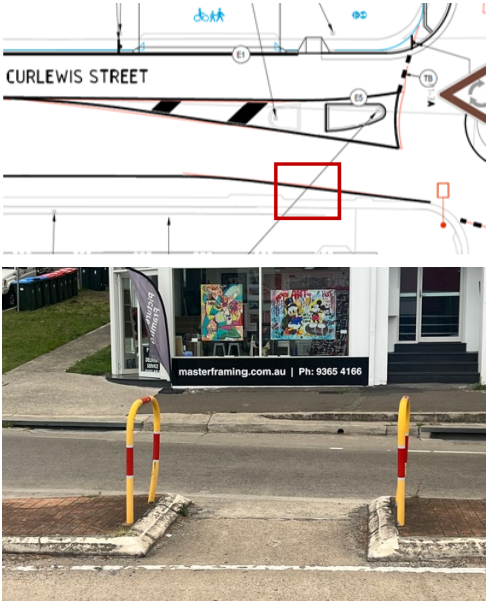
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
8	Old South Road and Curlewis Street intersection	The shared through and right turn lane on Curlewis Street westbound is 2.7m wide, and may not be sufficient to accommodate the design vehicle along the curve towards the intersection, noting that the existing central median will be replaced by a double barrier line. Vehicles not staying within the lane may result in a side-swipe incident with vehicles in the adjacent lane.		Unlikely	Minor	Low	
9	Curlewis Street west of Old South Head Road	Utilities located within the future shared path area, if retained, will become hazardous to pedestrians and cyclists.	 	Unlikely	Minor	Low	

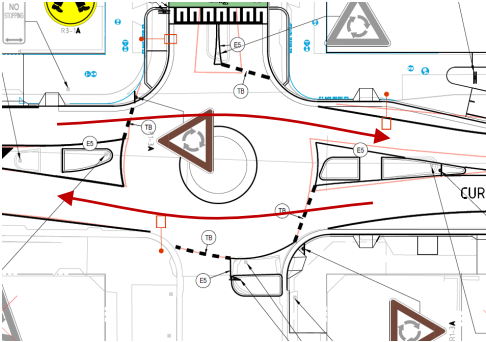
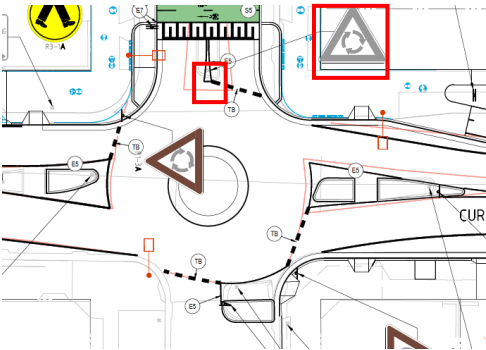
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
10	Curlewis Street and Blair Street intersection	The design does not provide a crossing facility nor priority for shared path users at the crossing point in Blair Street. This crossing is located immediately following a diverge point. This may increase the risk of collisions with shared path users.		Unlikely	Minor	Low	
11	Diverge Point to Blair Street on Curlewis Street	Drivers may not be aware of the diverge point on Curlewis Street as a result of the following issues: - Pavement arrows give late notice of the split in traffic, road users not familiar with the area may make a late lane change to avoid taking the wrong turn. - The gore area is not well delineated with insufficient line marking and signage to emphasise its presence. Late lane change may cause turbulence in the traffic stream, which may increase the risk in side-swipe and rear-end collisions.		Unlikely	Moderate	Medium	

