

# Corn Street, Old Reynella

## Road Safety Audit



April 2016

**RAA**

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### Revision History

Rev	Date	Author	Approver	Comment
A	27/04/16	IAB	CM	For issue.
B	11/08/16	IAB	CM	Audit amended based on the completed project.

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# **1 Introduction**

## **1.1 Introduction**

In March 2016, RAA received an enquiry from a member about the Give Way rules that applied at the intersection of Corn Street and Olive Street, Old Reynella. In response to the enquiry, which was considered to be unusual, RAA undertook a site investigation to examine the intersection in further detail. The results of the investigation indicated that the road authority, the City of Onkaparinga Council had installed a new traffic calming scheme along Corn Street. The works at the time were not complete, evidenced by setting out marks on the pavement for line marking crews. The initial investigation however flagged a number of concerns so RAA escalated the traffic investigation into a formal Road Safety audit, which was completed on the 24<sup>th</sup> March. A further audit was performed on 15<sup>th</sup> June 2016 to review the traffic calming scheme following substantial completion of the work. This report details the findings of the audit and presents recommendations for traffic and safety improvements for the consideration of the City of Onkaparinga Council.

## **1.2 About the Road Safety Audit**

A road safety audit is a formal examination of an existing or proposed road or intersection, by an independent and qualified multidisciplinary team. The purpose of the audit is to identify risks and hazards that may result in a collision and provide broad recommendations that will reduce the probability and/or consequence of a collision occurring.

The audit is conducted in accordance with the *Austroads Guide to Road Safety, Part 6: Road Safety Audit*, which defines a multi-stage review process for the audit, and incorporates the following stages:

- Feasibility / Concept Design
- Preliminary Design
- Detailed Design
- Construction (Road Works)
- Pre-Opening to Traffic
- Existing Road Audits

Since access to Corn Street was maintained throughout the project, this Road Safety Audit is classed as an existing road audit, rather than a pre-opening audit which would usually be undertaken before the road is opened to traffic.

### 1.3 Road Safety Audit Team

The road safety audit team comprised of the following members of staff:



**Charles Mountain** is the Senior Manager – Road Safety at RAA. He has extensive experience in transport, traffic and road safety. Prior to joining RAA he had over 25 years' experience in local government managing a wide variety of traffic, access and parking issues. He has qualifications in engineering, business management and is a qualified road safety auditor.



**Ian Bishop** is a Traffic Engineer at RAA and an accredited road safety auditor. He has over 10 years' experience in Civil & Traffic Engineering including highways, intersection design and modelling, road safety mass action treatments and the design and implementation of local area traffic management schemes targeted at road safety improvements.



## 1.4 Background

Corn Street is located in Old Reynella and runs in a north-south direction, connecting Oval Road to Reynell Road (Figure 1). It is an undivided minor street, primarily providing residential access but is also home to the Mary Bywaters Memorial Kindergarten. RAA understands that the City of Onkaparinga have recently installed traffic calming in a bid to lower vehicle speeds. The traffic scheme incorporates the construction of slow points along Corn Street, a chicane on the bridge over the creek and also a change to the Give Way priorities such that traffic entering from either Mill Street or Olive Street has the priority.



Figure 1 – Corn Street

Over the last five years, there have been two crashes along Corn Street consisting of a minor injury and one property damage only crash. The crashes that have occurred have been attributed to inattention and on both occasions, vehicles were travelling within the posted speed limit.

## 2 Site Investigation

The audit was conducted on Friday 24<sup>th</sup> March 2016 between 10:00 and 11:00. The weather at the time of the investigation overcast with occasional fine showers. The investigation was carried out on foot and several drive throughs in a Subaru Forrester SUV. A night audit has not been undertaken to date but given some of the risks identified, may be undertaken as a separate exercise if required.

## 3 Audit Findings

### 3.1 Geometry

- a) Chicanes constructed at the intersections of Olive Street and Mill Street are likely to cause both a road safety and traffic management issue. Vehicles on Olive and Mill Street have the priority turning onto Corn Street but since Corn Street is restricted to one lane of traffic through the chicane, there is the potential for a vehicle turning into the path of an oncoming vehicle approaching the Give Way hold point on Corn Street. For vehicles already at the Give Way hold point, the vehicle on either Olive or Mill Street cannot enter Corn Street and must give way to the traffic on Corn Street. RAA are unclear as to why the priorities were changed as it isn't intuitive with normal driving practice. RAA understand that the priorities were changed to accommodate the turn paths of heavy vehicles however under the new arrangement, particularly on Olive Street, there is a greater crash risk if the motorist approaching on the side streets understands the changes in place while a motorist continuing on Corn Street does not. During both audits, the team witnessed vehicles failing understand the scheme despite the signage in place. We therefore recommend that the priorities are changed so that traffic on Olive or Mill Street must to give way to vehicles in either direction.