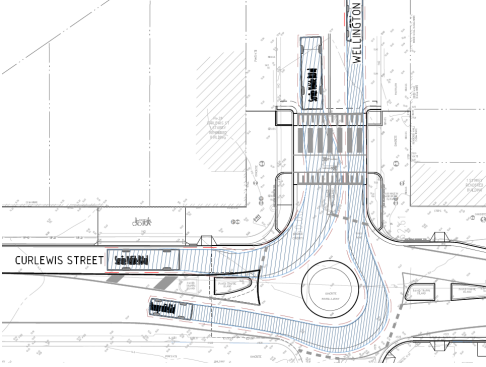
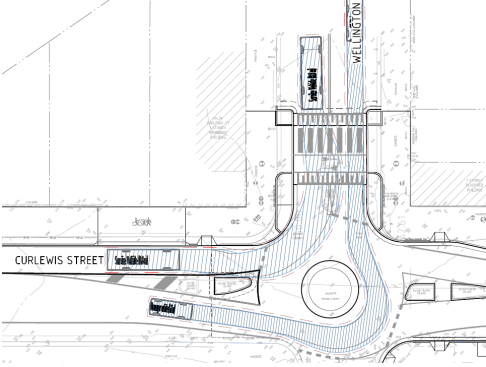
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
12	Curlewis Street east of Blair Street	The proposed shared path is located directly behind the kerbline along the curve in Curlewis Street with no buffer / offset from passing traffic. There is a risk of errant vehicles traversing the shared path, which may result in conflicts with pedestrians and cyclists.		Unlikely	Moderate	Medium	
13	Curlewis Street east of Blair Street	There is no provision of physical separation from the travel lane along the outside of the curve. This would leave pedestrians and cyclists unprotected on the shared use path. This would increase the likelihood of conflicts between an errant vehicle and shared path users.		Rare	Moderate	Low	
14	Curlewis Street, east of Blair Street	The proposed new tree (Corymbia eximia) is located within the shared path which could obstruct visibility towards approaching shared path users. The tree and the pit would also reduce the effective width of the shared path and impede the travel path of a cyclist. This may increase the likelihood of cyclist-pedestrian conflicts.	 	Unlikely	Minor	Low	

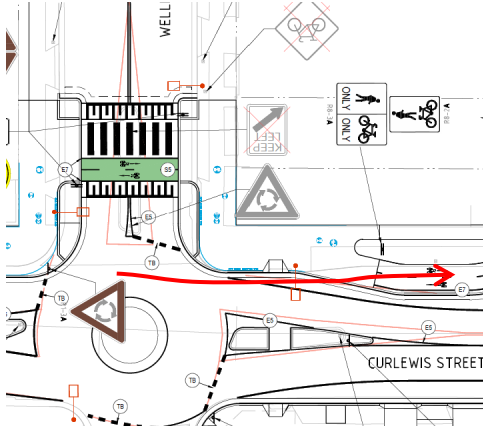
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
15	Curlewis Street, between Blair Street and Wellington Street	The driveway treatment at two locations on Curlewis Street to the west of Wellington is inconsistent with driveway treatments painted green located to the east of Wellington Street. The shared path logo may not be prominent to motorists when accessing the driveway.					Note only

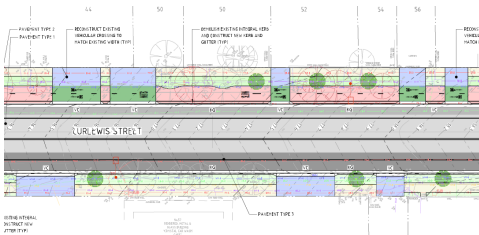
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
16	Wellington Street – Pedestrian Crossing	There does not appear to be 6m between the give way line marking on the Wellington Street north approach and the cycleway crossing. Consequently, vehicles may encroach the cycleway crossing which may lead to conflict with cyclists. This safety concern is exacerbated when a large vehicle waits at the give way line.		Rare	Moderate	Low	

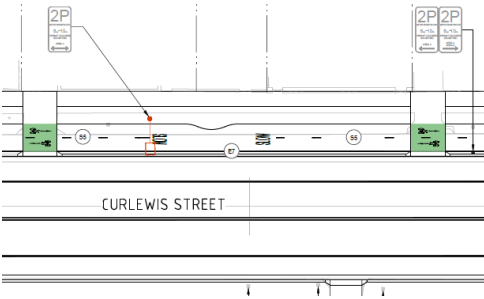
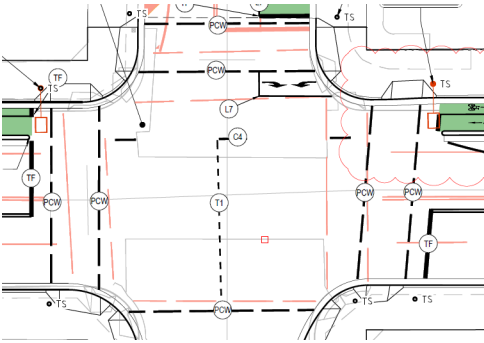
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
17	Wellington Street – Pedestrian Crossing	Motorists waiting on the Wellington Street north approach to the roundabout may restrict the visibility of motorists traveling northbound on Wellington Street towards cyclists and pedestrians crossing Wellington Street. This would increase the likelihood of conflicts with cycleway and pedestrian crossing users at this location. If the pedestrian and cycle crossing is busy, the roundabout operation may become gridlocked which may lead to driver frustration and illogical driver behaviour.		Unlikely	Moderate	Medium	
18.	Wellington Street, Curlewis Street roundabout	No kerb ramp has been provided on the south side of the west leg of the Wellington Street and Curlewis Street roundabout. Absence of the kerb ramp would not provide a smooth transition between the roadway and footpath for pedestrians with prams and in wheelchairs. They may walk in the roadway and cause conflicts with passing vehicles.		Rare	Moderate	Low	

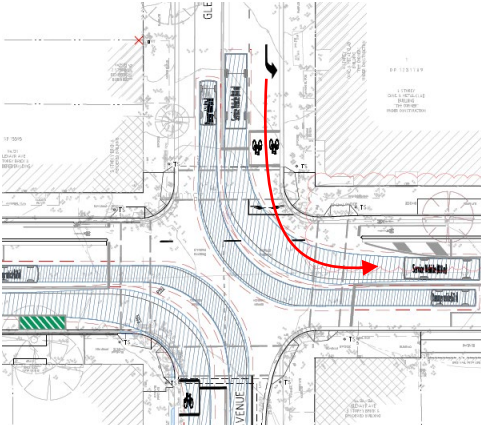
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
19	Wellington Street, Curlewis Street roundabout	Kerb build-outs on both Curlewis Street approaches to Wellington Street provide little deflection for motorists heading westbound and eastbound on Curlewis Street. Vehicle speeds may remain high when travelling through the roundabout, and increase the likelihood of collisions with other road users.		Rare	Moderate	Low	
20	Wellington Street, Curlewis Street roundabout	An existing 'Roundabout Give Way' sign would be located within a small painted median island on the north leg of the roundabout. The signpost could be knocked down by turning vehicles in the absence of a raised median island, as shown in the swept path diagram. This could cause damage to other vehicles. Subsequently, this could also result in vehicles not noticing the signage and stopping after the give way line marking which could result in an incident.		Unlikely	Moderate	Medium	

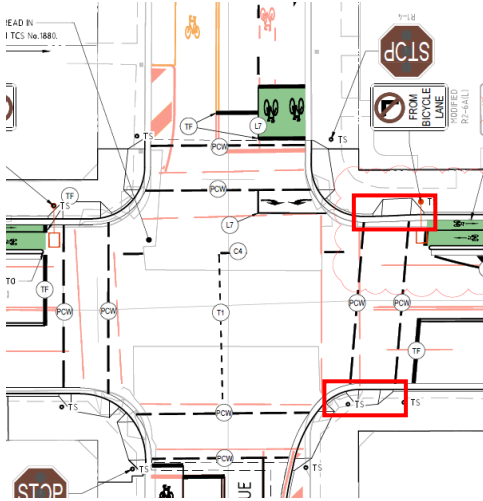
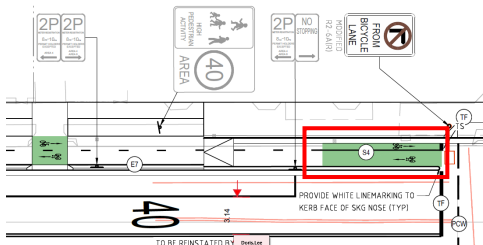
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
21	Wellington Street, Curlewis Street roundabout	The swept path of the Curlewis Street to Wellington Street left turn movement encroaches the centreline and painted island in Wellington Street, which would be impeded by a southbound vehicle if it sits in the middle of the travel lane, as opposed to the swept path diagram that shows the southbound vehicle hugging the kerbline. As a result, this may increase the likelihood of side-swipe conflicts.	 	Unlikely	Moderate	Medium	