Figure 2 – Chicane at the intersections of Mill Street (pictured) and Olive Street could cause safety and traffic issues for vehicles turning into the chicane while vehicles approach from the opposite direction.



**Figure 3 – Approaching the Mill Street / Corn Street intersection on Corn Street.**



**Figure 4 – Approaching the Olive Street / Corn Street intersection on Corn Street.**

- b) Concrete islands are beginning to break at the edges. The narrow geometry of the chicane is evident by the damage already visible on the concrete islands. Although the islands have been designed to be mountable by larger vehicles, the edge damage suggests that many vehicles are clipping the islands. This may pose a safety issue in the near future. As the concrete breaks out, the exposed surface is rough and if vehicles continue to brush against the exposed surface, tyre damage may occur. It is recommended that the islands are monitored for damage and remedial performed where necessary.





**Figure 5 – Concrete islands are already starting to crack and break away at the edges.**

- c) The height of the concrete islands throughout the scheme is inconsistent. Some of the islands are of sufficient height and edge gradient that would enable a light vehicle to mount the island, while others are higher and have steeper edge gradients. The key concern is that when driving, it can be difficult for the driver to judge the height. If the driver was to mount a lower island, there may be a misconception that all islands are easily mountable, resulting in a risk of loss of control of the vehicle when attempting to mount a higher island as steering may be deflected.



**Figure 6 – Example of a shallower island, almost half the height of that shown in Figure 7.**

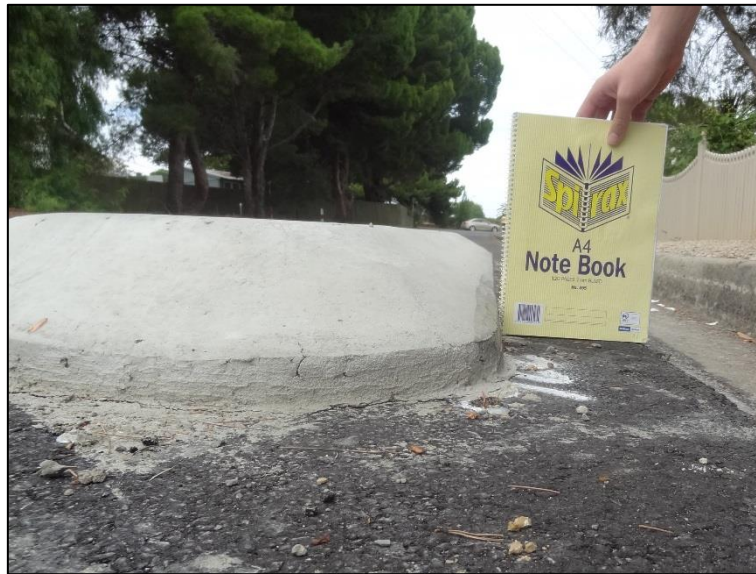


Figure 7 – Example of a steeper island, almost double the height of that shown in Figure 6.

### 3.2 Signs

- a) Change of priorities at Olive Street and Mill Street. The change of priorities at either intersection is concerning since it is counterintuitive to what a motorists would expect to find at a T-intersection, despite the fact that it has been signed. The auditors spoke to two separate residents during the audit, both of whom were completely unaware of either the Give Way sign or warning sign showing the road continuing to the left / right. This reflects local familiarisation with the historic road network and suggests that any signage should be more prominent through either increasing sign sizes and / or duplication. It is however recommended that the previous priorities are reinstated since motorists would expect this arrangement. This would also solve the risks associated with vehicles turning into chicane at the intersection (refer to item 3.1(a)).



Figure 8 – The change of priorities are counter intuitive to the road user. The number of “Slow Point” warning signs may result in the “Road continues left/right” warning signs being disregarded. Priority signage (Give Way & warning signs) should perhaps be more prominent.

- b) Conflicting warning signs, Mill Street – When approaching the Corn Street intersection on Mill Street, there is a T intersection warning sign followed by a route continues to the left warning sign. These signs contradict each other and could cause confusion. If the proposed arrangement is to remain, the T intersection warning sign should be removed.



Figure 9 – T intersection warning sign conflicts with the road continues to the left warning sign in the background.