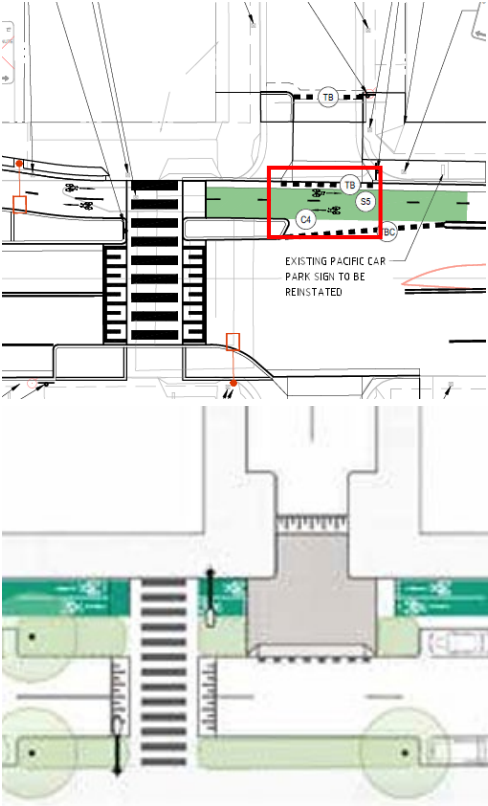
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
22	Wellington Street, Curlewis Street roundabout	Confident cyclists cycling eastbound on Curlewis Street may avoid the shared path facility west of Wellington Street, however they may want to connect with the cycleway when it transitions to a bi-directional cycleway. There is a lack of a bike ramp to enable the connection to the cycleway.		-	-	Note only	
23	Wellington Street, Curlewis Street roundabout	The design plan does not indicate whether the existing Raised Retro-Reflective Pavement Markers (RRPM) would be replaced to delineate the shifted centreline in Curlewis Street, on approach to the Wellington Street roundabout.				Note only	

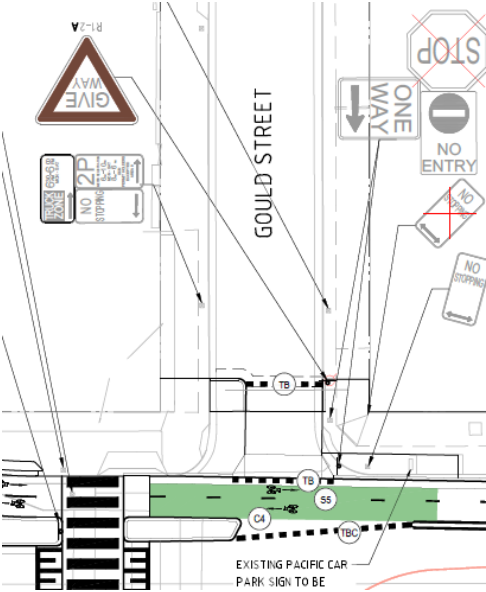
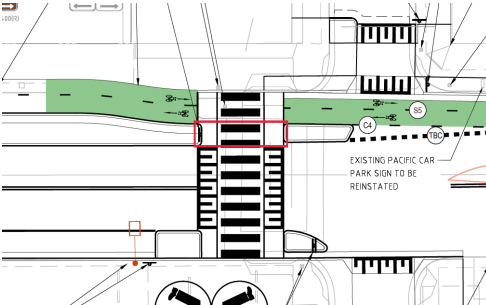
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
24	General finding	There are several driveways along the route where motorists will be required to reverse across the proposed cycleway as there is insufficient area on-site to enter and exit in a forward direction. Inter-visibility between a cyclist and a driver turning into the driveway from Curlewis Street may be obstructed by vehicles parked in the parking lane. A motorist may not have full visibility of oncoming cyclists when reversing which may lead to them reversing into cyclists. Furthermore, vehicles awaiting a gap in traffic at a driveway may impede both directions of the cycleway. Likewise, vehicles entering a driveway from Curlewis Street may also impede the cycleway when they yield to pedestrians in the footpath. There is a potential risk to cyclists if motorists failed to cross the cycleway at an appropriate and safe time.		Unlikely	Moderate	Medium	
							

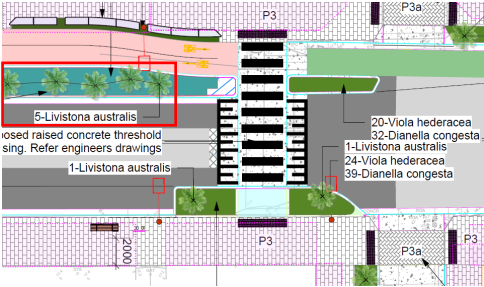
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
25	General finding	It was observed on many occasions that delivery vehicles double park within the travel lane when kerbside parking is not available. Under the existing condition, vehicles would overtake the stationary vehicle by partially encroaching into the travel lane in the opposite direction, in the absence of a centreline. The proposed scheme would narrow the travel lanes with provision of a double barrier centreline. Motorists are not legally allowed to encroach the centreline to overtake the stationary delivery vehicles. However, it is likely that some motorists may breach the road rule by crossing over the double barrier line. This would increase the likelihood of a side-swipe collision due to the reduced buffer in the narrowed travel lanes.	 	Unlikely	Moderate	Medium	
26	Glenayr Avenue and Curlewis Street intersection	The hook turn bay is 4 to 5.2m long to accommodate eastbound cyclists waiting to turn right, and westbound cyclists waiting to turn left towards Glenayr Avenue southbound. Considering Austroads require 3m for the hook turn bay (one direction), the proposed bay is too short to accommodate two bicycles in opposite directions. This may result in conflicts between cyclists, or cyclists storing outside the hook turn bay. Furthermore, the hook turn bay has no bicycle line marking (i.e. green paint and		Unlikely	Minor	Low	

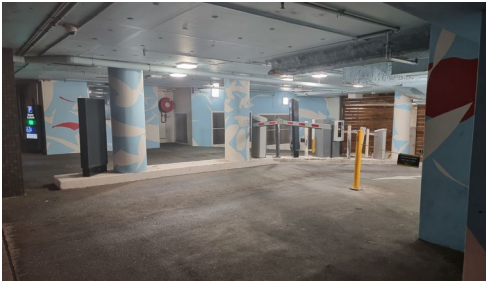
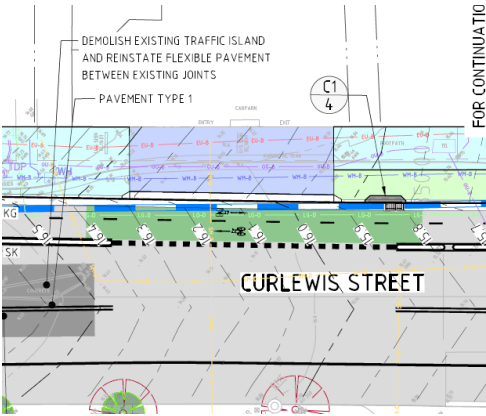
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
		bike symbol) and therefore may not be used correctly. Cyclists may ignore this and will use a conventional right-turn which has a greater risk of collision with vehicles. Of note, hook turns can be used as an alternative to a conventional right-turn from the centre of the road under the <i>Australian Road Rules (National Transport Commission 2012)</i>, however, there is no mention of left turn hook turns within the Austroads Guide. Lastly, consideration should be given to providing a hook turn for the Glenayr Avenue to Curlewis Street right turn movement.					
27	Glenayr Avenue and Curlewis Street intersection	The swept path assessment shows the left turn movement being made from the second lane (median lane) on Glenayr Avenue onto Curlewis Street rather than straddling both lanes. Consequently, motorists turning left from the kerbside lane may conflict with motorists turning left from the median lane.		Unlikely	Moderate	Medium	