### **3.3 Line Marking & Delineation**

Line marking for the traffic calming scheme was outstanding at the time of the first audit however setting out marks were present on the pavement. When RAA conducted the second audit, line marking had been completed, including the painting of the concrete islands.

- a) Absence of centre line around curve on Mill and Olive Street. The absence of centreline marking around the proposed curve from Olive and Mill Street onto Corn Street results in ambiguity of the intended priority. A centre line would reinforce to the motorist that the road continues to the left or right and the intersection should not be treated as a T intersection. As previously outlined in the audit, it is recommended that the former priorities are reinstated however if the arrangement is to be maintained, it is recommended that a centreline be applied.



**Figure 10 – Absence of centreline marking at Mill Street does not clearly indicate that the road continues to the left. Note – photo was taken during the first audit in March however centreline was absent during second audit in June.**



## 4 Summary & Recommendations

The road safety audit on Corn Street, Old Reynella has identified a number of recommendations, a summary of which is provided in Table 1 below. Suggested priorities have also been included, where 1 is high priority and 3 is low priority. A further table is provided in Appendix A to enable the City of Onkaparinga Council to respond to the audit.

Table 1 – Summary of Recommendations

Item No.	Risk / Hazard Description	Recommendation	Priority
<b>3.1 - Geometry</b>			
a	Chicanes constructed at the intersections of Olive Street and Mill Street are likely to cause both a road safety and traffic management issue	<ul style="list-style-type: none"> <li>Change priorities back to T intersection configuration.</li> </ul>	1
b	Concrete islands are beginning to break at the edges	<ul style="list-style-type: none"> <li>Monitor damage and undertake remedial work to ensure rough edges do not pose a risk of tire damage.</li> </ul>	2
c	The height of the concrete islands throughout the scheme is inconsistent.	<ul style="list-style-type: none"> <li>Reconstruct islands as necessary to ensure consistency in the height and that island are mountable safely.</li> </ul>	1
<b>3.2 – Signs</b>			
a	Change of priorities at Olive Street and Mill Street.	<ul style="list-style-type: none"> <li>Refer to recommendation 3.1(a) or;</li> <li>Increase sign size and/or duplicate signs.</li> </ul>	1
b	Conflicting warning signs, Mill Street	<ul style="list-style-type: none"> <li>If priorities are to remain unchanged, remove T intersection warning sign.</li> </ul>	3
<b>3.3 – Line Marking &amp; Delineation</b>			
a	Absence of centre line around curve on Mill and Olive Street.	<ul style="list-style-type: none"> <li>Mark centre line around corner.</li> </ul>	2



## 5 Concluding Statement

This road safety audit has been conducted by the audit team through an on-site inspection for the purposes of identifying infrastructure and/or environmental issues that may present safety risks for road users.

The identified issues have been noted in this report and the accompanying recommendations have been submitted for the consideration of the City of Onkaparinga Council.

  
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Charles Mountain  
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Lead Auditor

27 / 04 / 16

  
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Auditor

27 / 04 / 16

## Appendix A – Response to Road Safety Audit



Table A1 – Summary of Recommendations and Response to Audit

Item No.	Risk / Hazard Description	Recommendation	Priority	Authority Response
<b>3.1 – Geometry</b>				
a	Chicanes constructed at the intersections of Olive Street and Mill Street are likely to cause both a road safety and traffic management issue	<ul style="list-style-type: none"> <li>Change priorities back to T intersection configuration.</li> </ul>	1	
b	Concrete islands are beginning to break at the edges	<ul style="list-style-type: none"> <li>Monitor damage and undertake remedial work to ensure rough edges do not pose a risk of tire damage.</li> </ul>	2	
c	The height of the concrete islands throughout the scheme is inconsistent.	<ul style="list-style-type: none"> <li>Reconstruct islands as necessary to ensure consistency in the height and that island are mountable safely.</li> </ul>	1	
<b>3.2 – Signs</b>				
a	Change of priorities at Olive Street and Mill Street.	<ul style="list-style-type: none"> <li>Refer to recommendation 3.1(a) or;</li> <li>Increase sign size and/or duplicate signs.</li> </ul>	1	
b	Conflicting warning signs, Mill Street	<ul style="list-style-type: none"> <li>If priorities are to remain unchanged, remove T intersection warning sign.</li> </ul>	3	
<b>3.3 – Line Marking &amp; Delineation</b>				
a	Absence of centre line around curve on Mill and Olive Street.	<ul style="list-style-type: none"> <li>Mark centre line around corner.</li> </ul>	2	