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
28	Curlewis Street, east leg at the Glenayr Avenue intersection	The proposed kerb ramps are 2.3m wide in Curlewis Street and do not extend the full width of the marked foot crossings which are about 3.6m wide on Curlewis Street. RMS Guide to Traffic Signals Appendix D suggests kerb ramps should ideally be the full width of the crossing.				Note only	
29	Curlewis Street, west leg at the Glenayr Avenue intersection	The width of the eastbound cycleway appears too narrow and is inconsistent with the width of the upstream cycleway. It could be a CAD error.				Note only	

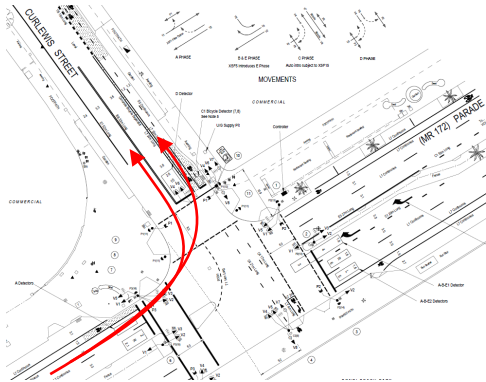
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
30	Gould Street – north approach	The cycleway is not included in the raised continuous footpath treatment. An example design stipulated in TfNSW cycleway Toolbox involves an extension of the raised platform past the intersection.		Rare	Moderate	Low	

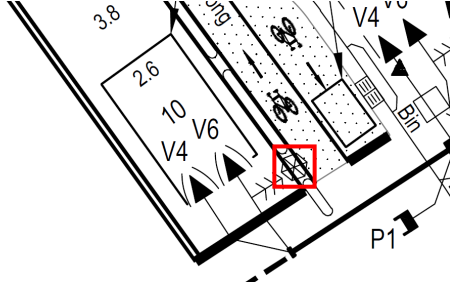
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
31	Gould Street – north approach	No advance cycle crossing ahead signage is provided on the Gould Street north approach to Curlewis Street. Drivers may not be aware of the cycle crossing after the raised pedestrian facility and could collide with passing cyclists.		Rare	Moderate	Low	
32	Pedestrian crossing on Curlewis Street west of Gould Street	The storage area for pedestrians travelling south on the pedestrian crossing between the cycleway and road is small. Pedestrians may store outside the storage area which may result in conflicts with cyclists or passing vehicles. Further, given this area is a decision point for pedestrians, it should not be marked as a pedestrian crossing, as it would give pedestrians a false impression that the crossing is continuous without having to look out for traffic after crossing the cycleway or the roadway.		Rare	Moderate	Low	

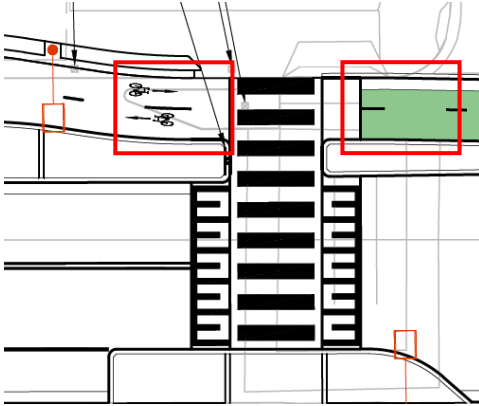
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
							
33	Pedestrian crossing on Curlewis Street west of Gould Street	Pedestrians waiting on the footpath may have their sight distance impeded by landscaping. The landscaping design plans indicate that <i>livistona australis</i> palms will be installed within the kerb build outs. Mature palms can grow 10 to 25 metres, which may impact sight visibility between pedestrians and cyclists. Insufficient sight visibility at the pedestrian crossing and cycleway increases risks to pedestrians as cyclists may not see pedestrians crossing in the northbound direction. Similarly, pedestrians may not see oncoming vehicles in the other direction. Landscaping within the kerb buildout should not be higher than 1.0m to allow for reciprocal visibility as per design principles in the Cycleway Design Toolbox.		Rare	Moderate	Low	

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
34	Pacific Car Park	During busy periods, vehicles queueing for the boom gate when entering the car park may queue across the cycleway. This would increase the likelihood of an incident between cyclists and queued vehicles. Cyclists may also use the roadway or footpath to avoid vehicles queued across the cycle lane which increases the likelihood of incidents with vehicles or pedestrians.	 	Rare	Moderate	Low	

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
35	Carlogy, east of Glenayr Avenue	Outside Carlogy, motorists park perpendicular to the cycleway across the driveway. In the future, these cars may park across the cycleway, however for the purposes of this audit it is assumed motorists would not park in this location in the future.				Note only	
36	General comment	Similarly, delivery vehicles were observed parked across the driveway. In the future, these cars may park across the cycleway, however for the purposes of this audit it is assumed motorists would not park in this location in the future.				Note only	

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
37	General comment	A number of trees would be retained in the road verge on the north side of the cycleway. In some instances, vegetation overhanging into the proposed cycleway would intrude into the cyclist design envelope and become a potential head hazard. A 2.2m vertical clearance is required for the cyclist design envelope (plus another 0.3m for overhead clearance) in accordance with Austroads. Overhanging vegetation reduces visibility and could be a hazard to cyclists. Vegetation would need to be trimmed on a regular basis in the future. Trimming vegetation should be included in Council's maintenance program.		Unlikely	Minor	Low	
38	West leg approach side of Campbell parade	The design does not indicate any connectivity or restriction for cyclist turning movements from the existing on-road cycleway on Campbell Parade (west approach) to Curlewis Street or Curlewis Street cycleway. This would potentially cause confusion for cyclists and motorists turning left from Campbell Parade into Curlewis which could result in an incident.		Unlikely	Moderate	Medium	

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
39	Curlewis Street approach to the Campbell Parade intersection	The ridge between the pavement and utility pit exceeds the surface tolerance of 10mm specified in Austroads Guide to Road Design Part 6A. If not repaired, the change in level of the surface may unseat a cyclist.	 	Rare	Moderate	Low	

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
40	Curlewis Street, near Campbell Parade.	Signage should be provided to delineate the bidirectional cycleway and adjacent pedestrian footpath at the commencement of the facility, and the end of the facility.	 R8-3 Separated path			Note only	
41	General	Markings for all cycleway entry points should be: Direction arrow + bicycle symbol + "ONLY" - in top to bottom order. No pavement markings on exit.				Note only	

5 Concluding Statement

The findings and opinions in the report are based on the examination of the specific road and environs, and might not address all concerns existing at the time of the audit.

The auditors have endeavoured to identify features of the road that could be modified in order to improve safety, although it must be recognised that safety cannot be guaranteed since no road can be regarded as absolutely safe.

While every effort has been made to ensure the accuracy of this report, it is made available strictly on the basis that anyone relying on it does so at their own risk without any liability to the Auditors.



Wayne Johnson
Level 3 Road Safety Auditor
The Transport Planning Partnership



Doris Lee
Level 3 Road Safety Auditor
The Transport Planning Partnership

Appendix A

Design Drawings

The Transport Planning Partnership
Suite 402 Level 4, 22 Atchison Street
St Leonards NSW 2065

P.O. Box 237
St Leonards NSW 1590

02 8437 7800

info@tpp.net.au

www.tpp.net.au